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Facilitation of Transportation in Turkey and Poland: a Comparative Study

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FACILITATION OF TRANSPORTATION IN TURKEY AND POLAND: A COMPARATIVE STUDY

***Research n°* FEM35-09**

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FACILITATION OF TRANSPORTATION IN TURKEY AND POLAND: A COMPARATIVE STUDY

1. THE ISSUE AND THE MOTIVATION

With increasing trade liberalization and lowering of tariff and non-tariff barriers to trade, transport costs remain among the major constraints for further economic integration and thus of countries' ability to participate in the world economy in order to seize the growth opportunities. In this context, we considered how recent regulatory changes and investment in infrastructure have affected the evolution of transport costs. The focus of our analysis has been on each of the four sub-sectors of the transportation industry: road, rail, maritime and air transportation. As specific case studies, we considered the cases of a new member state of the European Union (EU), Poland, and of a country candidate to EU accession, Turkey.

2. THE STUDY

The study consists of seven chapters. In Chapter 1 we provide a picture of the state of the transport infrastructure and its quality, whereas in Chapters 2-5 we concentrate on the analysis of existing regulatory frameworks for road, rail, maritime and air transportation sectors, as well as on the analysis of restrictions to market access and commercial presence. Each of the chapters concerning regulatory systems describes the basic characteristics of the sectors as well as the international regulatory regime, the rules and regulations in the EU, and lastly the rules and regulations in Turkey and Poland. Chapter 6 studies the market structures of each of the four sub-sectors for Poland and Turkey using firm level data with a particular attention to the performance and characteristics of firms that are engaged in the provision of such services. Chapter 7 studies the implications of trade liberalization in transportation services.

In the past, Poland, like many non-market economies in Central and Eastern Europe, relied on public transportation services provided by large state-owned enterprises. However, the situation changed dramatically in early 1990s with the beginning of transition and adoption of privatization programs. Bigger state-owned enterprises were split and transformed into public or private enterprises. During the transformation process the rail transport's share of the modal split decreased sharply, and the increased demand for road transportation services and the surge of private traffic led to considerable bottlenecks in infrastructure.

In Turkey the transport system relies essentially on road transportation, while railway network remains underdeveloped. In foreign trade maritime transport plays a very important role. In air transportation after the withdrawal of government from commercial activities during the 1980s, Turkey experienced a tremendous development in civil aviation sector. However, despite the recent improvements, Turkey's infrastructure size and quality still lags behind those of other OECD and EU countries.

3. THE MAIN RESULTS

In Poland, the liberalization of all transportation sectors intensified after the accession to the EU. The major institutional changes were very visible in the case of air, road and railway

transportation. Despite liberalization efforts of the last decade, a detailed market analysis of EU firms reveals that price-cost margins are fairly stable in all transport sectors. In the case of Poland, while competitive pressure in rail services is rather low, inefficiencies in the major rail service providers result in poor financial conditions of single enterprises. In the case of airline companies, we register a strongly decreasing minimum efficient scale along the whole period, which is consistent with the entry of a number of low-cost firms. Those firms have benefited from lower technological barriers that have considerably enhanced industrial competitive pressure. On the other hand, railway companies still register the highest minimum efficient scale, most probably due to the relevance of the fixed costs for investment in infrastructure, which impedes the entry of smaller firms and reduces the level of competition.

The analysis of the determinants of export behavior of transportation firms in Poland and other Central and Eastern European countries reveals a complicated picture. In the case of transportation services, labor productivity has a positive impact on the probability of exporting. Moreover, the quality certificates and introduction of new products are among the factors that tend to increase the probability to export as well. However, when comparing transportation services with manufacturing industries, we could not find confirmation of some of the determinants that in the latter case are usually considered important for export performance of goods. Transportation services are in this context peculiar. While in general larger manufacturing enterprises have a higher probability of exporting, this result does not hold for transport firms. Human capital is acknowledged as an important driver for export activity of manufacturing firms, the same is not true for transport firms.

On the other hand, the analysis of export determinants for Turkish transportation firms reveals many similarities to manufacturing sector. Empirical results suggest that firms that are more capital intensive have higher productivity. Similarly as in other empirical studies, the firm size in Turkey is positively related to the probability of exporting. Moreover, the coefficient of large firm is greater than the coefficient of the variable for medium firms, indicating vertical integration in transport service exports. Furthermore, the empirical results suggest that firms with foreign participation involve in export activity more than the domestic ones.

Comparing the evidence from firm level data on Poland and Turkey, we find that services trade in transportation sector display some of the properties of goods exports. Therefore, our analysis suggests that heterogeneous firm literature would work for transportation exports as well. The main determinant of exports in transportation sector for both of the countries appears as the labor productivity. The other determinants of exports in transportation sector vary for the two countries due to both available data and different firm structures.

The economic analysis of the institutional liberalization was concentrated on rail sector, that proved to be difficult to liberalize. The empirical analysis, based on gravity model, did not reveal a clear downward trend in the levels of trade barriers between EU countries. Moreover, we were not able to find a statistical evidence that all indices of rail services liberalization significantly affected the bilateral trade flows in rail services. Only the LEX index of the importing country turned out to be significant. This index quantifies the legal requirements for market entry. Our results suggest, that among all the measures, only the liberalization of the legal framework of the importing country has had a significant impact on the volume of imports.
The lack of economic implications can be attributed to the fact that the entry to the rail sector by independent operators has been limited by the infrastructure ownership and that in the majority of EU countries the rail infrastructure has been owned by incumbent state rail

undertakings. Moreover, the potential competitors in Eastern Europe were discouraged to entry by the low quality of rail infrastructure, suffering from inadequate investment and being non-attractive due to low level of freight and passengers fares. It has been also shown that independently from liberation efforts the level of price-cost margin (PCM) in rail was fairly stable and low in comparison to other sectors. We argued that a low level of PCM in this sector represents the inefficiency of the firms and not the strength of competitive pressure. The effects of institutional liberalization are expected to be more pronounced in other transportation sectors.

4. POLICY RECOMMENDATIONS

Despite major liberalization achievements, Polish transportation sector is still far less competitive than the EU-15 member states. This relative underdevelopment is mainly due to a low level of infrastructural investments. Those investments have been dramatically low for rail and motorway sectors, whereas the situation is only slightly better in the case of air transportation. Recently, some major investments in motorways, airports and high-speed railway lines have been undertaken and supported by EU structural funds; thereby a quality improvement is expected in the next decade. However, in order to guarantee the conclusion of those investments, ongoing financial support from EU structural funds is crucial. At the same time, due to political fragility of EU financial procedures, there are worries that the available funds can be reduced by year 2020. In this case the development of new forms of public and private partnership would be of help to pledge that investment plans are completed in due course with the expected results in terms of infrastructural endowments.

Turkey, on the other hand, has set ambitious targets for 2023, the 100th anniversary of the establishment of the Republic of Turkey in order to improve the performance and competitiveness of the transportation sector. It aims to expand highways by three times, almost double the length of divided roads, double the railway infrastructure capacity, expand considerably the length of high-speed railways, and increase also considerably the port, airport and air fleet capacities. In addition, Turkey aims to have fair competition in the provision of transportation services by liberalizing the four transport sectors in trade with the EU, which in turn requires the adoption and strict implementation of the EU *acquis* in the related transport sub-sectors.

The Polish and Turkish experience of liberalization of trade in transportation services revealed that the liberalization process within the context of EU integration is challenging. In particular, in the case of road freight transportation, the liberalization requires that the countries adopt and implement effectively the rules and regulations on market access and competition, prices and fiscal conditions, social conditions, technical conditions, road safety, and international transport networks. Poland as a member of the EU had to adopt and implement these rules and regulations. On the other hand, Turkey is a candidate country for EU accession, and is committed to adopt and implement the EU rules and regulations. However, other countries may not have the prospect of EU accession. For those countries, in particular for the southern Mediterranean countries, at their present state of development the adoption and implementation of EU rules and regulations could be much more challenging and costlier than in the case of Turkey.

The study reveals that the southern Mediterranean countries will benefit from liberalization of transportation services. But the crucial point is how to liberalize the transportation sector. Liberalization could be achieved unilaterally by adopting and implementing international

norms. Unilateral liberalization may lead to efficiency gains, but such liberalization can be constrained if the country cannot on its own gain improved access to larger foreign markets. On the other hand, liberalization can be achieved through negotiations under the World Trade Organization's (WTO) General Agreement on Trade in Services (GATS). Although the multilateral approach to liberalization under GATS may lead not only to efficiency gains but also to improved access to larger foreign markets, the chances of achieving liberalization through multilateral negotiations are very dim. Finally, the Mediterranean countries can try to achieve liberalization of transportation services through regional cooperation with the EU. But as emphasized above this approach has its problems.

The study reveals that the Mediterranean countries can derive efficiency gains by liberalizing unilaterally, but following the WTO's framework by emphasizing liberalization of the supply of transportation services through cross border delivery (mode 1 in WTO parlance), by establishing commercial presence (mode 3), or by the presence of a natural person (mode 4). Thus, the countries could focus on policy measures that will discriminate against foreign transportation services or transportation service providers. In the case of mode 3 the countries could put emphasis on elimination of the requirements on discriminatory legal forms of entry and restrictions on foreign equity, limits on licenses and discrimination in the allocation of licenses, restriction on ongoing operations, and relevant aspects of the regulatory environment.

CHAPTER 1

OVERVIEW OF TRANSPORT SECTORS IN POLAND AND TURKEY

A close relationship exists between trade costs and exports as revealed by Samuelson (1964) and Dornbush et al. (1977) within the framework of a version of the Ricardian model of international trade. On the other hand, in the Melitz (2003) model, that combines economies of scale at the firm level with productivity differences between firms, and its numerous extensions, trade costs do play important roles. In all models of 'new new trade theory' trade costs affect the aggregate volume of international trade. Since with increased liberalization a major component of trade costs turned out to be the transport costs as shown by Hummels (1998) and Anderson and Wincoop (2004), the transport costs are one of the major determinants of a country's competitiveness, and thus of its ability to participate in the world economy. Empirical models of Bougheas et al. (1999) and Limao and Venables (2001) confirm this conclusion.

Important determinants of transport costs are distance, geography, infrastructure, administrative barriers, and state of competition in the transport sector. In addition, high transport costs resulting from inefficiencies in transport services may become an obstacle to trade and impede the realization of gains from trade liberalization. In principle governments can try to decrease the transport costs by improving poor transportation infrastructure conditions, reducing administrative costs, and decreasing the inefficiencies in transport services by liberalizing the transport sector and thus increasing competition in the sector. Hence, the liberalization of transportation services sector is of crucial importance for both the output and exports of this sector as well as for decreasing the trade costs of goods produced by various industries within the manufacturing sector.

In this study we concentrate on the effects of changes in infrastructure and regulatory framework on the transport costs by focusing on the four sub-sectors of the transport sector, namely road transportation, rail transportation, maritime transportation, and air transportation, and consider the cases of an associated country with the European Union (EU), namely Turkey and a New Member State of the EU, namely Poland. Chapters 2-5 of the study concentrate on the analysis of regulatory framework in road, rail, maritime and air transportation sectors and Chapter 6 on the analysis of firm level data in those sectors. In this chapter we concentrate on the analysis of current transport infrastructure in Poland and Turkey. Emphasis is placed on the analysis of the role of the transportation sectors in Polish and Turkish economies in relation to other EU and non-EU countries for providing a better understanding of the economic importance of the sector within a comparative framework. Next, we turn to the study of existing market structure in transportation sectors of Poland and Turkey, and describe the changes in markets and infrastructure investment in each of the transportation sub-sectors.

The chapter is structured as follows. While section 1 considers the Polish and Turkish transportation sectors in relation to other EU and non-EU countries, Section 2 provides an overview of the Polish transport sector with emphasis on developments in air, rail, maritime and road transportation sub-sectors, and Section 3 studies similarly the Turkish transport sub-sectors. Finally, Section 4 concludes.

1. POLISH AND TURKISH TRANSPORTATION SECTORS WITHIN A COMPARATIVE FRAMEWORK

Transportation sector is important for the economies of Turkey, Poland and EU27. Table 1.1 shows the shares of the different transport sectors in the overall value added in the analyzed countries as well as the shares in the costs of intermediate use and in total value added of final products derived from the latest available input-output tables[1]. It is to be noted that the transportation sector was economically much more important in Turkey than in Poland and on average in the EU27. Turkish transportation sector produced over 10 percent of the value added (latest input/output tables from 2002) whereas transportation sector in Poland produced 3.6 percent during 2005 of value added and the transportation sector in EU27 3.2 percent of value added during 2007.

Besides its role in the creation of value added, the transport services constitute a significant part of the costs of intermediate use in the analyzed economies. The share of transport services took over 8 percent of total intermediate use in Turkey, considerably more than in Poland (4.9 percent) and in the EU27 (4 percent). Similar patterns emerge when the value of intermediate use is compared to the total output of production sector: the share of transportation sector in the value of final products produced in Turkey was 3.8 percent versus 2.3 percent in Poland and 2.1 percent in the EU27.

It has also to be noted that Poland relies heavily on land transport compared to water and air transport, which constitute a very small share of the total transport services both in terms of value added and in terms of the value of intermediate use. Partially due to its geographical location, but also thanks to large airline industry, Turkey uses water and air transport services in a much more intensive fashion, and it also produced a larger share of value added than in Poland and EU27.

Table 1.1: The importance of transport sectors in the analysed economies

	EU27	Poland	Turkey
Shares in the total value added			
Land transport; transport via pipeline services	2.6	3.5	9.0
Water transport services	0.3	0.1	0.9
Air transport services	0.2		0.4
Total transport services	3.2	3.6	10.3
Share of transport intermediate use in the total output			
Land transport; transport via pipeline services	1.6	2.2	3.0
Water transport services	0.2	0.2	0.6
Air transport services	0.3		0.2
Total transport services	2.1	2.3	3.8
Share of transport in the intermediate use			
Land transport; transport via pipeline services	3.0	4.6	6.3
Water transport services	0.4	0.3	1.2
Air transport services	0.5		0.5

[1] Source: Erostat

	EU27	Poland	Turkey
Total transport services	4.0	4.9	8.1

Note: the input output table base year is 2007 for EU27, 2005 for Poland and 2002 for Turkey, data for Poland aggregated in the original IO table (water and air transport). The value added percentage is computed as $\%VA = 100 * \frac{x_i v_i}{\sum_j x_j v_j}$ *where* x_i *is the output vector of sector i and* v_i *is the unit value added coefficient.*

The dependence of the analyzed economies on the transportation sectors through intermediate use make the efficiency and the structure of those sectors a crucial issue from the point of view of economic policy. Inefficiencies that stem from inappropriate infrastructure and the degree of competitiveness of those sectors translate indirectly to costs and production efficiencies of other sectors in the economy.

Similar analysis can be performed for the two-digit NACE sectors (Table 1.2). One can observe that in most of the sectors, transport activities constitute more than 1 percent of the total value of their production, for tourism and transport-related industries, these cost go as high as 20 percent of the total value of production in Poland, over 14 percent in Turkey and over 13 percent in the EU27. Mining sector is very transport-intensive in the EU-27 (over 7 percent of the value of output) and much less so in Turkey and Poland. Other transport intensive sectors include wholesale trade and retail trade sectors, especially in Turkey, where transport costs take over 5 percent of the value of output.

Table 1.2: Intermediate use of transport services

	EU27	Poland	Turkey
Agriculture, hunting and related service activities	1.4	0.6	1.4
Forestry, logging and related service activities	1.4	2.3	1.2
Fishing, operating of fish hatcheries and fish farms; service activities incidental to fishing	2.0	1.3	1.9
Mining of coal and lignite; extraction of peat	3.0	2.3	1.3
Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying	2.6	0.0	0.1
Mining of uranium and thorium ores	2.9	0.0	0.0
Mining of metal ores	7.3	1.3	3.0
Other mining and quarrying	6.8	0.0	3.5
Manufacture of food products and beverages	2.9	2.1	4.4
Manufacture of tobacco products	2.1	2.7	3.3
Manufacture of textiles	2.9	0.7	3.2
Manufacture of wearing apparel; dressing and dyeing of fur	2.1	0.9	3.2
Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	2.7	0.8	2.7
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	4.0	6.3	4.8
Manufacture of pulp, paper and paper products	4.1	4.0	3.4
Publishing, printing and reproduction of recorded media	2.3	1.2	3.2

	EU27	Poland	Turkey
Manufacture of coke, refined petroleum products and nuclear fuels	3.5	2.4	4.8
Manufacture of chemicals and chemical products	2.6	2.0	3.1
Manufacture of rubber and plastic products	2.4	2.1	3.6
Manufacture of other non-metallic mineral products	5.7	5.2	4.4
Manufacture of basic metals	3.2	1.8	3.1
Manufacture of fabricated metal products, except machinery and equipment	1.8	1.7	3.5
Manufacture of machinery and equipment n.e.c.	1.7	1.1	2.1
Manufacture of office machinery and computers	1.8	0.6	0.5
Manufacture of electrical machinery and apparatus n.e.c.	1.5	1.7	3.2
Manufacture of radio, television and communication equipment and apparatus	1.4	1.1	2.2
Manufacture of medical, precision and optical instruments, watches and clocks	1.5	1.2	1.4
Manufacture of motor vehicles, trailers and semi-trailers	2.0	1.3	3.1
Manufacture of other transport equipment	1.2	1.1	1.8
Manufacture of furniture; manufacturing n.e.c.	2.9	1.9	4.5
Recycling	2.4	7.2	4.9
Electricity, gas, steam and hot water supply	1.4	4.3	1.9
Collection, purification and distribution of water	0.6	0.4	0.6
Construction	1.1	2.1	3.4
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale services of automotive fuel	2.6	3.2	4.3
Wholesale trade and commission trade, except of motor vehicles and motorcycles	4.9	7.2	5.9
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	2.1	2.0	5.5
Hotels and restaurants	1.0	0.4	3.8
Land transport; transport via pipelines	5.8	6.6	10.4
Water transport	7.5	0.0	10.7
Air transport	5.4	4.7	7.4
Supporting and auxiliary transport activities; activities of travel agencies	13.4	20.7	14.2
Post and telecommunications	1.3	0.6	2.2
Financial intermediation, except insurance and pension funding	0.7	0.2	0.4
Insurance and pension funding, except compulsory social security	0.8	0.3	0.9
Activities auxiliary to financial intermediation	0.7	0.4	2.0
Real estate activities	0.2	0.4	0.8
Renting of machinery and equipment without operator and of personal and household goods	1.7	1.3	2.4
Computer and related activities	0.9	1.2	2.0
Research and development	1.3	0.9	3.1
Other business activities	1.0	1.3	1.8

	EU27	Poland	Turkey
Public administration and defence; compulsory social security	1.2	0.8	4.1
Education	1.3	0.5	1.1
Health and social work	0.7	0.3	2.5
Sewage and refuse disposal, sanitation and similar activities	1.1	2.3	0.8
Activities of membership organisation n.e.c.	1.8	0.4	1.1
Recreational, cultural and sporting activities	1.0	0.6	2.3
Other service activities	0.9	0.8	1.3

Note: the table shows the share of transport activities in the total intermediate use in all sectors of the economy, the ratio of the intermediate use of transport in sector i to the total intermediate use of that sector. Each row of the table corresponds to the following expression: $\%IU_i = a_{tr,i}/(1 - va_i)$ *where* $a_{tr,i}$ *is the input output coefficient corresponding to the use of transport services of sector i and* va_i *is the unit value added of that sector.*

As far as manufacturing sectors are concerned, the costs of intermediate transport use are high in production of non-metalic mineral products, reaching as high as 5.7 percent in the EU27, 5.2 percent in Poland and 4.4 percent of the value of output in Turkey. High transport costs are also incurred in the wood and paper industries, up to 6 percent of the total output value in Poland and considerably less in Turkey and the EU27. Over 3 percent of the value of the final output is spent on transport in production of basic metals (except Poland) and in the case of metal products (Turkey only). Transport is also important in the Turkish food industry (over 4 percent share in the value of output). In most other manufacturing industries, the share of transport cost in the total value of output varies between 1 percent and 3 percent.

2. TRANSPORT SECTOR IN POLAND

Transport is the one of the largest contributor to GDP amounting to 3.6 percent in 2011. Poland is a medium size country by European standards with many plains and few mountainous areas. The distances within the country are relatively long. Both the distances from the German border to Belarus and the distance from the Czech border to Baltic Sea are about 1,000 km. Poland is a transit country for West-East and North-South European traffic. The length of European roads is 5,500 km, which is relatively large in relation to other neighboring countries.[2] The traditional transport network is also well developed. Poland has 406,122 kilometers of standard roads, which is large relative to other countries both in absolute terms and per square kilometers. The rail network is also relatively well developed. The total length of tracks in Poland in 2010 was of 20,220 kilometers, of which 58 percent were electrified railways. This was the third largest rail network in Europe. The rolling stock is also substantial. For example, there were about 2.5 million of lorries, road tractors, semi-trailers and trailers in 2010, which is a comparable number to other large European countries[3].

[2] The international E-road network consists of a grid system of reference roads having a general north-south and west-east orientation; it includes also intermediate roads located between the reference roads and branch, link and connecting roads. In the case of Czech Republic and Hungary the length of E-roads is 2,600 and 2,200 kilometers respectively.

[3] The relevant number of lorries, road tractors, semi-trailers and trailers, was equal to 5.4 million in France, 2.6 million in Germany and 5.2 million in Spain. Those aggregate numbers are probably "distorted" by a number of

As a result the annual freight road transport in Poland, was equal to 1,322,237 thousand ton kilometers (Tkm) in 2010, which was comparable to figures in other large European countries, like France, Germany or Spain.[4]

Unfortunately, Poland's modern transport network is far less developed in comparison to other EU-15 countries. For example, in 2010 there were no high speed rail lines in Poland, while the respective numbers for France, Germany and Spain were 1,872 km, 1,286 km and 1,599 kilometers. The relative situation of Poland is even worse in terms of motorways' length. In 2010 there were 857 kilometers of motorways, while the relevant numbers for France, Germany or Spain were several times higher. The massive construction of motorways has started in Poland only after 2010. This relative backwardness in modern transport infrastructure diminishes the transit potential of Poland.

Poland, before transition towards the market economy initiated in 1989, like many non-market economies in Central and Eastern Europe, relied mainly on public transportation. Vast majority of passenger transportation was done by large, public enterprises. Rail transportation was provided by Polish State Railways (Polskie Koleje Panstwowe: PKP), which had a monopoly position in the rail sector. In the same way the passenger road transportation was performed, almost exclusively, by a large state owned enterprise Państwowa Komunikacja Samochodowa (PKS). The number of private motor cars in Poland was extremely small by Western European standards. The role of air transport was negligible, and air sector was monopolized by the state carrier Polskie Linie Lotnicze LOT.

The situation changed quite dramatically after transition in early 1990s. The introduction of market economy and currency convertibility boosted the market for imported passenger cars. In 2009 there were 433 passenger cars per 1,000 inhabitants in Poland, a number that is comparable to many EU members from Western Europe. Many new small road transportation firms emerged, usually with only few trucks. The large state-owned enterprises were split and transformed into public or private enterprises. The demand for public passenger and rail transportation decreased quite dramatically in the first 10-15 years after the transition, while the role of air transportation has been increasing, especially in the international passenger transport.

In Poland, like in all Central and Eastern European countries (CEECs), rail transport's share of the modal split has decreased sharply after the start of the transition process. Rail transport's share in the freight transport market dropped from 51 percent to just under 27 percent between 1995 and 2005, while railway's share of passenger transport fell from 15 per cent to just 8 per cent between 1995 and 2004. During the same time period the share of road transport increased dramatically compensating the decrease in rail transportation.

A more detailed data on modal split in Poland for the last ten years are presented in Table 1.3. In the case of passenger transport, the share of passenger cars increased from 74.7 per cent in 2001 to 88.4 percent in 2010. On the other hand the share of trains decreased by 5 percentage points from 10.6 percent in 2001 to 5.2 percent in 2010. The share of motor coaches and busses in passenger transport decreased drastically from 14.7 per cent in 2001 to 6.4 per cent

tractors in possession of small farmers in Poland or in France. They do not reflect precisely long-distance transport capacity.

[4] Those numbers were very close to the numbers for Italy or Spain, and much lower in comparison to Germany or France.

in 2010. Thus, the role of public transportation, which has decreased immediately after transition, kept on falling over the last ten years. A similar trend was observed in the case of freight transport. The share of (mostly public) railways in transport of goods decreased drastically by 19 percentage points from 37.9 per cent in 2001 to 18.8 percent in 2010. On the other hand, the share of road transportation in freight of goods increased by almost 20 percentage points from 61.1 percent to 81.2 per cent over the same period. Of course, a vast majority of road transportation firms are private. The role of inland water transportation, which was very small (1.0 per cent in 2001) has been marginalized to 0.1 per cent in 2010.

Table 1.3: Modal split of passenger transport and freight in Poland 2001-2010

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Modal split of passenger transport										
Trains	10.60	9.50	8.80	8.00	7.30	6.90	6.80	6.20	5.50	5.20
Passenger cars	74.70	77.00	77.60	78.90	80.70	82.50	83.60	85.50	87.00	88.40
Motor coaches, buses and trolley buses	14.70	13.50	13.50	13.10	12.00	10.60	9.60	8.40	7.40	6.40
Modal split of freight transport										
Railways	37.90	37.00	35.30	33.70	30.80	29.40	26.40	24.00	19.40	18.80
Roads	61.10	62.20	64.00	66.10	69.00	70.40	73.50	75.90	80.50	81.20
Inland waterways	1.00	0.90	0.60	0.20	0.20	0.20	0.10	0.10	0.10	0.10

The Polish Government in recognition of modernization needs has set ambitious targets of constructing new motorways and high speed railway lines with funds, partially supported by the European Structural Funds.

2.1 Developments in Transport Sub-Sectors

In order to analyse the major developments in Polish transport sub-sectors we consider first the case of road transportation, followed by rail, maritime and air transportation respectively.

2.1.1 Road Transportation

Road transport is the most important transport mode in Poland. In 2010, it carried 94.8 percent of passengers where 88.4 percent was attributed to passenger cars and 6.4 percent to coaches and busses. Moreover, 81.2 percent of all freight transport was carried using road transport. As mentioned above road transport has a dominant role in the generation of both the value added (3.5 percent of overall value added in road transport vs. 3.6 percent of value added in transport overall) in the transport sector and in the share of intermediate use (4.6 percent of overall intermediate use come from road transport vs. 4.9 percent from all transport sectors combined). In 2009, road transport sector employed 202.1 thousand people. The importance of road freight transport is also indicated in Table 1.4. Even in absolute terms, the number of tonne-kilometers carried by road freight transport in Poland was the second highest in the EU countries. Even in relative terms, where this number is taken relative to the value of GDP at market prices, for each 1 EUR of GDP, Polish economy uses 0.56 tkm of road freight transport. This is one of the highest transport intensities in the EU27, lower than only in Lithuania and Latvia, and with similar values observed for Bulgaria. This indicator is visibly

lower in all the EU15 countries. It is also worth noting that the road freight transport intensity of GDP has increased in Poland by 20 percent since 2006, which means that the output of the road freight transport sector is growing faster than the rest of the economy. In most of the other countries under consideration a reverse trend is observed.

Table 1.4: Tonne-kilometres of road transport and road transport intensity of GDP

Country	Millions of Tonne-kilometre			tkm per 1 EUR of GDP		
	2006	2010	2011	2006	2010	2011
Belgium	43,017	35,002	33,107	0.13	0.10	0.09
Bulgaria	13,765	19,433	21,214	0.52	0.54	0.55
Czech Republic	50,376	51,832	54,830	0.43	0.35	0.35
Denmark	21,254	15,018	16,120	0.10	0.06	0.07
Germany	330,016	313,104	323,833	0.14	0.13	0.12
Estonia	5,548	5,614	5,912	0.41	0.39	0.37
Ireland	17,454	10,939	10,108	0.10	0.07	0.06
Greece	34,002	29,815		0.16	0.13	
Spain	241,788	210,068	206,843	0.25	0.20	0.19
France	211,445	182,193	185,658	0.12	0.09	0.09
Italy	187,065	175,775	142,885	0.13	0.11	0.09
Cyprus	1,165	1,087	941	0.08	0.06	0.05
Latvia	10,753	10,590	12,131	0.67	0.59	0.61
Lithuania	18,134	19,398	21,512	0.75	0.70	0.70
Luxembourg	8,807	8,694	8,835	0.26	0.22	0.21
Hungary	30,479	33,721	34,529	0.34	0.35	0.34
Netherlands	83,193	75,783	73,333	0.15	0.13	0.12
Austria	39,187	28,659	28,542	0.15	0.10	0.09
Poland	128,315	202,308	207,651	0.47	0.57	0.56
Portugal	44,835	35,368	36,453	0.28	0.20	0.21
Romania	57,288	25,889	26,349	0.59	0.21	0.19
Slovenia	12,112	15,931	16,439	0.39	0.45	0.46
Slovakia	22,212	27,575	29,179	0.50	0.42	0.42
Finland	29,715	29,532	26,787	0.18	0.17	0.14
Sweden	39,918	36,268	36,932	0.13	0.10	0.10
United Kingdom	165,479	146,685		0.08	0.09	

Source: Eurostat

As compared to other transport modes, the road transport sector is very fragmented. As of December 31, 2010, 9.1 thousand licenses for roughly 66 thousand vehicles were issued in the domestic passenger transport plus another 63 thousand licenses for provision of taxi services. As many as 61.2 thousand licenses were granted for domestic freight transport accounting for 181.2 thousand vehicles.[5] The analysis of the structure of international freight transport sector shows that by 2010 of the 22 thousand firms with international transport licenses almost 25 percent had only one vehicle, and almost 90 percent had fewer than 10 vehicles.[6] At the same time only 57 firms had over 100 vehicles.

[5] http://www.transport.gov.pl/2-482b082dbb417-1793921-p_5.htm
[6] www.trans.info/message/view/7324.html

Similar analysis can be performed for all the firms in the freight road transportation sectors. Over 77 percent of firms had only one vehicle in 2010 and over 97 percent of firms had fewer than 10 vehicles. Only 190 firms (0.2 percent) had 50 vehicles or more. The fragmentation of the road transport industry dates back to the early years of transformation when the transport sector was liberalized. However, some signs of consolidation and increased concentration are clearly present: the number of firms with more than 10 vehicles quadrupled since 1995 while the number of firms with 50 vehicles or more doubled.

Table 1.5: Fragmentation in the road transport industry (number of enterprises)

Number of vehicles	1995	2000	2005	2009	2010	2010 (percent)
Total	60,070	91,794	70,383	75,034	79,430	100.0
1 vehicle	52,815	79,782	55,106	56,328	61,550	77.5
From 2 to 5 vehicles	6,270	10,879	13,776	14,082	15,388	19.4
From 6 to 9 vehicles	333	548	745	308	331	0.4
From 10 to 19 vehicles	340	359	440	1,160	1,224	1.5
From 20 to 49 vehicles	234	177	263	647	747	0.9
50 vehicles or more	78	49	53	164	190	0.2

Source: Eurostat

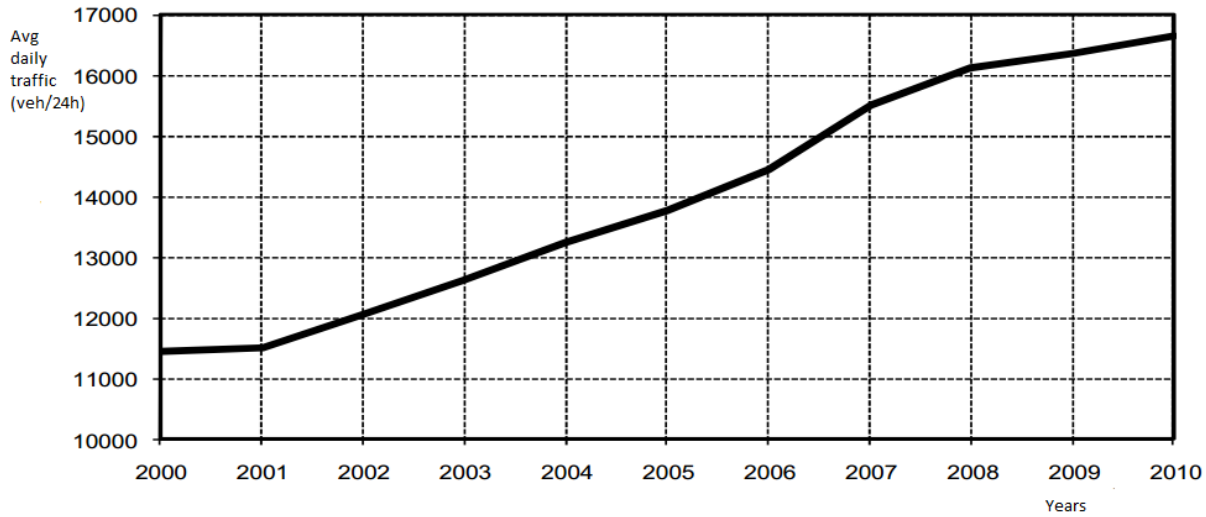
The share of transport for hire and reward accounted for 53 percent of all freight carried domestically in 2009 and the remaining part can be attributed to own account transport. Between 2005 and 2009 the importance of international freight road transport doubled.[7] By 2009 the share of international road transport in the overall freight road transport reached almost 45 percent as revealed by Central Statistical Office (2010).

The road network in Poland in 2010 consisted of 383.3 thousand kilometers of which the national road constituted 5 percent and handled 60 percent of traffic. By June 2012 only 1,289 km of motorways and 835 km of expressways (most of them very fragmented) have been in operation. In 2009, only 60 percent of national roads were in good state, whereas 19 percent were classified as being in bad condition.

[7] Hire and reward drivers carry freight for another firm (customers or freight forwarders) on a contractual basis. On the other hand, according to the EU 'transport for hire or reward' consists of a range of transport operations such as postal transport, transport vehicles that are damaged or have broken down, transport of goods by vehicles whose authorized payload does not exceed 3.5 tonnes, transport of medicinal products or medical equipment, transport of emergency equipment. Transport operations for hire or reward other than those just listed require an operating certificate, namely the Community license, which replaces bilateral licenses at EU Level (Council Regulation EEC N° 881/92 of 26 March 1992). Finally, note that Annex I to the European Economic Community (EEC) Directive of 23 July 1962 defines intra-community own account transport as follows: *"Transport of goods by motor vehicle subject to the following conditions:* (i) t*he goods transported must belong to the company or have been sold, bought, rented, produced, extracted, transformed or repaired by it, or given to it, (ii) the carriage must be used to take goods to the company premises, to send them from the company premises, to move them, either within the company premises, or outside the company premises for its own needs, (iii) the motor vehicles used for this carriage must be driven by members of the company's own staff, (iv) the vehicles transporting the goods must belong to the company or have been bought by it on deferred terms, or hired provided that in the latter case they meet the conditions of Council Directive 84/67 on the use of vehicles hired without drivers for the carriage of goods by road, and (v) transport must only be incidental to the companies activity as a whole."*

The development of the road infrastructure in Poland has accelerated following the 2007 UEFA decision to organize the 2012 European Football Championship in Poland and Ukraine. The medium term plans on construction of roads and motorways were adjusted in order to set ambitious plans for completion of major roads before June 2012 when the championships took place. Within the period of 2008-2010, 1,166.5 km of new national roads, including 183.5 km of motorways and 293.1 km of new motorways, were completed. The fiscal situation in 2010 lead to an adjustment of the medium term plans and establishment of the 2011-2015 Program for Construction of National Roads, set the goals of creating the network of 810.4 km of motorways, 782.5 km of motorways and major improvements to existing roads by 2013. The plans for 2015 include completion of the A1 (north-south), A2 (east-west through central Poland) and A4/A18 (east-west through southern Poland). The majority of vehicles used on Polish roads were at least 10 years old and their share increased from 61 percent in 2005 to almost 70 percent in 2009 (Central Statistical Office, (2010)). Between 2005 and 2009, as many as 4.5 million second-hand passenger vehicles were imported. The analysis performed by International Road Transport Union (1998) shows that in late 1990s the degree of congestion of the Polish road was high as compared to other European countries and estimated to take up to 28.8 percent of total travel time (as compared to 3.2 percent in the UK) in the case of road freight transport and 2.6 percent of GDP. As noted above, the infrastructure development has speeded up after the late 2000's, but so has the demand for transportation services with a growing economy and increasing openness and international trade, especially with the rest of the EU.

Figure 1.1: Average daily traffic (vehicles/24 hours)



Source: http://www.gddkia.gov.pl/userfiles/articles/g/GENERALNY_POMIAR_RUCHU_2010/0.1.1.5_Synteza_GPR_2010.pdf

As Figure 1.1 shows, the average daily traffic on international roads in Poland has gone up by 45 percent, with yearly growth as high as 7.5 percent in 2007. Other parts of the national roads network have experienced even larger surges in traffic. Overall traffic on national roads including international roads went up from 5109 vehicles / 24 hours in 2000 up to 9,888 vehicles / 24 hours in 2010 representing an over 90 percent increase (General Directorate for National Roads and Motorways (2011)). However, due the improvements in the road infrastructure, driving habits, better education of drivers and law enforcement, the degree of

road safety has increased and the number of road accidents has dropped by almost 28 percent between 2001 and 2010 (Police Headquarters (2011)).

2.1.2 Rail Transportation

The first private company Warsaw-Vienna Railway was set up in 1844. The first section of the line from Warsaw to Skierniewice was opened one year later. Opening of all Warsaw-Vienna Railway from Warszawa to the border (328 km) has been completed in 1848. Connections between Warsaw - Cracow, Berlin (via Breslau), and Vienna (via Gliwice – Kozle – Bohumin – Breclav) and Dresden were completed at the end of the same year.

Since that period the development of railways on Polish territory was rather dynamic, but very uneven. The best infrastructure was developed at the German territory, less progress was made over the Austro-Hungarian territory and the least developed infrastructure was set up in Russian territories. Polish State regained independence in 1918, after 123 years of partition among Germany, Russia and Austro-Hungarian Empire. Formation of first Government of the Polish Republic led to creation of Railway Department in the Ministry of Communication, and to the establishment of the Polish State Railways (Polskie Koleje Panstwowe (PKP)). Initially, the company was public and was used for military purposes. The transfer of military railways to civil railways in the former Russian and Austrian sectors started in 1918, and was completed only in 1921. A year later Polish administration took over the railway network in Upper Silesia. The main task of new Polish administration was to reconstruct and unify the railway infrastructure. Since the Russian gauge was wider relative to German and Austrian gauges, signaling systems and railway rolling stock were incompatible, there were no direct connections between different parts of newly reconstructed Polish state.

The initial rapid development of railways was stopped by Great Depression in 1930's. In 1930, the revenues of PKP dropped by 50 percent, and 23 thousand employees of PKP lost jobs between 1930 and 1933. The new wave of modernization of railway network started only during 1933-39. The major investment during that period was the so called Coal Corridor, connecting Silesian mines with new Polish harbor in Gdynia. New rail lines were constructed, connecting Warsaw with Katowice and Cracow. Poland had also three fairly modern factories producing passenger wagons (Lilpop, Rau & Loewenstein in Warsaw), wagons and locomotives (H. Cegielski in Poznan) and locomotives (Fablok in Chrzanow).

A very large share of Poland's railway infrastructure, cars and locomotives had been destroyed during the Second World War. Poland received several hundred of locomotives from USA and UK under the UNRRA (United Nations Relief and Rehabilitation Administration) program, and has regained some wagons from Hungary and Austria as a part of the repatriation process. The domestic reconstruction was relatively rapid. The Polish State Railways (PKP) regained its monopoly position over the whole Polish territory.

The main modernization investments under communist regime were aimed at electrification of existing rail lines. The production of steam locomotives was stopped in 1957, and production of relatively modern electric locomotives has been developed. Till 1988 about 10 thousand km of railway lines (almost 50 percent of total) were electrified. The main Coal Corridor has been modernized and on the corridor the maximum speed was increased to 160 km/h.

The beginning of the transition towards market economy in 1990 affected adversely the Polish State Railways PKP. The initial important drop of GDP (in 1990-1991), combined with rapid growth of privately owned motor cars and trucks, reduced drastically the demand for rail cargo freights and passengers' transportation. The investment funds of PKP were reduced and first strikes of railway workers started in 1993. The number of railway passengers dropped from 784 million in 1990 to 400 million in 1998 and further to 263 million in 2006. The reduction of demand for rail services in Poland, like in many other Central and Eastern European countries, reduced the rail transport's share of the modal split drastically over last twenty years. Thus, in Poland, like in many European countries, rail transport share of the modal split has decreased very abruptly during recent years.

Since 2006 the total passenger transport in Poland has almost stabilized. The total number of passengers has been equal to 17,485 pkm (1000 pass., million pkm) in 2010, only 4.5 per cent less in comparison to 2006. The relevant numbers for Germany and France, the largest European passengers' markets, were equal to: 82,837 pkm and 88,610 pkm respectively.

The situation in Poland's freight transportation was more favorable, as shown in Table 1.6. The transportation of massive goods by rail is gradually increasing in Poland, Turkey and Germany during the period 2003 to 2011. This phenomenon is probably reflecting a relatively higher domestic market potential in those three countries in recent years. On the other hand goods' transportation is stagnant or falling in the old member states Italy, France and Spain and in the New Member States (NMS) of the EU such as Czech Rep, Hungary, Romania and Slovakia.

Table 1.6: Goods transported by rail: millions tkm

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Czech Rep.	93,297	88,843	85,613	97,491	99,777	95,073	76,715	82,900	87,096
France	120,676	117,415	107,532	109,222	111,236	109,509	86,127	85,045	92,481
Germany	296,924	310,261	317,294	346,118	361,116	371,298	312,087	355,715	-
Hungary	42,940	51,726	50,850	54,705	51,523	51,543	42,277	45,794	47,424
Italy	74,293	83,533	89,755	102,169	105,314	95,810	76,336	84,435	12,878
Poland	161,816	282,919	269,553	291,394	245,307	248,860	200,819	216,767	24,8606
Romania	-	72,738	69,176	68,312	68,772	66,711	50,595	52,932	60,723
Slovakia	50,521	50,445	49,310	52,449	51,813	47,910	37,603	44,327	-
Spain	26,244	30,514	29,731	29,862	29,918	26,906	21,292	21,986	25,014
Turkey	15,755	17,708	18,946	19,745	20,849	22,870	21,270	23,816	24,753
old EU	518,137	541,723	544,312	587,371	607,584	603,523	495,842	547,181	130,373
CEE	348,574	546,671	524,502	564,351	517,192	510,097	408,009	442,720	443,849

Source: Eurostat.

Nevertheless, the drop of railways share in inland freight transportation is very pronounced in Poland and in some other CEECs. This radical change was reflecting relative underdevelopment of road transports before transition and its rapid expansion afterwards in Central European countries. The relative decrease of railways in modal split is reflecting relative low level of its competitiveness. In consequence there is need for modernization of the network and a downsizing of the whole sector.

The downsizing phenomenon can be best measured by a decreasing number of employees in principal railway enterprises as shown in Table 1.7. Unfortunately the data on employment are somewhat incomplete. In Poland the number of employees was reduced from 145 thousand in 2001 to 110 thousand in 2010 or by 24 per cent in relative terms. In Turkey the number of railway employees was reduced by 18.3 thousand or by almost 40 per cent over the same period. In absolute terms the largest drop in total employment in principal railway enterprises was observed in Germany (by almost 90 thousand) and in Romania (60 thousand). This reduction in employment, in Poland as well as in the majority of other cases, was a reaction to the over-employment in the old incumbent, monopolistic, state owned railway enterprises (PKP), which started to face the increased competition from incoming Railway Undertakings (RUs) and other modes of transportation.

Table 1.7: Employment in principal railway enterprises, by type of activity

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	change
Czech Rep.	85,225	82,839	79,885	74,993	66,627	62,983	57,934	56,054	-	-	-29,171
France	176,575	175,510	171,674	167,895	164,298	-	-	-	-	-	-12,277
Germany	-	223,065	-	-	60,399	-	-	-	-	134,702	-88,363
Hungary	56,647	55,619	54,888	-	-	-	42,709	37,795	36,794	-	-19,853
Italy	-	97,180	95,071	93,380	91,500	91,679	87,421	83,335	78,991	75,011	-22,169
Poland	145,239	140,633	136,687	133,329	126,342	125,263	122,568	117,077	109,743	109,840	-35,399
Romania	101,418	87,835	-	65,568	-	-	-	41,520	41,340	-	-60,078
Slovakia	44,596	43,688	41,627	39,151	36,664	34,766	34,074	33,468	32,643	31,749	-12,847
Spain	32,584	31,422	-	29,752	14,916	20,721	20,763	20,893	20,671	-	-11,913
Turkey	45,175	41,978	29,695	28,978	27,473	26,415	28,024	27,603	26,868	-	-18,307
old EU	209,159	527,177	266,745	291,027	331,113	112,400	108,184	104,228	99,662	209,713	
CEE	433,125	410,614	313,087	313,041	229,633	223,012	257,285	285,914	220,520	141,589	

Source: Eurostat statistics.

Another aspect of downsizing can be observed in the number of wagons, used by railway enterprises. The relevant figures are shown in Table .Unfortunately, the data on number of wagons are incomplete as well. In all European countries the drop in the numbers of wagons in operation was very substantial. In Poland the number of wagons was reduced in 2010 by almost 7.5 thousand in comparison to 2001 and by almost 19 thousand in relation to the maximum level reached in 2004. A similar situation existed in other CEECs, with the largest drop observed in Romania, by almost 50 thousand, or nearly 50 percent in relative terms. This change was reflecting the obsolete state of wagons. In Old EU countries the largest drop was observed in Italy. On the other hand the number of wagons increased slightly only in Turkey. But we have to take into consideration that in Turkey the share of rail transportation in modal split is relatively small and did not decrease during the last ten years.

Table 1.8: Number of wagons, by status of enterprise

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	change
Czech Rep.	52,427	49,150	48,158	47,500	47,172	47,680	47,659	46,925	35,436	35,077	-17,350
France	109,770	107,033	103,833	99,372	95,238	-	-	-	-	-	-14,532
Germany	118,415	111,852	-	-	102,778	-	-	-	-	-	-15,637

Hungary	22,983	21,695	20,189	19,783	16,027	-	-	12,240	10,683	-	-12,300
Italy	-	-	56,155	54,528	45,660	46,371	41,398	40,740	30,319	30,331	-25,824
Poland	96,741	119,308	111,532	107,315	103,234	103,527	104,982	101,528	95,462	89,270	-7,471
Romania	93,187	86,786	-	60,964	58,951	55,503	54,713	47,420	45,505	43,311	-49,876
Slovakia	24,587	24,796	23,973	24,936	25,515	25,989	27,538	20,820	14,534	15,260	-9,327
Spain	25,987	25,041	-	32,658	22,658	13,817	14,311	13,718	13,218	12,966	-13,021
Turkey	17,571	17,030	16,841	16,872	17,499	18,229	19,205	19,537	17,607	-	36
old EU		243,926	159,988	186,558	266,334	60,188	55,709	54,458	43,537	43,297	
CEE		182,427	92,320	153,183	147,665	129,172	129,910	127,405	106,158	93,648	

Source: Eurostat.

The downsizing is practically not observed in the case of total railway lines. In Poland and in some other countries with a large railway network (e.g. Hungary or France), the total length of lines decreased slightly. In the case of Poland, which has the third largest network in Europe, the reduction of lines was forced mainly by the declining quality of the network.[8] In some other large countries, investing a lot in modernization of the network, the total length of lines increased only slightly (e.g. Germany and Spain). A similar slight increase was also observed in the case of Turkey.

The total length of operational standard gauge lines was slowly decreasing over the time from 20,545 kilometers in 2004.[9] Although Poland is the third largest railway network in Europe after Germany and France its economic attractiveness is limited. Many railway lines were closed after 1990 due to lack of funds. The average density of the railway network is 6.6 km/100 sq. km, ranging from 3.3 km/100 sq. km in the Podlaskie voivodship (province neighboring to Eastern border of Poland) to 17.4 km/100 sq. km in the Silesian voivodship. Most of these lines are property of PKP Polskie Linie Kolejowe SA (PKP PLK), which operates as the infrastructure manager. The entire Polish railway network includes 1,600 railway stations, all managed by PKP PLK.

The most important railway lines in Poland are E20 (German border Warsaw - Belarus border), E30 (German border – Wrocław– Katowice– Kraków– Ukrainian border) and E65 (Czech border – Katowice – Warszawa— Gdynia). These lines have been under modernization since 2000, most of these projects have been scheduled for completion until 2012. Part of E65 line between Katowice and Warszawa is known as the Central Railway Line (Centralna Magistrala Kolejowa) and has already been rehabilitated for high-speed trains.

As mentioned above, the railway infrastructure was in a poor state during the mid-2000's. Some 30 percent of the network was classified as being in an "inadequate" condition subject to major speed restrictions and they were suspended for use. In that period the maximum speed was restricted on many lines.

[8] In 2005 at about 6 percent of the network, the maximum speed was less than 40 km/h. See: Office of Railway Transport (2005) Functioning of Polish Railway Transport in 2004 and updates.

[9] Office of Railway Transport (2005) Functioning of Polish Railway Transport in 2004, page 5. The number of standard lines decreased from 22,560 kilometers in 2000.

Despite some efforts undertaken, the technical condition of the infrastructure was still worsening during early 2000's. According to a report presented by the Office of Railway Transport (2005) the major challenges for the infrastructure was the inadequate level of investments for maintenance and modernization of railway infrastructure. In particular in 2005 it was estimated that the backlog in main repair amounts to 9,600 km of tracks and 16,600 crossovers, while yearly needs resulting from the repair cycles amount to 950 km of tracks and 1,370 crossovers. In 2004 only 179.8 km of tracks and 149 crossovers were replaced. The rolling stock owned mainly by the PKP and other Polish railway undertakings (RUs) was of rather poor technical condition as well. Of the 115 thousand freight cars and about 9 thousand passenger wagons owned by Polish RUs majority of them were old and not in line with modern standards.[10]

Indeed, the level of infrastructure investment in Poland was very low by European standards and inadequate to meet the modernization needs. The relevant numbers are presented in Table 1.9. Until 2005 Poland invested about 10 times less in comparison to other large EU countries having the similar or slightly larger length of lines in the railway network. Although Turkey had a much smaller railway network, the investments in Turkey were still half of railway investments in Poland,

Table 1.9: Investment in Rail Infrastructure (Current Prices - Million EUR), 1992 – 2008

	1992	1994	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Czech Rep.		92	160	280	302	269	371	394	473	417	411	485	465	612	1,217
France	3,601	2,840	2,963	3,024	2,879	2,891	2,955	2,444	3,045	3,634	3,680	4,118	4,214	4,505	5,119
Germany	4,673	5,471	5,200	4,745	4,423	7,350	5,305	5,481	7,437	7,233	6,417	4,284	4,860	4,717	4,716
Hungary	41	75	103	80	136	188	197	228	278	280	155	171	91	376	298
Italy			2,312	2,078	2,170	3,681	4,549	4,856	5,525	7,403	8,809	10,175	8,970	7,702	
Poland	96	164	278	308	338	237	198	113	108	195	219	235	353	646	901
Romania	5	21	51	43	46	30	43	57	106	99	58	109	102	311	317
Slovakia	24	29	107	121	64	37	53	170	241	91	91	160	225	287	215
Spain	973	772	645	597	856	1,279	920	1,106	1,199	1,633	1,900	1,926	2,255	2,368	2,503
U.K.	3,175	2,579	2,735	3,365	3,917	4,821	4,583	5,873	6,751	7,497	6,300	6,518	7,392	8,137	7,515
Turkey	34	34	36	44	54	69	61	50	47	86	125	170	330	271	339

Source: OECD, International Transport Forum, Paris 2009, Online Database (http://www.internationaltransportforum.org/statistics/statistics.html), issued 16 July 2010.

Thus, the modernization of Polish railways network is a great challenge for the government. Only recently, Poland has begun investing in railway modernization with the aim of raising the quality of standards. Poland has divided its railway lines into national interest lines, urban interest and international interest lines, which can benefit from external funds. According to the PKP PLK the lines of strategic interest for international traffic will be gradually upgraded

[10] The structure of rolling stock and average age of freight cars were as follows in 2004: (1) box cars 12.6 percent 27.7 years, (ii) coal cars 68.3 percent 22.1 years and (iii) flat cars 14.9 percent 24.3 years. The situation regarding the technical condition of locomotives was similar. The basic electric locomotives for passenger traffic are: EP09 (average age of 11.2 years) and EU07 (average age of 26.1 years).

to European standards. The ultimate goal is to ensure the interoperability of the Polish network included in the Trans-European network of high speed lines, as well as the interoperability of the Trans-European conventional railway system. In general, the modernization of railway lines in Poland is made with the help of state-budget funds and through non-reimbursable European funding, as well as various agreements signed with European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD) and the World Bank.

Currently, the main cities in Poland are linked through a railway transport system where trains can reach speeds of 160 km/h. But, Polish Railways do not have rolling stock that can reach this speed. PKP SA has been planning to buy Pendolino fast trains ever since 1998, but the contract was cancelled for financial reasons. Finally, in 2012 the PKP SA signed the contract worth 665 EUR millions for 20 trains of Pendolino. In total PKP's plans to buy rolling stock of EUR 1.3 billion until 2013 for the renewal of the company's rolling stock fleet. The first trains shall be operating at lines Warszawa – Gdańsk, Warszawa – Kraków, and Warszawa – Katowice during the period 2013-2014, and the latter should be operating up to the 220 km/h cruising speed after 2015.

Polish Railways' priority was to connect Warsaw, Wroclaw and Krakow with airports. In total, PKP PLK was planning to modernize nine railway sections with total length of almost thousand kilometers. Unfortunately, PKP PLK was not able to finalize all infrastructure modernization projects, and some of them have been abandoned, like the modernization of the line connecting Szczecin with Poznan. Due to the fact that PKP PLK was not able to realize all projects before 2012, some of the European funds have been transferred from railways networks to road modernization investments.

The Polish infrastructure manager, PKP PLK plans to invest PLN 5 Billion (EUR 1.2 Billion) in the extension of the transport network.[11] Until 2015, the railway infrastructure has EUR 4.8 Billion investments approved from European funding. One of the major investments will be the Rail Baltica project which will link Warsaw, Kaunas, Tallin, Riga and Helsinki. Rail Baltica Polish segment is 341 km long will cost around PLN 700 Million (EUR 178.8 Million). With over EUR 4 Billion announced for investments in the Polish railway infrastructure over the next 3 years, the railway network in Poland should be modernized. The situation is changing with large scale investments co-financed by structural funds of the EU. At present the economic attractiveness of Polish railway infrastructure remains rather potential than real.

2.1.3 Maritime Transportation

An important feature of the Polish position is its geographical location, particularly its access to the Baltic Sea. The Polish coastline has over 528 km length, which allows the use of the cost line for sea fishing, shipbuilding, tourism, and maritime transport. The Polish marine merchant fleet is used primarily for carriage and export of raw materials and final products to and from the other coastal countries. Polish vessels carried mainly general cargo, grain, coal

[11] For example in 2010, funds of PLN 3.7 Billion (EUR over 880 Million) have been approved, which with European funding, gave the amount of PLN 4.2 Billion (EUR 1 Billion) for new railways investments.

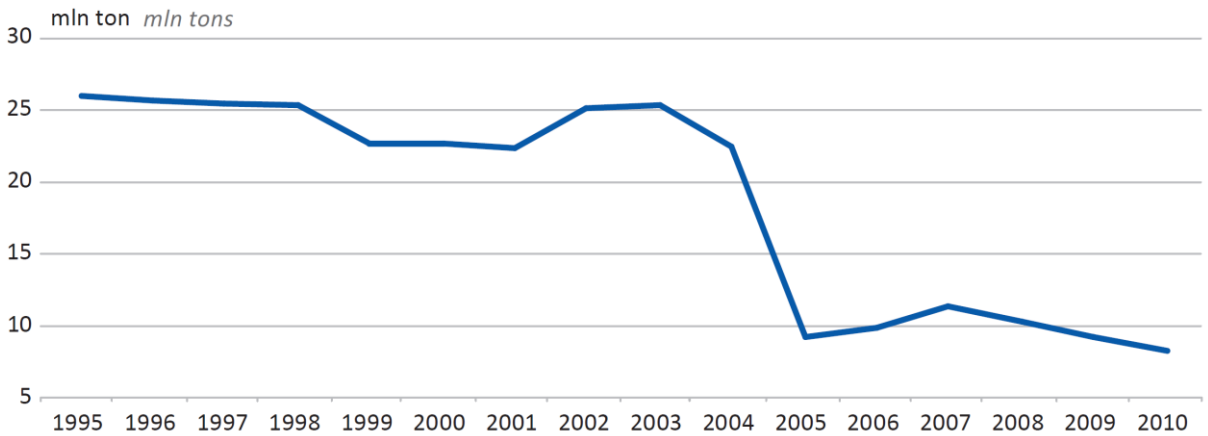
and coke. Nearly 79 percent of Polish maritime traffic is in irregular transport, namely tramp shipping.

One of the possible negative impacts of Polish membership in the EU was the rapid decrease of the role of Polish shipowners in the Polish cargo traffic. In 2003 Polish shipowners transported 9.1 million tonnes of cargo, which was over 23 percent of total cargo traffic (39.4 million tonnes). In 2009 this share dropped to 6.5 percent of total cargo of over 40 million tonnes. The rapid drop in total amount of cargo transported by Polish shipowners after joining the EU is visible in Figure 1.2.

In Poland there are four main seaports that are crucial for the economy: Gdańsk, Gdynia, Szczecin and Świnoujście. Over 95 percent of the whole Polish cargo traffic takes place in these ports and this share remained stable throughout the last decade. The remaining part of the cargo traffic is facilitated by 57 smaller ports and harbours along the Polish coastline. The greatest weakness of Polish maritime infrastructure is the distance from the main oceanic traffic routes and the underdeveloped transport connections with the main business centres in the country.

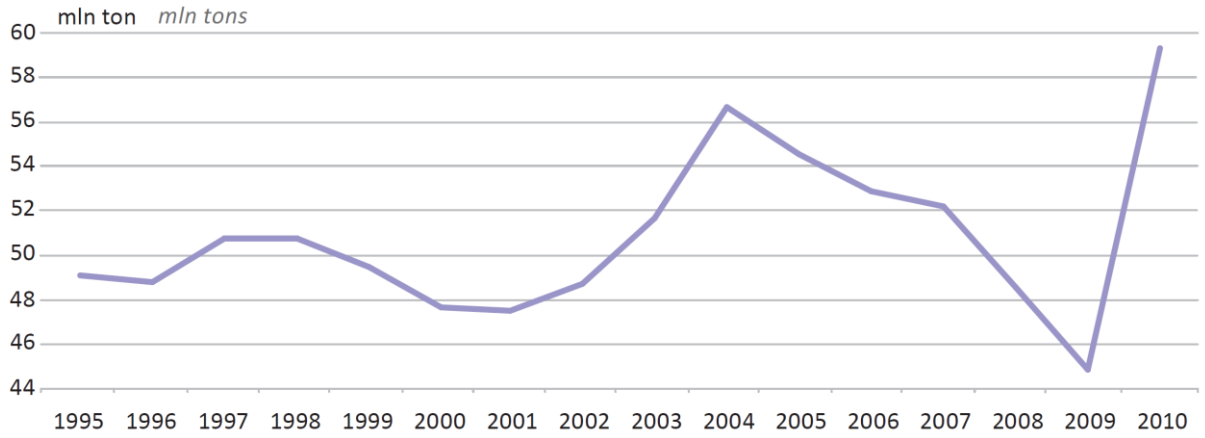
In comparison to other international ports in the Baltic Sea region, which are the direct competitors of Polish harbours, the four main Polish seaports do not lag behind in terms of the reloading offer. The main obstacle to gaining on international importance is the limited quality and throughput of the access to the port facilities. In years 2000 – 2009 the total length of seaport quays decreased by 5.4 percent, though at the same time the length of quays suitable for use (of depth over 10.9 m) increased by 10.3 percent. The total length of transshipping quays increased by 1.4 percent while the length of the transshipping quays suitable for use grew by 3.2 percent. The most significant development took place in Szczecin, where throughout the last decade the length the transshipping quays suitable for use spiked by 45.9 percent reaching 11.34 km. On the other hand in Swinoujście the length the transshipping quays suitable for use dropped by 45.4 percent and at the end of year 2010 amounted only 5.88 km. Among the major weaknesses of Polish fatigued seaport infrastructure are the shallow port pools, insufficient maximum load of quays, underdeveloped logistics of transhipping quays and decapitalisation of remaining port infrastructure.

Figure 1.2: Cargo transport by cargo carrying Polish sea fleet



Source: Statistical Office in Szczecin, Statistical yearbook of maritime economy 2011, Szczecin 2012, http://www.stat.gov.pl/cps/rde/xbcr/gus/rs_rocznik_gosp_morskiej_2011.pdf

Figure 1.3: Cargo traffic in Polish seaports



Source: Statistical Office in Szczecin, Statistical yearbook of maritime economy 2011, Szczecin 2012, http://www.stat.gov.pl/cps/rde/xbcr/gus/rs_rocznik_gosp_morskiej_2011.pdf

The number of ships in Polish cargo carrying sea fleet increased by 3.4 percent during the years 2003-2009. However, this trend has been revised since the year 2009. Since 2009 the world's sea transport sector has been experiencing the impact of the economic crisis and general downturn in world's economy and international trade flows. The freight rates decreased rapidly to a level at which they couldn't any longer guarantee to cover all of the exploitation costs. This forced the ship owners to reduce employment and take other anti-crisis actions. In year 2011, as compared to year 2010, the number of Polish cargo carrying sea ships decreased by 10.7 percent and accounted for only 108 ships at the end of year 2011. Still this was combined with only a slight decrease in the total deadweight of the ships (by 0.4 percent) and the total gross capacity (3.4 percent).

At the end of 2011 there were only 15 cargo carrying ships under Polish flag. With total deadweight of 26.4 thousand tonnes and gross capacity of GT 21.2 thousand they constituted 13.9 percent of Polish fleet, 0.9 percent of its total deadweight and 1 percent of total capacity. The small fraction of Polish ships operating under Polish flag is due to the reflagging phenomenon, when shipowners change the flag for other flags offering lower exploitation costs. Majority of Polish ships operate under the flag of the Bahamas, Cyprus or Malta. This reflagging process was applied by the majority of ships with the exception of the oldest units that were predicted to be withdrawn soon from the market. Therefore though in 2011 the average age of Polish ships was 17.8 years, for the ships under Polish flag it was 32 years. There are no ships under Polish flag that are owned by another country's citizens.

Table 1.10: Polish sea fleet by flag in 2011 (as of 31 Dec)

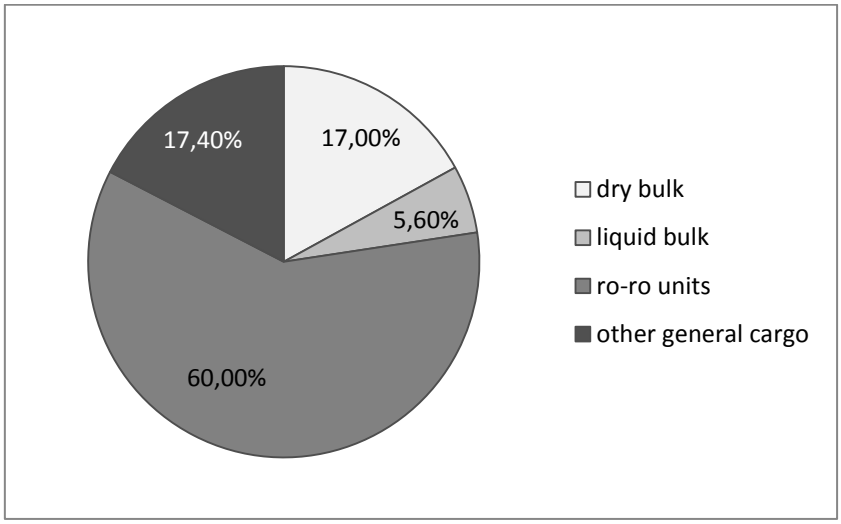
	total	flag					
		Bahamas	Cyprus	Malta	Poland	Liberia	Vanuatu
number of vessels	108	36	20	16	15	13	7
deadweight (DWT) in thous. tonnes	2,931.0	1141.5	395.2	534.0	26.4	363.5	454.8
gross tonnage (GT) in thous. tonnes	2,039.2	849.9	311.4	354.3	21.2	235.3	257.2

Source: Statistical Office in Szczecin, Gospodarka morska w Polsce w 2011 r., Szczecin 2012, http://www.stat.gov.pl/cps/rde/xbcr/gus/t_gospodarka_morska_2011.pdf

In 2011 Polish ship owners transported 7,737.5 tonnes of cargo, which was less than that of the year before by 7.5 percent. The structure of the cargo transported by Polish fleet is dominated by ro-ro units (over 60 percent) while the percentage of cargo transported by large containers was reduced to 0 percent (Figure 1.4). Such structure implies the inadequacy of Polish fleet in terms of global trends. Nowadays, international trade tends to rely largely on container traffic, and large containers constitute more than 10 percent of the total cargo traffic in Poland. This share is similar to the share of large containers cargo in France and United Kingdom, though significantly less than in Germany, Spain, Portugal or Turkey. During the year 2011 only one ship in the Polish sea fleet consisting of 108 ships was suitable for transporting large containers. The majority of Polish fleet (83 percent) focuses on bulk cargo traffic. In the Baltic Sea region there is already competition among the 19 foreign shipowners with over 152 container ships with total capacity of 113.7 thousand TEU.[12]

Though the number of large ships in Polish sea fleet remains significantly smaller than those of other western European countries, which tend to own a few times more ships than Poland. The number of vessels in Polish fleet is comparable to those of other countries in Baltic Sea region. Also in terms of the flag the size of Polish fleet bears strong resemblance to fleets of Lithuania, Latvia or Estonia. All of the countries experience a situation, where ships owned by the country's citizens frequently operate under a foreign flag. In 2009 none of the four Baltic countries had a flag fleet with total gross tonnage above 1 million tonnes. Nevertheless, in terms of the number of ships arriving at the major seaports Poland bear more resemblance to Portugal or Ireland. In 2009 over 15 thousand ships arrived in Polish seaports, which was more than the number of ships that arrived to ports in the three Baltic States. Still twice as many ships as in Poland have arrived this year in Finland and in Turkey.

Figure 1.4: The structure of cargo transported by Polish sea fleet in 2011



Source: Statistical Office in Szczecin, Gospodarka morska w Polsce w 2011 r., Szczecin 2012, http://www.stat.gov.pl/cps/rde/xbcr/gus/t_gospodarka_morska_2011.pdf

[12] TEU is the abbreviation of Twenty foot Equivalent Unit, meaning a container with the basic dimensions of 20 ft length, 8 ft wide and 8 ft 6 inches in height.

Another aspect indicating that Poland is not one of the major players in maritime transport sector is the total amount of cargo traffic in Polish seaports. In 2009 the absolute tonnage of cargo traffic in Poland reached 44.6 million tonnes, which is similar to other countries operating in the Baltic Sea region, though much less than for countries in western Europe or for Turkey (with over 277 million tonnes cargo). Also the gross weight of goods handled in seaports per capita reveals that Poland uses maritime transportation to much smaller extent than countries in Western Europe. Within the first decade of the XXIst century the weight of cargo traffic increased from 1.2 tonnes per capita to 1.6 tonnes per capita. These numbers are still significantly smaller than in the other large countries in Europe. But it is worth noting that after the temporal breakdown in 2009 the value reached in 2010 was higher in relation to the pre-crisis levels, whereas in other European countries cargo traffic has not recovered.

In maritime transport the risk of an accident is much greater than in case of air transport. The reason is that the direct contact of the ship with the sea element combined with the wind can prevent the shipowner from further seafaring. Nevertheless, in the first decade of XXIst century there was no major shipwreck (i.e. drowning, complete loss of a large ship) in the Polish sea fleet. Still maritime accidents are on a daily basis in Poland – each year 80-100 accidents involving Polish ships take place. Most of them are collisions of ships or ship crushes (25 percent-35 percent). Stranding of ships accounted 5 percent-12 percent of all accidents and 10 percent-25 percent involved engine breakdown or misadventures experienced by crew members. The number of accidents of Polish sailors is not larger than in other European countries, though the rate of fatal accidents among them remains disturbingly high.

2.1.4 Air Transportation

The modern history of Polish civil aviation starts with the establishment of Polskie Linie Lotnicze LOT (trading as LOT Polish Airlines or LOT) on 1 January 1929 by the Polish government as a state owned self-governing corporation taking over existing domestic lines Aero and Aerolot, making it one of the world's oldest airlines still in operation. LOT started on January 2, 1929 with domestic services to Bydgoszcz and Katowice in addition to those previously operated by Aero and Aerolot. Its first international service began on August 2, 1929 to Vienna. Accepted into IATA in 1930, LOT opened an international route to Bucharest that year, followed by Berlin, Athens, Beirut, Helsinki, Rome and some others. The airline had carried 218,000 passengers by the outbreak of the Second World War. Services were suspended during the Second World War, and all of LOT's aircraft were either destroyed or detained.

The LOT airline was recreated by the Polish government on March 10, 1945 and in 1946 the airline restarted its operations. Both domestic and international services restarted that year, first to Berlin, Paris, Stockholm and Prague. In 1955 LOT inaugurated new services to Moscow and Vienna. Services to London and Zürich were not re-established until 1958. By 1963 LOT had expanded its routes to serve the Middle Eastern and North African cities Cairo, Baghdad, Beirut, Benghazi, Damascus and Tunis. The first transatlantic routes in the history of Polish air transport were inaugurated in 1972. From the mid-1980s to early 1990s LOT flew from Warsaw to Chicago, Edmonton, Montreal, Newark, New York and Toronto. These routes were primarily inaugurated to serve the large Polish communities present in North America. LOT began service on its first Far-East destination Bangkok via Dubai and Bombay in 1976.

After the fall of the communist system in Poland in 1989 the airline continued to operate as a state-run monopoly until 1992 when it became a joint stock company with the State Treasury owning 67.97 percent of shares; Regionalny Fundusz Gospodarczy S.A. owning 25.1 percent of shares; and the employees owning 6.93 percent of the share in the company. Soon, in 1993, LOT began to expand its Western-European operations, inaugurating, in quick succession, flights to Oslo, Frankfurt and Düsseldorf. Operations at Poland's other regional airports outside Warsaw were also duly expanded around that time. In 1994 the airline signed a code-sharing agreement with American Airlines on flights to and from Warsaw as well as onward flights in the United States and Poland operated by both companies. In addition, flights to Thessaloniki, Zagreb and Nice were inaugurated. In 1997 LOT set up a sister airline, EuroLOT, which, essentially operating as its parent airline's regional subsidiary, took over domestic flights. The airline was developed with the hope that it would increase transit passenger-flow through Warsaw's Chopin Airport, whilst at the same time providing capacity on routes with smaller load factors and play a part in developing LOT's reputation as the largest transit airline in Central and Eastern Europe. Expansion of LOT's route network continued in the early 2000s and the potential of the airline's hub at Warsaw Chopin Airport to become a major transit airport was realised with more and more success. In 2003 LOT became the member of Star Alliance led by the German Lufthansa.

After Poland's accession to the EU in 2004, LOT confronted with increasing competition, started losing its dominant position in the Polish market and faced financial problems. The very strong position of LOT has been undermined in recent years, mainly as a result of competition from emerging low-cost airlines serving the European routes. The share of LOT in the passenger air traffic in Poland decreased quite abruptly from almost 60 percent in 2004 to less than 30 percent in 2011. This change resulted mainly from market access liberalization, decrease of tickets' prices and expansion of low cost-airlines. Indeed the share of low cost airlines increased from 12.0 percent to 47.9 percent during the same period of time.

In order to compete with low cost airlines LOT in 2004 created low-cost arm Centralwings, however, this strategy did not prove to be very successful. Already in 2009 the new company was dissolved and reincorporated into LOT after just five years of operation due to its long-term unprofitability and LOT's wish to redeploy aircraft within its own fleet. In 2008 LOT opened a new flight to Beijing, however this lasted just a month, in the period prior to the Olympics.[13] In 2010 LOT started new services to Yerevan, Beirut, and resumed its flights to Tallinn, Kaliningrad, Gothenburg, and Bratislava. In addition to this, new services to Tbilisi, Damascus and Cairo were inaugurated. In 2010 LOT cancelled flights, after 14 years of operation, between Kraków and the US destinations of Chicago and New York, citing profitability concerns and not lack of demand as the reason for the routes' cancellation. The aircrafts previously used on this route were re-deployed to resumed service to Asia, with three weekly flights on the Warsaw – Hanoi route.[14]

[13] The main reason for failure to continue this service was given as the need to route aircraft via an air corridor to the south of Kazakhstan (as LOT did not have permission for flights over Siberia from the Russian government) which was making the services too long and thus unprofitable.

[14] This route to Hanoi was largely under-utilised by European carriers and has proved very successful for LOT in the beginning. However, in February 2012 LOT decided to halt service to Hanoi and phased out their Hanoi destination in March 2012. The aircraft previously used on this route were then re-deployed to resume service to Beijing.

In 2010/11 LOT announced its new 'East meets West' route expansion policy; the airline will add a number of new Asian destinations to its schedule over the coming years. The policy aims to take advantage of LOT's perspectives as a transit airline and the substantial passenger growth seen on Europe-Asia flights in recent years. In 2012 LOT reopened its route to Beijing and has plans to open routes also to Shanghai and Tokyo. This has now become feasible since the initializing of an agreement on Siberian overflight permits for LOT by the Polish and Russian governments in November 2011. However, the main obstacle is the lack of appropriate long-distance planes. The first two Boeing 787 Dreamliners have arrived on November 30, 2012, with another three being delivered by February 2013. Other possible destinations for the near term include Seoul, Shenzhen, Bangkok, Singapore, Delhi and Washington DC, however these are all dependent on the delivery of Boeing 787 aircrafts.

LOT has begun a process of partial privatization and selling minority shares to the Swiss company SairGroup already in 1999. However, after the sale of 37.6 percent stake to Swissair, the state remained as the majority (51 percent) owner of the company. Given deteriorating financial standing it was intended to privatise LOT completely in 2011. Although advanced talks were undertaken with Turkish Airlines the deal failed to materialize. In July 2012 it was announced that a planned sale of a major stake of the airline to Turkish Airlines would not go ahead. The main problem was the fact that Turkish Airlines as a non-EU airline was according to EU regulations not allowed to own a majority stake of an EU airline. The LOT airline is now again seeking a partner to take a major stake. If they fail to find a new buyer the airline may be floated. In 2011 LOT lost 145.5 million PLN, compared to a 163.1 million PLN loss in 2010.

The dynamic growth of air transport market is very well pronounced after Polish accession to the EU in 2004. As a result of accession access to the Polish market has greatly increased the degree of competition within the country. It seems, that the liberalization process by having a positive impact on the development of the air transport market has contributed to the rapid growth of passenger flights in Poland.

The liberalization of the air transport market in Poland had a very positive impact on the development of this market. As new entrants to the domestic and international routes started to offer their services competition in the sector increased bringing tangible benefits to consumers.. Moreover, a number of new routes have been opened. Since 2004, a significant increase in the number of passengers handled by the national airports in regular and charter traffic has been observed. Despite the temporary drop in the number of passengers as a result of the global crisis in 2009, the number of passengers during the period 2004-2011 increased more than threefold. The rapid growth in airline traffic has occurred despite the fact that Polish airports suffered from underinvestment, inadequate infrastructure and limited capacity. This dynamic growth of number of passengers is a reflection of the high rate of GDP growth experienced during 2005-2008, increased demand for tourism services and the growing importance of the movement of Polish labor force to the EU.

In 2004 Polish airports served a little more than 7 million passengers, 20.5 million in 2010 and 21.7 million in 2011. In total, in absolute terms during the period 2004-2011 the number of passengers increased by more than 14.7 million. For comparison, it is worth noting that during the period before liberalization of the market namely 1999-2003, the number of passengers had increased by only 1.8 million (an increase of 34 percent). It should also be noted that in 1999-2003, the annual increase in the number of passengers handled by the national airports was approximately 9 percent per year except in 2002, when the growth rate

was about 3 percent. The liberalization of the market meant that during 2004-2007, the number of airports served to passengers grew at a rate of 25-30 percent per annum, while during 2008 the increase was reduced to 8 percent. However, in absolute terms, the number of passengers handled in 2008 increased by more than 1.5 million, and the increase was spread over the whole period of 1999-2003. In 2009 there was a decrease in the number of passengers handled by the national airports by about 8 percent (1.7 million people) to 18.9 million passengers. In 2010, the number of passengers increased again by 8.1 percent to 20.5 million passengers. However, this was still below the number for the year 2008. It was only in 2011, when the number of passengers increased compared to 2008 for the first time. In 2011 Polish airports served a total of 21.71 million commercial traffic passengers (an increase of 6.1 percent compared to the previous year).

At the same time the liberalization of the airline market led to the development of regional airports. During the 2004-2011 commercial air traffic in Poland (passenger flights, both scheduled and charter) was supported by 11 airports, which provided air traffic control services, located in 11 of the 16 Polish regions. The system of civil airports in Poland, used for passenger transport, consisted of one dominant central Warsaw-Okęcie airport and ten regional airports namely Kraków, Katowice, Gdańsk, Wrocław, Poznań, Łódź, Rzeszow, Szczecin, Bydgoszcz and Zielona Gora. In addition, in the Warmia and Mazury region there is the Masuria airport located in Szymany near Szczytno, but it is closed to passenger traffic since 2005. Morover, in the province of Lublin a new airport is being built in Świdnik. On the other hand, the Lublin Airport is now having its main terminal built and it is expected to be finished in September 2012.Three Polish regions, namely Podlaskie, Opole and Świętokrzyskie do not have airports.

Prior to 2004, the dominant airport in the country was the airport Warsaw-Okęcie. Consumers wishing to go abroad in most cases were forced to travel through Warsaw-Okęcie. Regional airports offered few international connections, and some of them offered only domestic flights to Warsaw. After 2004, the role of the Okęcie in passenger service declined strongly in favor of local airports. The share of Warsaw airport in handling the passenger traffic decreased from 75.5 percent in 2002 to 42.9 percent in 2011, and at the same time the role of regional airports in Krakow, Katowice, Gdansk, Wroclaw and Poznan increased significantly. The shares in passenger market for the airport in Krakow increased from 7.4 percent to 13.8 percent during the period 2002-2011, the airport in Katowice from 3 percent to 11.5 percent, and the airport in Gdansk, from 4.9 percent to 11.3 percent. However, the highest rate of growth in the number of passengers was reported at the airports in Lodz, Bydgoszcz and Katowice.

It is worth noting that in the 2002-2004 period, only one airport in Poland served over one million passengers a year. It was the airport in Warsaw. In 2005, there were already three airports serving more than one million passenger, and since 2008 six airports namely Warsaw, Krakow and Katowice, Gdańsk, Wrocław and Poznań, of which in 2011 Warsaw, Krakow, Katowice and Gdańsk served over 2 million passengers.

The long-term forecasts made by the Polish Civil Aviation Office indicate rapid growth of the airline market. Majority of airports have been already modernized and expanded while in others such investments are planned in the near future. These actions are justified because the forecasts suggest a continuation of steady growth of passengers in Poland, at around 7 percent per annum during the period 2012-15. It is to be realized primarily in regional airports, which is a continuation of the current trend.

A good opportunity to expand the airport capacity in Poland was the organization of European Football Championship 2012 (EURO2012), which forced the airport managers to accelerate the necessary investments. In Wroclaw the new terminal built in 2012 increased its passenger capacity to 3.2 million passengers per year. In addition, the airports that do not fully utilize their capacity do not remain passive. In particular, Gdańsk has increased its passenger handling capabilities more than twofold. In March 31, 2012 a second terminal was officially opened, and the first passengers were checked in April 6, 2012.

Airports that do not support directly the EURO 2012 host cities were given the status of the so-called supporting airport and had to take into account the temporary increase in the number of passengers. For example, Krakow plans to expand its terminal complex, in order to increase its capacity. The new terminal will have 55 thousand square meters of floor space and an annual capacity of 8 million passengers.

In the expansion of airport infrastructure, airports will benefit also from public funds, in particular, from funds available under the Operational Programme Infrastructure and Environment, and additionally in the case of airports that do not belong to the Trans-European Transport Network TEN-T from the Regional Operational Programmes. Apart from the already mentioned airports Katowice, Lodz and Rzeszow plan to build new terminals, while Warsaw-Okęcie, Poznań and Bydgoszcz are going to upgrade or expand their existing facilities.

In 2010, airports in the world checked in 4.8 billion passengers and 85 million tons of cargo and civil aircrafts performed 70 million take-off and landing operations. Compared to 2009, the number of passengers in the world increased by 6.3 percent, tonnage of cargo by 15.2 percent and the number of operations by 0.8 percent. The largest passenger airports were Atlanta, London Heathrow and Beijing, and largest cargo airports were Hong Kong, Memphis and Shanghai. Despite its rapid growth in recent years Polish air transport market still plays a marginal role in the world air transportation, and cargo traffic is negligible. Its share in passenger transports was equal to 0.43 percent and in cargos to 0.09 percent in 2010 compared to 0.24 percent and 0.07 percent in 2004, respectively. Warsaw-Okęcie, which is the largest airport in Poland, was not recorded in the world rankings by the end of 2004, and was ranked as 135th in the world ordering of 2010.

According to Eurostat data the EU airports in 2004 handled about 650 million passengers. In 2008, the number of passengers rose by about 23 percent to 798.3 million reaching its highest value before the crisis, but in 2009 fell to 751 million, and in 2010 rose again to 776.8 million but it was still below its pre-crisis value. At the same time, the increase in the number of passengers served by airports in Poland was much higher – more than threefold. However, despite the significant increase in the number of passengers handled by the airports in Poland and their role in the EU as a whole is still rather minor. In 2010, the Polish airports checked in only 2.4 percent of all passengers in the EU. It is worth noting that in 2004 the share was only 1.4 percent. Most passengers in 2010 were handled by the airports in the UK (192.9 million), Germany (166.1 million), Spain (153.4 million), France (122.9 million) and Italy (109 million). The major airports in the EU during 2010 were the Heathrow airport in London (65.9 million passengers), Charles De Gaulle in Paris (58.2 million passengers), Frankfurt / Main (53 million passengers), Barajas Madrid (48.9 million passengers), Amsterdam Schiphol (45.2 million passengers), Rome Fiumicino (36.2 million.) and Munich (34.7 million.). Warsaw Okęcie with over 9 million passengers handled was ranked only 34, however it should be noted that in 2004 it was ranked 41.

Analyzing the development of the aviation market in particular EU countries, it is clear that the aviation market in Poland was one of the fastest growing markets. In the years 2004-2010, only the Latvian market, which increased the number of passengers by 441 percent, grew faster than the Polish market. Significant increases were reported also in the other new EU member states, especially Romania (by 277 percent), Lithuania (by 230 percent), Slovakia (by 174 percent) and Estonia (by 139 percent). Analyzing the absolute values reveals that Poland was one of the markets in which the largest increase in the number of passengers served was reported. During the period 2004-2010, the largest increase in the number of passengers handled was reported in Germany (30.2 million), Italy (27.9 million), Spain (23.6 million), and France (19.8 million). During the same period Poland was in 5th place with more than 12 million increase in number of passengers handled.

Certainly, the Polish aviation market should be regarded as a growing market with huge potential resulting from the mobility of the population, but also from the large potential of the Polish population, the progressive enrichment of the population and its geographic location. However, it is worth mentioning that in 2004, the Polish aviation market compared to other EU markets was rather underdeveloped. In 2004, the national airports served 8.8 million passengers only, which gave Poland 16th position among the 25 EU member states. More passengers were handled by airports in much smaller countries such as the Czech Republic (10 million) and Finland (11.8 million). The difference in the number of passengers handled between Poland and Ireland, which was ranked 10th in the EU, was 136 percent (ie Ireland in 2004 handled 136 percent more passengers than in Poland). In addition, a tiny country, Cyprus, occupying 18th place in the ranking handled 6.4 million passengers. In 2010, Poland's position in the EU ranking improved slightly. In 2010, Poland was ranked 14, ahead of Finland and the Czech Republic. Ranked 13 Belgium handled 4.3 million passengers more than Poland in 2010.

The limited capacity of Polish airports stemmed directly from a less dense airport network in Poland in comparison to Western European countries. In Poland there is one airport per almost 3.2 million inhabitants, whereas in more developed European countries this ratio is on average one to 460 thousands inhabitants. Unfavourable for Poland is the indicator measuring the density of airport infrastructure, i.e., the area per one airport. For Poland the value of this indicator is 28 thousand km² / airport and this value is far above the values for the leading countries in the EU (Austria - 7.5 thousand. km² / airport, Germany - 7 thousand. km² / airport, Italy - 7.3 thousand. km² / airport and France – 11.5 thousand. km² / airport). In Poland travelers from non-urban areas often have to travel over 200 km using ground transportation to reach the nearest airport.

The dynamic development of the market in Poland is not surprising when one takes into account the mobility factor, measured by the ratio of passengers to the number of inhabitants. Poland's neighbours from Central and Eastern Europe have rates that are twice as high, from Western Europe that are 5 times as high and from Scandinavia up to ten times higher. Currently, the mobility rate for the world is 0.7, for Europe 2.0, and for North America 4.5. Poland with a score of 0.23 in 2004 and 0.5 in 2010 ranks one of the last in Europe. For this reason, a number of foreign carriers are interested in serving the Polish market, perceiving the market as the potential source of profits and trying to obtain a strong market share right after the liberalization.

3. TRANSPORT SECTOR IN TURKEY

Transport together with communications is the third largest contributor to GDP amounting to 13.3 percent in 2011. Turkey is a large country with mountainous terrain and harsh winter conditions, and distances within the country are relatively long. While the distance from the Bulgarian border to Iran is 1,750 km, the distance from the Bulgarian border to Iraq is 1,900 km.

The main institution responsible for the transport sector at the central government level is the Ministry of Transportation, Maritime Affairs and Communications (MTMAC). The Ministry is responsible for developing the infrastructure of rail, maritime and air transport modes; the regulation of transport operations in the various modes and the supervision of State Economic Enterprises (SEE) in the transport sector. The attached institutions to MTMAC include the Directorate General of Highways (KGM) and the Directorate General of Civil Aviation (DGCA), and the related institutions of MTMAC consist of the Directorate General of State Railways (TCDD), Directorate General of State Airports Authority (DHMI), and Directorate General of Coastal Safety (KEGM). While KGM is responsible for the development and maintenance of state and provincial roads and motorways, TCDD is responsible for the operation of the railways and some of the major ports in the country, DGCA supervises and monitors the air transport sector, DHMI manages air navigation systems and most of the airports, and KEGM is concerned with coastal safety in Turkish maritime waters.

The backbone of Turkey's transport system consists as of 2011 of 65,049 km of roads and 8,770 km of rail network. Surrounded by seas on three sides and with a coastline of 8,333 km, Turkey has about 160 ports and 67 airports. Based on data from 2010, the share of road freight transportation in total transportation measured in volume terms is 88.9 percent, railway transportation 4.7 percent, maritime transportation 5.9 percent, and air transportation 0.6 percent. Regarding transport of passengers, the modal share of road transport is 91.7 percent, railway transport 2.2 percent, marine transport 0.6 percent, and air transport 5.4 percent. Thus, transport system in Turkey relies essentially on road transportation.

Turkey’s transport sector has been growing relatively fast. Over the period 2002-2012 annual demand growth rates were 3.41 percent for road freight transport; 4.87 percent for rail freight transport; 7.17 percent for maritime freight transport; and over 12.96 percent for air freight transport. But, the supply of infrastructure was in general insufficient to meet the demand.

Turkey’s transport sector has been growing not only in terms of its size but also in terms of quality of the network. According to the quality index for transport infrastructure, published in the World Global Competitiveness Report (WCR) 2011-2012, Turkey as shown in Table 1.11 ranks above Poland in the quality of its roads, railways, ports and air transport infrastructure, but it is below those of Korea, Malaysia and Germany. Although not shown in Table 1.11, Turkey’s infrastructure quality lags behind the levels of EU countries, particularly in the railroads and ports sector. Thus, Turkey’s transport infrastructure needs improvements to catch up with the EU countries. On the other hand, the World Bank’s 2012 Logistics Performance Index (LPI) report ranks Turkey 27th out of 155 countries with its score of 3.51.[15] According to LPI, 60 percent of the respondents believe that quality of railways is

[15] The World Bank’s LPI analyzes countries in six components: (i) efficiency of customs and border management clearance; (ii) quality of trade and transport infrastructure; (iii) ease of arranging competitively

either low or very low. This percent is 11.11 percent for airports and ports, and 7.41 percent for roads. LPI further reveals that according to 33.33 percent of respondents rail transport rates are high or very high. The percentage is 25 percent for road transport rates, 3.7 percent for airport charges, and zero percent for port charges. Thus, there could be significant returns for Turkey in terms of exports and economic growth from improved transport infrastructure. Furthermore, a better transport infrastructure will help to improve the transportation network between "poor performing" eastern regions of Turkey and the western provinces with better industrial and trade performance.

Table 1.11: Quality of Different Modes of Transport

	Turkey		Korea		Malaysia		Germany		Poland	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Roads Infrastructure	4.8	42	5.8	17	5.7	18	6.2	10	2.3	134
Air Transport Infrastructure	5.5	40	5.9	28	6	20	6.5	6	3.7	111
Railroad Infrastructure	2.7	60	5.7	8	5	18	5.7	5	2.5	74
Port Transport Infrastructure	4.2	69	5.5	25	5.7	15	6.1	10	3.4	107

Source: World Economic Forum (2012)

The Turkish Government recognizing these needs has set ambitious targets for 2023, the 100th anniversary of the establishment of the Republic of Turkey, in the new transport strategy document.[16] The document advocates a modal shift between roads and railways. In the new strategy, the Government's target is to increase the share of railways from 4.76 percent to 15 percent in freight transportation and from 2.22 percent to 10 percent in passenger transportation by 2023. These targets require a reduction in the share of road transport from 80.66 percent to 60 percent in freight and from 89.59 percent to 72 percent in passenger transportation. The Government announced plans to expand highways by three times, from 2,250 km to 7,500 km, and almost double the length of divided roads by the end of 2023. Similarly, the plan more than doubles the railway infrastructure capacity by 2023 as shown in Table 1.12.

Table 1.12: Existing Road and Railway Networks and Targets for 2023

	Existing Network (kilometers)	Target for 2023 (kilometers)
Highway network	2,250	7,500
Divided Roads	19,700	32,000
Railways	11,005	25,536

Source: Ministry of Transportation, Maritime Affairs and Communications (2010)

The government estimates total cost of TL 379 (US$ 252.6) billion in 2010 prices for the new investments that are planned until 2023. The amount is equivalent to $252.6 billion measures in 2010 prices. Of the total cost, the Government is aiming to finance 21 percent, which amounts to about TL 78 billion, from the private sector through Public Private Partnership

priced shipments; (iv) competence and quality of logistics services.; (v) ability to track and trace consignments; and (vi) frequency with which shipments reach consignees within scheduled or expected delivery times

[16] See Ministry of Transportation, Maritime Affairs, and Communications. (2010).

(PPP) projects. But the need for additional annual fiscal resources in the level of 3 percent of GDP poses a major fiscal challenge for the government.

3.1 Developments in Transport Sub-Sectors

Analyzing the major developments in Turkish transport sub-sectors we consider first the case of road transportation, thereafter rail, maritime and air transportation respectively.

3.1.1 Road Transportation

During the first decades of the Republic while railways and maritime transportation sector received priority investments, road transport was neglected. In 1950 while the share of road transportation in total passenger transport was 49.9 percent, the share of road transport in total inland freight was 17.1 percent. Following the establishment of the Directorate General of Highways (KGM) in 1950 road transport developed rapidly with substantial investment in the road network while the other modes of transport were neglected. During the plan period starting in1963, it did not change. In total public investment in the transportation sector the share of roads increased up to 80 percent and of airways to 10 percent, while the share of railways and the share of seaways decreased to 6 percent and to 4 percent respectively.

While Figure 1.5 shows the road map of Turkey, Table 1.13 provides basic data on road transportation. During 2010 total number of vehicles amounted to 15.1 million of which 7.5 million are passenger cars and 726,359 trucks. The road network, consisting of motorways, state highways and provincial roads but excluding rural roads, has as of 2011 2,119 km of motorways, 31,372 km of state roads and 31,558 km of provincial roads, amounting to a total of 65,049 km. Of this total, 20,273 km consist of divided roads, and the total length of roads having hot-mixed asphalt pavements capable of handling heavy axle loads stands at 13,680 km. While the share of road transport in total exports was 41.7 percent during 2010, the share of road transport in total imports amounted to 23.6 percent. In 2002, the Turkish government had set a target of 15,000 km of multi-lane highway networks; up to now, 2,119 km of divided motorways, 17,033 km of divided state highways, and 1,121 km of divided provincial roads have been completed.

Figure 1.5: Road Map of Turkey

Table 1.13: Basic Data on Turkish Road Transportation Sector

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Road Network									
Motorways (km)	1,753	1,662	1,667	1,908	1,908	1,922	2,036	2,080	2,119
State highways (km)	31,358	31,446	31,371	31,335	31,333	31,311	31,271	31,395	31,372
Provincial roads (km)	30,133	30,368	30,568	30,429	30,579	30,712	30,948	31,390	31,558
Total	63,244	63,476	63,606	63,672	63,820	63,945	64,255	64,865	65,049
Surface types of road network									
Asphaltic concrete (km)	8,683	8,692	8,747	9,112	9,314	9,926	10,717	12,277	13,680
Surface treatment (km)	50,218	50,461	50,302	50,159	50,619	50,305	49,782	48,929	47,912
Stone blocked roads (km)	132	136	133	135	158	168	180	212	212
Stabilized and crashed stone (km)	2,441	2,236	2,207	2,132	1,796	1,600	1,490	1,314	1,077
Earth roads (km)	1,018	1,214	1,329	1,226	947	862	783	782	721
Primitive roads (km)	752	737	888	908	986	1,084	1,303	1,351	1,447
Traffic									
Passengers (passenger - km)	164,311	174,312	182,152	187,593	209,115	206,098	212,464	226,913	242,265
Freight (ton - km)	152,163	156,853	166,831	177,399	181,330	181,935	176,455	190,365	203,072
Traffic accidents									
Accidents	455,637	537,352	620,789	728755	825,561	459,941	299,569	292,308	na
Deaths	3,966	4,428	4,525	4,633	5,007	4,236	4,324	4,045	na
Injured	128,689	152,214	154,094	169,080	189,057	184,468	201,380	211,496	na

Source: MTMAC website www.kgm.gov.tr

As modes of freight transport other than road are largely underdeveloped in Turkey, a great amount of pressure is put on the road infrastructure, which is in need of improvement. The percentage of roads in good or fair condition in Turkey is low in comparison to the 95 percent in good or fair condition of roads in Western European countries. Since 88.9 percent of freight transport is realized on roads, increases in freight transport rises heavy commercial vehicle traffic creating unsafe situations on the roads. According to MTMAC (2007) heavy loaded trucks make up 22 percent of total trucks, and trucks with excessive axle load 20 percent of heavy vehicles. In addition, the high density of heavy vehicle traffic leads to deterioration of road structures, and insufficient maintenance due to inappropriate management procedures is a serious road network problem. Thus, infrastructure development remains to be one of the key issues affecting Turkey's transportation sector.

Although road safety has improved during the last decade, road accidents remain a serious socio-economic problem in Turkey. In 2003, about 250,000 accidents were reported by police, of which there were 3,966 deaths and 117,268 injuries.[17] From 2003 to 2011, the number of accidents had been decreasing at an annual average rate of 2.5 percent. While the number of fatalities has been drastically reduced, the number of injuries has been increasing at about 1.3 percent per year. However, the current fatality rate in Turkey (8 fatalities/10,000 vehicles) is still about four times the average of the European Community (2 fatalities/10,000 vehicles). In 2010 a total of 1,104,388 road accidents have taken place in Turkey on urban and

[17] The death figures are underestimated as they do not include the deaths in the hospitals after the injured persons have been taken from the site of traffic accident to the hospitals.

intercity roads, with total casualties of 4,045 and the total number of injured reaching 211,496. Although fatalities per 100 million vehicle-km resulting from traffic accidents are decreasing, they are still high by international standards. According to World Health Organization (2009) the number of death per 100,000 vehicles was 13.4 in Turkey, while it was 9.3 in Spain and 6.0 in Germany. The reduction of fatalities over time has resulted from the introduction of air bags and seat belts in cars, and one of the most important goals in the divided road projects has been to decrease the number of traffic accidents through increasing traffic safety.

On the international level Turkey spends great efforts to establish transportation connections between Europe, Asia and Africa. Road network of Turkey is included in the Trans-European North-South Motorway (TEM) project, which is a regional transportation infrastructure project starting from Poland and reaches Asia via Turkey and also covers Middle East, Southeast European countries. TEM road network in Turkey starts at Bulgarian border, passes through Istanbul and parts into two branches in Ankara as eastward and southward. Eastern branch is again parted into two branches in Aşkale. One of them reaches Trabzon in Black Sea Region, the other ends in Gürbulak at Iranian border. The southern branch ends at Syrian and Iraqi borders. Turkey is also a party to the Agreement of Main International Traffic Arteries (AGR) within the United Nations Economic Commission for Europe (UNECE) framework. According to the provisions of AGR two arteries reach Turkey. These are E-80 entering from Bulgarian border at Kapıkule and E-90 entering from Greek border at Ipsala. These two main routes reach International Road Network of Middle East and Asia at southern and eastern borders of Turkey via Anatolia. On the other hand, the Trans Turkey Highway (TTH) starts at Bulgarian border. It passes through İstanbul, Gerede and Ankara, then it parts into two, one of its branches ends at Syrian border, the other ends at Iraqi border. Another branch starts in Gerede, passes through Refahiye, Erzincan and ends at Iranian border. TTH is connected to road network of Europe and Central Asia, and it is the shortest transit route between Central Asia, Western Asia and Northern Africa. Finally, Turkey's East-West TRACECA (transport corridor Europe-Caucasus-Asia) corridor provides efficient road connection between Europe and Asia. Major traffic is carried along the Trans-European Motorway, an extension of Pan-European Corridor IV from Bulgaria to Ankara.[18] Finally, note that Turkey is involved in the construction of Black Sea Ring Highway, which is planned to have 1,140 km of length and to pass through 12 Black Sea Economic Co-operation countries.

3.1.2 Rail Transportation

The first railway line in Turkey was the 130 km Izmir – Aydin line built in 1856 by a British company. Thereafter, the following railway lines were built on the territories of the then Ottoman Empire until the formation of the Turkish Republic in 1923: (i) Rumeli Railways, (ii) Rousse - Varna, (iii) Anatolia – Baghdad railways, (iv) Izmir – Kasaba, (v) Izmir – Aydin and its branches (610 km standard gauge), (vi) Damascus – Hama and its extensions, (vii) Jafa

[18] The European Commission's January 2007 communication, "Extension of the Major Trans-European Transport Axes to the Neighbouring Countries – Guidelines for Transport in Europe and Neighbouring Countries" to the Council and the European Parliament, focuses on linking the major axes of the trans-European networks with the transport networks of neighbouring countries. The Commission identified five major transnational transport axes and one of those concerns road transportation in Turkey. The "South-Eastern Axis" will link the EU with the Balkans and Turkey and further – with the Southern Caucasus and the Caspian Sea as well as with the Middle East up to Egypt and the Red Sea.

– Jerusalem, (viii) Bursa – Mudanya, (ix) Ankara – Yahsihan, and (x) Damascus – Medina. These railways were essentially privately financed. With the declaration of the Republic in 1923 Turkey inherited 4,138 km out of the 8,619 km of railway lines from the Ottoman Empire.

After 1923 a Turkish State company called 'Chemins de fer d'Anatolie Baghdad' was formed to take over the railways that were under German ownership and lying in Anatolia under Turkish control. On the other hand all railways belonging to the French or the British during the Ottoman period were returned after 1923 to their former owners. During the French occupation of Cilicia and Syria a separate company had been created by the French to take over the part of the Baghdad railways that was in the area controlled by the French. This company was reorganized when the French withdrew from Cilicia and part of the area was left to Turkey. In 1924 all of the railways in Turkey were nationalized. In 1927 ports were connected to railways and general Administration of State Railways and Ports were formed.

By 1938 the length of railway lines increased to the 7,153 km as a result of the railway oriented transport policies followed during the first years of the Republic. This policy was pursued until 1950s when the length of railways reached 9,204 km, and within the indicated period the share of railways in total transport sector increased to 42 percent for the passenger and 68 percent for freight. After 1950, a transport policy which focused mostly on road transportation was adopted. In 1953 Turkish State Railways (TCDD) was set up as a State Economic Enterprise, which had monopoly rights on any railways related activities. While during the first years of the Republic approximately 134 km of railway line was built per year, after 1950, average length of railway lines constructed per year decreased to 30 km.

The rail industry in Turkey is dominated by TCDD which is a state owned, vertically integrated company that not only deals with provision of infrastructure, but also with the supply of both freight and passenger services. It is responsible for operating and renewing railways, ports, and piers, guiding and coordinating affiliated companies, carrying out complementary activities regarding rail transport such as land transport that includes ferry operations. TCDD also manufactures rolling stock and similar vehicles, sets up warehouses and passenger facilities, and undertakes railway construction works as a contractor in Turkey as well as abroad. TCDD, affiliated with the Ministry of Transport, benefits from monopoly rights concerning the operation of railway services in Turkey. The three affiliated companies of TCDD are TULOMSAS (locomotive, motor and freight wagons), TUVASAS (passenger cars), and TUDEMSAS (railway machines and freight wagons). There are a total of four factories that are active in the railway sector, and they include a switch factory, two concrete sleeper factories, and a rail-welding factory. In 2006 TCDD established the HYUNDAI EUROTEM company in cooperation with the private sector to manufacture electric train sets, light rail vehicles, high speed train sets and high speed train passenger cars. The VOESTALPINE KARDEMIR Railway Systems Company was established by TCDD in 2010 to produce all types of switches suitable for conventional and high speed railways. In addition, TCDD owned large number of rather inefficient ports. In order to deal with congestion and inefficiencies, the operational rights of 13 public ports operated by the Turkey

Maritime Organization (TDI) were privatized several years ago, but the main ports are still operated by TCDD.[19]

Currently, the Turkish rail network comprises, as shown in Figure 1.6, roughly 8,770 km of mainlines, 2,342 km of branch and station lines, and 888 km of high speed lines. High speed rail track has been added from 2004 to 2009 as part of the connection Ankara – Istanbul and the initial step of building up a comprehensive high speed rail network. In Turkey 77 percent of the mainlines are single-track; 3,159 km of total lines are electrified and 3908 km of them are signalled. Electrified and signalled lines in overall lines are 26.3 percent and 32.6 percent respectively. During 2011 TCDD carried 26.2 million intercity passengers, 59.4 million suburban passengers, and 24.4 million tons of freight.

Figure 1.6: Rail Network

The railway services include passenger transport, freight transport, and port handling as shown in Table 1.14. The rail network is single track operation over 95 percent of the network. With respect to rolling stock there are as of 2007 15,384 active freight wagons, 20,387 active other type of wagons, 522 active diesel mainline locomotives and 67 active electric mainline locomotives, as well as 129 other locomotives (shunting locomotives, diesel multiple units, and electric multiple units).

[19] TCDD is still the port operator in Haydarpasa port, Derince port, Izmir port, Bandirma port, Samsun port, Mersin port,, Iskenderun port. On the other hand, the port of Tekirdag which was privatized was later returned to the public sector.

Table 1.14: Services offered by TCDD

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Passenger Transport (Million Persons)	48	50	51	52	60	81	79	80	84	86
Passenger Transport Revenue (Million Euro)	56	62	62	77	104	90	87	86	99	102
Freight Transport (Million Tons)	14.6	15.9	17.9	19.2	20.4	21	23	22	24	25
Freight Transport Revenue (Million Euro)	105	125	146	173	208	199	216	191	231	222
Port Handling (Million Tons)	36.3	41.5	46.7	44.6	50	37	30	26	20	15
Port Handling Revenues (Million Euro)	186	195	195	212	242	182	152	122	120	110

Source: Turkish State Railways (2012)

The Turkish Treasury, which is the major shareholder of TCDD, finances TCDD's capital and operating deficits, and MTMAC supervises it. TCDD receives compensation for duty losses on certain trains operated and railway lines kept open for social purposes. TCDD also receives compensation through the budget of the MTMAC budget for its cost of repair and maintenance of railway infrastructure. Together these payments make up the operating subsidy. Treasury also makes capital transfers to TCDD each year, which cover capital investment and TCDD staff costs. From time to time, Treasury also pays TCDD debts. The subsidies provided to TCDD simply cover TCDD costs. The subsidies to railways have been increasing substantially over time, and they will continue to increase in the absence of reforms.

Recently, the government of Turkey has given special attention and priority to railways among other transport modes, which has resulted in allocation of large amount of investment and new rail transport policy both in passenger and freight transportation. Approximately 10 billion US Dollars investment was allocated to railway infrastructure between the years 2002 and 2010.

Over the course of last 8 years, the TCDD has changed its freight transportation strategy and shifted to Block Train Operations from piece-by-piece transportation. 24.2 million tones freight was carried in 2010 and when it is compared with the transportation in 2002 freight transport has increased by 67 percent, and freight transport income was increased by 206 percent.

There are 452 km sidelines which enable the connection of 326 freight centers (such as Factory-organized industrial zones) with main railway network. In terms of type of goods carried; ore, coal, container and international transportation account for the 78 percent of total transportation. Moreover, transportation of goods such as automobile, construction materials, food products etc. which were not carried in 2002 are now being transported by block trains.

With regard to international transportation, block trains are operated reciprocally from Turkey to Germany, Hungary, Austria, Bulgaria, Romania and Slovenia in west and to Iran, Pakistan, Syria, Iraq in east, and to Turkmenistan, and Kazakhstan in Central Asia. In this scope, 191 block freight trains are operated reciprocally per day including 158 domestic and 33 international trains.

TCDD is also involved in international, intercity, regional and combined passenger transportation. 5.5 billion passenger-km was procured by transporting 22.3 million passengers in 2010. On the other hand, TCDD gives suburban services in Ankara and İzmir. 1,885 million passenger-km was procured in suburban passenger transportation by transporting 60 million passengers in 2010. High Speed Train (HST) operation between Ankara and Eskisehir was started in 2009 as the first step of Ankara-Istanbul High Speed Train project. Recently, the second HST operation started between Ankara and Konya.

3.1.3 Maritime Transportation

Turkey, located at the crossroads between Europe and Asia, is a peninsula country surrounded by the Black Sea in the north, the Aegean Sea in the west and the Mediterranean in the south. It sits on important transport routes through the strategic waterways of the Istanbul (Bosporus) and Çanakkale (Dardanelles) Straits, connecting the Black Sea and other northern countries to southern seas. Cargo coming from Europe and Americas are handled in transit to Commonwealth of Independent States (CIS) Republics, Iran, Iraq, and the Balkans and vice versa. Turkey's coastline is 8,333 km long, and the country's major industrial centres are on or near the sea. It is thus not surprising that 54.5 percent of the quantity and 75 percent of the value of goods exported by Turkey are transported over water. On the other hand 55.4 percent of the quantity and 93 percent of the value of goods imported by Turkey are transported through maritime transportation. Total loading and unloading in the maritime subsector including transit and cabotage cargo has risen from 213.1 million tons to 363.4 million tons in 2011, and in 2011 container handling reached 6.5 million TEU.[20] The share of Turkish flag vessels in total freight handled amounted to only 16.6 percent. The number of ships in the Turkish-owned shipping fleet (1000 GT and above) was 568 in 2002, whereas in 2011 it has become 1,165 by an increase of 105 percent.[21] Total tonnage of Turkish-owned fleet (1000 GT and above) was 9,329 million DWT in 2002, whereas it has reached 22,572 DWT in 2011 by an increase of 242 percent. Turkish-owned Merchant ships of 1,000 GT and over ranked 17th in the world in 2002, whereas it has ranked 15th in 2011.

Table 1.15: Basic Data on Turkish Maritime Sector

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Shipping Fleet									
Number of Turkish owned ships (1000 GT and above)	579	571	657	785	870	1,003	1,156	1,239	1,219
Total tonnage of Turkish owned fleet (1000 GT and above, 1000 DWT)	8,817	8,715	9,152	10,453	11,115	13,183	15,328	18,671	19,660

[20] "TEU" means "twenty feet equivalent unit."

[21] GT stands for gross tonnage. It is a measurement of total capacity expressed in volumetric tons of 100 cubic feet, and is calculated by adding the underdeck tonnage and the internal volume of tween-decks and deck space used for cargo

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Freight									
Total freight handled in Turkish ports (million tons)	189.91	213.11	213.03	244.00	291.57	314.61	309.44	348.64	363.35
Total container handling (million tons)	na	34.60	36.86	41.82	48.64	52.53	46.03	61.18	70.38
Total container handling (1000 TEU)	2,492.75	3,113.86	3,312.21	3,358.05	4,582.27	5,091.62	4,404.44	5,743.46	6,523.51
Total volume of exports handled in Turkish ports									
Turkish owned ships (million tons)	12.82	12.67	11.30	9.82	9.80	10.65	9.58	11.62	12.27
Foreign owned ships (million tons)	33.24	42.45	43.20	53.49	58.86	62.59	64.19	72.32	69.50
Share of volume of exports handled by Turkish owned ships in total volume of exports (percent)	27.83	22.98	20.73	15.51	14.28	14.55	12.98	13.84	15.01
Total volume of imports handled in Turkish ports									
Turkish owned ships (million tons)	30.36	29.24	31.58	32.79	27.19	21.15	20.39	28.87	30.12
Foreign owned ships (million tons)	72.57	91.80	94.59	106.61	126.21	130.40	119.48	133.72	143.43
Share of volume of imports handled by Turkish owned ships in total volume of imports (percent)	29.50	24.16	25.03	23.52	17.72	13.96	14.58	17.76	17.36

Note: 'na' stands for not available.
Source: MTMAC (2012)

There have been important developments in the Turkish shipbuilding sector in recent years. Shipbuilding has evolved to an internationally recognized industry. The industry has modern, quality certified shipyards that can build ships, yachts, mega-yachts, and sailing boats, as well as carrying out extensive repair and conversion works. As of 2011 there are 70 active shipyards, while another 56 were reported to be in the process of being built. Turkey's shipyards are mainly located in the Marmara Region, namely Tuzla, Yalova, and İzmit. Turkish shipyards are considered to be highly ranked in the world in the production of small tonnage chemical/oil tankers and also of mega yachts.[22]

Turkey is the world's fifth largest ship recycler, and it is the largest outside South-Asia and China. Most of the ships that are recycled are primarily from the EU countries. Turkey is chosen as the recycling country as it complies with ship recycling standards. Ship recycling and dismantling takes place mainly in İzmir Aliağa located in the Aegean Region. Turkey is one of the five major ship recycling countries in the world.

Concerning ports we note that there are about 160 ports in Turkey, both privately and publically owned, servicing domestic and foreign trade. More than 100 of the ports are private, the rest being about equally split between the Government and Municipalities. 20 ports were originally controlled by Turkish Railways (TCDD), and the remaining public ports by Turkey Maritime Organization (TDI). As of 2011 five of the main ports remain under the

[22] See Organization for Economic Co-operation and Development (2011).

management of TCDD, namely those of Samsun, Haydarpasa, Derince, Bandirma, and Iskenderun. The ports of Hopa, Giresun, Ordu, Rize, Sinop and Tekirdag owned by TDI were awarded to private operators in 1997. The port of Antalya was privatized in 1998, followed by the ports of Alanya and Marmaris in 2000. The ports of Cesme, Kusadasi, Trabzon and Dikili owned by TDI were sold or offered under concession in 2003.

In 2004, the Privatization Higher Council planned tenders for the remaining TCDD ports. These include the most important container ports of Mersin, Izmir, Haydarpasa and Iskenderun. In 2005, the joint venture of the Singapore based PSA International and the Turkish construction company Akfen submitted the highest bids for both Mersin and Iskenderun. But, the Competition Board rejected the plan arguing that the joint venture securing both concessions would curtail competition. The concession contract on Mersin was signed in 2007 with the Turkish Privatization Authority. Privatization of Iskenderun Port has not been completed yet. On the other hand, Izmir port was tendered in 2007. The highest bidder was a consortium consisting of Hutchinson Port Holdings together with some Turkish firms. But the deal has fallen through. The port will be re-tendered for privatization. A consortium under the leadership of Turkey's Turkeler Group had launched a bid for the port of Derince.

In Turkey there are specialized ports such as container ports. There are four major container ports, Haydarpasa, Ambarli, Izmir and Mersin. Except Ambarli, the other three ports are operated as mentioned above by TCDD, and Izmir port is included in the privatization portfolio. Haydarpasa Port is not included in the portfolio since it will be part of a tourism complex project. On the other hand, Pendik Ro-Ro Terminal meets approximately 50 percent of ro-ro traffic, and Autoport in Izmit is expected to meet 25-30 percent of total car handling. Moreover, Aliağa, Samsun and Ceyhan regions meet the traffic of oil and its derivatives; Kusadasi, Istanbul, Izmir and Marmaris ports meet the large portion of the cruise passenger traffic.

3.1.4 Air Transportation

The first aviation activity in Turkey started in 1912 as an establishment of two hangars and a small runway in Sefaköy, situated nearby the current Atatürk Airport in Istanbul. It soon became the Yeşilköy flying school. ''Turkish Aeroplane Association'' was established in 1925, and the name was changed later to ''Turkish Aeronautical Association'' (THK). In 1933, the first civil air transport company ''Turkish Air Mails'' started its operations with a small fleet of 5 aircraft. During the same year 'State Airlines Administration' was established under the Ministry of National Defense, whose mission was to establish civil air routes and provide civil air transport. Air transport between the principal cities of Turkey for commercial purposes began using aircraft which were bought previously for military purposes.

In 1938 the status of 'State Airlines Administration' was changed to 'Directorate-General for State Airlines', and it was attached to the Ministry of Reconstruction. In 1943 the rapid development of transport services in civil aviation made it necessary to attach the DG to the Ministry of Transport. But further developments in civil aviation showed that entrusting the management of aerodromes and of aircrafts to the same body had to be given up. As a result the functions were separated. 'Civil Aviation Department' has been founded in 1954 attached to the Ministry of Transport. In 1956 air transport was reorganized and the new company operated under a special legislation as Turkish Airlines (THY) with a capital of 60 million TL, while the administration of aerodromes, ground services, air transport, air traffic control

and aeronautical communications was placed in 1956 under the responsibility of the 'Directorate-General for State Airports Authority'.

In 1987, the 'Civil Aviation Department' has been restructured as ''Directorate-General for Civil Aviation'' (DGCA) under the Ministry of Transportation. The 'State Aviation and Airports Management Authority' (DHHMİ) was established in 1983. In 1984 an aerodrome operating company with limited responsibility was established attached to DHHMI but with its own legal personality. The Decree-Law No. 233 of 1984 reorganized the financial companies of the State, and closed DHHMİ and the aerodrome operating company under it. The assets, receivables and liabilities of DHHMI and of the attached operating company were ceded to the 'State Airports Management Authority' (DHMI).

On the other hand THY, the predominant provider of passenger and freight services in Turkey's air transport sector, was classified as a State Economic Enterprise in 1984 and its capital was raised. In 1994 the Turkish Airlines Corporation was redefined as a State Economic Enterprise under the jurisdiction of the Privatization Administration. By 2006, 49 percent of Turkish Airline shares belonged to the Privatization Administration in order to be privatized, and 51 percent were offered to the public. The privatization of THY led to substantial cuts in costs. Turkish Airlines Annual shows that domestic passenger numbers almost doubled while the number of international customers more than doubled. In 2011 THY increased its sales by 40 percent to 11.8 billion TL ($7.07 billion) and booked an operating profit of TL 339 million ($203 million). Owing mainly to the effects of non-operational items, net profit amounted to TL 19 million ($11.4 million). While THY in 2010 flew to 42 domestic and 132 foreign airports, in 2011 it added 21 new destinations with the number reaching 196 of which 44 are domestic and 152 are international. With the addition of 21 new destinations in 2011, that the total number of destinations reached 196 of which 44 are domestic and 152 are international. On the other hand, Turkish Airlines' fleet, which numbered 65 at the beginning of 2004, has reached 179 as of end-2011, and 19 new aircrafts are expected to be added to the fleet in 2012.

Liberalization of air transport services started in 1981. Within this context Turkish airports have been restructured. They are the first transport facilities that have been established as Build-Operate-Transfer (BOT) projects. The tender for the Antalya Terminal 1 was the first Public Private Partnership (PPP) of the Turkish State Airport Authority. The private partners have been responsible for financing the projects. To attract investors to join airport PPPs, the Turkish government has provided demand guarantees, shifting the business risk to the public sector and protecting the bidders for airport PPPs from the risk of losses. Since in the cases of Antalya Terminal 1 and Istanbul Atatürk Terminal actual traffic exceeded the minimum traffic levels guaranteed by the government from year one onwards the parties did not resort to them.

Government's withdrawal from the commercial activities in air transport sector started in 1986 with the government's withdrawal from the catering and handling services. 70 percent of Plane Services Inc (USAS) shares have been privatized by block selling in 1989, with the remaining 30 percent share being privatized later in October 1993. Airports Ground Handling Services Inc. (HAVAS) has been privatized by block selling of the shares, 60 percent in 1995 and 4th remaining 40 percent in 1998.

Turkey has had a tremendous development in the civil aviation sector during the last decade since the start of liberalization of air transport services in 1981. Over the period 2002-2011,

traffic has increased by 150.1 percent. While domestic flights during the same period increased by 268 percent, international arrivals and departures increased by 110.5 percent. In fact, the total number of passengers increased from 33.8 million in 2002 to 117.3 million in 2011 as shown in Table 1.16. Of this total 58.3 million in 2011 were domestic and 59 million international passengers whereas the number of domestic passengers was 8.7 million in 2002 and of international passengers 25.1 million. The increase in the number of controlled flights is expected to continue in the near future. Although the traffic growth rate is expected to amount to 2.1 percent per annum for Europe as a whole over the period 2012-2018, a growth rate of 5.9 percent is expected for Turkey. It should also be underlined that the traffic volume is higher in the summer period due to tourism activities. The following figures further illustrate the growth in the sector. In 2002, there were 150 large aircrafts in Turkish fleet compared to the 349 aircrafts in 2011. In 2002, total numbers of transit flights, domestic flights, and international flights were 156 thousand, 158 thousand and 218.6 thousand respectively. On the other hand, in 2011, total number of transit flights was 290.3 thousand, international flights 460.2 thousand, and domestic flights were 581.3 thousand. Thus, the total number of flights had increased from 532.5 thousand in 2002 to 1.3 million in 2011. In 2002, near 793 thousand tons of cargo were carried by air. 181.3 thousand tons of this amount was domestic and 611.7 thousand tons were international. In 2011, domestic cargo jumped to 715.6 thousand tons and international cargo reached 1.6 million tons. The total was 2.3 million tons.

Table 1.16: Air Transport Statistics

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of large aircrafts	150	162	202	240	259	250	270	300	332	349
Freight carried domestic lines(tonne)	181,262	188,936	262,647	315,858	373,055	414,192	399,213	484,833	555,871	715,603
Freight carried international lines (tonne)	611,691	775,101	901,559	979,644	971,344	1,131,890	1,135,091	1,241,512	1,467,350	1,617,594
Total freight carried	*792,953*	*964,037*	*1,164,206*	*1,295,502*	*1,344,399*	*1,546,082*	*1,534,304*	*1,726,345*	*2,023,221*	*2,333,197*
Domestic air traffic (unit)	157,953	156,582	196,207	265,113	341,262	365,117	385,764	419,422	496,865	581,271
International air traffic (unit)	218,626	218,405	253,286	286,867	286,139	323,471	356,001	369,047	420,596	460,218
Overflight (Transit) Traffic	155,952	154,218	191,056	206,003	224,774	247,099	268,328	277,584	294,934	290,346
Total Traffic	*532,531*	*529,205*	*640,549*	*757,983*	*852,175*	*935,687*	*1,010,093*	*1,066,053*	*1,212,395*	*1,331,835*
Number of passengers domestic lines	8,729,000	9,147,000	14,461,000	20,529,000	28,774,000	31,949,000	35,832,000	41,227,000	50,517,000	58,329,000
Number of passengers international lines	25,054,000	25,296,000	30,596,000	35,042,000	32,880,000	38,347,000	43,605,000	44,281,000	52,189,000	59,018,000
Total number of passengers	*33,783,000*	*34,443,000*	*45,057,000*	*55,571,000*	*61,654,000*	*70,296,000*	*79,437,000*	*85,508,000*	*102,706,000*	*117,347,000*

Source: Directorate General of Civil Aviation, General Directorate of State Airports Authority

With deregulation and liberalization in the sector, several private airline companies have entered the market in recent years. Currently, the largest airline companies are Onur Air, Atlas Jet, Pegasus, and Güneş Express. Today, there are 15 airline companies of which three are cargo operators in the Turkish civil aviation sector. As of 2011, Turkey has 67 airports. The major international airports are Atatürk in Istanbul, Antalya international terminals, Esenboğa in Ankara and Adnan Menderes in Izmir. While 24 of the 67 airports serve domestic and international flights, 31 airports are used for domestic flights, and 12 airports have special status.

The total number of passengers carried grew by 15.1 percent and reached 22.6 million in 2008. In addition, cargo carriage increased by 8.0 percent to 203,000 tons. The freight carried by domestic and international lines has continuously grown until 2008. However, freight volumes then declined in 2008 due to the effects of the global financial crisis. Although domestic airfreight volume is smaller than international airfreight, it is growing faster. The compound annual growth rate between 2004 and 2008 has been 7.1 percent for freight carried by international lines and 11.0 percent for freight carried by domestic lines.

4. CONCLUSION

In this chapter, we analysed the current transport infrastructure in Poland and in Turkey. Emphasis was placed on understanding the quality of logistics and of transportation services as well as the quality of transport infrastructure in general.

Poland like many non-market economies in Central and Eastern Europe had relied before the transition towards the market economy initiated in 1989, on public transportation provided by large, public enterprises. Rail transportation system was operated by PKP, which had a monopolistic position. In the same way the passenger road transportation was performed by another large state-owned enterprise PKS. The number of private motor cars in Poland was extremely small by Western European standards. The role of air transport was negligible and monopolized by the state carrier LOT.

The situation in Poland changed dramatically after transition in early 1990s. The introduction of market economy and currency convertibility boosted the market for imported passenger cars. The large state-owned enterprises were split and transformed into public or private enterprises. In Poland, like in all Central and Eastern European countries, rail transport's share of the modal split has decreased sharply. In the freight transport market, rail's share dropped from over 50 percent to just under 27 percent between 1995 and 2005, while rail's share of passenger transport fell from 15 per cent to just 8 per cent between 1995 and 2004. At the same time, the share of road transport increased dramatically, compensating for the drop in railway transportation.

The increased demand for road transportation services and a surge of private traffic revealed that the existing road transportation infrastructure was a considerable bottleneck. The larger demand for air passenger transportation services was restricted by both the limited number of airports and their insufficient capacity in major cities. On the other hand, the drop of demand for railway passenger and cargo services and underinvestment in maintenance and modernization of the existing network reduced the competitiveness of the railway transport even further. A similar phenomenon has been observed in the case of the maritime sector. In addition, liberalization of the economy revealed two great weaknesses of Polish maritime

infrastructure: remoteness from the main oceanic traffic routes and underdeveloped transport connections with the main domestic business centres. The relative drop in demand for maritime services was related to the liberalization of Poland's trade with the EU within the framework of the Europe Agreements signed in 1991 and the accession to the EU in 2004. In comparison to other international ports in the Baltic Sea region, Polish seaports do not lag behind in terms of the range and quality of services provided. However, the main obstacle to gaining on international importance is the limited quality and throughput of the access to the port facilities.

Only in the recent years some major investments in motorways, airports and high-speed railway lines have been undertaken with the support of the EU structural funds. The improvement in the quality of the transport infrastructure in Poland can be expected in the following decades.

Turkey, in contrast to Poland, has been a market economy throughout the whole post-war period and has been associated with the EU since the 1960s. The major modernization efforts in the field of transport infrastructure development have been initiated in the 1990s. Turkey's transport sector has been growing relatively fast over the last decade. The transport system in Turkey relies essentially on road transportation, similar to Poland. Currently, the network of motorways in Turkey is roughly as large as its Polish counterpart and it is planned to be expanded by threefold in the following decade. On the other hand, the railway network in Turkey remains still underdeveloped despite the attempts of the government to change the modal shift between roads and railways in favour of the railway sector by doubling the capacity of the railway infrastructure.

Unlike in Poland, maritime transport plays an important role in development of international trade in Turkey due to its geographic location between Europe and Asia and the length of the coastline. Therefore, it is thus not surprising that over 50 percent of the quantity and 75 percent of the value of goods exported by Turkey are transported over water.

Turkey's transport sector has been growing not only in terms of its size but also in terms of quality of the network. According to the quality indexes for transport infrastructure Turkey ranks above Poland in the quality of its roads, railways, ports and air transport infrastructure, but is below old EU member states.

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CHAPTER 2

REGULATORY FRAMEWORK IN ROAD FREIGHT TRANSPORTATION

Road transport represents between 2 and 6 percent of countries' gross domestic product and employment, depending on the structure of their transport networks, and the geography. Studies show that freight transport by road is the principle mode of freight transport for a large number of countries. According to Eurostat (2011), road haulage measured in tonne-kilometres represents 46.6 percent of Europe's freight transport. While road haulage activity has increased by 31.3 percent from 1995 to 2009, other modes of transport's road haulage activity on land has decreased during the same time period.

In the 1980's, many countries turned to liberalization of road freight transport sectors for improving the safety, security and efficiency of transport operations and development of efficient transport networks. Liberalization requires first the harmonization of rules and regulations in the sector with those of the major trading partners, and second the removal of any legal or administrative provisions restricting market access and commercial presence.

The paper is structured as follows. While Section 1 discusses the functioning of road freight transportation sector, barriers to trade, and what liberalization of the sector entails, Section 2 considers the international rules and regulations in the road freight transportation sector. Section 3 covers the European Union (EU) rules and regulations, Section 4 the Turkish rules and regulations, and Section 5 the Polish rules and regulations in the sector. Finally, Section 6 concludes.

1. ROAD FREIGHT TRANSPORTATION SERVICES

The road freight industry is geared to distribution, logistics and basic physical transport. As emphasized by Boylaud (2000), it is a key sector of the economy, playing a major role in market integration and having a direct impact on transaction costs for economic agents. WTO Secretariat (2001) emphasizes that because of the downstream nature of road transport activity, the steadily increasing complexity of production methods and the generalization of just-in-time production, road transport has considerable impact on GDP and employment.

The road freight transportation industry is divided into two segments. While the first segment consists of a large number of small firms providing basic transport services, the second segment incorporates a limited number of major hauliers providing more sophisticated logistics services. Firms in the first segment compete mainly in prices, and barriers to entry into the sector are low because in general little start-up capital is needed. This segment of the sector is competitive as it has small economies of scale with low entry and exit costs. On the other hand, firms in the second segment compete in both prices and in the range and quality of services. Here, economies of scale are important, and increasing use is being made of information and communications technologies such as electronic data transfers and tracking systems as they enable hauliers to provide better quality services to a much wider range of destinations.

For shippers of manufactured goods, freight rates and reliability of meeting arrival times at destination according to Londono-Kent (2009) are the most important attributes. On the other hand, avoidance of damage or deterioration, communication with respect to problems, and frequency of service turn out to be also important, but to a lesser extent than freight rate and reliability.

According to the Final Resolution of the XXVIth Congress of the International Road Transport Union held at Marrakesh on March 20, 1998, there are different types of barriers to cross border trade in road freight transportation services. The first of these barriers is the blocking of roads and motorways as a result of political conflicts. As examples of these blockings consider the closure of borders between Lebanon and Syria on the one hand and with Israel on the other hand; and the closure of borders between Morocco and Algeria. These problems are in general very complex. Although the resolution of them is important, as it represents a prerequisite for enabling any kind of border crossings to be made, we abstract from consideration of these problems and turn to consideration of the second type of barriers to border crossing. These barriers are considered under the headings of standardization of documents required at the customs, customs declaration and clearance procedures, and infrastructure and equipment at border points. In addition, there are other barriers related with access to profession, vehicle standards, driver's working conditions, and checks and sanctions.

Regarding the level of standardization of documents, we note that the use of the single administrative document (SAD) by customs authorities facilitates trade. The SAD constitutes a standard form that can be commonly shared by all involved border authorities, thereby enabling significant time savings to be made in crossing the borders and clearing cargo. In the EU, the SAD is used within the framework of trade with third countries and for the movement of non-EU goods within the EU. It is aimed at ensuring openness in national administrative requirements, rationalizing and reducing administrative documentation, reducing the amount of requested information and standardizing and harmonizing data. On the other hand, regarding the automation and computerization of customs declaration and clearance procedures we note that large number of countries make use of Information Technology (IT) packages. But as long as these packages do not support the implementation of modern risk management techniques and are not linked to the overall port management systems, they do not allow Electronic Data Interchange (EDI) interaction to be made with the service providers and economic operators such as the freight forwarders and customs. As a result, the actual rate of inspections at the customs continues to be much higher than the rate in the countries where these facilities are used.

While the rate of inspections at the customs is about 2 percent in the EU, the rate in other countries not using the facilities is much higher. When different parties involved in the process of clearing cargo could be connected through IT and EDI, then full automation of customs declarations, cargo manifests, drawings illustrating cargo distribution on board ships, cargo invoices, certificates for payment of taxes and duties, and certificates issued by the monitoring authorities could be achieved. Furthermore, the infrastructure and equipment at border points may often be insufficient or in need of upgrading. The main issues here are the lack or underdevelopment of offices for the inspection and control agents, laboratories, warehouses, road approaches to the border, border gates, vehicle parking areas, reliable electricity and power sources, and reliable telecommunications services. Elimination of all these shortfalls would improve the efficiency of customs services and procedures and decrease the barriers to trade in road freight services. According to World Trade Organization

(WTO) Secretariat (2001), the annual cost of these barriers has amounted to 1 to 7 percent of total transport costs in Western Europe and between 8 to 29 percent of total transport costs in Central and Eastern Europe.

The regulation of issues such as market access and prices in the road freight transportation sector has been motivated in a large number of countries by concerns that competition could cause instability and lead to bankruptcies in the sector. Furthermore, according to Boylaud (2000), the main rationales for regulating the road freight business relate to road safety, the environment and infrastructure congestion. In a world where countries have different regulatory regimes in the road freight transportation sector, often have little interest in each other's regulatory regimes, often have little confidence in the quality of other countries' regulatory regimes, and are in general reluctant to change their own regulatory regimes, achieving liberalization of road freight transportation services is a challenging task. As long as the qualifications of different countries differ substantially and the associated complying costs are country-specific, they become market-entry costs, and they may turn out to be prohibitive hampering exports and investment.

Historically, the transport sector has had many regulations with respect to entering and exiting the market as in the case of Mexico prior to 1989. During that period, Mexico had extreme degree of rigid regulation in the road freight transportation sector with a high degree of government interference. As emphasized by Dutz et al. (2000), "important government-imposed barriers to competition included entry restrictions to operate on federal highways, discretionary allocations of freight among truckers, and strong restrictions on moving cargo outside the established transport corridors. Official tariffs applied to all cargo and a semipublic company held a monopoly in handling containers. Regulations did not allow companies to charge higher rates for better service and hence no incentive to offer better services. Neither did they allow them to compete with one another by offering lower rates. As a result, the trucking industry was characterized by a limited number of firms operating with minimal competition. Moreover, to maintain this highly inefficient and archaic system, the government employed a sizeable bureaucracy." Thus, the effect of restrictions on itineraries or distances, the need to pass through freight centers, the impossibility of transporting a load on the return journey was to diminish the productivity of the undertakings. These undertakings were protected from the full effects of competition, and as a result, they could enjoy higher returns. Hence, the consequence of quantitative regulations was to limit gains in productivity and technical and organizational innovations, thereby preventing a downward trend in transport prices, whether in relative or in absolute terms. With liberalization, all these restrictions were eliminated. Currently a license or permit is required in most countries to set up a new road freight company, as well as registration. When deciding on the entry of new operators requirements such as financial soundness, moral soundness and public safety requirements are taken into consideration, and decisions are made on a transparent basis.

In principle, countries can choose to liberalize the markets for road freight transportation services unilaterally by adopting and implementing international norms. Alternatively and also simultaneously, countries can use multilateral engagement through negotiations under WTO's General Agreement on Trade in Services (GATS). Finally, the third alternative to liberalization of services is through regional cooperation.

Unilateral liberalization of the markets for services may lead to efficiency gains, but liberalization in this case can be constrained if the country cannot on its own gain improved access to larger foreign markets. On the other hand multilateral approach to services

liberalization under GATS may lead not only to efficiency gains but also to improved access to larger foreign markets, and to reduction of compliance costs.

The above considerations reveal that liberalization of services whether pursued unilaterally, or through multilateral engagement and alternatively through regional cooperation is a challenging task. Consider the case of two trucking companies, a Turkish trucking company established in Turkey and a German trucking company established in Germany. The Turkish company is subject to Turkish rules that regulate market access, competition, prices, fiscal conditions, social conditions, technical conditions, and safety in road freight transportation sector in Turkey. Similarly, the German company is subject to German rules that regulate market access, competition, prices, fiscal conditions, social conditions, technical conditions, and safety in road freight transportation sector in Germany. Before the achievement of liberalization of trade in road freight transportation services between the two countries, suppose that Germany is satisfied with its own regulatory regime, that rules are implemented strictly in Germany, and that German rules and regulations are in general much stricter than those in Turkey. In such a case how can the two countries achieve liberalization of trade in road freight services?

If Turkey wants to liberalize its road freight transportation services, Turkey could adopt and implement international norms. If Turkey adopts and implements these norms and Germany determines that Turkey is indeed implementing those norms, will trade in road freight transportation services be liberalized between the two countries? The answer is no, as long as the norms of Germany are much stricter than the international norms. Let us first be clear about what liberalization of road freight transportation services between Turkey and Germany entails.

We say that road freight transportation services between Turkey and Germany are liberalized if there are no restrictions on the operations of the Turkish and German trucking companies between the two countries (cross-border supply). Turkish trucking company should be able to carry freight between e.g. Istanbul and Frankfurt, and also between Frankfurt and Istanbul freely. Similar condition should apply for the German trucking company. Liberalization further requires that no restrictions are placed on freight transportation by the Turkish company between e.g. Frankfurt and Vienna, and no restrictions are placed on freight transportation by the German company between e.g. Istanbul and Antalya. In addition, liberalization requires that there should be no restrictions on the establishment of Turkish trucking companies in Germany, and no restrictions on the establishment of German trucking companies in Turkey (commercial presence). Finally, liberalization requires that Turkish road freight transportation service providers or Turkish employees of the Turkish trucking company should be able to move freely for relatively short periods (movement of natural persons) from Turkey to Germany and also within the EU. Similarly, German road freight transportation service providers or German employees of the German trucking company should be able to move freely for relatively short periods from Germany to Turkey and within Turkey.

Under the assumptions introduced liberalization of trade in road freight transportation services between Turkey and Germany will be achieved if Turkey would adopt and implement strictly all of the German rules and regulations in the road freight transportation sector, and Germany would determine that this is indeed the case. Thus, generalizing from this simple case we note that liberalization of services involves the reduction of regulatory barriers to market access and discriminatory national treatment across all four modes of supply of GATS, namely cross

border supply, consumption abroad, commercial presence, and movement of individuals.[23] The focus is to ensure that existing regulations do not discriminate against foreign participation in the markets of domestic and foreign countries. Moving to a non-discriminatory regulatory regime can thus require significant changes in how some service sectors are currently regulated in the particular country under consideration.

2. INTERNATIONAL RULES AND REGULATIONS

There are two broad categories of regulations: regulations on traffic and vehicles and regulations on the operation of the market. The first category includes the vehicle standards, highway codes, labor regulations, regulations on social conditions, regulations on the carriage of hazardous substances and traffic restrictions. The second category covers mainly market access conditions and price regulations.

The vehicle regulations concern the regulations on how motor vehicles should be manufactured. They are numerous and apply to a great many technical points such as fittings, roadworthiness tests, and to the specific characteristics of the vehicles. The United Nations Economic Commission for Europe (UNECE) has set up a Working Party on the Construction of Vehicles (Working Party 29 (WP29)) in 1953 and agreed upon its first regulation in 1958. The 1958 UNECE Agreement and Regulations under it set out the technical norms with which road vehicles must comply. The scheme was, as emphasized by Braithwaite and Drahos (2000), such that if e.g. a German factory would get approval from the German government to manufacture vehicles of a design, other European states would grant mutual recognition to the type approval. The job of WP29 was to ensure that the grounds for type approvals in different states converged sufficiently to make mutual recognition acceptable. Recently European Commission helped to develop new standards. Once the Commission decides on a standard that can be agreed among the experts in its member states, then a member state is delegated to take it to WP29. In this way the European Commission uses WP29 to attempt to globalize a direction for standards.

Because hauliers move internationally, there is a strong need to standardise those aspects of national road freight transportation rules and regulations that are related to the international operation of hauliers. These rules and regulations are developed besides the European Conference of Ministers of Transport (ECMT) through the United Nations Economic Commission for Europe (UNECE), and the World Trade Organization (WTO).

2.1 European Conference of Ministers of Transport and the International Transport Forum

The ECMT, an inter-governmental organization established by a Protocol signed in 1953, was a forum 6 in which Ministers responsible for transport, and more specifically the transport sector, could co-operate on policy. Its role primarily consisted of (i) helping to create an

[23] In general cross-border supply is analogous to trade in goods, and arises when a service crosses a national frontier, for example, air or maritime transport across borders. Consumption abroad occurs when the consumer travels to the territory of the service supplier, for example, when purchasing tourism, education or health services, or a visit to a law office abroad. Commercial presence involves foreign direct investment, for example, when a foreign bank, telecommunications or electricity firm establishes a branch, subsidiary or plant in the territory of another country. Finally, movement of natural persons occurs when independent service providers or employees of a multinational firm temporarily move to another country for business consulting or construction.

integrated transport system throughout the enlarged Europe that is economically and technically efficient, meets the highest possible safety and environmental standards and takes full account of the social dimension, and (ii) helping to build a bridge between the EU and the rest of the continent at a political level. Over the fifty years of its operation ECMT has developed a set of agreements and resolutions on general transport policy, market integration, trade facilitation, road freight transport, intermodal transport and logistics, infrastructure, and road safety, to which countries can subscribe to. According to the rules accepted by the international community individual transport operations may be undertaken without authorization in any ECMT Member country.[24] But the vast bulk of European international transport, outside the EU, is subject to authorization. Transport operations other than individual transport operations, to or from countries that do not belong to the EU, require an international transport license of which there are two distinct types: (i) the "bilateral" license, which may be used both for transport on own account and for transport for hire or reward, and (ii) the ECMT multilateral license, only available for transport for hire or reward.

The purpose of bilateral licensing agreements is to ensure the right balance of traffic between transport operators from the concerned countries. The agreements establish the authorized annual number of journeys. The contracting states exchange blank licenses, which each issues to its transporters on behalf of the other. Bilateral licenses cover the activity of both own account transport operations and public transport operations. Moreover, these licenses are the only ones to which own-account operators are entitled for carriage outside the EU. Bilateral licenses cover the major part of transport between two countries when one of them is not an EU Member. Bilateral licenses can be valid for a return journey undertaken within a given time (a maximum of 3 months from the date of issue), or for a period of one year and an indeterminate number of journeys. Moreover, it may turn out that the foreign issuing country only makes a certain license valid for transit, whereas others make them valid for both the return journey and/or transit. The bilateral licenses, granted according to the principle of reciprocity, present the apparent advantage for the issuing countries of enabling them to control the flow of traffic and, in principle, of producing a certain balance of national operators.

On the other hand a quota for multilateral permits was put in place in 1974 to the benefit of undertakings engaged in regular carriage for hire or reward between ECMT Member States. Over time, changes were made to the ECMT license system in order to accommodate environmental standards for eligible vehicles, and the number of licenses has increased, but only slightly. ECMT licenses are not applicable to transport between EU Member States. The ECMT licenses, when they do not contain qualifications, may be used for all public road haulage operations, including transit but excluding carriage within a country, on all

[24] The list of individual transport operations comprises: (i) transport of vehicles that are damaged or have broken down, (ii) unladen runs by a vehicle sent to replace a vehicle that has broken down and also the return run, after repair, of the vehicle that had broken down, (iii) transport of goods by motor vehicle whose total permissible laden weight, including trailers, does not exceed 6 tonnes, or whose permitted payload, including that of the trailers, does not exceed 3.5 tonnes, (iv) transport of supplies to meet medical and humanitarian needs, (v) transport of goods, on an occasional basis, to airports in the event of services being diverted, (vi) transport of works and objects of art for fairs and exhibitions or for non-commercial purposes, (vii) transport for non-commercial purposes of properties, accessories and animals to or from theatrical or circus performances, (viii) transport of spare parts and provisions for ocean-going ships and for aircraft, (ix) funeral transport, (x) transport of livestock in special purpose-built or permanently converted vehicles for the transport of livestock, recognized as such by the Member Countries' authorities concerned, and (xi) transport of goods on own account

infrastructures connecting ECMT Member countries that subscribe to the system.

As emphasized by Bernadet (2009) the basic quota for ECMT licenses in 2009 came to a total of 6 090 licences allocated to ECMT member countries determining the number of licenses for different vehicle types and their duration. The percentage allocation by vehicle type in line with environmental standards was 49 per cent for Euro III vehicles, 40 per cent for Euro IV vehicles and 11 per cent for Euro V vehicles; annual licenses account for 97 per cent of the total quota and 30-day licenses for the remaining 3 per cent. It is difficult to measure the scale of transport performed by ECMT licenses, based on the availability and quality of existing statistics. Furthermore, the share of transport performed by hauliers operating with ECMT licenses in total international transport between ECMT Member countries has been estimated by International Transport Forum (2009) to amount to five percent, share of transport performed by hauliers operating with ECMT licenses from non-EU Member countries in international transport between EU Members 0.33 percent, and the share of transport performed by hauliers operating with ECMT licenses from EU Member countries in international transport between non-EU Members 0.9 percent. Since 1 January 2006, ECMT licenses can only be used for transport operations after a laden trip between the country of registration and another ECMT member country. Vehicles can only make three laden trips before they must return to the country of registration, either laden or unladen. The measure is aimed at preventing a vehicle roaming throughout Europe and exploiting the international haulage market and thereby subverting, by practicing intra-European cabotage". Other solutions in the same vein have been envisaged and indeed temporarily adopted, such as the obligation that a vehicle return to its country of registration within a period of 6 weeks.

The ECMT was transformed into the International Transport Forum (ITF) in 2006 as new members from non-European countries were invited "in order to address transport issues on a global level and for all transport modes, and to create a public platform for a broad policy dialogue".[25, 26] As of 2012 ITF has 53 members. The aim of the Forum is to foster a deeper understanding of the essential role played by transport in the economy and society. The ITF Group on road Transport took over the ECMT responsibilities involving the management of the Multilateral Quota of freight transport licenses. In addition, ITF organizes an annual summit aimed at policy debate but also serves as a think-tank for policy-makers and the global transport community.

2.2 United Nations Economic Commission for Europe

The United Nations Economic Commission for Europe (UNECE) Inland Transport Committee, since its creation in 1947, has been working towards the facilitation of international transport while improving its safety and environmental performance. There are almost 56 international agreements and conventions that provide the international legal and technical framework for the development of international transport in the UNECE region. These international legal instruments, some of which are applied also by countries outside the

[25] The current ITF (2012) members are: Albania, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Canada, Chile, China, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Former Yugoslav Republic of Macedonia, Georgia, Germany, Greece, Hungary, Iceland, India, Ireland, Italy, Japan, Korea, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, Moldova, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, USA, Morocco (Observer)

[26] http://www.internationaltransportforum.org/about/about.html

UNECE region, address a wide array of transport issues which fall under the responsibility of Governments and which have an impact on international transport. This includes coherent international infrastructure networks, uniform and simplified border-crossing procedures and uniform rules and regulations aimed at ensuring a high level of efficiency, safety and environmental protection in transport. Some of the important international conventions that have an impact on facilitating the crossing of borders include the Convention on Customs Containers, the Convention on Harmonizing the Frontier Control of Goods, the Convention on Customs Pool Container, the Convention on the International Carriage of Dangerous Goods by Road, and the Agreement on the International Carriage of Perishable Foodstuffs.

UNECE produced also the TIR Convention, the most recent provisions of which entered into force on February 17, 1999. The Convention has 64 Contracting Parties, including the European Community (EC), and covers the whole Europe and reaches out to North Africa and the Near and Middle East. The United States of America and Canada are Contracting Parties as well as Chile and Uruguay in South America. The TIR customs transit procedure permits the international carriage of goods, as long as a road leg is involved, in international journeys from a customs office of departure to a customs office of arrival, through as many countries as necessary, without any intermediate frontier control of the goods carried. This facilitation of international goods transport requires a number of measures to be fulfilled and applied by customs authorities and transport operators. They include the use of customs-approved vehicles and containers, the use of the TIR Carnet as an international customs document, the provision of an international TIR guarantee and the mutual recognition of customs control measures in the countries involved.

2.3 World Trade Organization

The WTO commitments provide important forum for the liberalization of road freight transportation services, and the negotiations at the WTO are of significant relevance to road freight transport's fortunes. Although the WTO document W/120 identifies five subcategories under road services (passenger, freight, rental, maintenance and supporting services), many countries have given commitments using the more detailed United Nation's Central Product Classification (CPC) classification that distinguishes 25 types of road transportation services. The freight transportation is distinguished into seven types consisting of road transport services of freight by refrigerator vehicles, road transport services of freight by tank trucks or semi-trailers, road transport services of containerized freight by trucks equipped with a container chassis, road transport services of freight by man- or animal-drawn vehicles, moving services of household and office furniture and other goods, road transport services of letters and parcels, and other road transport services of freight.

In the case of freight\ transportation 25 countries according to WTO Secretariat (2001) have given commitments within the context of WTO multilateral negotiations. Table 2.1 shows the market access commitments by modes of supply. The table reveals that for freight transportation the most liberalized mode is mode 2 (consumption abroad), where full commitments have been given in four fifths of cases. In the case of mode 4 (movement of natural persons) all countries preferred to remain unbound except as indicated in the horizontal commitments. In more than three quarters of cases there are no commitments in the case of mode 1. Only five Members have taken full commitments for mode 1 (cross border trade) and there are two cases of partial commitments. Mode 3 (commercial presence) is evenly split between full commitments and partial commitments. Restrictions listed are typically economic need test, foreign ownership restrictions, incorporation required,

nationality of the board of directors, citizenship requirement, authorization required but not extended to foreign-registered vehicles, emergency safeguards on the number of services suppliers, services operations and services output, and limitations on the use of leased vehicles. Only two Members have undertaken no commitments for this mode.

Table 2.1: Analysis of Commitments Made by Members on Road Transport Services (Number of Full, Partial and Non-Commitments by Subsector and by Mode of Supply)

Market access	Cross-border supply			Consumption abroad			Commercial presence			Presence of natural persons		
(Number of Members with commitments)	F	P	N	F	P	N	F	P	N	F	P	N
Urban and suburban regular transportation CPC 71211	8	0	9	13	0	4	9	7	1	0	17	0
Urban and suburban special transportation CPC 71212	8	0	9	13	0	4	10	6	1	0	17	0
Interurban regular transportation CPC71213	11	1	13	21	0	4	13	11	2[1]	0	25	0
Interurban special transportation CPC 71214	8	0	10	14	0	4	11	6	1	0	18	0
Other scheduled passenger transportation CPC 71219	8	0	9	13	0	4	11	5	1	0	17	0
Taxi services CPC 71221	9	0	12	17	0	4	12	8	1	0	21	0
Rental services of passenger cars with operator CPC 71222	9	0	15	20	0	4	12	11	1	0	24	0
Rental services of buses and coaches with operator CPC 71223	10	1	14	21	0	4	15	9	1	0	25	0
Passenger transportation by man- or animal-drawn vehicle CPC 71224	8	0	13	17	0	4	12	8	1	0	21	0
Other non scheduled passenger transportation CPC 71229	8	0	12	16	0	4	12	7	1	0	20	0
Transportation of frozen or refrigerated goods CPC 71231	5	2	20	22	0	5	14	12	2[2]	0	27	0
Transportation of bulk liquids and gases CPC 71232	5	2	17	20	0	4	12	11	2[3]	0	24	0
Transportation of containerized freight	5	2	19	21	0	5	12	13	2[4]	0	27	0

CPC 71233												
Transportation of furniture CPC 71234	5	2	19	21	0	5	14	11	2[5]	0	26	0
Mail transportation CPC 71235	4	1	15	16	0	4	10	9	2[6]	0	20	0
Freight transportation by man- or animal-drawn vehicle CPC 71236	5	1	15	17	0	4	9	10	2[7]	0	21	0
Transportation of other freight CPC 71239	5	1	17	19	0	4	11	10	3	0	23	0
Rental services of commercial freight vehicles with operator CPC 7124	7	1	1	9	0	0	8	0	1	0	9	0
Maintenance and repair of motor vehicles CPC 6112	9	0	13	21	0	1	16	3	3	0	22	0
Repair services not elsewhere classified of motor vehicles, trailers and semi-trailers on a fee or contract basis CPC 8867	7	0	1312*	19	0	1	15	2	3	0	20	0
Bus station services CPC 7441	4	0	1	5	0	0	4	0	1	0	5	0
Highway, bridge and tunnel operation services CPC 7442	4	0	1	5	0	0	4	0	1	0	5	0
Parking services CPC 7443	4	0	1	5	0	0	4	0	1	0	5	0
Other supporting services for road transport CPC 7449	4	0	1	5	0	0	4	0	1	0	5	0

F: Full commitment (indicated by 'none' in the market access column)
P: Partial commitment (limitation recorded in the market access column of the schedule)
N: No commitments
[1] EU counted twice as a specific restriction by a Member State appears in another column
[2] – [7] Idem

In the case of national treatment for freight transportation we note that there are few specific restrictions: requirement of establishment in the country concerned to provide cabotage services, prior approval, cargoes confined to containerized cargoes to be exported or imported, and requirement on established entities to use vehicles with national registration.[27] Finally, the MFN exemptions have an important bearing on the extent of the commitments

[27] "National treatment" requires that once products have entered the market, they must be treated no less favourably than the equivalent domestically produced products.

undertaken.[28] Out of the 25 countries having given commitments on freight transportation, ten also have one or more MFN exemptions regarding cargoes. Five members including the EU have felt it necessary to lodge separate exemptions for preferential fiscal treatment on VAT, vehicle tax and income tax. In other instances the preferential tax treatment has been combined with cargo-sharing provisions in a single derogation, either by mentioning the preferential tax treatment specifically or by referring more generally to the operating conditions. The cargo–sharing provisions are mainly bilateral, although there are cases where they are regional or both bilateral and regional. In six cases they are unilateral and in five of those cases they are based on reciprocity. In nearly all cases they cover all countries and existing and future agreements, although sometimes accompanied by a detailed list of beneficiaries.

As far as auxiliary road transport activities are concerned, rental services of commercial freight vehicles with operators have been offered by only a few Members but with nearly no restrictions. Finally, supporting services for road transport covering bus station services/highways, bridges and tunnel operation services, and parking services have attracted very few commitments.

3. EUROPEAN UNION RULES AND REGULATIONS

Although the Treaty of Rome, Title V, Article 71 provides for the freedom to supply international inland transport services by road by 1969 at the latest, the objective could not be achieved for a relatively long period. In 1969 the Council approved the creation of multilateral licenses, and these were to be phased in to replace the bilateral licenses that regulated cabotage among member countries until 1969. When it came to increasing the number of licenses the Council proved reluctant. It took a ruling by the Court of Justice in 1985 to start the liberalization process, and the Single European Act of 1986 intensified the efforts. As a result, liberalization of the road freight transportation sector in Europe was made possible only through the single market reform in 1993, when the quota restrictions were abandoned on January 1, 1993. As the main objective in the EU is to create a single open market with freedom of establishment and freedom to provide services through liberalization, the main concerns were market access, competition, and the harmonization of legislation. Therefore, EU regulations aim to ease entry into the market, and liberalize the prices and supply of transport. Attention is being paid to moving toward a functionally homogeneous transportation system that can take safety, efficiency, social conditions, and environmental factors into account. Thus, the objective of the EU road transport policy is to create a competitive, safe and efficient transport system with minimal environmental effects. But, in the EU non-EU firms in general do not have the same rights as the EU firms. In the case of foreign firms a number of limitations apply. For example, cabotage in the EU was fully liberalized only in July 1998, but it applies only to EU member states and excludes non-member countries. Finally, we note that although state ownership is becoming a relatively minor phenomenon, there are nevertheless several countries with state-controlled companies operating in the road freight haulage sector. Often they are subsidiaries of state-owned companies in other sectors, such as the railways or post office and they concentrate on only a few activities.

[28] MFN stands for "most favoured nation". According to MFN clause, members are bound to grant to the products of others treatment no less favourable than that accorded to the products of any other country.

The main international rules that regulate commercial operations and practices, and safety have been transposed into the Community law, ensuring that they have legal force and uniform application throughout the Member States. EU countries have been founding members of the UNECE and ECMT. Thus, EU is party to most of the rules and regulations developed by ECMT as well as to various UNECE conventions and agreements. In this context it should be emphasized that the EU is party to the Convention on Harmonizing the Frontier Control of Goods, the Convention on Customs Pool Container, the Convention on the International Carriage of Dangerous Goods by Road, the Agreement on the International Carriage of Perishable Foodstuffs, and the TIR Convention. As emphasized by the European Commission (2007) the EU intends to replace 38 Community Directives by the equivalent of UNECE international regulations.

Turning to WTO road transportation services commitments made by the EU and shown in Table 2.2 we note that for 'cross border' supply (mode 1) no commitments have been made in the case of passenger transportation, freight transportation, storage and warehouse services, and other transport services; and no limitations have been placed in the cases maintenance and repair of road transport equipment, freight transport agency/freight forwarding services, and pre-shipment inspection. While in the case of consumption abroad (mode 2) no limitations have been placed, different restrictions have been placed for 'commercial presence' (mode 3) on 'market access' in the cases of passenger transportation and freight transportation. No limitations for 'commercial presence' (mode 3) have been placed on maintenance and repair of road transport equipment, services auxiliary to all modes of transport, and other transport services. Finally, mode 4 (movement of personnel) for all cases does not diverge from the pattern 'unbound except as indicated in the horizontal commitments'

Table 2.2: Specific Commitments by European Communities in Road Transportation Services

Mode of supply:	Market access				National treatment			
Cross border	1				1			
Consumption abroad		2				2		
Commercial presence			3				3	
Presence of natural persons				4				4

Commitments (■ full; ◨ partial; □ none; − not in the Schedule)

Road Transport Services										
Passenger Transportation (CPC 71213 + 7122)			■	□	◨	■	■	□	■	■
Freight Transportation (CPC 7123)			■	□	◨	■	■	□	■	■
Maintenance and Repair of Road Transport Equipment (CPC			□	□	□	■	□	□	□	■

6112)										
Services Auxiliary to all Modes of Transport										
Storage and Warehouse Services (CPC 742) (other than in ports)			■	□	□	■	■	□	□	■
Freight Transport Agency/Freight Forwarding Services (CPC 748)			□	□	□	■	□	□	□	■
Pre-Shipment Inspection (CPC 749)			□	□	□	■	□	□	□	■
Other Transport Services										
Land Transport, Provision of Combined Transport Service			■	□	□	■	■	□	□	■

3.1 Market Access and Competition

Historically, the liberalization of road transport sector in the EU started with the 1985 White Paper that stressed the importance of freedom to provide services and outlined the Community Common Transport Policy. Three important guidelines were accepted: having a free market by 1992, increasing bilateral as well as Community quotas, and eliminating distortions to competition. Infrastructure development, decreasing border controls and bureaucracy, and improving safety by the end of 1992 were also outlined as goals in the 1985 White Paper. As emphasized above, all quantitative restrictions, Community and bilateral quotas were abolished starting on January 1, 1993. The international transport of goods between Member States was liberalized with Council Regulation 881/92. According to the regulation, a road transport operator that works among at least two Member States must obtain a Community license which gives the operator the right to access to the whole market with no quantitative restrictions. The conditions to obtain this license are set forth in the same regulation. It should be noted that own account transport and small vehicles of less than 3.5 tons do not require such a license.

According to the Regulation (EC) No 484/2002 amending the Council Regulations No 881/92 every driver from a non-EU country driving an EU operator's vehicle while carrying out cross-border haulage activities within the Union must carry the correct driver attestation. It is a uniform document certifying that the driver of a vehicle carrying out road haulage operations between Member States is lawfully employed by the Community transport operator concerned in the Member State in which the operator is established, or lawfully placed at the disposal of that operator. This document enables inspecting officers in all the Member States to check the employment status of drivers carrying out transport operations between Member States in Community vehicles and with a Community license, thereby helping the authorities to combat effectively the use of irregularly employed drivers and the resulting distortions of competition.

The process of liberalization took longer for road cabotage where a non-resident carrier holding a Community License can transport goods, on 'a temporary basis', from two points which are in a Member State. This was fully liberalized for freight transport in 1993 with Council Regulation 3118/93. Liberalization on 'a temporary basis' means that it is not continuously carried out. Council Regulation 3916/90 put forth measures that are to be taken in the event of a crisis in the market in the carriage of goods by road. With the implementation of deregulation measures the road haulage market in the EU has become very competitive, integrated, and efficient. The cabotage regime was extended to the EFTA countries on 1 July 1994 with the exception of Austria, which joined the EU on January 1, 1997, and Switzerland. Following the accession to the EU on May 1, 2004 restrictions have been lifted for hauliers from Cyprus, Malta and Slovenia as well. But the other new Member States were to enjoy the right to cabotage services after a transitional period. There were anxieties in the sector about the possible adverse effects of running cabotage services.[29] The transitional period expired in 2009.

In May 2010 the Regulation No 1072/2009 on common rules for access to the international road haulage entered into force repealing Regulations 881/92 and 3118/93. The aim of the new Regulation is to improve the efficiency of road freight transport by reducing empty trips after the unloading of international transport operations. Article 8 of the new Regulation provides that every haulier is entitled to perform up to three cabotage operations within a seven day period starting the day after the unloading of the international transport. Under the new rules, any carrier performing the carriage of goods by road for hire or reward is entitled to carry out cabotage operations on the territory of EU Member States, if he holds a Community license. If the driver is a citizen of a third country, he has to hold a driver attestation. The cabotage services can be delivered in any member state, however they are limited to 1 in 3 days following the unloaded entry to a given member state. In has to be noted that carriers are permitted to carry out national transport services within a Member State only on a temporary basis, without having a registered office or other establishment therein.

Lately, Directive 2006/1/EC has laid down the conditions for hiring vehicles for international road transport. According to the Directive such vehicles must comply with the laws of the Member State of origin and be driven by the personnel of the undertaking using them.

The harmonization of rules regarding access to the profession is outlined in Directive 96/26/EC based on Article 75 of the Treaty. According to the Directive good repute in the exercise of business, being a road haulage operator requires minimum financial standing, and professional competence. This involved a policy that replaces quantitative licensing with qualitative criteria for allowing access to the road transport market. Given that road haulage undertakings are subject to numerous rules which affect the safety of other road users, an operative who is certified as professionally competent is one who is familiar with all these rules and is also able to manage a company. Good repute means that entrepreneurs who have few scruples about disregarding the law may be excluded from the occupation, while good financial standing ensures that they have the capital required to continue managing the undertaking and maintaining the vehicles, so that any practice that might endanger safety is prevented. The directive requires that each Member State must accept the documents issued

[29] These focused on potentially unfair competition from lower-wage countries that could undercut operators who have to bear with greater costs in a more tightly regulated environment.

by another Member State stating that these conditions are fulfilled. The scope of this Directive excludes the operators of vehicles with a laden weight below 3.5 tons. Regular checks at least every five years ensure that undertakings continue to satisfy these three criteria. The criteria are justified as they halt the proliferation of unscrupulous firms seeking to gain market share by skimping on safety; achieve greater harmonization of standards between Member States, particularly as regards levels of financial standing required and the standard of professional competence expected; facilitate the establishment in other Member States and the mutual recognition of professional status; and improve the overall professional standing and quality of road transport.

The Directive 96/26/EC was repealed in 2009 by Regulation 1071/2009 with the aim of promoting fair competition between road transport companies and improving the level of professional qualification of staff. According to the Regulation every road transport undertaking shall designate a transport manager who shall be responsible for continuously managing the transport activities of the undertaking. Undertakings wishing to engage in the occupation of road transport operator are obliged to have an establishment with an operating center where it can keep all of the documents required for the pursuit of business, and one or more vehicles registered in accordance with national legislation. In addition, the undertaking and the manager shall be deemed to be of good repute. The undertaking shall not have infringed Community rules in fields such as the driving time and rest periods of drivers; the roadworthiness of commercial vehicles; safety in the carriage of dangerous goods by road; and driving licenses. Finally, the undertaking must be able to meet its financial obligations. It must have at its disposal, every year, capital and reserves totalling at least EUR 9 000 when only one vehicle is used, increased by EUR 5 000 for each additional vehicle, and the manager of the undertaking shall have passed a compulsory written examination which may be supplemented by an oral examination.

It should be noted that access to transport market not only requires looking at services and access to infrastructure, but also involves the development of traffic control systems such as the road traffic control. Only by establishing non discriminatory access to infrastructure can the goal of increasing efficiency and competition be met, and the non discriminatory access must be applicable to all current and potential service providers, as grandfather rights used by incumbents can play a devastating role on increasing competition. The traffic control systems are not just an aspect of safety but are integral to properly allocating infrastructure capacity, and also play a crucial role in the relationship between operation and infrastructure. Finally, we note that the EU countries have been using the SAD for almost two decades. Furthermore, the IT packages in use in the EU support the implementation of modern risk management techniques, they are linked to the overall port management systems, and they allow Electronic Data Interchange interaction to be made with the services providers and economic operators such as the freight forwarders and customs. In addition, the infrastructure and equipment at border points are on the whole sufficient.

3.2 Prices and Fiscal Conditions

Road transportation is projected to continue to increase, and there is universal recognition that it is not possible to increase the road supply in relation with the forecasted increases in traffic unless financing issues are solved. Most countries that have built high performance and access-controlled highway systems have either financed their expressways by general tax revenues or through toll receipts. But most countries have used both systems of finance to some degree, and almost every country that uses tolls requires that a parallel untolled route be

available to motorists, even though the alternative is usually not built to expressway standards.

The Common Transport Policy based on the principle of 'sustainable mobility', where 'sustainable mobility' refers to maximizing efficiency in terms of energy, time, and distance, while internalizing external costs of infrastructure, environment, operation, upkeep, congestion, and accidents. The system of 'sustainable mobility' and internalizing the average variable costs required the development of a new approach to fiscal issues, and the Green Paper of December 1995 put forth taxation as one of the important solutions to this problem.[30] The Green paper stated that internalizing costs would improve traffic, safety, environment, and remove distortions in competition. On the other hand, the White Paper of 1998 emphasized a range of issues including the need to manage transport capacity more efficiently, to finance transport infrastructure, and the need to improve the efficiency of the transport sector by means of institutional reform involving deregulation and privatization.[31]

According to the objective of 'sustainable mobility' outlined in the Common Transport Policy, EU maintains that charges for infrastructure should reflect the marginal social cost. Hence, users should incur both internal costs such as fuel, driver's time, wear and tear as well as the external costs consisting of operating, infrastructure, congestion, environmental, and accident costs. According to Button (1990) the environmental external cost of road transport as a percentage of GDP is much higher than that of other modes. Charging vehicles for external costs will discourage them from taking trips where the benefits don't exceed the total social cost. This would decrease demand for congested roads, and increase efficiency thereby helping to solve problems of congestion.

It is emphasized that transport is the main cause of 50 percent of nitrogen oxide emissions, which forms nitric acid and leads to acid rain. Internalizing such costs not only aids in improving traffic conditions, but is also environmentally sound as it will reduce emissions. When considering external costs we must also look at the combination of noise, air pollution, congestion delays, and aesthetic factors. Estimates show that if the external costs of road transport were internalized, it would increase operating costs as emphasized by Button (2002) by about 20-33 percent. Therefore the 1998 White Paper sets out to internalize the externalized costs with a step by step approach, where the objective was to harmonize the charges in transport across all Member States, where individuals would participate in funding the road systems and cover the marginal social costs. The aim here is that harmonization due to liberalization will also be in accord with social aspects, safety measures, and environmental concerns. Furthermore, it should be noted that the aim of internalizing costs is not to increase the cost of transport, but to make sure that costs are apportioned properly while external costs are incurred across all transport modes to avoid distortions of competition. It is also important to state that while the internalization is based on marginal social cost, a multi-tier charging system should be designed to incorporate taxes based on factors such as emissions. Given the projected continued dominance of road transport, one has to consider also besides pricing other options such as making the mode of transport more environmentally friendly through initiatives that will encourage the use of less harmful fuels, and adopting cleaner technologies.

[30] See European Commission (1995).
[31] See European Commission (1998).

The Directive 1999/62/EC (Eurovignette Directive) based on Article 71 and article 93 of the EC Treaty sets forth the rules for harmonizing requirements on heavy goods vehicles taxes for use on infrastructure. The Directive covers vehicle taxes, tolls and user charges imposed on vehicles intended for the carriage of goods by road and having a maximum permissible gross laden weight of not less than 12 tons. By the 2006 revision, this threshold will fall by the year 2012 to 3.5 tons. According to the directive tolls should be levied according to the distance traveled and type of the vehicle, and user charges should relate to the duration of the usage of the infrastructure. Tolls and user charges may vary according to congestion and vehicle emission class. As a general rule, distance-based tolls and time-based user charges shall not be applied on the same stretch road. Both tolls and user charges can only be imposed on users of motorways or multi-lane roads similar to motorways as well as on users of bridges, tunnels and mountain passes. National tolls and charges should be non-discriminatory, and should be easy for the motorist to understand, so as to avoid unnecessary hold-ups and problems at toll boots. Mandatory checks at the EU's internal borders should also be avoided. The Directive 2006/38/EC amending the Directive 1999/62/EC establishes a new Community framework for charging for the use of road infrastructure. The Directive lays down rules for the application by Member States of tolls or user charges on roads, including roads on the trans-European road network and roads in mountainous regions, and the Directive will apply from 2012 onwards to vehicles weighing between 3.5 and 12 tons. According to the Directive Member States are able to differentiate tolls according to a vehicle's emission category ("EURO" classification) and the level of damage it causes to roads, the place, the time and the amount of congestion.[32] Hence, this makes it possible to tackle the problems of traffic congestion, including damage to the environment, on the basis of the "user pays" and "polluter pays" principles.[33]

3.3 Social Conditions

With liberalization and the creation of a free market, certain social, technical, and safety conditions need to be harmonized in the EU in order to be able to have 'sustainable mobility'. Harmonization of social conditions includes the harmonization of maximum working times, installing necessary technical components, and eliminating controls on frontiers.
Regulation 561/2006 is on harmonizing certain social legislation with respect to road transport. Its aims are to improve road safety by limiting driving times, improve working conditions, and harmonize the conditions across Member countries. It sets out the rules for maximum daily and fortnightly driving times, daily and weekly minimum rest periods for road haulage as well as for passenger transport vehicles.[34] According to the Regulation drivers

[32] EU legislation on emissions from new motor vehicles has been in force since 1970. Since 1993 this has been mandatory for Member States. Standards requiring the use of catalytic converters on petrol cars first came into force in 1993 with EURO I, which was replaced by EURO II in 1997. Even stricter standards have been agreed, with EURO III and EURO IV, coming into force in 2001 and 2006 for passenger cars and in 2002 and 2007 for light commercial cars. Catalytic converters result in marked reductions of CO, NO_x and hydrocarbon emissions from petrol-driven cars, and more efficient catalytic converters will ensure compliance with future, more stringent, standards. For heavy-duty vehicles, standards relate to emissions of CO, HC, NO_x and PM. The first standards came into force in 1990 with EURO 0, which was replaced by EURO I and EURO II, in 1993 and 1996. Proposals for EURO III, IV and V for 2001, 2006 and 2009 are currently being discussed.

[33] For recent developments on estimation of external cost in the transport sector see CE Delft (2007)

[34] The maximum daily driving period is 9 hours, with an exception of two days of the week it can be 10 hours, where the driver may drive for 6 days a week. Total driving time must not be more than 56 hours, and total fortnightly driving time must not be more than 90 hours. The driver must rest for at least 11 hours a day, with an exception of 9 hours three times a week. There is a stipulation for a split rest of 3 hours followed by another 9

age must be at least 18; daily driving time among others should not exceed nine hours while twice a week, the driving time may be extended to ten hours; weekly driving time shall not exceed 56 hours; total driving time during any two consecutive weeks shall not exceed 90 hours; and after driving for four and a half hours a driver shall take an uninterrupted break of not less than 45 minutes or of 15 minutes followed by 30 minutes over the same period. The Regulation also stipulates that a digital tachograph be fitted in all new vehicles that go into service for the first time, starting May 1, 2006. This has a very wide ranging scope, where it includes national as well as international transport, long as well as short distance, own account transport as well as for hire, and employees as well as those who are self employed. On the other hand, Council Regulation 3821/85 concerns the recording equipment in road transport, primarily the analogue tachograph, which records driving time, breaks, and rests. Council Regulation (EC) 2135/98, amending the regulation, requires the use of the fully digital tachograph, which is more reliable and which includes a printer for roadside inspections. On the other hand Directive 2006/22/EC lays down the minimum conditions for implementation of Regulation 3821/85 regarding amount of road side inspections of driving time, rest period, breaks and checks at the premises of undertakings. Finally, Directive 2002/15 regarding the working time of those persons performing road transport activities, sets forth the minimum requirements for working time in order to improve road safety as well as the health of workers, and it defines working time, place of work, night work, and maximum working week.

3.4 Technical Conditions

Harmonization of technical conditions dealing with issues such as tread depth of tires, installation of speed limitation devices, maximum authorized weights and dimensions, roadworthiness tests for vehicles, technical roadside inspection, and registration documents for vehicles, concerns interoperability, safety and environmental issues. Council Directive 89/459 sets forth the conditions with respect to the tread depth of tyres in certain categories of motor vehicles and their trailers, where the minimum tread depth in main grooves must be 1.6 mm in vehicle categories M1, N1, O1, and O2.[35] On the other hand Council Directive 92/6 with environmental and safety concerns at hand regarding heavy goods vehicles and busses,

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hours (totalling 12 hours) a day. Weekly rest is 45 hours (continuous), which can be brought down to 24 hours, where one 45-hour-rest must be taken every two weeks. Breaks are at least 45 minutes (where that can be broken up into 15 and 30 minutes) and should be taken every four and a half hours.

[35] In Council Directive 70/156/EEC of 6 February 1970 the categories are specified as follows:

Category M1 : Vehicles used for the carriage of passengers and comprising no more than eight seats in addition to the driver's seat.

Category M2 : Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum weight not exceeding 5 metric tons.

Category M3 : Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum weight exceeding 5 metric tons.

Category N : Motor vehicles having at least four wheels, or having three wheels when the maximum weight exceeds 1 metric ton, and used for the carriage of goods. - Category N1 : Vehicles used for the carriage of goods and having a maximum weight not exceeding 3 75 metric tons.

Category N2 : Vehicles used for the carriage of goods and having a maximum weight exceeding 3 75 but not exceeding 12 metric tons.

Category N3 : Vehicles used for the carriage of goods and having a maximum weight exceeding 12 metric tons.

Category O : Trailers (including semi-trailers) - Category O1 : Trailers with a maximum weight not exceeding 0 775 metric ton.

Category O2: Trailers with a maximum weight exceeding 0 775 metric ton but not exceeding 3 75 metric tons.

Category O3 : Trailers with a maximum weight exceeding 3 75 but not exceeding 10 metric tons.

Category O4 : Trailers with a maximum weight exceeding 10 metric tons.

puts forth the necessary installation and use of speed limitation for M2, M3, N2, and N3 categories of vehicles. The directive further stipulates that M2 and M3 vehicles can have a maximum speed of 100 km/h, and N2, N3 vehicles can have a speed limit of 90 km/h. The directive was later amended by Directive 2002/85/EC.

Council Directive 96/53/EC puts forth the maximum dimensions that are authorized for M2, M3, N2, and N3 categories of vehicles in national and international traffic, as well as the maximum authorized weights in international traffic.[36] According to the Directive any vehicles or vehicle combinations exceeding the maximum dimensions may only be used on the roads if a special authorization has been received, and Member States will take any action needed in order to ensure that vehicles are provided with one of the three following proofs (i) a "manufacturer's" plate supplemented by a plate concerning dimensions; or (ii) a single plate containing the data from the two plates referred to above; or (iii) a single document issued by the competent authority in the Member State in which the vehicle is registered or was placed in service, and which contains the same data as those on the other plates.

Council Directive 96/96/EC states that Member States must conduct periodic roadworthiness tests for vehicles and trailers registered in the Member State, and the test will have mutual recognition by other Member States. These inspections should be carried out once a year for heavy vehicles, and at least every other year for light vehicles and passenger cars. The directive was later amended by Directive 2009/40/EC harmonizing the frequency of roadworthiness tests and detailing which parts of motor vehicles must be tested.[37] Finally, we have the Directive 2000/30/EC setting out legal framework for roadside roadworthiness checks on commercial vehicles. These checks are unannounced checks on a commercial vehicle travelling within an EU country comprising a check on the documents relating to the compliance of the vehicle with a technical roadside inspection and a check to uncover poor maintenance. In this instance, the inspector should take the most recent documents and any other safety certificate into consideration. If the results of a roadside check show that a commercial vehicle does not meet the standards set out in the directive, the use of that vehicle on the public highway will immediately be banned.

EU legislation on emissions from new motor vehicles have been in force since 1970s. Since 1993 this has been mandatory for Member States. Standards requiring the use of catalytic converters on petrol cars first came into force in 1993 with EURO 1, which was replaced by EURO 2 in 1997. Even stricter standards have been agreed, with EURO 3 and EURO 4, coming into force in 2001 and 2006 for passenger cars and in 2002 and 2007 for light

[36] Maximum length of motor vehicle is 12 meters, articulated vehicle 16.5 meters, road train is 18.75 meters. Maximum width of a vehicle is 2.55 meters, while conditioned vehicles are 2.6 meters. Maximum weight is 40 tonnes for road train or articulated vehicle with 5-6 axles, 44 tonnes for a motor vehicle with 3 axles that has a semi trailer (2-3 axle) that transports a 40 foot ISO container (combined transport).

[37] Annex I of the Directive 2009/40/EC details the categories of motor vehicles that will be subject to roadworthiness tests and the required frequency of the tests for each category. On the other hand Annex II of the Directive sets out which items must be compulsorily tested. According to the Annex the compulsory test items include vehicle identification; braking equipment; steering; visibility; lighting equipment and parts of electric system; axles, wheels, tyres and suspension; chassis and chassis attachments; other equipment – safety belts, fire extinguisher, locks and anti-theft device, warning triangle, first-aid kit, speedometer, etc; nuisance – noise, exhaust emissions, etc; and supplementary tests for public transport vehicles – emergency exit(s), heating and ventilation systems, seat layout, interior lighting. Vehicles passing the test will be certified, and all EU countries will mutually recognize the proof issued.

commercial cars. For heavy-duty vehicles, standards relate to emissions of carbon monoxide (CO), hydrocarbon (HC), nitrogen oxides (NO_x) and particulate matter (PM).

Directive 2005/55/EC laying down limit values for emissions of gaseous and particulate pollutants and for opacity of exhaust fumes has been amended by Regulation 715/2007. The Euro 5 standards as specified in this Regulation state that emission limits from diesel vehicles should be as follows: carbon monoxide: 500 mg/km; particulates: 5 mg/km indicating 80 percent reduction of emissions in comparison to the Euro 4 standards; nitrogen oxides (NOx): 180 mg/km indicating 20 percent reduction of emissions in comparison to the Euro 4 standard; and combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km. On the other hand emissions from petrol vehicles or those running on natural gas or LPG should be as follows: carbon monoxide: 1 000 mg/km; non-methane hydrocarbons: 68 mg/km; total hydrocarbons: 100 mg/km; nitrogen oxides (NOx): 60 mg/km indicating 25 percent reduction of emissions in comparison to the Euro 4 standard; and particulates for lean burn direct-injection petrol vehicles: 5 mg/km. Finally, the Euro 6 standards state that all vehicles equipped with a diesel engine are required to substantially reduce their emissions of nitrogen oxides as soon as the Euro 6 standard enters into force. In this context, emissions from cars and other vehicles intended to be used for transport will be capped at 80 mg/km indicating an additional reduction of more than 50 percent compared to the Euro 5 standard. Combined emissions of hydrocarbons and nitrogen oxides from diesel vehicles are also to be reduced, and will be capped at 170 mg/km for cars and other vehicles intended to be used for transport.

Regulation 715/2007 covers vehicles of categories M1, M2, N1 and N2. According to the Regulation the Euro 5 standard came into force on September 1, 2009 for the approval of vehicles, and shall apply from 1 January 2011 for the registration and sale of new types of cars. On the other hand the Euro 6 standard will come into force on September 1, 2014 for the approval of vehicles, and from January 1, 2015 for the registration and sale of new types of cars.

Finally, Directive 2006/40/EC aims to cut back the emission of fluorinated greenhouse gases used in air condition systems in motor vehicles, and Directive 70/157/EEC lays down similarly limits for the noise level of the mechanical parts of the exhaust systems of vehicles with design speed exceeding 25 km/h. The sound level limits range from 74 dB(A) for motor cars to 80 dB(A) for high powered goods vehicles.

3.5 Road Safety

According to European Commission (2003) each year more than 40 000 people die in the EU-15 as a result of road accidents and 1 700 000 are injured, and the total cost to society corresponds to about 2 percent of EU GNP. Although there has been improvements in safety overall, the situation was considered as socially unacceptable. As a result the Commission proposed that the EU should set itself the target of halving the number of road deaths by 2010. Studies revealed that the main causes of accidents are excessive and improper speed, the consumption of alcohol and drugs or fatigue, failure to wear seatbelts, lack of sufficient protection provided by vehicles in the event of an impact, non-compliance with driving and rest times, poor visibility of other users, and poor road infrastructure. Since many of the road safety improvements could be achieved by complying with existing rules, the communication aims to encourage road users to improve their behaviour through better compliance with existing legislation. Furthermore, it emphasizes making vehicles safer through technical harmonization and support for technical progress, and improving road infrastructure. In 2010

the Commission (2010) proposed to maintain the target of halving the overall number of road deaths between 2010 and 2020 by setting the objectives of improving education and training of road users, increasing enforcement of road rules, safer road infrastructure, safer vehicles, promoting use of modern technology to increase road safety, improving emergency and post-injuries services, and protecting vulnerable road users.

Turning to existing rules developed in the EU on road safety, we start with the issuing of national driving licenses and their mutual recognition in the EU. The Directive 91/439/EEC introduced the mutual recognition of drivers licenses along with the harmonization of many aspects of drivers licenses including categories, issuing conditions, and requirements. A review in some Member States showed that 30 percent of drivers never received any training. This situation was remedied with Directive 2003/59/EC regarding the qualifications and periodic training of drivers of certain road vehicles for the carriage of goods or passengers. Drivers would be trained in road safety, technical aspects of the vehicle, fuel consumption, loading, accidents and physical risk, criminality, emergencies, and the economic image of the company. Starting towards the end of 2008 all new drivers were to be trained, and training was supposed to lead to better skills, improved service and higher quality, improved road safety, reduced fuel consumption, and reduced costs. The Directive 2006/126/EC recasting the Directive 91/439/EEC and introducing into it amendments previously introduced by Directive 2003/59/EC aims to reduce the scope of fraud, ensure free movement of citizens, and help to improve road safety. According to the Directive all licenses will have a given period of validity and will be unconditionally valid in all EU countries. Category A (motorcycles) and category B (cars) licenses will be valid for 10 years, category C (lorries) and category D (buses/coaches) licenses will be valid for 5 years. The Directive harmonizes the frequency of medical checks for professional drivers, and introduces minimum requirements for the initial qualification and the training of driving examiners.

The Commission Recommendation of 2001 concerning the maximum authorized level of alcohol in the blood recommends that two different alcohol levels be applied. The standard alcohol level for all motor vehicle drivers which should be adopted by all of the Member States is one not exceeding 0.5 mg/ml. In addition a second alcohol level of 0.2 mg/ml is recommended among others for drivers of large vehicles, i.e. lorries weighing more than 3.5 tons; and drivers of vehicles carrying dangerous goods. The recommendation feels that all of the Member States should adopt a system of random detection by analyzing expelled air in order to dissuade drivers from drinking.

Seatbelts are another important aspect of road transport safety. While the Directive 91/671/EEC regarding ‘the approximation of the laws of EU Member States having to do with the compulsory seat belt use in motorized vehicles weighing less than 3,5 tons’ applied only to cars and vans and did not require parents to use child restraints for their children, the new Directive 2003/20/EC extends the scope of application of Directive 91/671/EEC requiring the use of seatbelts, where provided, by those in all motor vehicles. Furthermore it states that children must be restrained by an appropriate child restraint system that conforms to the latest UNECE standard when traveling in M1 and N1 vehicles.

Directive 2004/54/EC concerns the minimum safety requirements dealing with various organizational, structural, technical and operational aspects for tunnels which facilitate communication between various areas of the EU. Since many tunnels have been aging, and many lives have been lost in recent years, and the costs from closure of a tunnel are great, the objective of the Directive is to prevent in all tunnels longer than 500 meters those situations

that endanger the lives of people, and protect the tunnels and the environment. According to the Directive each EU country must designate one or more administrative authorities. The administrative authority ensures that testing and inspecting tunnels on a regular basis and drawing up the related safety requirements; putting in place organizational and operational schemes for the training and equipping of emergency services; and establishing the procedure for immediate closure of a tunnel in case of an emergency tasks are performed. In addition, the administrative authority identifies a Tunnel Manager who has to prepare an incident report in case of any significant incident or accident occurring in a tunnel. For each tunnel the Tunnel Manager with the prior approval of the administrative authority nominates a Safety Officer who coordinates all preventive and safeguarding measures to ensure the safety of users and operations staff. Finally, EU countries have to ensure that inspections, evaluations and tests are carried out by inspection entities, and risk analysis is carried out by an independent body, taking into account all design factors and traffic conditions that affect safety, length and geometry of the tunnel, as well as the projected number of heavy goods vehicles per day.

Another issue of importance for safety is the transportation of dangerous goods. Regarding road transport of dangerous goods, the international transport of dangerous goods has long been governed by established agreements. Directive 94/55/EC concerned the rules regarding the transport of dangerous by road, and the rules are based on the European Agreement concerning the International Carriage of Dangerous Goods by Road. On the other hand, Council Directive 96/35/EC concerned appointing safety advisers for the transportation of dangerous goods by road, rail and inland waterway. The Directive stipulates that all operations involved in the transportation, loading or unloading of dangerous goods appoint a safety advisor who has gone through the necessary training, passed an examination, and received a certificate. The advisor has to seek all appropriate means and promote all appropriate action to ensure that dangerous goods are transported in the safest possible way. The Directive 2000/18/EC is about the examination requirements for safety advisers for the transportation of dangerous goods. These Directives were repealed in 2008 by Directive 2008/68/EC. According to Directive 2008/68/EC EU countries have the right to regulate or prohibit, strictly for reasons other than safety during transport, the transport of dangerous goods within their own territory, and they may set down specific safety requirements within their own territory. On the other hand the Directive 95/50/EC is about uniform procedures for random checks on the road transportation of dangerous good. According to the Directive consignments found to be in infringement may be immobilized, and obliged to be brought into conformity before continuing their journey, or be subject to other measures such as refusal to allow such vehicles to enter the EU.

In 2010 the Directive 2010/35/EU referred to as Transportable Pressure Equipment Directive was adopted repealing previous Directives such as 1999/36/EC. This directive aims to increase the safety in relation to transportable pressure equipment by setting technical requirements. According to the Directive manufacturers must ensure that when placing their transportable pressure equipment on the market, the equipment has been designed, manufactured and documented in compliance with the requirements in both this directive and in Directive 2008/68/EC on the inland transport of dangerous goods. The compliance has to be demonstrated through the conformity assessment process by or under the surveillance of the notified body. In addition importers and distributors may place on the EU market transportable pressure equipment that complies with Directive 2008/68/EC and this directive, and no EU country may prohibit, restrict or impede the free movement, the placing on the market and the use of transportable pressure equipment on their territory, when the above

complies with this directive.

A Community database on road accidents called CARE (Community database on Accidents on the Roads in Europe) was set up in 1993 by Council Decision 93/704/EC. The objectives of the CARE database is to identify and quantify problems in road safety, study further situations leading to accidents, examine the efficiency of measures taken for road safety, and play a role in disseminating and exchanging information in order to find appropriate solutions.

4. ROAD TRANSPORTATION IN TURKEY

Concerning road transportation, Turkey has signed 32 bilateral agreements with different countries in order to increase access to foreign markets. These agreements are co-operation agreements in the field of passenger and freight transport, and usually have capacity clauses imposed on foreign carriers, constraints on the number of foreign carriers. Some of the agreements even have tariff clauses. In addition we note that Turkey is a founding member of the ECMT and the UNECE. It has ratified various ECMT and UNECE resolutions, agreements and conventions. In particular Turkey has ratified the Convention on Customs Containers, the Convention on Harmonizing the Frontier Control of Goods, and the TIR convention. Recently Turkey, by introducing major reform in the sector, tried to close the gap between the legislation pertaining to the internal and international markets. On the other hand, consideration of the WTO commitments made by Turkey, shown in reveals that for passenger transportation and freight transportation no commitments for market access and national treatment have been made in case of 'cross border' supply (mode 1) and that no limitations have been placed in the cases consumption abroad (mode 2) and movement of personnel (mode 4) for market access and national treatment. In the case 'commercial presence' (mode 3) limitations have been placed for market access and no limitations have been placed for national treatment.

Table reveals that for passenger transportation and freight transportation no commitments for market access and national treatment have been made in case of 'cross border' supply (mode 1) and that no limitations have been placed in the cases consumption abroad (mode 2) and movement of personnel (mode 4) for market access and national treatment. In the case 'commercial presence' (mode 3) limitations have been placed for market access and no limitations have been placed for national treatment.

Table 2.3: Specific Commitments by Turkey in Road Transportation Services

Mode of supply:	Market access				National treatment			
Cross border	1				1			
Consumption abroad		2				2		
Commercial presence			3				3	
Presence of natural persons				4				4

Commitments (■ full; ◨ partial; □ none; − not in the Schedule)

Road Transport Services

Passenger Transportation (CPC 7121 + 7122)		■	□	◨	□	■	□	□	□
Freight Transportation (CPC 7123)		■	□	◨	□	■	□	□	□

4.1 Market Access

In Turkey the responsibilities of the Ministry of Transport, Maritime Affairs and Communications (MTMAC) include among others regulating access to market and profession, regulating and issuing operating licenses, and inspecting and monitoring market conditions. In addition to the MTMAC, there is the Ministry of Environment and Urban Planning which regulates and collects tolls as well as collects data regarding traffic on toll roads and which is responsible for the development as well as the maintenance of state and provincial roads; the Ministry of Interior which is responsible for roadside inspections; the Ministry of Science, Industry and Technology (MSIT) which regulates technical standards including tachographs, and speed limiters; and the Ministry of Labor and Social Security which regulates social conditions such as driving times, working times, and rest periods. After the abolition of the General Directorate of Rural Affairs of the Ministry of Agriculture, the construction and maintenance of rural roads has been decentralized and given to rural authorities.

Regulatory framework in the transport sector is comprised of one general law regarding the duties of the MTMAC and a number of other laws specific to the subsectors. The main legislation in the road transport sector is the Law on Road Transport No. 4925 which gives the framework for access to market and the profession. On the other hand the By-Law on Road Transport which became effective in July 2003 was repealed by the By-Law on Road Transport of June 2009. The By-Law puts forth the secondary legislation for access to the market and profession. Other related laws are the By-Law on Training for Professional Competence in Road Transport Operations, the Foreign Direct Investment Law No. 4875, and the Turkish Commercial Code No. 6102.[38] These regulations put forth conditions for admission to occupation and market access; licensing system for transport operations as well as other auxiliary transport categories; the rights and responsibilities of the carriers, undertakings, and consumers; conditions for vehicles; competition in the sector; rules regarding inspections, the rights, responsibilities of the personnel; and rules and procedures for training and obtaining the Professional Competence Certificate.

Turkey has recently introduced a licensing system. The introduction of the system resulted in registration of 90 percent of commercial vehicles in domestic freight transport, and almost all of the commercial vehicles in international freight transport. The licensing regulations are in line with the conditions set by the EU. According to the licensing system natural as well as

[38] For Law on Road Transport No. 4925 see Official Gazette of July 19, 2003, no. 25173; for By-Law on Road Transport the Official Gazette of February 25, 2004, no 25384; for By-Law on Training for Professional Competence in Road Transport Operations the Official Gazette of September 3, 2004, no 25572; for Foreign Direct Investment Law No. 4875 the Official Gazette of June 17, 2003, no 25141; and for the Turkish Commercial Code No. 6762 the Official Gazette of July 25, 1956, no 9353.

legal persons registered under Turkish commercial registry can apply for the license as long as they meet the following conditions: (i) good repute, (ii) registration at relevant chambers of trade and industry or chambers of tradesmen and craftsmen, (iii) at least one mid or high level manager who has the Professional Competence Certificate or employment of a person who has such a certificate, and (iv) having sufficient financial resources as well as sound management and operation. Furthermore, natural and legal persons that are not Turkish nationals can obtain the license given that the applications are in accordance with the requirements of Foreign Direct Investment Law and satisfy the conditions specified in the Road Transport Law and the related By-Law. However, it should be noted that foreign vehicles may not conduct transport operations between two points in Turkey, and that foreign vehicles transporting goods to, and from, or through Turkey require a permit unless it is specified otherwise in bilateral agreements. Moreover, goods coming to Turkey by sea, rail, or air and carried to a third country can only be transported by Turkish hauliers, and a special permission for registered foreign vehicles is required from the Ministry of Transport by the Law on Road Transport. The International Freight Transport Licenses are valid for 5 years, are not transferable, and may be suspended in case of loss of good repute/financial standing. Conditions for withdrawal are outlined in the law. According to Article 7 of the law, fire brigades, ambulances, funeral transports, transport of medicine/medical equipment, postal services, and transport related to accidents are exempt from the authorization of permits. However, the Ministry of Transport may bring further restrictions and make new arrangements in the event of a crisis.

The By-Law on Training for Professional Competence in Road Transport Operations puts down the regulations regarding training and examining professional competence, qualifications of institutions in charge of giving such training, authorizations given to those institutions, and the Certificate for Professional Competence.

The above considerations reveal that the new law and series of by-laws issued under this Law helped to bring the national legislation in line with international standards, and in particular in line with those of the EU road freight transport *acquis*. These legal regulations allow the creation and development of strong and efficient enterprises that have financial and professional competence, and professional reputation.

4.2 Prices and Fiscal Conditions

There are a number of administrative units that are in charge of road prices. The Ministry of Finance is responsible for vehicle tax, MTMAC is responsible for transit passage fee, and the Ministry of Environment and Urban Planning is responsible for the toll. The MTMAC is responsible for determining and implementing the Transit Passage Fee by Law on Road Transport, Article 16.[39] It is a fee charged to foreign vehicles at borders, and vehicles can be exempt from it within the context of bilateral agreements. The fee is calculated according to the gross weight of truck measured in tons and the distance measured in kilometers. On the other hand with regard to the highways we note that the General Directorate of Highways of the Ministry of Public Works and Settlement is responsible for the construction, maintenance, and operation of roads.

[39] For law on Road Transport No.4925 see Official Gazette of July 19, 2003, no 25173.

Tolling is done on high-performance motorways and bridges over the Bosporus in Istanbul. The Law on Establishment of General Directorate of Highways No. 5539 outlines tolling, where Article 15 states that the Minister of Public Works and Settlements has authority on tolling, and Article 21 outlines enforcement for toll evaders.[40] The Legislation on Tolling are outlined in the By-Law on Istanbul Strait Bridge Operation, the By-Law on Motorway Operation, and Ministerial Approvals.[41] Toll rate varies according to class of vehicle in open type tolls, and vehicle class and distance traveled for the closed type tolled motorways.[42] Finally, turning to issues related with state aid we note according to Decree No 2002/4367 investments in transportation sector are encouraged where the objective is to support and orient investment, in line with international commitments, create new employment opportunities, and add value in order to achieve international competitiveness.[43] The program covers investments in trailer/truck renewal for international land transport, public transportation, heavy construction equipment, bus terminal construction, and combined container transport. In those cases imports of machinery and equipment are exempted from customs duty, and value added tax is exempt from imported and domestically purchased equipment. Foreign financing is provided for transport sector projects including construction of highways and toll roads, where the project must be part of the Annual Investment Program prepared by the Ministry of Development formerly State Planning Organization[44] Finally, we note that the construction of roads is the responsibility of the General Directorate of Highways (KGM), which is under the Ministry of Environment and Urban Planning. For road construction KGM uses either budgetary resources or foreign financing.

Although Turkey has road and vehicle charges in place, it is doubtful whether these charges reflect the marginal social costs, as outlined by European Commission (1998). According to the Commission users should bear the internal and external costs, which include infrastructure damage, congestion, scarcity, environment, and accident costs. As emphasized by Goodwin (2002), the decision of one person to make a trip during peak traffic period actually imposes delays on others, which is longer than the person is expecting to spend on that trip. It is clear that the increase of car ownership and road transport is due to the fact that road transport has not externalized its full cost. Internalizing these costs would prevent excessive use of road transport, and would be a way to equalize the conditions of competition across different modes of transport. Thus, the government has to put mechanisms to secure short term road

[40] For Law on Establishment of General Directorate of Highways No. 5539 see Official Gazette of February 16, 1950, no 7434.

[41] The Legislation on Tolling is outlined in the By-Law on Istanbul Strait Bridge Operation. See Official Gazette of June 3, 1977, no 15955.

[42] Vehicles are classified into five different types according to the axle number and distance. The same toll rate applies for national and foreign vehicles. The General Directorate of Highways is in charge of toll revenue. Ambulances of the Ministry of Health are exempted from paying tolls following the Cabinet Decree no: 2003/6254 of September 23, 2003 (Official Gazette October 23, 2003; no25268)). Furthermore toll discounts are applicable for Non-stop Electronic Toll Collection System (ETC) and contactless smart card subscribers (20 percent discount) and motorcycle that are contactless smart card subscribers (30 percent discount). With regard to interoperability we note that there are 2 open bridges, 7 closed motorways, 80 tolls stations on motorways and Istanbul Strait bridges, with 756 lanes in total with three different payment methods: manually operated toll, contactless smart card system, non-stop ETC system. The Dedicated Short Range Communications (DSRC) roadside unit and onboard unit allow for reading of vehicle passing through toll. Enforcement of this procedure is possible through capture by camera and violators are penalized by paying ten times the maximum tariff.

[43] See Official Gazette of June 9, 2002, no 24810.

[44] See the Law on Public Finance and Regulation of Debt Management No. 4749 published in the Official Gazette of April 12, 2002, no 24721.

maintenance financing, and tolling based on a willingness to pay principle has to be introduced as a way for achieving the objective. Moreover, more differentiation can be introduced into the structure of the tolls. Turkey realizes that there is need to rebalance the modes of transport, and to improve linkages for intermodal transport.

4.3 Social Conditions, Technical Conditions, and Safety

Aspects of social conditions such as setting the rules on working time, rest periods, and driving time are the responsibility of the Ministry of Labor and Social Security. Ministry of Interior is responsible for the enforcement of certain rules regarding driving times, and rest periods of vehicles on the road, and the MSIT is responsible for determining the technical specifications for recording equipment. The related laws are the Labor Law No. 4857, By-Law on Working Time that cannot be divided into Weekly Working Days, and the By-Law on Road Traffic.[45] It should also be emphasized that Turkey has ratified the 'European Agreement on the Work of Crews of Vehicles Engaged in International Road Transport', and the ILO Convention concerning Hours of Work and Rest Periods in Road Transport.[46]

The objective of the Labor Law is to regulate the rights as well as obligations regarding working conditions, work environment of employers and workers who have a labor contract, and the law does not apply to those who are self-employed. On the other hand the 'By-Law on Working Time that cannot be Divided into Weekly Working Days' has the objective of laying down the methods and principles that are applied to working time and period of work that cannot be done by dividing into weekly working hours.[47] Again, the law does not apply to the self-employed. On the other hand, the By-Law on Road Traffic applies to all drivers, including the self-employed and pertains to vehicles carrying goods for commercial purposes where the weight limit exceeds 3.5 tons, and to those which carry passengers for commercial purposes where the capacity exceeds 9 people including the driver.[48]

[45] For Labor Law No. 4857 see Official Gazette of June 10, 2003, no 25134; for By-Law on Working Time that cannot be Divided into Weekly Working Days the Official Gazette of April 6, 2004, no 25425; for By-Law on Road Traffic the Official Gazette of September 2, 2004; no 25571.

[46] For European Agreement on the Work of Crews of Vehicles Engaged in International Road Transport (AETR Agreement) see Official Gazette of July 25, 1999, no 23766), and for the ILO Convention concerning Hours of Work and Rest Periods in Road Transport (C153) the Official Gazette of July 22, 2003, no 25176.

[47] The By-Law defines a reference period as the period that is necessary to do a particular job, which can range between 2-6 months, as designated by the employer. Furthermore, the maximum weekly working time over a reference period is 45 hours. Each period of 24 hours should have at least 11 consecutive hours of daily rest period, or 12 hours can be separated into two or three periods. One of these periods has to be at least 8 consecutive hours, or there can be a reduced rest period of a minimum 9 consecutive hours. But such arrangements cannot take place more than three times a week. When there are at least two drivers for a vehicle, then during a 30-hour-period, there has to be 8 consecutive hours of rest for each driver. Weekly rest period is at least 24 consecutive hours, which is taken not later than at the end of six 24 hour driving period.

[48] The Labor Law stipulates that breaks be a minimum of 15 minutes for work lasting 4 hours or less, a minimum of 30 minutes for work lasting 4-7.5 hours, and a minimum of 1 hour for work lasting longer than 7.5 hours. According to the By-Law on Road Traffic, there should be a rest period of 45 minutes after 4.5 hours of driving and this maybe replaced by breaks of at least 15 minutes. Furthermore it states that the driver may not carry out any other work during the break, and that breaks cannot be considered as part of the daily rest period. The daily driving limits are a total of 9 hours within a 24 hour period, where the maximum uninterrupted driving period is 4.5 hours. Furthermore, the By-Law specifies that weekly driving period cannot exceed 54 hours, and the driving limit in a fortnight is 90 hours.

Other obligations include drivers' possessing a Professional Competence Certificates, and installation of mechanical, electronic or electro mechanical tachographs in buses and trucks. Tachograph records must be kept 1 month in the vehicle, and 5 years in the office. Each year checks must be done for at least 1 percent of the days worked by drivers of a vehicle, where at least 15 percent of the checks are roadside, and 25 percent are at the undertakings themselves. Checks at the undertakings concern weekly and fortnightly driving times and rest periods, compensation for reduced weekly rest periods, record sheets and driver card data. The Labor Inspection Board of the Ministry of Labor and Social Security is responsible for enforcing the rules at the undertakings. The Labor Inspectors make inspections on three grounds at the workplace: inspection, control and investigation. According to the ILO Convention Concerning Labor Inspection in Industry and Commerce no 81 and other relevant legislation, collection of statistical data is of prime importance. The data is published in the General Report of Labor Inspection and submitted to the ILO annually. There are two organizational bodies in the Ministry of Labor and Social Security: the General Directorate for Labor, and the Labor Inspection Board. The General Directorate for Labor is responsible for preparing the draft legislations. The Labor Inspection Board is responsible for checks at the premises, and has heads of units settled in 10 regions. The General Directorate of Security at the Ministry of Interior is responsible for checks at roadsides and terminals.

Legislation regarding technical conditions includes the By-Law on Establishment and Management of Vehicle Technical Inspection Stations and Vehicle Inspection.[49] The Ministry of Transport is responsible for conducting roadworthiness tests. Recently a consortium was authorized for building and operating Technical Inspection Stations for 20 years. The consortium set up fixed and mobile stations, which are to be supervised by the supervisors of the MTMAC. On the other hand, weights and dimensions are regulated mainly by the By-Law on Road Traffic.[50] The freight weight controls are planned to be done effectively by completing the fixed and mobile control systems. Within the framework of Renewal, Improvement and Construction of Weight and Dimension Control Stations project, the preliminary studies on the renewal of the existing stations and construction of additional stations are to be completed. Other related legislation include the By-Law on Type Approval of Speed Limitation Devices of Motor Vehicles and Their Installation, the Law on the Amendment of Law on Road Traffic No. 5495, and the Fundamental Principles of International Passenger and Freight Transport by Road No. 8/984.[51] According to the By-Law on Amending By-Law on Road Traffic, installation of speed limitation devices for category N3 trucks and tractors, and M3 buses, when the maximum mass exceeds 10 tons, are mandatory.[52] [53] The Draft Law on Amending Road Traffic Law is currently on the agenda of the Turkish Grand National Assembly, and this draft law lays down the features, model years

[49] See Official Gazette of September 23, 2004, no 25592.

[50] For By-Law on Road Traffic see Official Gazette of July 18, 1997, no 23053.

[51] For By-Law on Type Approval of Speed Limitation Devices of Motor Vehicles and Their Installation (92/24/AT) see Official Gazette of June 5, 2002, no 24776; for the Law on the amendment of Law on Road Traffic No. 5495 the Official Gazette of May 10, 2006, no 26164; and for Fundamental Principles of International Passenger and Freight Transport by Road (Resolution of Council of Ministers) No. 8/984 the Official Gazette of June 29, 1980, no 17032.

[52] For By-Law on Amending By-Law on Road Traffic see Official Gazette of April 11, 2003, no 25076.

[53] Exemptions for speed limitation devices include motor vehicles used by police, gendarmerie, armed forces, civil defense, fire and other emergency services; category M3 vehicles which cannot exceed a speed of 100 km/h and category N3 vehicles which cannot exceed a speed of 85km/h; motor vehicles used for scientific experiments; motor vehicles used only for public services in urban areas.

and categories of vehicles where installation and use of speed limitation devices are made mandatory.

Road safety is another issue of concern. Although there has been some improvement over the past ten years, road accidents remain to be a serious problem. The annual growth in the number of accidents of 2 percent is in line with the growth rate of traffic. While fatalities are decreasing, injuries are increasing at the rate of 1.3 percent annually. But the current fatality rate of 8 fatalities/10000 vehicles is four times larger than the EU average rate, which is 2 fatalities/10000 vehicles.

The General Directorate of Security of the Ministry of Interior is responsible for regulating road safety on all motorways, state roads, and province roads, and Gendarmerie is responsible for the remaining roads. The MTMAC is responsible for regulating and monitoring the transport of dangerous goods by road, Ministry of Education for training of drivers, Ministry of Health for drivers' health conditions, and MSIT for type approvals of transportable pressure equipment.

The carriage of dangerous goods is regulated by the By-Law on Transport of Dangerous Goods by Road and the By-Law on Training for Professional Competence in Road Transport Operations.[54] In October, 2009 Turkey became a party to the European Agreement on international carriage of dangerous goods on road (ADR), and the Agreement became effective during March, 2010.

With regard to administrative capacity, we note that new staff has been recruited, a new Department for Professional Competence has been setup within the MTMAC, and in addition a new Department for Transport of Dangerous Goods was established. Furthermore, the institutional capacity of the Directorate General for Land Transport (DGLT) has been improved. According to European Commission (2007) "an IT system was put into operation to establish an information infrastructure with regional transport directorates and enables all licensing of road transport activities to be conducted electronically. DGLT also established a new unit for roadside checks on the weights and measures of vehicles. DGLT signed protocols with the governors of 80 provinces to devolve authority regarding weight and measure inspections. However, the number of weighing stations in Turkey is limited compared to the travel frequency and the number of heavy vehicles in traffic. Insufficient inspection of overloaded vehicles exacerbates damage to transport infrastructure and increases high accident rates."

Thus, legislative studies are in progress on the harmonization of driving licenses in Turkey with those in the EU, installing speed-limit devices into certain vehicle types, regulating the working and rest hours of drivers, building up a compatible database with the EU standards on traffic accidents and ensuring the equivalence of driver training in Turkey with that of in the EU member states. Furthermore, Turkey aims to increase road traffic safety by effective and sound conduct of mechanical inspection, weight and dimension controls of vehicles. In this context, the process of delegating the opening and operation of vehicle inspection stations to private sector has largely been completed. By now, all operations and transactions in road

[54] For the By-Law on Transport of Dangerous Goods by Road see Official Gazette of October 22, 1976, no 15742; and for the By-Law on Training for Professional Competence in Road Transport Operations the Official Gazette of September 3, 2004, no 25572.

transport sector are conducted electronically in real time by means of the recently developed Land Transportation Automation System.

5. ROAD TRANSPORTATION IN POLAND

Poland has signed 41 bilateral international transport agreements. Most of those agreements were signed many years before Poland became a member of the EU. The agreements regulate the issues of market access, provide the framework of international transport cooperation, regulate the customs procedures and list the required documentation for provision of freight transport services. Some of the agreements explicitly forbid cabotage. Most of these agreements are superseded by the accession to the EU and the internal market regulations concerning road transport services. Poland is a founding member of the United Nations Economic Commission, and it is a member of European Conference of Ministers of Transport (ECMT) since 1991.

5.1 Market Access

At the time of preparation of this document, the legal framework for the market access in the road transport sector in Poland is given by the Law on Road Transport, passed on September 21, 2001 and amended several times thereafter. The law explicitly says that if the international agreements do not provide otherwise, foreign providers of road transport services are allowed to provide those services in Poland, as long as they follow the rules of Polish law. The rules regarding access to the profession are in accordance with those of Directive 96/26/EC. However, since the Decisions no 1071, 1072 and 1073/2009 of European Parliament and European Council are in effect as of December 4, 2011, there are some discrepancies between the local rules and the EU regulations and the some regulations of the Law on Road transport are temporarily overridden by the decisions of minister relevant to the transport sector.[55]

Provision of road transport services in Poland requires a license, which may be granted for a length of time not shorter than 2 years and not longer than 50 years. The foreign providers need a permission issued by the minister responsible for transport.[56] The legal requirements are the following: First, the so-called "good reputation" record is required when applying for the licence (the person or firm does not have "good reputation" if he/she was convicted of crime or he/she was forbidden economic activity in the area of road transport by a court of law). Second, at least one member of the company's board has to carry a certificate of professional competence in the area of road transport. Third, the financial situation of the company is suitable for provision of transport services. In particular, the company has to demonstrate the ownership of a sum of 9 000 euro for the first vehicle and 5 000 for each additional vehicle. If the company is aiming to provide intermediation services in the transport sector, it is required to demonstrate 50 000 euro of available funds. The required funds may be demonstrated through financial statements, bank statements, bank guarantees or

[55] The minister relevant to the transport sector has changed several times over the recent years due to reorganizations of the government. Currently (2012) it is the Minister of Transport, Construction and Maritime Economy, while before 2005 it was the Ministry of Infrastructure, Ministry of Transport and Construction (up to 2006), Ministry of Transport (up to 2007) and again Ministry of Infrastructure (2007-2011).

[56] The validity period for the license awarded to the foreign providers, previously limited to 1 year, by the change of Law on Transport (2009) can now be the same as those awarded to Polish nationals.

real property. All the drivers employed by the company have to satisfy the requirements set by the general Traffic Law.

With the introduction of the European Parliament and of the Council Decision number 1071/2009 every road transport undertaking shall additionally designate a transport manager who shall be responsible for continuously managing the transport activities of the enterprise. Another new requirement is to have an establishment with premises in which it keeps its core business documents, in particular its accounting documents, personnel management documents, documents containing data relating to driving time and rest periods and any other document to which the competent authority must have access in order to verify compliance with the conditions laid down in this regulation.

According to the existing Polish Law on Road Transport, there are two types of licenses: domestic and international license which allow for provision of respective services. The license is in general not transferable and it may be revoked in the event that the service provider violates the transport law or avoids legal, tax or custom fees.

If the transport services are provided as a supporting activity of the company (own account), the company has to notify the authorities and receive a confirmation document. Such activity can be provided both domestically and internationally and does not require a license. A confirmation document is valid for 5 years and it may be revoked if it is proven that the service provided is not purely own account. The certificate for domestic transport services are issued by the local administration units and the international certificates are issued by the relevant minister. If international agreements require so, the provision of international transport services may, in some cases, require special permission. The permission requirement may be relieved if the provision of service involves medical or humanitarian aid or occurs in the case of a natural disaster.

The costs of the transport licenses are set in the former Ministry of Infrastructure regulation issued on December 4, 2007 (Dz.U. Nr 235, poz. 1726). The licence fee for the domestic transport services varies from 700 to 900 PLN depending on the validity period (205-264 EUR at 3.4 PLN/EUR). The license fee for the international transport licence amounts to 4 000 PLN (5 years – 1176 EUR). The provider of transport services may suspend its license for the period up to one year and the costs of the licence will be reimbursed proportionately. Licences are not transferable, except in the cases of the death of the licence holder, in which case the licence can be inherited, and in the cases of mergers and splits of companies.

The entrepreneur providing transport services is required to cover the costs of (a) administrative procedures that are described in the Law on Road Transport, (b) competence certificate examinations, and (c) all the procedures required in the process of obtaining the competence certificate.

However, as of December 4, 2011, when the European Parliament and of the Council Decisions number 1071, 1072 and 1073 came into operation, the international licence has been replaced by the Community Licence. The discrepancy of the local law with the community law is temporarily solved by the Communique of the Ministry of Transport, Construction and Maritime Economy (replacing the former Ministry of Infrastructure) dated December 2, 2011. Enterprises planning to offer international road transport services are required to obtain a domestic licence before applying for a community licence and community licences are granted according to the rules set by the European law.

All the licences issued before December 4, 2011 are valid until their original expiry date. All the new community licences are to be granted by the General Inspectorate for Road Transport according to the rules of the Decision 1071. Before the Law on Transport Law is adjusted in-line with the European law, the financial standing of the enterprise is to be assessed on the basis of the documents listed in Article 7 of the Decision No 1071/2009. The requirements concerning the establishment and the good reputation are currently assessed on the basis of self-declaration by entrepreneurs.

The community licence can be issued for a period of up to 10 years. In the case of the community licence issued for a period of 10 years, the entrepreneur will be required to cover the double of the cost for the international transport licence as originally set by the 2007 decision of the Ministry of Infrastructure. The fee for the domestic licence remains unchanged while the rules for issuing domestic licences are in line with those for community licences.

According to the accession treaty, up to a period of three years after accession to the EU, the service operators based in Poland were excluded from provision of cabotage in other Member States and respectively other entrepreneurs based in other Member States were not permitted to offer cabotage in Poland. According to the Treaty, three years after accession, the Member States could notify the Commission whenever they wanted to apply for an extension of that exclusion period. Most of the EU Member States have used that possibility and only Ireland, Portugal and Sweden allowed Polish companies to provide cabotage services. Poland has mutually opened it its markets toward cabotage offered by entrepreneurs from those Member States.

The extended transition period has expired on May 1, 2009. Moreover, the Regulation of the European Parliament and of the Council of October 21, 2009 No 1072/2009 came into operation on May 14, 2010, and the amendment to the Law on Transport made in April 2010 introduced the "3 times in 7 days" rule for cabotage according with the EU regulations. Cabotage undertaken by service providers from third countries require a permission issued by the minister relevant to transport. The above rule applies both to Polish hauliers performing cabotage in other EU countries and EU hauliers operating in Poland.

According to the Law on Transport, non-EU foreign providers of international transport services within the territory of Poland requires a permission by the minister relevant to the transport sector. Prior to the actual transport activity, the provider has to fill the permission form which has to be shown at road inspections.

5.2 Prices and Fiscal Conditions

The rules of financing of transport infrastructure are set forth by the Law on Financing of Land Transport passed on December 16, 2005. The law sets the responsibility for financing road construction and maintenance according to the types of roads: national, regional and commune roads – the national roads are financed by the central budget, regional roads are financed by the voivodship budgets and commune roads are financed by the commune (powiat) governments.

The Program for Construction of National Roads identifies the following sources of national roads financing: (i) the National Roads Fund – based on the fuel fees paid by the producers and importers of fuels, (ii) Central Government Budget – mainly based on the excise tax

revenues of which at least 18 percent would be allocated towards improvement of transport infrastructure together with loans from international financial organizations and a special budget reserve that will be used for projects co-financed through EU funds, (iii) EU funds (mainly Cohesion Fund and European Regional Development Fund), and (iv) other domestic funds.

Up to the end of June of 2011, the fees for the use of national roads were collected by a system of the so-called vignettes, a sticker valid for a set period of time. Once purchased and placed on the vehicle, it entitled to use the national roads with no further fee. The fee varied depending on the size and load of the vehicle and on the standard of emissions.

The law on the Use of Public Roads was amended in 2008 in order to make it compatible with the directive 2006/38/EC. The amendment replaced the vignette system with a system that makes the fees dependent on the distance travelled. Since July 1, 2011 the fees are levied using a viaTOLL system that requires a compatible device to be installed in the vehicle. The device automatically communicates with a system of electronic gates installed on national roads and selected expressways and motorways. The charges are automatically deducted from the account associated with a given device. The charges on motorways vary by the EURO standard of emissions and the tonnage of the truck, from 0.2 PLN per kilometer for a truck between 3.5 and 12 tons in line with the EURO5 standard up to 0.53 PLN per kilometer for a truck above 12 tons conforming to the EURO2 standard. The charges corresponding to national roads are considerably lower, ranging from 0.16 PLN per kilometer up to 0.42 PLN per kilometer. The viaTOLL system applies to motorways that are maintained by the General Directorate for the National Roads and Motorways which is a government institution.

On remaining motorways, constructed within the private-public-partnership (PPP) program (parts of A1, A2 and A4 motorways), the manual system of payments through toll booths is still in operation. The fees vary depending of the type of vehicle and in general they are considerably higher for cargo trucks.

5.3 Social Conditions, Technical Conditions, and Safety

The Law on Road Transport sets the requirements for the drivers profession. The drivers that are nationals of the non-members of the EU are required to have the so-called driver certificate. One can apply for such certificate and it will be granted for a period not longer than 5 years. The application should include the company and driver details, a copy of the company transport license, the driver's license of the driver and a copy of the social security insurance of the driver. The above regulation is in line with the Regulation (EC) No 484/2002 amending the Council Regulations No 881/92 and No 3118/93.

The competence certificates require proving knowledge and experience regarding the provision of transport services. The rules of testing and certification are given by the regulations of the relevant minister. If the entrepreneur can demonstrate at least five years of experience in the road transport sector, it can obtain a certificate having passed a written examination. The professional competences are currently assessed according to the rules set

by the decision of Ministry of Infrastructure of October 8, 2003 on certificates of professional competence in road transport.[57]

An entrepreneur who wants to employ a driver can do so, if the driver, among other health and age requirements, was prequalified to receive a competence certificate. To be prequalified, a person has to reside in Poland for at least 185 days in a year because of personal or professional ties and/or is studying in Poland for at least 6 months. Otherwise, a non EU member resident person can be prequalified if he/she is willing to work as a driver for a company registered in the territory of Poland. The prequalification includes theoretical and practical training and qualifying examinations.

Within five years of prequalification, the drivers are required to undergo a so-called periodic training improving the skills in driving a particular vehicle used in the drivers' line of work. Once the periodical training is completed, the driver is granted a competence certificate.

The working conditions of the drivers together with rules on workers safety, rights and obligations are regulated by the general Labour Law of June 26, 1974 which was amended several times with the most recent amendment carried out on June 30, 2008. However, the Act on Working Time of Drivers of April 16, 2004 regulates the working time of drivers. The law precisely defines what is included in the total working time of a driver and sets the requirements on the maximum working time. According to the Law the working time cannot exceed 8 hours a day and on average 40 hours a week in a period of 4 months. The working time can be sporadically exceeded with overtime hours to 60 hours if this does not cause the 4 month average to exceed 48 hours a week. Each week the driver has a right to an uninterrupted 35 hours rest period, and each day to 11 hours of uninterrupted rest. Poland has ratified the AETR agreement on August 30, 1999. The Law on Working Time of Drivers is in accordance with the Directive 2002/15/EC and it implements the EU Regulation No 3820/85.

The obligations concerning installation of tachographs are stemming from the European Law. As was mentioned before, the Council Regulation 3821/85 introduces the need of use of analogue tachograph in the road transport. Council Regulations 2135/98 and 1360/2002 introduce and describe the technical specifications of the digital tachograph. The Law on the System of Digital Tachograph of July 29, 2005 describes the obligations of the public administration and other units involved in the functioning of the system of digital tachographs and sets the legal framework on the provision of the service of installation, servicing and controlling of the digital tachographs. The tachographs have to be certified by the Central Office of Measures which also grants licences to and supervises the service points that handle digital tachographs.

The Polish regulations concerning the transport of dangerous goods transpose the EU Regulations. The rules are set by the Law on Transport of Dangerous Goods of August 19, 2011 that also transposes the rules of the directive 2008/58 CE of the European Parliament and Council on the inland transport of dangerous goods, the directive 008/68/EC of the European Parliament and Council adapting the rules on the inland transport of dangerous

[57] The decision sets the rules for obtaining certificates, including the content of the examinations. The exam for the certificate of competence tests the knowledge of: civil law, commercial law, labor regulations, financial law, organization and enterprise management to the extent related to road freight transport, rules of access to the service provision of road transport and road safety, technical requirements for vehicles and environmental rules.

goods to scientific and technical progress, and the directive 2010/35/EU of the European Parliament and Council on pressure transport equipment. According to the law, the supervision of road transport of dangerous goods is assigned to the minister relevant to transport. The road controls can be performed by the Main Inspectorate of Road Transport, the police, the border guard and the customs officers. The Main Inspectorate of Road Transport report to the minister relevant to transport and notify the minister on the extent of controls undertaken, infringements of the law and penalties levied on entities not complying with the law on transport of dangerous goods.

6. CONCLUSION

The liberalization of road freight transport services is a daunting task as revealed by the experience of the EU. It requires harmonization of rules and regulations in the road transport sector among the Member Countries, and strict implementation of these rules and regulations. Those rules and regulations concern market access and competition, pricing and fiscal conditions, social conditions, technical conditions, and road safety. In addition road infrastructure should be accessible to all current and potential service providers on a non discriminatory basis, and road infrastructure as a whole should be sufficient. Furthermore, road border crossing points should be modernized by increasing efficiency of customs procedures and checks.

The EU has successfully harmonized its rules and regulations largely by adopting the road freight transportation *acquis*, and has taken major steps in implementing strictly the *acquis.* It has resolved the issue of border crossings between Member Countries. But waiting times at borders between the EU and non-Member States vary considerably. In addition, problems remain in the field of tax harmonization among the Member Countries, and also due to different interpretations of the rules on vehicle standards and drivers' working conditions. Although the EU sets minimum and maximum taxation thresholds, taxation of fuels and charges for infrastructure use vary considerably among Member Countries. As long as vehicle standards for domestic haulage remain more generous than European standards, problems remain since it is impossible to check all vehicles crossing borders. Similar considerations apply to drivers' working conditions. There may also be lack of confidence in the ability or the will of the Member States to enforce the harmonized rules and regulations. To avoid problems in this area there is need for harmonization of inspection practices among the Member Countries.

One case where the EU has failed to create a single road freight transportation market is the road cabotage. As emphasized above, cabotage was liberalized in 1993 with the adoption of Council Regulation 3118/93. But it was not possible to overcome the protectionist leanings within the Community, and protectionist lobby made use of Article 1 of the Regulation. This Article specified that any road haulage carrier for hire or reward who is a holder of the Community authorization shall be entitled, under the conditions laid down in the Regulation, to operate on a 'temporary basis' national road haulage services for hire and reward in another Member State. The issue centered on how temporary basis should be interpreted. Several countries tried to restrict cabotage by interpreting temporary basis on their liking. In particular, France in 2002 restricted the duration of a foreign vehicle's stay to one week. But the Council of State annulled the decision. In 2004, a decree defined cabotage as transport operations which do not give rise to the presence on the national territory of one and the same vehicle for more than 10 consecutive days, nor more than 15 days in any 60 day period. The provision was also sanctioned by the Council of State. In 2005 the French government made

another attempt to restrict cabotage, by adopting a law restricting the stay of a foreign vehicle from another member country in France to a maximum of 30 consecutive days, or for more than 45 days in any 12 month period. In addition, France adopted a new labor law requiring that the drivers of firms carrying out cabotage in France are subject to the same rules on salary as the drivers of French firms, whether these derive from legal provisions or collective bargaining arrangements, and to the same social security rules.[58] At the end the Commission adopted the Regulation 1072/2009. Article 8 of that Regulation states that every haulier is entitled to perform up to three cabotage operations within a seven day period starting the day after the unloading of the international transport.

When we consider the case of Poland we note that the liberalization of Polish freight transport sector is driven mainly by the changes in the EU regulations that are subsequently harmonized into the Polish law. The recent changes in the EU regulations concerning market access, cabotage and community licences are currently being introduced into national legal framework, in particular the Law of Transport. While the national legislation is currently being updated, the EU law applies and it carried out through decisions of the minister relevant to transport. The analysis performed in Chapter 1 shows that the transport sector in Poland has the features of a competitive market, with tens of thousands of companies operating. Where the degree of concentration market concentration seems much higher is the market for international road transport services, where the granted licenses are considerably less numerous.

The new developments in EU regulations can affect the degree of competitive pressure in EU markets including Poland. EU law replaces Polish international transport licences with community licenses granting access to EU markets. A limited degree of liberalization was granted to cabotage services. The recent data (Central Statistical Office, 2012), show that in 2011 1.8 percent of all traffic in Poland was already due to cabotage, which accounted for 8.8 percent of all international traffic.

On the other hand, Turkey has started the process of adopting and implementing the legislative, regulatory and institutional framework of the EU road freight transport sector. The country by changing the regulatory regime aims to increase competition in the sector, increase access to the EU road freight transportation market, and also lower the price of road freight transport services within Turkey. As in the case of Poland, major issues are faced in the implementation of these rules as well as with the improvement of infrastructure in Turkey.

[58] See Bernadet (2009).

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CHAPTER 3

REGULATORY FRAMEWORK IN RAIL TRANSPORT SERVICES

During the 18th century when industrial revolution began to generate unprecedented demand for high capacity movement of raw materials, especially, for coal, the poor state of roads and inflexibility of canals led to development of transport of freight using fixed rails. The result was the emergence of a number of freight wagons equipped with steel wheels on steel rails pulled by powered locomotives. By the end of 19th century the developed countries had quite extensive national railway networks developed mainly through private companies. These networks provided rail connections between industrial and population centers and major ports, and they monopolized long-distance freight transport except in cases where commercial waterways provided some competition.

The development of the internal combustion engine and its application to road haulage in the early 20th century were followed by massive investments in national road systems. As a result railways lost their monopoly in transportation sector, but in railway industry monopolistic market structure prevailed excluding completely any sort of international and national competition leading to many economic inefficiencies. Apart from that, the companies were usually vertically integrated, i.e. the single company was responsible for the infrastructure and operation of trains.

Over time as more air, land and sea transport options developed, passenger and freight traffic by railways declined because of stronger competition from trucks, cars, buses and airplanes; extraordinary increase in the efficiency of road transport starting from 1950s; the flexibility of trucking, buses, and automobiles to the market; relatively low levels of taxes and tolls on road transportation not covering the total cost of usage; and poor performance of the rail. The large necessary investment in railway infrastructure became rarely profitable on a commercial basis. As post-second world war decline of rail freight modal share led to rail company bankruptcies, but railways were considered to create important positive social and economic externalities, railway networks were consolidated and in many cases nationalized. In consequence, in the majority of developed countries classic public monopolies started to operate the railway infrastructures and trains. They usually functioned as a department of a ministry, or a public entity with an administrative reporting relationship to that ministry. Besides offering passenger and freight transport services the railways were managing the railway infrastructure and undertaking a range of non core railway activities such as hotels, ferries, ports, and haulage companies.

The political pressure for deregulation, privatization and opening-up of railway sector for competition started in 1980's in developed countries, due to increased inefficiencies and increased competition from road transportation. The concept of contestable markets provided an intellectual support for the deregulation processes. Many European countries sought to increase the efficiency of national railroad companies through a range of reforms: separating infrastructure and operations, creating independent regulatory institutions and providing access to the network to third parties. At the same time the World Bank was encouraging countries in transition and the developing countries to liberalize their railway transport systems. The aims were making the railway sector financially sustainable, increasing over

time the transport market share of railways by shifting traffic from roads, and creating greener, low-carbon economies.

The paper, studying the liberalization of railway services, is structured as follows. While section 1 introduces the basic characteristics of railway services, section 2 considers the international regulatory regime in the rail sector. Section 3 covers the European Union (EU) railway rules and regulations. Section 4 considers the regulatory issues in the railway sector in Poland, and Section 5 the regulatory regime in the railway sector of Turkey. Finally, section 6 concludes.

1. RAILWAY SERVICES

The railway sector has several characteristics that, according to traditional main-stream economists, make it a perfect case for a natural monopoly. These elements are the multi-product nature of the activity, the particular cost structure of railroad companies, the role played by infrastructures and networks, the existence of indivisibilities in inputs and outputs, the organization of the rail transport as a public service, and the existence of externalities in the transport system as a whole.[59]

Rail companies are usually multi-product firms. They provide different types of freight (cargo wagons or trains, parcel and postal services), and different passenger transport services (long-distance traffic usually coexists with local traffic). In consequence, at the accounting level it is often difficult to allocate total costs among different services as most of the costs (wagons, energy, and staff) may not be attributed to a particular service. As emphasized by Amos (2009) rail freight costs can be divided into infrastructure costs, cost of train operations, and costs of corporate administration.

Basic railway infrastructure includes the sub-grade, sub-ballast, ballast, sleepers, rail, and track fastenings that secure the rail in position relative to sleepers. Since railways must have low gradients, railway designers use bridges and tunnels to traverse vertically challenging territory, cuts through rolling hills, and fills in low spots to keep tracks as level as possible. In addition, railways require maintenance depots, switches and crossovers allowing trains to change from one track to another. Tracks may be single or double track. While busy railways install signals to control train movements, high speed or very busy railways are often electrified drawing electrical power. Costs related with infrastructure consist mainly of fixed costs, which do not vary with the usage of the infrastructure, although some components are variable varying with traffic levels at least in the long run.

It is emphasized that the main sources of costs of an existing railway infrastructure are costs related to track maintenance and renewal, structure maintenance and renewal, signaling systems, and electrification systems. While track maintenance consists of inspections, resurfacing, ballast cleaning, rail grinding and track formation maintenance, track renewals consists of re-sleepering and re-railing. On the other hand, structure maintenance costs refer to costs of maintenance of tunnels, embarkments, and overbridges, signaling costs to costs of periodic inspection and servicing of signaling components, and electrification costs to maintenance and renewal of electrification infrastructures.

[59] See Campos and Cantos (1999).

Train operating costs consists of costs of diesel fuel or electrical energy, locomotive capital depreciation, locomotive maintenance, locomotive crew, wagon capital depreciation, wagon maintenance, and other operation costs. These costs are mainly variable with traffic volume, and they depend on the size of the train, the utilization of the rollingstock, and the ratio of the net tonnes of a wagon and the empty weight of the wagon.[60] Finally, corporate overheads include costs of executive management, finance, legal, security and personnel functions. These costs are considered to vary with traffic levels in the long term.

Because of the heavy fixed costs associated with rail operations Kessides and Willig (1995) emphasize that there are substantial economies of scale in the provision of some of the rail services, whether focused on particular routes or types of freight. Since infrastructure costs do not rise with traffic volume, very few additional fixed costs are incurred as more traffic uses a section of the roadway. In addition, a large firm may have lower average administrative costs compared to a smaller firm.

Because of the above considerations, fixed costs per ton of freight transported by railways will fall as traffic volume increases. These economies are usually termed economies of density attributed to declining average capital costs. Thus, under economies of density the cost minimizing market structure for a route may be a natural monopoly. Another feature of the railroad industry leading to economies of scope is the multi-product nature of rail companies. A carrier that provides an array of services can do so at a lower total cost than a set of carriers producing each service separately.

The rail industry is considered to be capital-intensive with several indivisibilities within its productive process. The capital units such as rolling stock, track and stations can be expanded only in indivisible increments, whereas demand may fluctuate in much smaller units having implications for investment and pricing. The transportation costs of an additional unit of freight or passengers may be insignificant when there is excess capacity, but may be substantial when the infrastructure or rolling stock is at the limit of its full use.

In a large number of countries the rail industry is regarded as a public and social service. The industry is supposed to aid the economic development of underdeveloped regions, and provide minimum transport services for particular segments of the population. These considerations in turn led to public service obligations imposed on the rail industry. A further characteristic of the rail industry concerns the environmental impacts. A recent study by the European Commission revealed that road haulage in Europe has higher external environmental costs per tonne-km than rail freight of up to five times.[61] Amos (2009) reports that similar results were obtained for the US and China.

The analysis of total external costs of transportation provides a fuller picture of externalities. External costs are the negative effects of transport that are not internalized into the price paid by the user and are therefore not taken into account by users when they make a transport decision. However, they cannot be disregarded as they give rise to real costs to society, such as global warming, health bills, and delays. Although the estimation of external costs has to consider several uncertainties, there is consensus at scientific level that external costs of

[60] Railway rolling stock consists of locomotives, passenger rolling stock, and freight wagons.
[61] See Maibach, M. et al. (2008).

transport can be measured by best practice within reliable bandwidths. Having in mind these reservations we can quote a comparison of yearly external costs in the EU-15 caused by rail and road transportation.

Table 3.1: Total external costs (billion Euro) for Road and Rail in the EU-15 and Switzerland and Norway (2007)

External costs	Road	Rail
Congestion	268	-
Accidents	156	0.3
Noise	40	1.3
Climate Change	70	2.1
Air Pollution	164	2.4
Total	698	6.2

Source: International Union of Railways (2008)

The data in Table 3.1 show that the external costs of road transportation are more than one hundred times higher, and per unit external costs of rail transport are about ten times lower in comparison to truck transportation. This is a strong argument in favor of rail in the society that cares about long term sustainable hence environmentally friendly growth. Other studies show that railroad transportation is relatively fuel efficient. Since they use a technology that has very low friction based on steel wheels and steel rails, rail freight is estimated on average 63 percent more fuel efficient than road transport.[62]

Rail transport is considered to be an effective means of transporting bulk commodities such as coal, iron ore, phosphates, grains and cereals, lumber and other construction materials for larger volumes over relatively longer distances. While rail transport is also used extensively in transporting general freight, automobiles and heavy object, rail container transport used in shipping manufactured goods is also expanding. The raising role of containerization and development of intermodal terminals, that link road with rail, has improved the chances of rail transport to remain economically viable.

A final characteristic of the rail industry is its extensive regulation. Historically, rail industry has precluded competitive organization, and price, entry, exit, financial structure, accounting methods, vertical relations and operating rules have been subject different forms of

[62] See World Bank (2011).

governmental controls. It is emphasized that regulation has contributed substantially to the poor performance of railways.[63] With the liberalization of rail industry a restructuring of railroad regulation is also taking place.

The World Bank (2011) emphasizes that the best regulator is the market, and that regulatory intervention is required if the public interest is expected to differ from the commercial interests of service providers, a situation called market failure. Rail regulation usually includes economic regulation, railway safety regulation, environmental protection regulation, and harmonization of technical standards.

Economic regulation addresses problems with natural monopoly and managing industry interfaces. Since railways have monopoly power in infrastructure provisions, regulation may be required to protect the final consumer in order to regulate the competitive environment. If regulated price is set below average cost, the consumer may benefit in the short run, but may suffer in the long run as setting prices below cost may discourage railway companies from making longer term investments required for preserving service quality. Hence, regulation should ensure that revenues are adequate and the corresponding rates are best for public interest. In addition, an important task for the regulator is to help establish competitive markets so that the need to regulate tariffs will be eliminated. If there is third party access to infrastructure, regulation should ensure that access rules and charges are not discriminatory. Finally, the regulator should create a framework that encourages the right amount and type of infrastructure investment.

Since cross-border railways are of growing economic importance, regulatory frameworks need to meet national requirements and also they should be sufficiently flexible to achieve compatibility across borders to operate or build new systems. Noting that railway companies because of commercial reasons may neglect safety and environmental concerns, regulation is required to protect the public and the environment. Furthermore, in railway industry there is need for common technical standards. Railway companies can lack incentives to develop and apply common standards. Since national railway system with diverse technical standards concerning track gauges, signaling and electrification systems, maximum axle-loads and safety systems may create troublesome operating constraints, inter-governmental agreements are essential to provide coherent frameworks for railway management co-operation, to streamline national border controls, to minimize delays, and to avoid the unreliability. These regulations may require that tracks, wheels and signaling systems are compatible with each other on all lines within the country as well as across borders.

Since regulation is one of the most important determinants of the performance of rail industry we turn now to consideration first of international railway regulations, and thereafter to railway regulations in respectively the EU, Poland and Turkey.

2. INTERNATIONAL RULES AND REGULATIONS

An early development that made international railway traffic possible in Europe was the adoption of gauge of 1435m by the railway systems of many European countries. During the 1830's British engineers built lines in several parts of Britain and much of Belgium using

[63] See Kessides and Willig (1995).

gauge of 1435m, while other British engineers introduced this gauge to several parts of Germany and Italy by the early 1840s. These railways set the pattern for subsequent lines that branched out from them, as compatible gauges were clearly adopted to facilitate through traffic. Through interconnection, national networks provided the basic material infrastructure on which international passenger' and good' trains run. On the other hand, in 1887 the protocol on the Technical Unity on Rail Transport was signed among representatives of governments of Austria-Hungary, France, Germany, Italy and Switzerland securing uniformity in rolling-stock exchange in Europe. The protocol determined technical parameters such as the dimensions of loading gauge, the maximum length of vehicles and maximum axle load, and it fixed the position of couplings, continuous brakes and steam heating pumps. Although more protocols, conferences and agreements followed we shall concentrate in the following only on the discussion of international agreements undertaken within the context of International Union of Railways, Intergovernmental Organization for International Carriage by Rail (OTIF), and finally those undertaken under the World Trade Organization's (WTO's) General Agreement on Trade in Services (GATS).

2.1 International Union of Railways

The purpose of the International Union of Railways (UIC) founded in 1922 was to deal with all technical and operating matters relating to the development of international rail transport. During the interwar period, UIC in order to promote international railway traffic formed various sub-committees working on different fields of international railway traffic, such as a revision of the international regulations for the transport of goods, the promotion of similar regulations with respect to the traffic of passengers and luggage by rail, the revision of the technical standards for international traffic, and the moderation of the financial disputes between railway administrations of different nationalities. During the Second World War UIC halted its activity, but resumed its activity after the war. In the post war period it became the leader of the various railway organizations and also the sole regular agent for intergovernmental organizations. It continued its work in promoting the standardization of railway material in the railway networks of the different European countries, the unification of railway tariffs and its overall activity through which it promoted the unification of the railway networks in Europe.

As of 2011 UIC comprises 200 members across five continents including integrated railway companies, rail passenger and freight operators, infrastructure managers, railway service providers, rail research institutes, and railway related bodies. The latest change of the Statutes took place in March 2009. According to the new statutes UIC aims among others to promote rail transport at world level with the objective of optimally meeting current and future challenges of mobility and sustainable development, and promote interoperability, improve the overall coherence of the rail system, and create new world standards for railways.

UIC has developed close to 700 'UIC Leaflets' covering all the main railway areas including passenger traffic, freight traffic, finance-statistics, operations, rolling stock, traction, infrastructure and information technology. These leaflets are professional documents, and they aim at unifying or standardizing the construction measures as well as the railway operating procedures with a view to facilitating international traffic. They are applied, according to their content, by railway undertakings, infrastructure managers, industry, and public works undertakings. The measures they contain are often integrated in national norms, European norms, and global invitations to tender for railway equipment. They therefore contain the technical requirements which must be respected to facilitate the exchange of

equipment between the networks, as well as cross-border transport. The UIC Leaflets coexist with the national and international laws, and they often act as a reference and technical basis for drafting the norms and regulations decreed by authorized organisms in Europe such as the European Committee for Standardization (CEN).

2.2 Intergovernmental Organization for International Carriage by Rail

The first International Convention concerning the Carriage of Goods by Rail dates from the year 1890. This Convention created an Administrative Union according to the rules of international law of that time. The administrative unions of the 19th century were institutionalized continuations of international diplomatic conferences. In 1956, the supervisory function was transferred to an Administrative Committee, made up of representatives from some of the Member States. At the 8th revision conference in 1980, the institutional provisions of the original Conventions were fundamentally reformed which led to the creation of an international intergovernmental organization of a modern structure. With the entry into force on May 1,1985 of the 'Convention Concerning International Carriage by Rail' of May 9, 1980 (COTIF), the 'Intergovernmental Organization for International Carriage by Rail' (OTIF) was born. At present 46 States are Members of OTIF including all of the European States, excluding the successor States of the Soviet Union, but including the Baltic states and the Ukraine, as well as four Near Eastern States and three North African States.

The territorial scope of OTIF covers international carriage by rail on around 240,000 km of railway lines and the complementary carriage of freight and passengers. The headquarters of the Organization are in Berne**,** Switzerland. Its organs are the General Assembly, the Administrative Committee and other bodies[64]. The main objective of this Governmental Organization was principally to develop the uniform systems of law which apply to the carriage of passengers and freight in international traffic by rail.

The old rules of the Convention were reflecting a "traditional" approach to railways systems. Under that systems the national railways had monopolistic position and were closely related with state administration. The railway infrastructure was usually managed by national, usually state owned, railway companies. The new challenge for traditional rail transport law came from the European integration on one hand and, on the other, the general move towards liberalization in the transport policy of numerous countries, and within the railway companies themselves[65]. The separation of railways from the state administration, as well as the separation of infrastructure management from the transport of passengers and goods, required a fundamental revision of the international rail transport law currently in force.

After preparatory work, a decision was taken by the 5th General Assembly of the OTIF, held from May 26 to June 3, 1999 in Vilnius, to adopt the new version of the Convention (COTIF, 1999). Under the new COTIF, regional economic integration organizations may also accede to COTIF. Previously, there were only individual members states. At the beginning of 2002, the European Community (EC) declared accession to COTIF as one of its aims. At present almost

[64] Revision Committee, the Committee of Experts on the Transport of Dangerous Goods, the Committee of Technical Experts and the Rail Facilitation Committee. The Secretary General provides the secretariat services. See: http://www.otif.org/en/publications.html.

[65] This process will be described in detail in the section on EU legislation.

all EU members ratified the COTIF (1999), which came into force in majority of them in 2006.[66]

The main elements of the present rail transport law (COTIF, 1999), regarding uniform rules, are concentrated in the following areas:

- Uniform Rules concerning the Contract of International Carriage of Passengers by Rail (CIV), forming Appendix A to the Convention,
- Uniform Rules concerning the Contract of International Carriage of Goods by Rail (CIM), forming Appendix B to the Convention,
- Regulation concerning the International Carriage of Dangerous Goods by Rail (RID), forming Appendix C to the Convention,
- Uniform Rules concerning Contracts of Use of Vehicles in International Rail Traffic (CUV), forming Appendix D to the Convention,
- Uniform Rules concerning the Contract of Use of Infrastructure in International Rail Traffic (CUI), forming Appendix E to the Convention,
- Uniform Rules concerning the Validation of Technical Standards and the Adoption of Uniform Technical Prescriptions applicable to Railway Material intended to be used in International Traffic (APTU), forming Appendix F to the Convention,
- Uniform Rules concerning Technical Admission of Railway Material used in International Traffic (ATMF), forming Appendix G to the Convention.[67]

The uniform rules listed above are aimed at facilitating cross border rail traffic and expansion of rail services among Member States of the OTIF. In the above areas they are aiming at setting general uniform rules, facilitating transportation of passengers and goods between member states.

The uniform rules concerning the Contract for International Carriage of Goods by Rail (CIM), Appendix B to the Convention are complemented by: (i) Annex I on Regulation concerning the International Carriage of Dangerous Goods by Rail (RID); (ii) Annex II on Regulations concerning the International Haulage of Private Owner's Wagons by Rail (RIP), (iii) Annex III on Regulations concerning the International Carriage of Containers by Rail (RICo) and (iv) Annex IV on Regulations concerning the International Carriage of Express Parcels by Rail (RIEx).

The development of the regulations concerning the carriage of dangerous goods by rail is one of main tasks of OTIF. RID has about 1000 pages and is reissued every two years. RID has become an independent Appendix to COTIF. This means that the application of RID no longer depends on the existence of a CIM transport contract. RID now has a more user-friendly presentation and differs from ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road) and ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways) in the mode-specific parts.

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[66] OTIF: State of the signatures, ratifications, acceptances, approvals, accessions and entry into force Protocol of 3 June 1999 for the Modification of the Convention concerning International Carriage by Rail (COTIF) of 9 May 1980. 8.01.2009.

[67] The Article 6 of the Convention. The detailed regulations are contained in the above mentioned appendices to the Convention. The Organization can also develop new elements of uniform law (Article 2 § 2, letter a).

One of the major tasks of the OTIF is to facilitate border crossing in international rail transport. OTIF has made numerous proposals and recommendations at improving border crossing procedures for the international transport of passengers and goods by rail (Facilrail program). The smooth border crossing requires technical uniformity in the rail sector, technical approval and supervision. The APTU appendix to COTIF (1999) deals with this issue. The aim of APTU is to ensure the interoperability of the technical systems in international rail transport. It lays down the procedures according to which technical standards and uniform technical provisions for railway equipment, to be used in international transport are validated or adopted. These technical standards provisions should contribute to achieving safety, reliability for international transport and to taking account of environmental and public health issues. The elaboration of technical standards and uniform technical provisions remains in the competence of the national or international standards organizations (e.g. CEN, CENELEC, ETSI etc.) or of the international associations working in the railway sector, especially the UIC[68].

On the other hand the ATMF Uniform Rules lay down the procedure under which railway vehicles (and other railway equipment) are approved for use in international transport. "Technical admission" (technical approval) is the task of the competent national or international authorities according to the laws and regulations of the respective State. Technical approval must be based on the validated standards and uniform technical provisions adopted in accordance with APTU.

2.3 GATS Commitments in Railway Services

The completion of GATT Uruguay Round resulted in the emergence of the General Agreement on Trade in Services (GATS). For the first time the liberalization at world scale covered not only trade in goods but also services as well. But the results of services' negotiations were fairly limited.[69] The commitments were undertaken in the four modes of supply of GATS: (i) cross-border supply, (ii) consumption abroad, (iii) commercial presence, and (iv) movement of natural persons.

The relative importance of different modes of supply is closely related to the structure of railway companies. Traditionally, at times when national railway monopolies functioned in all countries, cross-border supply (mode 1) for international transportation meant cooperation between national railway companies both in terms of fares and technical responsibility for transport. But in general there was no competition, except in the rare cases of transit between two points using different routes.[70] The commercial concepts of competition emerged when high-speed international trains and freight-ways (freeways) started operation, first of all, in some European countries. The number of technical problems involved in crossing the border is potentially very large: different gauges and signaling systems, types of electric power, breaking systems, commercial speed limits to name just a few. Some of these problems have already been solved through the OTIF initiative.

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[68] APTU creates for the railway sector a legal basis similar to the Geneva Homologation Convention of 1958 concerning road transport.

[69] There is a large literature analyzing results of negotiations in services. The most comprehensive overview is probably presented in WTO Secretariat, 2000, *Guide to the GATS.*

[70] WTO Secretariat (2000).

The second mode of supply, i.e. consumption abroad, is almost never restricted. So there is no special need to undertake any specific commitments in this field. On the contrary, some European countries, in-cooperation with others, introduced preferential systems in order to attract certain customers to use the international railway network such as Euro-rail cards or young people rail passes.

In the past there was no mode three trade (commercial presence) since railway companies were state owned monopolies in almost every country. In late 1990's, when railway services liberalization process started, companies from one country started to provide services in the other countries or purchase shares of existing companies in those countries. But in early nineties, when Uruguay Round was in the last phase, such activities at the world scale were almost non-existent.

Finally, mode four (movement of natural persons), had also a very limited importance in the past. It covered a marginal flow of railway technicians, mainly towards developing countries. At present, it is becoming more important due to liberalized access to railway infrastructure in European countries. All in all, the railway sector in early nineties was not a priority in negotiations regarding services liberalization. Therefore the results of negotiations in the rail sector are fairly limited.

According to the services sectoral classification of the WTO (1991) the railway services are divided, in the GATS, into five subcategories: (i) passenger transportation (interurban and urban and suburban); (ii) freight transportation; (iii) pushing and towing services, (iv) maintenance and repair of rail transport equipment and (v) supporting services (terminal services, cargo handling, other support services). Freight transportation is further divided into (a) transportation of frozen or refrigerated goods, (b) transportation of bulk liquids and gases, (c) transportation of containerized goods, (d) mail transportation, and (e) transportation of other freight. The number of commitments undertaken during the Uruguay round is very limited. Only 22 countries (EC counted as one) have undertaken any commitments in the railway sector. The majority of liberalization commitments are offered in the subsector of maintenance and repair of equipment, which clearly is not the most important one. The summary of commitments undertaken by all WTO members is presented in Table 3.2. The commitments were undertaken mainly by developed European countries. The only non-OECD non-European countries that offered some liberalization in the rail sector were: Brazil, Nicaragua, Nigeria, Philippines, Sierra Leone and Thailand.

Table3.2: Analysis of Sectoral Commitments made by WTO Members on Railway Transport Services

	Mode I: Cross border supply			Mode II Consumption Abroad			Mode III Commercial Presence			Mode IV Presence of Natural Persons		
	F	P	N	F	P	N	F	P	N	F	P	N
Railway Passenger Transportation	4	1	5	10	0	0	2	7	1	2	8	0
Railway Freight Transportation	4	1	5	9	0	1	2	6	1	1	9	0
Railway Pushing & Towing Services	3	0	2	5	0	0	3	2	0	0	5	0
Maintanance & Repair of Rail Transportation Equipment	4	0	13	16	0	1	12	3	2	1	16	1
Supporting Services for Railway Transport	2	0	2	4	0	0	2	2	0	0	4	0

Comments: F= full commitment (none), P= partial commitment (limitation recorded), N= No commitment (unbound)
Source: WTO Secretariat (2000)

The most frequent commitments were made in the case for maintenance and repair. Full market access in consumption abroad has been granted in 16 out of 18 and the commercial

presence in 12 cases. Full commitments regarding passenger transportation are made in 10 cases. Similar pattern of commitments exist in the case of railway freight transportations. The liberalization of pushing and towing services and of supporting services are rare. Thus, the worldwide liberalization in the railway sector is very limited, even among developed countries. More significant commitments exist in maintenance and repair of rail equipment services. There are no proposed general commitments in mode 1, with the exception of Hungary and Estonia. On the other hand all EC members proposed liberalization of consumption abroad (with exception of Austria, Cyprus, Malta, Latvia and Poland). There is also an offer to liberalize commercial presence for other WTO members, but once again with an exception of six members (four above mentioned countries plus Slovakia and Sweden). There is also an unbound proposal regarding movement of natural persons (mode four of supply). Finally, there is a very limited offer regarding supporting services in the case of rail freight agency and forwarding services. Here again the offer is unbound with the exception of Latvia. Thus, there will be no significant liberalization of EU external trade in railway services, even if the Doha Round is successfully completed. The main liberalization of services trade takes place within the EU.

3. RULES AND REGULATIONS IN THE EUROPEAN UNION

The main objectives of the rail reforms introduced in Europe were: (i) to improve competition; (ii) to create more and better integrated international freight rail services; (iii) to improve the efficient use of infrastructure capacity; (iv) to facilitate the creation of a single European rail space; and (v) to reduce the declining modal share of railways.[71] The reform started with directives issued in 1991, 1995 and 1996. The Council Directive 91/440/EEC on the development of the Community's railways, created the first and probably the most important step towards the achievement of rail liberalization. According to the Directive, the creation of the single railway market in the EU, should be achieved by:

- ensuring the management independence of railway undertakings;
- separating the management of railway infrastructure from the provision of railway transport services with separation of accounts being compulsory and organizational or institutional separation being optional,
- improving the financial structure of undertakings,
- ensuring access to the networks of Member states for international groupings of railway undertakings and for railway undertakings engaged in the international combined transport of goods.

To achieve management independence, the railway undertakings should have independent status in accordance with which they will hold, in particular, assets, budgets and accounts which are separate from those of the State. They should be managed according to the principles which apply to commercial companies and should determine their business plans, including their investment and financing programs. It was also stated that Member States should ensure that the accounts for the provision of transport services and the management of railway infrastructure be kept separate. They may assign a manager for the railway infrastructure. The manager should charge a fee for the use of the railway infrastructure for which he is responsible, payable by railway undertakings and international groupings using

[71] See Monsalve (2011).

that infrastructure. According to the Directive 91/440/EEC international groupings should be granted access to railway infrastructure on equitable conditions and transit rights in the Member States for the purpose of operating international combined transport services.

The basic provisions of Directive 91/440 were supplemented by two other Directives issued in 1995 and two in 1996. The Directive 95/18/EC sets out the criteria for obtaining the license of railway undertakings requiring that they be granted on uniform and non-discriminatory basis. A license is valid throughout the territory of the Community but services by railway undertakings limited to the operation of urban, suburban or regional services could be provided without a license. The applicant for a license had to have a management organization which possesses the knowledge and experience necessary to exercise safe and reliable operational control and supervision of the type to be provided. A railway undertaking should be adequately insured or make equivalent arrangements to cover its liabilities in the event of accidents. The second Directive 95/19/EC regulated the allocation of railway infrastructure capacity and the charging of infrastructure fees. It stated that each country should designate an allocation body which should be informed of all train paths available. The body should ensure that railway infrastructure capacity is allocated on a fair and non-discriminatory basis and that the allocation procedure allows optimum effective use the infrastructure. According to the directives Member States should designate national independent bodies responsible respectively for granting licenses and ensuring the access to railway infrastructures.

The Directive 96/48/EC set provisions on the interoperability of the trans-European high speed rail system where interoperability meant the ability of the trans-European high-speed rail system to allow the safe and uninterrupted movement of high-speed trains. This ability rested on all the regulatory, technical and operational conditions which must be met in order to satisfy essential requirements, where essential requirements take the form of "Technical Specifications for Interoperability" (TSIs). These specifications lay down the fundamental elements of each sub-system and identify in particular the constituents that are critical from the perspective of interoperability. Finally, the last Directive 96/49/EC was on the approximation of the laws of the Member States with regard to the transport of dangerous goods by rail. The purpose of this Directive was to establish national safety standards at the level of the international standards set in COTIF.

New ideas regarding further liberalization were presented in the Commission's 1996 White Paper 'A strategy for revitalizing the Community's Railways'. In the paper the Commission emphasized that the railway sector was in decline and that its market share was falling, while it had characteristics which could make it an attractive form of transport in Europe. In order to exploit these opportunities, the Community according to the paper needed a genuine single market. Rail systems were based on national lines resulting in difficulties in operating across frontiers. Planning of infrastructure was inadequate, and markets were fragmented. Integration was therefore far from being complete. The basic idea presented in the White Paper was to introduce market forces into rail, which should give incentives to firms to reduce their costs, improve service quality and develop new products and markets. In order to reach these goals the railways should be run on a commercial basis and Member States should relieve the burdens of the past.

The Commission, in order to increase the role of market forces, proposed (i) to extend access rights to railway infrastructure for all freight services and international passenger services, (ii) to examine options for improving the institutional framework for developing domestic passenger transport of the future, (iii) to modify Community legislation in order to separate

infrastructure management and transport operations into distinct business units, and (iv) to promote the creation of a number of trans-European rail freeways for freight. On the other hand the Commission stressed the role of public services. The Commission proposed to improve the quality/price ratio in the transport sector and to generalize the use of public service contracts agreed between the State and transport operator. Finally Commission recognized that the integration of national systems was needed. Therefore Commission proposed (i) to examine the scope for improving interoperability on major international routes in cost-effective ways, (ii) to study how to eliminate delays at frontiers for freight traffic, and (iii) to assess what improvements had to be made to infrastructure to develop freight transport.

In the follow up to the White Paper the Commission put forward the idea of "Trans-European Rail Freight Freeways" (TERFN).[72] In its communication the Commission advocated the introduction of rail corridors to operate on the following principles: (i) access to freeways must be fair, equal and non-discriminatory for all train operators licensed in the Community; (ii) the granting of licenses, allocation of infrastructure capacity and charging fees within the framework of these freeways should be in compliance with Directive 95/18/EC; (iii) freeways should be open to cabotage; and (iv) freight terminals should be open for non-discriminatory access to all train, road haulage and waterway operators.

3.1 First Railway Package

In 1998 the Commission proposed a package of reforms adopted as the First Railway Package on February 26, 2001. The package consisted of three Directives 2001/12/EC, 2001/13/EC, 2001/14/EC, and Member States had time until March 15, 2003 to implement the provisions of the Directives in national legislation.

Directive 2001/12/EC amended Directive 91/440/EEC by requiring the infrastructure manager to have responsibility for its own management, administration and internal control, and to have established a business plan that includes the investment program and that is designed so as to ensure financial equilibrium and optimum use of infrastructure. Capacity allocation, infrastructure licensing and charging must be undertaken by an organization that does not provide transport operations, in order to create non-discriminatory access to infrastructure. Furthermore, it required (i) production of separate profit and loss accounts and balance sheets for freight, passenger transport services and infrastructure management, and (ii) open access for international freight services on the TERFN.[73] The Member States must also ensure that compliance with safety standards are verified, rolling stock and rail undertaking are certified, and accidents are investigated. Concerning the financial statements of rail undertaking revenues from Public Service Obligation (PSO) must be shown distinctively and not be transferred to another item. No transfer of public funds provided for passenger services was allowed to be used to cross-subsidize freight operations.

The Directive 2001/13/EC on the licensing of railway undertakings amending the Directive 95/18/EC introduces a system of licensing to prevent unfit operators from commencing operations and to prevent international operators from facing entry barriers by having a

[72] European Commission (1997).
[73] Initially – these were the major lines in each Member State shown on the map incorporated into the Directive, plus feeder lines and access to track in ports and multi-user terminals; and by 2008 open access to the entire European rail network for all international freight.

harmonized system of licensing. The Directive defines (i) conditions required for operators to obtain a license to run rail freight services over TERFN and the recognition of any such license in another member state, (ii) framework for financial, economic and safety conditions required in order to obtain a license, and (iii) procedure for notifying the European Commission with respect to the issue of a license.[74]

The Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification amending the Directive 95/19/EC aims to ensure that member states adopt transparent processes in relation to access charging and capacity allocation. The key principles are contained in Article 30 of the Directive, which requires the creation of national regulatory bodies (RBs), independent from any infrastructure manager (IM), allocation or charging body or railway undertaking seeking railway capacity; the applicant must have a right of appeal against unfair discrimination, and RBs must decide on any complaints, take remedial action, and they must ensure the charges for access to infrastructure are nondiscriminatory; RBs must ensure that IMs are able to balance income and expenditure; and Member States must establish charging framework and its specific rules. The directive lays down charging principles so that charges must be paid to the infrastructure managers and used to fund their business. In principle, the charge for the use of railway infrastructure is equal to the cost directly incurred as a result of operating trains. But the infrastructure charge may include a sum reflecting the scarcity of capacity, and the charge may be adjusted to take account of the cost of the environmental impact of operating the trains.[75] The calculation of the charge and the collecting of that charge must be performed by the infrastructure manager, which will receive the track access fees and will use them to fund its business.

The right to use railway infrastructure is granted by the infrastructure concerned manager who allocates the available capacity which, once allocated, may not be transferred to any other undertaking by the recipient. The rights and obligations of the infrastructure manager and of the authorized applicants are laid down in a contract. The directive lays down a schedule for the capacity allocation process and describes how railway undertakings should apply to use infrastructure. Infrastructure managers must make every effort to meet all requests for capacity and to ensure the best possible matching of all requirements. Save in exceptional cases, no priority should be given to any service or undertaking within the scheduling and coordination process. Infrastructure managers unable to meet all the requests for capacity must declare the section in question to be congested. They must then carry out a capacity analysis to determine the restrictions on capacity and propose alternatives. Thus, the infrastructure manager shall ensure that infrastructure capacity is allocated on a fair and non-discriminatory basis and in accordance with Community law.

According to Directives 2001/12/EC and 2001/14/EC Member States must establish a regulatory body which shall be independent in its organization, funding decisions, legal structure and decision-making from any infrastructure manager, charging body, allocation body or applicant.

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[74] Undertakings which only operate rail passenger services on local and regional stand-alone railway infrastructure; urban or suburban rail passenger services are exempted from licenses.

[75] Pientrantonio and Pelkmans (2004) point out that the Directive 2001/14/EC opts for the application of marginal cost principle. To secure the cost recovery the directive proposes the application of Ramsey (1928) pricing.

In addition to the First Package, the Directive 2001/16/EC on the interoperability of the trans-European conventional rail system was adopted. This Directive was designed on the basis of the structure and content of the High-Speed Directive (Directive 96/48/EC). Nonetheless, a number of changes were made, essentially concerning the geographical scope (relevant network), the technical scope (relevant subsystems), the gradual approach to introducing new Community specifications, and the adoption of a work program and priorities for the work of the joint representative body and the committee. The Directive itself, contains essential requirements to be met by the system. In addition it provides the technical specifications for interoperability (TSIs) and all the other European specifications, including European standards from the European standards bodies: European Committee for Standardization (CEN), European Committee for Electrotechnical Standardization (CENELEC) and European Telecommunications Standards Institute (ETSI). The Directive stipulates that work on common standards should focus first "on control/command and signaling, telematic applications for freight services, traffic operation and management (including staff qualifications), freight wagons and noise problems." The Commission adopted TSI for the six subsystems in 2002.[76] For example the controlling and signaling subsystem required a unified control system, the European Rail Traffic Management System (ERTMS), on the high speed Trans -European network.[77]

In 2001 the Commission published the White Paper 'European Transport Policy for 2010: Time to Decide'. The prescriptions of the white paper are based on the assessment of ten years of transport policy pursued until then. The Paper identifies rail as 'the strategic sector". The main weaknesses of railway transportation are listed explicitly as (i) infrastructure not suitable for modern transportation and interoperability, (ii) poor information systems, (iii) opaque costing, (iv) uneven productivity, and (v) mediocre reliability. The White Paper proposed many changes which are classified under the objectives of creating an integrated rail transport market; using the infrastructure more efficiently; improving quality and safety for users; and reducing congestion. The specific measures proposed in the paper include the opening of national rail freight and passenger markets to cabotage and increasing the members' allocation of train slots to freight rather than passenger, which should be more efficiently served by a high speed rail network. In addition, the white paper proposes to include some sections of TERFN into the Trans European Network (TEN) in order to make them eligible for European and national funding.

3.2 Second Railway Package

The White Paper provided an additional incentive for further liberalization of railway transportation. The Second Railway Package formally adopted by the Council of Ministers

[76] The texts of the TSIs were published in the Official Journal L245 of September 12, 2002 and they covered maintenance subsystem of trans-European high speed rail system, control command and signaling subsystem of the trans-European high speed rail system, infrastructure subsystem of the trans-European high speed rail system, energy subsystem of the trans-European high speed rail system, operation subsystem of the trans-European high speed rail system, and railing stock subsystem of the trans-European high speed rail system.

[77] The rationale for proposing a uniform control system was the recognition that more than 15 different signaling systems currently operate on the European network. The proposal to establish the ERTMS, set up by European Signaling suppliers, was intended to provide a common rail traffic management system across the entire European network.

and European Parliament on April 29, 2004 provided a framework for further liberalization of the freight market and harmonization of the regulation of safety and technical standards across the EU. The package contains four pieces of legislation and a recommendation: (i) Directive 2004/49/EC; (ii) Directive 2004/50/EC; (iii) Directive 2004/51/EC; (iv) Regulation (EC) 881/2004; and (v) the recommendation covering the accession of the European Community to the Intergovernmental Organization for International Carriage by Rail (COTIF).

The Railway Safety Directive 2004/49/EC amended lately by Directive 2008/110/EC develops a common approach to rail safety by laying down a clear procedure for granting the safety certificates that every railway company must obtain before it can run trains on the European network. The purpose of the safety certificate is to provide evidence that the railway undertaking has established its safety management system and can meet requirements laid down in technical specifications for interoperability and other relevant Community legislation. The Directive harmonizes safety levels across Europe by specifying what infrastructure managers need to do in order to receive safety authorization. As emphasized by Monsalve (2011) it obliges each Member State to establish binding national safety rules. Member States must annually collect standard safety indicators and must establish a safety authority independent from any railway undertaking, infrastructure manager, or applicant and procurement entity in charge of issuing, renewing, and amending the safety certificates. Moreover, Member States must also establish an investigating body independent from any rail undertaking, infrastructure manager, or charging or allocating body. It must investigate any serious accident and publish an annual report. Finally, any rail undertaking must hold a standard safety certificate defined in the same directive, and any infrastructure manager must obtain a safety authorization also defined in the same directive. All Member States were required to adopt all necessary measures by April 30, 2006.

The Directive 2004/50/EC amending Directive 96/48/EC setting provisions on interoperability of the trans-European the high speed rail system and Directive 2001/16/EC on the interoperability of the trans European conventional rail system aims at completing the interoperability principles. It harmonizes the two Directives, taking into account the new legislation of the Second Rail Package, and clarifies interoperability requirements. These requirements concern the design, construction, placing in service, upgrading, renewal, operation and maintenance of the parts of this system placed in service after April 30, 2004, as well as the qualifications and health and safety conditions of the staff who contribute to its operation. Thus, the objective of the directive is to narrow down the divide so that international trains can provide a better, completely safe service when they change national networks.

The Directive 2004/51/EC which further amends the crucial Directive 91/440 is aimed at further liberalization and opening up of the freight market. The goal was to achieve the opening of entire European market to national freight services no later than January 1, 2006. It means that all railway undertakings established in Member States must be granted access to the TERFN and to the whole network for international freight services. The scope of Directive 91/440 shall be applied to all freight including national freight by January 2007. Finally, all Member States are required to transpose the Directive into national legal systems by December 31, 2005.

Regulation (EC) 881/2004 amended lately by Regulation (EC) 1335/2008 sets up an effective steering body, the European Railway Agency, to co-ordinate groups of technical experts seeking common solutions on safety and interoperability. The main objectives of the

European Railway Agency are to increase the safety of the European railway system; improve the level of interoperability of the European railway system; contribute towards establishing a European certification system of vehicle maintenance workshops; and to contribute towards setting up a uniform training and recognition system for train drivers. The Agency by providing the necessary technical assistance to implement Directive 2004/49/EC on safety on Europe's railways has been a driving force in the policy for modernizing the European railway sector. Since mutually incompatible technical and security regulations in Member States are a major handicap to the development of the railway sector, the Agency aims to gradually align these regulations and establish common safety objectives that all Europe's railways have to achieve. Thus, it has to organize and manage work aimed at creating and updating the TSIs.

In 2005 the Commission published the Communication on the deployment of the European rail signaling system ERTMS/ETCS. The communication noted that the coexistence of more than twenty different signalling and speed control systems for rail transport in Europe developed on national level is a barrier to the development of international rail traffic, as locomotives have to be able to read the signals from different networks when crossing borders. Since the systems are very different in terms of performance and safety, the communication shows that a more effective signaling system with automatic train speed control could improve the safety of the railways. As a result the communication calls for the gradual transition to a system that is common to the various Member States: the European Rail Traffic Management System (ERTMS) with the components GSM-R, which is a radio communication system based on standard GSM, but using various frequencies specific to rail, and ETCS (European Train Control System), which not only allows permitted speed information to be transmitted to the driver, but also monitors the driver's compliance with these instructions.

In 2006 the Commission published the communication on facilitating the movement of locomotives across the EU. The communication notes that one of the main obstacles to developing a Community railway system is the fact that rolling stock that has been approved for operational service in one Member State and in particular locomotives is not automatically accepted in another Member State. The cross-acceptance of locomotives is, in fact, subject to very different national requirements, and international operators must repeatedly undergo approval procedures in each Member State in which they intend to operate, often requiring supporting evidence that is not mutually recognized by Member States resulting in delays and additional expenses for railway companies and manufacturers. The Commission therefore proposes to amend the legislation on the procedure for authorizing the entry into service of new and existing rolling stock, making it possible to create a precise framework procedure to assist the newly created national safety authorities;

3.3 Third Railway Package

The Commission adopted the 'Third Railway Package' on September 27, 2007 composed of Directive 2007/58/EC, Directive 2007/59/EC and Regulation (EC) 1371/2007.

According to the Directive 2007/58/EC amending Council Directive 91/440/EEC and Directive 2001/14/EC railway undertakings established in Member States must by January 1, 2010 be granted the right of access to the infrastructure in all Member States for the purpose of operating international passenger service provided the competitors have rolling stock and drivers authorized for service in the Member States in which they plan to operate; a railway

undertaking license in a Member State; a safety certificate issued by the national safety authority of each of the Member States they plan to cross; and infrastructure capacity, in order to provide a regular service. Furthermore, rail undertaking must in the course of an international passenger service have the right to pick up passengers at any station located on the international route and set them down at another, including stations that are located in the same Member State.

Directive 2007/59/EC lays down conditions and procedures for the certification of train crews operating locomotives and trains. More specifically, it introduces a European driver license allowing train drivers to circulate on the entire European network. The certification of cross-border drivers was foreseen as from 2009, and of all other drivers as from 2011. According to the Directive drivers have to meet basic requirements concerning their educational level, age, physical and mental health, specific knowledge and practical training of driving skills. It also specifies the tasks for which the competent authorities of the Member States, the train drivers and other stakeholders in the sector, the rail undertaking, infrastructure managers and training centers are responsible.

Regulation (EC) 1371/2007 on rail passengers' rights and obligations ensures basic rights for passengers in such areas as insurance, ticketing, and passengers with reduced mobility. While long-distance travelers will enjoy a wider range of rights, minimum quality standards will have to be guaranteed to passengers on all lines. Regulation establishes quality standards in the following areas: (i) non-discrimination toward handicapped travelers or persons with reduced mobility; (ii) liability in case of accidents; (iii) availability of train tickets; and (iv) personal security of passengers in stations. This pregulation sets minimum requirements for information to be provided to passengers relative to their journey, contract conditions, and the liability of rail undertaking in cases of accidents, delays or cancellations of services. In particular, the passenger is entitled to be reimbursed or re-routed when he/she has missed a connection due to delay or there has been a cancellation of services. A passenger may also request compensation for delays. The minimum compensations for delays has to be as follows: (a) 25 percent of the ticket price for a delay of 60 to 119 minutes, and (b) 50 percent of the ticket price for a delay of 120 minutes or more.[78]

3.4. Further steps towards the Single European Railway Area

According to the EU Commission (2010) a single European railway area is a strategy which consists of promoting the development of an effective EU rail infrastructure, establishing an open rail market, removing administrative and technical barriers, and ensuring a level playing field with other transport modes. The Commission emphasized that the railway freight sector was in decline when its market share was falling in 1990's.. After a sharp decrease in the 1990s from 420.1 billion pkm in 1990 to 370.7 billion pkm in 2000, rail passenger transport has been stabilized in 2000's, despite a further decline in Central and Eastern Europe. The current economic climate has exacerbated some of the structural weaknesses of the rail market and accelerated a consolidation of the railway sector with the acquisition by incumbents of several new freight service operators in 2008-2010.

Making rail transport sustainable is a long-term strategic priority of the EU. The Commission (2009) in its Communication on the Future of Transport, has proposed the Greening Transport

[78] Regulation 1371/2007, Article 17.

package. It has proposed measures to internalise the external costs of transport in a coordinated manner across modes so that the charges reflect the level of the external cost imposed on the whole society. Internalising external costs is the right way to ensure that pricing systems reflect more accurately the true costs borne by transport modes.

Today there is still no fair inter-modal competition. The charging principles applicable to rail, road and air transport differ vastly among member countries. The infrastructure costs and the instruments for internalising or modulating external costs such as air pollution, noise, climate change and congestion are still very diverse. The Commission (2008) proposal to revise the 'first railway package' and the measures set out in the Greening Transport package in the field of road freight transport already contain new provisions aimed at ensuring convergence between the charging principles applying to rail and road transport and enabling a genuine level playing field among transport modes. The revised Eurovignette Directive will allow the internalization of external environmental and congestion costs.

The insufficient level of investment in rail infrastructure in many EU members – and especially in the Central European countries - is a key reason contributing to the decline of the share of rail in transport services. Poor maintenance and slow modernisation have a direct negative effect on the low level of competitiveness of the whole sector. The policy of the European Commission aims at mobilising EU national and private funds for the development of new rail transport projects and to ensure that the existing infrastructure is adequately maintained. The majority of financial support will be provided from Trans-European Networks for Transport (TEN-T) projects for the creation of a rail network for competitive freight.

The main goal of the single European railway area is to create genuinely open market through enforcing and improving existing rules. Since the 1990s when the liberalization of rail services started in the EU considerable progress has been made. Rail freight transport and passenger transport by rail have been fully open to competition from January 2007 and January 2010 respectively. The Commission aims to extend market opening to domestic passenger traffic, whether under public service or private contract subject to appropriate quality safeguards. The market opening will be incomplete as long as European railway undertakings do not have the right to provide domestic passenger transport services throughout the EU. The Commission has launched a study on the regulatory options available for domestic passenger market opening. The Commission will also examine the conditions for awarding public service contracts for rail transport in Member States. An evaluation of the current practices under Regulation (EC) No 1370/2007, which entered into force in December 2009, is already underway.[79]

Much has been achieved with the adoption by the Commission of a set of 'Technical Specifications for Interoperability' (TSI) for both high-speed and conventional rail. But at this stage all TSI remain applicable only to the TEN-T. However, a mandate has been given to European Railway Agency to prepare the extension of TSIs of their scope so that the whole railway system would be covered in the near future by harmonized specification. But because

[79] See Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70.

of the long lifespan of rail equipment and the need to keep investment costs at levels that the sector can bear, moving towards interoperability is a slow process.

Despite the progress reached through three railway packeges the competition between railway undertakings is still limited by various factors stemming from the protectionist behaviours of historical incumbent operators and the collusive management of rail infrastructure, which, being a natural monopoly, should in principle be accessible to all applicants in a fair and non-discriminatory manner. In many countries there is an insufficient transparency of market conditions and ineffective functioning of the institutional framework. Operators entering a new market continue to face discrimination in obtaining access to the infrastructure and rail-related services, which are often owned and operated by the incumbent rail undertaking. In addition, safety requirements still impose significant barriers to entry in the EU rail market. These barriers stem mainly from the cost and duration of the procedures involved at national level, their disparity across Europe and the lack of transparency and predictability. Regulation 884/2004 amended by Regulation 1335/2008 gives a leading role to the European Railway Agency (ERA) in gradually harmonising national safety processes. The Commission will examine how ERA's role can gradually evolve to complement or even take on at least in part the activities of national safety agencies in the certification and authorisation processes.

Finally, note that the EU has set out uniform regulations for the transport of dangerous goods by rail. The current regulations were already presented and provided for the application of the existing rules. Recently the Directives 94/55/EC an 96/49/EC were repealed and replaced by Directive 2008/68/EC on the inland transport of dangerous goods. According to the 2008 Directive the EU countries have the right to regulate or prohibit, strictly for reasons other than safety during transport, the transport of dangerous goods within their own territory. They may also set down specific safety requirements for the international transport of dangerous goods within their own territory with regards to: (i) the transport of dangerous goods by, wagons waterway vessels not covered by this directive; (ii) the use of prescribed routes, where justified, including the use of prescribed modes of transport and (iii) special rules for the transport of dangerous goods in passenger trains. Thus, apart from the efforts to harmonize safety process, the EU is also accepting some level of national autonomy in this area.

3.5 Trans-European Transport Networks, Pan-European Rail Corridors, and Transport Infrastructure

The Maastricht Treaty gave the Community the powers and instruments to establish and develop the trans-European network. In 1996, the first guidelines for the development of the Trans-European Transport Network (TEN-T) were adopted. The aim of the TEN-T is to ensure that national networks for all modes of transport are accessible, interconnected and interoperable. The guidelines initially incorporated 14 projects of common interest that were adopted by the Essen Council. The enlargement of the EU in 2004 and 2007 led to the need for a thorough revision of the TEN guidelines. The number of priority projects was raised from 14 to 30, and rules for granting Community aid were modified to allow for a higher maximum co-funding rate for priority projects. The EU is supporting the implementation of the TEN-T by the TEN-T program, the Cohesion Fund, the European Regional Development Fund, and the European Investment Bank's loans and credit guarantees.

The Eastern enlargement of the EU posed the question of providing a connection between Western and Eastern Europe, and within the Eastern Europe itself. After the second Pan-European Transport Conference (PETC) held in Crete, in 1994 the nine multimodal Pan-

European transport links were identified as being of European interest and were considered to be a basis for future work on transport infrastructure development in Central and Eastern Europe[80]. The corridors are road or rail corridors—with the exception of Corridor VII, which is an inland waterway through the Danube The nine Pan-European transport corridors in the Central and Eastern European region and the guidelines adopted for the development of the EU TEN-T continued to constitute a valid basis for coherent infrastructure development at Pan-European level.[81]

The structural dialogue between the Transport Council of the EU and the Transport Ministers of the EU-associated countries started in 1995, recommending a Transport Infrastructure Needs Assessment (TINA) for EU-accession candidates. On the basis of this recommendation, the Commission launched the TINA process, with the objective to define the future Trans-European Transport Infrastructure Network in the enlarged Union. The TINA process has been designed to support the planning and development of a multi-modal transport network within the candidate countries for accession. The starting point for the TINA process was the blueprint for the backbone network based on the Pan-European Transport Corridors.

It has also become apparent that the corridor concept, based on the development of links between major activity centers, did not adequately address transport infrastructure needs in certain areas, particularly those surrounding or linked to sea basins. The result was the adoption of the complementary concept of Pan-European Transport Areas (PETrA). It has been agreed that the countries concerned should work on infrastructure development plans for each area, and its links with the Pan-European Corridors, and the EU Trans-European Networks. This work should also aim at complementing the Pan- European Transport Corridors to ensure their greatest possible integration with Areas in question.[82] Pan European Transport Corridors are designed for multimodal transportation. In the case of railways another element which should increase competiveness of a single area is the creation of a rail network for competitive freight. The Regulations (EU) No 913/2011 sets out rules for the establishment and organisation of international rail corridors for competitive rail freight. It sets out 9 initial freight corridors which must be made operational by the concerned EU countries. For each freight corridor, EU countries must establish a management board, made up of representatives of the infrastructure managers. This board shall draw up an implementation plan which includes an investment plan, the measures foreseen to implement the corridor and the main elements of a market study. The management board will designate a joint body a single place to provide answers relating to infrastructure capacity for freight trains crossing at least one border along the freight corridor. This "one-stop shop" will take decisions regarding applications for pre-arranged train paths and the reserve capacity for international freight trains.

The TEN-T policy is crucial for the development of high-speed lines and efficient freight infrastructures on EU scale. Having increased considerably in the 1990s, the length of the

[80] The list of ten corridors is provided in the Annex to this chapter.

[81] In the light of the peace process taking place in the successor states to the Socialist Federal Republic of Yugoslavia, a new corridor (Corridor X) that broadly follows the traditional transport route in south-eastern Europe has been established. The list of ten corridors is provided in Annex 1 to this chapter.

[82] The PETrAs identified by the Conference are the Barents Euro-Arctic Area, the Black Sea Basin Area, the Mediterranean Basin Area, and the Adriatic/ Ionian Seas Area.

high-speed network doubled between 2001 and 2007 in Europe, totalling 5 764 km in 2008, with more than 2 500 km of additional high-speed lines under construction in Belgium, France, Germany, Italy, Spain and the Netherlands. By 2007, high-speed rail transport constituted 23 percent of the total EU passenger rail market measured in passengers/kilometres and has succeeded in recapturing markets from cars and aviation. By 2020 the comprehensive TEN-T should cover 106,000 km of railways, including 32,000 km of high-speed railways. While most of the links already exist, completion of the TEN-T entails construction of the missing links such as building and improving on the network.

Finally, it should be noted that rail transportation has received only a small part of total investment budget in infrastructure in comparison to the road infrastructure.[83] This imbalance is particularly marked in Central and Eastern Europe. The majority of financial support will be provided for the TEN-T projects. Despite long term ambitious plans the current level of expendture supported by the EU is much smaller. Under the EU financial framework 2007-2013 about €82 billion from the EU Structural and Cohesion Funds (23.8 percent of the total allocation) will be spent on transportation between 2007 and 2013, of which € 23.6 billion will be allocated for rail infrastructure. [84]

3.6 Concluding Remarks

The above consideration apply to the EU Member Countries. But there are other countries such as the neighbouring countries of the EU that could also reap the benefits of liberalization by ensuring compliance with the requirements of the relevant EU directives for the railway sector contained within the *acquis communautaire*. For those countries the first step would be the separation of accounts between infrastructure managers and transport services as foreseen in Directive 91/440/EEC. On the other hand, the First Rail Package requires (i) the development of multi-annual contracts between the state and infrastructure manager; (ii) the introduction of track access charges; (iii) the development of public service contracts; and (iv) mechanisms to reduce indebtedness of rail incumbents. In addition, the EU directives foresee the establishment of a regulatory authority (Directive 2001/12/EC and Directive 2001/14/EC), licensing body (Directive 2001/13/EC amending Council Directive 95/18/EC), safety authority (Directive 2004/49/EC), accident investigation body (Directive 2004/49/EC), and notified body (Directive 1996/49/EC). These institutions are required to be independent in order to act in a fair and non-discriminatory fashion where independence is understood in terms of financing and organizational independence from transport ministries—with board of directors and managers hired through an open process and not appointed by the transport ministry or government, and with decision-making independent from transport ministries.[85]

4. REGULATORY FRAMEWORK IN POLISH RAIL TRANSPORTATION SECTOR

The reform of the Polish rail transportation sector started with the adoption of the Railway Transport Law in June 1997.[86] It transposed the Directive 95/19/EC on the allocation of

[83] Investment needs for the Trans-European Transport Network are estimated at around about 600 billion euro (a 250 billion for 30 priority projects). But the EU TEN-T budget amounts only to 8 billion.
[84] COM(2010) 474 final, p. 5
[85] See Monsalve (2011).
[86] Ustawa o Transporcie Kolejowym z dnia 27 czerwca 1997 r (Dz.U.97.96.591).

railway infrastructure capacity and the charging of infrastructure fees. The Law states that authorities shall designate the allocation body which shall be informed of all train paths available. The body shall ensure that railway infrastructure capacity is allocated on a fair and non-discriminatory basis and that the allocation procedure allows optimum effective use the infrastructure. But no specific provisions were adopted.

The serious preparations for the accession of Poland to the EU in the railway sector started with the "Law on Privatization, Restructuring and Commercialization of State Company Polish State Railways (Polskie Koleje Państwowe (PKP))" in September 2000. As of this date the Polish Railways are independent from the state. The Polish incumbent PKP was transformed into Polskie Koleje Państwowe S.A., a joint stock company under normal commercial law with a holding structure. The State Treasury holds 100 per cent of the shares of PKP S.A. The ten subsidiary holding companies include PKP PLK S.A. (infrastructure operator), PKP Cargo Sp. z o.o. (freight transport), PKP Intercity Sp. z o.o. (long distance passenger transport), PKP Przewozy Regionalne Sp. z o.o. (short distance passenger transport) and PKP Linia Hutnicza Szerokotorowa Sp.z o.o. (freight transport on broad gauge line). Separated accounts for the restructured PKP SA group subsidiaries, infrastructure, freight and passenger sectors were kept since 2002.

The most important legal development was the adoption of the second Railway Transport Law ("Ustawa o transporcie kolejowym") on March 28, 2003. The purpose of this law, implemented just before the accession, was to enact into Polish legal system the key EU directives regarding railway legislation. In particular it aimed at implementation of (i) Directive 91/440/EEC on development of Community's railways (ii) Directive 95/18/EC on licensing of railway systems, (iii) Directive 96/48/EC on interoperability of the trans-European high-speed rail system, (iv) Directive 2001/12/EC on development of the community railways, (v) Directive 2000/13/EC on licensing of Railway Undertakings and (vi) Directive 2001/14/EC on allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification. The next piece of transposition of the EU legislation was the Law on Transportation of Dangerous Goods by Rail of March 31, 2004. It implemented the Directive 96/49/EC on the approximation of the laws of the Member States. The main goal of this Law is to assure safety standards at compatible level with the international standards set in COTIF.

The Law on Financing the Land Transportation Infrastructure of December 16, 2005 constituted the next element of enacting the EU legislation. It amended the Railway Transport Act of 2003, stating that the construction and maintenance of the railway infrastructure should be financed by the manager of infrastructure. It enables also the co-financing of the construction of infrastructure by the EU Cohesion Fund.

The last, important element of the legal transposition is the Law on Railway Fund of December 16, 2006. It amended the first Railway Transport Law of 1997. The new Law establishes the Fund for constructing, modernizing and maintaining existing railway infrastructure. It covers the losses suffered by railway undertakings' in the years 2002-2003, when passengers fees were set by the administration. The Fund can gather financial resources from the fuel charge, assets issued by the State Treasury, loans and other sources. In addition several Regulations by the Ministry of Infrastucture have been issued enacting EU *Acquis communataire* in many specific areas, and especially in the field of safety, network standardization and licenses.

Since that time Poland is gradually implementing the EU *Acquis communataire* to Polish legislation. The implementation of the legislation summarized above is supervised by the Urząd Transportu Kolejowego (UTK), the Office of Rail Transportation.[87]

4.1 The Organization of Poland's Railways and Market Access

The independent regulator operating in Poland, foreseen by Directive 2001/14/EC, is the Office for Railway Transport (Urząd Transportu Kolejowego (UTK)), which was created on the basis of the Railway Transport Act of June 1, 2003. Currently, as required by *Acquis Commnautaire* relevant to the railway sector, the UTK performs three key functions on the domestic railway market:

- National Regulatory Body (based on Directive 2001/14/EC);
- National Safety Authority (based on Directive 2004/49/EC);
- National Enforcement Body for Passenger Rights (based on Regulation 1371/2007).

The UTK, in line with the first Directive, is responsible for the regulation of railway transport, railway transport licensing, technical supervision of rolling stock, railway tracks exploitation and maintenance, and the supervision of railway traffic security. The UTK had the budget of 18 million zlotys (about 4.2 million euro) and employed 182 in 2012. According to the law an appeal body has been established for capacity allocation decisions made by the infrastructure manager. The UTK also settles disputes among stakeholders.

IBM Business Consulting Services (2011) has rated the competencies of the UTK as transparent, and the procedures in the case of legal proceedings and sanctions as clear. However, the political independence of UTK is not obvious, as its director at any time can be recalled by the Minister of Transport. In case of complaints relating to train path allocation procedures, the charging system or the level and structure of infrastructure charging, the UTK is obliged to initiate investigations in response to complaints; it can but it does not have to take action ex officio. However, it investigates only the results, and not the process of drawing up these charges. No information was available in 2011 about the number of investigation procedures and decisions taken in recent years by the UTK and whether these were positive or negative.

Objections to UTK decisions, which can also be made ex-ante, have a suspensive effect. The UTK is entitled to impose coercive measures and is able to fine up to a level of two per cent of the annual profit of the company concerned. Thus, the regulatory body in Poland is embodied within a traditional Railway Authority. The primary responsibility is not access regulation, but licensing, safety certificates, etc. According to the interviewed Railway Undertakings (RUs), the identification of personal contacts for obtaining information about market access and a license is easy and uncomplicated. All relevant information and documents relating to access to Polish rail infrastructure are published on the Internet by the corresponding institutions. However, most documents are only available in Polish. The network statement for 2011 has been published in both Polish and English on the website of the infrastructure manager.

[87] See http://www.utk.gov.pl/portal/en).

The majority of the EU Member States have implemented mainly the minimum set of EU requirements, but some of the new Member States in comparison to old Member States have set up more modern regulatory bodies. Poland is among this group of countries and its progress in the opening up of the rail market has been recognized by IBM Business Consulting Services (2011). Indeed, only three countries, Germany, Austria and the UK, have regulatory bodies that had specialized staff prepared to deal exclusively with regulatory matters and were provided with far-reaching powers to enable them to enforce their decisions.

The UTK is also responsible for licensing Railway Undertakings (RUs), i.e. for the issue of licenses, safety certificates and homologation of rolling stock. A license issued by UTK is valid for the entire network for an indefinite period of time, but have to be reviewed every one to two years. There are three types of licenses, namely freight transport, passenger transport and the disposal of traction vehicles. A maximum period of three months is prescribed by law for the issue of licenses, and the licenses expire after six months if unused.[88] Licenses from other EU countries are recognized only for freight transport, not for passenger transport. The fees for issuing of a license amount to an equivalent of EUR 1,750. The interviewed RUs rated the license issuing process in Poland as transparent. The insurance coverage required by law amounts to the equivalent of around EUR 10 million.

The safety certificate is valid for the entire network for both passenger and freight transport, and if not used it does not lose its validity. A safety certificate is valid for five years and has to be verified every one to two years. They expire after twelve months if unused. It takes about 90 days to examine safety certificates from other EU countries. The maximum fees for issue amount to an equivalent of EUR 5,000. The applications for the issue of a safety certificate have to be processed, by law, within three months.[89] While part A of safety certificates issued in other EU Member States is recognized without any further examination, part B of foreign certificates is examined within three months. The allocation process for safety certificates is explained on the website of the UTK and is rated as transparent by the interviewed RUs.

The applications for the homologation of rolling stock shall be processed in two months but it can take up to six months before an application is processed. The degree of detail in respect of requirements is average on a European comparison. The transparency of the process for the homologation of rolling stock is mainly rated as positive by the interviewed RUs. The overall costs (capital costs, certificates, expert reports, tests, time factor etc.) can amount to up to EUR 25,000.

The infrastructure manager, as required by the EU legislation, is the PKP Polish State Railway Lines (*PKP Polskie Linie Kolejowe S.A.* (PKP PLK SA)). It is a joint stock company that is responsible for provision of track access. PKP PLK SA defines the infrastructure charges, which are then approved by the UTK. The manager also collects the infrastructure charges and solves disputes related to theses charges, subject to appeal to the Office of Railway Transport (UTK). The PKP PLK SA is a structural part of the PKP SA group organization, although, as required by law, it has a separate accounting reporting system.

[88] However, the period can take up to twelve months.

[89] In practice it frequently takes five to six months until the UTK issues safety certificates. According to IBM Business Consulting Services (2011) the degree of detail required is on average to that required in the EU.

Train path access is regulated in a standard contract with the RUs, but framework agreements are also possible. A lead time of six months is required for applications for a regular train path. Train path allocation during the year is possible. The linear infrastructure charging system is published in the network statement and the same system applies to all market players. The average infrastructure charge per train path kilometer in 2010, converted into EUR, is EUR 3.21 for rail freight transport, EUR 3.77 for long-distance rail passenger transport, and EUR 1.65 for regional rail passenger transport.[90]

In addition the reservation charges are levied when ordering train paths. The charges for regular and ad-hoc train paths differ. Non-discriminatory access to other service facilities and services is only partly guaranteed in Poland. In contrast to most other European countries, the station charging system in Poland is based on how long trains remain in the stations. According to the Ministry of Transport, the average station charge is EUR 0.27 per minute, so that this is a low level on a European comparison if it is presumed that trains do not remain at a station for more than five minutes. All these fees are relatively low, and comparable to those practiced by other EU countries.
There are three Ministries involved in the functioning of railway services in Poland. The Ministry of Finance finances the development of railway infrastructure. It provides financial subventions for development of infrastructure, financing new railway investments and purchase of rolling stock in line with the principle of fair competition, non-discrimination and economic efficiency. The Ministry can also provide financial guarantees for financial obligations undertaken by the PKP holding. The Ministry finances also the activities of the Office for Railway Transport (UTK). On the other hand, the Ministry of Treasury is the only shareholder of the PKP (Polish State Railway) group. The Ministry is responsible for privatization and commercialization of PKP.[91] In particular the Treasury is responsible for transferring the financial means collected by the Railway Fund to PKP. These funds are aimed at covering previous debts (2002-2003) and financing the maintenance of railway infrastructure. Finally, the Ministry for Regional Development is responsible for coordination and management of financial means received from the structural funds of the EU. The EU structural funds can be used to co-finance new railway infrastructure investments.

Since 2004, the new tasks have been allocated to regional authorities, according to Article 40 of the Railway Transport Law of 2003. They are now responsible for organizing and subsidizing local railway communication under a public service contract. Regional authorities restructure own local railway undertakings and can create new cooperative RUs (e.g. Koleje Regionalne in many provinces). In certain principalities, PKP SA and local bodies created independent companies, for example Koleje Mazowieckie (Mazovian Railways) in Mazovia principality. In cities of Gdynia, Gdansk and Sopot there are also urban lines on the network owned by PKP, called Fast Urban Railways (Szybka Kolej Miejska: SKM). The other regional example includes the commuter Warsaw Commuter Line (Warszawska Kolej Dojazdowa WKD).

Till 2013 local authorities will become the owners for local railway infrastructures and will be obliged to undertake new investments necessary to upgrade the quality of the railway network.

[90] The regulations are published in Journal of Law. The depreciation of Polish currency against EUR in 2009-2011diminished the amount of fees in terms of Euro.
[91] These activities are mandated to the Minister of Transport.

4.2 State of Competition

The opening up of the market to domestic and international competition appears to be a rather slow process. As of end of 2004 fifty-five business entities were granted 88 licenses including 18 licenses for passenger transport, 46 licenses for freight transport, and 24 licenses for making traction vehicles available. Out of the licensed operators 4 are not providing passenger transport while 10 are not providing freight transport. There are currently 40 active external rail freight operators and ten active rail passenger operators. According to the UTK, however, a total 48 external railway undertakings are licensed.

There are already several important Railways Undertakings (RU) being active at Polish passenger transport market. The share of external RUs in Poland in terms of number of passengers has grown considerably since the regional transport provider *Przewozy Regionalne* was hived off from the PKP Holding. In the first half of 2012 *Przewozy Regionalne* accounts for 37.7 percent and the regionally owned *Koleje Mazowieckie* accounts for 21.3 percent[92]. Together, the two subsidiaries of the incumbent PKP covered a market share of about 59 per cent. Other important RU's are: PKP Inter-city having share of 12,6 percent and PKP-SKM (regional railways in Gdansk province) with 12,6 percent share. The other smaller regional companies do have the following shares in the number of Polish passengers' market: SKM: 5.9 percent, WKD: 2.7 percent, Koleje Slaskie: 3.1 percent, *Koleje Wielkopolskie* 1.2 percent, Arriva RP 0.9 percent and *Koleje Dolnoslaskie*: 0.6 percent.

The picture is slightly modified when shares are measured in terms of passengers'-kilometers terms. The 2012 shares in Polish passengers' market were as follows: PKP Intercity: 42,2 percent, *Przewozy Regionalne* 35.5 percent, *Koleje Mazowieckie*: 12.0 percent, PKP SKM: 5.0 percent, *Koleje Slaskie*: 1.6 percent, SKM Warszawa 1.4 percent, Arriva RP: 0.5 percent and *Koleje Dolnoslaskie*: 0.4 percent.[93]

However, when looking at the non-public-owned RUs, the market share of private RUs is only about one per cent. Although the market for purely commercial passenger transport is open in Poland, only one foreign RU owned Arriva is active. Nevertheless, there is a reasonable degree of "internal" competition. For example a standard passenger ticket for Gdansk-Warsaw route costs about half purchased at *Przewozy Regionalne,* in comparison to PKP-Intercity, with a comparable duration of trip.

In the case of freight transport market there is relatively more competition from foreign RUs. In the first half 2012 the main RUs active in freight transport were as follows: PKP Group (Cargo and LHS: 67.0 percent of tkm); Lotos Kolej (8.0 percent), CTL Group (6.6 per cent), DB Schenker (5.9 percent), Pol-Miedz-Trans (1.8 percent), Rail-Polska (1.7 percent), STK (1.6 per cent), PKN Orlen (1.1 percent); PUK-Kolprem (0.7 per cent); PHU Lokomotiv (0.5 per cent), ITL Polska (0.4 per cent) and others (2.1 percent).[94]

[92] The 2012 statistical data available at UTK website: http://www.utk.gov.pl/portal/en

[93] The different shares result from the fact that the PKP Intercity serves only long-distance destinations, while regional RU's serve almost exclusively local communities.

[94] The 2012 statistical data available at UTK website: http://www.utk.gov.pl/portal/en

The activities of incumbent PKP Cargo group covers large scope of services in different areas of freight transport, while the other, smaller RUs are specialized in transportation of massive, standardized goods.[95] For example Lotos Kolej and PKN Orlen transport almost exclusively liquid fuels, PKP LHS iron ores and Pol-Miedz-Trans copper alloy.

There are already several new European (mainly German) RUs being active in the Polish market. CTL Logistics S.A. is the largest privately-owned logistics company in Poland, operating in the area of rail transportation. The Group incorporates 20 companies registered in Poland and Western Europe (Germany). In 2006, the CTL Logistics Group handled 40 million tons of freight and posted sales of EUR 250 million. The second RU is DB Schenker, a global logistics company, offering rail, road and water transportation services. It employs 90 thousand workers and has the turnover of 19 billion euro (2008). The third one was the PCC Rail, with a 3 percent share in 2008, being a subsidiary of PCC with headquarters in Duisburg (Germany). The fourth one is ITL Polska, a subsidiary of French national railways (Société Nationale des Chemins de fer Français: SNCF) being present in Poland. The share of the first two companies in Polish freight market increased from zero in 2004 to 12.5 per cent in 2012.[96] Thus, the incumbent PKP is facing increased competition in the rail freight market.

The market for specialized non-massive deliveries is growing slowly. Using frequently intermodal transportation it requires a network of intermodal terminals and logistic centers. In 2010 there were 32 intermodal terminals in Poland, five of them being located at sea harbors. These terminals enable to combine railway, sea and truck modes of delivers of goods in a door-to-door service. This segment of the market is still relatively underdeveloped in Poland, in comparison to those of the old EU Member Countries but also in the rail passenger segment.

The access to the local railway market is based, in principle, on fixed charges for the use of rail infrastructure. But the systems existing in many European countries are fairly different for freight and passenger traffic. One of the main variables, having impact on charges is the quality of a given line and a level of traffic intensity, affecting possible level of congestion.

With respect to cargo, the gross tonne-km measure is a possible basis for calculation of charges for marginal wear and tear, that is, wear and tear that is related to traffic. It is may be also adjusted for different line categories (or line speed) and for different types of rolling stock. But gross tonne-km does not reflect the costs of congestion (line capacity). If charges are based on tone-km, they give the operator an incentive to run lighter trains or trains with a high ratio of net to gross weight, with no particular incentive as to train length. [97] Thus,

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[95] The incumbent PKP Cargo was accused and fined in 2004 – by the Office of Competition and Consumer Protection (UOKiK) – of abusing the dominant position. Namely, the company was differentiating its contractors unlawfully. Despite the enforceable decision by the President of UOKiK, PKP Cargo was still abusing its dominant position in 2012 and was fined with PLN 1.7 mln (about 400 EUR thousand).

[96] See Bryliński (2010). For example in Germany there are 119 intermodal centers and 33 in Belgium in 2010.

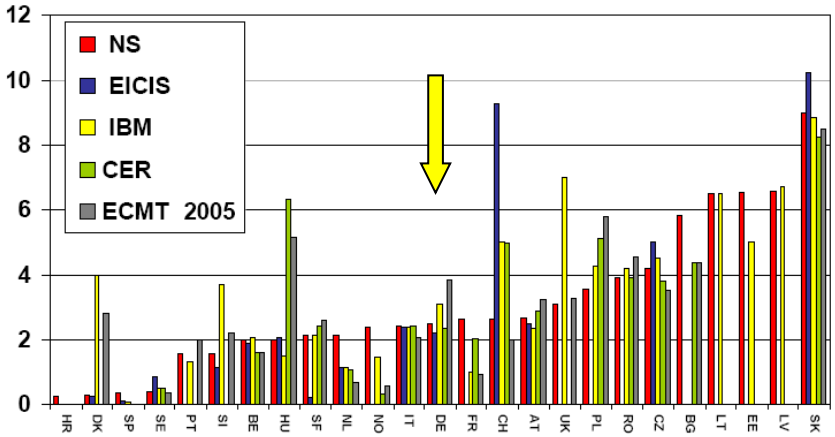
[97] Since only two systems in Europe attempt to use gross ton-km alone as a basis for charges, the limitations of this approach are recognized. By contrast, train-km might be usefully correlated with congestion costs, but would not be a good variable for infrastructure wear unless all trains in a particular service category have the same weight. Thus, train-km alone, though it has the virtue of simplicity, cannot be an accurate indicator of marginal wear and tear unless all trains are the same size– which they generally are not. In general, train-km charges cause the operator to run fewer but longer trains consistent with market needs. There are more systems that use only train-km for charging than those using gross tonnes only. This footnote and the whole section draws heavily on Thompson (2008).

optimally, there could be a combination of gross-tonne and train-km based charges that should provide a better balance of incentives to run trains that are operated at the right frequency and at the weight that minimizes access charges while maximizing the demand/operating cost tradeoffs. Of course it makes direct international comparisons quite difficult.

To estimate the access costs to railway infrastructure several models have been developed. The Rail Net Europe has developed an interactive, web-based tool for estimating access charges (EICIS model). Italian Federal Railway Network (RFI) also has made available on the web an interactive model (Pedaggio 2004) for calculating access charges on the RFI network. Finally, the German network operator (DB Netz) makes available on the web an interactive model from which potential users can develop an estimate of access charges for various services. The comparative study prepared by OECD Transportation Forum (2008), provides a good basis for international comparisons.

Having in mind all the above mentioned reservations, we can describe the relative level of access fees for cargo freights in the case of Poland. The access charges for a typical 960 Gross Ton Freight Train (Euros/Train-Km) are approximately 3.5 Euro per train-km in Poland and appear to be relatively high by European standards. This level is slightly higher in comparison to German, Swiss, Austrian and British charges and much higher than French, Hungarian or Belgian ones, which are close to 2.0 Euro per train-km. But this high level probably reflects one important phenomenon. The EICIS model, used there for Poland relates only to the main (most costly) lines. The EICIS model does not yet permit passenger train calculations for Poland This "overestimation" phenomenon becomes more clear if one compares the estimations of access fees with those obtained from different models. The relevant data presented for various models are in Figure 3. In this case Poland's fees correspond to average fees in the sample of European countries.[98]

Figure 3.1: Freight Access Charge Euros/train-km, 960 Gross Ton Train (according to different models of estimation)



Note: Poland (EICIS) and Lithuania (CER) outlying points removed. The IBM approach is discussed in the next section.
Source: OECD Transportation Forum (2008),Figure 8, page 22

The data presented in Figure 3 demonstrate that the new Member States of the EU from Central and eastern Europe have usually higher fees than the "old" Western members. It

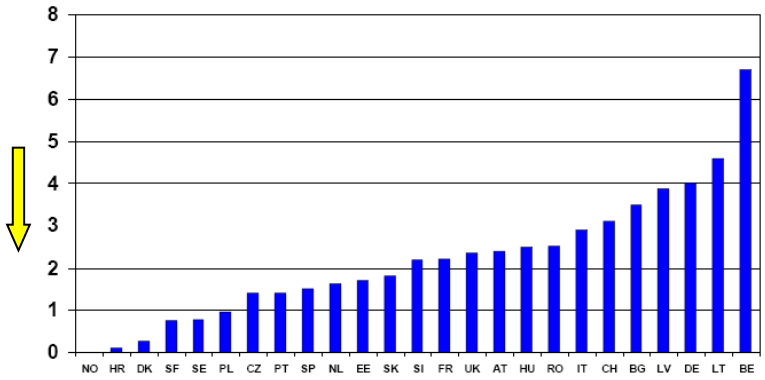
[98] See Organization for Economic Co-operation and Development (2008). Figure 10 p. 29.

reflects the fact that new Member States, having more limited budget per capita, tried to finance a majority of their expenditure on railway infrastructure by funds collected from access charges. By contrast, in the case of more developed countries majority of spending on railway infrastructure is covered by public support.[99] The situation is changing in the late 2010's when majority of Central and Eastern European countries started to modernize intensively their railway infrastructure with the support from European Structural Funds.

Switching to passenger rail market it appears that fees charged by Poland's infrastructure manager are quite competitive in comparison to other European countries. The access charges for a typical local and suburban train were less than one Euro per train kilometer in 2008, which is well below the EU average.[100] The lowest charges were in Norway and Denmark**,** while in France they were close to EUR 2 and in Germany to EUR 4.0 per train kilometer. The highest charges were in Belgium.

Also, the access for a typical inter-city passenger trains in Poland appears to be reasonably well priced. The relevant comparisons are shown in Figure 4. The fee is close to one Euro per train/Km, which is well below the EU average. The highest charges are in case of congested Belgian and German railway networks, and somewhat surprisingly, in Lithuania[101].

Figure 3.2: Access Charges For Typical Inter City Passenger Trains (Euros/Train-Km)



Source: Charges for the Use of Rail Infrastructure 2008. OECD, International Transportation Forum, Figure 9, p. 22.

We have to be aware that access fees are the crucial, but not the only determinant affecting the real access costs to the railway network. The limits on train path allocation for freight and passenger transports, legal constraints and restrictive administrative procedures can also constitute an important barrier limiting access to a market.

In summing up we can state that increased competition is especially pronounced in Poland's freight transports. At present several foreign Railway Undertakings, mainly from Germany,

[99] For example, during 2008 the target percent of total cost covered by infrastructure charges with remainder to be covered by public support was 100 percent in Estonia, Latvia and Lithuania; 92 percent in Poland; 80 percent in Hungary, while the relevant figures for some Western countries were 1 percent in Norway, 5 percent in Sweden, and 12 percent in the Netherlands.
[100] See Organization for Economic Co-operation and Development (2008). Figure 1, p. 29.
[101] According to authors of the study the number for Lithuania is probably incorrect. Ibidem p.11.

started their operations and already gained an important share of Poland's market. In the case of passenger transport the increased competition is mainly among domestic firms. The incumbent PKP SA is competing with new public Railway Undertakings such as Przewozy Regionalne and Koleje Mazowieckie. In consequence the share of PKP SA in the market is decreasing, while the local companies, by offering lower prices of tickets, increase their share in the passenger market. For the moment there are practically no foreign passenger RUs present at Polish market.

Despite the progress in the access liberalization the share of railways is gradually decreasing in the intermodal split. The road transportation is increasing the share in freights, while passenger traffic is switching towards road and air transportation. This phenomenon was especially important in 1990's and early 2000's. The similar trends have been observed in other new members states from Central and Eastern Europe. In intermodal change reflected relative underdevelopment of road and air transportation in the non-market economy before 1990 and low level of investments in maintaining railway infrastructure after 1990. This general European phenomenon can be gradually changed by "greening" railway and other modes of transportation. The major challenge is the necessity to modernize Polish railway infrastructure. Till 2008 the level of infrastructure investments was very low by standards of old EU states. The situation is improving since 2009, when substantial amounts of public investments with the support from the European structural funds have been spent on railway infrastructure and rolling stock. Unfortunately, Poland was unable to use all European Structural Funds till 2012, and some of them have been transferred to investments in highway system. Another major challenge is to ensure the interoperability of the Polish network with the Trans-European network of high speed lines, as well as the interoperability of the Trans-European conventional railway system. After many delays finally in 2012 the PKP SA signed the contract for 20 fast trains of Pendolino. The first trains shall be operating at lines Warsaw – Gdańsk, Warsaw –Cracow and Warsaw – Katowice in 2013-2014.

Finally, note that during the Uruguay Round of multilateral trade negotiations the European Communities (EC) have undertaken to liberalize maintenance and repair services for second and third modes of supply (consumption abroad and commercial presence), but no commitments were made in neither the first mode (cross border supply) and nor in the fourth mode of supply (movement of natural persons. On the other hand Poland did not make any commitments in the GATS in rail sector. After accession to the EU, Poland like other new Central-European members states has accepted all of the GATS commitments made by the EC.

5. REGULATORY FRAMEWORK IN TURKISH RAIL TRANSPORTATION SECTOR

The rail industry in Turkey is dominated by Turkish National Railways (TCDD) which is a state owned, vertically integrated company that not only deals with provision of infrastructure, but also with the supply of both freight and passenger services. It is responsible for operating and renewing railways, ports, and piers; guiding and coordinating affiliated companies; and carrying out complementary activities regarding rail transport such as land transport that includes ferry operations. TCDD also operates and renews railways, ports and piers; guides and coordinates affiliated companies; carries out all kinds of complementary activities regarding rail transport such as maritime and land transport including ferry operations; manufactures rolling-stock and similar vehicles, sets up warehouses, depots and passenger facilities; and undertakes railway construction works as a contractor in Turkey and abroad.

The three affiliated companies of TCDD are TULOMSAS (locomotive, motor and freight wagons), TUVASAS (passenger cars), and TUDEMSAS (railway machines and freight wagons). There are a total of four factories that are active in the railway sector, and they include a switch factory, two concrete sleeper factories, and a rail-welding factory. In 2006 TCDD established the HYUNDAI EUROTEM company in cooperation with the private sector to manufacture electric train sets, light rail vehicles, high speed train sets and high speed train passenger cars. The VOESTALPINE KARDEMIR Railway Systems Company was established by TCDD in 2010 to produce all types of switches suitable for conventional and high speed railways.

Turning to railway legislation we note that the relevant legislation includes the Law on the Organization and Duties of the Ministry of Transport No 3348 (Official Gazette, April 17, 1987; no 19434) regulating tasks and duties of the Ministry of Transport, the Decree Law on State Economic Enterprises (SEEs) No 233 (Official Gazette, June 18, 1984; no 18435) defining the legal status of SEEs, and TCDD's Incorporation Statue on TCDD's Rights and Obligations (Official Gazette, October 28, 1984; no 18559) defining the responsibilities and competences of TCDD.[102, 103] The Ministry of Transport, Maritime Affairs and Communications, which includes the DG Construction of Railways, Ports, Airports (DLH) and DG Land Transport (DGLT), and the TCDD are the responsible authorities. The Ministry of Transport is responsible for determining and planning according to the transport needs, defining the basic principles regarding the arrangement of rail transport systems, and regulating relations with international railway organizations. While DLH is responsible for constructing new railway lines, and preparing the plans and programs of the railways, and facilities and equipment of the railways, DGLT is responsible for ensuring that railway transport is carried out in accord with national security, economic, technical, social needs, that rail transport is in harmony with other modes, and coordinating international activities in the field of railways. Regarding the transportation of dangerous goods we note that DGLT is responsible for setting rules on the transportation of dangerous goods by rail and for supervision, while TCDD is responsible for the carriage of these goods. Domestic legislation on the transportation of dangerous goods by rail includes 'Internal Operational Instruction on Carriage of Dangerous Goods by Rail', issued by TCDD, No 505 April 28, 2005. Technical studies on 'By-Law on Transport of Dangerous Goods by Rail' is underway.

The four main units of TCDD are the Installations Department (electrification, signaling, telecommunication, traffic), Traction Department, Permanent Way Department, and Freight Transport Department. The Permanent Way Department is responsible for maintenance and

[102] Expenditure on construction, operation, and administration of infrastructure is in line with the EU Acquis. With respect to financial transfers to TCDD, the responsible authorities are General Directorate of State Owned Enterprises (SOEs) in the Undersecretariat of Treasury, and the Privatization Administration. The responsibilities of the Undersecretariat of Treasury include the owndership of SOEs, providing financing to SOEs, and planning and monitoring the annual budgets of SOEs. The TCDD received capital from the Undersecretariat of Treasury and the Privatization Administration. Legislation on this front is Article 37 of the Decree Law on State Owned Enterprises No. 233 (Official Gazette, June 18,1984; no 18435) which states that the Treasury will transfer capital for investment and operational deficits of SOEs, and Article 10 of the Law on Privatization No. 4046 which states that capital obligations of the Privatization Administration can be met by the sources in the Privatization fund. Other financial transfers include subsidies for track maintenance/repair from the Ministry of Transport (Decree Law No. 233 and TCDD's Incorporation Statute).

[103] This part relies heavily on Secretariat General for EU Affairs (2007).

repair of permanent way.[104] The Traction Department deals with the standards and compliance regarding rolling stock. The Office of Train Operators responsible for safety of the Rolling Stock is also associated with the Traction Department. Traction Inspectors also perform internal inspections. The Freight Department defines the principles for loading, labeling, and sealing of freight, plans demands, allocation, distribution, and transport of freight wagons, defines principles of loading, unloading, transferring and labeling of dangerous gods. Finally, the Installations Department deals with railway traffic management deals with radio communication, telecommunication, energy, DRS signaling system, and control-command and signaling systems etc.

Firms wishing to use their own rail cars to carry goods apply to TCDD to obtain approval. TCDD evaluates applications based on operational and technical criteria. Today, large logistics companies building their own rolling stock are providing services both domestic as well as international transport. In addition within the framework of agreements signed with different countries, block trains, pulled by TCDD locomotives, are operated towards Europe (Germany, Hungary, the Netherlands and Slovenia), Iran, Syria, Iraq and Central Asia (Turkmenistan and Kazakhstan).[105] Currently, relatively large number of block trains per day are in operation both domestically and internationally, and most of these companies also own and operate railway stations and warehouses that they use for storing and handling freight. In 2010 2.7 million tons of load transportation has taken place through block train operations representing 107 percent increase in load transportation compared to the value in 2002.

TCDD, affiliated with the Ministry of Transport, Maritime Affairs and Communications, benefits from monopoly rights concerning the operation of railway services in Turkey. It owns the entire railway system. Recently, the management of several ports owned by TCDD have been turned into concession agreements with private operators, and other ports are in the process of privatization.

TCDD has single set of accounts, and no accounting separation of infrastructure and rail transport operations. Certain rail services are provided under public service obligation. Since there is no accounting separation between infrastructure management and transportation services, or between transportation of freight or passenger, there is no information available on true costs of rail transportation. Consequently, corporate customers have no understanding of whether or not TCDD prices actually reflect the costs. Currently, TCDD tariffs for carrying goods are determined based on information about distance, type and weight of load. Prices are published on the TCDD website and apply equally to all customers. A protocol may be drawn between the customer and TCDD for regular transportation of goods by TCDD rail cars, or rail cars can be arranged upon request. Thus, TCDD is not unbundled vertically, does not have separation of accounts, does not have a proper accounting scheme to calculate unit costs with respect to infrastructure, and does not have a charging or performance scheme.

[104] Technical specifications and regulations are specified according to 'International Union of Railways' (UIC) standards, and there are technical standards on track gauge, axle load and speed etc. Bridges and culverts are built according to BE German Railways Steel Bridge Calculation Basics and EUROCODE standards. Tracking infrastructure, and projects and applications are also issues that are taken up by the Permanent Way Department.

[105] Block trains are trains where freight is transported uninterruptedly, from the loading to the unloading station, without changing locomotive and wagons, and without interval freight loading and unloading.

TCDD and DLH set and enforce safety rules and standards with respect to the construction, maintenance and management of the rail infrastructure as well as the provision of rail transport services. Railway safety rules and standards have not yet been made public. We note that in addition investigations of accidents are done by ad hoc committees within TCDD, where the investigation includes a technical as well as an administrative component. The technical component defines the causes of the accident and finds the appropriate measures that must be taken to prevent future accidents, and the administrative component tries to find those people who are responsible for the accident. Then, there is also a judicial investigation by legal authorities who are independent from TCDD. Thus, currently there is no central office that is responsible for overall rail safety; responsibilities pertaining to interoperability and safety are divided between departments of the TCDD, and there is no national implementation plan for the Technical Specifications for Interoperability.

Lately, it has been noted that TCDD does not operate on commercial principles, has a monopoly on management of the infrastructure and on the provisions of rail transport services. Moreover, there is no independent regulatory body, or a network statement. As a result there has been commitment on the part of government to change the TCDD, both in terms of structure, as well as technology, in order to make it a more competitive player in the market, and to increase the modal share of railways in the transport sector. Both the 8th Five Year Development Plan for 2001-2005 prepared by the State Planning Organization in 2000 and the 9th Seven Year Development Plan for 2007-2013 clearly put forward the goals of separation of infrastructure management from provision of transport services, the restructuring of the TCDD with a commercial mindset, in order to increase its performance and to allow for private sector enterprises to compete in provision of transport services. On the other hand the TCDD Business Plan for 2005-2010 aims to improve financial situation, establish a client oriented structure, increase competitiveness and market share, integrate the network into the European and Asian networks, and provide a secure and economic service.

In 2005, a project was launched by the TCDD to open the railway market, to establish the legislative framework in accordance with the EU *acquis* and to re-structure the TCDD. This is a 4.2 Million € project, funded by the EU. The project has three parts: Twinning Project with Germany, Service Project and Financial Management Information System. The objectives of the project are to (i) establish the legislative and institutional framework for the rail sector in accordance with the EU *acquis*, (ii) define a stable financial relationship between TCDD and the Government that satisfies the requirements of the *acquis*, and (iii) develop/customize a Financial Management Information System, and provide the necessary information technology platform for the functioning of the system, measuring financial performance (profit and loss) and monitoring actual performance. The project also entails (a) training of TCDD managers for increasing level of knowledge and gaining new capabilities to be eligible on commercial conditions, (b) preparing proposals for capacity improvement of employee, training programs and budgets, (c) defining employee and sources to be transferred to new business units and programming mobility of such personnel, (d) defining targets and aims of business units and management, (e) defining budgets and 5-year activity plans of business units, (f) defining Public Service Contracts between Government and TCDD and preparation of draft contracts, and (h) defining separate accounting for infrastructure, operations and Public Service Obligations with principle of non-transferability of funds between services.

Within the context of the twinning project two draft laws entitled “Railway Law” and “TCDD Law” were prepared. While the Railway Law is providing a new legal framework for rail activity, the TCDD Law is supporting reorganization through the separation and eventual

privatization of the affiliated companies and port operations. In 2008 a commission was formed within TCDD in order to complete technical work necessary for drafting of the General Railroad Framework Law and the TCDD Law. The TCDD commission envisages the creation of a railroad regulatory authority, independent from any railway undertaking, to ensure fair competition in the rail services market, supervising the railway companies and infrastructure manager on safety issues, licensing and interoperability. The Framework Law also establishes a 'Regulatory Body of Access to Infrastructure'. It will be independent from Allocation and Charging Body (Infrastructure Manager) and railway undertakings; it will ensure free, fair and non-discriminating access to railway infrastructure, and it will solve disagreements concerning capacity allocation, charging between Infrastructure Manager and Railway Undertakings. Another body that will be established within the Framework Law will be the 'Safety and Licensing Body'. This body independent from infrastructure manager and railway undertakings will define Railway Safety Framework and monitor and issue a Safety Authorization to, Safety Certificate to and operational licenses to infrastructure manager and railway undertakings. Finally, the third body that will be established within the Framework Law will be the 'Railway Research and Accident Investigation Body'. It will be independent from Safety Authority, Infrastructure Manager and Railway Undertakings. It will investigate serious railway accidents and incident in order to prevent railway accidents.

In the new organizational structure for the rail sector, TCDD would become the infrastructure manager, continuing to operate as a public enterprise. The rolling stock, tracks, track components, and signaling will be under the supervision of TCDD. In addition, a new joint stock company, Turkish Railway Transportation Corporation, will be created as a rail undertaking, providing passenger and freight rail services as a subsidiary of TCDD.

Thus, the General Railway Framework Law will determine (i) the safety requirements for railway undertakings and safety managers, (ii) the basic principles for organization of railway undertakings and infrastructure managers, and (iii) provisions for public service obligations and access rights to railway infrastructure. Bylaws have been drafted on safety, license, interoperability and free access regulation. The 'safety regulation' regulates safety requirements for railway undertakings and infrastructure managers; establishment of a safety management system, safety certificate and safety authorization, access to training facilities. The 'license regulation' sets out provisions necessary for obtaining licenses. The 'interoperability regulation' sets out processes to be observed in order to get an authorization of technical interoperability and the necessary Turkish Standards annex to this regulation. The 'free access regulation' provides for regulation on free access as a cornerstone of the legislative package, free access to the infrastructure and lays down the process of train path allocation and sets the rules for charging.

The future plans for the Turkish railway sector include among others the strengthening of the administrative capacity in regard to safety and interoperability, analyzing current railway safety rules for gap analysis, examining Technical Specifications for Interoperability for preparing National Safety Rules, training the staff about interoperability, establishing a safety unit at TCDD, and preparing a Safety Management System. The existing Railway safety rules are to be rearranged.

The service component of the Twinning Project has a section on "New TCDD Organization, Financial Relations with Government and Financial Management Information System". The expected outcomes of the project include reorganization and the separation of railway management from infrastructure, separation of accounting for infrastructure, transport services

(passenger and goods) and public service obligation, free and non discriminatory access to rail network, and independent allocation of capacity and charging, fully commercial operation of transport activities, provision of long term financial viability of the Infrastructure Manager, and the preparation of the network statement under responsibility of Infrastructure Manager.

6. CONCLUSION

Although over the last two decades the EU managed to build a good basis for a genuine single market for railway transportation, European Commission (2010) points out that a single European railway area based on an integrated infrastructure network and interoperable equipment enabling seamless transport services throughout Europe and with neighboring countries could still not be established. To improve the situation the Commission aims to revise the existing rail market legislation so that a financial environment conducive to public and private investments in the rail sector can be established; adopt further harmonized safety and interoperability measures in order to remove technical barriers to entry in the EU rail market; and establish appropriate institutional arrangements to ensure more integrated supervision of the EU rail market. In September 2010 the Regulation (EU) No 913/2010 on European network for competitive freight was published aiming the development of European rail network for competitive freight by establishing rules for the creation and organization of international rail corridors for competitive rail freight. On the other hand, Poland has made significant progress in opening-up its railway market to domestic and foreign competition. This progress can be illustrated by relatively high ranking of Poland among EU states, as expressed using rail liberalization indices as reported by IBM Business Consulting Services (2011). The progress was made in terms of legal liberalization, measured by the LEX index and in real opening of the market as measured by ACCESS index. The increased competition is especially pronounced in freight transports. By now several foreign Railway Undertaking started their operations and gained important share of Poland's market. In the case of passenger transport the increased competition is mainly among domestic firms.

But similar progress could not be made by Turkey. As of May 2012 the new railway framework and TCDD law have still not been passed. This means that the legal basis in Turkey does not exist for key elements of the EU rail *acquis,* including the separation of accounts between infrastructure managers and transport services; the development of multi-annual contracts between the state and infrastructure manager; the introduction of track access charges; the development of public service contracts; mechanisms to reduce indebtedness of rail incumbents; the establishment of a regulatory authority, licensing body, safety authority, accident investigation body, and notified body. But it is emphasized that the Law will enter into force during the Fall 2012.

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Annex: Pan European Corridors: which encompass road, rail and waterway routes.

1. (North-South) Helsinki - Tallinn - Riga - Kaunas and Klaipėda - Warsaw and Gdańsk Branch A (Via/Rail Hanseatica) - St. Petersburg to Riga to Kaliningrad to Gdańsk to Lübeck Branch B (Via Baltica/E 67) - Helsinki to Warsaw.
2. (East-West) Berlin - Poznań - Warsaw - Brest - Minsk - Smolensk - Moscow - Nizhny Novgorod
3. Brussels - Aachen - Cologne - Dresden - Wrocław - Katowice - Kraków - Lviv - Kiev a. Branch A - Berlin - Wrocław
4. Dresden/Nuremberg - Prague - Vienna - Bratislava - Győr - Budapest - Arad - Bucharest - Constanţa / Craiova - Sofia - Thessaloniki / Plovdiv - Istanbul.
5. (East-West) Venice - Trieste/Koper - Ljubljana - Maribor - Budapest - Uzhhorod - Lviv - Kiev. a. Branch A - Bratislava - Žilina - Košice - Uzhhorod b. Branch B - Rijeka - Zagreb - Budapest c. Branch C - Ploče - Sarajevo - Osijek - Budapest
6. (North-South) Gdańsk - Katowice - Žilina, with a western branch Katowice-Brno.
7. (The Danube River) (Northwest-Southeast) -
8. Durrës - Tirana - Skopje - Sofia - Plovdiv - Burgas - Varna
9. Helsinki - Vyborg - St. Petersburg - Pskov - Gomel - Kiev - Ljubashevka - Chişinău - Bucharest - Dimitrovgrad - Alexandroupolis. Major sub-alignment: St. Petersburg - Moscow - Kiev. a. Branch A - Klaipeda - Vilnius - Minsk - Gomel b. Branch B - Kaliningrad - Vilnius - Minsk - Gomel c. Branch C - Ljubashevka - Rozdilna - Odessa
10. Salzburg - Ljubljana - Zagreb - Beograd - Niš - Skopje - Veles - Thessaloniki. a. Branch A: Graz - Maribor - Zagreb b. Branch B: Budapest - Novi Sad - Beograd c. Branch C: Niš - Sofia - Plovdiv - Dimitrovgrad - Istanbul via Corridor IV d. Branch D: Veles - Prilep - Bitola - Florina - Igoumenitsa

Chapter 4

Regulatory Framework in Maritime Transportation

Maritime transport is inherently international in character, and vessels on most voyages must operate under the regulatory requirements of many jurisdictions. Thus, there is an inherent need for harmonization across countries. In order to liberalize the sector, countries need to adopt not only international norms, but, in the case of regional integrations, also the rules and regulations of countries with stricter policies. Furthermore, liberalization requires the removal of any legal or administrative provisions restricting market access in maritime transport services.

The chapter is structured as follows. While Section 1 discusses the functioning of maritime freight transportation sector and barriers to trade, Section 2 considers the international regulatory regime in the sector. Section 3 covers the European Union (EU) rules and regulations, Section 4 the Turkish rules and regulations, and Section 5 the Polish rules and regulations in maritime freight transportation sector, Finally, Section 6 concludes.

1. MARITIME FREIGHT TRANSPORTION SERVICES

Maritime transport services consist of three types of activities: (i) international maritime transport, that is, the actual transportation service performed from the time the commodity is on board a ship in a country until the moment when the vessel reaches the destination port of a different state; (ii) maritime auxiliary services, that is, any activities related to cargo manipulation in ports and on ships; and (iii) port services, that is, activities related solely to ship management in ports (Fink et al. (2002)).

Maritime transport constitutes over 80 percent of total world trade expressed in units of tons. According to United Nations Conference on Trade and Development (UNCTAD (2012)) world seaborne trade measured in tons has amounted to 8 408.3 million tons. While during 2010 crude oil and oil products referring to commodities such as crude oil, kerosene, diesel and liquefied gas formed 21.2 percent of total seaborne trade, dry cargo referring to commodities that are transported in bulk form such as coal, iron ore, phosphate rock and grains formed 67.3 percent of total seaborne trade. On the other hand other cargoes referring to all the other types of cargo, are often classified by their packaging, appearance or loading unloading method such as pallets and containers. While pallets refer to cargo assembled on a wooden or plastic pallet that allows the simultaneous handling of more units per period of time, containers refer to packaging of cargo in huge metal boxes that could be loaded and unloaded by cranes.

While in the past all merchant vessels belonged to the general cargo type, today there are a variety of vessels such as crude oil carriers, liquefied gas carriers, dry bulk carriers, container ships, reefers (refrigerated vessels), roll-on/roll-off or ro-ro vessels (vessels equipped with a ramp that allows cargo to be driven on and off the vessel), and multipurpose vessels. Of these vessels the container ships are of paramount importance as their importance in world seaborne trade has been increasing rapidly over the last fifty years when containers fifty years ago were first introduced. In fact containers led to a revolution in cargo handling in terms of vessel capacity and dimensions, new types of terminals and changes in hinterland connection

modalities. Today, more than 60 percent of world general cargo trade moved by sea is carried in containers, and on trades between industrialized counties the percentage approaches over 80 percent.

Containers are usually expressed in twenty foot equivalent unit (TEU), meaning a container with the basic dimensions of 20 ft length, 8ft wide and 8 ft 6 inches in height. The maximum cargo load for 1 TEU container was in the range of 22 tons and that of 2 TEU container about 28 tons. With the increase in container dimensions the ratio of 20ft / 40ft containers has decreased from 2.16 in 1986 to 0.94 in 2007.[106] Currently, containers are carried mostly by container vessels. In the past the capacity of container vessels ranged from 800 to approximately 1 700 TEU. The design of these vessels were limited in the width dimension. Since Panama Canal could accommodate maximum beam dimension of 32.2 m vessels were built accordingly, and they were called Panamax container vessels. But over time the companies opted for flexibility. Vessels were built with capacities of more than 3 000 TEU, and soon they reached capacities of 8 000 TEU. Currently, the largest container vessel has a capacity of 14 000 TEU.

International maritime freight transport has developed specialized branches mainly due to differences in commodity types and to technological improvements in the shipping industry. For instance, a clear distinction must be drawn between liner shipping and bulk shipping. Liner shipping is regular shipping with set schedules in different harbours published in advance. The capital-intensive character of liner shipping, particularly container shipping, has led to a substantial degree of concentration. As emphasized by UNCTAD (2006), the top 20 liner operators, 11 of which are based in Asia, accounted for 67 percent of the capacity in 2004. On the other hand, non-liner shipping is performed irregularly and is provided on a demand basis, predominantly by specialised bulk carriers. Vessels carry unpacked dry carriages or liquid cargoes, and bulk shipping operations are carried out for individual shippers. Compared to liner shipping, there is less concentration in bulk shipping, and there are many small owners with fleets of one or two vessels. While non-liner tankers and bulk carriers dominate in terms of trade volume, liner vessels are far more significant in value terms, since they tend to carry relatively high-value and low-volume cargoes (Kang and Findlay (2000), World Trade Organization (WTO, 1998b) and WTO (2001b)).

A principal organizational feature of the liner sector is the ability of operators to enter into co-operative arrangements and agreements through "conferences". According to Organisation for Economic Cooperation and Development (OECD (2001)), there are over 300 liner conferences worldwide. As one of the oldest in the world, shipping cartels commonly involve collusion to set prices and limit competition among members. Closed conferences not only set freight rates, which apply to all members, but also allocate cargo quotas and restrict membership, while open conferences merely set the freight rates on a specific route.[107] A recent development in the sector has been the supplementation of conferences with verbal agreements and similar arrangements. Compared to independent shipping operations, conferences are expected to determine the fleet capacity, create scale economies, prevent unexpected fluctuations in freight rates, limit competition between members and generate higher profits. However, it is usually argued that even if conferences create cost savings, the

[106] See Krug and Donner (2009).
[107] Closed conference regimes mean that the right of admission and withdrawal is prescribed and that specific and varying conditions must be met. On the other hand, in open conferences, newcomers cannot be denied entry.

savings are not always passed on to shippers, consumers or producers of shipped commodities. Conferences usually cause increased shipping rates and establish market power for their members, thereby restricting the entry of newcomers and delaying improvement in the quality of shipping services.

The prevalence of conferences flows directly from the exemption they enjoy under the antitrust laws of the United States, the European Union (EU) and many countries.[108] Under these systems, shipping conferences are considered necessary to ensure stability and certainty in the movement of freight. However, in recent years, the power of conferences has eroded. Containerization has made it possible for outsiders to supply the same services as conferences at a lower cost to consumers. Non-conference lines offering independent, semi- or full container services at a frequency varying between weekly and fortnightly have emerged and are based mainly in the newly industrializing economies of East Asia. The WTO (2001b) reports that the share of non-conference lines in the world liner shipping market is about 50 percent.

Nevertheless, the bulk traffic is organized as a spot market, and contracts are allocated on an extremely competitive basis. As pointed out by the WTO (2001b), business is won on the basis of freight rates a few cents per ton lower than the competitor. Hence, bulk shipping services and related freight rates respond to market developments and to supply and demand pressures. Bulk shipping pools are occasionally created, but they fail to survive for long periods.[109] In addition, these pools are not generally exempted from competition policy laws and, therefore, are dealt with by competition agencies in the same way as other commercial activities.

Another organizational feature of the maritime transport sector is the existence of classification societies. These societies make rules for ship construction and maintenance and issue a "class certificate" to reflect compliance. They arose from the efforts of insurers to establish that the vessels for which they were writing insurance were sound.[110] Classification societies have no legal authority. Today, they mainly aim to enhance the safety of life and property at sea by securing high technical standards of design, manufacture, construction and maintenance of mercantile and non-mercantile ships. More than 50 organizations worldwide define their activities as providing marine classification. Ten of those organizations form the International Association of Classification Societies (IACS).[111] It is estimated that these ten societies, together with the additional society that was accorded associate status by IACS, collectively class the ships dealing with more than 90 percent of all commercial tonnage involved in international trade worldwide.[112] The voluntary nature of classification implies

[108] See Section 3 for further discussion of exemptions in the EU.
[109] Some bulk companies do enter into pooling arrangements whereby they share the profits and losses made by their respective fleets.
[110] Although a ship owner must class a vessel to obtain insurance, and in some instances a government may require a ship to be classed, the importance of the classification certificate extends beyond insurance. It is, as stated by Stopford (1997), the industry standard for establishing that a vessel is properly constructed and in good condition.
[111] The ten member societies that form the IACS are American Bureau of Shipping (USA), Bureau Veritas (France), China Classification Society (China), Det Norske Veritas (Norway), Germanischer Lloyd (Germany), Korean Register of Shipping (South Korea), Lloyd's Register (UK), Nippon Kaiji Kyokai (Japan), Registro Italiano Navale (Italy) and Russian Maritime Register of Shipping (Russian Federation).
[112] See the website of IACS (www.iacs.org.uk).

that classification societies compete with each other to offer attractive classification services to ship owners. In general, the services offered fall into two major categories, namely developing rules and implementing them. The societies continuously update the rules to reflect changes in maritime technology, and they are responsible for the application of the rules, including a technical inspection of the plans of the ship, surveys during construction and periodic surveys for the maintenance of class.

Turning to the consideration of maritime auxiliary and port services, we note that seaports offer many different services. According to Trujillo and Nombela (1999), seaport activities can be divided into (i) infrastructure; (ii) services provided by ports, which require the use of infrastructure; and (iii) coordination between different activities performed at ports. Infrastructure consists of the infrastructure within ports (berths, quays, docks and storage yards) and the superstructure (sheds, fuel tanks, office buildings, cranes, van carriers and transtainers). Besides the provision of basic infrastructure for the transfer of goods between sea and land, ports provide numerous services to ships, such as pilotage, towing, tying, cargo handling, freezing, administrative paperwork, permits, cleaning, refuse collection and repair facilities. Since many different activities are performed simultaneously within the limited space of port areas, there is a need for an agent to act as coordinator to ensure the proper use of common facilities and to oversee the safety of port facilities. In most seaports, these functions are performed by the port authority, which are usually public organizations.

A major characteristics of ports today is the fact that most ports are competing with one another on a global scale as emphasized by the World Bank (2007). The tremendous gains in productivity in ocean transport achieved over the past several decades has forced countries to improve port efficiency, lower cargo handling costs, and integrate port services with other components of the global distribution network. Because of the capital intensity of such efficiency improvements, these have encouraged private sector operation of a wide range of port-related activities.

Today, there are three main organizational modes for seaports. Under the so-called “landlord ports” system, the port authority owns and manages port infrastructure, and private firms provide the rest of the port and maritime auxiliary services. Private firms are able to own superstructures and operate assets pertaining to infrastructure by concession or licensing. Under a “tool ports” system, the port authority owns both the infrastructure and superstructure, but private firms provide services by renting port assets through concessions or licenses. Finally, under the “service ports” regime, the port authority owns assets and supplies services by directly hiring employees.

Port reform processes referring to the movement from public service ports management model towards the land port management model have accelerated during the 1980s. While the tool port management model is not applied in many countries, the landlord port model is considered to be the optimum public-private-partnership (PPP). Ports in many countries have been moving into the land port direction. But, when public port sector in a particular country decides to enter into a PPP with a private operator, it is essential that regulation is introduced as emphasized by Kruk and Donner (2009). The public sector through regulation has to ensure that the ports operate efficiently and safely, and that on the premises fair and competitive services are provided. Efficiency is usually measured by dwell time defined as the period of

time that a container stays within a container terminal before it is moved to a hinterland destination or loaded on a vessel.[113] In addition, ports are expected to expand the use of information technology (IT) to support port user requirements. IT systems link electronically port administration with terminal operators, truckers, customs, freight forwarders, and ship agents, and thus reduce time for delivering cargo and reduce manpower to prepare paperwork involving port use and operation. Finally, ports are expected to have good connections to the hinterland. Thus, rail and road infrastructures at the ports should be sufficient.

Currently, the number of sizable ports in the world has been estimated to be around 3 000 where sizable means that these ports handle a number of types of cargoes in considerable quantities. Of the top ten container ports in the world seven are located in Asia while Rotterdam and Hamburg are the main competitors. In the case of dry bulk ports the majority is located in Australia, while the largest one is in China. Of the top ten all cargo ports, seven are located in China, one in Korea and one in Singapore. As containerization has spread in freight shipping, distribution patterns have evolved into hub and spoke networks, which is intended to maximize utilization of large containerships while providing market coverage to a maximum number of ports. While large container ships with 4 000 + TEU capacity provide service between regional hubs, smaller ships are used to pick up and distribute containers within the region. One such region is the Eastern Mediterranean where Damietta, Limassol, Piraeus and Port Said serve as hubs, and all the other ports are used for distributing containers within the region.

2. INTERNATIONAL RULES AND REGULATIONS

International maritime laws are developed by the participation of flag and port states in treaties or conventions. International conventions set out agreed objectives for legislation on particular issues, such as maritime safety, pollution control and the conditions of seafarers' employment. They provide internationally accepted templates from which individual flag states can develop their own national maritime legislation. By so doing, it is hoped that most countries will have the same law on key maritime transport issues, so that major inconsistencies between national maritime legislations are avoided. Consultation, drafting, the adoption of drafts, the opening for signature by the governments and ratification by countries were the major steps in creating a maritime convention in which several United Nations (UN) agencies and the OECD are involved. At the global level, the maritime industry is principally regulated by the International Maritime Organization (IMO), which is a small UN agency responsible for the safety of life at sea and the protection of the marine environment.[114] The International Labour Organisation (ILO) is responsible for the development of labour standards applicable to seafarers worldwide.[115] The third UN agency that deals with international shipping conventions is the Shipping Committee of UNCTAD. Finally, the WTO's General Agreement on Tariffs and Trade (GATT) commitments, the ongoing services

[113] At a typical container terminal today average container dwell time amounts to five to six days.
[114] The Inter-governmental Maritime Consultative Organization (IMCO) was founded in 1958. In 1982, IMCO changed its name to the IMO. As of the beginning of 2007, IMO has 167 member states.
[115] Regarding maritime transport, ILO's major interest is in working conditions on ships, such as provisions for manning, hours of work, pensions, vacation, sick pay and minimum wages. Between 1923 and 2005 a total of 41 maritime labour conventions concerning seafarers and dockworkers were adopted, in addition to 33 maritime labour recommendations.

negotiations at the WTO and the Maritime Transport Committee (MTC) of the OECD provide important forums for the liberalisation of maritime services.[116]

The shipping industry is controlled by a web of national and international regulations and practices. Overall, these regulations and practices can be classified, following the approach of OECD (2001), under two broad headings: (i) regulations related to commercial operations and practices and (ii) regulations related to the rights and obligations of states and to safety and environmental regulations.

2.1 Regulations Related to Commercial Operations and Practices

Regulations related to commercial operations and practices include shipping-specific economic policy regulations, ship registration conditions, cargo reservation/cargo sharing provisions, cabotage laws, cargo liability regimes, national security measures, competition legislation and seaport industry. These regulations reflect a more pragmatic rationale, aimed at giving effect to government policies, achieving economic or national objectives and ensuring national participation or simply regulating commercial activities. While some regulations (such as competition or anti-trust laws) are intended to free up the market, the majority probably distort or interfere with the market to some degree.

In the case of liner shipping, the basic regulatory framework among OECD countries consists of "The Code of Liberalization of Current Invisible Operations" (the Code) and "The Common Shipping Principles". The Code was formally adopted by the Council of the OECD in 1961. Under the Code, members are obliged to eliminate restrictions on current invisible transactions and transfers relating to maritime transport operations, such as harbour services, repair and chartering. According to Note 1 to Annex A of the Code, the provisions of maritime freights are intended to give residents of a member state the unrestricted opportunity to avail themselves of and pay for all services in connection with international maritime transport that are offered by residents of any other member state. These provisions include chartering, harbour expenses, disbursements for fishing vessels, all means of maritime transport including harbour services (bunkering and provisioning, maintenance, repairs, expenses for crews) and other items that have a direct or indirect bearing on international maritime transport. As the shipping policy of the governments of the members is based on the principle of free circulation of shipping in international trade in free and fair competition, it follows that the freedom of transactions and transfers in connection with maritime transport should not be hampered by measures in exchange control, by legislative provisions in favour of the national flag, by arrangements made by governmental or semi-governmental organisations giving preferential treatment to national flag ships, by preferential shipping clauses in trade agreements, by the operation of import and export licensing systems so as to influence the flag of the carrying ship, or by discriminatory port regulations or taxation measures. The aim is to ensure that liberal and competitive commercial and shipping practices and procedures are followed in international trade and that normal commercial considerations alone determine the method and flag of shipment. Thus, the Code generally obliges OECD

[116] The Maritime Transport Committee of the OECD is the only international forum that looks at this sector from both the policy and economic perspectives. Key activities of the Committee include the development of common shipping policies and the exchange of information on shipping policy developments both within and outside the OECD, combating substandard shipping to achieve better ship safety and protecting the environment through the involvement of the entire maritime industry.

members to refrain from introducing and maintaining legislation or other measures in favour of national flag vessels within the OECD; the OECD member States, by having subscribed to the Code, are generally obliged to eliminate barriers to free trade in maritime transport services.

"The Common Shipping Principles" adopted by the Council of OECD in 1987 lays down a common approach to international shipping policy and practices among OECD members based on the following principles: (i) the maintenance of open trades and free competitive access to international shipping operations, (ii) coordinated response to external pressure based on full consultations among member countries, (iii) the role and recognition of governmental involvement by member countries to preserve free competitive access and the provision of choice to the shippers and (iv) a common approach to the application of competition policy to the liner shipping sector. These principles were reviewed in the late 1990s, and a modified version extending and adding to the 13 principles was formally adopted by the OECD Council in September 2000.[117] Principle 14 deals with maritime auxiliary services and provides that access to and use of these services shall be non-discriminatory. Principle 15 acknowledges the importance of international multimodal transport services involving a sea leg and stipulates non-discriminatory treatment in access to and use of those services as well as a free and fair competitive environment with regard to their provision. Finally, Principle 16 deals with measures related to safety, the environment and the prevention of substandard shipping.

The OECD is also involved in the liberalization of maritime services on a regional basis. OECD members signed an "understanding on common shipping policy principles" in 1993 with the republics of the Former Soviet Union and Central and Eastern Europe, largely modelled on the "common shipping policy principles" discussed above. OECD members have begun a dialogue with the Dynamic Non Member Economies (DNME): Argentina, Brazil, Chile, Hong Kong China, the Republic of Korea, Malaysia, Singapore and Chinese Taipei. This dialogue is aimed at the promotion of free access to international maritime trade, respectful of the principle of free and fair competition on a commercial basis, the promotion of maritime safety, the protection of the marine environment, the need to prevent the operation of substandard vessels and to improve the training of sea-going personnel and the promotion of modern business technologies such as electronic data interchange.

An important category of barriers that have been applied to international maritime transport is the various cargo reservation schemes. These require that part of the cargo carried in trade with other states must be transported only by ships carrying the national-flag or interpreted as national by other criteria. These policies have typically been justified by either security or economic concerns. Cargo reservation can be imposed either unilaterally, if ships flying national flags are given the exclusive right to transport a specified share of the cargo passing through the country's ports, through cargo sharing with trade partner countries on the basis of bilateral or multilateral agreements or through a specific form of cargo reservation scheme. In the latter case, the governments of two or more countries may decide to distribute cargo arising from their common trade, so that each national-flag fleet is granted a significant share. Ships belonging to other countries are allowed access to a small share or, in some cases, no share at all.

[117] See OECD (2000).

It was mentioned above that a principle feature of the liner sector is the ability of operators to enter into co-operative arrangements and agreements. To counteract the anti-competitive actions of liner conferences at the multilateral level, the United Nations Convention on a Code of Conduct for Liner Conferences was adopted in 1974. The so-called UN Liner Code, which entered into force in 1983 by its ratification by more than 70 countries, applies only to liner conferences in trades between contracting states and embraces a self-regulatory philosophy for "closed" conference shipping operations. The Code establishes a framework within which conferences should operate in trades between contracting states and grants certain rights to those conferences, but at the same time it imposes certain obligations upon them, thereby protecting shipper interests. The Liner Code is best known for its cargo-sharing formula of 40:40:20, which suggests that cargo between member countries be divided, with 40 percent of cargo being carried by vessels of the country of origin, 40 percent by vessels of the country of destination and 20 percent by cross-trading vessels. It should be noted that the 20 percent figure, and therefore the "40:40" is recommended only. However, two important qualifications need to be made about this provision. First, the provisions concern conference trades only, not the totality of the liner trade. Second, it is for conferences themselves, not governments, to determine the allocation of the cargo shares between conference members. Governments have no part to play in that allocation. Countries opposing the Convention do so for a variety of reasons. Some reasons are that cargo sharing leads to inefficiencies, reduced competition, reduction in shipper choice, and ultimately, higher freight rates. It is contended that shipper protection could be provided more efficiently through national legislation and that ratification of this Convention would be inconsistent with OECD obligations and would run counter to existing competition legislation. Despite having been in force for more than 15 years, the Convention is of limited economic relevance, as numerous countries have not complied with it.

The primary legal authority governing the activities of merchant ships is the state in which the ship is registered, the flag state. It is responsible for regulating all aspects of the commercial and operational performance of the ship. By registering in a particular country, the ship and its owner become subject to the laws of this flag state. That is, registration makes the ship an extension of national territory while it is at sea. Therefore, for ship owners, the choice of register is a major issue that may have important consequences in terms of the (a) tax, applicable company law and financial law; (b) compliance with maritime safety conventions; (c) crewing and terms of employment; and (d) naval protection. Besides national registers, however, there are also open, or international, registers. International registers aim to offer terms that are favourable to an international ship owner.[118] Furthermore, in some cases it is also possible for a ship owner to register a ship under two different flags. All of these alternatives – to register a ship in one or two national registers or simply in an open register – force ship owners to carefully weigh the relative advantages and disadvantages of each possibility. In general, the restrictions that apply to ship registration set maximum allowable stakes in a ship permitted for foreign nationals/corporate bodies or minimum levels that must be owned by domestic interest. Many also require that the person or organization owning that ship should have its principle place of business located within their own country or that certain senior management posts within the owning company be filled by nationals.

[118] Panamanian and Liberian registries have been among the most popular open registries since the early 1920s.

In an effort to reserve the largest possible share of the country's seaborne trade, foreign firms are sometimes restricted from entering or operating in the domestic market. Ships engaged in cabotage, referring to the transportation of commodities between ports of the same country, have been required to be manned by the country's own citizens, either wholly or majority owned by domestic nationals, built at domestic shipyards or registered under the national flag. In return, owners operating ships on cabotage routes have not had to compete with foreign flag vessels.

Finally, it should be noted that relevant negotiations at the WTO in Geneva with respect to the opening of maritime transport service markets are, as emphasized by the WTO Secretariat (2001b), of significant relevance to the fortunes of shipping. These negotiations proved difficult because of the complex and diverse nature of the sector. The first issue negotiators had to deal with during the Uruguay Round was to decide which sub-sectors and activities could be covered in the schedule for maritime transport services. It was decided that negotiations should cover the three pillars: (i) international maritime transport, (ii) maritime auxiliary services and (iii) access to and use of port services. The first pillar, international maritime transport, was recognized as being relatively liberal, although important aspects still needed to be addressed, such as national cargo reservation and unilateral retaliatory measures. During the Uruguay Round, considerable attention was given to the second pillar, maritime auxiliary services, including cargo handling and storage services and providing services to ships while in their berths. It was recognized that this was a sector with considerable scope for liberalisation. The third pillar, access to and use of port services, covered all other services provided to ships while accessing and berthing in ports, for example, towage.

During the Uruguay Round of multilateral trade negotiations, there was considerable discussion as to whether multimodal transport should be added to the negotiations as a "fourth pillar". During negotiations in the specialized Negotiations Group on Maritime Transport Services, it was stressed that door-to-door services would play an increasing role in international shipping. The aim was to ensure that a multimodal transport operator should be able to rent or lease lorries, railway trucks, barges and related equipment for inland cargo transport, and operators should have access to, and use of, these facilities on reasonable and non-discriminatory terms and conditions. Hence, it was argued that multimodal transport should be considered a fourth pillar to the schedule. Other countries have pointed out, however, that multimodal transport involves regulatory regimes (such as road and rail transport) that go beyond the maritime transport sector and that, as such, it should not be incorporated into the schedules.

Negotiations on maritime transport services at the WTO aimed to improve commitments in international shipping, auxiliary services and access to and use of port facilities through eliminating restrictions within a fixed time scale. Although negotiations were scheduled to end in 1996, little progress has been achieved until now. Participants failed to agree on a package of commitments. Lately, talks have resumed. As of 2008, some commitments exist in certain countries' schedules covering the three main areas of maritime services.[119]

In the case of seaports, public budgets have been used until recently to finance the construction of most large infrastructure. Generally, public port authorities have financed the costs of maintenance and repairs for infrastructure, and the port authority itself has been

[119] For an extensive discussion of maritime transport services in the WTO, see B. Parameswaran (2004).

financed with a combination of public funds and tariffs and fees exacted from private firms operating in the port. With the increase in private participation in the operation of seaports, the landlord port became the most desirable category for the operation of seaports from an efficiency standpoint, since it allows private enterprises and market forces to play a role in the supply of services while preventing the monopolization of essential assets by private firms. Trujillo and Nombela (1999), and Clark et al. (2001) maintain that the type of economic regulation changes with the size of seaports. For small and large local ports that do not require more than a general cargo terminal, it is possible to consider the introduction of some form of competition among those firms that are willing to operate in the port. Once the single operator is chosen, it is necessary to have some regulation over the charges that this firm imposes on port users; since, otherwise, it would enjoy a monopoly position. The regulatory authority could mainly use price-cap systems or a rate-of-return type of regulation. On the other hand, in cases of larger seaports, one could introduce competition within the port. If a large port is divided into several independent terminals, it is possible to induce competition between operators for the traffic that calls at the port. In such a case, regulation of prices is less of an issue. However, some form of supervision would be needed, since the parties could collude due their small numbers.[120]

2.2 Regulations Related to Safety and Environment

The regulations on safety and environmental protection are generally based on UN conventions such as the UN Convention of the Law of the Sea of 1982 (UNCLOS). According to this convention, the flag state has primary legal responsibility for the ship in terms of regulating safety and environment, while the coastal state also has limited legal rights over any ship sailing in its waters. The limits of the rights of the coastal states to enforce their own laws are defined by dividing the sea into four "zones", each of which is treated differently from a legal point of view: (a) the territorial sea, which is the strip of water closest to the shore; (b) the contiguous zone, which is a strip of water to the seaward of the territorial sea; (c) the exclusive economic zone, which is a belt of sea extending up to 200 miles from the legally defined shoreline; and (d) the high sea, which nobody owns. On the high seas, all vessels enjoy, in principle, freedom of navigation under the exclusive jurisdiction of their flag state (UNCLOS Articles 87, 89 and 92). While the high seas are free from sovereignty claims by individual nations, the intensity of state control over the waters increases landwards. In the exclusive economic zone, the coastal state enjoys considerable sovereign exploration, exploitation, conservation and management rights, as stipulated in UNCLOS Articles 56 and 60. Despite the existence of sovereign exploitation and related jurisdictional rights of the coastal state in the exclusive economic zone, the freedom of navigation under Article 58 applies in this zone, albeit with a number of explicit and implicit restrictions. Article 3 stipulates that coastal states have the right to enforce international laws and their own laws on safe navigation and pollution in a territorial area with a maximum width of 12 nautical miles. The coastal states have limited powers to enforce customs, fiscal and immigration laws in the contiguous zone, and in the exclusive economic zone, that they have the power to enforce only oil pollution regulations.

Since an international maritime transport service involves the movement of goods by vessel from the port of one country to the port of another country, access to ports is an indispensable element of any international shipping service. Access includes the loading and unloading of

[120] On the Argentinean experience on privatization of ports and waterways, see Estache et al. (1999).

cargo, the embarking and disembarking of passengers, the taking on board of fuel and supplies and even the possibility of conducting trade. As emphasized by Parameswaran (2004), it is a basic condition for the smooth operation of the international maritime transport industry that merchant vessels from all nations are permitted unhampered access to and the efficient use of ports. The 1923 Geneva Ports Convention and the Statute annexed thereto secures freedom of communication by guaranteeing in the maritime ports, under the sovereignty and authority of the parties and for purposes of international trade, equality of treatment among the ships of all Contracting States, their cargoes and their passengers.

The 1982 "Paris Memorandum of Understanding (MOU) on Port State Control" aims to eliminate the operation of substandard ships through a harmonized system of port state control. Ships are selected for inspection according to the Paris MOU targeting system. Only internationally accepted conventions are enforced during port state control inspections. When serious deficiencies are found, the ship is detained. The captain is instructed to rectify the deficiencies before departure. On the other hand, flag states that are not a party to conventions receive no more favourable treatment. The results of each inspection are recorded in the central database, located in Saint-Malo, France. Their periodically updated black-grey-white lists, which show the degree of riskiness of individual ships from different flag states, became one of the major indicators of the safeness and environmental friendliness of national shipping fleets within the last decade.

The IMO adopted a comprehensive framework of detailed technical regulations in the form of international conventions, which govern the safety of ships and the protection of the marine environment. National governments, which form the membership of IMO, are required to implement and enforce these international rules and to ensure that the ships registered under their national flags comply. The majority of IMO conventions fall into three main categories. The first group is concerned with maritime safety, the second with the prevention of marine pollution and the third with liability and compensation, especially in relation to damage caused by pollution. Outside these major groupings are a number of other conventions dealing with facilitation, tonnage measurement, unlawful acts against shipping and salvage.

The level of ratification and enforcement of IMO conventions is generally high, in comparison with international rules adopted for shore-based industries. The principal responsibility for enforcing IMO regulations concerning ship safety and environmental protection rests with the flag states. Flag states enforce IMO requirements through inspections of ships conducted by a network of international surveyors. Much of this work is delegated to classification societies. However, flag state enforcement is supplemented by what is known as Port State Control, whereby officials in any country that a ship may visit can inspect foreign flag ships to ensure that they comply with international requirements.

Among the IMO conventions, the "International Convention for the Safety of Life at Sea" (SOLAS), which entered into force in 1980, covers a wide range of measures to improve the safety of shipping. The provisions of the convention cover the design and stability of passenger and cargo ships, machinery and electrical installations, life protection, life-saving appliances, navigational safety and the carriage of dangerous goods. In 1990, the "International Safety Management Code" was incorporated into SOLAS regulations. The Code requires shipping companies to develop, implement, and maintain a Safety Management System, which includes company safety, environmental policy, and written procedures to ensure the safe operation of ships and the protection of the environment. The Code has been

effectively enforced, as its violation could result in detention of the vessel by port authorities and denial of permission for the ship to enter its intended port of call, as well as fines.

The IMO recently adopted comprehensive maritime security measures at the "Conference of Contracting Governments to the International Convention for the Safety of Life at Sea". The Conference, held at the end of 2002, adopted a number of amendments to the 1974 SOLAS, the most far-reaching of which enshrines the new "International Ship and Port Facility Security Code" (ISPS Code). The Code contains detailed security-related requirements for governments, port authorities, and shipping companies in a mandatory section, together with a series of guidelines about how to meet these requirements in a second, non-mandatory section. The Conference also adopted a series of resolutions designed to add weight to the amendments, encourage the application of the measures to ships and port facilities not covered by the Code and to pave the way for future work on the subject.

The "International Convention for the Prevention of Pollution from Ships" (MARPOL), adopted in 1973, deals with all forms of marine pollution except the disposal of land-generated waste. It covers such matters as the definition of violations, special rules on the inspection of ships, enforcement and reports on incidents involving harmful substances. It should be noted that most oil tankers are currently of "single hull" design. In such vessels, oil in the cargo tanks is separated from the seawater only by a bottom and a side plate. Should this plate be damaged as a result of collision or stranding, the contents of the cargo tanks risk spilling into the sea and causing serious pollution. An effective way to avoid this risk is to surround the cargo tanks with a second internal plate at a sufficient distance from the external plate. This design, known as a "double hull", protects cargo tanks against damage and thus reduces the risk of pollution. Following the *Exxon Valdez* accident in 1989, the United States unilaterally imposed double hull requirements on both new and existing oil tankers according to vessel age limits and deadlines for the phasing out of single hull oil tankers. Faced with unilateral action on the part of the Americans to impose double hull requirements on both new and existing oil tankers during the 1990s, the IMO established double hull standards in 1992 through the International Convention for the Prevention of Pollution from Ships (MARPOL). This Convention requires all oil tankers with a deadweight tonnage (DWT) of 600 tonnes or more, as delivered from July 1996, to be constructed with a double hull or an equivalent design. Therefore, no single hull tankers of this size have been constructed since this date. The International Convention requires that single hull tankers with a deadweight tonnage of 20,000 tonnes or more, and delivered before July 6, 1996, comply with the double hull standards at the latest by the time they are 25 or 30 years old, depending on whether or not they have segregated ballast tanks.

It has long been recognized that limitations on the draught to which a ship may be loaded make a significant contribution to its safety. These limits are set in the form of freeboards. In the 1966 "International Convention on Load Lines", adopted by IMO in 1996, provisions are made determining the freeboard of tankers by subdivision and damage stability calculations. The regulations account for the potential hazards present in different zones and different seasons. The technical annex contains several additional safety measures concerning doors, freeing ports, hatchways, and other items. The main purpose of these measures is to ensure the watertight integrity of a ship's hull below the freeboard deck. All assigned load lines must be marked midship on each side of the ship, together with the deck line.

The 1978 "International Convention on Standards of Training, Certification and Watchkeeping for Seafarers" was the first to establish basic requirements on an international

level. The Convention prescribes minimum standards relating to training, certification, and watchkeeping for seafarers that countries are obliged to meet or exceed.

Because of the unique character of seafaring, most maritime countries have special laws and regulations for seafarers. On the other hand, the ILO has adopted over 60 maritime labour standards during the past 75 years. The standards adopted specifically for seafarers cover a multitude of questions: minimum age of entry to employment, recruitment and replacement, medical examination, articles of agreement, repatriation, holidays with pay, social security, hours of work and rest periods, crew accommodation, identity documents, occupational safety and health, welfare at sea and in ports, continuity of employment, vocational training and certificates of competency. Among the ILO conventions, one of the most important international labour agreements is ILO Convention N. 147. According to this Convention, board ships must be similar to those required by ILO standards regarding safety and health, social security and the living and working conditions of seafarers. Additionally, ILO Convention 180, adopted in 1996, aims to promote the health and safety of workers, to improve maritime safety and protect the marine environment. The Convention establishes limits on seafarers' hours of work or rest on board ship, requiring a maximum of 14 hours work per day and 72 hours per week for seafarers on board ship, with minimum rest periods of 10 hours daily and 77 hours weekly.

3. EUROPEAN UNION RULES AND REGULATIONS

Europe, with thousands of kilometres of coastline, is surrounded by a number of islands, including island-states. The EU, surrounded by five seas and one ocean, has the world's largest maritime territory, while today, the maritime regions of Europe account for nearly half of the EU's population and GDP. Twenty-two out of twenty-seven EU members are coastal states. After Romania and Bulgaria joined the EU, EU borders extended to the Black Sea. Within the enlarged EU there are now more than 1,000 ports situated near industrial and population centres, representing the largest concentration of ports in the world. Because over 90 percent of EU external trade travels by sea, and more than 1 billion tonnes of freight a year are loaded and unloaded in EU ports, maritime transport is of fundamental importance to Europe. Shipping is the most important mode of transport in terms of volume.

EU maritime transport legislation aims to apply the European Community (EC) Treaty's principle of free movement of services to the EU's sea transport industry and its compliance with competition rules. Thus, it aims to improve the functioning of the internal market in maritime services by promoting safe, efficient, environmentally sound, and user-friendly maritime transport services. The maritime transport *acquis* relates to market liberalisation, technical and safety standards, security, social standards and state aid control in the context of the internal maritime transport market.

The main international rules that regulate commercial operations and practices, and safety at sea have been transposed into the Community law, which ensures that they have legal force and uniform application throughout the Member States.[121] In this context, we note that almost all EU-15 Member States subscribe to OECD's "Code of Liberalization of Current Invisible

[121] See Commission of the European Communities (2006d).

Operations" and "Common Shipping Principles".[122] Regarding the United Nations Convention on a Code of Conduct for Liner Conferences, we note that the Community is not a party to the Code, since by providing for the allotment of freight on the basis of national shares, the Code was held to be contrary to the Treaty of Rome. In 1979, Regulation 954/79 was adopted, requiring Member States to enter a reservation while ratifying the Convention, according to which Member States had to open the national share granted under the Code to all ship owners established in the Community. On September 25, 2006, the Council adopted Regulation 1419/2006 repealing Regulation 4056/86, which detailed rules for the application of Articles 85 and 86 of the EC Treaty to maritime transport. With the adoption of this regulation, shipping conferences would become unlawful on trades to/from ports of the Community at the end of a transitional period that expired on October 18, 2008. This implies that Member States that were party to the Code would no longer be able to fulfil their obligations thereof, namely to ensure that their national shipping lines have the right to be members of conferences serving their foreign trade. Those Member States would therefore have to withdraw from the Code of Conduct, and Member States that are not party to the Code would no longer be able to ratify or accede to it. Furthermore, we note that the EU countries have ratified the UN Convention on the Law of the Sea (UNCLOS) and joined the 1973 MARPOL Convention amended in 1978, the 1974 SOLAS Convention and the LOAD LINES conventions. The EU-15 countries have also subscribed to "Paris Memorandum of Understanding on Port State Control", "International Convention on Standards of Training, Certification and Watchkeeping for Seafarers" and the ILO conventions including Convention N.147 and Convention 180. Finally, it should be emphasized that most of the EU-15 countries are party to the 1923 Geneva Ports Convention and the Statute annexed thereto.

3.1 Internal Market

When considering the EU rules and regulations on maritime transport services, we note that real progress toward the realization of a common maritime transport services market free of restrictions was achieved in the EU during the 1980s and 1990s. The 1986 maritime package consisting of a bundle of four EC regulations enabled the freedom to provide services to the maritime transport sector. These four are basic regulations related to commercial operations and practices in the EU. Council Regulation 4055/86 gives Member State nationals (and non-Community shipping companies using ships registered in a Member State and controlled by Member State nationals) the right to carry passengers or goods by sea between any port of a Member State and any port or off-shore installation of another Member State or of a non-Community country. Then, Regulation 4056/86, which was repealed by Regulation 1419/2006, implements the EC competition rules within certain fields of maritime transport. The transport must be between one or more Community ports, and tramp vessel services are excluded, where tramp vessel services refer to transport of goods without a regular timetable and where the freight rates are negotiated freely case by case in accordance with supply and demand. Council Regulation 4057/86, which entered into force on June 1, 1987, enables the EC to apply compensatory duties in order to protect ship owners in Member States from unfair pricing practices on the part of non-Community ship owners. Concerned with anti-

[122] France has lodged a reservation to OECD's "Code of Liberalization of Current Invisible Operations" regarding liberalization of maritime freights, including chartering, harbour expenses and disbursements for fishing vessels. On the other hand, regarding the "Common Shipping Principles", we note that Greece did not commit itself to accepting Principles 14 and 15, regarding auxiliary services and international multimodal transport, respectively

dumping in maritime transport, Regulation 4057/86 was adopted in order to respond to unfair pricing practices by non-Member State ship owners engaged in international cargo liner shipping. Finally, we note that in cases in which a non-Member State seeks to impose cargo sharing arrangements on Member States in liquid or dry bulk trades, the Council shall take the appropriate action, in accordance with Regulation 4058/86, to safeguard free access to cargoes in ocean trades for shipping companies of Member States or by ships registered in a Member State.

It has been common practice in the majority of nations around the world to reserve a major part of the transport of goods and passengers between national ports to domestic fleets. In the EC, the southern Member States have been reluctant to open up this sector to service suppliers from other EC Member States. On the other hand, northern Member States have insisted on easing national cabotage laws. A milestone in the process of liberalizing cabotage trades within EC Member States has been achieved through the adoption of Council Regulation 3577/92. It implements the freedom to provide services to the national maritime transport of EU Member States, and provides for the progressive liberalisation of cabotage restrictions. The Regulation liberalises maritime cabotage in countries in which that economic sector was reserved for nationals. Accordingly, freedom to operate between two ports in the same Member State is offered to all Community ship owners, not only to national ship owners.

The Directive 2009/20/EC on the insurance of shipowners for maritime claims requires that ships flying the flag of Member States shall be insured by their owners, and that ships not flying the flag of Member States are to be insured when they enter ports under Member Sates' jurisdiction. Insurance shall cover claims which are subject to limitation pursuant to the 1996 Convention, and shall provide cover up to the liability limitation treshholds laid down in that Convention.[123] On the other hand, the Directive 2010/65/EU applies to the reporting formalities set out in the annex to the Directive applicable to maritime transport for ships arriving in and ships departing from ports in EU countries. According to the Directive, every EU country must ensure that the reporting formalities at their ports are requested in a harmonized and coordinated manner. EU countries are asked to accept electronic reports via a single window as soon as possible and at the latest by June 2015. The Member Countries have to ensure that the received information be made available in their national SafeSeaNet systems and also to other EU countries via the SafeSeaNet system.

Council Regulation 3094/95 concerning state aid to shipbuilding restricts state aid to social assistance, research and development aid, and indirect aid given in the form of state loans and guarantees. Member States are obliged to give Commission advance notice of any aid scheme or amendment of an existing scheme.

Regarding ship registration conditions, we note that conditions vary among the EU countries. In Germany, registration in the German Ship Register is reserved to vessels owned by nationals of an EU Member State or by companies having their place of business in an EU Member State, and registration is a precondition for the right to fly the German flag. In Sweden, however, a ship is entitled to fly the Swedish flag if it is more than half-owned by a Swedish national or a Swedish legal entity. The Swedish national maritime administration may grant the right to fly the Swedish flag to other ships whose operation is essentially under

[123] The 1996 Convention refers to the consolidated text of the 1976 Convention on Limitation of Liability for Maritime Claims adopted by IMO as amended by the 1996 Protocol.

Swedish control and whose owner has their permanent residence in Sweden. Regulation 789/2004 concerns the transfer of cargo ships between registers within the EU. According to the Regulation EU countries will not withhold from registration, for technical reasons arising from the conventions, a ship registered in another EU country which complies with the requirements and carries valid certificates and marine equipment in accordance with Council Directive 96/98/EC. Before registering a ship, the EU country of the receiving register will subject the ship to an inspection to confirm that the actual condition of the ship and her equipment correspond to the certificates.

3.2 Port Infrastructure

In 1997 the Commission published the Green Paper on seaports and maritime infrastructure, the aim of which was to launch a debate on the efficiency of ports and maritime infrastructure, their integration into the multimodal trans-European network and the application of competition rules to this sector. The paper notes that ports have a role to play in the trans-European transport network (TEN-T) and that intermodal transport is an essential component of the common transport policy for sustainable mobility. Improved port efficiency will contribute to the integration of different modes in a single system, on condition that there is interoperability and interconnection between systems through common information system, reduction of administrative procedures, standardization of loading units. In addition the Green Paper stresses the importance of maritime safety. The Commission also makes suggestions for improving the integration of environmental considerations in the planning of port development.

Noting that the financing of ports and maritime infrastructure and policies on charging their users vary from one country to another, the Commission advocates a general framework requiring charges to be linked to costs. The most frequent port charges are charges for the provision of services and facilities to enable a ship to enter safely and use the port; charges for specific services or supplies rendered; and rents or charges for the use of land or equipment owned by the port. Noting that different approaches are possible with regard to infrastructure costs such as average cost pricing, charging for operating costs only, and marginal cost pricing, the Green Paper advocates the use of marginal social costs of infrastructure use that will include capital, operating, environmental and congestion costs. On the other hand, outside the port area, the Commission advocates a user-pays policy, which would make for fair competition and affect the distribution of cargo flows among European ports. This will include among others navigational aids such as lighthouses, buoys, radio-navigation systems, and maritime traffic organization systems. Finally, the supply of services such as towage, mooring, cargo-handling could be provided by either the public or private sector in competition with other operators. Since services such as pilotage need to be provided on a monopoly basis, regulatory framework for these services should be developed at Community level.

In 2001, the Commission adopted the Communication "Reinforcing Quality Service in Sea Ports: A Key for European Transport" setting certain number of avenues with the aim of improving the quality of services in maritime ports.[124] Noting that sea ports play an important role within the TEN-T the Commission proposed the integration of sea ports in the TEN-T. In addition, the Commission proposed a Directive on market access through competition to port

[124] See European Commission (2001a).

services. The Directive was supposed to establish comprehensive rules for market access taking safety and environmental protection requirements into account. But after almost three years of inter-institutional legislative process, at the end of the Conciliation procedure, the European Parliament rejected the compromise text. The Commission, believing it necessary in the interests of operators, authorities and consumers to introduce specific and clear rules on access to the port services market, decided to bring forward a new proposal.

Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues seeks to reduce the discharges from ships using ports in the Community of ship-generated waste and cargo residues into the sea, especially illegal discharges. By improving the availability and use of port reception facilities for ship-generated waste and cargo residues, the Community hopes to enhance the protection of the marine environment. Member States must ensure the availability of port reception facilities adequate to meet the needs of ships using the port. Costs will be borne by ships, and the system must provide no incentive for ships to discharge at sea. On the other hand, the purpose of Directive 2005/35/EC on ship-source pollution and on the introduction of penalties for infringements is to incorporate international standards for ship-source pollution into Community law and to ensure that persons responsible for discharges are subject to adequate penalties, in order to improve maritime safety and to enhance protection of the marine environment from pollution by ships.

3.3 Social Conditions

Access to the occupation of carrier of goods by waterway is governed by the Member States within the framework of the common rules as laid down in Directive 87/540/EEC. The Directive is based on the principle of mutual recognition of diplomas, certificates and other evidence of formal qualifications. According to the Directive natural persons and undertakings have to meet the condition of professional competence. They have to possess the competences recognized by the authority or body appointed to this end by each Member State in the areas listed in the annex to the Directive. Once it has verified possession of the competences the authority will issue a certificate, and if the carrier no longer meets the conditions, the certificate may be withdrawn. On the other hand, the Directive 2008/106/EC sets out the rules on training and the standards of competence to be met by seafarers who are candidates for the issue or revalidation of certificates that allow them to perform as masters, chief mates, deck officers and engineer officers, chief engineer officers and second engineer officers, and personnel responsible for radiocommunications. In addition, for certain categories of vessels such as tankers and ro-ro passenger ships, the Directive lays down special training provisions and sets out the mandatory minimum requirements concerning their training and qualifications. According to the Directive certificates will be issued by the competent authorities of the Member States to authorize the holder to serve as stated in the document or as authorized by national regulations. Holders of certificates are required to prove, at regular intervals, that they still meet the standards for skills and professional competence.

Council Directive 1999/63/EC of June 1999 concerning the agreement on the organization of working time for seafarers was largely inspired by ILO Convention 180. The current directive is intended to enforce the European Agreement concluded in 1998 between the trade-union and employers' organizations of the maritime transport sector concerning the working time of seafarers. The agreement, comprised in an annex to the directive, applies to seafarers on board of every seagoing ship, whether publicly or privately owned, which is registered in the territory of a Member State and is ordinarily engaged in commercial maritime operations.

Hours of work and rest are laid down as follows: (i) the maximum hours of work must not exceed 14 hours in any 24-hour period or 72 hours in any seven-day period, and (ii) the minimum hours of rest must not be fewer than 10 hours in any 24-hour period or 77 hours in any seven-day period. Hours of rest may not be divided into more than two periods, one of which must be at least six hours in length, and the interval between consecutive periods of rest must not exceed 14 hours. Musters, fire-fighting and lifeboat drills and drills prescribed by national laws and international instruments must be conducted in a manner that minimizes the disturbance of rest periods. Provision is to be made for a compensatory rest period, if a seafarer's normal period of rest is disturbed by call-outs. Seafarers are entitled to paid annual leave of at least four weeks, or a proportion thereof for periods of employment of less than one year. The minimum period of paid leave may not be replaced by an allowance in lieu. Seafarers under the age of 18 are not permitted to work at night. In addition, no person under 16 years of age is allowed to work on a ship. All seafarers must possess a certificate attesting to their fitness for the work for which they are employed and have regular health assessments.

The Directive 1999/95/EC aims to protect the health and safety of seafarers on board of third country ships using Community ports. A Member State that has received a complaint or obtained evidence that a ship does not conform to the existing international standards must forward a report to the government of the country in whose registry the ship is registered, and take all necessary measures to ensure that any conditions on board ship which are hazardous for the safety or health of seafarers are rectified. The measures may include a ban on leaving the port until such time as the irregularities have been rectified.

In 2007, the EU with the Decision 2007/431/EC has ratified the ILO 2006 Maritime Labour Convention (MLC), which consolidates and updates more than 65 international labour standards related to seafarers adopted over the last 80 years. The Convention sets out seafarers' rights to decent conditions of work on a wide range of subjects, and aims to be globally applicable, easily understandable, readily updatable, and uniformly enforced.

3.4 Safety and Environment

Following several disasters such as Torrey Canyon in 1967 and Exxon Valdez in 1989, a series of conventions were drawn up under the auspices of the IMO. For example, the International MARPOL Convention was adopted in 1973. Apart from the environmental aspect, this convention as emphasized in the previous section seeks to bring about the gradual phasing-out of single hull oil tankers and their replacement by double hull tankers or tankers of equivalent design. The MARPOL Convention also provides for more rigorous checks on the state of ageing oil tankers. As a result of MARPOL, oil tankers built since 1966 have to have a double hull or be of equivalent design, while single hull oil tankers are gradually being phased out. But action by the IMO is handicapped by the absence of adequate control mechanisms governing the way the rules are applied.

In 1993 the Commission published the Communication “A Common Policy on Safe Seas”, which proposed that an ambitious policy be introduced at Community level to improve the safety of ships, their crews and to prevent marine pollution more effectively. As a result, the EC adopted Directive 95/21/EC on port state control providing for inspections to be carried out on all vessels and including specific requirements relating to the inspection of oil tankers; Directive 94/57/EC laying down common rules and standards for ship inspection and survey organizations and for the relevant activities of maritime administrations; and the Regulation 2978/94 governing the implementation of IMO Resolution A.747(18) on the application of

tonnage measurement of ballast spaces in segregated ballast oil tankers. The latter Regulation aims to encourage the use of oil tankers fitted with segregated ballast capacity by requiring the community's port and pilotage authorities either to apply the recommendations of Resolution A.747(18) or to permit a system of rebates on dues, such as that provided for therein. Resolution A.747(18) invites governments to advise port authorities to apply to all tankers with segregated ballast tanks the recommendation of deducting the segregated ballast tank tonnage from the gross tonnage, wherever their dues are based on the latter, and to advise pilotage authorities to act in accordance with the same recommendation.

Council Directive 93/75, signed on September 13, 1993, establishes minimum requirements for vessels bound for or leaving Community ports and carrying dangerous or polluting goods. Carriers must declare the loading of such goods in accordance with international regulations. This directive defines the information that the operator must supply to the relevant authorities of the Member States for which the vessel is bound or from which it is leaving and the action to be taken in the event of an accident. That Directive was repealed, however, by Directive 2002/59/EC, which establishes a Community vessel traffic monitoring and information system. On the other hand, Council Directive 95/21/EC passed in June 1995 aims to improve maritime safety in Community waters by banning substandard shipping. The Directive applies to all merchant shipping and crews using a seaport of a Member State, an offshore terminal or anchored off such a port or installation. Member States are obliged to establish and maintain national maritime administrations for the inspection of ships in their ports and in the waters under their jurisdiction. Each Member State is obliged to inspect at least 25 percent of the ships flying other countries' flags that enter its ports. Vessels inspected within the previous six months are exempt. Additionally, enhanced controls must be carried out on all oil tankers scheduled for phasing out within five years, all bulk carriers older than 12 years of age and all passenger ships and gas and chemical tankers over ten years old (counting from the date of construction represented on the ship's safety certificates). An obligation is placed on the Member States to ensure that any deficiencies revealed in the course of the inspection are rectified and that conditions warranting detention of the ship are laid down.

During December 1999 the oil tanker Erika broke in two 40 miles off the coast of Brittany, and more than 10 000 tons of heavy fuel oil were spilt, thereby creating an ecological disaster. Pressure of public opinion prompted the Commission to propose action at Community level. In March 2000 the Commission published the communication on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers. In addition, the Commission published in December 2000 the communication proposing the adoption of a directive establishing a Community monitoring, control and information system for maritime traffic; a regulation on the establishment of a fund for the compensation of oil pollution damage in European waters and related measures; and a regulation establishing a European Maritime Safety Agency.

As a result of the two Communications, the EC adopted the Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues aiming to ensure compliance with the MARPOL provisions requiring ports to provide adequate reception facilities; Directive 2001/96/EC establishing harmonized requirements and procedures for the safe loading and unloading of bulk carriers; Regulation No 2099/2002 establishing a Committee on Safe Seas and the Prevention of Pollution from Ships (COSS) and amending the Regulations on maritime safety and the prevention of pollution from ships; Regulation 417/2002 aiming to reduce the risk of accidental oil pollution in European waters by speeding up the phasing-in of double hulls; Directive 2002/59/EC aiming to establish a EU vessel

traffic monitoring and information system with a view to enhancing safety and minimizing the environmental impact of shipping accidents; and Regulation 1406/2002 establishing the 'European Maritime Safety Agency'.

The Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues seeks to reduce the discharges from ships using ports in the Community of ship-generated waste and cargo residues into the sea, especially illegal discharges. By improving the availability and use of port reception facilities for ship-generated waste and cargo residues, the Community hopes to enhance the protection of the marine environment. Member States must ensure the availability of port reception facilities adequate to meet the needs of ships using the port. Costs will be borne by ships, and the system must provide no incentive for ships to discharge at sea. On the other hand the Directive 2001/96/EC follows up the Code of Practice for the Safe Loading and Unloading of Bulk Carriers, which was adopted by the IMO in 1997. The aim is to reduce the number of shipping accidents involving bulk carriers during loading or unloading of solid bulk cargoes. The Directive recognizes the principle of intervention by the competent authorities in the Member States whenever the cargo handling operations give rise to situations which are likely to pose a threat to ship safety.

The Regulation 2099/2002 establishing a Committee on Safe Seas and Prevention of Pollution from Ships (COSS) has the aims of simplifying procedures by replacing various committees set up by the Community legislation on maritime safety and the prevention of pollution from ships with a single committee, the COSS; and to accelerate and simplify the incorporation of international rules into the Community legislation by allowing amendments to the international rules to apply directly or semi-automatically. The Regulation 417/2002 on the other hand aims to reduce the risk of accidental oil pollution in European waters by speeding up the phasing-in of double hulls. It applies to all tankers of 5,000 tonnes deadweight or above entering or leaving a port or offshore terminal or anchoring in an area under the jurisdiction of a Member State, irrespective of their flag.

The Directive 2002/59/EC sets ups a European vessel traffic monitoring and information system that will help to prevent accidents and pollution at sea and to minimize their impact on the marine and coastal environment. The Directive covering all ships of 300 gross tonnage and upwards stipulates that ships built after July 2002 and calling at a port of an EU country must be fitted with and automatic identification system and a voyage data recorder system to facilitate investigations following accidents. In addition, the Directive repealing the Directive 93/75 aims to enhance the safety and efficiency of maritime traffic; and to contribute to better prevention and detection of pollution by ships. The directive sets out rules for the notification of dangerous or polluting goods onboard ships, for the monitoring of hazardous ships and for intervention in the event of incidents and accidents at sea. When conducting any marine casualty or incident investigation, Member States are required to comply with the provisions of the relevant IMO code.

Regulation 2244/2003 establishes satellite based Vessel Monitoring System (VMS) for fishing vessels of certain size and above. The basic function of VMS is to provide reports of the location of a vessel at regular intervals. Electronic devices are installed on board vessels, and these devices automatically send data to a satellite system which transmits them to a ground station which in turn sends them to fisheries monitoring system. In order to guarantee safe, secure and clean maritime goods transport the EU has set up in June 2002 the "European Maritime Safety Agency" with Regulation 1406/2002. Its main objective is to provide technical and scientific assistance to the European Commission and Member States with the

proper development and implementation of EU legislation on maritime safety, pollution by ships and security on board ships.

In 2006 the EC published the Regulation 336/2006 on the implementation of the International Safety Management (ISM) Code within the Community. The code based on International Management Code for the Safe Operation of Ships and for Pollution Prevention of IMO and reproduced in SOLAS aims to ensure that the Code is implemented correctly, strictly and uniformly in all the member States. According to the Regulation Member States have to comply with the provisions in Part B of the ISM Code and Title II of the Annex to the Regulation.

On March 11, 2009, the European Parliament adopted the third maritime safety package. With the adoption of this package, the EU delivered the message that substandard shipping would no longer be tolerated. The Regulation 391/2009 establishes a harmonized framework of regulations and procedures applicable to organizations carrying out ship inspection and surveys. On the other hand, the Directive 2009/15/EC creates a harmonized legal framework for organizations carrying out inspection and certification of ships as well as their relationships with the competent authorities of Member States. Finally, the Directive 2009/16/EC on port state control aims at making maritime transport by reducing the number of ships circulating in the territorial waters of the EU which do not comply with existing safety standards. According to the Directive Member States shall take all necessary measures to carry out the inspection of ships in particular by making qualified inspectors available to the competent authorities. Member States shall refuse access to their ports for ships flying flags included on black or grey lists adopted pursuant to the Paris Memorandum which have been detained or whose operation has been prohibited more than twice during the preceding 36 months for ships flying a flag on the black list and more than twice during the preceding 24 months for ships flying a flag on the grey list in a port or anchorage of a Member State or of a State signatory of the Paris Memorandum of Understanding. If deficiencies are hazardous to safety, health or the environment, the competent authority of the port State shall ensure that the ship is detained or that its operation is stopped. In addition, the Directive lays down the qualification criteria that inspectors must meet in order to be approved by the competent authority.

Regarding further regulations on environment we note that the Regulation 782/2003 prohibits organotin compounds on ships flying the flag or operating under the authority of a Member State and on ships sailing to or from Member State ports.[125] The purpose of the Regulation is to reduce or eliminate the adverse effects of organotin compounds on the marine environment and on human health in general. On the other hand, the Council Decision 2002/762/EC aims to authorize the Member States to become Contracting Parties to the 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage of IMO. The Convention aims to ensure adequate, prompt and effective compensation of persons who suffer damage caused by spills of oil carried as fuel in ships' bunkers. Owners of ships with a gross tonnage greater than 1 000 registered in a Sate which is party to the Convention are required to maintain insurance or other financial security, such as the guarantee of a bank or similar financial institution, to cover their liability for pollution damage.

[125] Organotin compounds are chemical compounds based on tin with hydrocarbon substituents.

4. TURKISH MARITIME RULES AND REGULATIONS

In Turkey, all maritime-related decision- and policymaking activities, including signing international maritime conventions, are carried out by the Ministry of Transportation, Maritime Affairs, and Communications (MTMAC). Previously the tasks were carried out by the 'Undersecretariat for Maritime Affairs'. Maritime activities in Turkey are mainly subject to Turkish Commercial Law No. 6762, Cabotage Law No. 815, Law on Turkish International Ship Registry No 4490, and Ports Law No. 618.

Regarding regulations on commercial operations and practices, we note that Turkey does not associate itself with the OECD Common Shipping Principles and has a reservation on Note 1 of the OECD Code of Liberalization of Current Invisible Operations. Turkey has signed the UN Liner Code but has not ratified it yet. Turkey has no laws and regulations governing the operation of liner conferences.

Until 1983, Turkish regulations required that all imports of public enterprises and public entities be transported by Turkish-flag vessels. This restrictive policy was liberalised in 1983 by Decree 152, which stipulates that all imports for the account of public entities are to be carried on board Turkish-flag vessels if the freight rate is not more than 10 percent higher than that quoted by foreign operators. On the other hand, according to the Cabotage Act, cabotage is reserved to national flag carriers, and maritime transport among Turkish ports is assigned to Turkish ships only. Furthermore, towage, pilotage, and other services related to ports are executed only by Turkish ships.

According to the Law on Turkish International Flag Registration enacted in 2000, there are two different types of ships registry: National Ship Registry (NSR) and Turkish International Ship Registry (TISR). In order to fly the Turkish flag on the NSR, shipping companies must be 51 percent owned by Turkish nationals, and first mates and masters of ships must be of Turkish nationality, while up to 40 percent of the officers of ships engaged in international seaborne transportation, excluding cabotage, can be foreign nationals. Ships registered in NSR benefit from cabotage rights. Ships that belong to legal persons, such as bodies, institutions, associations and foundations set up in accordance with Turkish law, the majority of whose Boards of Directors are of Turkish nationality, and ships that belong to trading companies, the majority of whose managerial staff and representatives are of Turkish nationality and are registered on the Turkish Trade Register, are considered Turkish. On the other hand, the TISR, established in 1999, is open to ships and yachts owned by foreign persons resident in Turkey and foreign owned companies incorporated pursuant to Turkish legislation. On Turkish flagged ships registered to TISR, 49 percent of the crew can be employed from foreign seafarers, provided that the first captain is a Turkish citizen. In addition to the special tax incentives offered through the international register, flying the Turkish flag allows the vessels to perform cabotage operations in Turkish waters and a 10 percent preference in bidding for the transport of public cargoes or strategic raw materials.[126] Finally, vessels rented by foreigners cannot operate inside Turkish coastal waters, and vessels rented by Turkish nationals are considered foreign vessels and they may not fly the Turkish flag.

[126] See WTO (2012)

Turkey in the light of experience acquired by Turkish Straits Vessel Traffic Services at Gulf of Izmit, Izmir, Iskenderun, Mersin and Aliaga, where maritime traffic is dense and risky, studies for implementing vessel traffic monitoring information systems (VTMIS) were carried out with the purpose of improving sea safety and security. Although VTMIS for İzmit are operational as of 2012, the ports of Mersin, İzmir and İskenderun are not expected to be operational in the short term. But the aim is to have them operational as soon as possible. In addition, works for integrating the Long Range Identification and Tracking (LRIT) System was put into operation for the purpose of monitoring Turkish flagged vessels in the whole world and foreign flagged vessels within 1,000 miles of Turkish coastal are by means of VTMIS.

Regarding regulations on safety and the environment, we note that Turkey is one of 38 states that have not signed the "The United Nations Convention on the Law of the Sea" (UNCLOS). The Turkish flag was on the gray list of the Secretariat of the Paris Memorandum of Understanding (MOU) on Port State Control. According to the Commission of the European Communities (2006b), the percentage of Turkish flag vessels detained following Port State Control has decreased from 24.59 percent in 2001 to 7.85 percent in 2005. As of 2010, Turkey is on the white list of the Paris MOU. The detention rate was 4.3 percent in 2010 compared to 1.78 percent for the EU average in 2010. We note that Turkey has authorized ten classification societies (nine IACS Members together with the Turkish Lloyd) to carry out inspection, survey and certification of ships. But Turkish Lloyd has not been recognized by the EC. As a result, ships classed by Turkish Lloyd are subject to further inspection in Paris MOU ports due to targeting factors.[127]

Turkey is a signatory to many of the IMO rules and regulations. Although Turkey has ratified the MARPOL (Mandatory Annexes I and II, and also Annex V) and SOLAS conventions and acceded some of the amending protocols, it has not ratified SOLAS Protocol 78, SOLAS Protocol 88 (International Convention for the Safety of Life at Sea), MARPOL Annexes III and IV (International Convention for the Prevention of Pollution from Ships), and Load Line 88. According to European Commission (2011), Turkey during 2011 took steps to become a party to SOLAS-78, SOLAS-88, the Convention on facilitation of international maritime traffic (FAL) and MARPOL Annexes III and IV.

According to Law on Environment No. 2872, discharge of pollutants from ships, ports and other coastal installations are prohibited, and fines for discharge from ships depend on the kind of pollutant. The Law regulates obligations to establish port reception facilities and imposes penalties for violating these obligations. Furthermore, Part A and parts of Part B of "International Ship and Port Facility Security Code" (ISPS Code) are applicable in Turkey, and technical studies to prepare a By-Law on Implementation of ISPS Code are underway. Finally, it should be emphasized that Turkey has fulfilled its international obligations under the SOLAS Convention/Chapter XI/2.

[127] The Target Factor is in use within the Paris MOU on PSC as a tool for selecting ships eligible for an inspection only. The calculation of the Target Factor is divided into two parts. While the generic factor is based on elements of the ship's profile, the history factor is based on the ship's inspection history in the Paris MOU. The generic factor is updated when the particulars of the ship change or the status of its existing flag or class changes. The history factor is updated at the end of each day.

According to the European Commission (2011), ship sourced emissions, maritime emergency response, reception of waste from ships, and handling of dangerous goods in Turkey are areas that call for closer scrutiny.

Turkey signed only 12 of the ILO conventions concerning seafarers and dockworkers. According to Law on Maritime Labour No. 854, the working time of seafarers is eight hours in a day and 48 hours in a week. Working time is the time of work and watchkeeping. By-Law on Seafarers No. 24832 requires that minimum hours of rest shall not be fewer than 10 hours in a day and 72 hours in a week. Daily hours of rest may be shortened due to musters and emergency cases. In that case, rest time shall not be fewer than six hours and this implementation shall not continue more than two days. Turkey has ratified the 1978 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, and the Code is applicable.

In 2011 Turkey has volunteered for IMO's member audit scheme (VIMSAS), which requires the IMO member states to sign up to all relevant maritime conventions. Turkey also adopted a VIMSAS strategy, which is reinforced by a board set up by Minister's decision establishing a mechanism for monitoring and adoption of all maritime conventions.

In December 2003, Turkey adopted an ambitious five-year Maritime Transport Action Plan for the enhancement of maritime safety. This action plan sets out a road map for legislative alignment with the *acquis* on maritime safety, measures aimed at strengthening administrative structures (in the area of flag State and port State control) and training and equipment needs. Since January 2004, the Turkish Undersecretariat of Maritime Affairs has been conducting a broad legal and institutional harmonization project with the participation of Spain as an EU partner country (the "twinning project"), to strengthen the Turkish institutional infrastructure on maritime transport in advance of Turkey's accession into the EU.

Turkey's major ports are owned by two state institutions: the Turkish State Railways (TCDD) and the Turkish Maritime Organization (TDI). According to Turkish Ports Law No. 618, dated April 20, 1925, only Turkish citizens, and companies that are majority owned, managed and controlled by Turkish citizens, may exercise the rights related to the ports. Again, foreign ownership in companies involved in port undertakings is restricted to 49 percent. All services, access to ports, pilotage, towing, tug assistance, provisioning, fuelling, watering and navigation aids are available to all users of port services. However, pilotage and all other port services can be provided only by Turkish flag ships.

In order to deal with congestion and inefficiencies at Turkish ports, the operational rights of 13 public ports operated by the General Directorate of the TDI were privatized several years ago, but until recently, the main ports were operated by TCDD. The privatizations were carried out by granting concessions for the operating rights mostly for 36 years. Thus, in the market for port operations and services (pilotage, towage, cargo handling, container handling, etc.) the public sector was heavily involved in the past. Currently, the situation is advancing rapidly, as ports under the control of TCDD are subject to an ongoing liberalization process.

According to EuroMed (2005), container terminals are operating at relatively low levels of efficiency due to insufficient availability of handling equipment, the sub-optimal use of stacking areas and the long dwell times of containers, where dwell times refer to the time that container units/cargoes remain in the port between vessel discharge and leaving or between entering and vessel loading. In Istanbul, dwell times are about 12 days, which is a relatively

high figure. It is a result of not only infrastructure deficiency, but also the sub-optimal statutory, regulatory, procedural and documentation frameworks used within the ports. It is clear that there is a need to improve this situation and to reduce container dwell times. These terminals would operate much more efficiently within their existing configuration, provided investments were made in equipment, improvements were introduced to stacking and handling procedures, and dwell times were shortened.

5. POLISH MARITIME RULES AND REGULATIONS

Poland has 56 binding bilateral and international agreements regulating maritime transport issues in 2012. Majority of them were signed before Polish accession to the EU in 2004. These agreements provide a general framework of international maritime transport cooperation, and regulate the rules and procedures regarding market access and bilateral non-discrimination treatment.

The rules for Polish maritime transport and international trade are determined by multilateral treaties, such as the UN Convention of the Law of the Sea of 1982 (UNCLOS), conventions adopted by the International Maritime Organization (IMO) and the rules of International Labour Organisation (ILO). Poland is contracting party to the Baltic Marine Environment Protection Commission (HELCOM). This intergovernmental organization is governing the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention). HELCOM and the Helsinki Convention play a crucial role in protection of the marine environment of the Baltic Sea.

The legal relations in terms of maritime activities in Poland are subject to the the Maritime Code of September 2001.[128] Other important domestic regulations are specified in the Maritime Safety Act of November, 2000 and the Act on the Polish sea areas and the maritime administration of March, 1991.[129, 130] The Ministry of Transport, Construction and Maritime Economy is currently responsible for the maritime-related decision- and policymaking activities in Poland. Previously the tasks were carried out by the Ministry of Infrastructure.

The accession of Poland to the EU in 2004 meant that all *acquis communautaire* had to be adopted. The acts of EU's law and international agreements are implemented in the national regulations on an ongoing basis. The Maritime Law Codification Commission is the entity responsible for amendments in the Maritime Code and other national acts dealing with the maritime regulations. The Commission was established by the decision of Council of Ministers of April, 2007.

The process of adjusting Polish regulations, in terms of maritime transport, to EU's legislation required many novelizations. In order to provide the legal and institutional conditions for the application of the principle of freedom of establishment Poland has introduced the novelized Act of Economic Activity, abolishing the business license requirement for foreign entities willing to conduct business in maritime transport.[131] Until 2004 the cabotage was restricted to national flag carriers in Poland. The foreign flag vessels willing to perform cabotage could

[128] (Dz. U. No. 138, poz 1545, with amendments)
[129] (Dz. U. 2006, No. 99, poz. 693, with amendments.)
[130] (Dz. U. z 2003 r. Nr 153, poz. 1502, with amendments)
[131] (Dz.U. z 1999 r. Nr 101, poz. 1178 with amendemnds)

obtain only temporal permits issued by one of the Polish Sea Offices. After the EU enlargement in 2004 all European vessels gained the same privileges as national flag ships, granting full liberalization of cabotage services and the same market access conditions.

According to the Polish Maritime Code there is one national Ship Registry. All ships willing to fly the Polish flag should be listed in the Registry. The only exceptions are ships with hull shorter than 24 m, which are used exclusively for sport and leisure activities, which are subject to one of the Yacht Registries. The Ship Registry consists of three books: permanent records registry, temporary record registry and ships under construction. In order to be included in the permanent records registry the ship must be owned by at least 51 percent by Polish nationals. Ships owned by foreign citizens or companies can be subject to temporary records registry only, provided that Polish citizens, legal persons or companies produce a lease or rental agreement for the ship.

Poland, like many other European countries, is experiencing the phenomenon of "flag of convenience" practices. This term describes the business practice of registering a merchant ship in a sovereign state different from that of the ship's owners. Ships are registered under flags of convenience to reduce operating costs or avoid the regulations of the owner's country. Of course, this choice, as explained in the first part of this chapter, is based on cost-benefit analysis. EU authorities have been searching for a solution to this situation for long time. One of the concepts related to the establishment of a common European "Community Shipping Register" (EUROS). However, this idea was abandoned in favor of strengthening the role of national registries. EU favors creation of a similar favorable legal framework to that offered by the flags of convenience. This should encourage the shipowners to return with their fleet to their national flags, and remain competitive in relation to the other countries.

The competitive position of European merchant fleet may also be affected by state subsidies used in some countries. In 1997 EU adopted the "Community guidelines on State aid to maritime transport" which were updated in 2004 (2004/C 13/03). The document lists the possible range of privileges which member states can implement in order to encourage the shipowners to return to European flags. The recommended privileges include

- replacement of income tax by flat rate tonnage taxation system (tonnage tax). Such tax would depend on the total volume of transport (based on the official capacity of the registered ship) instead of the financial outcome of the shipowner;
- reduction or elimination of social security contributions for seafarers;
- reduction or elimination of other social benefit payments incurred by the shipowners;
- reduction or elimination of the income tax and other taxation incurred by seafarers; and
- reimbursement of expenditures incurred on upgrading skills of seamen.

In Poland the tonnage tax has been introduced by the Act of Tonnage Taxation.[132] The provisions of the Act came into force on January 1, 2011 and other acts on financial conditions are underway. The tonnage tax in Poland depends on the total capacity of the ship. The act defines 5 capacity categories, each of them being subject to different daily payment. The total tax base is a multiplication of the daily payments and the period of exploitation of

[132] (Dz. U. 2006., Mo. 183, poz. 1353) of 24th August 2006

the ships in the given month. The tax rate is 19 percent, though the total payment is reduced by the value of health insurance contributions made by the shipowner.

In order to increase the safety of navigation and the ability to respond in distress in the waters of the Gulf of Gdansk, the traffic surveillance system VTS has been launched in the Gulf of Gdansk on May 1, 2003. The new system was implemented in line with the guidelines of the IMO and the International Association of Navigation Services Labelling (IALA). It has been providing users with VTS services and supervising the safety of navigation in the area. In October 2007, the Gdansk Bay VTS system has been approved and formally adopted at the 83rd session of the IMO Maritime Safety Committee. The VTS Gulf of Gdansk staff is working around the clock. The VTS working languages are English and Polish. The Gdansk Bay VTS is one of four reporting VTS systems in the Baltic Sea Region.

The accession to the EU forced Poland to follow European standards on maritime safety and security. Poland became a member of the European Maritime Safety Agency (EMSA) – one of the EU's decentralised agencies, responsible for provision of technical assistance and support to the European Commission and Member States in the development and implementation of EU legislation on maritime safety, pollution by ships and maritime security. EMSA, in cooperation with MOU is publishing quality performance lists of flags divided into colours (black-grey-white) depending on the technical state and safety level of the ships. Ships flying each flag are subject to frequent inspections, though the frequency depends on the assigned risk profile. As of July 1, 2010 Poland was ascribed a white flag, which meant that Polish flag ships are subject to control every 2-3 years. At the same time, 24 flags were listed as high risk flags (black list).

Poland is also one of the parties to the MARPOL convention. The Annex VI sets the maximum sulphur content of fuel used by ships in the Baltic Sea Region or calling at Baltic ports as of May 19, 2006 at the level of 1.5 percent. The novelization of the Annex VI reduces the allowed sulphur content level to 1 percent (binding from July 1, 2010) and eventually to 0.1 percent (binding from January 1, 2015). At the same time, however, Poland was subject to EU Directive 1999/32/EC of April 1999, relating to a reduction in the sulphur content of certain liquid fuels, which set the maximum sulphur content for ships in Baltic Sea Region at 0.1 percent level. The only exceptions are the ships engaged in oceanic seafaring, which are excluded from the provisions of the Directive.

Poland has signed all 19 of ILO conventions concerning seafarers, 2 concerning fishermen and 2 concerning dockworkers. On the May 3, 2012 Poland has ratified the latest ILO convention on seafarers – the Maritime Labour Convention of 2006 (MLC). The regulations concerning maritime labour in Poland are specified in the Maritime Code as well as in the Act of Working on Offshore Merchant Ships (Seafarers Act).[133] According to the Act, the average working time of a seaman should not exceed 40 hours per week (or 30 hours in polar or tropical zone). While the ship is at sea, the working time can be extended to 56 hours in a seven-day working week, including the time of watchkeeping. Additionally, the minimum hours of rest shall not be fewer than 10 hours a day and 77 hours per week.

The marine areas account for over 10 percent of Polish territory. They are therefore an important element of the National Spatial Development Concept 2030 (KPZK 2030)

[133] See (Dz.U. z 1991 r. nr 61 poz. 258)

coordinated by the Ministry of Infrastructure, published in April of 2012. Previously the issue of marine territories was absent from the strategic national level acts. KPZK 2030 is said to be the most important national strategic document on spatial planning of the country. This document contains, among others, the Polish vision of spatial development until 2030, the principles of the restoration and consolidation of spatial order and spatial policy objectives of the country. One of the main aims of the document is to enhance the spatial accessibility of Poland through development of transportation infrastructure.

The natural context in which the issue of Polish maritime transport is discussed is the Baltic Sea Region (BSR). Baltic Sea, together with its coastal areas, constitutes a unique regional unit. A specific characteristic of this region is the strong relationship between the development of the countries bordering with the Baltic Sea and the fate of the body of water that connects them. For this reason one can presently observe a revival of the maritime identity in the Baltic Sea Region. The EU accession had a strong influence on Polish position in the region, where the cooperation and integration is based on a network of multilateral links within the regional community. Eight of the nine states bordering the Baltic Sea are members of the EU.[134] One of the outcomes of the apparent importance of the region in the EU is the adoption of the "European Union Strategy for the Baltic Sea Region" (COM (2009) 248) (EUS BSR) on June 10, 2009.

The EUS Baltic Sea Region is the first EU macro-regional strategy. It focuses on four thematic pillars: environmental protection, prosperity, accessibility and attractiveness and safety. The implementation strategy is based on the Action Plan defining 15 priority areas, about 80 flagship projects and 12 horizontal actions. Its main objective is to strengthen co-operation in the region and the potential that occurred with the enlargement of the EU in 2004. The entity responsible for coordination and implementation of the EUS BSR in Poland (the National Contact Point) is the Ministry of Foreign Affairs. An advisory body for the National Contact Point, the Working Group for the coordination of the implementation of EUS BSR in Poland, has been established on September 5, 2011. It consists of representatives of all the entities involved in the process of EUS BSR in Poland.

On March 18, 2009 Poland adopted the Polish Maritime Policy until 2020. The document establishes the basis for Polish maritime policy, to implemented in accordance with the guidelines presented in "An Integrated Maritime Policy for the European Union", called the Blue Book, and the Guidelines for an "Integrated Approach to Maritime Policy: Towards best practice in integrated maritime governance and stakeholder consultation".[135, 136]

6. CONCLUSION

Since maritime transport is inherently international in character, and vessels on most voyages must operate under the regulatory requirements of many jurisdictions, there is an inherent need for harmonization across countries. Countries need to harmonize their own rules and regulations to international rules and regulations, which are classified as (i) regulations related to commercial operations and practices and (ii) regulations related to safety and

[134] Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden
[135] The Communication from the Commission to the European Parliament (COM (2007) 575) of 10th October 2007).
[136] Communication from the Commission to the Council (COM (2008) 395) of 26th June 2008.

environmental regulations. Compared to international rules and regulations the EU rules and regulations in the maritime sector are generally much stricter. Since Poland is a Member State of the EU it has to comply with all the rules and regulations of the EU. On the other hand, Turkey is in the process of adopting and implementing the legislative, regulatory and institutional framework of the EU maritime freight transport sector. The country by changing the regulatory regime aims in the long run to increase competition in the sector, and gain market access to the EU market.

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CHAPTER 5

REGULATORY FRAMEWORK IN AIR TRANSPORTATION

The provision of air transport services involves elaborate infrastructure needs and is tightly linked to the so-called ancillary services consisting of air-traffic control, booking system, ground handling, catering and maintenance. Due to the complexity of the whole network of interrelated services and the need to provide sufficient infrastructure, the airline sector was believed to be a natural monopoly for a very long time, and as a result it was heavily regulated and protected. There was no real competition between flag carriers, and schedules and fares were both subject to regulation and international coordination. Since air sector is a network industry, a degree of cooperation between providers cannot be avoided. However, lack of competition lead to inefficiency, insufficient air traffic and high fares. The process of air services markets liberalization started in the United States in the 1970s, where deregulation resulted in significant drop in fares and an increase in air traffic. On the other hand liberalization in Europe started in 1987, and with the adoption of three European Union (EU) liberalization packages the air services market in the EU has been completely reshaped to provide tighter competition, more efficient use of infrastructure and more benefits to consumers.

This chapter is organized as follows. Section 1 provides a brief introduction to the functioning of the air transportation sector. Section 2 discusses international rules and regulations in the air freight transport industry. Section 3 focuses on EU rules and regulations. Sections 4 and 5 discuss the regulatory framework in Polish and Turkish air freight transportation sectors. Finally, section 6 concludes.

1. AIR TRANSPORT SERVICES

The provision of air transport services involves on the one hand the transportation of passengers and freight from one point to another by aircraft, and on the other hand the ancillary services such air traffic control services, airport services, aircraft repair, computer reservation systems (CRS), ground handling, and aircraft repair and maintenance services.[137]

1.1 Air Freight

The air cargo industry forming about 1 percent of the overall freight industry measured by weight forms a crucial component of the supply chain filling a niche in mostly time-sensitive high value-low density deliveries. Shippers demand that shipments arrive at their destination on time, undamaged, and at a reasonable price, regardless of transportation mode. In the case of intercontinental freight have the choice of air and maritime. Maritime transport offers the primary benefit of low cost, but air transport offers the benefits of speed and reliability. Thus, for goods to be transported by air the value of timing of the delivery needs to be larger than the savings in the costs of shipping by alternate modes.

[137] This section is based mainly on World Trade Organization Secretariat (2001), World Trade Organization (2006a, 2006b), World Bank (2009), and Boffinger (2009).

Air cargo is essential to global sourcing, manufacturing, assembling, and distribution of goods. As a result the principle commodities shipped by air consist of perishables and refrigerated goods; computers, telecommunications equipment and other technology products; capital and transport equipment; apparel and textiles; and intermediate goods for distributed manufacturing.

The air freight industry globally is estimated in 2009 at 166.8 billion kilometer/tons, with a 15 year annual geometric growth rate of almost 7 percent, compared to 3.6 percent growth in GDP. Thus, growth in the industry is closely linked to growth of global GDP, with an estimated 1 percent growth in GDP resulting in roughly 2 percent growth in freight traffic. Most of the trade involves movements between North America, the EU and Asia, primarily China, and routes with origins or destinations in Asia account for 70 percent of the total volume of air cargo. The principal growth has been in shipments of intermediate goods to China, and manufactured goods from China. Although declining, North America still accounts for the largest share of cargo handled in its airports. Both in revenue ton-kilometers (RTK) and in actual tonnage North American, the EU and Asian markets dominate globally, with the U.S. domestic market being a close runner-up in RTKs.

According to Boeing (2012) world air cargo traffic will expand at an average annual rate of 5.9 percent for the next two decades reaching 526.5 billion RTK in 2029. Asia's air cargo markets will continue to lead the industry in average annual growth. The intra-Asia market is expected to expand by 7.9 percent per year. Similarly, markets connecting developing economies to established economies will equal or exceed the average world growth rate. As a result of these developments the freighter fleet over the next two decades will grow more than two-thirds, expanding from 1755 airplanes in 2009 to 2967 airplanes in 2029.

In terms of energy consumption per ton kilometer, air transport is the least efficient mode of transportation as emphasized by International Energy Agency (2008). Since the sector after roads is the second most intense emitter of CO_2 in the transport sector, environmental pressures mount in the sector.

The infrastructure and technology required for air cargo is, except for highly specialized cargo operations and hubs, very similar to passenger services, sharing the same navigation and air traffic control needs and runway needs. Dedicated apron areas for cargo is a minimum requirement for cargo-only operations. As with passenger transport, good road access to the airport is important. Air freight is by necessity highly dependent on road access to the departing and arriving airport, and is thus multi-modal. Commodities that are shipped by air are brought to the airport by truck, and at the arrival airport they are taken by truck for delivery. In addition, other multi-modal operations have existed since the 1960's, specifically the sea-air linkage.

In the industry there are 'asset based operators' which own and operate their own equipment and 'non-asset based operators' who rely exclusively on equipment of other operators. The basic types of asset based operators include combination carriers, all cargo airlines, integrated carriers, and leasing companies. While combination carriers are mainly passenger airlines offering cargo services, all cargo airlines offer chartered and/or schedules services, and integrated carriers offer door-to-door services by combining air and land transport. Finally, leasing companies provide aircraft on dry or wet lease.

Most of the airports handle both passengers and cargo, and there are relatively few pure cargo airports. In international operations the hub- and spoke system is the main operating model for scheduled flights. While larger aircrafts are used in international flights, smaller aircrafts serve domestic origins and destinations.

1.2 Ancillary Services

Ancillary services consist of air traffic control services, airport services, computer reservation systems, ground handling, and aircraft repair and maintenance.

1.2.1 Air Traffic Control Services

Originally the management of airspace was done by sharing the airspace on a more or less permanent basis along structures composed of routes, reserved areas, holding points, etc. At that time cockpits did not use any electronic instruments or displays, and average transport aircraft had more than one hundred cockpit instruments and controls. With increasing traffic and improvements in computer technology, it became necessary to manage airspace and to assist pilots in choosing and keeping their routes safely without conflict of collision with other aircraft and terrain. Therefore, states have put in place air traffic management systems with the main objective of assisting airspace users in ensuring appropriate separation between aircraft, as well as between them and the ground.

Air traffic is composed mainly of the military Operational Air Traffic and the General Air Traffic. While military Operational Air Traffic requires large volumes of airspace where military aircraft can train, General Air Traffic encompasses all other movements, generally of aircraft flying from one point to another, which need protected corridors. These two types of traffic compete for the same scarce resource, namely the airspace. The techniques used for allocating the airspace are called Air Space Management or Air Traffic Control. While Air Space Management refers to segregation of traffic by allocating the traffic to different pieces of airspace on a more or less permanent basis, Air Traffic Control refers to real time monitoring done by the air traffic controller, who detects potential conflicts and gives pilots the appropriate instructions to avoid them. Thus, the role of airspace management is to allocate airspace to users so that each of them gets a reasonable share, allowing it to fulfill its tasks and to prosper. Since Air Traffic Control relies heavily on individual performances of air traffic controller, it introduces limits to the number of aircraft which can actually fly at the same time in a given area. Thus, the capacity of the airspace for air traffic purposes, is finite. When airspace users' demand to fly exceeds that capacity, this generates delays like on any motorway at peak times. Since queuing or holding in the air creates additional pollution, may generate additional congestion in neighboring areas, and could even become potentially dangerous, virtual queues are organized on the ground as much as possible, and this is called Air Traffic Flow Management.

1.2.2 Airport Services

Airport services consist of landing and take-off services, other services provided for aircraft operators such as hangars, space for parking aircraft, towing and other handling of aircraft, accommodation for airline offices, and provision of aircraft fuels and other technical supplies, security measures including inspection and screening, accommodation for shops, hotels and restaurants, accommodation for car parking and customs, and services for noise alleviation and prevention. Although public provision of airport facilities and services remains dominant,

the prospects are strong for growth in private participation in airports. World Trade Organization (2006a) emphasizes that steady expansion in air transport combined with revenue security and limited competition in the sector will cause the continuation of private participation in the sector.

1.2.3 Computer Reservation Services and Freight Forwarders

Computer reservation services (CRS) related mainly to passenger traffic are defined as services provided by computerized systems that contain information about carrier' schedules, availability, fares and fare rules, through which reservations can be made and tickets may be issued. In the past traditional procedure of booking the ticket by hand or via simple mechanism was enough. But currently, CRS requires something much more.

From the historical point of view, the first real-time informatics system was SABRE (Semi Automated Business Research Environment), established by American Airlines in 1959. Nowadays, there are six major players in the CRS market. SABRE remains the largest one, closely followed by GALILEO, AMADEUS, WORLDSPAN, GETS, and ABACUS. Thus, the market is characterized by the high level of concentration, and with forthcoming mergers and acquisitions, the number of CRS providers will probably decrease even further.

In the past it happened so that CRS companies, founded by airlines, were preparing incomplete or deliberately incorrect offers. Although they were in principle supposed to include a full range of competitors' flights in their databases, they were promoting their own services. Currently, each CRS provider has to display all flights on their platforms. The regulatory regime has been developed in order to ensure consumer protection as well as the property rights of the airline companies, and market access turns out to be a major concern in this field. But because there are several systems available, there are markets where certain CRS dominates the rest. From the consumer rights point of view, a proper and convenient presentation of data should be ensured. Passengers are interested in receiving timely and detailed data closest to their demands. The second concern is obviously the data privacy. Nowadays with the growing popularity of on-line booking and the electronic data interchange in general, hackers also harvest in the market. So a greater care had to be placed on this issue. All in all, it seems like the CRS presence is an important factor in the air traffic trend.

On the other hand, freight forwarders are part of larger transportation industry network which includes trucking, shipping and rail transport as well as air transport. Most of the scheduled air transport that is non-express has freight forwarders as the direct client, who purchase freight capacity ahead of time and schedule the space of their client's shipments. This arrangement can at times cause delays for smaller packages, and also presents a challenge since the forwarder is a relatively low risk, less capital intensive operation than the actual freight operations of the airlines. By tonnage, about 90 percent of all air freight is handled by combination and dedicated services using freight forwarders. There are also companies providing full logistical services, sometimes called Logistics Corporations which provide freight forwarding as part of a total package which may include the carriage of goods by air.

1.2.4 Ground Handling

Ground handling is a link between the airports' entrances and exists, i.e. the passenger is handled right after crossing the threshold of their take-off airport and then again before leaving the destination airport. These services can be divided into two groups. Landside

services are passenger-related and include ticketing and baggage handling at the check-in desks. Airside services comprise of ramp handling, aircraft maintenance, fuelling and de-fuelling operations, and catering. They all contribute to value creation for airlines and are crucial element of competition among air carriers.

Historically, the provision of this kind of services used to be a monopoly on many Community airports. The monopoly service providers often offered a standard package of services with no possibility of splitting it and using up only the necessary amount, resulting in considerable wastage. There was also quality problem. For a long time passengers were complaining about inadequate services being provided on the ground, and in the early years of 1990's several major airlines filed complaints against the abuse of ground handling monopolies. Since the supply of ground handling services is a vital element of competition among air carriers, lately competition was introduced in ground handling. Both airlines and passengers seem to be more satisfied with the current state of affairs.

1.2.5 Aircraft Repair and Maintenance Services

Aircraft repair and maintenance services are aimed at keeping the aircrafts fully functional. It is a complex matter as the structure of the market for such services is in fact diversified. It is called in the industry the 'maintenance, repair and overhaul' (MRO) market and its segments include: line maintenance, upkeep of components, upkeep of engines and heavy maintenance of airframes. Each of these sub-divisions can be operated by different agents. The airlines on their own can care for their equipment. They can also provide such services to other airlines. The "Original Equipment Manufacturers" usually offer the after-sale MRO services. Recently, there is a growing market for independent operators having MRO as their core activities.

It is important to note that the entry cost, especially to the engine sector of the market, is very high and therefore there is a tendency for market operators to consolidate. Airlines seek alliances with their counterparts or with the other operators. There are three main types of strategy that they follow: new and leasing companies usually outsource entirely MRO activities. Well-funded airlines may establish subsidiaries devoted to such service and even provide them to others. A company may also function in-between those two ways and decide each time which case is best handled on-site and which can be trusted to an external company.

The main reason for regulation in the field of aircraft repair and maintenance is the concern for quality and flight safety. Therefore security regulations are imposed starting from international level, by International Civil Aviation Organization (ICAO). National civil aviation authorities also define additional standards and require their fulfillment through certification programs. But MROs must be regulated beyond the terms of quality.

1.3 Competition in the Air Transport Services Industry

In order to better understand all aspects of the vast range of air transport services, it is useful to present briefly the nature of competition in this industry.[138] Economists usually associate increasing returns to scale (IRS) with differentiated products and oligopolistic competition, and they note that airlines business is oligopolistically competitive.

[138] See Organization for Economic Co-operation and Development (2000).

Empirical studies have shown that the airline industry exhibits constant returns to scale.[139] Long-run average costs are constant with the increase of production beyond a certain level of traffic, and increasing returns to scale are limited with unit costs decreasing as the size of the aircraft increases (the so-called economies of density, reflecting the diminishing costs of the additional seats, passengers, freight and flights on individual routes). These economies are exhausted at relatively low levels of output.[140] It may sometimes be difficult to fill a large plane if the demand on certain routes is scarce. This has led to the emergence of the so-called hub-and-spoke system. Under hub-and-spoke organization service can be provided to airports for which the volume of traffic to any other single destination would otherwise be insufficient to justify service.

All the above-mentioned cost side economies of scope have profound effects on airlines' behavior on the market. Since the demand for airline's services increases with the range and frequency of the offer, there are strong incentives for air carriers to enter into alliance with other carriers which also operate on the same hubs or on complementary route network. Thus, the airlines are driven towards holding dominant position on the hubs. On spoke routes, on the other hand, competition may be sustainable if the competitor has lower costs than the incumbent or differentiates itself for instance in terms of the product offered. Also, if both ends of the route are hubs for different carrier (i.e. this is a hub-hub route), competition will be in place.

2. INTERNATIONAL RULES AND REGULATIONS

Ever since it was established, air transportation has been heavily regulated. Government control has covered not only technical and operational standards in the interest of safety, but also the economic and commercial aspects of airline operations. The history of regulation of civil aviation dates back to 1920's. During World War II utilization of aircrafts significantly had advanced the technical and operational possibilities of air transport. In 1943, the US initiated studies of post-war civil aviation problems. In November 1944, an International Civil Aviation Conference was held in Chicago. Fifty two states signed the Convention on International Civil Aviation and set up the permanent International Civil Aviation Organization (ICAO), now a specialized Agency of the United Nations. The Convention consisted of 43 articles that dealt with all technical, operational and organizational aspects of civil aviation and also foresaw the creation of an International Commission for Air Navigation (ICAN) to monitor developments in civil aviation and to propose measures to States to keep abreast of developments. At the same time the International Services Transit Agreement and the International Air Transport Agreement were signed.

The Convention led to the establishment of the four basic principles of international aviation regulation, namely the principle of sovereignty stating that each state has complete and exclusive sovereignty over the air space above its territory; the principle of equal opportunities meaning that all states have equal legal rights to participate in air traffic; the principle of non-discrimination according to which international aviation regulation must be made without distinction as to nationality; and the principle of freedom to designate, according to which each state has complete freedom to designate the national airlines which

[139] See Liu and Lynk (1999).
[140] Gonenc and Nicoletti (2000).

will operate its air services. Closely linked to the four principles were the five freedoms of the air, where

- first freedom refers to flying over a territory of another country without landing,[141]
- second freedom allows for landing in other countries for technical stop without boarding and deplaning passengers,[142]
- third freedom refers to carrying freight and passengers from the home country to another country,[143]
- fourth freedom refers to carrying freight and passengers to the home country from another country,[144]
- fifth freedom allows to carry freight and passengers between two countries by an airline of a third country on route origin/destination in its home country.[145]

The first two freedoms were in fact incorporated in the International Air Services Transit Agreement adopted at Chicago. As for the remaining three freedoms the Chicago Conference failed to reach an agreement on the multilateral exchange of commercial rights to operate air services. Thus, the exchange of traffic rights as incorporated in the other three freedoms became an issue to be dealt with on a bilateral basis between states.

Two years after the Chicago Conference, the Bermuda Agreement was reached between the United States and the United Kingdom. This Agreement, adding three more freedoms, namely the third, fourth and fifth freedoms, to the two granted in the Chicago Convention, served as a model for other such bilateral accords. The tendency of many countries since the Bermuda agreement of 1946 was to opt for bilateral agreements which were highly restrictive, ensuring that a percentage of total traffic on a route was guaranteed for the national carrier of the countries concerned and the number of flights on particular routes limited, allowing only the national carrier to operate. Over time large number of bilateral air services agreements were concluded. Over 70 percent of these agreements contained some form of liberalization arrangements, such as expanded traffic rights covering third, fourth and in some cases fifth freedom traffic rights.[146]

Among the five freedoms the most important one is the fifth freedom, which is closely related to cabotage, the right of an airline company of one country to embark passengers, mail and goods in another country and carry them to another point in the same country for a fee or a leasing contract. Cabotage introduces competition between domestic and international carriers and is as important as the fifth freedom in the whole issue of air transport liberalization. In the Chicago Convention, cabotage was referred to in the declaration according to which each contracting state may reserve to its own aircraft the exclusive right to carry traffic between

[141] First freedom refers for example to the right of a Canadian air carrier to transit U.S. airspace enroute to Mexico. Fir many countries this freedom is enshrined in the International Air Services Transit Agreement (IASTA) adopted at Chicago Conference. However, a number of countries are not party to this agreement.
[142] Second freedom refers for example to the right of a Canadian carrier to refuel in the U.S. as part of an onward journey. As with the first freedom, many countries provide this right under IASTA.
[143] Third freedom refers for example to the right of a Canadian carrier to transport passengers from Canada to the U.S. It is standard nearly in all bilateral agreements.
[144] Fourth freedom refers for example to the right of a Canadian carrier to transport passengers from the U.S. to Canada. It is standard nearly in all bilateral agreements.
[145] Fifth freedom refers for example to the case where a Canadian carrier flies from Canada to the U.S., boards passengers at a U.S. airport and flies those passengers to Mexico. The granting of fifth freedom varies from bilateral to bilateral.
[146] See International Civil Aviation Organization (2009).

two points in its own territory. Since the five freedoms do not cover cabotage and other aspects of aviation, the following four additional freedoms were somehow artificially created later on, where

- sixth freedom allows to carry freight and passengers between two countries by an airline of a third country on two routes connecting in its home country,[147]
- seventh freedom allows to carry freight and passengers between two countries by an airline of a third country on with no connection with its home country,[148]
- eight freedom allows to carry freight and passengers within a country by an airline of another country on a route with origin/destination in its home country,[149] and
- ninth freedom allows to carry freight and passengers within a foreign country with no connection with the home country.[150]

Of the additional four freedoms the most important ones are the seventh, eight and ninth freedoms. Whereas the seventh freedom allows carriers to carry freight and passengers from one country to another without going through the home country, the eight and ninth freedoms concern cabotage.

Scheduled passenger transportation has been heavily regulated as a mode contributing to regional development, delivering public services and being at instant readiness for the national defense alert. As such, aviation was an artifact of the country's prestige and had to demonstrate high safety standards which many governments thought to be possible to maintain only via strict national control. Rigorous policies were governing the entry and ownership of airlines, the selection of points and routes to be served, and the freedoms to set capacity and fares. They affected both the market structure and inner business models of service operators. Flag carriers, being usually state owned, were protected from competition, thus had no incentives to operate efficiently. The quality offered to passengers was indeed high but operating costs very high, capacity utilization rate low, wages too generous and output growth restricted. Network structure was rather far from being optimized according to economic considerations. All in all, airlines were not able to adjust their operations to the dynamics of demand. From the customers' point of view, prices were very high, service inadequate and it was argued that liberalization would increase social welfare.

The general policy of most bilateral agreements was that fares and rates on routes between two countries should be subject to the approval of the two governments concerned. Since the Bermuda agreement in 1946, governments agreed to delegate rate-making to the airlines through the traffic conferences of the International Air Transport Association (IATA), a trade body comprising some 80 per cent of the world's airlines operating on international routes, which cooperates with the ICAO and other international bodies. As a general rule tariffs were set at IATA conferences and then approved by national governments. In 1979, the IATA

[147] Sixth freedom refers for example to the case where a Canadian carrier transporting passengers from Europe to the U.S. via Canada. It rarely appears in bilateral agreements.
[148] Seventh freedom refers for example to the right of a Canadian carrier to transport passengers from the U.S. to Mexico as a stand-alone flight. While these rights are fairly rare for passenger services, they are quite common for all-cargo flights.
[149] Eight freedom refers for example to the right of a Canadian carrier to transport passengers from Denver to Miami as part of a service that originated in Vancouver, Canada. This right is rarely granted.
[150] Ninth freedom refers for example to the case where a Canadian carrier operating a service between San Francisco and Houston in the U.S. as a stand-alone service. It is rare for this right to be granted. The above examples on the nine freedoms are based on the work by InterVISTAS (2009).

regulations were changed and member airlines were no longer required to participate in nor to adopt tariffs agreed by the IATA conferences.

The bilateral regulatory system and the nationally based airline industry fostered by the system have been undergoing a profound change because of the policy of reduced government involvement in the commercial affairs of businesses. This policy which had important effects on air transport could be pursued bilaterally, regionally, or multilaterally. But in each case economic liberalization means not only the liberalization of the transportation of passengers and freight from one point to another by aircraft, but also the liberalization of ancillary services as well as harmonization of economic policy on licensing rules, limits on foreign ownership, pricing policies, designation and capacity, and policies regarding the fulfillment of public service obligations subject to the condition that minimal safety, security and environmental consideration are secured.

In the context of liberalization of air transportation services a major issue concerns economic policy on licensing rules, limits on foreign ownership, pricing policies, designation and capacity, and public service obligations. Licensing could be granted on the basis of different criteria. Under more liberal systems licensing are granted to firms satisfying economic fitness conditions requiring financial sustainability and covering of liabilities through insurance in regard to passengers, cargo, mail and third parties. Regarding foreign ownership there may be regulations restricting foreign ownership. Pricing policy concerns the spectrum where carriers are granted to set their own prices or not. The rules on designation of authorized carriers, their entry on specific routes and their freedom to establish capacity affect the organization of the industry. Finally, public service obligations may be imposed on carriers by the government on certain conditions. Thus, again different rules on licensing, limits on foreign ownership, pricing policies, and public service obligations determine the degree of liberalization in the sector.

Safety and security rules are set by ICAO and also regional organizations. There may be general obligations on safety management systems and quality management systems, and in addition there may be rules on air traffic management and runway safety. Closely related are also the rules on aircraft repair and maintenance.

Currently, ICAO has strategic objectives to enhance global civil aviation safety and security, minimize its adverse effects on environment, enhance the efficiency and maintain the continuity of air transport operations, and strengthen the law governing international civil aviation. Therefore, first and foremost, the Organization sets international standards in the forms of: Standards and Recommended Practices, collectively referred to as SARPs and concerning aircraft materials and technology, aviation personnel and procedures, Procedures for Air Navigation Services, Regional Supplementary Procedures, and Guidance Material in several formats. To ensure the proper implementation of these safety prerequisites, ICAO runs a Universal Safety Oversight Audit Program which determines the status of implementation of relevant SARPs.

2.1 GATS Attempts at Liberalizing Air Transport Services

On the multilateral level there has been attempt to liberalize air transport services through the multilateral trading mechanism under the World Trade Organization (WTO), which among others had the mandate to liberalize and expand all service sectors through the General Agreement on Trade in Services (GATS).

GATS focused on promoting trade by setting credible, non-discriminating and liberalizing international trade rules. They were categorized as horizontal obligations (applying directly to market access in all services sectors listed by notifying Member States), and the Most Favored Nation (a clause ensuring non-discrimination) bligations. Other general disciplines included: transparency, establishment of administrative review and appeals procedures and measures coordinating the operation of monopolies and exclusive suppliers. However, there may be country-and-sector-specific exceptions from these general commitments. These exceptions may concern Market Access or National Treatment. The former may be subject to various types of limitations that are imposed on the number of service suppliers, natural persons that may be employed in a particular service sector, service operations or on the total quantity of service output, the total value of service transactions or assets, the participation of foreign capital, or measures which restrict or require specific types of legal entity or joint venture through which a service may be supplied. The National Treatment clause implies that no measures are to be undertaken to discriminate against any foreign service supplier while benefiting the domestic ones. For either of specific principles four modes of supplying of a service are distinguished: cross-border supply, consumption abroad, commercial presence and presence of natural persons.[151]

After lengthy negotiations at the Uruguay Round the compromise was reached in the form of an Annex explicitly referring to only three ancillary services, namely aircraft repair and maintenance services, the selling and marketing of air transport services, and computer reservation system (CRS) services, and leaving the rest of the sector to be covered at a later date.[152] The Annex is indeed very modest. The first sub-sector was a must in the liberalization process as emergencies often happen abroad and have to be handled accordingly. Marketing is an activity hardly ever banned anyway, and CRS by its nature is a global undertaking. Therefore, one may come to the conclusion that GATS negotiations on air transport services ended with a very limited success as only some obvious sub-sectors were covered with commitments, leaving the crucial ones outside the agreement.

What are the reasons for such a modest development? The negotiators saw a clash between the MFN/national treatment disciplines and the bilateral, reciprocal relationships in the exchange of traffic rights.[153] They wanted to have the aviation sector liberalized between the like-minded states but decided to leave this process in hands of ICAO. If the traffic rights were included into the GATS schedules of commitments and some members would apply them while others held to the existing bilateral arrangements, it would in fact create a kind of dual regulatory regime. In such a scenario those unwilling to open their markets would also enjoy the benefits of liberalization due to the history of bilateral dealing. And this is exactly what neither states nor airlines wished to agree on.

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[151] Certain transactions, as e.g. banking and mail, may occur in the form of *cross-border supply*. Different modes apply when provider and consumer must be in the same place at the same time. *Consumption abroad* refers to the movement of customers, for instance tourists, to another country to consume a service. Establishing *commercial presence*, on the other hand, means that the service supplier from one Member country purchase or lease a premise abroad (subsidiaries, hotel chains) to provide a service over there. Lastly, *presence of natural persons* occurs when suppliers themselves move abroad to provide their services. (See Hoekman and Kostecki (2009)).

[152] The selling and marketing of air transport services includes all aspects of marketing such as market research, advertising and distribution, do not include the pricing of air transport services.

[153] According to the Annex on Air Transport Services to the GATS Agreement of the WTO traffic rights mean "the right for scheduled and non-scheduled services to operate and/or to carry passengers, cargo and mail for remuneration or hire from, to, within, or over the territory of a Member"

Pursuant to a ministerial decision, in 2000, WTO, as emphasized by International Civil Aviation Organization (2009), launched the first mandatory review of the operation of the Annex covering developments in the air transport sector for the period 1995–2000.[154] In 2003, WTO decided to end the first review process with the conclusion that the Annex remains unchanged. In 2005, the second mandatory review of the Annex commenced with the assessment of the developments in the air transport sector and the operation of the Annex for the period 2000–2005.[155] The second review is ongoing. Air transport services are included in the new services negotiations that has begun in 2000. In 2006, a group of WTO members prepared plurilateral request calling for commitments in aircraft repair and maintenance, selling and marketing, CRS, ground handling services, and airport services. But no decision has been reached yet.

3. RULES AND REGULATIONS IN THE EUROPEAN UNION

With the failure of the Chicago Convention to establish a multilateral regime for the exchange of international traffic rights the European governments set up their own regulatory regimes for their air transport industries. The basic aim of the regulatory regimes was to protect the national flag carriers from competition by controlling the market entry on both domestic and international routes. In most cases the flag carrier was given monopoly rights in domestic routes, and on international routes the flag carriers of the two states were given license to operate according to bilateral agreement between the two countries. The two carriers usually collided to avoid competition and even pooled revenue. In the 1980's the system came increasingly under attack. Prices tended to be high, services were inadequate, and various European regions left outside the nationally agreed route networks had no possibility of attracting air carriers.[156]

The European Commission tried to introduce limited deregulation by extending competition policy to air transport but its efforts to formulate a general airline policy were initially thwarted by the Council of Transport Ministers which did not succeed in implementing such measures. In the end, the Commission referred the matter to the European Court of Justice which ruled in the *Nouvelle Frontières* case in 1986 that the competition rules should indeed apply to air transport sector, and that the Member States should not approve fares if it was obvious that they had resulted from a cartel or concerted actions among airlines. This opened the door for liberalization.

Although it is acknowledged that the liberalization within the EU internal air transport market was made through three packages, one can actually distinguish among five consecutive stages. The initial stage took place in the mid-1980's when United Kingdom loosed its traditional restrictions on the route to Ireland. It had been served for years by British Airways and Aer Lingus only.[157] But in 1985 Ryanair, the Europe's original low fares airline, obtained permission to enter certain routes between the two countries at the same time challenging the duopoly of flag carriers and bringing some competition.

[154] See World Trade Organization (2006a).
[155] See World Trade Organization (2006b).
[156] See Borenstein and Rose (2007) and Storm (1999).
[157] National (flag) airlines of the UK and Ireland respectively

Next steps were taken by the European Commission which started presenting cases of infringement of competition law by bilateral agreements on fares, capacity-sharing and other restrictive practices. Eventually in December 1987 the Council of Transport Ministers agreed on the First Package relaxing the anti-competitive rules governing the aviation market and consisting of Council Regulation (EEC) No 3975/87 officially applying Articles 85 and 86 of the Treaty to the air transport industry and Council Regulation (EEC) No 3976/87 allowing for block exemptions from some restrictions imposed by Article 85.1. Moreover, a system was introduced for the approval of air fares by member states which allowed for the flexible pricing with the relaxation of capacity controls between member states and freer market entry. Thus, governments maintained only limited rights to object to the introduction of new fares within the EU, the single designation provision was abandoned and also seat capacity sharing restrictions were released. All in all, any number of airlines could compete on EU routes, thus overriding the insistence of some Member States that their flag carrier be guaranteed 50 percent of their market; the ratio was to be reduced gradually to 40 percent. What is more, the fifth freedom flights were allowed for 30 percent of the traffic and European airlines could start to pick-up and drop-off passengers during the stopovers in third countries.

In June 1990 the so-called Second Package followed and released even more the provisions of the first one. In terms of competition, it was only a significant amendment to the first package.[158] But the measure of crucial importance was to allow all European airlines the third and fourth freedom, i.e. they could carry an unlimited number of passengers or cargo to and from their home countries to other EU Member States. Also the fifth freedom flights were extended to 50 percent of the market. Airlines were allowed multi-designation on specific routes as well. Restrictions concerning fares and capacity were further abolished.

The culmination of gradual process of dismantling the bilateral restrictions was represented by the Third Package. Since June 1993 when it came to force any airline had the right to set its own fares without government approval. But even more significant were the common licensing criteria for air carriers across the EU introduced by the Council Regulation (EEC) no 2407/92.[159] This was the practical effect to the right of establishment provisions of the Treaty of Rome. The "Community air carrier" concept replaced the national ownership and control restrictions. Any airline meeting legislation, financial and safety requirements was allowed to serve any international route within the EU. It was also free to determine fares as set out in the Air Fares Regulation subject to certain safeguards designed to protect the consumers' and industry interests. In April 1997, as a part of the Third Package, community airlines were given the freedom to provide cabotage, obviously limited to the territories of other Member States. All of the above mentioned provisions have been extended to Norway, Iceland and Switzerland in the years to follow.

As it has already been argued, the ICAO sets just the general framework for the functioning of air transport. The process of developing the common air transport law on the territory of EU is unique. As the Guide to European Community Legislation in the Field of Civil Aviation puts it: "*The Community's policy has been defined by looking first at the needs of the sector itself, and secondly but most importantly, to the needs of the whole society, as in many ways air*

[158] Regulations 3975/87 and 3976/87 were superceded by Council Regulations 1284/91 and 2344/90 (OJ 1991, L 122/2 and OJ 1990, L 10/7) respectively

[159] The third package consists of: Council Regulation (EEC) No 2407/92, No 2408/92 No 2409/92, published in *OJ L 240, 24.8.1992, For details see next page.*

transport is essential for the fabric of a modern well functioning society, such as for trade and tourism."[160] The EU members for the first time agreed on a comprehensive mandatory policy in this field. The rules are to be applied with the force of national law. Ever since 1977, when the European Community started implementing the aviation regulations, the focus has been put on eight subject areas which are as follows: economic policy, air traffic management, safety, security, environmental affairs, social matters, passenger protection and external relations.

3.1 Economic Policy

In the context of economic policy the main issue has been the creation of the European single air transport market. Within such a market a company originating in any Member State would have the right to create and operate an air carrier anywhere in the single EU market. The most significant liberalizing aspect of it was the fact that there was no need for a certified and licensed air carrier to be designated by a government.

The legal instruments guaranteeing the single air transport market consisted until 2008 of Regulation 2407/92 on Licensing of Air Carriers, Regulation 2408/92 on Access to Air Routes and Regulation, and Regulation 2409/92 on Fares and Rates for Air Services of the third aviation package. In 2008 the three regulations were repealed and replaced by Regulation 1008/2008 establishing common rules for the operation of air services in the Community.

The Regulation 2407/92 deals with the issue of Operating License which is to be granted under certain conditions regarding the candidate's economic and technical fitness. In order to be able to take normal commercial decisions, the carrier must be financially fit. Otherwise, it would have to use the state aid which would naturally lead to a non-market based behavior. Article 5 summarizes the specific requirements: the air carrier must produce a realistic business plan for two years and prove that it would be able to operate for three months with no income. Moreover, according to Article 7, the carrier must be insured to cover liability in regard to passengers, luggage, mail, cargo and third parties. Regulation 785/2004[161] contains further details to flexible wording of Article 7. Thus, it must meet certain conditions with regard to start-up capital, business costs, financial obligations, seating capacity of the aircraft the carriers intends to operate, etc.

As for the technical fitness, Article 9 and 10 of Regulation 2407/92 oblige the authorities to regular and thorough monitoring of the safety level of equipment, staff and operational methods of an air carrier while granting him air operator's certificate. This is to prevent the company from cutting costs by adopting cheaper solutions in the technical field. One more condition is set out in the Article 8 and regards the registration of at least one aircraft owned or dry-leased by the company. This is to avoid creating a simple sales-and-marketing organization. In addition, air carriers must hold air operator's certificate confirming that the operator has the professional ability and organization to ensure the safety of operations specified in the certificate, as provided in the relevant provisions of Community or national law as applicable. Thus, these conditions are necessary to guarantee safety and sustainability,

[160] See European Commission (2007).
[161] Regulation (EC) No 785/2004 of the European Parliament and of Council of 21 April 2004 on insurance requirements for air carriers and aircraft operators; OJ L 138/1 30.4.2004

and sufficient to establish a new carrier. What it means is that the State has no right to refuse the license if the candidate complies with all the requirements, due to the Article 3 of the Regulation. In addition, no air carrier without an appropriate operating license may carry out commercial operations within the single EU market or elsewhere. Finally, Article 4 of the Regulation 2407/92 contains a provision liberalizing the ownership and control of the Community Air Carrier. It enabled the switch from the national ownership to the principle of non-discrimination but still mostly within the Single Market. The Community Air Carriers must be majority owned and controlled by EU nationals unless the Community has entered into agreement with one or more third countries.

The second crucial legal instrument in the field of economic policy here is the Regulation 2408/92 on Access to Air Routes. It liberalizes the market access and ensures that the access to air routes within the EU stays open for any Community Air Carrier under all circumstances. This applies equally to scheduled and non-scheduled services. The Regulation also contains important provisions for the Public Service Obligations (PSO) within and between states. These apply to the routes which under the free market conditions would not be financially attractive to the operators but would provide a socially desirable advantage. If a route cannot be served appropriately and without interruptions by any other means of transport or can only be served up to 30 000 passengers a year, it is then given a PSO-status and the Member State can limit the access to the route for one carrier for up to three years. The allocation of the PSO routes is based on a tender process which any Community carrier can submit offers to. As of 2012 there exist 264 routes in the EU on which PSO have been imposed with the corresponding references in the OJ. Another exception towards the protection of domestic route which is served only by a small aircraft, i.e. of up to eighty seats. Such a route is still open for access by any Community carrier but cannot be served by a larger plane than the one just defined.

Article 8 of Regulation 2408/92 states that while the Community Air Carrier is given the operational freedom, the distribution of traffic within the airports network remains subject to the Member States, but without discrimination on grounds of nationality. The published Community, national, regional or local operational rules relating to safety, environmental protection and the slot allocation must be respected. This leads to the recognition of possible environmental or, more serious, capacity problems. In such case the management of traffic rights lies in hands of Member States. But limitation or refusal of those rights can only take place when absolutely necessary, should not distort competition or be discriminative in any way and can only last for three years at most before being reviewed. On the other hand, Article 10 of the Regulation makes it clear that capacity restrictions should not occur unless all scheduled air services experience serious negative financial damages. Therefore it may seem that some Commission interventions are allowed however it does not interfere with liberalization clauses which have been proved over the first years of new entries to the aviation market. The low cost airlines endangered the existence of flag carriers. The latter suffered from major losses yet the action to limit capacity was excluded.

With the liberalized market and route access, next field to take care of were the fares. Regulation 2409/92 on Fares and Rates for Air Services was the third legal instrument creating the single air transport market. Its most significant provision was the statement that carriers are free to set their own prices for passengers and freight alike. Airfares should, however, be filed but only for informational purposes. The Regulation recognizes also the need for certain limitations with the aim to safeguard the market against the abuse of dominant position. What may seem controversial is Article 6 that allows the States to cease

the airfares going persistently downwards. Such an intervention could seem like a protection of traditional airlines. It is, however, not the case. The low prices can only be stopped if they leave a company in the red. The Article does not apply to low prices resulting in prosperity, and this is usually the way that the most new entrants follow.

According to Regulation 1008/2008 repealing and replacing three Regulations from the third aviation package defines the granting of operating licenses, the monitoring of airlines and their access to the market. It guarantees a competitive air transport market, quality services and more transparent fares. According to the Regulation the undertaking must in particular hold an Air Operator Certificate, comply with insurance and ownership requirements and provide financial guarantees. In addition, the management will be requested to provide proof that the undertaking is of good repute. Furthermore, the Regulation lays down general principles for PSO. According to the Regulation the exercise of traffic rights shall be subject to Community, national, regional and local operational rules relating to safety, security, the protection of the environment and the allocation of slots. Finally, Community air carriers shall freely set fares for passengers and cargo, except in the case of a PSO.

The above mentioned Regulations gave the basic framework for the unified air transport market in the EU, the major area of economic policy. But also other regulations were issued to provide for the specific nature of aviation industry and its newest developments. The remaining legal instruments in the field of economic policy regulate slot allocation, Computer Reservation System (CRS) and ground handling services.

The slot allocation is very important but a complex one. The market access to slots has been historically frozen by the so-called "grandfather rights". But with the ever-increasing air traffic, the problem of congestion is more and more serious. Still, to be compliant with the spirit of liberalization, the access to slots should be free by default and based on market conditions. The slot allocation itself is to be performed, in a non-discriminatory and transparent fashion, by the appointed coordinators, not the air carrier. Luckily, the vast majority of the airports do not require a formal slot allocation and the slot facilitator can efficiently deal with the issue. Only when the capacity problems exist, should the formal procedure apply. It is avoided due to the certain amount of bureaucracy and rigidity to the aviation market that it introduces.

The aim of Regulation 95/93[162] on Slot Allocation is to ensure that where airport capacity is scarce, the available landing and take-off slots are used efficiently and distributed in an equitable, non-discriminatory and transparent way. The regulation sets the rules somehow restricting the free market access but still as much in tune with the general liberalization as possible. According to Article 2, an air carrier can operate as it wishes to unless the vast congestion imposes the coordination facilities. In the worst case scenario, a slot must be secured before any landing or a take-off. Further articles regulate the flow of information between the slot facilitator/coordinator and the airlines to ensure smooth operations. They are followed by the Article 8 that provides the framework for the actual slot allocation. The slot received can then be freely exchanged on the market and sometimes even transferred to another player by mutual agreement or unilaterally. Reallocation of slots must be facilitated out of the efficiency reasons. Static and inflexible situations when air carriers hold on to the

[162] Council Regulation (EEC) No 95/93 of 18 January 1993 on common rules for the allocation of slots at Community airports; *OJ L 14, 22.1.1993*

slots which they will not give up unless obliged to distort the market. Therefore, as a way of "encouraging" such movements, the regulation also tightens the use-it-or-lose-it rule. This means that if an airline cannot demonstrate 80 percent of slot usage, it goes to the slot pool (unless the case is fairly justified).

Ground handling is one of the links creating a chain of air transport services and as such it has attracted a lot of attention of the European Commission. Its market has been gradually opened up starting October 1996 with the issuing of the Directive 96/97.[163] It was very much needed as many airlines complained about high prices being coupled with low quality, mainly as a result of monopoly of those services occurring at the majority of airports.

The main objective of the regulation was to ensure that no air carrier is given a discriminatory advantage over any of its competitor. Article 4 sets the first tool, namely it clearly states that the accounts of ground handling activities must be rigorously separated from the accounts of any other of their provider's activities. They may and should be offered on a free-access basis but certain services (handling of baggage, ramp, fuel and oil, freight and mail) can be limited to just two providers or further to just one. Some other services, like baggage sorting, de-icing, water purification and fuel-distribution systems, due to their complexity, cost or environmental impact, may be reserved to be provided only via centralized infrastructure at the airport. Self-handling, i.e. all the services that the air carrier can perform on its own, are also regulated. Generally two rules apply to the cases mentioned above. First of all, all limitations can occur only if there exist specific constraints on space or capacity stemming from congestion and area utilization rate. Secondly, the allocation and management of this scarce pool of services should be "*transparent, objective and non-discriminatory*" (Directive 96/97, Article 8).

The last regulated elements are the Computer Reservation Systems (CRS). They are rather complex for the time being, therefore there exist a detailed Regulation on their use in the EU. A Code of Conduct for the use of CRS has been introduced by Regulation 2299/1989 with a view of simplifying the rules with the prospective advancement of the procedures in these services.[164] They are, after all, relatively new to the industry, and touch the field of ever changing information technology. According to Article 3 of the Regulation, all carriers must be able to participate on a non-discriminatory manner in the CRSs, and data provided by them cannot be manipulated in any way. Even if an air carrier owns or controls the system vendor to some extent, equal conditions should apply. One important problem is the data confidentionality. Generally, no participant (even the one owning the CRS) is granted access to the confidential data of another air carrier or an individual passenger.

To sum up, all the provisions included in these Regulations reinforce the general objective of the EU legislation to ensure all air carriers, both incumbents and new entrants, a non-biased treatment with the possible benefits of competition being experienced by all the parties, from airlines to consumers. To take it a step further, applying a similar approach towards third countries was in scope of the European liberal aviation policy.

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[163] Council Directive 96/67/EC of 15 October 1996 on access to the groundhandling market at Community airports; OJ *L 272, 25/10/1996*

[164] Council Regulation (EEC) No 2299/1989 of 24 July 1989 introducing a code of conduct for computer reservation systems amended by Council Regulation (EEC) No 3089/93 of 29 October 1993 and Council Regulation (EC) No 323/1999 of 8 February 1999, *OJ L 040 , 13/02/1999*

3.2 Air Safety

Europe has long traditions in rulemaking cooperation in aviation safety. The latest legislation consists of Regulation 216/2008 on common rules in the field of civil aviation and establishment of the European Aviation Safety Agency (EASA). The Regulation aims to establish common rules on aviation safety in order to guarantee a high level of passenger security and ensure that the environment is protected; ensure a level playing field for all stakeholders in the internal aviation market and facilitate the free movement of goods, persons and services, through the recognition of certificates issued by the competent authorities; and simplify and enhance the efficiency of the certification process, by centralizing activities at European level where possible. To achieve these objectives, the Regulation provides for the creation of a European Aviation Safety Agency (EASA), with increased powers. EASA's main tasks are to assist the Commission to develop common rules in the field of civil aviation and to provide it with technical, scientific and administrative support to carry out its tasks; conduct standardization inspections to ensure that these rules are correctly applied within the Member States; and issue certificates to European companies involved in aircraft design, certify the aircraft used in Europe and certify air carriers, maintenance organizations and training organizations located in third countries. In 2009 the Commission adopted Regulation 1194/2009 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances as well as for certification of design and production organizations.

The rules of Regulation 216/2008 are fully compliant with the international standards and recommended practices of ICAO. They cover all issues related to the initial airworthiness, including the design and the production of aircraft and other aeronautical products, their continuing airworthiness and maintenance, as well as the training and the licensing of aeronautical mechanics, technicians and engineers, where airworthiness refers to the capability of an aircraft to fly safely. According to the Regulation aircrafts must have valid airworthiness certificates before they can be used. In addition, with the Regulation 216/2008 the EU extended the responsibilities of EASA to crew licensing and training. Thus, pilots must hold a license and a medical certificate appropriate to the operations to be performed. Training organizations and flight simulator operators must hold appropriate certificates. Furthermore, cabin crew members must have a certificate and they must be periodically assessed for medical fitness to safely exercise their assigned safety duties. In addition, aerodromes determining the structures to be used for the departure and arrival of aircraft must have certificates guaranteeing their safety and the capability of the bodies responsible for using the aerodromes. Finally, the services and personnel responsible for air traffic control are also required to be holders of certificates.

According to the Regulation 216/2008 enforcement actions can be taken if safety deficiencies are detected. In the EU any European and non-European aircraft may be subject to safety inspections at the European airports. If such checks conducted on a random basis reveal safety deficiencies the breaches may lead to restricting or, in the worst cases, banning the operation of the non-compliant air carriers from flying to Europe.

Since accidents with an ever growing traffic may happen from time to time, European policy is to do everything possible to increase the safety of air transport. According to Regulation 996/2010 on the investigation and prevention of accidents and incidents in civil aviation each EU country must ensure that safety investigations are conducted or supervised by a permanent national civil aviation safety investigation authority, which must be independent from any

entity whose interests could conflict with or influence the safety investigation authority's task or objectivity. It is necessary for each EU country to launch investigations into their causes whenever incidents or accidents happen in order to learn safety lessons and prevent such dramatic occurrences from happening again. The regulation establishes a European Network of Civil Aviation Safety Investigation Authorities, formed of all the national safety investigation authorities. The network will be responsible for improving the quality of investigations conducted by safety investigation authorities and strengthening their independence notably by encouraging high standards in investigation methods and investigator training. Furthermore, the role of EASA in accident investigations is clarified.

A new element to aviation safety is now being added to those described above which introduces a pro-active, evidence-based, component to aviation safety activities at EU level. This component seeks to improve EU-wide safety performance by identifying the main risks to aviation safety and taking action to address those risks in a coordinated fashion. The means of achieving this, together with the associated problems to be overcome, were spelt out in the Communication from the Commission of October 2011 setting up an Aviation Safety Management System for Europe.

The Directive 2004/36/EC aims to improve air safety by ensuring that third-country aircraft using Community airports comply with international safety standards. According to the Directive checks will be carried out in compliance with the international safety standards listed in the annexes to the Chicago Convention of 1944 to which all the Member States of the EU are party.

3.3 Air Traffic Management and the Single European Sky

In the past air traffic control in the EU has been closely associated with sovereignty and hence confined within national borders. Each country had its own rules and regulations resulting in inefficiencies. In particular, the European route network which was an amalgamation of national routes was not aligned with European traffic. In 1960 Eurocontrol was founded. It has implemented the European Air Traffic Control Harmonization and Implementation Program since 1991. But, partly due to the lack of enforcement powers of Eurocontrol the objectives of its Convergence Implementation Program could be realized only by 76 percent. In 1997, Eurocontrol put into place the Central Flow Management Unit which arbitrates in last resort conflicting requirements on airspace, decides on the final attribution of slots and if necessary imposes delays. In 1997, the Ministers of Transport of the Member States of Eurocontrol signed the revised Convention with a view to improving the Agency's ability to carry out its responsibilities more effectively. The revised Convention provided for the reformulation of Eurocontrol's tasks and the creation of a new institutional structure to enable the Organization to achieve the expansion of available airspace to meet traffic demand and the optimum utilization of available capacity within the framework of a uniform European Air Traffic Management System. Unfortunately, the revised Convention could not enter into force.

In December 1999, the European Commission published the communication entitled the "Creation of a Single European Sky".[165] The Communication points out that air space is a common asset which should be managed collectively as a continuum regardless of borders,

[165] See European Commission (1999).

with a view to satisfying all its users, civilian and military, and optimizing air traffic management. To that effect, it suggests that a central organization should be given the full responsibility for the management of European air space at both the strategic and tactical level. The Commission then suggested that the provision of air traffic services should be regulated so as to ensure that they meet the necessary level of safety and interoperability.

The transposition of the working group's suggestions into EC legislation was a long process, In 2004 the European Commission decided to launch a major initiative, the Single European Sky (SES), to modernize and restructure air traffic management in Europe, which includes a change to the classical concept of operations. The rules governing the Single Sky initiative are covered in four separate pieces of legislation, all passed in March 2004, namely Regulation 549/2004 laying down the framework for the creation of the SES, Regulation 550/2004 on the provision of air navigation services in the SES, Regulation 551/2004 on the organization and use of airspace in the SES, and Regulation 552/2004 on the interopearbility of the European Air Traffic Management network.

The objective of Regulation 549/2004 is to enhance the safety standards and overall efficiency for the general air traffic in Europe, to optimize capacity meeting the requirements of all airspace users and to minimize delays. The Regulation sets out the framework for the associated organs such as National Supervisory Bodies (NSBs), which must be independent from the air navigation service providers (ANSP), the Single Sky Committee (SSC), on which every Member State will be represented and which is to be the vehicle for change under the Single Sky legislation, and an Industry Consultation Body advising the Commission on the implementation of the SES. Furthermore, Eurocontrol is involved in the development of implementing rules which fall within its remit, on the basis of mandates agreed by the Single Sky Committee.

Regulation 550/2004 harmonizing the organisation of air navigation services in the Single Sky defines the principal responsibilities, which will be assumed by the NSBs in order to ensure that they are working on a similar basis. The Regulation contains a non-exhaustive list of areas in which common requirements must be established, including human resources, insurance, systems, and quality of service. According to the Regulation all provision of air navigation services within the Community is subject to certification by EU countries with common principles. Furthermore, according to the Regulation EU countries must ensure the implementation of functional airspace blocks to reach the necessary capacity and efficienty of air traffic management network within the single European sky, maintaining high level of safety and a reduced environmental impact. Regulation encourages also cooperation between national ANSPs and provides the principles of a common charging system. These include a system of recuperation of fully allocated costs, including investments in equipment and the cost of the supervisory body; non-discriminatory pricing with an exception for cross-subsidisation where it is objectively justified and identified; and transparency of pricing.

The objective of Regulation 551/2004 governing the organization and use of airspace in the Single Sky is to support the concept of a progressively more integrated operating airspace within the context of the common transport policy and to establish common procedures for design, planning and management ensuring efficient and safe performance of air traffic management. The Regulation aims to develop a single European Upper Flight Information Region (EUFIR), to be recognized by ICAO. The creation of a single flight information region in upper airspace will thus enable this space to be revonfigured into delimited control

areas without regard to national frontiers, thereby ensuring the more efficient use of airspace, systems and personnel.

The aim of Regulation 552/2004 is to ensure the interoperability of the European air traffic management network and introduce common requirements for the use of the various air traffic management systems. According to the Regulation European standards are to be developed by standardisation bodies assisted by the European Organization for Civil Aviation Equipment (EUROCAE) or by Eurocontrol, and Member States are required to create or nominate agencies to verify manufacturers' compliance with these norms. Products will have to carry a declaration of conformity which will be published in the EC Official Journal. Thus, compatible systems are expected to facilitate extended cooperation in future.

On the technology side, SES is supported by the Single European Sky Air Traffic Management Research (SESAR) Program, which will provide advanced technologies and procedures with a view to modernizing and optimizing the future European Air Traffic Management network. The program is composed of three phases, namely a definition phase (2005-2007) in which the air traffic modernization plan (Air Traffic Management Master Plan) has been developed to define the different technological stages, priorities and timetable; a development phase (2007-2016) consisting of research, development and validation activities relating to new technologies and procedures which will underpin the new generation of systems; and deployment phase (2014-2020), which will see the large scale production and implementation of the new technologies and procedures. On the other hand, Eurocontrol is assisting the EU, contributing to both the regulatory and the technology elements of the SES, by drafting implementing rules, guidance and technical regulatory material for the implementation of SES regulations; assisting Member States in exercising their regulatory functions; and identifying needs for new regulations for the complex new Air Traffic Management technologies and procedures delivered by SESAR.

In 2007 a joint undertaking was established via Regulation 219/2007 to develop the new generation European air traffic management system (SESAR). The undertaking constituting a public-private partnership is responsible for organizing and coordinating development of SESAR project, in accordance with Air Traffic Management Master Plan; organizing the technical research and development, validation and study work to be carried out while avoiding its fragmentation; and supervising the activities to develop common products identified in the Air Traffic Management Master Plan, and if necessary launching specific invitations to tender.

During the time when the 2004 Single European Sky (SES I) package came into force the greatest problem in air traffic management was congestion in the air and subsequent delays hence it also became the main focus of SES I, together with safety. As emphasized by the European Commission (2008) safety and capacity during 2008 are still major issues. But during the past years the picture has become more varied with a greater emphasis on environment and more recently due to the fuel price crisis, on cost efficiency. Thus, the issue of sustainability of aviation is getting more attention. Noting that aviation accounts for about 3 percent of all CO_2 emissions in Europe, it is emphasized that air traffic management should contribute to sustainable aviation. Hence, aircrafts should be able to follow the shortest routes with optimized flight profiles. But air traffic control is still closely associated with sovereignty and hence confined to a large extent within national borders. The process of integration within functional airspace blocks (FABs), regardless of national borders, has encountered numerous hurdles. In particular, the European route network which was an

amalgamation of national routes was not aligned with European traffic, and the shortest available routes were underused. Additionally, the regulatory approach has been changed due to requests from Member States and stakeholders for a less prescriptive approach. Thus, SES I has not delivered the expected results in some important areas.

The updated Single European Sky (SES II) package adopted in 2009 and thereafter is tackling all these challenges. According to the package priority is to be given to actions that will make the biggest contribution to the performance scheme starting early in 2012; the FABs to be operational by end 2012; and the deployment of the SESAR program that will start in 2014.

3.4 The EU External Policy

In the EU the liberalization process of air transport services did not extend to relations outside the EU. Member States have retained authority over third country bilateral arrangements, and airspace. The Commission has initiated a case before the European Court of Justice (ECJ) against eight member States on this subject. The 'open skies' judgments of November 2, 2002 of the ECJ marked the start of Community external aviation policy testifying the Community's powers in the field of international air services.

The external aviation policy rests on three pillars. First and foremost, all bilateral agreements currently in place should be amended and new agreements should take the form of horizontal ones. These agreements are negotiated by the Commission on behalf of the Member States, in order to bring all existing bilateral air services agreements (ASA) in line with Community law. Secondly, a Common Aviation Area with neighboring countries is the target of 2010. Thirdly, European Commission seeks to sign global agreements with the partners mostly impacting the worldwide economy.

A horizontal agreement is a result of negotiations between the third country and European Commission acting on behalf of Member State(s) for which it has been authorized by the relevant government. Acting autonomously would be contrary to the principles of the single aviation market and this has been clearly stated in the "Communication from the Commission on relations between the Community and third countries in the field on air transport".[166] It has a crucial consequence for any new member of the European Union. Not only must such a country harmonize its aviation law to be compatible with the Community Air Carrier model, but it must also amend its existing bilateral agreements which for sure are numerous. The main reasons for doing this work is to ensure the legal certainty of aviation relations based on such agreements, and also to guarantee the same rights to all Community operators, by virtue of the principles of non-discrimination and freedom of establishment. Amending the Air Services Agreements can be done in two ways. A country might come again to the negotiation table with each of its partners and set the agreement so that it is in line with the Community law or the Commission can do so on a mandate of the new member, negotiating a single horizontal agreement. The former method is regulated by the Regulation (EC) No 847/2004 which says that any Member State can conduct negotiations with a third country if relevant standard clauses jointly developed within the Community are included and proper notification procedures are fulfilled. On the other hand, negotiations at Community level in the framework of the so-called "horizontal mandate" do not have to be formally regulated as this is the common rule and not a deviation from such. The negotiations enabled third country to avoid

[166] See European Commission (2003)

individual negotiations with each of the Member States with which air transport agreements were in place.

As a sector, aviation contributes also to the Community neighborhood policy. It is one of the factors in promoting co-operation between countries whose markets are essentially turned towards each other. The ultimate goal was to create a Common Aviation Area by the end of 2010 between the EU members and their eastern and southern partners. So far the agreement was concluded with Iceland, Norway, Western Balkans and some of the Mediterranean countries. Priorities comprises of Russia and the region of Black Sea. And last but definitely not least important pillar of the Community Air Transport Policy are the horizontal agreements with global partners which, even if remote, influence the European economy significantly. The list of seven such countries includes United States of America, China, India, Canada, Australia, New Zealand and Chile.

The most recent development in this area is the EU-US (Open Sky) Air Transport Agreement, signed on April 30, 2007, which was applied from March 30, 2008. Till March 2007 Germany, France, and 14 other member of the EU had bilateral "open skies" agreements with the US. Those "open skies" agreements gave EU airlines the right to fly without restrictions on capacity or pricing to any point in the US, but only from their home country – French airlines from France, Polish airlines from Poland and so on. These "open skies" agreements included the “fifth freedom” and thereby gave US airlines the rights to operate flights within the Community.

The new Agreement opens the possibility for any "Community air carrier" to fly between any point in the EU to any airport in the U.S., without any restrictions on pricing or capacity and the opportunity to continue flights beyond US the towards third countries (“5th Freedom”). In the Agreement there is also the possibility to operate all-cargo flights between the US and any third country, without a requirement that the service starts or ends in the EU ('7th Freedom'). Finally there is more freedom to enter into commercial arrangements with other airlines (code-sharing, wet-leasing etc.) and the rights - in the area of franchising and branding of air services - to enhance legal certainty in the commercial relations in between airlines.

4. REGULATION OF AIR TRANSPORT SERVICES IN POLAND

The accession of Poland to the EU and the liberalization of the market legislation changed the legal environment in the aviation market in Poland. The major change of the law approximation initiated prior to accession was the creation of the national Civil Aviation Office (CAO) being the aviation supervision authority and responsible for the implementation of the EU regulations. The CAO is responsible inter alia for registers of: aircraft, aerodromes, aviation ground facilities, etc., flight safety, examination of safety levels in civil aviation, and general application of civil aviation regulations.

The third liberalization package regulations regarding licenses to air carriers, access for air carriers to intra-Community air routes, and fares and rates for air services was supplemented by the key Regulation (EC) No 1008/2008 on common rules for the operation of air services. The 2008 regulation liberalized and standardized terms of the granting of licenses to carry out air transportation services and strengthened the supervision of the national authorities, introduced a complete freedom to set fares by carriers and regulations on the code-sharing operations. Hence, the new regulation increased the freedom of operation, while tightening the rules on finance and tariff transparency.

Like in many other countries the air transport market there are three main types of entities operating in Poland: aerodrome operators, airlines and ground services handling agents and the development of each of these groups are linked together. [167] However, the main change from the economic point of view was the facilitation of access to the passenger segment of the Polish aviation market.

The adjustments in the legal system had a significant impact on both the structure and the operation of the air transport market in Poland. The increasing number of carriers operating to and from Polish airports had a positive impact on the management and development of airports, as well as suppliers of ground handling services. The facilitation of access to the Polish market has greatly increased the degree of competition and contributed to the rapid growth of passengers flights. The effects of the presence of foreign carriers in the Polish market are described in the subsequent section of this chapter.

4.1 General legal conditions

The air transport market in Poland is regulated by the Civil Aviation Office (CAO), created in 2002.[168] It is a civil aviation authority which is responsible for providing and maintaining safe and efficient aviation services to, from and within Poland.

The CAO is the main aviation administrator and supervisor being active in the following areas:

- compliance with legal provisions relating to the civil aviation & commercial aviation,
- operation of aircraft & certification of entities conducting activity in civil aviation,
- airworthiness of aeronautical equipment & the competency of the flight personnel,
- registers of: aircraft, aerodromes, aviation ground facilities, flight personnel, & landing areas,
- flight safety in civil aviation, including the examination & evaluation of safety levels in civil aviation,
- application of civil aviation regulations,
- approving the boundaries of maneuvering area of the aerodrome,
- international agreements - preparation & negotiations;
- aerodrome security protection programs,
- organization of aviation medical examination services,
- co-ordination of local town & country plans in municipalities where a new aerodrome location is projected.

[167] At this point it should be noted that in addition to the aforementioned three main groups of actors, the air transport market is related also to the activities of service providers of air navigation services that allow aircraft operations in the airspace and takeoff and landing operations at airports. In Poland in 2007 there were two such institutions that had certificates issued by the President of the CAO to provide air navigation services: Polish Air Navigation Services Agency, which was established as an independent entity on 1.4.2007, through the separation of Air Traffic Agency operating earlier within the structures the State Enterprise "Polish Airports" under the Act of 8 December 2006 on the Polish Air Navigation Services Agency, and the Institute of Meteorology and Water Management [See Acts. U. No. 249, item. 1829.].

[168] Order 136 by the President of Council of Ministers in Polish Monitor of 20 November 2002.

The CAO in fulfilling its administrative and supervisory duties publishes relevant regulations, briefings and annual reports, describing new developments in the civil aviation sector, issues entry permissions, and sets air navigation charges in Poland[169].

The precondition of the accession was the adoption and implementation of Community legislation concerning, among others, air transport. Before joining the European Union, Poland has declared that until its accession date (May 1, 2004) it will adopt and implement the *acquis communautaire* in the field of air transport. Thus, Poland agreed to a radical liberalization of air services. From the economic point of view the most important action was to liberalize rules on foreign carriers access to the Polish market. The rules of air transport liberalization were set before the accession the so-called liberalization packages. The most important one was the third liberalization package underlying the establishment of a common market in the field of civil aviation in the Community. The package consisted of:

- Regulation No 2407/92 of 23 July 1992 on the granting of licenses to air carriers, (including cabotage services),
- Regulation No 2408/92 of 23 July 1992 on access for Community air carriers to intra-Community air routes,
- Regulation No 2409/92 of 23 July 1992 on fares and rates for air services.

In line with the aforementioned regulations foreign air carriers may carry out international commercial flights involving commercial landing in the territory of Poland, subject to the permission granted by the President of CAO of the Republic of Poland.[170] The President of CAO issues: (i) permissions for ad hoc commercial flights; (ii) general permission for a series of unscheduled commercial flights comprising of at least ten flights and (iii) operating permit for scheduled flights.

No permission is required for the operations of all foreign air carriers for: (i) single passenger flights performed with aircraft of seating capacity less than 12 passengers, used only by the charterer or charterers on the route of their choice, (ii) single cargo flights performed with aircraft of which the maximum total weight authorised is less than 5700 kg, used only by the charterer or charterers on the route of their choice and (iii) non - commercial flights. Such flights are only confirmed by the Polish Air Traffic Agency. The only document required is an insurance certificate.

As far as traffic rights for regular carriers are concerned there is a distinction between the requirements for air carriers from European Economic Area (EEA) plus Switzerland and air carriers from non-EEA countries. The documents required to be submitted together with the application for single commercial flight are: (i) Air Operating Certificate (AOC) with Operations Specifications; (ii) Insurance Certificate and (iii) Operating Licence. If the air carrier is intending to perform scheduled flights, it has to also submit the timetable before the beginning of every IATA season and tariffs applicable to air transport services, for information of the authority.

[169] See: http://www.ulc.gov.pl/

[170] According to the article 193 item 1 of the Polish Aviation Act of 3rd July 2002 (Journal of Law No 130 item. 1112 with changes) a foreign air carrier may perform air transport to or from the Republic of Poland only to the extent and on conditions set out in a permission issued by the President of CAO of the Republic of Poland.

Further documents can be required on demand especially if there are specific safety or security concerns. The application for a permission containing the required data and documents, should be submitted at least 30 working days before the planned commencement of carriage services.

Poland, in line with the European Union provisions related to the Single European Sky, set up the Polish Air Navigation Services Agency (PANSA) in 2006.[171] This complies with: (i) Regulation (EC) No 549/2004 (laying down the framework for the creation of the Single European Sky); (ii) Regulation (EC) No 550/2004 (on the provision of air navigation services in the single European sky), (iii) Regulation (EC) No 551/2004 (on the organisation and use of the airspace in the single European sky), (iv) Regulation (EC) No 552/2004 (on the interoperability of the European Air Traffic Management network) and (v) Commission Regulation (EC) No 2096/2005 (laying down common requirements for the provision of air navigation services).

The Agency (Article 3 of PANSA) shall ensure safe, continuous, smooth and effective air navigation in the Polish airspace by performing functions of an air navigation service provider, airspace management and air traffic flow management. In particular PANSA shall: (i) provide meteorological information to airspace users; (ii) purchase, maintain and modernise the airspace communication, navigation and surveillance equipment and systems; (iii) perform airborne control of airspace communication, navigation and surveillance systems; (iv) provide training and consultation within air navigation; (v) ensure flight procedure design and (vi) coordinate air search and rescue.

Thus, Poland has implemented the core elements of the Single European Sky legislation. At the time of Poland's accession to the EU aviation market was thus already open to competition between airlines and airports.

The provisions for granting licenses to air carriers and those for the authorization to perform ground handling services at airports had to be changed in line with Regulation No 2408/92. The most significant change in the regulations were regarding the capital structure of companies providing the aforementioned services. The requirement of a majority participation of Polish entities was replaced by a requirement of participation of the majority of entities from the EU countries.

4.1.1 The modifications introduced by the Regulation No 1008/2008

The Regulation No 1008/2008 on common rules for the operation of air services in the Community entered into force on 01.11.2008.[172] It replaced partially the previously existing three regulations, forming the so-called third liberalization package. This regulation introduced significant changes, among others, in:

- Licensing of Community air carriers and conditions of the concession,
- Leasing aircraft from a third country with the crew,
- Rules for the operation of air services in the European Community,
- Obligations related to the publication of fares.

[171] The Act 1829 of 8 December 2006 on the Polish Air Navigation Services Agency
[172] See Dz. Urz. UE L 293 z 31.10.2008, p. 3.

Because of the fundamental importance of this regulation for the operation of air services in the European Community and consequently in Poland, below we briefly describe the most important changes and the provisions of the act.

4.1.2 Terms of the concession

The implementation of the Regulation has strengthened the supervision of the President of CAO in Poland over air operators in the granting of licenses to carry out air transportation services. Moreover, the European Commission was granted the right to request the licensing body to verify compliance with the requirements of the license by the carrier. In addition, the Commission must be informed of any decisions relating to the granting, suspension and withdrawal of approval of the license. According to the 1008/20078 Regulation:

- The President of CAO shall review compliance with these requirements two years after the granting of a new licence, if there is a problem or at the request of the Commission.
- a Community air carrier must notify the President of the CAO in advance of modifications in its activities (operation of a new service to a region not previously served, merger, acquisition, etc.).
- the President of the CAO may at any time assess the financial performance of a Community air carrier which it has licensed.
- the President of the CAO must notify on matters of procedures for the issue, suspension or revocation of the license to engage in air transportation
- The Regulation introduced a more restrictive provision on the obligation to dispose of at least one aircraft in the form of ownership or lease without crew;
- The Regulation introduced a three-month deadline for the issuance by the President of the CAO a decision to grant or refuse to grant the license;
- The Regulation modified rules regarding the approval for the concessionaire lease aircraft registered in a third country
- The Regulation imposed strict sanctions on carriers not submitting financial statements.

An important change with respect to small air carriers with aircraft of less than 10 tonnes maximum take-off mass (MTOM) and/or less than 20 seats introduced by the Regulation was to increase the amount of net capital. The required net capital value has been increased from 80,000 to 100,000 euros euro.

The regulation, however, posed also a more general net capital requirement for large air carriers. In this case a carrier can meet at any time its actual and potential obligations, for a period of 24 months from the start of operations. Alternatively, the company has to prove that it can meet its fixed and operational costs incurred by operations according to its business plan, for a period of three months from the start of operations, without taking into account any income from its operations.

It should also be noted that the new regulation clearly defined the relationship between the Air Operator Certificate (AOC) and license to perform air transportation - the granting of the concession and the behavior is dependent on the possession of a valid AOC and any changes are reflected in the license. In case a AOC is suspended or withdrawn, the the President of the CAO shall immediately suspend or revoke that air carrier's operating licence.

4.1.3 Tariffs

The Regulation introduced a complete freedom to set fares by Community carriers, and - on the basis of reciprocity - carriers from third countries. It also established new rules for publishing air transport tariffs, performed from airports situated on the territory of the Community and supplementary provisions on unfair commercial practices and other consumer protection laws. Regulation requires sellers of air transportation to:

- quote the total, final price of transport service at all stages of the process of offering and contracting;
- specify the total price air fare, taxes and fees, and surcharges;
- convey in a clear, transparent and unambiguous way at the start of the booking process information about any additional charges to the price, and the customer's consent to the above. payments should be expressed on an optional basis (opt-in - join the service). The details must be given of the different components of the price (fares, taxes, airport charges and other costs).

The Regulation also introduced direct prohibition of discrimination on grounds of nationality or place of residence of the consumer, as well as the place of the representative of the air carrier or other entity conducting the sale of tickets for the Community.

4.1.4 Air transport and Market Access

Under the new 2008 regulation, air carriers, having been licensed in one Member of the Community (Community carriers), are free to provide air transport in the EU and are not subject to any additional permits or concessions in this area. The Regulation introduced regulations on the code-sharing operations. According to these regulations Community carriers may enter into code-sharing agreements with other carriers Community or third countries for service on the routes within the Community and third countries. Any restrictions imposed by bilateral agreements between Member States, of the operations conducted by Community carriers within the Community and on routes to / from third countries will be lifted. However, in the case of bilateral air service agreements with third countries, the Member State may impose a limit on the code-share agreement between Community carriers and carriers of third countries, in particular, when the third country concerned does not offer similar commercial opportunities to Community air carriers operating of the Member State (ensuring the principle of reciprocity). The new regulation increased the freedom of operation within the EU Community carriers, while tightening the rules on finance and tariff transparency.

4.2 Specific Legal Conditions in the Polish Aviation Market

The Aviation Law (Article 2 point 17 of the Act of 3 July 2002) as amended in 2006[173], defines public airport for commercial flights. The management of the airport for public use requires a license. Detailed regulations related to the aforementioned licences and permits are regulated in Section 4 of the Aviation Law. They describe precisely the conditions for setting

[173] Journal of Laws of 2006 No. 100, item. 696, with subsequent amendments.

up and operating public airports. The Register of public airports is managed by the President of CAO and publicly available to the public.

In the previous system, management of airports in Poland was done by the State Enterprise "Polskie Porty Lotnicze" (Polish Airports) which was founded by Act of Oct. 23, 1987. PPL currently manages two airports in Warsaw and Zielona Gora. In other airports in Bydgoszcz, Gdansk, Katowice, Krakow, Poznan, Szczecin and Wroclaw Szymany, which were transformed in the nineties into commercial companies, PPL holds some shares. PPL has no shares only in the Lodz Airport.

At present there are 10 management companies of public use airports in the Register of CAO. Initially, only two airport management companies received permits in 2004: Airport Szczecin and Airport Poznań. In 2005 two more companies: Gdańsk Airport and the Upper Silesian Airport managing Katowice Pyrzowice airport obtained permits. Next permits were given only in 2007 to three more companies: the Krakow Airport, the Łódź Airport, and the Wroclaw Airport. In 2008, the airport management permits were granted to two entities: Bydgoszcz Airport and the State Enterprise "Polish Airports" for airport management in Warsaw and Rzeszów. In 2009, the permit was given only to one entity: Rzeszów Airport. No new no permits were given in 2010. Thus, there were ten entities that have permission to manage public use airports at the end of 2010.

The formation of new public airports is rather difficult due to existing demanding regulations, as well as the lack of regulations for the business model for small regional airports. The CAO in Poland began to work on such legislation to facilitate the "creation of a nationwide network of local airports to allow smooth functioning of the airports with low or even very low traffic." They are tentatively called "local ports" or "local airports." The legal framework is being created to allow carrying out commercial operations such as: air taxi flights, charters, and passenger shuttle services to transport hubs.

4.2.1 Carriers

The provision of air services in Poland is conditioned upon obtaining a license to operate in air flights. Regulations relating to the granting of the aforementioned licences were regulated by the Act of July 3, 2002 - Aviation Law. The Law is implementing legislation and Council Regulation (EEC) No. 2407 / 92 of 23 July 1992 on licensing of air carriers. The access rules for carriers to routes within the European Union, in turn, were defined in Council Regulation (EEC) No 2408/92 of 23 July 1992 on access for Community air carriers to intra-Community air routes, while the rules for determining fares and rates for air transportation regulated in the period to Council Regulation (EEC) No 2409/92 of 23 July 1992 on fares and rates for air services.

As mentioned above, the economic activity in the field of air transport requires a license. According to the current regulations four types of licenses are issued:

- license to perform irregular flights using aircraft with a maximum take-off weight limit of less than 10 tonnes and a passenger seating configuration of less than 20;
- license to perform scheduled flights using aircraft with a maximum take-off weight limit of less than 10 tonnes and passenger seats less than 20;
- license to perform irregular flights with unlimited take-off weight and the number of seats;
- license to perform regular flights with unlimited take-off weight and the number of seats.

The air carrier having a license without restrictions will automatically receive a a license to fly aircrafts covered by the license, with the maximum take-off weights limit and the number of seats. The right to perform scheduled and non-scheduled flights has only a carrier, in whose concession it is clearly specified.

In the years 2004 - 2011 there have been major changes in the number of entities with permits and licenses to perform aviation activities. Since the Polish accession to the European Union, the number of domestic entities that have a license to operate in the field of air transport has significantly increased.

Among Polish carriers the LOT group, which consisted at that time of Polish Airlines LOT - the parent company and its subsidiaries: the Eurolot and the "New Carrier" (trading as Centralwings - ceased to operate on 31.05.2009), has the greatest potential. The strong position resulted, among others, from a long history of LOT in the market as the flag Polish carrier. LOT is a majority-owned by the State Treasury, so that the group had large capital and a stable market position. In addition, it should be noted that LOT was the only carrier that had many years of experience in the business, as it was the only Polish carrier that operated before the transition in 1990.

Other Polish firms operating at the market in first decade of 2000 were rather small air carriers, performing mostly charter flights, business flights, transporting mail or regular flights on domestic routes. These entities handled mostly the domestic traffic and were often faced with serious financial problems as well as operational problems. Many of them being unable to obtain equipment necessary to increase their fleet and get experienced staff who chose the larger entities, that were able to offer them better conditions of employment.

While at the end of 2003, only 5 carriers had the concessions, at the end of 2004 there were 11 firms, at the end of 2005 there were 13 firm, at the end of 2006 their number increased to 15. In 2007, already 17 carriers had licenses to carry out air transport. After a period of rapid growth in the number of entities licensed to conduct business in the field of air transport, their number began to decline during the crisis of 2008-2009. In 2008, 15 carriers had licenses to perform air transportation, and in 2009 their number dropped to 13. In 2010, the situation improved and the number of market players has increased to 16. At the end of 2010, there were 16 eligible companies to carry passengers or freight: LOT Polish Airlines, EuroLOT, Enter Air, Air Italy Poland, Small Planet Airlines, Exin, SprintAir, SprintAir Cargo, Sky Taxi, Jet Air, Jet Blue, Fly Jet, AD Astra Executive Charter, General Aviation, Ibex and Air Rescue.

It is quite clear that the Polish accession to the European Union contributed to a significant development of the air transportation market measured in terms of the number of carriers operating in it. This situation is not surprising, since the Polish membership in the EU has opened up new opportunities for Polish carriers, giving them the right to operate freely throughout the European Union. In addition, Polish relatively good economic growth has contributed to the growth of interest in the business aviation segment.

5. REGULATION OF AIR TRANSPORT SERVICES IN TURKEY

General Directorate of Civil Aviation (DGCA) under the umbrella of the Ministry of Transportation, Maritime Affairs and Communications (MTMAC) supervises and monitors

the air transport sector, and General Directorate of State Airports Administration (DHMI) of MTMAC manages air navigation systems and most of the airports. DGCA is the agency tasked with developing civil aviation rules, licensing air transport personnel, authorization of all aviation activities, the coordination of navigation services, monitoring of the implementation of international agreements, the examination of air transport-related accidents, the auditing of all civil aviation systems and determining the contents of civil aviation training programs. In 2005 DGCA has been restructured with the Law No. 5431 on the Organization and Tasks of Directorate General of Civil Aviation. The aim of the law was to enhance air transport safety and to enable DGCA to effectively perform the duties assigned to it by law. On the other hand, the General Directorate of State Airports (DHMI), born legally in 1984, is in charge of airport operations, provision of airport services, air traffic control, setting up and operation of the navigation systems and the associated facilities. DHMI operates 45 out of the 67 airports. The remaining airports are those with special status, those used by the Turkish Aeronautical Association (THK), the military airports used by civil aviation entities under special protocols, military airports and joint military-civilian airports.

In Turkey private air carriers could be established with the enactment of Law No. 2920 on Civil Aviation in 1983. Authority for approval of new carriers is vested in the MTMAC. Air carriers for domestic or international 'scheduled' flights are authorized to schedule services if they are registered in Turkey and operate a minimum of five registered aircraft with at least 100 seats. However, aircraft can be leased and there is no requirement of ownership. Where there is no company-owned aircraft, a bank letter of guarantee for up to US$ 3 million is required. In the case of non-scheduled domestic and international flights at least three registered aircraft are required, and each aircraft must have at least 100-seat capacity. However, for regional air transport, a carrier should own or lease at least two aircraft registered in the Turkish Civil Aircraft Registry, with a capacity of between 20 and 99 seats. For cargo operations, the aircraft requirement is dropped to one. Provided that these requirements are fulfilled, a market entry license can be obtained. In addition Turkish regulations require that the majority of a company's executive and authorized representatives must be of Turkish nationality, and that Turkish shareholders must have voting majority. Hence, the equity participation ratio of foreign shareholders is restricted to 49 percent. Airlines with a majority of shares controlled by foreigners are not permitted to carry passengers from one national point to another within Turkey. Technical and financial supervision of existing carriers is carried out by DGCA and the rules are enforced by DGCA. Thus, the Turkish licensing system is on the whole compatible with the EU legislation.

In 2001 as the Turkish aviation sector was undergoing liberalization an amendment to the Turkish Civil Aviation Code was adopted allowing air carriers to set airfares without the approval of the MTMAC. When setting the tariffs, airline operators should obtain the approval of the Ministry in advance, and they are under the obligation to advertise new tariffs at least 3 days before they are implemented. Thus, the government no longer intervenes in the pricing of non-scheduled or air taxi services, and since the beginning of 2004 air tickets have not been subject to the special transaction tax or education contribution payment. In 2004 some Turkish air carriers started scheduled domestic flights including to and from Istanbul, contributing to the end of the State-owned operator's de facto monopoly in the domestic scheduled flights.

One of the critically important factors in enabling a level competitive field in air transport relates to the question of flight permits and slot allocations. For a flight to be realized, the air carrier must have obtained both a flight permit for that route and a slot allocation for the

airport. An appropriate allocation mechanism of flight permits and landing slots, especially at busier airports, is instrumental in preventing market closure by the traditionally dominant players and thus creating room for new entrants. In Turkey flight permits are awarded by the MTMAC, and the Ministry maintains that no additional flight permits will be issued for any route until the load factor on average reaches 85 percent on that route. Because slots are finite, the objective should be to set the conditions for the creation of a contestable market in specific routes. In Turkey landing and take-off rights are allocated on slot time basis, and slot allocation is applied at Atatürk, Antalya, Adnan Menderes, Dalaman, Bodrum, and Esenboga airports, and Kayseri during the summer months.

With the approval of the MTMAC in 2005, slot coordination responsibility in Turkey has been placed under the authority of the 'Commission for Evaluation of Slot Allocation' (CESA) established under the presidency of the DGCA. Since May 2010 slot allocation has been the responsibility of DHMİ. CESA is a consultative body comprised of representatives of national and international air carriers, of the 'State Airports Management Authority' and of ground handling companies. In addition a slot coordinator post, an evaluation committee and a technical committee in line with the *acquis* have been established. Given the importance for maintaining a contestable market, the current slot allocation procedures allow for new market entry by defining and protecting the rights of 'new entrants', and new entrant means an air carrier requesting slots at an airport on any day and holding or having been allocated fewer than four slots at that airport on that day. After slots are allocated to the historic slots and hour changes in the slots, 50 percent of the remaining capacity is allocated to new entrants. Finally, in order to increase the efficiency in slot allocation, fines have been introduced to prevent operators from violating their arrival and departure schedules. The new regulations thus aim to avoid unrealistic slot requests. Operators also face the risk of losing their slots if they fail to comply with allocated slot schedules.

Given the importance of ground handling services for efficient and cost effective air transport services, access to the ground handling market remains a critical issue. In Turkey three private-sector ground-handling companies provide services at all airports open to international civil air traffic. In Sabiha Gökçen airport in Istanbul ground services are provided by the airport operator. Although the presence of three ground handling operators complies with the EU requirements, ground handling at Sabiha Gökçen does not. The Turkish legislation, unlike the relevant EU legislation, does not stipulate a minimum number of service providers. Since it sets forth a maximum number depending on the number of passengers, the scope for competition remains limited. On the other hand catering services at the international airports are provided by five catering firms. Airlines may also provide ground handling services for their own use at all airports (self-handling), and as of 2011 13 companies provide these services. The prices for these services are again market-determined.

Turkey is a member of the International Civil Aviation Organization (ICAO), European Civil Aviation Conference (ECAC), European Organization for the Safety of Air Navigation (EUROCONTROL), Joint Aviation Authority (JAA), and it is party to a large number of international conventions such as the Chicago Convention. Safety regulations for civil aviation has its legal basis through (i) the organization and functions of the MTMAC, (ii) Turkish Civil Aviation Law, (iii) Law on the Organization and the Duties of the DGCA, (iv) the Chicago Convention, and (v) the EUROCONTROL Convention. Implementation of EUROCONTROL Safety Regulatory Requirements (ESARRs) has been delayed in Turkey although some are already being enacted in practice. According to EUROCONTROL the DGCA and DHMI are working together to adopt ESARRs in full. ESARR 2 on Reporting and

Assessment of Safety Occurrences in ATM (SHY6502) and ESARR 5 on ATM Services' Personnel (SHY6501) have been enacted. ESARR 3 on the Use of Safety Management Systems by ATM Service Providers and ESARR 4 on Risk Assessment and Mitigation in ATM are in draft form and ESARR 6 on Software in ATM Functional Systems have been sent to the legal office for final approval. Turkey is not compliant with ESARR 1 on Safety Oversight in ATM and this is being discussed with both EUROCONTROL and the Turkish EU relations unit with regard to Single European Sky requirements.

The DHMİ Safety Commission which is responsible for all ATM safety matters has been established in relation with the Safety Management System (SMS). Generic Safety Management Manual guidelines are used for updating Local Guidelines for SMS and Quality Management Systems (QMS) adapted to Turkish requirements. The DHMI Safety Commission promotes awareness and implementation of Single European Sky (SES) safety provisions within DHMİ and in accordance with Turkish legislation. Oversight activities conducted by DGCA were presently confined to airports and ATM units.

Regarding runway safety, Local Runway Safety Teams have been formed for all airports, and a reporting and dissemination structure to DHMİ and to the DGCA have also been formed. Airport related personnel have been kept fully aware of all runway incursion matters. Suitable training in line with EUROCONTROL Action Plan for the prevention of runway incursions and Airport Runway Incident (APRI) guidelines has been prepared. Local Runway Safety Teams have also been carrying out the trainings and awareness campaigns in accordance with ICAO Runway Safety Toolkit in all aerodromes. All aerodromes are regularly checked for compliance with ICAO Annex 14. Finally, we note that the Implementing Regulation on Approved Overhaul Administrations in line with the *acquis* has been published in 2004. Similarly in 2005 the instructions on licensing of plane and helicopter pilots have been issued in line with the *acquis*.

In Turkey, the public service obligation (PSO) used to be fulfilled by the national flag carrier Turkish Airlines (THY). After the liberalization of the market, PSOs were imposed on other carriers in a less than transparent way. More often than not, these obligations were enacted by linking the permit to fly requested routes to the obligation to fly to government imposed destinations. Thus, actual practice is not compatible with the EU rules. Harmonization with the EU rules will require that state authorities determine the specific routes that will fall under the PSO regime, allocate and disclose the planned amount of state aid, and launch competitive tenders for servicing these routes.

Air carriers operating international scheduled services to Turkey are authorized on the basis of reciprocity within the framework of bilateral agreements. Charter services are authorized on the basis of reciprocity under the rules of the European Civil Aviation Commission (ECAC), of which Turkey is a member. Cargo transport is under the provisions of Law No. 2920 and relevant articles of the Regulation on Commercial Air Transport Operations, as well as the applicable provisions of bilateral air transport agreements signed by Turkey. Turkey has signed bilateral air transport agreements with 122 partners. Under these agreements, Turkish carriers are operating scheduled services to 175 cities abroad. Some of these agreements restrict market access to the signatory states' respective national carriers. A legal duopoly has therefore been created for the specific international routes covered by these Agreements. These restrictions benefit the THY to the detriment of all the other domestic carriers who are prevented from flying to the international destinations covered by these Agreements.

An open skies agreement has been concluded between Turkey and the United States in 2000. Turkey has initialized a civil aviation agreement with the EU on March 25, 2010. The new agreement does not replace existing bilateral agreements between Turkey and individual EU member states, but aligns them with the EU law. A de facto open sky agreement also exists between Turkey and Germany due to the large Turkish population living in Germany. EU Commission maintains that under the bilateral agreements signed with the EU Member States, Turkey should allow Community air carriers to operate from EU Member States to Turkey and not discriminate between Community air carriers on the basis of nationality. Cabotage in air transport in Turkey as emphasized above is not open to competition from foreign companies.

Although major steps have been taken in Turkey to liberalize the aviation sector since 2001, European Commission's 2011 Regular Report on "Turkey's Progress towards Accession" maintains that the process is not complete. According to the report an EU-Turkey horizontal aviation agreement is at a final stage. Since Turkey is willing to be part of the single European sky, a pre-accession strategy for the aviation sector has been developed. The strategy covers a set of priority actions on human resources, environment, market regulation and aviation safety that needs to taken by Turkey. Regarding air traffic management the report notes that there are no developments concerning the exchange of flight data and requirements for the application of a flight message transfer protocol used for the purpose of notification, coordination and transfer of flights between air traffic control units. Moreover, air traffic management is suffering from a lack of regional cooperation. In addition, to align with the acquis in the area of air safety, Turkey is expected to accept European Aviation Safety Agency (EASA) as the competent body to carry out standardization inspections in the field of air traffic management and air navigation services. Finally, the Report notes that further efforts are needed in order to improve implementation on slot allocation, particularly as regards the independence of the slot coordinator.

To satisfy the requirements of the EU, DGCA has issued instructions on the language proficiency of personnel, rules to control air vehicle path length, and rules to determine methods related to the creation and approval of minimum equipment list. In addition DGCA has published a flight operations inspector's handbook, and issued a regulation for a computerized reservation system, a regulation on the oversight of safety in air traffic management, a regulation on the use of risk assessment and reduction methods by the air navigation service providers, and a regulation on use of safety management systems by the air navigation service providers. On the other hand the European Commission's 2010 Regular Report pointed out that the DGCA had extended the scope of the regulation on carriage of liquids on airplanes to include all international airports, finalized a circular on passenger rights which is undergoing stakeholder consultation with the aviation industry, and issued a regulation on safety assessment of national and foreign aircraft (SANA - SAFA). Previously, Turkey had adopted implementing legislation in line with the *acquis* on liability insurance for air carriers, on occurrence reporting in civil aviation, on licensing and rating of air traffic controllers, on certification and licensing of safety electronics staff, reporting and assessment of safety incidents, approved maintenance organizations, and on commercial air transport operators. On the other hand, the '2009 National Program for the Adoption of the *Acquis*' notes that Regulation for Circular and Entrance Card to all Airports and Aircraft Maintenance Staff Legislation (SHY 66-01), Examination Regulation prepared in line with the requirements of European Aviation Safety Agency (EASA) Part 66, SHY-66 Conversion Regulation that regulates the conversion of SHD-That-35 Licenses to SHY/JAR-66 Licenses, and the SHY-66-01 Implementation Circular had been published.

Full harmonization with the EU *acquis* would mean the incorporation of Turkey within the Single European Space. As a result, EU carriers would begin to service the Turkish market including flying between domestic destinations, and Turkish carriers would be able to operate between and within EU countries without any discrimination. This freedom would translate into increased competition over Turkish skies with ensuing benefits for the Turkish consumer in terms of still lower prices and wider consumer choice as witnessed by the experience in EU countries as regards the liberalization of air transport services. The external dimension of the EU's Single Sky policy also requires the amendment and re-negotiation of the EU Member States' bilateral air transport agreements so as to eliminate designation clauses reserving routes to national carriers. This clause is to be replaced by a reference to all EU carriers. Harmonization with the EU *acquis* in this area would then mean that Turkey should also review its range of bilateral air transport agreements so as to implement these changes. As a result, the external market for privately held Turkish carriers would be liberalized. They would then have the possibility of flying to hitherto closed destinations. The competition impact of the possible ending of the block exemption granted by the Commission to International Air Transport Association (IATA) tariff conferences should also be addressed. Once Turkey becomes part of the Single European Space tariff fixing between EU and Turkish destination would become illegal, ushering in a period of increased price competition for EU-Turkey routes. A full regulatory harmonization would also allow a more competitive ground handling services market to emerge. The necessary changes in the Turkish legislation would enable the market entry of new competitors.

5.1 Developments[174]

With the steps that were taken in 2001 to liberalize the aviation sector and the commencement of scheduled flights by the private sector, the Turkish civil aviation sector has entered into a rapid growth period. Although the growth rate has been decreasing lately, it was still high and well above the European average. In 2011 traffic volume measured by the sum of domestic, international and transit (overflight) air traffic has increased by 9.9 percent compared to 2010 and the number of controlled traffic reached 1,331,835 representing an increase of 119,440 flights over the previous year.

Over the period 2002-2011, traffic has increased by 150.1 percent. While domestic flights during the same period increased by 268 percent, international arrivals and departures increased by 110.5 percent. The increase in the number of controlled flights is expected to continue in the near future. Although the traffic growth is expected to amount to 2.1 percent per annum for Europe as a whole over the period 2012-2018, a growth rate of 5.9 percent is expected for Turkey. It should also be underlined that the traffic volume is higher in the summer period due to tourism activities. The following figures further illustrate the growth in the sector: (i) number of large airplanes increased from 110 in 2002 to 346 in June 2011, while 26 of these are cargo planes and 220 are large passenger planes, (ii) number of domestic passengers increased from 8.7 million in 2002 to 58.4 million in 2011, (iii) number of international passengers increased from 25.1 million in 2002 to 59 million in 2011, (iv) amount of cargo transported domestically has increased from 181,262 tons in 2002 to 715,603

[174] This section is based largely on Directorate General for Civil Aviation (2011) and General Directorate of State Airports (2011).

tons in 2011, and (v) the amount of cargo transported internationally has increased from 611,691 tons in 2002 to 1,617,594 tons in 2011.

The public-private partnership model and in particular the build-operate-transfer (BOT) option has been espoused by Turkey as the favorite method for developing the airport capacity of the country. As a result, private sector investments in airport construction have increased considerably. Currently 67 airports are operated of which 24 are used for both domestic and international flights, 31 for domestic flights, and 12 of them on special status. It is also interesting to note that Istanbul Atatürk Airport which is the hub of THY is among the leading airports in Europe in terms of passenger traffic. It has been also the European leader in terms of traffic growth during the past few years. Domestic and International Terminal Buildings, Multi-Storied Car Park and General Aviation Terminal of Istanbul Atatürk Airport was rented out for 15.5 years and for US$ 3 Billion in 2005. Similarly, Esenboğa airport in Ankara and its multi-story car park was rented out for 15 years and eight months to TAV Esenboğa Investment, Construction and Management Company on BOT basis. On the other hand DHMİ transferred the operating rights of Antalya Airport to a private company for a total amount of € 2.37 Billion in 2007. The new international terminal building for Adnan Menderes Airport, Milas-Bodrum Airport, Çukurova Airpot, and Zafer Airport are constructed according to BOT model. Zonguldak-Çaycuma and Antalya-Gazipaşa Airport projects are realized by transferring operational rights. Eighteen airports which were closed or were not active have been opened to the civil air traffic again by DHMİ.[175]

During the peak tourist season İstanbul Atatürk Airport experienced some delays due to the large increase in the traffic. Although these delays were eliminated through common actions taken, additional measures need to be taken in order to enhance and better manage the capacity. The measures have been effective in increasing air traffic management (ATM) capacity. As a result of the implementation of the Interim Systematic Modernization of ATM Resources (SMART) system the average en-route delay per flight reduced to 0.1 minutes in summer 2009.[176]

Lately, DHMI has taken measures to ensure that the airport systems have the capacity and redundancy to work in a safe and reliable way. Communications infrastructure and surveillance infrastructure have been improved substantially and additional controllers were recruited. Together with EUROCONTROL airside capacity assessment and enhancement studies for İstanbul Atatürk Airport were completed by taking into account the new runway and taxiways. New theoretical capacity and the bottlenecks have been identified, and bottlenecks have been investigated further. In addition to the airside capacity studies, Collaborative Decision Making (CDM) GAP Analysis studies were commenced to enhance the productivity of the airport. In the meantime, it was noted that the continuous traffic growth

[175] The eighteen airports are Balıkesir-Körfez, Balıkesir-Merkez, Bursa-Yenişehir, Zonguldak-Çaycuma, Sinop, Şanlıurfa-GAP, Antalya, Gökçeada, Kocaeli-Cengiz Topel, Tokat, Uşak, Sivas, Siirt, Çanakkale, Kahramanmaraş, Adıyaman, Amasya, Merzifon and Hatay

[176] SMART is a program initiated by DHMI to renew the Air Traffic Control (ATC) Systems which were procured in 1989; meet the future needs for increasing air traffic capacity; increase safety and quality in air traffic management with new functionalities to the systems; and suit to EUROCONTROL's One Sky concept. With the SMART Project, ATC infrastructure in Turkey will completely be renewed. The Project consist of 3 sub-projects: (i) procurement of Central Ankara Air Traffic Control Center (ACC) and other Air Traffic Control Centers, (ii) replacement of existing radars and procurement of additional radars, and (iii) procurement of Advanced-Surface Movement Guidance and Control System for Atatürk, Esenboğa and Antalya Airports. The total amount for the project is approximately 140.000.000 €. The project which started in 2002 is expected to end in 2013.

has resulted in erosion of reserve capacity, meaning that the existing system was no longer capable of economic upgrading to satisfy the extra capacity needs. In the light of this fact, Turkey has accelerated its SMART project to allow an early implementation of an interim upgrade of the ATM systems. Regarding safety inspections we note that the number of Safety Assessment of Foreign Aircraft (SAFA) inspections increased from 150 in the year 2006 to 511 in 2011 and the number of Safety Assessment of National Aircraft (SANA) inspections increased from 85 in the year 2006 to 390 in 2011.

6. CONCLUSION

Economic liberalization of air transport services means not only the liberalization of the transportation of passengers and freight from one point to another by aircraft, but also the liberalization of ancillary services such as air traffic control services, airport services, aircraft repair, computer reservation systems (CRS), ground handling, and aircraft repair and maintenance services subject to the condition that minimal safety, security and environmental consideration are secured. Since air transport is inherently international in character, and carriers must operate under the regulatory requirements of many jurisdictions, there is an inherent need for harmonization of rules and regulations across countries. Countries tried to achieve the liberalization of air transport services through bilateral liberalization, regional liberalization and multilateral liberalization. But on the whole the attempts were not very successful in the cases of bilateral and multilateral liberalization. On the other hand, liberalization of air transport services could essentially be achieved on a regional basis through adoption of the Single European Sky *acquis* of the EU as revealed by the experiences of Poland and Turkey. But the task as shown in the paper is quite challenging.

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CHAPTER 6

TRADE IN TRANSPORTATION SERVICES: AGGREGATE AND FIRM LEVEL DATA ANALYSIS

Recent developments in the empirical trade literature has placed the relation between labor productivity and exporting to the center of analysis in the models of 'new new trade theory'. In particular, Melitz (2003), by relaxing the key assumption of firm symmetry in the Krugman (1980) monopolistic competition model, has introduced firm heterogeneity in terms of labor productivity. In his model productivity differences among firms are exogenously given and each firm has to pay fixed costs of entry into domestic and foreign markets. The model predicts that the most productive firms with lowest marginal costs will cover the fixed cost of entry and become exporters.

A large empirical literature has found that exporters are more productive than non-exporters, and that they often have higher productivity growth. This productivity advantage of exporters could be explained by two hypotheses (Bernard and Jensen (1999) and Bernard and Wagner, (1997)) namely, more productive firms self-select into export markets, and learning-by-exporting. The theoretical model by Melitz (2003) has shown that only firms with a productivity level above a critical threshold find it profitable to export. This self-selection of more productive firms into export markets can be explained by the presence of fixed and variable costs associated with exporting. The majority of the empirical studies find support for the theoretical prediction of the Melitz (2003) model, i.e. more productive firms self-select into foreign markets, while there are also some studies demonstrating that learning by exporting significantly affects firm productivity.

The standard literature on the determinants of country's export activity has assumed that firm productivity is exogenous, but more recent theoretical contributions allow for the possibility of firms to increase their productivity through innovation activities (Yeaple, 2005; Bustos, 2005). Empirical evidence suggests that foreign-owned firms and exporters are more likely to innovate (Criscuolo et al, 2010; Siedschlag et al, 2010). In addition, a number of recent empirical studies have found that exporters are more likely to introduce product innovation (Liu and Buck, 2007; Salomon and Shaver, 2005; Fafchampsa et al, 2008; Bratti and Felice, 2010). Thus, the analysis of determinants of exports is crucial for understanding the export performance of the economy and factors affecting long term innovations and economic efficiency.

The Melitz (2003) framework can be used to study other issues as well. In particular, it can be applied to study the effects of trade liberalization. According to the approach, the fall in the cost of importing will force the least productive firms to exit the domestic market, and will thus reallocate the market shares from inefficient firms to more productive firms. As a result, the average level of productivity within the sector increases. On the other hand, a reduction in the cost of exporting reduces the threshold level of productivity that firms need to export and consequently the highest productivity non-exporters can enter the export markets.

Most of the empirical studies, confirming the self-selection hypothesis, analyze firms' export performance depending on labor productivity or on TFP. The other frequently used explanatory variables are reflecting the size of the company, resources, physical and human

capital, the level of internationalization of companies and other variables based on the extensions of the Melitz model (e.g. EFIGE (2012)). Most of these studies focus on manufacturing firms. The majority of work analyzing trade barriers and implications of trade liberalization also deal with manufacturing firms. The empirical studies on services firms are rare, since the number of those firms in the existing data bases is usually quite limited.

One of the studies on services' firms was presented by Siedschlag et al (2010). They examined the effects of internationalization of firms on their innovation and productivity performance in manufacturing and in services firms in Ireland. They found both similarities and differences with respect to the effects of international linkages on innovation and productivity for manufacturing and services firms. Notably, while foreign-owned firms in manufacturing were more likely to invest in innovation and to be successful at innovating, they find no significant link in the case of foreign-owned firms in services. In a recent paper, Crozet et al. (2012) analyze export barriers using a new French firm level dataset on professional services trade. The authors analyze implications of existing trade barriers in services. They find that domestic regulations do matter for services trade.

In this chapter we analyze several aspects of economic performance of firms in transport sub-sectors over last few years. In Section 1 we analyze the changes in levels and composition of trade in transportation services experienced during the period 2003-2010 in Poland and in Turkey. Section 2 is based on two different sets of data. First, we use the Orbis firm level data for the EU countries and Poland. Next, we consider the Business Environment and Enterprise Performance Survey (BEEPS) firm-level data for Central and Eastern European countries (CEECs). Using the Orbis data we describe economic characteristics of firms active in the different transport sub-sectors of the EU, CEECs excluding Poland, and only Poland. We focus our analysis on the size and labor productivity of firms across different sectors and countries of the EU. Unfortunately, we are unable to analyze the export performance directly, since Orbis data do not contain information on the exports of firms. To overcome this problem, we use the BEEPS data. The analysis concentrates on export barriers. The variables reflect selected firm characteristics and potential local barriers restricting the level of exports of services' firms. In the last Section, namely Section 3, we consider the case of Turkey. Since we know very little about firms that engage in production of and trade in transport services in Turkey, we use firm level data to produce a detailed picture of the characteristics of production and trade pattern of transportation service providers. We present a set of stylized facts for firms engaging in the production and trade in transportation services based on data collected by Turkish Statistical Institute (TURKSTAT) over the period 2003-2008. The analysis is based largely on the approach developed by Breinlich and Criscuolo (2011). Finally, we analyze the determinants of exports of Turkish firms in the transport sub-sectors.

1. TRADE IN TRANSPORTATION SERVICES: CASES OF POLAND AND TURKEY

The data on international flows in transport services, supplied by the International Trade Centre, allow the analysis of Polish and Turkish transportation services' trade pattern. Primarily, throughout the first decade of the XXIst century both countries – Poland and Turkey experienced a gradual increase in terms of absolute values of transport services being imported and exported. However, in both countries a substantial decrease in the trade values – resulting from the world economic crisis – was noted in the year 2009. This impact was less pronounced in Turkey, where in 2010 trade volume exceeded the levels that were reached in

2008, while in Poland the export values did not only return to the pre-crisis level, but continued to decrease (Figure 6.1 – Figure 6.4).

The data for the transport trade in Turkey cover only freight transport services and the rail transport services and are available only from year 2003 onwards. The outcomes may therefore be biased, however a simple comparison of structure of exports and imports reveals substantial differences in the two patterns (Figure 6.1 and Figure 6.2). On the other hand, in the case of Poland the pattern of trade is rather balanced – both in terms of export and import value of transport services. The largest share of transport services is provided by road transport. The analysis of the structure of Polish transport services exports over the last decade demonstrates different dynamics in transport services after the accession to the EU in 2004 (Figure 6.3 and Figure 6.4). On the one hand, the value of maritime transport services decreased starting from that year on by over 42 percent. On the other hand, a rapid development in road transport services export was observed after accession to the EU. The value of road transport services almost doubled in the first year after accession and has been growing rapidly (over 40 percent increase each year) over the next few years. Moreover, the economic crisis had limited impact on road and air transport services' exports. This traffic remained rather stable in the period of economic recession. The strongest negative impact of the crisis was visible in the case of maritime transport services, which dropped by 22 percent in 2009 and by 67 percent in 2010.

Poland was a net importer both in total transport services and in road transport services. However, since 2002 Poland became the net exporter in freight road transport services. On the other hand, since 2004 Poland has been a net importer of air freight transport services. In sea freight transport services Poland became a net importer in 2006 and this status changed only in 2009 due to the global financial crisis when value of imported services in all of the transport sub-sectors decreased substantially. In terms of the rail sector Poland remained a net exporter until 2010. For total rail transport services trade balance became negative in 2010.

The data on bilateral trade flows in transport services are available for Poland since 2004. The majority of transportation services imported by Poland was supplied by European countries. The share remained quite stable since the EU accession and was close to 83 percent (Figure 5). The changes in the geographic export pattern were more dynamic in the period. As Figure 6 shows, the total share of services exported to Europe rose from 85 percent in 2004 to over 90 percent in 2010. The second largest continental trade partner was America, followed by Asia. Although the trade share of services imported from Asia remained stable during the last decade, the trade share of America was constantly decreasing in favour of trade with European countries.

Germany remained the most important country among Poland's trade partners in transportation services. It accounted for over a quarter of total value of imports as well as of exports. The domination of Germany among trade partners is natural, as it is one of the largest neighbours with a strong and stable economy. Netherlands, France and Russian Federation were among the largest receivers of Polish transportation services. The United States of America was 7th largest receiver of Polish exports in 2010. On the other hand, the US was the second largest supplier, after Germany, of transportation services to Poland in 2010.

Figure 6.1 Value of transport services exports in Turkey (million US Dollar)

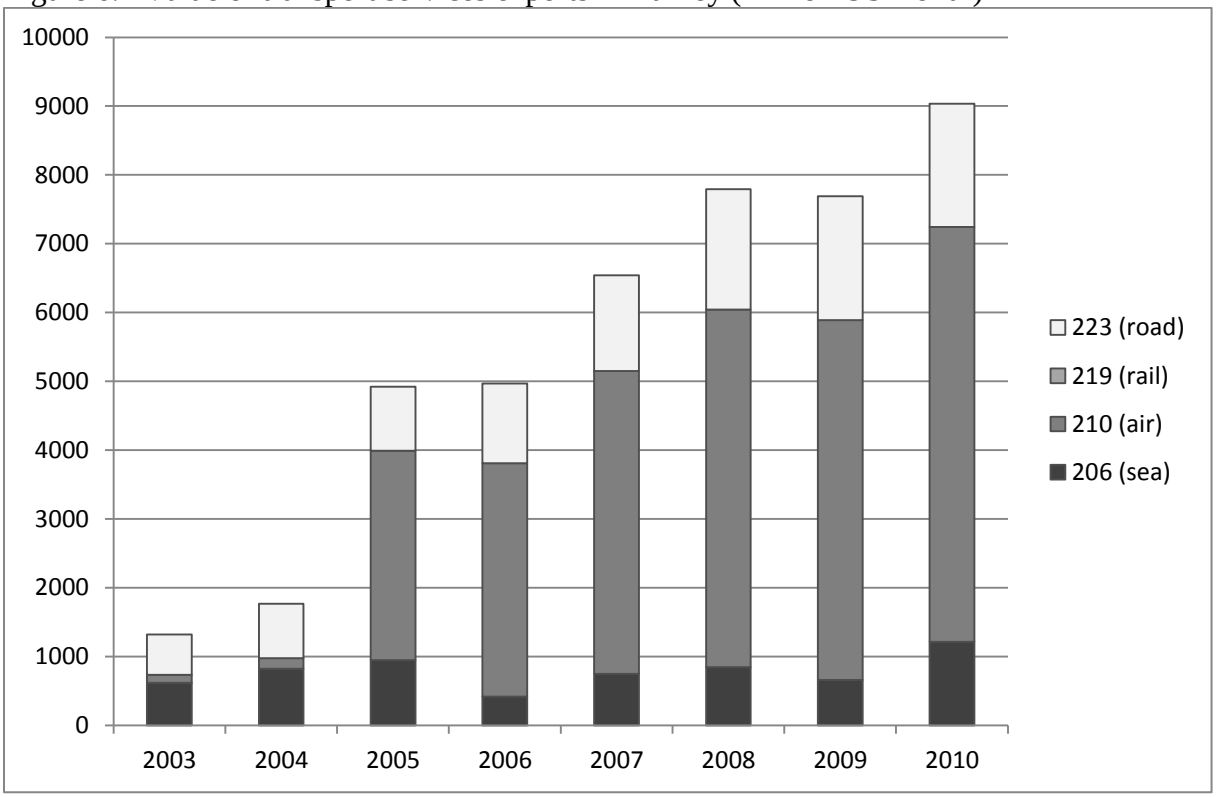


Figure 6.2 Value of transport services imports in Turkey (million US Dollar)

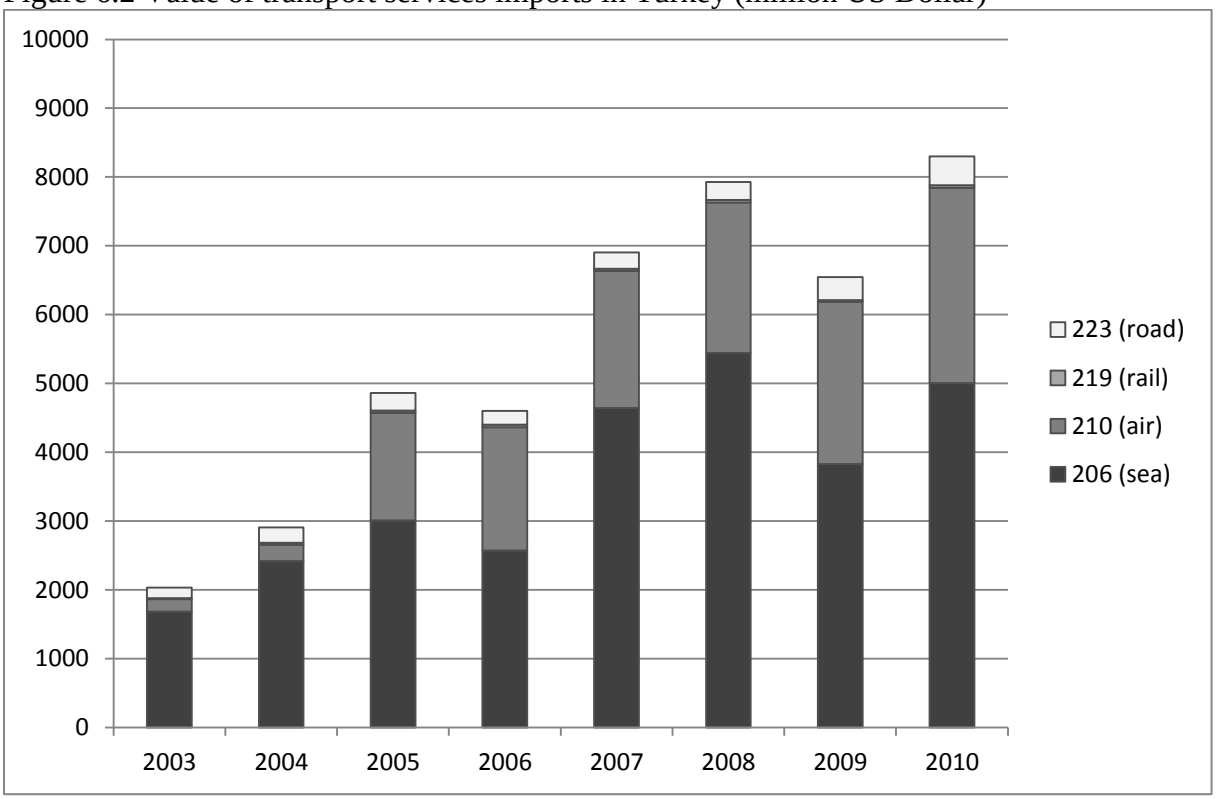


Figure 6.3 Value of transport services exports in Poland (US million Dollar)

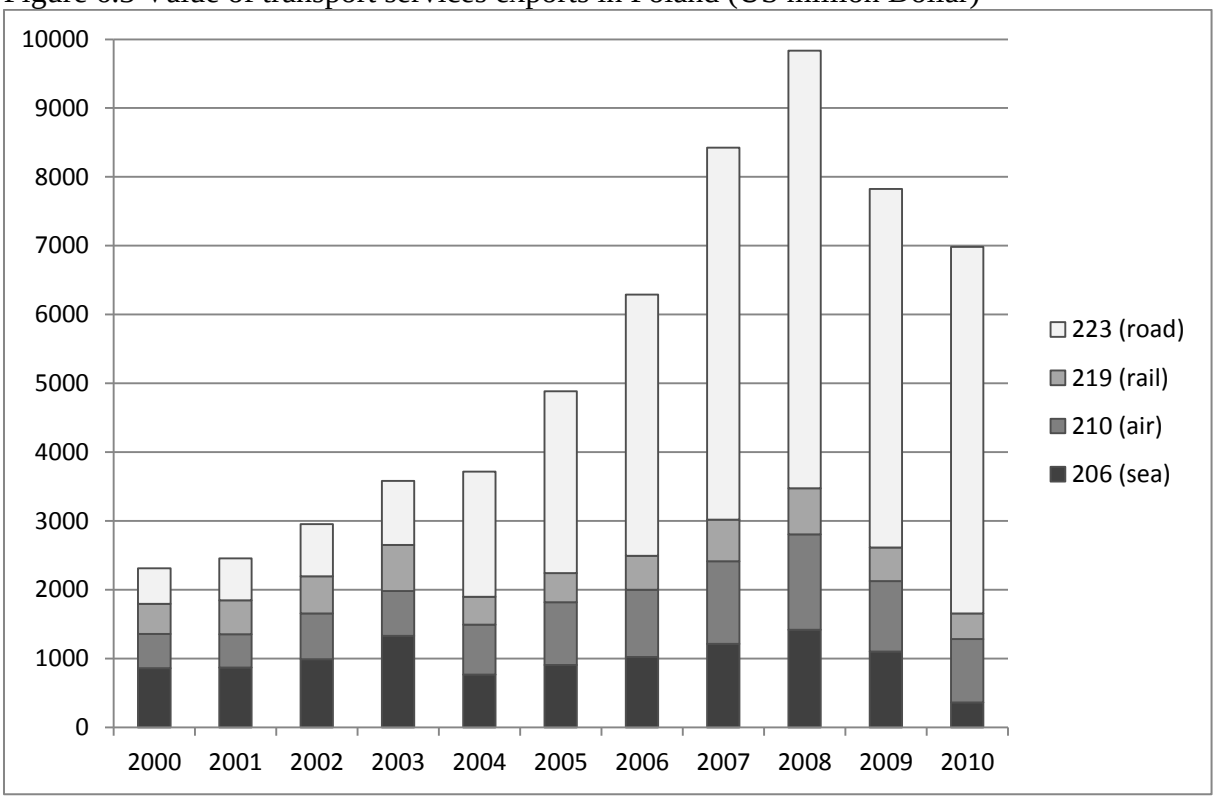


Figure 6.4 Value of transport services imported by Poland (US Dollar million)

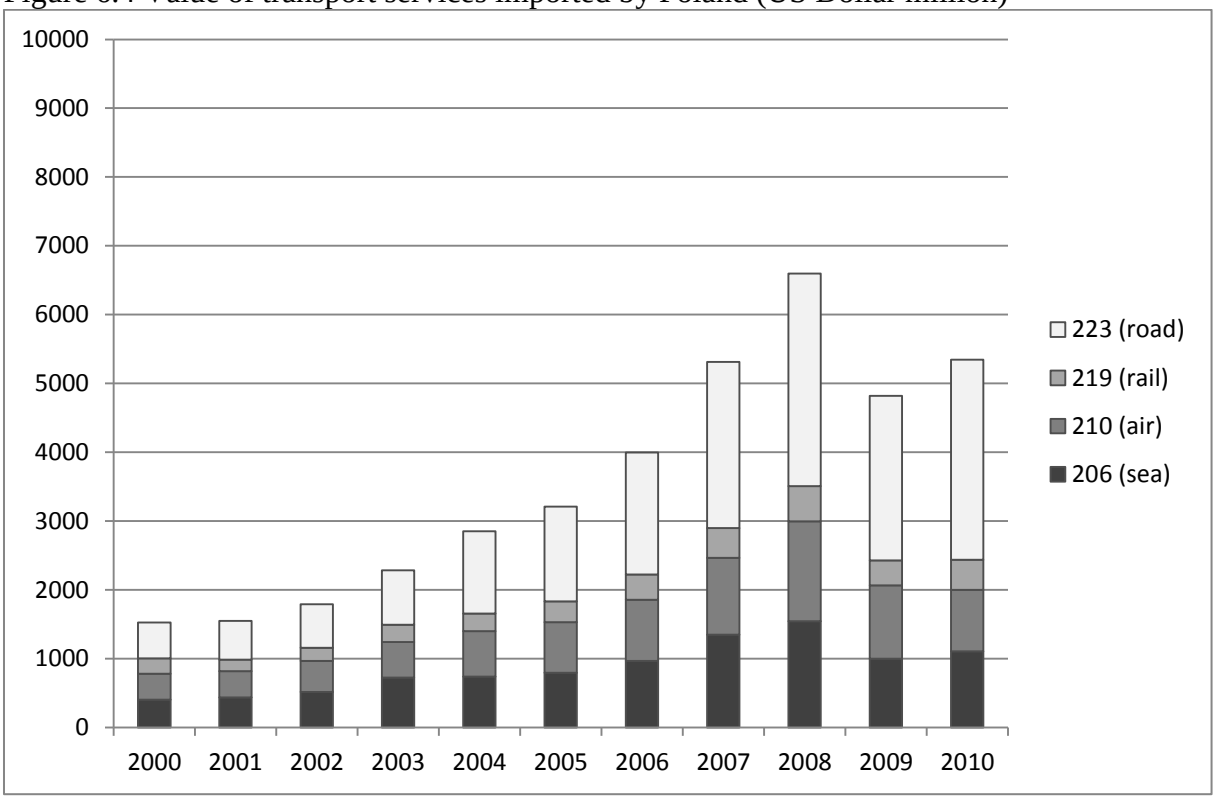


Figure 6.5 Supplying markets for transport services imported by Poland

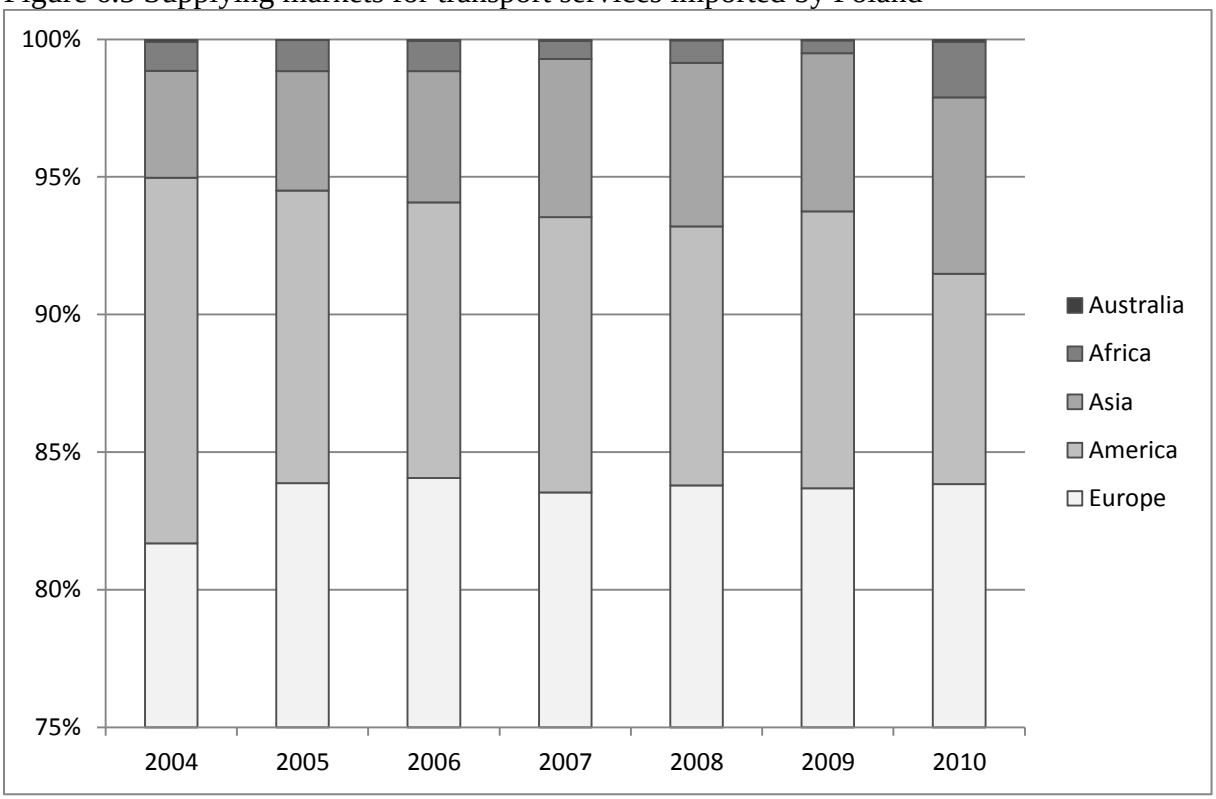
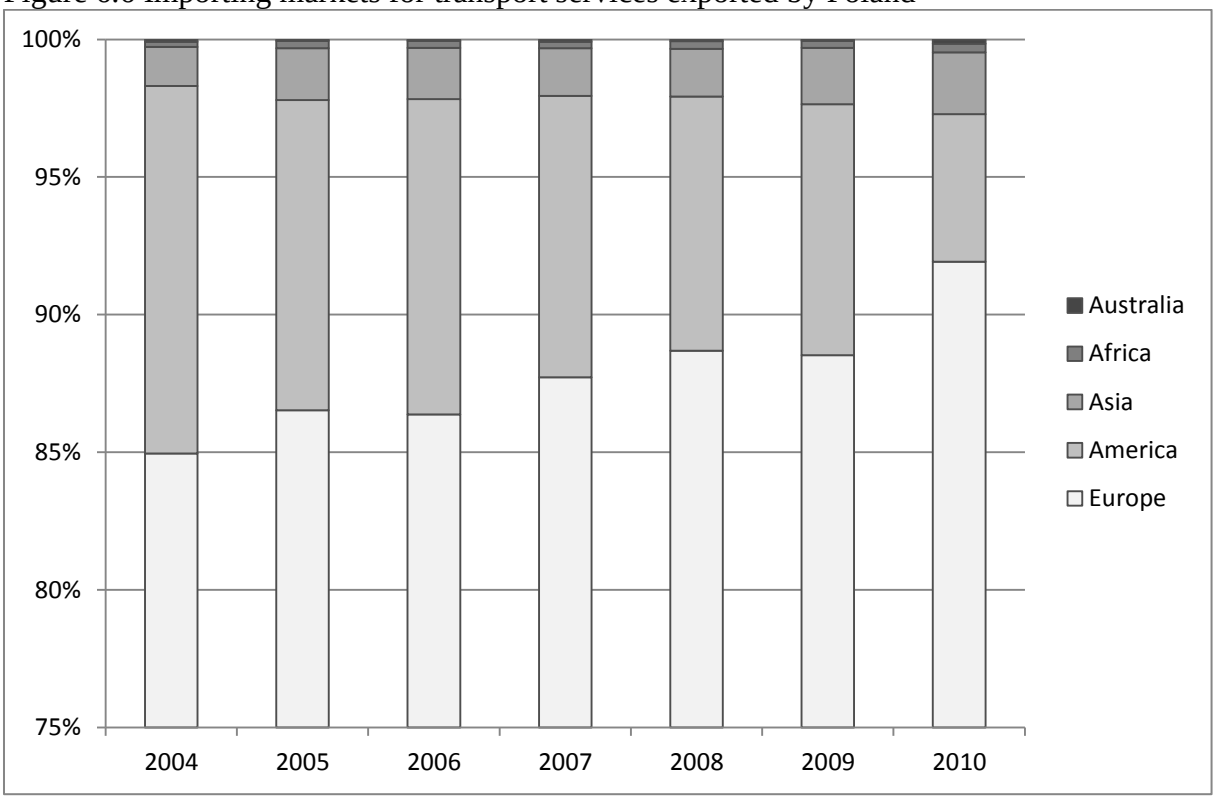


Figure 6.6 Importing markets for transport services exported by Poland



European countries are most important trade partners for Poland in all transportation services' subsectors. The domination of European trade partners is especially strong for rail and road transportation services; it is less pronounced in case of air and maritime transportation services. The trade share of European countries in value of road transportation services imported by Poland remains stable at the level of 92 percent, while rail transportation services supplied by European countries constitute over 93 percent of total value of such imports. Since Polish EU accession, Europe was receiving over 95 percent of all rail transportation services exported from Poland and 94 -96 percent of all road transportation services exports.

In case of maritime transport services Europe was the source of 69-82 percent of Polish imports. Germany was the largest supplier of such services (up to 24 percent of imports). The second largest supplier – Denmark, is gaining importance and in 2010 it supplied over 14 percent of all Polish imports in maritime transport services. Similar pattern is observed in maritime freight transport services imported by Poland. In the case of maritime services, Switzerland was the second largest receiver of Poland's services in 2010. The significance of European countries was the least in terms of air transport services. Only 56 percent to 69 percent of Polish exports were delivered to European countries. The USA was receiving the largest share of Polish air transport services – 22-29 percent, though in 2010 this share dropped down to 15 percent. 62 percent of air freight transport relies on European customers. Also the importance of America as trade partner is decreasing. Its share decreased to 20 percent in 2010. Throughout the first decade of the XXIst century the share of Asian countries was gradually increasing from 3 percent in 2004 to over 17 percent in 2010. Asian countries became second largest suppliers of air freight transport services to Poland.

The gradual evolution of Poland's pattern in services' trade is quite pronounced. We observe the decreasing share of rail and maritime services at the expense of road and air services. European countries were and are the key partners in Poland's trade in the road and rail transport services.

2. FIRM LEVEL ANALYSIS OF THE TRANSPORT SECTOR IN POLAND

The aim of this section is to provide a comprehensive picture of the enterprises active in the transport sectors across selected EU countries with focus on Poland. For this purpose, we exploit the Orbis database by Bureau Van Dijk that collects balance sheet data for 90 million companies around the world, together with firm ownership characteristics. The analysis is performed on a sample of 169,394 transportation firms, 3,299 operating in Poland, for which we have financial data for the period from 2002 to 2011. We discard firms for which we do not have observations for the operating turnover in the period of analysis and we exclude from our study firms active in transportation via pipelines (NACE 495) and the few firms active in the aerospace industry (NACE 512). The analysis covers also firms from Czech Republic, France, Germany, Hungary, Italy, Poland, Romania, Slovak Republic, and Spain.

In Table 6.1, we show our sample coverage by main industries, confronting our data with census official figures retrieved from Structural Business Statistics by Eurostat, available only until year 2009. An overwhelming majority of transportation firms is active in the road (freight or passenger) industry. However, most of activities in this industry are presumably micro-firms (taxi operations, removal services) not obliged to present balance sheet data, hence we don't have information on their financial accounts and we are able to retrieve only about 25 percent of the whole industry. Similarly for the maritime transportation industry, we cover about 40 percent of the recorded activities. On the other hand, our sample is able to

catch about 70 percent of recorded airline companies and 80 percent of recorded rail companies in 2009. Our analysis is based on several performance variables that are related to firm efficiency and competitive environment, and we analyze price cost margins and labor productivity.

Table 6.1: Sample coverage, comparison with Eurostat census in 2009

		Sample data		Eurostat census	
NACE rev. 2	Industry	Freq,	%	Freq.	%
49	Land transport	165,085	97.46	659,611	98.56
	of which:				
	Rail transport	407	0.24	505	0.08
	Road transport	164,678	97.22	659,106	98.49
50	Maritime transport	3,221	1.90	8,075	1.21
51	Air transport	1,088	0.64	1,538	0.23
	Total	169,394	100	669,224	100

2.1 General firm characteristics

Firms in transport sectors in the analyzed countries differ in size, both across sectors and geographically. Table 6.2 shows that while firms in transport sectors employ 34 employees on average, their size is larger in selected EU15 countries than in the analyzed CEECs. In Poland, however they are markedly larger, with an average of 155 employees.

Sectoral composition of enterprises reveals the source of such large discrepancies. In passenger rail transport, the average employment stood at over 10 thousand. Polish railways sector employed twice as many employees as the average among all the analyzed countries and almost 3 times the average among the CEEC. These numbers reflect an oligopolistic structure of the market, and relatively moderate results of downsizing processes reached by Polish railway companies, that emerged from the incumbent state company (PKP). Such differences are not found in freight rail transport, where firm size is markedly smaller.

In comparison to other transport sectors, enterprises in rail transport are visibly larger. On the other extreme of the spectrum is the freight road transport, where the mean of the enterprise size in the analyzed countries is 15 employees. The fragmentation in the transport sector is also suggested by the sample sizes – 75 percent of all analyzed observations are found in the freight road transport sector. While the mean estimate for Poland suggests that even in road transport, the average enterprise size is larger than in the EU and CEEC.

Sea transport companies are relatively scarce in Poland and in the CEEC, and in both cases, they are visibly smaller than in the analyzed EU15 members. A similar picture is found for air transport companies. While some of the analyzed EU15 members, such as France and Germany, operate large airlines, the air transport enterprises in Poland and other CEEC are characterized by smaller size, and they are relatively less numerous.

Table 6.2 showing the comparison of simple labor productivity (value added per employee), reveals rather striking differences between enterprises in the CEEC and the EU15. The average value added per employee in the overall sample stand at 358 thousand USD. The average productivity among the selected EU15 is over 50 percent higher, while the average among the CEEC is over 5 times lower. In Poland, the average productivity in the analyzed period is 91 thousand USD. While highest productivities in Poland are recorded in air transport and sea freight transport, the lowest productivities are found in rail transport followed by road freight transport.

Firm size together with the degree of liberalization affects the competitive environment where firms operate. In order to assess the degree of competitive pressure, we calculated price-cost margin for each firm according to the following formula:

$$PCM = \frac{turnover - costs\ of\ materials - costs\ of\ employees}{turnover}$$

We assume here that cost of materials and cost of employment are both variable costs and therefore such that: $PCM = \frac{Pq-Cq}{Pq} = \frac{P-C}{P}$, proxies the Lerner index. Indeed, Lerner (1934) demonstrated that this simple index is equivalent to the negative inverse of the perceived price elasticity of demand for the firms' own product. PCM can vary from zero to one. When PCM equals zero, it indicates that the firm has no market power at all approaching the perfectly competitive solution. Lower level of a firm-level *PCM* reflects in principle a higher level of competitive pressure, with firms less able to raise profits.

Analysis of PCMs at the firm level has to be performed with caution. In the case of transportation, firm's barriers to entry and strong economies of scale have to be taken into account, and thus a perfectly competitive market structure is not the rule. Rather, monopolistic competition or even oligopolies can allow firms to benefit from a consistent market power mirrored in a higher share of profits. Moreover, the necessity to break-even in presence of high fixed costs, especially in the case of airline and railway companies, can imply a threshold for economies of scale that can be covered only by a higher markup. This can reflect a lower bound for PCM for firms that have to sustain a relatively high portion of fixed costs in their daily operations and the existence of such technological barriers can prevent the entry of smaller firms, allowing incumbent firms to enjoy a certain degree of market power. Indeed, from our data we note that overall PCM is on average 0.45, a threshold that we consider relatively high if confronted for example with firms in the manufacturing industries. This overall average is relatively consistent across countries and is even higher among CEEC. However, a more detailed sectoral comparison of PCMs reveals in each sector, except the road transport, that PCMs are higher in the CEEC than in the selected EU15 countries. The discrepancy between the average for all transportation firms and the analyzed transport sector stems mainly from the relatively fragmented and competitive road passenger sector in the CEEC, where PCMs tend to be lower than in the EU15.

Figure 6.7 shows the distribution of PCMs, revealing their similarity across analyzed country-industry pairs. PCM's in air transportation are higher than in other sectors, while PCMs in rail and road tend to be lower. While there is not so much variation in the PCMs between 2002 and 2010 in the analyzed country groups, in Poland there is a marked increase in PCMs in the road transportation sector, indicating some industrial consolidation processes. While in road transportations the spread of PCMs has fallen over time, the reverse process can be found in other transportation sectors.

Figure 6.7: Distribution of price-cost margins

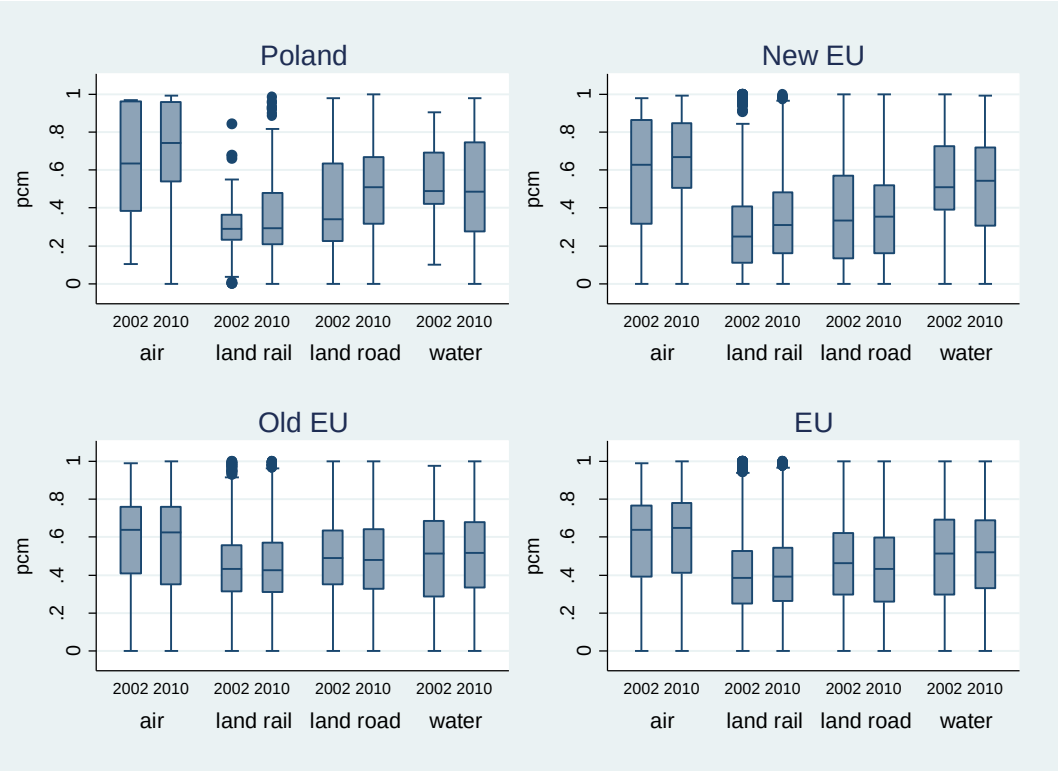


Figure 6.8 Minimum Efficiency Scale by industry, our estimate from sample data

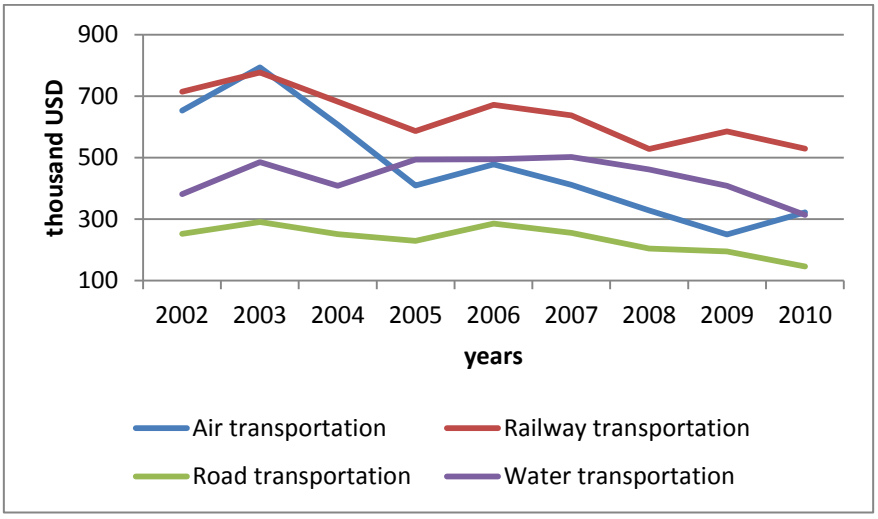


Table 6.2: General firm characteristics

Firm size	Old and New Members			Poland
	CEECs	Old EU	Total	
Passenger rail transport	3,657	6,272	5,309	10,247
Freight rail transport	267	102	222	265
Road freight transport	10	17	15	53
Passenger sea transport	22	38	37	43
Freight sea transport	38	240	214	63
Passenger air transport	153	1,180	967	147
Freight air transport	22	79	63	38
Total	21	43	34	155
Sample size				
Passenger rail transport	224	384	608	40
Freight rail transport	739	282	1,021	216
Road freight transport	152,436	272,410	424,846	6,135
Passenger sea transport	175	2,183	2,358	64
Freight sea transport	324	2,185	2,509	103
Passenger air transport	617	2,365	2,982	120
Freight air transport	181	455	636	23
Total	213,250	354,099	567,349	9,148
Labor productivity (thousand US $)				
Passenger rail transport	199	729	515	94
Freight rail transport	215	526	288	87
Road freight transport	35	476	304	104
Passenger sea transport	139	870	804	88
Freight sea transport	221	11,384	9,495	238
Passenger air transport	348	4,442	3,512	623
Freight air transport	253	6,763	4,800	189
Total	31	598	358	91
Sample size when evaluatinglabor productivity				
Total	173,533	236,018	409,551	7,081
Price cost margin (%)				
Passenger rail transport	57.4	53.8	55.3	54.1
Freight rail transport	60.0	45.6	56.5	52.8
Road freight transport	40.7	48.5	45.8	52.7
Passenger sea transport	54.8	50.9	51.3	50.5
Freight sea transport	58.1	46.5	48.2	52.4
Passenger air transport	59.8	57.5	58.1	66.5
Freight air transport	70.8	44.4	52.7	65.3
Total	39.8	48.5	45.3	48.1
Sample size when evaluating price cost margin				
Total	166,058	282,612	448,670	10,550

To better understand the changing competitive environment, we look at the minimum efficiency scale (MES) by main industries, adopting an indicator first proposed by Comanor and Wilson (1967) assuming that the distribution of firm size in a sector reflects the presence of (technological or legal) barriers to entry. According to this index, once the firms in our sample have been ordered by size in each country-industry pair, we are able to calculate the average sales of the largest firms accounting for the first 50 percent of total sales. This size threshold can be assumed to represent the minimum efficiency scale specific for each sector. In Figure 6.8, we report the dynamics of MES separately for air, rail, road and water transportation industries for the period of the analysis.

A strongly decreasing minimum efficiency scale (MES) for the airline companies is in line with what we expected. The sector has seen an entry of a discrete amount of low-cost firms that have benefited from lower technological barriers to entry and the competitive pressure has risen considerably. On the other hand, the highest minimum efficiency scale can be retrieved for railway companies, for which the fixed investment in infrastructure is still very important and it can impede the entry of smaller firms. Water transportation shows stability from the beginning to the end of the period, while not surprisingly road transport is the industry where minimum efficiency scale is lowest and weakly decreasing over the period. In this latter case, however, since our sample does not include micro-firms, which do not report balance sheet data, and many transportation firms in the road sector are usually micro-firms, we cannot exclude the conclusion that the actual minimum efficiency scale (MES) is even lower than our estimate.

2.2 Export Activity in the Polish Transport Sector

Our empirical analysis on export performance is based on a sample provided by a survey called "Business Environment and Enterprise Performance Survey" (BEEPS) collected by the World Bank and the European Bank for Reconstruction and Development in the post-communist countries located in Europe and Central Asia and Turkey. The main objective of the BEEPS was to obtain feedback from enterprises in the aforementioned countries on the state of the private sector. The survey examined the quality of the business environment with some special focus on the relationship between firms and public authorities. It covers both manufacturing and services sectors and is representative of the variety of firms according to sector and location within each country. The data were collected for years 2002, 2005, and 2009.

In order to present the relationship between company's export propensity and a range of specific characteristics of the enterprise and of its economic environment, we adopt an empirical strategy based on existing literature. The main estimation equation is specified as a probit model:

$$Y^*_{ikc} = \theta_1 X_i + \theta_2 X_k + \theta_3 X_c + \varepsilon_{ikc}$$

where $X = \{X_i, X_k, X_c\}$ *is a set of* firm-level (i), sector-level (k) and country-level (c) characteristics potentially affecting export propensity (Y). θ is the vector of parameters we are interested to be estimated and ε_{ikc} is the error term assumed to be normally distributed with a zero mean. Let Y_{ikc} be the level of exports of firm i in sector k within the country c. The dependent variable Y^*_{ikc} is a dummy variable indicating the sign of firm-level export turnover such that:

$$Y_{ikc}^{*} = \begin{cases} 1 \; if \; Y_{ikc} > 0 \\ 0 \; if \; Y_{ikc} = 0 \end{cases}$$

and our main equation can be interpreted in terms of probability that a company exports as a function of firm, industry and country features: $Pr(Y_{ikc}=1|X)=\Phi(\theta X)$

Our study focuses on the investigation of the main determinants of company's export activity, with special interest granted to transport sector and its specific characteristics. The export activity in the model is defined as a situation when at least one percent of firm's total sales revenue comes from the sales made abroad.

Thus, in our analysis the probability of exporting is related to the explanatory variables on firm, sector and country characteristics. These variables, listed in Appendix Table 6.1, are based on the survey questions regarding identification of company, sector activity, legal and economic status and size of the firm. Our core variable determining export status at enterprise level is labour productivity, as suggested by the recent trade theories postulating self-selection of firms into export activity. Among other company-level controls, we include firm size measured by the number of full-time employees (size), the company's experience proxied by the number of years it has been operating on the market (age), the ownership (b3), employment (ECAq69), structure of the company and the company's ability to supply high quality (certification1) and diversified (new_product) products. Besides firm-level controls, factors describing the business environment were included, and among them a binary variable describing whether the court system is regarded by the market as an obstacle to firms' activities (courts1). The constraint imposed by the fiscal administration is proxied by a binary variable describing the perceived difficulties with the tax administration (tax1). Further, market access is proxied by perceived obstacles in terms of business licensing and permits (permits1); other variables measure the impact on export activity of the perceived crime (robbery) and corruption (corruption1) level.

Before analysing the determinants of export performance let us present some of transport sector firms' characteristics. Table 6.3 reveals that services on average rely on a higher share of well-educated labour force as compared to the manufacturing sector. However, the average percentage of skilled workers in transportation is significantly lower than other service firms, but still significantly above the average of manufacturing firms. On the other hand the transport services sector shows the highest ownership concentration as measured by the average percentage of the establishment owned by the largest owner.

Table 6.3: Percentage of full-time skilled workers and ownership structure by main activities

	Transport sector	Other services	Manufacturing	Total
	Mean	Mean	Mean	Mean
Employees with university degree to all employees	26%	34%	20%	26%
Percentage of establishment owned by the largest owner	80%	76%	73%	75%

Source: own calculations based on the BEEPS data.

The key characteristics of transport firms operating in Poland, in comparison to other countries and sectors are shown in Table 6.4. It follows from the table that the surveyed service companies are relatively young. Polish companies tend to be older, regardless of the

specific sub-sector in which they operate. The same holds for transport sector companies, which in Poland are on average 7 years older. Furthermore, the Table 6.4 indicates that the perceived problems with corruption do not vary significantly among sectors and countries. In general, companies dealing with services report such difficulties less frequently than manufacturing firms. The transport sector in Poland is on average the slightly more affected by such behaviour. The other key characteristics - analysed in majority of empirical studies - is the size of a firm. The data for this variable is shown in the last row of Table 6.4. As shown in the Table 6.4 the transport sector is characterized by the largest companies in all countries analysed in the BEEPS data base. The same size structure prevails in Poland as well.

Activity in the transport services sector often requires specific licences. The process of acquiring a licence and any potential difficulties that may occur in this area, may have impact on company's performance. The Table 6.4 shows the percentage of companies declaring that obtaining necessary permits is an obstacle to standard business activity. Those data indicate that the problem is in fact more common in case of transport services sector as compared to other services. The transport companies operating in Poland report that such obstacles occur slightly more often in comparison to other countries.

A larger variety of goods and services should increase consumers' demand in accordance with modern trade theories. Therefore, a company being able to introduce any new products within the previous year can be regarded as a more innovative and better adapted to market demand. The Table 6.4 shows the percentage of companies declaring to have refreshed their offer in this way. The manufacturing sector is more focused on such activity. On the other hand, the services offered are much more often tailor cut and adjusted to the individual customer needs, and therefore it may be more difficult to define a concept of a "new product" in services. Another indicator of company's orientation towards customer satisfaction is the possession of quality certificates confirming the standard of offered goods or services. Table 6.4 shows that service sector companies use certification less frequently in in comparison to manufacturing firms. In particular, the transport sector companies seem to be the least interested in obtaining such certificates.

We applied the above described probit model to the BEEPS data in order to analyse the determinants of export performance of transport firms. The baseline results of the estimation of export propensities, are presented in the following Table 6.5. They are based on the analysis of firms when the sample is constrained to companies operating only in the transport sector in all CEE countries. Unfortunately, due to a limited number of observations, it was impossible to make the same estimations exclusively for Polish transport firms. Therefore in the Appendix Table 6.2 we present the results obtained for all firms in CEE countries (including manufacturing firms as well), while Appendix Table 6.3 shows estimations for all Polish companies. The tables presented in the Appendix serve as a reference point for benchmark estimations.

Table 6.4: Characteristics of BEEPs data

	Poland	Other countries	Total
Average age of the company			
Transport sector	24.55	17.48	18.67
Other services	16.15	13.89	14.14
Manufacturing	19.2	18.54	18.6
Total	18.41	16.7	16.89
Establishments reporting problems with corruption (%)			
Transport sector	71	61	63
Other services	64	65	64
Manufacturing	66	67	67
Total	65	66	66
Establishments reporting problems with obtaining permits (%)			
Transport sector	73	64	66
Other services	48	59	57
Manufacturing	56	61	60
Total	54	60	59
Establishments that have introduced a new product within last year (%)			
Transport sector	31	41	39
Other services	31	37	36
Manufacturing	54	62	61
Total	43	52	51
Establishments declaring to have a quality certificate (%)			
Transport sector	7	12	11
Other services	13	13	13
Manufacturing	21	34	32
Total	17	25	24
Average size of the company			
Transport sector	234	316	302
Other services	74	83	82
Manufacturing	63	176	165
Total	82	148	140

Source: own calculations based on the BEEPS data

The first column of the following Table 6.5 presents regression results and corresponds to a specification where each of the above variables is included, while the remaining five columns show results of probit regression with only one of the 5 variables to account for non-zero correlation between them.

Table 6.5 Export propensity, transport sector, all countries

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
property	-0.227***	-0.218***	-0.221***	-0.209**	-0.206***	-0.231***
	(0.0866)	(0.0836)	(0.0805)	(0.0832)	(0.0801)	(0.0820)
Firm-age	0.0161	0.0223	0.0236	0.0257	0.0174	0.0255
	(0.0334)	(0.0327)	(0.0313)	(0.0321)	(0.0313)	(0.0317)
Self-financing	-0.0697	-0.0766	-0.0938*	-0.0886	-0.0864	-0.0658
	(0.0587)	(0.0568)	(0.0541)	(0.0555)	(0.0539)	(0.0548)
size==2	-0.0256	-0.0456	-0.0569	-0.0502	-0.0685	-0.0478
	(0.0649)	(0.0616)	(0.0590)	(0.0612)	(0.0580)	(0.0596)
size==3	-0.148**	-0.143**	-0.145**	-0.175***	-0.142**	-0.145**
	(0.0664)	(0.0631)	(0.0609)	(0.0611)	(0.0597)	(0.0605)
Skilled work	0.259**	0.299***	0.271***	0.262***	0.261***	0.270***
	(0.103)	(0.0989)	(0.0938)	(0.0974)	(0.0934)	(0.0956)
importer	0.138**	0.124**	0.120**	0.124**	0.116**	0.132**
	(0.0623)	(0.0610)	(0.0570)	(0.0591)	(0.0566)	(0.0581)
productivity1	0.0232*	0.0230**	0.0264**	0.0205*	0.0263**	0.0287**
	(0.0120)	(0.0112)	(0.0112)	(0.0116)	(0.0111)	(0.0115)
Fixed_asset	0.313***	0.312***	0.303***	0.301***	0.294***	0.310***
	(0.109)	(0.111)	(0.0994)	(0.111)	(0.0956)	(0.0998)
new_product	0.0875*	0.0734	0.0884*	0.101**	0.0855*	0.100**
	(0.0498)	(0.0479)	(0.0456)	(0.0469)	(0.0454)	(0.0464)
certification1	0.188***	0.180***	0.197***	0.203***	0.194***	0.184***
	(0.0668)	(0.0628)	(0.0596)	(0.0626)	(0.0605)	(0.0609)
UE	-0.970***	-0.975***	0.0249	0.0180	0.0444	0.0368
	(0.0171)	(0.0137)	(0.341)	(0.343)	(0.339)	(0.342)
AA	-0.944***	-0.950***	0.0403	0.0345	0.0739	0.0455
	(0.0237)	(0.0196)	(0.315)	(0.316)	(0.314)	(0.315)
corruption	0.143**	0.111**				
	(0.0661)	(0.0530)				
robbery	-0.0832		-0.0501			
	(0.0556)		(0.0513)			
courts	0.0107			0.0373		
	(0.0643)			(0.0504)		
tax	0.0107				-0.00692	
	(0.0639)				(0.0518)	
permits	-0.115*					-0.0554
	(0.0596)					(0.0501)
Interactions: Poland x Institutional factors						
corruption	-0.0788	0.0868				
	(0.191)	(0.165)				
robbery	0.111		0.151			
	(0.154)		(0.134)			
courts	0.374*			0.399**		
	(0.219)			(0.176)		
tax	0.782***				0.797***	
	(0.0174)				(0.0157)	
permits	0.0834					0.0610
	(0.193)					(0.157)
Time dummies	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES
Observations	585	605	656	618	653	642
Log likelihood	-323.5	-343.3	-372.1	-352.4	-367.6	-363.8
Pseudo R2	0.202	0.181	0.179	0.177	0.186	0.181

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The estimates of the coefficients of enterprise characteristics are in most cases in line with intuition. This is firstly true for labour productivity that has a relatively robust, positive impact on probability of exporting. This result is in line with the literature on heterogeneous firms and international trade.

At the same time, in the whole sample of BEEPS firms, larger enterprises on average have a higher probability of exporting[177]. In the case of transport sector this result is not confirmed and indicates that the larger the company, the less likely it is to take up export activity. This may stem from the fact that some of the large transport companies in analysed countries are not necessarily export oriented – as their natural transport activity is focused on the domestic market, which is the case in e.g. public transportation. Moreover, while age of firms is usually expected to be positively related to productivity and exporting, this does not have to be the case in the case of transport industries in transition countries, where restructuring of former state-owned enterprises is still on-going. On the other hand human capital (skilled_work) seems to be important for export activity as employees' education does have a positive impact on that variable. This result is in line with other empirical studies and estimations for all firms, presented in Appendix Table 6.2.

Quality certificates and introduction of new products are among the factors that tend to increase the probability to export, which is also in line with the intuition. Quality certificates are meant to reduce information asymmetry and therefore costs of trade, while introduction of new products may be perceived as ways to gain new markets and increase market share in existing markets. Similar intuition can be provided for the positive effect of firm expansion.

While it is impossible in the current dataset to analyse other modes of internationalization, it seems that a contact with foreign markets through imports does improve the probability of export. It can be due to the fact that for a firm operating in a global value chain undertaking exports and imports is an obvious mode of activity. On the other hand importing reduces information asymmetry thanks to a network of business contacts and can reduce the costs of inputs being used for exports.

On the other hand, although the results of the estimations are not robust in this aspect, one can observe that in most cases, firms that rely on internal funding tend to export less frequently. This may be due to the fact that subsidiaries of international corporations, often relying on external funding, engage in exporting. The estimation results suggest also that higher concentration of company's assets in possession of the largest owner can have a negative influence on the decision to start export activity. In both of the above mentioned aspects, the impact of self-financing and the structure of firm's ownership, the analysis conducted for Polish establishments reveals contrary relation to export activity, although the obtained outcomes are not significant.

As far as institutional environment is concerned, we note that some of them are not statistically significant. For example the variable reflecting crime rate (robbery) is important, and the estimations for all firms (see Appendix Table 6.2) indicate that higher crime rate is detrimental to exporting activity. But these outcomes are not robust and they are not

[177] The estimation made for all firms and countries (more than 9 thousand observations) Appendix Table 6.2 and for all Polish firms (about 500 observations) Appendix Table A.3 confirmed a positive impact of size of firms' export propensity. See Appendix.

statistically significant for transport sector. On the other hand, while the perceived corruption does not seem to negatively affect the exporting activity of all firms, it seems that exporters in the transport sector tend to perceive more problems with corruption than non-exporters. Similarly, while perceived difficulties in obtaining permits – in general - do not affect the probability of exporting, they do have significant negative impact in the case of the transport sector. Furthermore, in the case of Poland the exporting firms operating in transport services tend to observe a more complicated taxation administration and less efficient court system as compared to the non-exporting companies. This finding is well pronounced in in all other industries of Polish economy as well.

Finally, a membership of a CEE country in the EU or in the European Agreement can have a negative impact on export probability of firms that are active in the transport sector. But this surprising result is not statistically robust across different model specifications and is not confirmed in the estimations covering all firms in CEE countries (Appendix Table 6.2).

3. FIRM LEVEL ANALYSIS OF THE TRANSPORT SECTOR IN TURKEY

For the firm-level analysis of the transport sector in Turkey, our main data source is Annual Industry and Service Statistics database, based on surveys covering the enterprises in the industry and services sector, carried out by Turkish Statistical Institute (TURKSTAT). Our sample covers the period of 2003-2008. When conducting the 2008 survey, the latest in our sample, TURKSTAT visited 100,152 enterprises using the full enumeration method for the enterprises having 20+ employees, and the sampling method for the enterprises having 1-19 employees. The database contains information on employment, wages, investment, value added, turnover and foreign ownership.[178] In addition, firms were asked to report whenever they export and/or import services. NACE Rev. 1.1 has been used as the classification of economic activity.[179] Our analysis is based on the following subsectors of transportation: rail (60.10), road (60.24), maritime (61), air transportation (62), and logistics (63.1+63.2+63.4).

3.1 General firm characteristics

Table 6.6 presents the characteristics of enterprises in different transportation sub-sectors for the period average of 2003-2008.[180] The summary data presented in the descriptive table cover all the firms. Employment, production value, gross value added and gross tangible investment in the tables are the aggregate figures for the sector. For the purpose of

[178] Note that in the past TURKSTAT periodically conducted Census of Industry and Business Establishments (CIBE) for all establishments, and Annual Surveys of Manufacturing Industries (ASMI) for establishments with 10 or more employees. The set of addresses used during ASMI was obtained through CIBE. In addition, every non-census year, addresses of newly opened private establishments with 10 or more employees were obtained from the chamber of industry. Since 2003 TURKSTAT conducts the Annual Survey of Industry and Services. The questionnaires used in these surveys are available from the website of TURKSTAT at www.tuik.gov.tr. Until 2006 the surveys did not include any information on foreign ownership in service sectors. The foreign ownership question has been included to the Survey in 2006.

[179] NACE is derived from the French "Nomenclature statistique des Activités économiques dans la Communauté Européenne" (Statistical Classification of Economic Activities in the European Community).

[180] Although data are available for Annual Industry and Service Statistics for the period 2003-2009 we are considering the surveys for the period 2003-2008 only. The reasons are twofold. First, during 2009 TURKSTAT switched from NACE 1.1 to NACE 2 causing comparability problems. Second, 2009 was the year when global financial crisis lead to substantial decreases in economic activity in Turkey.

comparison, the nominal variables for the period of 2003-2008 have been deflated by GDP deflator choosing 2011 as the base year. Thereafter all nominal variables have been expressed in 2011 US Dollars using the TL/$ exchange rate. Capital-labour ratio is capital per number of employees, where capital is calculated by dividing depreciation values at constant prices by the sector-specific depreciation rates[181]. Whereas the average wage is calculated as total labour cost divided by employment, labour productivity is measured as the ratio of production value to the number of employees. Foreign participation is the percent of foreign ownership to total in the sector. Finally, percent of service exporters and importers refer to the ratio of firms engaged in services export and import respectively to all of the firms in the sector.

The characteristics of the rail enterprises could not be derived from the TURKSTAT database as Turkish State Railways (TCDD) is a monopoly in railway sector and TURKSTAT refrains from giving firm level information in the cases when the number of firms in a particular sector is very small. We have therefore used the Annual Statistics prepared by TCDD.

Table 6.6 shows that road transportation sector has the highest number of enterprises among transportation sub-sectors followed by logistics, maritime, air and rail sectors. In addition, road transportation sector has the highest number of employees followed by logistics, rail, maritime and air sectors. However, when we analyse the value added figures of the transportation sub-sectors per firm, we note that air transportation has the highest value added figure per firm followed by maritime, logistics and road transportation sectors. A similar linkage appears for the employment structure. Number of employed persons per firm is very large in rail transportation sector followed by air transport, maritime transport, logistics and road transport sectors. It is interesting to note that highest wages are paid in air transport sector, followed by rail transport, maritime transport, logistics, and road transport sectors. Whereas capital-labour ratio is high in road transportation sector and the other transportation sectors have rather similar capital intensity, labour productivity is high in air transportation sector and low in the rail transportation sector. Finally, we note that foreign participation is very low in all of the transportation sectors. The above considerations reveal that the road transport and logistics sectors are competitive, whereas the rail transport sector is controlled mainly by one firm, Turkish State Railways (TCDD).

[181] The depreciation rates are obtained from the experts of the sector.

Table 6.6: Descriptive Statitics

	Turkish State Railways	Road (60.24)	Maritime (61)	Air (62.1+62.2)	Logistics (63.1+63.2+63
Number of firms	1	128,692	3,395	55	12,695
Employment	32,430	266,860	28,659	16,864	92,592
Production Value (US$)	1,637,523,581	18,423,394,923	4,980,401,494	5,310,337,805	6,930,589,051
Gross Value added (US$)	-	2,757,164,335	1,462,210,655	1,076,247,417	2,611,082,513
Average Wage (US$)	19,936	3,332	14,496	35,741	8,675
Gross Tangible Investment (US$)	390,190,802	2,104,463,000	684,613,855	291,232,170	781,294,058
Capital-Labour Ratio (US$)	124,655	498,161	137,715	110,705	123,334
Labour Productivity (US$)	50,657	69,038	173,781	314,892	74,851
Foreign Participation (%)	0	0.02	0.35	2.28	0.15
Service exporters (%)	-	1.05	7.94	58.20	5.15
Service importers (%)	-	0.09	2.76	13.24	0.14

Note: The US$ values refer in general to 2003-2008 averages. In the case of foreign participation the value is 2006-2008 average
Source: Own calculations

Analysing the characteristics of the transportation sector for each of the years over the period 2003-2008, we observe that the total number of firms in the transportation sector has increased from 92,921 in 2003 to 164,872 in 2008. However, the structure of the transportation sector did not change significantly during the time period analyzed.

Table 6.7 provides details on services exports and imports of transportation sectors. Our analysis is based on the response to the question of whether or not firms export or import services for the years 2003-2008. Thereby, we identify the firms engaged in services trade. We provide data on the number of firms that export and import services and their share in total number of the firms in the sector. We observe that almost half of the air transportation sector engages in exports in 2008, whereas the number of enterprises that engage in exports in other transportation sectors are relatively low. Considering services imports we note that firms in transportation sectors import less compared to their exports.

Table 6.7 Descriptive Statistics on Trade in Transportation Services

	Firms in Sample		Share	
	Export	Import	Export	Import
Rail	2	0	45.00	0.00
Road	1,256	83	0.96	0.06
Maritime	230	78	6.78	2.29
Air	26	6	47.27	10.61
Logistics	475	14	3.88	0.11
Total	1,989	180	1.63	0.04

Source: Own calculations

Table 6.8 and Appendix Tables 6.4 – 6.5 provide basic information on transportation service exporters and importers in Turkey for the period average of 2003-2008 and for the years 2003 and 2008 respectively. The tables show that transportation service exports and imports are rather rare activities in transportation sector. Only 1.32 percent of the enterprises engaged in either exports or imports of services in 2003-2008. In other words enterprises in transportation

sector mostly work within Turkish borders except those in rail and air transport sectors. Services trade that transportation sectors are mostly engaged in is exporting, whereas importing is rather rare. The percentage of enterprises in our sample that only imports is 0.02.

Table 6.8: Importers and Exporters of Transportation Sectors in Turkey, period average for 2003-2008

(1) Share of Firms

		Firms not engaged in international trade	Firms that only export	Firms that only import	Firms that export and import
Total		98.67	1.19	0.02	0.11
1	Rail	53.33	46.67	0.00	0.00
2	Road	99.12	0.81	0.00	0.07
3	Maritime	92.83	4.91	0.61	1.65
4	Air	64.37	24.59	0.70	10.34
5	Logistics	95.70	4.18	0.01	0.11

(2) Share of sector in Total

		Employment	Turnover	Value Added
Total		100.00	100.00	100.00
1	Rail	7.97	2.59	6.93
2	Road	60.88	51.48	33.76
3	Maritime	6.72	13.99	17.46
4	Air	3.94	14.61	12.98
5	Logistics	20.50	17.34	28.87

(3) Employment Share

		Firms not engaged in international trade	Firms that only export	Firms that only import	Firms that export and import
Total		78.72	16.52	0.07	4.69
1	Rail	16.81	83.19	0.00	0.00
2	Road	88.83	8.51	0.04	2.62
3	Maritime	65.72	26.51	0.67	7.10
4	Air	32.87	22.66	0.03	44.44
5	Logistics	80.73	13.15	0.08	6.03

(4) Value Added Share

		Firms not engaged in international trade	Firms that only export	Firms that only import	Firms that export and import
Total		61.10	26.10	0.33	12.47
1	Rail	16.98	83.02	0.00	0.00
2	Road	74.35	17.70	0.07	7.88
3	Maritime	53.84	35.47	2.10	8.59
4	Air	32.09	21.49	0.04	46.37
5	Logistics	66.86	19.67	0.10	13.37

Source: Own calculations

Second, we analyze the structure of the enterprises that engage in services trade. The picture is striking. Although only 1.32 percent of the firms engages in trade in services in 2003-2008,

these firms account for a large share of economic activity. To be precise, service traders in transportation sector account for 21.28 percent of the employment and 38.9 percent of the value added in 2003-2008. The figures provide the first signs of the large variations between services traders and non-traders of the transportation sector. A second implication of these figures is that although the percent of the firms that engage in services did not improve much in our sample the firms that trade services grew in size significantly higher than the non-trader firms.

Panel 2 of Table 6.8 shows that road transportation sector has the highest employment and value added among the transportation sectors and that only less than 1 percent of the sector engages in services trade during the 2003-2008 period. However, around 11 percent of the employees in road transportation sector work in enterprises that engage in services trade. Likewise 25.65 percent of the value added comes from the enterprises that engage in international services trade in road transportation sector.

Logistic firms that trade in services have a similar structure as road transportation sector. Firms either export or import, which is 4 percent of the firms in logistics. They account for 33.14 percent of the value added and 19.27 percent of the employment. Similarly around 7 percent of the firms in maritime sector engage in trade. These firms account for a large share of the sector with 34.28 percent of employment and 46.16 percent of value added in 2003-2008 period.

Air transportation sector is different among the transportation sectors as half of the sector engages in trade. The indicators for this sector show that only 32.87 percent of the employment and 32.09 percent of the value added belong to non-traders in 2003-2008. In other words, 67.91 percent of the value added comes from firms that engage in trade in services.[182]

3.2 Determinants of Trade in Transportation Services

To study the determinants of trade in transportation services we consider the variables derived from Annual Industry and Service Statistics database of TURKSTAT and explained in the previous section. Here, we include firms with 20+ employees as the data for them are collected using full enumeration method, whereas the data for firms with less than 20 employees are based on sampling method.

Export decision is a binary variable that takes the value 1 if the firm is exporting and 0 otherwise. Exporters-only, importers-only, importers and exporters of services, and non-traders are dummy variables that take the value 1 if the firm is in the specified category and 0 otherwise. Employment, turnover, gross-value added and production are derived by deflating the nominal variables using GDP deflator in 2003 prices. Labor productivity is calculated as the ratio of real production to the number of employees. Large and medium are dummies used as a proxy to firm size. Large takes the value 1 if the number of employees of the firm is greater than 99 and takes 0 otherwise. Similarly, the variable medium takes the value 1 if the number of employees of the firm is between 50 and 99, and takes the value 0 otherwise. We assume that firms with employees between 20 and 50 are small. Capital labor ratio is capital per employee, where capital is obtained again by dividing depreciation figures to sector

[182] For basic information for the years 2003 and 2008 see Appendix Tables 6.4 – 6.5.

specific depreciation rates and also the GDP deflator. Nominal wage expenditure figures are deflated by GDP deflator. They are then divided to the number of employees in order to obtain the real average wage rate. All of the variables used in the regression are in logarithmic form except those denoting export decisions, large firms, medium size firms, and the foreign participation ratio.

We analyse differences between service traders and non-traders using descriptive regressions for the four groups of firms: exporters-only, importers-only, importers and exporters of services, and non-traders. We regress firm characteristics such as employment, turnover, value added and capital/labour ratio on dummy variables for these four categories, using non-transport service traders as the excluded category and the results are presented in Table 6.9A and B. Panel 1 of Table 6.9A presents the results of regressions, Panel 2 of Table 6.9A presents regressions with sector dummies, and Panel 1 and Panel 2 of Table 6.9B present regression results with time dummies and both sector and time dummies, respectively.

Table 6.9A and 6.9.B show that exporters and importers of services are larger in terms of employment. However, comparing firms that only import and both export and import, we observe that importers-only firms have higher turnover and gross value added, pay higher wages, and are more capital intensive and labour is more productive compared to transport service traders. When we compare exporters-only and importers-only, we observe that firms that only import but not export have higher turnover, value added and labour productivity. Importers-only firms are also more capital intensive. Moreover, firms with more foreign involvement are in the category of importers-only.

We estimate probit regressions to determine the firm characteristics that have an impact on export decision. Table 6.10 presents the baseline results of regressions of the export decision on various characteristics of the transport sector firms. Our results suggest that labour productivity is positively significant in all the regressions, consistent with the previous studies. As a proxy to the firm size, we include large and medium dummies to the regressions. In all the regressions firm size appears to be positive and significant. Moreover, the coefficient of large is greater than the coefficient of the variable medium indicating vertical integration in transport service exports. Capital-to-labor ratio is another characteristic that affects export activity in transport sector. The coefficient of capital labor ratio is positive and significant in all of the regressions. We conclude that exporting firms are capital intensive. Foreign participation ratio is another variable included in the regressions. However, this variable is available for the period after 2006. Therefore, one should be cautious when comparing regressions with and without foreign participation variable because of different samples. The results suggest that firms with foreign participation involve in export activity more than the domestic firms. Previous studies do not have a consensus on the impact of foreign participation on export activity. Thus, it is not easy to interpret this result.

The variables that we included in our regressions are the standard ones mentioned in other studies such as Crozet et al. (2012). However, a caveat of our study is that we do not include human capital proxies which appear to be highly correlated with the export activity in previous studies on trade, as our data set do not carry information on the quality of human capital. We include real average wages per worker as a proxy to the quality of human capital, however it is not significant in most of the regressions. The results do not support the hypothesis that firms that pay higher wages to its workers export more. Further research on the effects of human capital on transportation service exports would be useful for the development of services trade models.

To study the sensitivity of our results, we included sector dummies in Table 6.11, time dummies in Table 6.12, and both sector and time dummies in Table 6.13. Productivity, firm size, capital-labour ratio and foreign participation dummy are still statistically significant in all the regressions, emphasizing the robustness of our results.

Next, we analyze empirically the determinants of labor productivity in the transportation sector of Turkey using firm-level data. Our aim is to focus on the impact of competition on productivity. For this purpose we model labor productivity following the recent empirical literature.[183] We include capital intensity, exports, size of the firm and foreign ownership as the indicators that affect productivity of the firms as well as competition variables which are at the core of this analysis.

Table 6.9A: Regression of firm-level variables on trading status, service traders and non-traders

	Employment	*Turnover*	*Value Added*	*Capital\Labor*	*Real Average Wages*	*Labor Productivity*	*Foreign Ownership*
Panel I: OLS Regression							
Exporter Only	0.325***	0.881***	0.732***	0.842***	0.164***	0.522***	0.031***
	(0.022)	(0.033)	(0.034)	(0.050)	(0.012)	(0.020)	(0.003)
Importer Only	0.632***	2.131***	1.744***	1.091***	0.557***	1.482***	0.082***
	(0.179)	(0.269)	(0.282)	(0.346)	(0.100)	(0.169)	(0.027)
Exporter-Importer	0.781***	1.687***	1.303***	0.963***	0.199***	0.961***	0.069***
	(0.051)	(0.077)	(0.081)	(0.091)	(0.029)	(0.048)	(0.009)
Constant	3.241***	14.36***	13.01***	7.608***	8.757***	10.87***	0.013***
	(0.012)	(0.018)	(0.019)	(0.027)	(0.007)	(0.011)	(0.001)
R-squared	0.032	0.082	0.053	0.040	0.018	0.073	0.015
Panel II: Sector fixed effects							
Exporter Only	0.350***	0.764***	0.650***	0.592***	0.113***	0.379***	0.033***
	(0.022)	(0.033)	(0.035)	(0.050)	(0.011)	(0.020)	(0.003)
Importer Only	0.689***	1.893***	1.475***	0.960***	0.381***	1.175***	0.082***
	(0.179)	(0.267)	(0.279)	(0.334)	(0.090)	(0.162)	(0.027)
Exporter-Importer	0.816***	0.077***	1.324***	0.637***	0.227***	0.798***	0.071***
	(0.052)	(0.077)	(0.081)	(0.089)	(0.026)	(0.047)	(0.009)
Constant	3.305***	14.02***	13.02***	6.837***	8.821***	10.48***	0.019***
	(0.019)	(0.029)	(0.030)	(0.041)	(0.010)	(0.017)	(0.002)
R-squared	0.040	0.103	0.078	0.111	0.202	0.147	0.016

Table reports results for LS. In brackets, we report standard errosrs clustered at the firm-level.

[183] See e.g. Ospina and Schiffbauer (2010)

Table 6.9B: Regression of firm-level variables on trading status, service traders and non-traders (continued)

	Employment	*Turnover*	*Value Added*	*Capital\Labor*	*Real Average Wages*	*Labor Productivity*	*Foreign Ownership*
Panel III: year time dummies							
Exporter Only	0.279***	0.812***	0.658***	0.776***	0.154***	0.535***	0.031***
	(0.022)	(0.033)	(0.034)	(0.051)	(0.012)	(0.021)	(0.003)
Importer Only	0.573***	2.057***	1.675***	1.129***	0.547***	1.498***	0.082***
	(0.177)	(0.267)	(0.279)	(0.343)	(0.100)	(0.169)	(0.027)
Exporter-Importer	0.836***	1.779***	1.410***	1.021***	0.214***	0.947***	0.069***
	(0.051)	(0.077)	(0.081)	(0.091)	(0.029)	(0.049)	(0.009)
Constant	3.429***	14.72***	13.41***	7.697***	8.807***	10.83***	0.014***
	(0.027)	(0.041)	(0.043)	(0.053)	(8.807)	(0.026)	(0.002)
R-squared	0.052	0.101	0.073	0.057	0.022	0.075	0.015
Panel IV: year and sector fixed effects							
Exporter Only	0.302***	0.690***	0.566***	0.526***	0.097***	0.390***	0.033***
	(0.022)	(0.033)	(0.035)	(0.051)	(0.011)	(0.020)	(0.003)
Importer Only	0.621***	1.801***	1.382***	0.986***	0.361***	1.192***	0.082***
	(0.177)	(0.264)	(0.276)	(0.331)	(0.090)	(0.162)	(0.027)
Exporter-Importer	0.873***	1.650***	1.315***	0.696***	0.249***	0.785***	0.071***
	(0.051)	(0.077)	(0.081)	(0.088)	(0.026)	(0.047)	(0.009)
Constant	3.494***	14.39***	13.44***	6.932***	8.891***	10.44***	0.020***
	(0.031)	(0.046)	(0.048)	(0.060)	(0.016)	(0.028)	(0.003)
R-squared	0.060	0.122	0.101	0.126	0.210	0.149	0.016

Table reports results for LS. In brackets, we report standard errosrs clustered at the firm-leve

Table 6.10. Baseline Results-Probit Regression

Variables	I	II	III	IV	V	VI	VII	VIII	IX	X
Constant	-9.643***	- 9.727***	-10.06***	-7.892***	-8.897***	-9.819***	-7.988***	-8.972***	-8.171***	-7.070***
	(0.374)	(0.378)	(0.494)	(0.433)	(0.426)	(0.496)	(0.438)	(0.429)	(0.551)	(0.619)
Labor Productivity	0.716***	0.712***	0.663***	0.519***	0.701***	0.675***	0.516***	0.701***	0.491***	0.493***
	(0.031)	(0.031)	(0.033)	(0.038)	(0.036)	(0.034)	(0.038)	(0.036)	(0.041)	(0.049)
Large		0.627***				0.553***	0.498***	0.400***	0.455***	0.387***
		(0.101)				(0.103)	(0.106)	(0.116)	(0.108)	(0.122)
Medium		0.426***				0.377***	0.365***	0.298***	0.340***	0.289***
		(0.081)				(0.081)	(0.089)	(0.093)	(0.089)	(0.101)
Real Average Wages			0.119**			0.063			0.053	-0.035
			(0.048)			(0.049)			(0.054)	(0.062)
Capital_labor ratio				0.121***			0.123***		0.126***	0.125***
				(0.016)			(0.016)		(0.017)	(0.023)
Foreign Part. Dum.					0.549**			0.465**		0.421*
					(0.235)			(0.236)		(0.243)
Observations	12310	12310	11806	8106	6738	11806	8106	6738	8011	4812
Log-Likelihood	-5493.846	-5466.515	-5420.995	-4233.655	-3245.141	-5400.688	-4217.750	-3236.043	-4192.064	-2625.294

Note: Dependent variable is a dummy variable that takes value 1 if firm exports and 0 otherwise. Standard errors are in paranthesis. * denotes significance at 10 percent, * denotes significance at 10 percent, ** denotes significance at 5 percent, *** denotes significance at 1 percent. Regressions V, VIII and X are for the perido 2006-2008, wehereas rest of the regressions are for the period 2003-2008.

Table 6.11: Sensitivity Analysis-Probit Regressions with sector dummies

Variables	I	II	III	IV	V	VI	VII	VIII	IX	X
Constant	-	-	-	-	-	-	-	-	-	-
	(0.373)	(0.377)	(0.526)	(0.429)	(0.420)	(0.528)	(0.433)	(0.422)	(0.587)	(0.670)
Labor Productivity	0.594***	0.587***	0.503***	0.422***	0.576***	0.516***	0.417***	0.574***	0.377***	0.399***
	(0.030)	(0.031)	(0.034)	(0.037)	(0.036)	(0.034)	(0.037)	(0.036)	(0.040)	(0.048)
Large		0.700***				0.596***	0.553***	0.465***	0.493***	0.431***
		(0.099)				(0.101)	(0.104)	(0.113)	(0.106)	(0.120)
Medium		0.418***				0.355***	0.356***	0.292***	0.326***	0.282***
		(0.080)				(0.080)	(0.087)	(0.092)	(0.088)	(0.100)
Real Average			0.210***			0.142***			0.105*	-0.023
			(0.052)			(0.053)			(0.060)	(0.070)
Capital_labor				0.088***			0.090***		0.092***	0.092***
				(0.016)			(0.016)		(0.016)	(0.023)
Foreign Part.					0.694***			0.600***		0.565**
					(0.228)			(0.228)		(0.238)
Observations	12310	12310	11806	8106	6738	11806	8106	6738	8011	4812
Log-Likelihood	-	-	-	-	-	-	-	-	-	-

Note: Dependent variable is a dummy variable that takes value 1 if firm exports and 0 otherwise. Standard errors are in paranthesis. * denotes significance at 10 percent, * denotes significance at 10 percent, ** denotes significance at 5 percent, *** denotes significance at 1 percent. Regressions V, VIII and X are for the perido 2006-2008, wehereas rest of the regressions are for the period 2003-2008.

Table 6.12: Sensitivity Analysis-Probit Regressions with time dummies

Variables	I	II	III	IV	V	VI	VII	VIII	IX	X
Constant	-	-	-	-	-	-	-	-	7.831***	-
	(0.377)	(0.381)	(0.493)	(0.438)	(0.430)	(0.495)	(0.442)	(0.433)	(0.555)	(0.624)
Labor Productivity	0.750***	0.746***	0.719***	0.549***	0.709***	0.730***	0.544***	0.708***	0.530***	0.503***
	(0.032)	(0.032)	(0.034)	(0.038)	(0.037)	(0.035)	(0.039)	(0.037)	(0.042)	(0.050)
Large		0.558***				0.506***	0.455***	0.376***	0.429***	0.368***
		(0.101)				(0.103)	(0.107)	(0.116)	(0.109)	(0.123)
Medium		0.396***				0.357***	0.355***	0.292***	0.337***	0.288***
		(0.081)				(0.082)	(0.089)	(0.093)	(0.090)	(0.102)
Real Average			0.052			0.001			0.008	-0.057
			(0.048)			(0.049)			(0.054)	(0.062)
Capital_labor				0.107***			0.110***		0.113***	0.129***
				(0.017)			(0.017)		(0.017)	(0.023)
Foreign Part.					0.564**			0.485**		0.450*
					(0.237)			(0.237)		(0.244)
Observations	12310	12310	11806	8106	6738	11806	8106	6738	8011	4812
Log-Likelihood	-	-	-	-	-	-	-	-	-	-

Note: Dependent variable is a dummy variable that takes value 1 if firm exports and 0 otherwise. Standard errors are in paranthesis. * denotes significance at 10 percent, * denotes significance at 10 percent, ** denotes significance at 5 percent, *** denotes significance at 1 percent. Regressions V, VIII and X are for the perido 2006-2008, wehereas rest of the regressions are for the period 2003-2008.

Table 6.13: Sensitivity Analysis-Probit Regressions with both time dummies and sector dummies

Variables	I	II	III	IV	V	VI	VII	VIII	IX	X
Constant	-	-	-	-	-	-	-	-	-	-
	(0.376)	(0.378)	(0.525)	(0.435)	(0.424)	(0.527)	(0.438)	(0.426)	(0.592)	(0.675)
Labor Productivity	0.626***	0.619***	0.562***	0.451***	0.583***	0.573***	0.445***	0.580***	0.418***	0.409***
	(0.031)	(0.031)	(0.034)	(0.038)	(0.036)	(0.035)	(0.038)	(0.036)	(0.041)	(0.049)
Large		0.639***				0.566***	0.515***	0.443***	0.477***	0.414***
		(0.099)				(0.101)	(0.105)	(0.114)	(0.107)	(0.121)
Medium		0.388***				0.340***	0.345***	0.287***	0.323***	0.281***
		(0.080)				(0.081)	(0.088)	(0.092)	(0.088)	(0.100)
Real Average			0.124**			0.060			0.048	-0.049
			(0.053)			(0.054)			(0.061)	(0.071)
Capital_labor				0.074***			0.076***		0.079***	0.096***
				(0.017)			(0.017)		(0.017)	(0.023)
Foreign Part.					0.707***			0.617***		0.594**
					(0.229)			(0.230)		(0.239)
Observations	12310	12310	11806	8106	6738	11806	8106	6738	8011	4812
Log-Likelihood	-	-	-	-	-	-	-	-	-	-2541.94

Note: Dependent variable is a dummy variable that takes value 1 if firm exports and 0 otherwise. Standard errors are in paranthesis. * denotes significance at 10 percent, * denotes significance at 10 percent, ** denotes significance at 5 percent, *** denotes significance at 1 percent. Regressions V, VIII and X are for the perido 2006-2008, wehereas rest of the regressions are for the period 2003-2008.

To represent market competition at the firm level we use two variables: price-cost margin and mark-up. We calculated price-cost margin as the ratio of difference between the value added and cost of employee to the value added of the firm. Similarly mark-up is determined as the ratio of the difference between the value-added of the firm and cost of employee to the cost of employee. Tables 6.14 and 6.15 present the results of the regressions regarding the determinants of labor productivity where the competition variables are price-cost margin and mark-up, respectively. Results are robust to the definition of competition. The tables suggest that firms that are more capital intensive, measured by capital-labour ratio, have higher productivity. The size of the firm which is number of employees in our case is positive and significant. Thereby larger firms are more productive. In line with the literature our results suggest that firms that are involved in services trade are more productive. Finally firms that have foreign ownership are more productive.

Price-cost margin and mark-up variables are positive and significant in all the regressions, although in the case of competitive markets the signs of these variables are expected to be negative. However one should be cautious about these results. Liberalization within the domestic market has been achieved in transportation sector, especially in road and air

subsectors during the 1980s and 1990s, which is out of our sample. On the other hand, external liberalization of the transportation sectors as emphasized in Chapters 2-5 are still in their initial stages. Since external liberalization of transport services requires the adoption and implementation of the legislative, regulatory and institutional framework of the main trading partner, namely those of the EU, external liberalization will be achieved only over time. Hence, the data do not indicate the result of external liberalization. Finally, note that the share of firms engaged in foreign trade is very small. These arguments would probably be the main reasons behind the positive sign of competition in our regressions.

We also run our regressions for each sector separately for robustness purposes[184]. The results for road sector are very similar to overall transportation sector. However we observe differences for airways and maritime sectors. In airways subsector, only capital intensity and mark-up (or PCM) variables are positive and significant. Size of the firm or exports do not affect these firms' productivity. When maritime sector is compared to overall transportation we observe that the productivity of a firm is not related to its foreign ownership structure. In all of the sectors mark-up and PCM are positive and significant in explaining productivity.

Table 6.14. Determinants of Labor Prodcutivity-PCM

Constant	9.86***	8.93***	9.49***	9.81***	9.91***	9.48***	9.65***	8.78***	8.60***
	(0.01)	(0.04)	(0.04)	(0.00)	(0.02)	(0.04)	(0.06)	(0.07)	(0.09)
PCM	0.01***	0.02***	0.00***	0.00***	0.00***	0.00***	0.00***	0.02***	0.05***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Capital_labor Ratio		0.14***						0.14***	0.18***
		(0.01)						(0.01)	(0.01)
Size (log_employment)			0.11			0.10***	0.06***	0.04***	0.01
			(0.01)			(0.01)	(0.02)	(0.01)	(0.02)
Exports				0.21***		0.19***	0.21***	0.14***	0.06**
				(0.02)		(0.02)	(0.03)	(0.02)	(0.02)
Foreign ownership					0.68***		0.63***		0.51***
					(0.11)		(0.11)		(0.10)
R-square	0.02	0.17	0.04	0.05	0.04	0.07	0.09	0,18	0.25
#obs	11314	7734	11314	11314	6314	11314	6314	7734	4707

Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively

Labor productivity is the logarithm of value added over employment. Price cost margin is calculated as the difference between value added and cost of labor divided by value added.

[184] The results are shown in the Appendix Tables 6.6-6.8.

Table 6.15. Determinants of Labor Productivity-Mark-up									
Constant	9.83***	8.93***	9.41***	9.78***	9.86***	9.40***	9.48***	8.73***	8.35***
	(0.01)	(0.05)	(0.04)	(0.01)	(0.02)	(0.04)	(0.00)	(0.07)	(0.09)
Mark-up	0.01***	0.01***	0.01***	0.01***	0.03***	0.01***	0.03***	0.01***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Capital_labor Ratio		0.14***						0.14***	0.19***
		(0.01)						(0.01)	(0.01)
Size (log_employment)			0.12***			0.11***	0.09***	0.05***	0.06***
			(0.01)			(0.00)	(0.01)	(0.01)	(0.02)
Exports				0.20***		0.18***	0.19***	0.14***	0.06**
				(0.02)		(0.02)	(0.02)	(0.02)	(0.02)
Foreign ownership					0.80***		0.72***		0.61***
					(0.11)		(0.11)		(0.10)
R-square	0,09	0,14	0,06	0,06	0,11	0,08	0,16	0,16	0,24
#obs	11315	7735	11315	11315	6314	11315	6314	7735	4707
Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively									
Labor productivity is the logarithm of value added over employment. Price cost margin is calculated as the difference between value added and cost of labor divided by value added.									

4. CONCLUSION

The chapter has presented empirical analysis of aggregate and dissaggregate data on transportation services in Poland and Turkey. First, we have analyzed the international trade flows of services provided by the transport sectors. Thereafter, the analysis was complemented by empirical investigation of firm-level data. Our calculations are based on ORBIS data in the case of EU countries and on the BEEPS data prepared by the World Bank for CEE countries. In the case of Turkey, the analysis was performed using firm level data provided by the Turkish Statistical Institute (TURKSTAT).

As far as firm-level data is concerned, we have analyzed the overall characteristics of Polish firms in transport sectors. The analysis allowed us to present a comparison of Polish firms in the transport sector to their counterparts in other EU countries. Moreover, we were able to quantitatively assess the most notable differences between the firms in the transport sectors and selected remaining sectors in the economy. Our analysis covered the evolution of price-cost-margins (PCMs). The results show that Polish firms in transportation sector are usually larger than those in other EU countries, especially in the railway and road transport sectors. The exception is air transportation firms where Polish firms are visibly smaller. There are also significant differences in terms of labor productivities. According to that measure, Polish firms are roughly six times less efficient in comparison to firms from the old EU member states. On the other hand their efficacy is about three times higher in relation to those operating in other CEEC.

The analysis of market characteristics of EU firms reveals that price cost margins are fairly stable in all transport sectors over the analyzed ten years period, but there are important differences in the average levels of PCM among different sectors. The lowest PCMs are in railway sector and the highest in air transportation. Thus, we can conclude that the observed PCMs are driven by low productivity and not necessarily by competitive pressure. In the case of Poland, while competitive pressure in rail services is rather low, inefficiencies in the major

rail service providers result in poor financial condition of the enterprises. We also observed a strongly decreasing minimum efficient scale (MES) for the EU airline firms. A number of low-cost firms have benefited from lower technological barriers to entry and the competitive pressure has risen considerably. On the other hand, the highest minimum efficient scale was observed for railway companies, for which the fixed investment in infrastructure is still very important and it can impede the entry of smaller firms.

The subsequent analysis of export performance, based on BEEPS survey for all CEE countries, demonstrated a number of similarities between manufacturing and transportation sectors, which can be described in the following way. Labour productivity has a relatively robust, positive impact on probability of exporting, both in the case of manufacturing and transportation sectors. In both sectors quality certificates and introduction of new products are among the factors that tend to increase to probability to export. Quality certificates are meant to reduce information asymmetry and may facilitate trade, while introduction of new products may be perceived as ways to gain new markets and increase market share in existing markets. Contacts with foreign markets through imports do improve the probability to export in both sectors.

However, a number of important differences between the manufacturing and transportation sectors can be identified on the basis of BEEPS analysis. In particular, larger manufacturing enterprises have a higher probability of exporting, while this result does not hold for transport firms. This may stem from the fact that some of the large transport companies in analysed countries are not necessarily export oriented – as their natural transport activity focus on the domestic market, which is the case in eg. public transportation. Additionally, in the case of transport industries in transition countries, the restructuring of former state-owned enterprises might have led to downsizing and outsourcing. Another difference is related to the age of firms. In the case of manufacturing sector the older, and more experienced firms, have a higher probability of exporting. This relationship is not confirmed in the case of transport services.

Human capital seems to be important for export activity of manufacturing firms however this result does not apply to firms operating in the transport sector. Firms in the manufacturing sector that rely on internal funding tend to export less frequently but this result does not hold for the transport firms. As far as institutional environment is concerned, higher crime rate (robbery) is among factors that can be detrimental to exporting activity. Its negative impact is not completely robust across analysed samples, although it seems to have a relatively significant negative impact in the case of Poland. On the other hand, while the perceived corruption does not seem to negatively affect the exporting activity, it seems that exporters in the transport sector tend to perceive more problems with corruption than non-exporters. Similarly, while difficulties in obtaining permits do not generally affect the probability of exporting, they do have a negative impact on exporting in the case of the transport industry. This finding does not apply to Poland, where difficulties with permits do not have a statistically significant impact on export activities.

In the last section of the chapter we investigated first the firm characteristics of Turkish enterprises in different transportation sub-sectors. Thereafter we turned to the analysis of the determinants of export activity of Turkish transportation firms. The analysis revealed that transportation service exports and imports are rather rare activities in transportation sector. Services trade that transportation sub-sectors are engaged in is exports, and they rarely import. Although the percentage of firms that engage in trade of transportation services is rather low,

the firms account for a large share of economic activity. On the other hand, the results of the determinants of export activity suggest that labour productivity is positively related to the probability of exporting and, that it is statistically significant in all the reported regressions. Similarly as in other empirical studies, the firm size is positively related to the probability of exporting and statistically significant in all the regressions. Moreover, the coefficient of large firm is greater than the coefficient of the variable for medium firms, indicating vertical integration in transport service exports. The estimated parameter on the capital-labour ratio was positive and significant in all of the regressions, which means that exporting firms in Turkey are usually capital intensive. Furthermore, the empirical results suggest that firms with foreign participation involve in export activity more than the domestic ones. The evidence on average wage level is less robust. The probability of exporting is positively related and statistically significant in only one baseline specification. The results do not support the hypothesis that firms that export pay higher wages to its workers, which was used as a proxy for the quality of human capital.

The analysis of export determinants of firms from CEE countries and Turkey, that are operating in the transport sector, revealed some similarities. Labour productivity has a relatively robust, positive impact on probability of exporting in both groups of countries and in all sectors. This robust result is in line with the literature on heterogonous firms. Also, the internationalization of firms, measured either by foreign participation or import activities, do have positive impact on probability of exporting .

The major difference exists with respect to the size of firms. In Turkey, firm size is positively related to the probability of exporting, like in majority of other empirical studies. This relationship is not confirmed in the case of CEE countries. It may result from the fact that in the case of transport sector the efficiency improving restructuring of former large state-owned enterprises might have led to downsizing and outsourcing. But this unusual result can also result from the small sample and relatively low number of transport firms contained in the BEEPS data base.

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Appendix Table 6.1: Description of variables used in empirical study

Variable name	BEEPS input name	Description
export propensity	d_d3a	Binary variable that takes the value 1 if the establishment is exporting and the value 0 if not
Firm-level controls		
firm age	b5	Logarithm of the age of the establishment at the moment of conduction of the survey
property	b3	Percentage of the establishment owned by the largest owner(s)
self-financing	k5a	Percentage of fixed assets funded by Internal funds
firm size	l1	Categorical variable describing the size of establishment measured by the number of full time employees. Takes value 1 for small companies (up to 10 employees), value 2 for medium companies (10 to 99 employees) and 3 for large companies (above 100 employees)
skilled work	ECAq69	Percentage of employees with a university degree
productivity	n2a	Logarithm of mean value of total sales per one employee
Importer	d12d	Binary variable that takes the value 1 if more than 1% of inputs and supplies is of foreign origin and the value of 0 if not
certification1	b8	Binary variable that takes the value 1 if the establishment has any quality certificates and the value of 0 if not
new_product	ECAo1	Binary variable that takes the value 1 if the establishment has introduced any new products within last fiscal year and the value of 0 if not
Fixed_asset	k4	Binary variable that takes the value 1 if the establishment has obtained any new fixed assets within the last 2 years and the value of 0 if not
Country-level controls		
tax1	j30b	Binary variable that takes the value 1 if the establishment declared that the taxation is an obstacle to the current operations and the value of 0 if not
permits1	j30c	Binary variable that takes the value 1 if the establishment declared that the permits acquisition process is an obstacle to the current operations and the value of 0 if not
robbery	i3	Binary variable that takes the value 1 if the establishment declared that robbery process is an obstacle to the current operations and the value of 0 if not
courts1	h30	Binary variable that takes the value 1 if the establishment declared that the court system is an obstacle to the current operations and the value of 0 if not

corruption1	j30f	Binary variable that takes the value 1 if the establishment declared that corruption is an obstacle to the current operations and the value of 0 if not
Country associations		
EU	n/a	Binary variable that takes the value 1 if at the moment of conduction of the survey, the country of the establishment was a member of the European Union and the value of 0 if not
AA	n/a	Binary variable that takes the value 1 if at the moment of conduction of the survey, the country of the establishment has signed a European Union Association Agreement and the value of 0 if not

Appendix Table 6.2 Export propensity, full sample

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
property	-0.0493**	-0.0490***	-0.0523***	-0.0512***	-0.0526***	-0.0523***
	(0.0195)	(0.0187)	(0.0181)	(0.0188)	(0.0183)	(0.0185)
firm age	0.0129	0.0135*	0.0134*	0.0104	0.0133*	0.0125
	(0.00798)	(0.00764)	(0.00740)	(0.00768)	(0.00744)	(0.00757)
Self-financing	-0.0242*	-0.0228*	-0.0239*	-0.0193	-0.0207	-0.0226*
	(0.0136)	(0.0130)	(0.0126)	(0.0131)	(0.0127)	(0.0129)
size==2	0.145***	0.140***	0.141***	0.140***	0.137***	0.140***
	(0.0147)	(0.0139)	(0.0136)	(0.0141)	(0.0136)	(0.0138)
size==3	0.257***	0.259***	0.261***	0.253***	0.252***	0.255***
	(0.0171)	(0.0164)	(0.0160)	(0.0164)	(0.0160)	(0.0162)
Skilled work	0.270***	0.276***	0.268***	0.273***	0.272***	0.271***
	(0.0229)	(0.0216)	(0.0210)	(0.0220)	(0.0212)	(0.0215)
importer	0.165***	0.160***	0.165***	0.161***	0.161***	0.163***
	(0.0114)	(0.0109)	(0.0105)	(0.0110)	(0.0106)	(0.0107)
productivity	0.00816***	0.00642***	0.00690***	0.00762***	0.00628***	0.00688***
	(0.00243)	(0.00224)	(0.00217)	(0.00233)	(0.00219)	(0.00225)
Fixed_asset	0.0826***	0.0810***	0.0815***	0.0765***	0.0799***	0.0933***
	(0.0300)	(0.0287)	(0.0273)	(0.0294)	(0.0278)	(0.0275)
new_product	0.0868***	0.0849***	0.0872***	0.0841***	0.0869***	0.0864***
	(0.0114)	(0.0109)	(0.0106)	(0.0110)	(0.0106)	(0.0108)
certification1	0.118***	0.118***	0.118***	0.121***	0.120***	0.114***
	(0.0142)	(0.0136)	(0.0132)	(0.0137)	(0.0133)	(0.0134)
UE	-0.124	-0.116	-0.108	-0.100	-0.116	-0.0970
	(0.0914)	(0.0896)	(0.0862)	(0.0892)	(0.0864)	(0.0883)
AA	-0.121	-0.122	-0.105	-0.104	-0.114	-0.1000
	(0.0826)	(0.0804)	(0.0782)	(0.0806)	(0.0779)	(0.0798)
corruption	-0.0142	0.00891				
	(0.0158)	(0.0124)				
robbery	-0.0402***		-0.0344***			
	(0.0132)		(0.0122)			
certification	0.0145			0.0177		
	(0.0152)			(0.0121)		
tax	0.0271*				0.0285**	
	(0.0152)				(0.0125)	
permits	0.0131					0.0241**
	(0.0139)					(0.0115)
Interactions: Poland x Institutional factors						
corruption	0.0131	0.0465				
	(0.0519)	(0.0433)				
robbery	-0.0438		-0.0281			
	(0.0409)		(0.0384)			
certification	0.121*			0.141***		
	(0.0624)			(0.0522)		
tax	0.132*				0.114*	
	(0.0732)				(0.0612)	
permits	-0.0557					-0.00511
	(0.0399)					(0.0368)
Interactions: Transport x Institutional factors						
corruption	0.165***	0.126***				
	(0.0592)	(0.0465)				
robbery	-0.0673*		-0.0484			
	(0.0365)		(0.0349)			
certification	0.00397			0.0374		
	(0.0509)			(0.0424)		
tax	0.0120				0.0225	
	(0.0504)				(0.0428)	
permits	-0.0878**					-0.0442
	(0.0396)					(0.0362)
Time dummies	YES	YES	YES	YES	YES	YES
Sectoral dummies	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES

Observations	8,753	9,438	9,933	9,332	9,823	9,554
Log likelihood	-4147	-4452	-4679	-4442	-4635	-4532
Pseudo R2	0.262	0.261	0.260	0.257	0.260	0.257

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 6.3 Export propensity, all sectors, Poland

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
property	0.0202	-0.00404	-0.00610	-0.00832	-0.0133	-0.00493
	(0.0563)	(0.0573)	(0.0553)	(0.0555)	(0.0538)	(0.0563)
Firm_age	0.0310	0.0409	0.0414*	0.0351	0.0339	0.0407*
	(0.0248)	(0.0251)	(0.0240)	(0.0242)	(0.0238)	(0.0247)
k5a	-0.0229	-0.0156	-0.0147	-0.0154	-0.000493	-0.0271
	(0.0448)	(0.0449)	(0.0435)	(0.0440)	(0.0425)	(0.0444)
size==2	0.227***	0.211***	0.212***	0.198***	0.185***	0.201***
	(0.0513)	(0.0491)	(0.0482)	(0.0487)	(0.0470)	(0.0488)
size==3	0.291***	0.253***	0.312***	0.270***	0.286***	0.278***
	(0.0674)	(0.0629)	(0.0606)	(0.0606)	(0.0599)	(0.0603)
Skilled_work	0.155**	0.183***	0.174**	0.168**	0.163**	0.190***
	(0.0706)	(0.0708)	(0.0686)	(0.0703)	(0.0674)	(0.0687)
Importer	0.178***	0.168***	0.160***	0.165***	0.164***	0.163***
	(0.0333)	(0.0338)	(0.0327)	(0.0333)	(0.0319)	(0.0334)
productivity	0.0441**	0.0418*	0.0435**	0.0485**	0.0345*	0.0422**
	(0.0215)	(0.0216)	(0.0208)	(0.0213)	(0.0205)	(0.0213)
Fixed_asset	-0.00151	0.0129	0.0170	0.0123	0.00862	0.0370
	(0.0521)	(0.0522)	(0.0500)	(0.0518)	(0.0494)	(0.0493)
new_product	0.0724**	0.0818**	0.0977***	0.0758**	0.0802**	0.0870**
	(0.0353)	(0.0355)	(0.0342)	(0.0346)	(0.0333)	(0.0347)
certification1	0.0983*	0.101*	0.0864*	0.0889*	0.0913*	0.0764
	(0.0521)	(0.0519)	(0.0494)	(0.0501)	(0.0490)	(0.0500)
corruption1	0.00550	0.0384				
	(0.0449)	(0.0375)				
robbery	-0.0868**		-0.0826**			
	(0.0364)		(0.0369)			
courts1	0.0900**			0.104***		
	(0.0422)			(0.0369)		
tax1	0.102**				0.0880**	
	(0.0444)				(0.0414)	
permits1	-0.0655					0.00264
	(0.0407)					(0.0359)
Interactions: Transport x Institutional factors						
corruption	0.0192	0.152				
	(0.153)	(0.157)				
robbery	-0.120*		-0.0637			
	(0.0712)		(0.0941)			
courts	0.158			0.336		
	(0.265)			(0.247)		
tax	0.903***				0.893***	
	(0.0183)				(0.0147)	
permits	0.00414					0.0375
	(0.139)					(0.129)
Time dummies	YES	YES	YES	YES	YES	YES
Sectoral dummies	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES
Observations	759	799	861	828	856	831
Log likelihood	-329.6	-364.4	-393.4	-374.0	-386.3	-381.8
Pseudo R2	0.289	0.254	0.253	0.264	0.261	0.249

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 6.4: Importers and Exporters of Transportation Sectors in Turkey during 2003

(1) Share of Firms					
		Firms not engaged in International trade	Firms that only export	Firms that only import	Firms that export and import
Total		98.38	1.38	0.09	0.16
1	Rail	100.00	0.00	0.00	0.00
2	Road	99.61	0.25	0.00	0.13
3	Maritime	90.47	5.77	3.12	0.64
4	Air	83.72	0.00	2.33	13.95
5	Logistics	87.53	12.31	0.01	0.15

(2) Share of sector in Total				
		Employment	Turnover	Value Added
Total		100.00	100.00	100.00
1	Rail	12.41	3.04	9.10
2	Road	56.94	48.56	36.90
3	Maritime	8.29	15.54	15.05
4	Air	4.95	17.15	15.73
5	Logistics	17.42	15.72	23.21

(3) Employment Share					
		Firms not engaged in International trade	Firms that only export	Firms that only import	Firms that export and import
Total		84.42	4.60	0.11	10.87
1	Rail	100.00	0.00	0.00	0.00
2	Road	92.09	3.91	0.02	3.98
3	Maritime	63.19	12.28	0.87	23.66
4	Air	16.25	0.00	0.09	83.66
5	Logistics	77.76	7.75	0.10	14.39

(4) Value Added Share					
		Firms not engaged in International trade	Firms that only export	Firms that only import	Firms that export and import
Total		63.24	8.76	0.14	27.86
1	Rail	100.00	0.00	0.00	0.00
2	Road	81.28	8.93	0.11	9.67
3	Maritime	52.98	22.77	0.30	23.94
4	Air	12.82	0.00	0.13	87.04
5	Logistics	60.99	8.76	0.14	30.11

Source: Own calculations

Appendix Table 6.5: Importers and Exporters of Transportation Sectors in Turkey during 2008

(1) Share of Firms

		Firms not engaged in International trade	Firms that only export	Firms that only import	Firms that export and import
Total		98.36	1.60	0.00	0.03
1	Rail	60.00	40.00	0.00	0.00
2	Road	99.20	0.77	0.00	0.02
3	Maritime	93.36	6.33	0.03	0.28
4	Air	50.00	42.19	0.00	7.81
5	Logistics	91.30	8.62	0.03	0.06

(2) Share of sector in Total

		Employment	Turnover	Value Added
Total		100.00	100.00	100.00
1	Rail	6.19	2.31	4.27
2	Road	62.51	51.17	30.27
3	Maritime	5.21	12.53	20.34
4	Air	3.48	15.08	11.62
5	Logistics	22.60	18.92	33.49

(3) Employment Share

		Firms not engaged in International trade	Firms that only export	Firms that only import	Firms that export and import
Total		74.01	23.40	0.07	2.53
1	Rail	0.24	99.76	0.00	0.00
2	Road	85.15	14.15	0.03	0.68
3	Maritime	66.47	30.72	0.03	2.78
4	Air	6.10	26.16	0.00	67.75
5	Logistics	67.90	23.49	0.21	8.39

(4) Value Added Share

		Firms not engaged in International trade	Firms that only export	Firms that only import	Firms that export and import
Total		58.07	32.38	0.09	9.45
1	Rail	0.80	99.20	0.00	0.00
2	Road	68.12	28.95	0.02	2.91
3	Maritime	61.74	34.25	0.01	4.00
4	Air	2.66	20.52	0.00	76.82
5	Logistics	57.82	21.30	0.23	20.65

Source: Own calculations

Appendix Table 6.6 a. Determinants of Labor Productivity in Roadways Sector-PCM

Constant	9.71***	8.44***	9.38***	9.65***	9.76***	9.38***	9.58***	8.27***	7.61***
	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.05)	(0.07)	(0.09)	(0.12)
PCM	0.02***	0.02***	0.02***	0.02***	0.05***	0.02***	0.05***	0.01***	0.04***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Capital_labor Ratio		0.17***						0.17***	0.26***
		(0.01)						(0.01)	(0.01)
Size									
(log_employment)			0.10***			0.08***	0.04**	0.04**	0.04**
			(0.01)			(0.01)	(0.02)	(0.02)	(0.02)
Exports				0.21***		0.18***	0.14***	0.07**	0,00
				(0.03)		(0.03)	(0.03)	(0.03)	(0.03)
Foreign ownership					0.55***		0.50***		0.52***
					(0.13)		(0.13)		(0.11)
R-square	0,09	0,20	0,11	0,12	0,13	0,13	0,16	0,21	0,35
#obs	5565	4072	5565	5565	3250	5565	3250	4072	2544

Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively

Labor productivity is the logarithm of value added over employment. Price cost margin is calculated as the difference between value added and cost of labor divided by value added.

Appendix Table 6.6 b. Determinants of Labor Productivity in Roadways Sector-Mark-up

Constant	9.68***	8.43***	9.31***	9.63***	9.66***	9.31***	9.25***	8.20***	7.55***
	(0.02)	(0.07)	(0.05)	(0.02)	(0.02)	(0.05)	(0.07)	(0.09)	(0.11)
Mark-up	0.01***	0.01***	0.01***	0.01***	0.05***	0.01***	0.05***	0.01***	0.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Capital_labor Ratio		0.17***						0.17***	0.24***
		(0.01)						(0.01)	(0.01)
Size									
(log_employment)			0.11***			0.09***	0.10***	0.06***	0.08***
			(0.02)			(0.02)	(0.02)	(0.02)	(0.02)
Exports				0.20***		0.17***	0.13***	0.08***	0,00
				(0.03)		(0.03)	(0.03)	(0.03)	(0.03)
Foreign ownership					0.62***		0.53***		0.55***
					(0.13)		(0.13)		(0.11)
R-square	0,04	0,16	0,06	0,06	0,14	0,08	0,18	0,17	0,31
#obs	5566	4073	5566	5566	3250	5566	3250	4073	2544

Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively

Appendix Table 6.7 a. Determinants of Labor Productivity in Maritime Sector-PCM

Constant	10.64***	10.03***	9.97***	10.55***	10.73***	9.94***	10.16***	9.74***	9.73***
	(0.04)	(0.12)	(0.12)	(0.04)	(0.06)	(0.12)	(0.18)	(0.17)	(0.24)
PCM	0.05***	0.16***	0.05***	0.05***	0.04***	0.05***	0.04***	0.16***	0.13***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Capital_labor Ratio		0.09***						0.08***	0.09***
		(0.01)						(0.01)	(0.02)
Size									
(log_employment)			0.20***			0.19***	0.15**	0.09**	0.10**
			(0.03)			(0.03)	(0.05)	(0.04)	(0.05)
Exports				0.22***		0.18***	0,10	0,05	0,01
				(0.05)		(0.05)	(0.07)	(0.06)	(0.07)
Foreign ownership					0.24***		0.15***		0,31
					(0.32)		(0.31)		(0.29)
R-square	0,08	0,24	0,13	0,10	0,08	0,14	0,14	0,26	0,26
#obs	1693	1216	1693	1693	867	1693	867	1216	712

Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively

Labor productivity is the logarithm of value added over employment. Price cost margin is calculated as the - difference between value added and cost of labor divided by value added.

Appendix Table 6.7 b. Determinants of Labor Productivity in Maritime Sector-Mark-up

Constant	10.27***	9.82***	9.22***	10.18***	10.42***	9.19***	9.01***	9.02***	8.94***
	(0.02)	(0.10)	(0.10)	(0.04)	(0.06)	(0.10)	(0.15)	(0.00)	(0.21)
Mark-up	10.27***	0.12***	0.11***	0.10***	0.10***	0.11***	0.11***	0.13***	0.13***
	(0.04)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Capital_labor Ratio		0.06***						0.06***	0.07***
		(0.01)						(0.01)	(0.02)
Size									
(log_employment)			0.31***			0.30***	0.39***	0.22***	0.27***
			(0.03)			(0.03)	(0.04)	(0.03)	(0.04)
Exports				0.21***		0.16***	0.11*	0.12**	0,08
				(0.05)		(0.05)	(0.06)	(0.05)	(0.06)
Foreign ownership					0,32		0,11		0,36
					(0.28)		(0.26)		(0.25)
R-square	0,30	0,38	0,38	0,31	0,28	0,39	0,41	0,43	0,45
#obs	1693	1216	1693	1693	867	1693	867	1216	712

Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively

Labor productivity is the logarithm of value added over employment. Price cost margin is calculated as the difference between value added and cost of labor divided by value added.

Table 6.8 a. Determinants of Labor Productivity in Airways Sector-PCM

Constant	10.88***	9.77***	10.87***	10.87***	11.06***	10.87***	11.23***	9.79***	9.33***
	(0.07)	(0.27)	(0.07)	(0.07)	(0.10)	(0.13)	(0.18)	(0.34)	(0.45)
PCM	0.36***	0.14***	0.36***	0.36***	0.43***	0.36***	0.43***	0.39***	0.39***
	(0.02)	(0.03)	(0.02)	(0.02)	(0.04)	(0.02)	(0.04)	-0.03	(0.04)
Capital_labor Ratio		0.14***						0.14***	0.21***
		(0.03)						(0.03)	(0.04)
Size (log_employment)			0.00			0.00	-0.07	-0.00	-0.02
			(0.03)			(0.03)	(0.05)	(0.04)	(0.05)
Exports				0.01		0.01	0.15	-0.00	-0.10
				(0.03)		(0.03)	(0.16)	(0.13)	(0.16)
Foreign ownership					0.40***		0.53		1.18
					(0.63)		(0.64)		(0.89)
R-square	0.38	0.51	0.37	0.38	0.41	0.37	0.42	0.51	0.58
#obs	276	194	276	276	151	276	151	194	132

Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively

Labor productivity is the logarithm of value added over employment. Price cost margin is calculated as the difference between value added and cost of labor divided by value added.

Table 6.8 b. Determinants of Labor Productivity in Airways Sector-Mark-up

Constant	10.77***	9.34***	10.62***	10.76***	10.89***	10.61***	10.71***	8.88***	7.75***
	(0.08)	(0.33)	(0.15)	(0.08)	(0.13)	(0.15)	(0.24)	(0.41)	(0.50)
Mark-up	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.31***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.04)
Capital_labor Ratio		0.17***						0.19***	0.31***
		(0.04)						(0.04)	(0.04)
Size (log_employment)			0.05			0.05	0.03	0.08	0.11**
			(0.04)			(0.04)	(0.07)	(0.05)	(0.06)
Exports				0.01		0.01	0.15	-0.00	-0.17
				(0.03)		(0.03)	(0.20)	(0.17)	(0.19)
Foreign ownership					0.59		0.55		1.48
					(0.80)		(0.67)		(1.05)
R-square	0.12	0.26	0.12	0.12	0.13	0.13	0.14	0.28	0.41
#obs	276	194	276	276	151	276	151	194	132

Note: Standard errors are in parantheses. *, **,*** indicate significance at 10 percent, 5 percent and 1 percent, respectively

Labor productivity is the logarithm of value added over employment. Price cost margin is calculated as the difference between value added and cost of labor divided by value added.

CHAPTER 7

IMPLICATIONS OF LIBERALIZATION OF TRANSPORTATION SERVICES

Modern economies are increasingly dominated by services, which cover a broad range of industries, encompassing 'network industries' such as electricity, natural gas and telecommunications, other 'intermediate services' such as transport, financial intermediation, distribution, construction and business services, and 'final demand services' such as education, health, recreation, environmental services, tourism and travel. Services for a long time were believed to be non-tradable, but technological changes have allowed an increasing number of services markets to be contested internationally through cross-border trade (mode 1) and commercial presence (mode 3).[185] Economic theory emphasizes that countries can derive welfare gains from freer trade, and that the proposition applies to both goods and services. But the types and forms of liberalization of services are quite different from those of liberalization of merchandise trade. Barriers to the flow of goods typically arise as customs and non-tariff barriers (NTBs), and hence for goods trade most discussion of liberalization focuses on tariffs and on NTBs. On the other hand, barriers to trade in services are typically regulatory in nature, and outcomes of services liberalization depend heavily on the regulatory environments.

Recent research indicates that barriers to services trade in the world remain prevalent, and that service barriers in both high income and developing countries are higher than those for trade in goods. Policies are more liberal in OECD countries, Latin America and Eastern Europe, whereas most restrictive policies are observed in MENA and Asian countries. Overall pattern of policies across sectors is increasingly similar in developing and industrial countries. Whereas telecommunications and banking services are more competitive, transport and professional services remain bastions of protectionism.[186]

Barriers to services trade lead to inefficiencies in service sectors and to high costs of services. Since the productivity and competitiveness of goods and services firms depend largely on access to low cost and high-quality producer services such as transportation, distribution, telecommunications and finance, and since they have powerful influence on economic growth, it is of utmost importance to increase the efficiency of service industries, which can largely be achieved through liberalization of service industries.

In principle countries can choose to liberalize a service sector unilaterally and try to derive efficiency gains. Indeed, during the last two decades there has been significant unilateral

[185] The General Agreement on Trade in Services (GATS) distinguishes between four modes of supplying services trade: cross border supply (mode 1), consumption abroad (mode 2), commercial presence (mode 3), and presence of natural persons (mode 4). While mode 1 refers to services supplied from the territory of one member into the territory of another, mode 2 consists of services supplied in the territory of one member to the consumers of another. On the other hand mode 3 refers to services supplied through any type of business or professional establishment of one member in the territory of another (foreign direct investment (FDI)), and mode 4 includes both independent service suppliers, and employees of the services supplier of another member (consultants).

[186] See B. Gootiiz and A. Mattoo (2009).

liberalization in services by different countries driven by the prospects of large welfare gains. Many countries have taken action to increase competition on service markets by liberalizing FDI and privatizing state-owned or controlled service providers. But unilateral liberalization may be constrained by the fact that a country cannot on its own gain improved access to larger foreign markets. Second, a country may face difficulty increasing competition. Finally, a country may lack the expertise and resources to devise and implement the appropriate domestic regulatory policies.

In recent years the number of regional trade agreements has increased significantly. Many provide for free trade in goods but also include some measures to facilitate trade in services. Such agreements could lead to gains from liberalization of trade in services. But not much has been achieved in terms of actual liberalization with the exception of the EU and a small number of agreements between high-income countries. On the other hand, multilateral negotiations on services began during the Uruguay Round, which culminated in the signing of the GATS in 1995. Article XIX GATS required members to launch new negotiations on services no later than 2000, and periodically thereafter. Initial negotiations were launched in 2000, which later became part of Doha. Between 2000 and the end of 2005, WTO members pursued a bilateral approach to negotiations, submitting request to others and responding to requests with offers. But large asymmetries in interest across membership impeded progress. In 2006 WTO members launched an effort to complement the bilateral request offer process with a plurilateral or 'collective' approach. This involved subsets of the WTO membership seeking to agree to a common 'minimum' set of policy commitments for a given sector. But even with the new approach not much progress could be achieved until now.

In order to design successful reform strategies it is crucial that the effects of economic liberalization be analyzed thoroughly. To do that, we first need to quantify the barriers to trade in services. The simplest and most-common approach to measuring the barriers to trade in services involves frequency measures developed by Hoekman (1995). A more elaborate restrictiveness measure than that of Hoekman has been constructed for different service industries by the Australian Productivity Commission (APC) in collaboration with the University of Adelaide and the Australian National University. To develop these indices, the actual restrictions on trade in a service industry have been compiled from specifically designed questionnaires using a number of different sources. These restrictions were then assigned scores and grouped into categories, each of which is assigned a numeric weight. These scores and weights were based on subjective assessments of the costs of restrictions to economic efficiency. Finally, the sectoral tariff equivalents were computed using these scores and econometrically estimated relations between restrictiveness values and performance indicators such as the price of the service under consideration.[187] Finally, we have the gravity approach developed by Francois (1999).

In the following we shall focus our attention on one specific transportation sector, namely the rail transportation sector. There are several reasons why the analysis of this specific sector is important to understand the implications of liberalization efforts. This sector has been or still is nationalized in majority of European countries, on the basis of natural monopoly argument, and it is also the sector in which network effects exist. The entry to this sector by independent operators has been severely limited by the infrastructure ownership. In the majority of

[187] See e.g. Findlay and Warren (2000).

European countries the rail infrastructure has been owned by state rail undertakings (RUs). Although the European Union (EU) has issued three packages of directives aiming at liberalization of the sector, there were large differences in the implementation of legislation among the EU Member States as revealed by a study conducted by IBM Consulting Services. The analysis presented in the last chapter, based on firm level data, demonstrated, that despite liberation efforts the level of price-cost margin (PCM) was very low over the analyzed period and that it did not change over the last few years. The rail sector in comparison to other transportation sectors had the lowest PCM level in Poland and in other EU countries. But, it was argued that a low level of PCM in this sector represents the low level of mark-ups and not the strength of competitive pressure. The performance of the sector depends largely on the quality of rail infrastructure, and the sector faces strong competition from road transportation. But the investments in rail transportation sector in Poland and in the majority of new member states of the EU have been far too small in relation to modernization and maintenance needs.

The chapter is structured as follows. Section 1 considers the gravity approach. Thereafter in Section 2 we shall concentrate on the new Services Restrictions Database of the World Bank, and thereafter on the quantification of restrictiveness of policy using the World Bank database.[188] But both approaches have certain drawbacks. Gravity approach does not make any use of the regulatory system. On the other hand, the Services Restrictions Database on rail transportation services emphasizes the supply of services through establishing commercial presence (mode 3) only. Hence, it is of importance for determining the barriers to services trade within the WTO framework. But to show how one can study the barriers to trade within the EU integration framework we make use in Section 3 of the IBM Consulting Services study on rail liberalization in the EU countries. In section 4 we study the impact of liberalization of rail services using the gravity approach. Finally, Section 5 concludes.

1. QUANTIFICATION OF RESTRICTIVENESS OF POLICY IN THE RAIL TRANSPORTATION SECTOR USING THE GRAVITY APPROACH

While measuring the possible impact of trade liberalisation in specific services trade sectors it is essential to control for changes in the liberalisation level. This can be done by introducing specific liberalisation indices as explanatory variables into the econometric model. Another possible approach to assess trade liberalization is to infer the level of liberalization from the actual trade flows and compare them to the reference trade flows generated from the theoretical, frictionless model of trade. Such an approach has been analysed and discussed in various studies, including Park (2002), Francois (2005) and Walsh (2006). In this section we estimate tariff equivalents in imports of rail transportation services and analyse them over time to assess the degree of trade liberalization in the period under consideration. In this section we will calculate the tariff equivalents in the rail sector and analyze whether the liberalization efforts led to clear reduction of those estimated equivalents.

Following the suppositions of the model applied by Anderson and van Wincoop (2003), it is assumed that products are differentiated by country of origin and that there are trade costs to international trade. Consequently, the gravity equation takes the following general form:

[188] The World Bank's Services Trade Restrictions Database is available at http://iresearch.worldbank.org/servicestrade

$$x_{ij} = \frac{Y_i Y_j}{Y^w} \frac{\tau_{ij}^{-\sigma}}{P_j^{1-\sigma} \varphi},$$

The nominal bilateral services trade flow from country *i* to country *j* (x_{ij}) is related to the exporting and importing countries' GDP (Y_i and Y_j respectively) where P_j denotes the price index in country *j* while, φ the exporter's price index which according to Park (2002) is a suitable proxy for Anderson and van Wincoop's (2003) multilateral resistance terms, and σ is the elasticity of substitution between sources of imports (Armington elasticity). The bilateral trade costs influencing the trade flow between a pair of countries is denominated as τ_{ij}. If σ>1, then a higher trade barrier will negatively influence the volume of trade.

Anderson and Wincoop (2001) assumed existence of symmetrical trade costs between pairs of countries, i.e. they assumed $\tau_{ij} = \tau_{ji}$. In this paper, following Park (2002) it is assumed, that a country has single trade barrier imposed on all trade partners, i.e. $\tau_{ik} = \tau_k$. These trade costs, following the assumptions introduced by Bergstrand (1985) and Anderson Wincoop (2001), consist of two components, which are the bilateral distance between the two partners (d_{ij}) and the trade barriers (t_j). Therefore the trade cost takes the form of:

$$\tau_{ij} = t_j^{k_{ij}} d_{ij}^{\rho},$$

where k_{ij} equals 0 if *i* equals *j*, which indicates that they are the same country in which case no additional tariff to trade is present. The trade barrier *t* equals 1 plus the country *j*'s tariff equivalent.

The empirical problem in this case is associated with measuring the barriers to trade in services (t_{ij}), which cannot be directly observed. Following Park (2002) an indirect method of computing this term is applied. In order to specify the significance of this term it is required to compare the observable, empirical trade flows with the theoretical volume that should take place under assumption of frictionless conditions to trade. The difference between the two values should indicate the level of existing trade barriers that causes distortion of empirical trade flows as compared to theoretical predictions.

In order to capture the information on most probable expected trade flows it is required to identify a set of variables that combined constitute a reliable gravity model. The variables should enable controlling for specific aspects of rail transportation services, such as the development of rail infrastructure and a country level demand for such services. Additional binary variables describing the impact of common language and other regional characteristics influencing the propensity to trade between a pair of countries should also be included in the analysis. However, under assumption of fixed effects model, their impact will be assessed by the assumption of existence of fixed effects among pairs of countries. Consequently the final equation might be written as:

$$\ln Im_{ijt} = c + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln d_{ij} + \beta_4 \ln(diff\_GDP_t) + \gamma_i Z_{ijt} + \varepsilon_{ijt},$$

where "Im_{irpt}" is the import of rail transport service by reporter country i from the partner country j at time t, c the intercept term, GDP_{it} the nominal GDP in year t of country i (or j respectively) measured in US Dollar terms, diff _ GDP_t the difference of real GDP per capita in US Dollar terms between the two countries, d_{ij} the distance between the two partners in kilometres, and Z is a vector of control variables.

In order to evaluate the possible impact of volume of goods trade as a source of demand on rail transportation services flows between a pair of countries the information on the value of imported goods and services was included in the study. The development of physical infrastructure was captured by information concerning the density of rail infrastructure measured as total lines divided by the area of the country. Additionally it was aimed to capture information on the country-specific demand on rail transport services by introduction of variables describing total number of rail passengers and total value of goods transported by rail in a given country.

The time period for which the analysis was conducted is limited due to limited data availability. It is both due to constricted data on bilateral trade flows of services and due to lacking of continuous data on transport infrastructure. Consequently the presented analysis is based on an unbalanced panel database during 2003-2010 for 29 countries, mostly European. The analysis is based on the same database as the study presented in the first part of the chapter. Therefore the dependent variable Im_{ijt} is obtained from TSDv8.7 database provided by Francois and Pindyuk (2013). The control variables describing the time-invariant relations between country pairs and geographical gravity variables were gathered from CEPII[189]. *Im* is UN COMTRADE data collected from World Integrated Trade Solution (WITS)[190]. Infrastructural variables are collected from International Transport Forum at the OECD[191]. The rest of the variables are collected from the World Development Indicators (WDI) provided by the World Bank[192]. Table 1 presents the complete data description.

Table 1: Data description

Variable	Description	Source
ln_Value	Import of Transport Services – USD Millions	TSDv8.7database provided by Francois and Pindyuk (2013)
	EBOPS Code 219: Rail transport	
ln_Inv	Infrastructure Investment – EUR Millions	International Transport Forum at the OECD (can be found at: http://www.internationaltransportforum.org/statistics/investment/data.html)
ln_rail_dens	Rail lines (total route-km) divided by the Area of the country (sq. km)	Own Calculations – Data from World Development Indicator
ln_passengers	Railways, passengers carried (mln passenger)	Own Calculations – Data from World Development Indicator

[189] Centre d'Études Prospectives et d'Informations Internationales and Can be found at: http://www.cepii.fr/anglaisgraph/bdd/distances.htm
[190] Can be found at: http://wits.worldbank.org/wits/
[191] Can be found at: http://www.internationaltransportforum.org/statistics/investment/data.html
[192] Can be found at: http://data.worldbank.org/data-catalog/world-development-indicators

Variable	Description	Source
ln_freight	Railways, goods transported (mln ton km)	Data from World Development Indicator
ln_diff_GDP	Difference of GDP per capita (constant 2000 USD) between the two countries	World Development Indicator
ln_nGDP	GDP (current USD)	World Development Indicator
ln_Im	Total Import to Reporter from Partner – Thousands USD	World Integrated Trade Solution (WITS) - UN COMTRADE
ln_Dist	Distance between the two countries in km	CEPII database
Contig	Contiguity of the two countries	CEPII database
comlang_off	Common official language in the two countries	CEPII database

Table 2 presents the coefficient estimates and their significance under assumption of occurrence random effects (RE) and fixed effects (FE) among pairs of countries. The conducted Hausman test for the study suggests that the preferable model in this case should be the fixed effects model.

Table 2: Gravity model estimation results

VARIABLES	(1) RE	(2) FE	(3) RE	(4) FE
lnIm	0.352***	0.152	0.384***	0.131
	(0.0852)	(0.132)	(0.0836)	(0.129)
lnGDP_REP	-0.140	-0.0920	0.108	0.104
	(0.169)	(0.392)	(0.135)	(0.377)
lnGDP_PAR	-0.126	-0.0134	-0.242**	-0.0649
	(0.137)	(0.266)	(0.122)	(0.260)
ln_inv_rep	0.0751	-0.0527	0.0811	-0.0743
	(0.0841)	(0.100)	(0.0831)	(0.0986)
ln_inv_par	0.166**	0.251***	0.137*	0.215**
	(0.0793)	(0.0899)	(0.0775)	(0.0878)
ln_diff_GDP	0.122**	0.0877	0.0822	0.0690
	(0.0599)	(0.101)	(0.0577)	(0.0978)
ln_dens_rep	-0.173	-2.442***	-0.00145	-0.801*
	(0.141)	(0.885)	(0.111)	(0.409)
ln_dens_par	0.441***	-1.340	0.376***	-0.968
	(0.130)	(0.875)	(0.122)	(0.781)
ln_passangers_rep	0.272**	0.231		
	(0.114)	(0.233)		
ln_passangers_par	-0.0920	0.193		
	(0.0744)	(0.145)		
ln_freight_rep	0.0921	-0.0737	0.116*	-0.0251
	(0.0664)	(0.111)	(0.0614)	(0.108)
ln_freight_par	0.274***	0.283***	0.266***	0.298***

	(1)	(2)	(3)	(4)
VARIABLES	RE	FE	RE	FE
	(0.0626)	(0.0846)	(0.0558)	(0.0827)
contig	1.383***		1.368***	
	(0.339)		(0.340)	
comlang_ethno	0.687		0.713	
	(0.475)		(0.478)	
ldistcap	-0.736***		-0.663***	
	(0.170)		(0.164)	
Constant	0.987	-18.14**	-1.262	-11.85*
	(3.597)	(7.251)	(3.460)	(6.643)
Observations	1,508	1,508	1,555	1,555
R-squared		0.035		0.029
Number of pair	351	351	368	368
Adj. R-squared	0.528	-0.270	0.518	-0.282

Standard errors in parentheses
**** p<0.01, ** p<0.05, * p<0.1*

Due to the fact, that information on the total number of passengers carried by rail transport proved to be insignificant under fixed effects model, and the removal of these variables, both with the respect to the importing as well as to the exporting country, did not cause a major change in the value of adjusted R-squared, they were omitted in the final study.

The estimated variables of the gravity model are in majority of cases in line with the expectations. The positive impact of contiguity and negative impact of distance has been expected. The positive impact of trade in goods on rail freight has also been expected. Finally, the GDP level had, at least in some specifications, positive impact of rail transportation.

The correct estimation of proper set of variables enabling construction of a reliable gravity model is essential for further analysis aimed at estimating the tariff equivalents for rail transportation services. The knowledge of the variables enables conduction of series of analyses focused on predicting the most probable trade flows.

In order to obtain the estimates for tariff equivalents some constraints have to be imposed on the above equation: The sum of residuals ε_{ij} for a given importing country in a given year should be to equal 0 and the sum of all residuals for a given year must also be equal 0.

Following Anderson and Wincoop (2001) and Park (2002) we assume that the residual ε_{ij} is defined as the difference in log values of actual and predicted export value from country *i* to country *j*. The difference between the total predicted value of country imports and total observed import flows are assumed to indicate the level of distortion to trade caused by existence of trade barriers. The absolute differences should be then normalized relative to a benchmark free-trade country case, where the trade volume is least distorted. Then the relative trade barrier (t_j) in transportation services sector for a given country in a given year can be measured on the basis of the following relation:

$$-\sigma \ln t_j = \ln \frac{X_j^a}{X_j^p} - \ln \frac{X_b^a}{X_b^p},$$

The indices *a*, *p* and *b* represent the actual, predicted and benchmark trade volumes. The σ is the elasticity of substitution between sources of imports (Armington elasticity) of a given service. X_j^a is then the country's *j* observable value of imports. Countries for which the total difference between the actual and predicted value of imports is negative and has greatest absolute value are assumed to be most restrictive. The most liberalised country in the sample, that is the country with greatest actual trade volumes relative to the predicted values, is the Great Britain in the year 2007. Therefore it was regarded as the benchmark country in further analysis.

In order to compute the final trade restrictiveness indices an additional assumption regarding the constant elasticity of substitution is required. Following the assumption made by Park (2002) we apply value of 5.6 as representing σ. being the most likely consumer preferences, characteristic for most services sectors.

As shown in the previous subsection, the reference estimations of the gravity equation were performed for the pooled sample in a panel form to account for unexplained heterogeneity. However, in order to account for the time variation in the tariff equivalents, a crossection version of the equation was estimated for each of the sample periods. This way the time-varying importer-specific fixed effects were estimated and they were subsequently used to compute the time series of tariff equivalents.

Table 3 presents the measured relative restrictiveness indices for transportation services sector for a group of European countries over the years 2003-2010. Apart of the indices themselves the table shows the unweighted averages and variances computed for indices for all countries in a given year and for a given country for all available years. The differences in the level of restriction are greater between countries in a given year than within one country over the time period. This observation is consistent with expectations – there are obvious differences in the state of legislation and rail services sector development among countries and the state of restrictiveness in a given country is not an attribute subject to significant changes under a limited time period.

One has to remember that presented outcomes refer to relative differences in restrictiveness levels, not to the absolute values. Therefore the fact that in this data sample Great Britain in year 2007 is defined as the country with 0% restrictions to trade in the sector indicates, that this country was experiencing most liberalized market compared to other countries in the sample, not that there were literally no restrictions in this country.

Table 3: Estimated tariff equivalents in rail transportation services sector

Country	2003	2004	2005	2006	2007	2008	2009	2010	Mean	Var
AUS	0,58		0,61	0,99	0,30	0,44	0,56	0,45	0,56	0,040
AUT	0,31	0,32	0,28	0,30	0,26				0,29	0,000
BEL	0,55	0,57	0,67	1,18	0,36	0,44	0,44		0,60	0,065
BGR	0,62	0,63							0,62	0,000
CAN			0,54	0,48	0,34	0,48	0,57	0,69	0,52	0,011
CHE	0,38	0,36	0,39	0,39	0,39				0,38	0,000
CZE	0,78	0,70	0,67	0,77	0,79	0,61	0,55	0,59	0,68	0,007
DEU	0,99	0,96	0,72	0,78	0,70	0,58	0,53	0,44	0,71	0,033
DNK	0,42	0,45							0,43	0,000

Country	2003	2004	2005	2006	2007	2008	2009	2010	Mean	Var
ESP	0,56	0,64	0,90	0,75	1,32	0,56	0,70	0,92	0,79	0,056
EST	0,30	0,31	0,21	0,23	0,11	0,38		0,30	0,26	0,007
FIN	0,53	0,48	0,86	0,89	0,70	0,53	0,41	0,36	0,60	0,035
FRA	0,45	0,45	0,51	0,35	0,36	0,47	0,41	0,50	0,44	0,003
GBR		0,07	0,12	0,12	0,00	0,33			0,13	0,012
HRV	0,46	0,50	0,45		0,16	0,74	0,46	0,89	0,52	0,047
HUN	0,34	0,24	0,81	0,49	0,77	0,56	0,30	0,23	0,47	0,047
ITA	0,59	0,64	0,54	0,61	0,61	0,52	0,48		0,57	0,003
JPN	0,46	0,39	0,30	0,47	0,51	0,61	0,58	0,40	0,47	0,009
LTU	0,77	0,85	0,91	1,35	0,60	0,83	0,64	0,65	0,83	0,050
LUX			0,63	0,65	0,60	0,39	0,51		0,56	0,009
LVA	0,37	0,35	0,33	0,39	0,20	0,17	0,64	0,56	0,38	0,023
POL	0,38	0,39	0,41	0,52	0,46	0,55	0,69	0,63	0,50	0,011
PRT	0,86	0,79	0,51	0,24	0,58	0,61	0,59	0,57	0,59	0,030
ROU	0,44	0,36	0,29	0,27	0,43	0,61	0,66	1,29	0,54	0,096
RUS	0,81	0,86	0,70	0,30	0,72	0,37	0,09	0,32	0,52	0,071
SVK	0,34	0,26	0,20	0,44	0,35	0,28	0,35	0,25	0,31	0,005
SVN	0,74	0,93	0,75	0,46	0,87	0,73	0,79	0,79	0,76	0,017
SWE	0,47	0,53	0,54	0,48	0,68	0,59			0,55	0,005
TUR	0,21	0,36	0,54	0,36	0,70	0,59	0,45	0,68	0,49	0,026
Mean	0,52	0,52	0,53	0,55	0,50	0,52	0,52	0,58		
Var	0,04	0,05	0,05	0,09	0,07	0,02	0,02	0,06		

Source: own calculations.

The results presented in the Table 3 demonstrate large differences in tariff equivalents among the analyzed countries. In general the countries with higher liberalization indices (indicating more liberal regimes, that will be discussed in the next section), like Great Britain (GBR), Denmark (DNK), Sweden (SVN) or Germany (GER) reveal lower level of tariff equivalents. There are, however, exceptions from that rule. For example Ireland, France or Latvia have relatively low indices of liberalization, while the tariff equivalents are not very high. Thus we can conclude that institutional liberalization reforms have some impact on the level of tariff equivalents but this is not a one-to-one type of relationship.

The empirical analysis, based on gravity model, did not reveal a clear downward trend in the levels of tariff equivalents, presumably reflecting existing trade barriers, between EU and OECD countries. Therefore, in contrast to liberalization indices among EU countries (see the third section), we cannot detect a clear downward trend. It has to be noted that there are some countries, such as Germany where the liberalization trend in tariff equivalents is clearly observed. On the other hand there are also countries in which the tariff equivalents increased over the period on 2002-2010. Poland and Turkey are among those countries.

These results are somewhat surprising given the three rail liberalization packages that have been adopted by the EU countries. The relevant liberalization indices will be discussed in the third section. In the fourth stage we will analyse a relationship between the and international trade in rail services, and rail liberalization indices. The estimated trade equivalents that are not going down over time, may suggest a slow progress in enforcement of liberalization policies.

2. QUANTIFICATION OF RESTRICTIVENESS OF POLICY IN THE RAIL TRANSPORTATION SECTOR BASED ON SERVICES RESTRICTIONS DATABASE OF THE WORLD BANK

The Services Trade Restrictions Database of the World Bank provides new data on services trade policies across 103 countries, 18 services sectors from within five broad industries (financial, telecommunications, retailing, transportation and professional services) and three modes of delivery (cross border, commercial presence, and presence of natural persons).[193] In this section we concentrate instead of 103 countries on two countries, namely Turkey and Poland, and on the transportation sector only.

In the transportation sector the database covers air, maritime, road and rail transportation. In air transportation a distinction is made between domestic air passenger transportation, and international air passenger transportation; and in maritime transportation a distinction is made between international maritime shipping and maritime auxiliary services. Emphasis is placed on mode 1 and mode 3 in the cases of international air passenger transportation and international maritime shipping. In all other cases emphasis is placed on mode 3 only.

The database is provided from the perspective of a foreign supplier, who wishes to provide services in a particular country, and the database focuses on policy measures that discriminate against foreign services or service providers. The questionnaires on which the database on transportation services are based is shown in Appendix Table 1. They draw upon model questionnaires that had been used in the context of WTO services negotiations, and related work at institutions such as the Australian Productivity Commission and the Organization for Economic Development and Co-operation (OECD).[194] The set of standardized policy measures with regard to mode 3 is divided into four broad categories: (i) legal form of entry and restrictions on foreign equity, (ii) licensing limits and transparency of licensing requirements, (iii) restrictions on operations, and (iv) relevant aspects of regulatory environment. On the other hand, measures related to mode 1 stipulate conditions under which cross border trade may take place.

Borchert et al. (2012) assess policy regimes for each subsector-mode and assign them into five broad categories: completely open, i.e. no restrictions at all; completely closed, i.e. no entry allowed at all; virtually open but with minor restrictions; virtually closed but with very limited opportunities to enter and operate; and a final residual "middle" category of regimes which allows entry and operations but imposes restrictions that are neither trivial nor stringent. The five regimes are assigned values on an openness scale from 0 to 100 with intervals of 25. Policy measures are divided into two tiers. While the first tier measures include those that affect market entry decisions most significantly, such as a limit on foreign ownership and the number of licenses, the second tier measures include those that affect operations of service providers, such as restrictions on the repatriation of earnings. Note that the second tier measures do not contribute to overall restrictiveness when first tier measures

[193] Qualitative and quantitative information on the Services Trade Restrictions Database in available at http://iresearch.worldbank.org/servicestrade. A detailed account of the database is provided in Borchert et al. (2012).
[194] See OECD (2009) and OECD (2011).

are prohibitive. On the other hand, if the first tier measures are not prohibitive then second tier measures are considered in determining the overall restrictiveness score. This quantification method is called the Services Trade Restrictions Index (STRI). Thus, the STRI focuses on measures which discriminate against foreign services and providers, and in the absence of any discriminatory measures the STRI takes the value of zero, which is associated with the greatest level of openness.

Given the questionnaire results on e.g. road transportation Borchert et al. (2012) select first the policy measures that go into building the STRIs for each subsector-mode combination, and for each subsector-mode they focus on measures that affect entry and operation of foreign entities most significantly. Next, they determine by consulting private sector representatives in the related countries the level of restrictiveness of certain measures by assigning values from 0 to 100 with intervals of 25. The aggregate subsector-mode scores are obtained in the third step using the set of weights for the rail transportation sector.[195]

3 QUANTIFICATION OF RESTRICTIVENESS OF POLICY IN THE RAIL TRANSPORTATION SECTOR IN THE CONTEXT OF EU INTEGRATION

In order to analyze the implications of transportation services' liberalization within EU integration, we concentrate on the liberalization of the rail transportation sector only, and focus on how much the countries have adopted and implemented the EU rules and regulations on organizational structure, regulation of market access, regulatory authority, information barriers such as the quality of personal and non-personal information provided, administrative barriers such as license and safety certificate, and operational barriers such as track access conditions in rail transportation sector.

In order to measure the status of market opening in the rail markets Christian Kirchner (Humboldt University) together with IBM Consulting Services constructed the liberalization index (LIB) for the following years: 2002, 2004 and 2007 and 2011. In the following section we present these indices in order to demonstrate the progress of liberalization of the European rail transport markets among EU member states. The study reveals that the degree of implementation of EU directives and regulations into national legislation was quite differentiated among the member states.

The overall progress in market access liberalization is measured by the LIB index. Now it consists of two sub-indices, reflecting various aspects of legal and economic liberalization. The first level (LEX Index) shows the existing legal framework (law in the books). In other words it describes what are the legal requirements for market entry and to what extent does a regulatory authority support external RUs? The second level investigates the status of the actual access opportunities and barriers (ACCESS Index) and reflects the "law in action". It

[195] This section is not complete. Once completed the section will focus on policy measures that discriminate against foreign transportation services or transportation service providers. Emphasis will be placed on requirements on the legal form of entry and restrictions on foreign equity, limits on licenses and discrimination in the allocation of licenses, restriction on ongoing operations, and relevant aspects of the regulatory environment. The analysis will be based as mentioned above on the World Bank's Services Trade Restrictions Database available at http://iresearch.worldbank.org/servicestrade and related literature such as Borchert et al. (2012a, 2012b) and Kalinova et al. (2010)

aims at replying what are the practical market access possibilities and barriers from the point of view of external RUs? Which market is accessible and what allocation procedures are employed? The third level shows the progress in market opening process and market dynamics (COM Index). Here the question is what are the dynamics of competition in the rail transport market and what progress is being made in rail's *modal split*?

While the first and third levels were important, it is the second level which is treated as being crucial for measuring market opening.[196] Therefore the ACCESS index, regarded as crucial has the weight of 80%, while COM index was excluded in 2004 from the LIB index calculations. This change was introduced in 2004 when weight of LEX amounted to 30 percent, while the ACCESS index counted for 70 percent. In the last surveys (2007 and 2011), the share of ACCESS index was further increased to 80 percent, while the weight of LEX index was decreased to 20 percent. Due to these significant methodological changes, the comparison in time among the level of indices should be treated with some caution.

The country coverage of indices has changed over time as well. In 2002 the study covered 15 EU members plus Norway and Switzerland. Since 2004 the scope of the analysis was extended to the new Member States. In 2007 it covers also Romania and Bulgaria. In that year the indices were calculated for 25 EU members and two additional European countries[197].

If it was possible to distinguish between scores, freight transport is included at 50 per cent, local and long distance passenger transport at 25 per cent each. The indices are calculated for each mode of transportation separately. The data for the LIB Index has been collected by means of questionnaires derived from the determinants used in the concept. The acquired data has been verified by recent scientific publications, further secondary sources and expert assessments. Paired comparisons and plausibility checks were also conducted to validate the data[198].

In 2011, the LEX sub-index consisted of three "subject areas" (and much more determinants), which were given the following weights:

I. Organisational structures of the (former) state railway of the national railway system (25 per cent)

1. Incumbents' Independence status from the state (5 per cent)
2. Degree of vertical separation – network/operations (80 per cent)
3. Degree of horizontal separation freight/passenger transport (15 per cent)

II. Regulation of market access (45 per cent)[199]

1. Market access for foreign railway undertakings (40 per cent)
2. Market access for domestic railway undertakings (40 per cent)

[196] Rail liberlziation Index 2002, page 6.
[197] Norway belongs to European Economic Area ((EEA), while Switzerland has signed a number of bilateral agreements regarding rail liberalization. There is no railway network in Cyprus and Malta.
[198] Rail liberlziation Index 2002, page 30.
[199] In 2002 version there were explicit references to the market access provisions pursuant to Directive 91/440/EEC as amended by Directive 2001/12/EC.

3. Legal controlled access to operational facilities (20 percent)

III. Regulatory authority powers (30 per cent)

1. General aspects of the regulatory authority (30 per cent)
2. Scope of regulation (30 per cent)
3. Powers of the regulatory authority (40 per cent)

The ACCESS index analyzed five aspects of market access liberalization with the following weights:

I. Information barriers (5 per cent)

1. Duration for obtaining information (40 per cent)
2. Quality of non-personal information provided (30 per cent)
3. Quality of personal information provided (30 per cent)

II. Administrative barriers (20 per cent)

1. Licence (35 per cent)
2. Safety certificate (25 per cent)
3. Homologation of rolling stock (40 per cent)

III. Operational barriers (45 per cent)

1. Train path access conditions (25 per cent)
2. Infrastructure charging system (50 per cent)
3. Other service facilities (25 per cent)

IV. Share of domestic market accessible – 2009 (25 per cent)

1. Method of awarding transport contracts (20 per cent)
2. Compliance with transparency provisions (10 per cent)
3. Percentage of the accessible market for RUs (70 per cent)

V. Sales services in passenger transport (5 per cent)

1. Rental of space ticket sales offices (50 per cent)
2. Access to sales services (50 per cent)

Since 2004, the COM index is not included in the LIB index. It reflects three aspects of the current market structure and is calculated with the following weights:

I. Modal split changes (20 per cent)

. Change in the modal split for rail freight transport (2001 - 2008) (40 per cent)
. Change in the modal split for rail passenger transport (2001 - 2008) (40 per cent)
. Share of modal split for rail freight transport 2008 (10 per cent)
. Share of modal split for rail passenger transport 2008 (10 per cent)

II. Number of external RUs 2009 (20 per cent)

. Certified RUs (excl. incumbent) in relation to network length (40 per cent)
. Ratio of active RUs to certified RUs (50 per cent)
. Number of active RUs providing passenger services on a regular basis (10 per cent)

III. Market share external RUs 200 (60 percent)

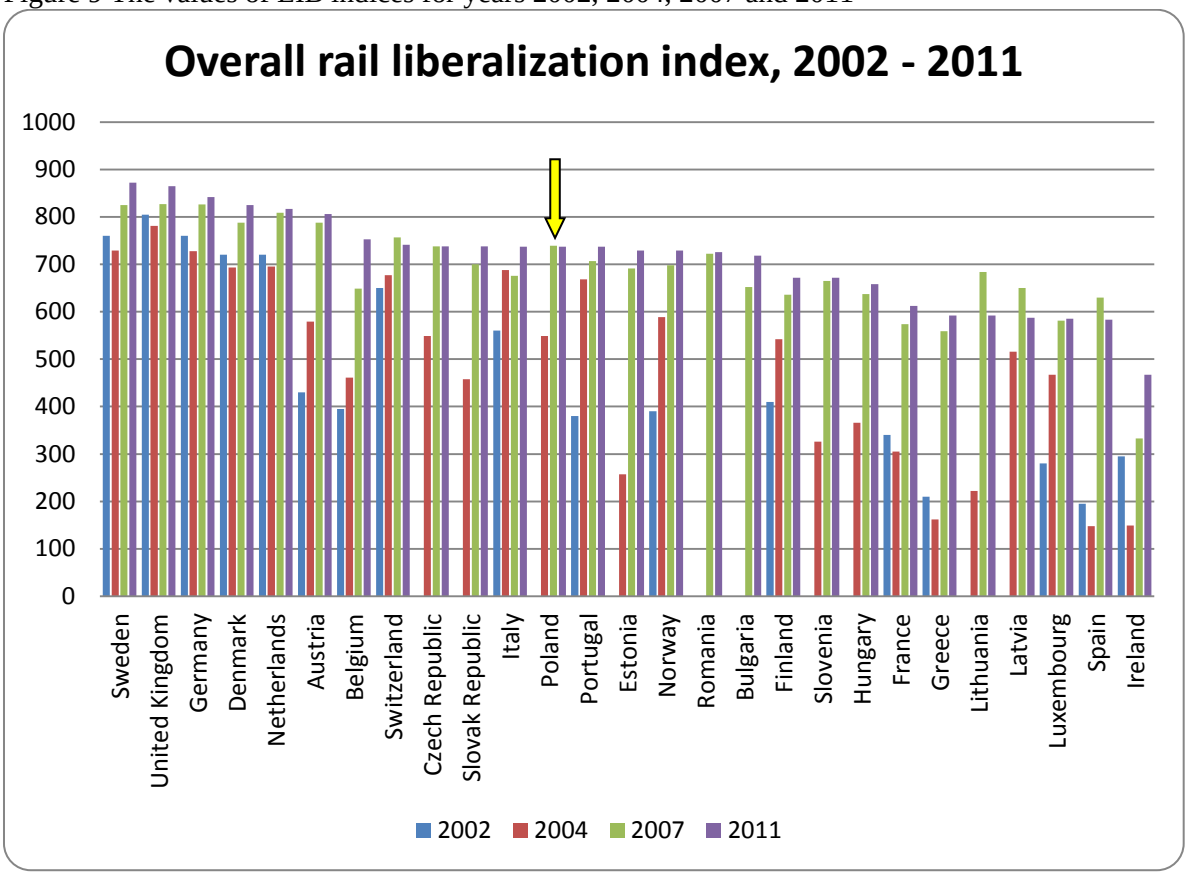
Market share ext. RUs in terms of transport performance in % (75 per cent)
Increase in market share of ext. RUs between 2006 and 2009 in % (25 per cent)

In majority of cases the "subject areas" listed above, were divided into more specific determinants describing various aspects of market access liberalization. For example in the case of licences and safety certificates (the component of ACCESS index in 2002, later merged into administrative barriers) the following specific determinants were analyzed: (1) decision makers regarding issue of licences; (2) duration of the process for the issue of licences; (3) scope of the licence; (4) recognition of foreign licences; (5) time required for the examination of foreign European licences; (6) period of validity of the licence; (7) required amount of insurance; (8) required paid-up capital; (9) licence costs; (10) additional conditions for the issue of licences; (11) clarity regarding contacts and (12) safety certificate.[200]

The authors of the study described the progress in implementation of EU legislation and market access liberalization achieved by different European countries on the basis of constructed indices. The changes in the level of overall LIB indices (aggregating LEX and ACCESS indices only) are shown in Figure 9.

[200] IBM Consulting Services (2002), page 19.

Figure 9 The values of LIB indices for years 2002, 2004, 2007 and 2011



The values of index varies from 0 to 1000 points, with 0 being the most restrictive regime and 1000 the most liberal one.
Source: IBM Business Consulting Services (2002, 2004, 2007, 2011)

The legal liberalization of the European rail transport markets continues to develop. In almost all countries the value of indices has increased over analyzed time, indicating a progress in the liberalization of the market access. This development is driven largely by reforms which the Member States have undertaken on the basis of the new EU railway legislation. But despite the uniform EU legislation, the liberalization happens at a differentiated pace. Overall, the rail sector still has some backlog compared with other network industries, such as telecommunications or the energy sector. The overall progress towards liberalization is shown in Table 4.

Table 4: The overall progress towards liberalization

Comparison of market opening categories for LIB Index 2002/2004 and 2007/2011

LIB Index points	Groups in the LIB Index 2002-2004	Groups in the LIB Index 2007 and 2011
800 – 1,000	No country with more than 800 points	Advanced
600 – 799	On Schedule	On Schedule
300 – 599	Delayed	Delayed
100 – 299	Pending Departure	No country with less than 300 points

Source: Based on IBM Business Consulting Services (2011 Table 1, p. 10.

In order to show the differences in the implementation of legislation among EU members the authors have created the following classification of countries. The first group of advanced countries, in which the liberalization is already well developed, the indices were evaluated with scores of 800 or more points in 2007. Sweden (872) Great Britain (865), Germany (842), the Netherlands (817) and Austria (806) are the countries with the most liberal market access railway regimes.

Countries in the second group there are "on schedule" with implementing the railway EU legislation. The LIB indices were evaluated with scores between 600 and 800 points. This is the most numerous group consisting of all new members states, which accessed the EU in 2004 plus Portugal, Spain and Switzerland.

Poland had fifth best score (737 points) together with Italy and Portugal, among those countries. The Polish score is by 28 points higher that the EU unweighted average. It has increased by 184 points in 2007 in comparison to year 2004 and then decreased by 2 points. This change reflects a significant progress achieved in the years after accession to the EU, diminishing distance to the most liberal economies. It is worth to mention that Poland moved from "delayed" to "on schedule" countries between 2004 and 2007.

The third group, with scores from 300 to 599, embraces the countries with "delayed" implementation of the EU legislation. To this group of countries belong Ireland, Spain, Luxemburg, Latvia, Lithuania, and Greece. Despite limited access to their market, some liberalization progress has also been made in the recent years, especially in Ireland and Greece.

The progress in the existing legal framework (law in the books) is measured by LEX index. The data for all European countries are shown in the Table 5

Table 5: The LEX indices for analyzed countries (2002-2011)

	2002	2004	2007	2011
United Kingdom	960	940	969	980
Sweden	800	680	857	960
Germany	840	750	905	935
Denmark	860	790	821	926
Austria	680	530	819	895

	2002	2004	2007	2011
Netherlands	760	670	865	887
Portugal			829	884
Greece	260	305	619	859
Slovak Republic		535	853	857
Estonia		380	728	840
Bulgaria			722	839
Hungary		485	731	822
Belgium	380	425	740	820
Poland		600	783	803
Italy	660	740	819	795
Czech Republic		530	839	786
Romania			822	783
Latvia		580	683	780
Norway	580	570	777	769
Lithuania		260	820	730
Finland	620	640	732	729
Spain	300	250	711	701
Switzerland	600	605	670	678
Luxembourg	520	530	551	669
Slovenia		550	622	655
France	340	360	595	650
Ireland	520	180	332	414
Average	605	537	749	794

The values of index varies from 0 to 1000 points, with 0 being the most restrictive regime and 1000 the most liberal one.
Source: Based on IBM Business Consulting Services (2002, 2004, 2007, 2011)

In the case of "law in the books" almost all countries, with the exception of Ireland, are on schedule. Poland with score of 803 points in 2011 was among advanced countries together with such a leaders like U.K. Sweden and Germany, and many Eastern European countries.

The real economic progress in market opening and market dynamics is measured by COM Index. The relevant changes measuring the progress are shown in Table 6.

Table 6: The of COM Index for analyzed EU countries 2004-2011

	2002	2004	2007	2011
Sweden	760	760	817	850
United Kingdom	740	715	791	837
Germany	840	720	807	819
Denmark	770	650	780	800
Netherlands	820	710	795	799
Austria	410	600	781	784
Switzerland	770	710	778	756
Belgium	500	475	626	737
Czech Republic		560	713	726
Italy	680	670	640	722

	2002	2004	2007	2011
Poland		530	728	720
Norway	410	595	679	719
Romania			697	711
Slovak Republic		430	662	708
Estonia		205	680	702
Portugal	209	605	676	701
Bulgaria			653	688
Slovenia		230	675	676
Finland	440	505	612	657
Hungary		320	613	616
France	430	280	568	602
Luxembourg	220	440	588	564
Lithuania		210	650	558
Spain	180	105	610	554
Latvia		485	642	539
Greece	240	100	544	525
Ireland	280	130	338	481
average	512	470	672	687

The values of index varies from 0 to 1000 points, with 0 being the most restrictive regime and 1000 the most liberal one.
Source: Based on IBM Business Consulting Services IBM Corporation (2002, 2004, 2007, 2011)

The scores of COM indices are strongly correlated with LIB indices, but are much more differentiated among analyzed countries, reflecting wider discrepancies in the market structure. In 2011 the lowest score was in Ireland (481 points) and the highest in U.K. (850 points), with an average of 687 points. The increase of these indices reflecting real progress in market opening is quite substantial . The average value of the COM indices increased only from 512 in 2002 to 687 in 2011. Poland was once again among the group of countries "on schedule". Poland had the score of 710 points in 2011, which was slightly above the unweighted average for that year. The ranking of Poland was close to Italy, Czech Rep. and Norway. Thus, we can state that Poland, according to this methodology, was among countries with fairly liberal railway network regimes. The liberalization led to increased competition especially among freight transporting companies.

Our empirical studies, however, reveal that despite major liberalization achievements Polish, transportation sector is still far less competitive than the EU-15 member states. This relative underdevelopment is can be attributed to a low level of investment in infrastructure.

4. THE IMPACT OF INSTITUTIONAL LIBERALIZATION ON RAIL SERVICES' TRADE

In this section we analyze the impact of liberalization on the import of rail transport services. We check whether the liberalization introduced by the European countries has increased the trade of these services. This hypothesis will be tested in a standard gravity model using econometric techniques. The gravity model have been applied by Park (2002) to trade in services. Afterwards, several other authors have used this framework in a similar fashion.

These include Grunfeld and Moxnes (2003), Lejour and de Paiva Verheijden (2003), Walsh (2006) or Marouani and Munro (2011).

We applied the gravity model to all four categories of rail transport services, available in the Extended Balance of Payments Services (EBOPS). Thus, our econometric analysis will be presented in four separate specifications for each category of rail transport services. In each specification, apart from standard gravity variables, four different liberalization indices will be included in a separate equation as follows:

$$\ln(Im_{irpt}) = c + \gamma_r + \eta_p + \lambda_t + \beta_1 \ln L_{rt} + \beta_2 \ln L_{pt} + \beta_3 \ln GDP_{rt} + \beta_4 \ln GDP_{pt} + \beta_5 \ln(diff\_GDP) + \beta_5 \ln(Dist_{rp}) + Z_{rpt} + \varepsilon_{rpt}$$

where "Im_{irpt}" is the import of rail transport service "*i*" from the partner country "*p*" to the reporter country "*r*" at time "*t*". The variable "c" is the intercept. "*L*" is one of the liberalization indices. "*GDP*" is the nominal GDP in USD. The variable "*diff_GDP*" refers to the differences of the real GDP per capita in USD between the two countries. "$Dist_{rp}$" is the distance between the two partners in kilometers. In general, according to the gravity approach, the volume of trade is an increasing function of the economic potential trading partners (GDP) and a decreasing function of the distance between them. "*Z*" is a vector of some control variables as follows, used in the majority of studies based on gravity model.

"Contig", "comlang_off", and "colony" are respectively referring to the contiguity, common official language, and common colonial history between the two trading partners. These variables are expected to increase bilateral trade between the two countries as they are reducing the costs associated with trade. "ln_Inv" and "ln_Main" that are respectively rail infrastructure investment and maintenance in each partner country. Those variables, improving the quality of rail infrastructure, are expected to have positive effects on the trade of rail transport services. "ln_Ex" and "ln_Im" are respectively total bilateral export and import of goods between the two partners. Since freight transport is one of possible means of goods transportation between European countries, it is expected that these variables should have positive impact on the import of rail transport services, especially freight transport services.

"γ_r", "η_p", and "λ_t" are respectively, reporter country, partner country, and times fixed effects. "ε_{rpt}" is the error term. Running normal OLS estimation for the above model produces biased results due to country specific and time fixed effects. Therefore, we used Fixed Effect (FE) and Random Effect (RE) estimators, where Hausman test suggests the efficiency and consistency of them to be chosen. We recall that geographical variables, that are time invariant are dropped out of FE regressions, while they are included in the RE estimations.

The analysis is based on an unbalanced panel database during 2002-2010 for 27 European countries (Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom). Dependent variable, "Im_{irpt}", is obtained from TSDv8.7 database provided by Francois and Pindyuk (2013). Liberalization indices are collected from IBM, Global Business Services and we used interpolation for the missing years during 2002-2010. The detailed description of those indices has been presented in the previous section.

The first three control variables and "Dist" are geographical gravity variables gathered from CEPII[201]. "Ex" and "Im" variables are provided by UN COMTRADE data collected from World Integrated Trade Solution (WITS)[202]. Infrastructural variables are collected from International Transport Forum at the OECD[203]. The rest of the variables are collected from the World Development Indicators (WDI) provided by the World Bank[204]. The following table represents the complete list of variables and data sources.

Table 7: Data Description

Variable	Description	Source
ln_Value	Import of Transport Services – USD Millions	TSDv8.7 database provided by Francois and Pindyuk (2013)
Services flows	EBOPS Code 219: Rail transport	
	EBOPS Code 220: Passenger	
	EBOPS Code 221: Freight	
	EBOPS Code 222: Other	
ln_Inv	Infrastructure Investment – EUR Millions	International Transport Forum at the OECD http://www.internationaltransportforum.org/statistics/investment/data.html)
ln_Main	Infrastructure Maintenance – EUR Millions	International Transport Forum at the OECD: http://www.internationaltransportforum.org/statistics/investment/data.html)
rail_dens	Rail lines (total route-km) divided by the Area of the country (sq. km)	Own Calculations – Data fromWorld Development Indicator
ln_diff_GDP	Difference of GDP per capita (constant 2000 USD) between the two countries	World Development Indicator
ln_nGDP	GDP (current USD)	World Development Indicator
ln_Ex	Total Export from Reporter to Partner – Thousands USD	World Integrated Trade Solution (WITS) - UN COMTRADE
ln_Im	Total Import to Reporter from Partner – Thousands USD	World Integrated Trade Solution (WITS) - UN COMTRADE
ln_Dist	Distance between the two countries in km	CEPII database
Contig	Contiguity of the two	CEPII database

[201] Centre d'Études Prospectives et d'Informations Internationales and Can be found at: http://www.cepii.fr/anglaisgraph/bdd/distances.htm
[202] Can be found at: http://wits.worldbank.org/wits/
[203] Can be found at: http://www.internationaltransportforum.org/statistics/investment/data.html
[204] Can be found at: http://data.worldbank.org/data-catalog/world-development-indicators

Variable	Description	Source
	countries	
comlang_off	Common official language in the two countries	CEPII database
colony	Colonial history of the two countries	CEPII database
ln_Access	Access Liberalisation Index (data exists for 2002, 2004, 2007, and 2011. Interpolation for missing year during 2002-2010 is estimated)	IBM, Global Business Services, Rail Liberalisation Index 2011
ln_COM	COM Liberalisation Index (data exists for 2002, 2004, 2007, and 2011. Interpolation for missing year during 2002-2010 is estimated)	IBM, Global Business Services, Rail Liberalisation Index 2011
ln_LEX	LEX Liberalisation Index (data exists for 2002, 2004, 2007, and 2011. Interpolation for missing year during 2002-2010 is estimated)	IBM, Global Business Services, Rail Liberalisation Index 2011
ln_OveralLib	Overal Liberalisation Index (data exists for 2002, 2004, 2007, and 2011. Interpolation for missing year during 2002-2010 is estimated)	IBM, Global Business Services, Rail Liberalisation Index 2011

4.1 Whole Rail Transport Services (BOP Code 219)

Table 8 shows the estimation results for the Whole Rail Transport category (BOP: 219). The difference between the four equations is mainly inclusion of a different liberalization indices in each of them. According to the Hausman test, all equations are preferred to be estimated using FE regression. Among all liberalization indices, only Access index for the partner country, and LEX index for the reporter country has statistical positive significant coefficients (at 5% and 10% levels of significance respectively). Thus, the improved access to the rail infrastructure of the exporters and legal liberalization of importer stimulates overall trade in rail services.

Infrastructure investment in the railroads of the reporter country has no statistical significant effect on the import of rail services. Maintenance of railroads in the reporter countries statistically significantly decreases the import of rail transports. However, infrastructure investment and maintenance of the partner country increases the import of these services from the partner countries, according to almost all statistical significant positive coefficients.

Railroad density in the reporter country has statistical negative significant coefficients in all equations, that suggests that the development of rail infrastructure is negatively related to

imports of rail transport services. This result may stem from the fact that in some countries (such as Poland) due to a period of disinvestments in railway transport infrastructure, the quality of majority of railroads is low and cannot be used for international freight or passenger transportation, while due to other factors imports of rail trade services went up. However, railroad density in the partner country has no statistical significant impact on the export of rail transports.

Differences in real GDP of both partners and nominal GDP of both countries have no no impact on imports of all rail transport services according to almost no statistical significant coefficients.

Export of goods from reporter to the partner country is significantly increasing the import of rail transport services. This suggests a country increasing the exportation of goods to a partner for about 1 percent, is increase the demand for rail transport services by about 0.3 percent from the partner. Surprisingly, the estimated parameter on the imports of goods is not only statistically insignificant, but also it is roughly half of the size of the export coefficient. This suggests that merchandise exports create extra demand for foreign rail services, while they do not boost the exporting country rail sector exports.

Table 8: Regressions of Whole Rail Transport (219)

	(1)	(2)	(3)	(4)
Type of Estimation	FE	FE	FE	FE
Dependent:	Import of Service	Import of Service	Import of Service	Import of Service
ln_Inv_r	-0.10	-0.11	-0.13	-0.088
	(0.11)	(0.11)	(0.11)	(0.11)
ln_Main_r	-0.19**	-0.17**	-0.19**	-0.19**
	(0.085)	(0.084)	(0.085)	(0.085)
ln_Inv_p	0.24**	0.21*	0.31***	0.24**
	(0.11)	(0.11)	(0.11)	(0.11)
ln_Main_p	0.13	0.16**	0.14*	0.14*
	(0.082)	(0.082)	(0.083)	(0.082)
rail_dens_r	-48.1**	-47.5**	-52.4***	-49.0**
	(19.4)	(19.5)	(19.7)	(19.4)
rail_dens_p	19.4	18.6	17.4	16.2
	(19.3)	(19.3)	(19.5)	(19.3)
ln_diff_GDP	-0.15	-0.13	-0.11	-0.15
	(0.11)	(0.11)	(0.13)	(0.11)
ln_nGDP_r	-0.65	-0.26	-1.12**	-0.80
	(0.49)	(0.47)	(0.52)	(0.51)
ln_nGDP_p	-0.15	0.25	0.26	-0.13
	(0.50)	(0.49)	(0.52)	(0.51)
ln_Ex	0.30*	0.29*	0.27*	0.30*
	(0.16)	(0.16)	(0.16)	(0.16)
ln_Im	0.15	0.13	0.12	0.14
	(0.17)	(0.18)	(0.19)	(0.17)
ln_Access_r	0.16			

	(1)	(2)	(3)	(4)
Type of Estimation	FE	FE	FE	FE
	(0.21)			
ln_Access_p	0.37*			
	(0.21)			
ln_COM_r		-0.22		
		(0.21)		
ln_COM_p		-0.053		
		(0.22)		
ln_LEX_r			0.68**	
			(0.31)	
ln_LEX_p			0.091	
			(0.32)	
ln_OveralLib_r				0.33
				(0.26)
ln_OveralLib_p				0.38
				(0.27)
Constant	14.4	-0.98	14.8	16.6*
	(9.60)	(9.18)	(10.1)	(9.95)
Observations	1022	1022	983	1022
R^2	0.046	0.043	0.056	0.047
AIC	2259.1	2263.2	2163.5	2258.6
BIC	2328.1	2332.3	2231.9	2327.6
Hausman Test	0.000	0.000	0.000	0.000

Standard errors in parentheses
** p < 0.10, ** p < 0.05, *** p < 0.01*
Hausman Test: FE coefficients are consistent under H_0 and H_1, RE coefficients are inconsistent under H_1 but efficient under H_0

4.2 Rail Passenger Transport Services (BOP Code 220)

Table 9 shows the estimation results for the Rail Passenger Transport category (BOP: 220). According to the Hausman test, only specification (7) is preferred to be estimated using FE regression and others are better to be estimated using RE. Among all liberalization indices, only LEX index for the reporter country has statistical positive significant coefficient.

Infrastructure investment and maintenance for both countries has statistically insignificant coefficients in all four specifications, which suggests no relationship between these variables and import of rail passenger transport services.

Railroad density in the reporter country has statistical negative significant coefficients in three of the equations. Moreover, railroad density in the partner country has no statistical significant coefficients in any of the equations. Again this estimation implies the same possible problem as stated above for the whole rail transport services.

Differences in real GDP of both partners and nominal GDP of reporter country have no specific relationship with the import of rail passenger transport services. Nevertheless, nominal GDP of the partner country has statistical significant positive coefficients in all columns of this table. Since nominal GDP is a proxy for potential market of the partner

economy, we argue that the bigger the partner market is, the bigger will be the export of rail passenger transport services from that country. In fact, in three RE estimations the coefficients are about 0.61 that correspond to elasticity. Thus, we can observe that a 1% increase in the nominal GDP of the partner country will increase the export of rail passenger services to the reporter country by about 0.61 percent.

Export and import of goods between the two partners have no relationship with the import of rail passenger transport. This result is not surprising because one can argue that export and import of goods are related to freight rather than passenger transports.

Contiguity and common official languages between the two partners can increase the trade of rail passenger transports in the FE specifications. The positive impact of common border is very strong. It is not surprising, given the fact that rail operational systems are not fully compatible among European countries.

Statistical significant negative coefficients for distance variable in all RE regressions suggest that import of rail services are also decreasing functions of the distance between the two partners. This result is in line with the standard gravity model. In fact, one can argue that passenger travel for longer distances are preferred by air transports rather than rail transports, and that is the reason for the negative relationship observed here. However, colonial history of the two countries has received no statistical significant coefficients. It is important to note that these findings are along with the general gravity expectations for goods rather than services.

Table 9: Regression of Rail Passenger Transport

	(5)	(6)	(7)	(8)
Type of Estimation	RE	RE	FE	RE
Dependent:	Import of Service	Import of Service	Import of Service	Import of Service
ln_Inv_r	0.14	0.18	0.18	0.14
	(0.14)	(0.14)	(0.18)	(0.14)
ln_Main_r	0.12	0.13	0.12	0.12
	(0.081)	(0.083)	(0.13)	(0.082)
ln_Inv_p	0.10	0.034	0.091	0.10
	(0.15)	(0.16)	(0.21)	(0.15)
ln_Main_p	-0.099	-0.070	-0.084	-0.10
	(0.091)	(0.092)	(0.16)	(0.092)
rail_dens_r	-8.66*	-9.09*	-40.0	-8.59*
	(5.14)	(5.16)	(32.6)	(5.13)
rail_dens_p	4.18	4.61	7.46	4.24
	(5.28)	(5.32)	(34.5)	(5.28)
ln_diff_GDP	-0.11	-0.12	0.034	-0.11
	(0.10)	(0.10)	(0.26)	(0.10)
ln_nGDP_r	0.19	0.13	-1.11	0.20
	(0.28)	(0.28)	(1.15)	(0.28)
ln_nGDP_p	0.61**	0.62**	2.18*	0.61**
	(0.27)	(0.27)	(1.13)	(0.27)
ln_Ex	0.28	0.24	-0.56	0.28

	(5)	(6)	(7)	(8)
Type of Estimation	RE	RE	FE	RE
	(0.22)	(0.22)	(0.51)	(0.22)
ln_Im	0.017	0.044	-0.39	0.017
	(0.22)	(0.22)	(0.41)	(0.22)
contig	0.98**	0.98**		0.99**
	(0.39)	(0.39)		(0.39)
comlang_off	1.71***	1.77***		1.70***
	(0.58)	(0.58)		(0.58)
colony	-0.77	-0.78		-0.76
	(0.57)	(0.57)		(0.57)
dist	-0.00078*	-0.00079*		-0.00078*
	(0.00041)	(0.00041)		(0.00041)
ln_Access_r	-0.13			
	(0.26)			
ln_Access_p	-0.021			
	(0.29)			
ln_COM_r		-0.14		
		(0.23)		
ln_COM_p		0.33		
		(0.23)		
ln_LEX_r			1.18*	
			(0.70)	
ln_LEX_p			0.67	
			(0.64)	
ln_OveralLib_r				-0.18
				(0.34)
ln_OveralLib_p				-0.045
				(0.35)
Constant	-25.4***	-25.9***	-27.9	-25.3***
	(8.68)	(8.72)	(21.7)	(8.66)
Observations	443	443	428	443
R^2			0.090	
AIC	.	.	1088.3	.
BIC	.	.	1145.2	.
Hausman Test	0.159	0.079	0.006	0.086

Standard errors in parentheses
** p < 0.10, ** p < 0.05, *** p < 0.01*
Hausman Test: FE coefficients are consistent under H_0 and H_1, RE coefficients are inconsistent under H_1 but efficient under H_0.

4.3 Rail Freight Transport Services (BOP Code 221):

Table 10 shows the estimation results for the Rail Freight Transport category (BOP: 221). According to the Hausman test, all equations are preferred to be estimated using FE regression. Among all liberalization indices, LEX index for the reporter country has statistical positive significant coefficient. On the other hand, the same index for the partner country receives negative significant coefficient.

Similar to the results for rail passenger transport, infrastructure investment and maintenance for both countries are not statistically significant in all four equations.
Similar to almost all previous regressions, railroad density in the reporter country has statistical negative significant coefficients in all of the equations in the below table, and railroad density in the partner country has no statistical significant coefficients in any of the equations.

Similar to the regressions over the whole rail transports, export of goods has no significant relationship with the import of freight transports, while import of goods significantly increases the import of freight transport services. The last result is in line with standard expectations.

Table 10: Regression of Rail Freight Transport

	(9)	(10)	(11)	(12)
Type of Estimation	FE	FE	FE	FE
Dependent:	Import of Service	Import of Service	Import of Service	Import of Service
ln_Inv_r	-0.15	-0.11	-0.14	-0.14
	(0.12)	(0.12)	(0.12)	(0.12)
ln_Main_r	-0.11	-0.11	-0.12	-0.11
	(0.096)	(0.095)	(0.095)	(0.096)
ln_Inv_p	0.18	0.11	0.23*	0.17
	(0.12)	(0.12)	(0.12)	(0.12)
ln_Main_p	0.036	0.044	0.049	0.043
	(0.087)	(0.086)	(0.087)	(0.087)
rail_dens_r	-41.6*	-45.1**	-39.1*	-39.5*
	(22.9)	(22.7)	(23.0)	(22.9)
rail_dens_p	-16.6	-14.5	-15.5	-18.3
	(21.1)	(21.0)	(21.1)	(21.1)
ln_diff_GDP	0.055	0.058	-0.037	0.058
	(0.14)	(0.14)	(0.14)	(0.14)
ln_nGDP_r	0.58	0.82	0.35	0.51
	(0.52)	(0.50)	(0.54)	(0.53)
ln_nGDP_p	-1.17**	-1.39**	-0.91	-1.04*
	(0.54)	(0.54)	(0.56)	(0.55)
ln_Ex	0.26	0.23	0.25	0.26
	(0.17)	(0.17)	(0.17)	(0.17)
ln_Im	0.39*	0.42**	0.38*	0.38*
	(0.21)	(0.21)	(0.21)	(0.21)
ln_Access_r	0.070			
	(0.23)			
ln_Access_p	0.084			
	(0.24)			
ln_COM_r		-0.30		
		(0.24)		
ln_COM_p		0.46*		
		(0.24)		

	(9)	(10)	(11)	(12)
Type of Estimation	FE	FE	FE	FE
ln_LEX_r			0.68*	
			(0.37)	
ln_LEX_p			-0.70*	
			(0.38)	
ln_OveralLib_r				0.25
				(0.30)
ln_OveralLib_p				-0.16
				(0.31)
Constant	9.59	9.08	10.3	8.35
	(10.5)	(10.3)	(11.0)	(10.8)
Observations	851	851	826	851
R^2	0.041	0.047	0.051	0.042
AIC	1832.0	1826.3	1764.8	1831.2
BIC	1898.4	1892.7	1830.8	1897.6
Hausman Test	0.000	0.000	0.000	0.000

*Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*
Hausman Test: FE coefficients are consistent under H_0 and H_1, RE coefficients are inconsistent under H_1 but efficient under H_0.

4.4 Other Rail Transport Services (BOP Code 222):

Table 11 shows the estimation results for Other Rail Transport category (BOP: 222). According to the Hausman test, specifications (14) and (15) are preferred to be estimated using FE technique, while equation (13) and (16) are better to be estimated with RE regression. Among all liberalization indices, only LEX index for the reporter country has a statistically positive significant coefficient. Again, this result cannot considerably determine a clear relationship between liberalization efforts and other rail transports.

Similar to the results for rail passenger and rail freight transports, infrastructure investment and maintenance variables for partner country have no statistical significance in all four equations. However, investment in rail infrastructures of the reporter country statistically significantly decreases the import of other rail transports according to the RE regression results. Maintenance of the railroads in the reporter country increases the import of these services given the RE estimations.

Similar to previous regressions, railroad density in the reporter country has statistical negative significant coefficients in the two RE regressions. We already tried to interpret this non-intuitive result. Railroad density in the partner country receives statistically significant coefficient in specification (15) only.

The same as regressions over rail passenger and freight transports, differences in real GDP of both partners have no specific relationship with the import of other rail transport services. However, unlike those last regressions, nominal GDP of the reporter country has statistical

significant positive coefficients in three columns of the following table. Similar to the whole rail transports, nominal GDP of the partner country has no statistically significant influence on the import of other rail transports.

Export and Import of goods have no significant relationship with the import of other transports. Among geographical CEPII variables, only contiguity receives statistically significant positive coefficients in the two RE regressions, which can be interpreted similarly to the results obtained in rail freight transports.

Table 11: Regression of Other Rail Transport

	(13)	(14)	(15)	(16)
Type of Estimation	RE	FE	FE	RE
Dependent:	Import of Service	Import of Service	Import of Service	Import of Service
ln_Inv_r	-0.38**	-0.39	-0.27	-0.38**
	(0.19)	(0.25)	(0.24)	(0.19)
ln_Main_r	0.21*	0.13	0.095	0.21*
	(0.11)	(0.18)	(0.17)	(0.11)
ln_Inv_p	0.18	0.11	0.29	0.19
	(0.22)	(0.29)	(0.28)	(0.22)
ln_Main_p	-0.046	0.11	0.080	-0.045
	(0.12)	(0.21)	(0.21)	(0.12)
rail_dens_r	-11.5*	9.78	29.1	-11.2*
	(6.50)	(50.2)	(48.9)	(6.51)
rail_dens_p	-5.62	-73.8	-80.5*	-5.78
	(6.49)	(45.3)	(44.6)	(6.49)
ln_diff_GDP	0.089	-0.10	-0.078	0.093
	(0.14)	(0.27)	(0.26)	(0.14)
ln_nGDP_r	0.79**	2.62**	1.25	0.76**
	(0.36)	(1.30)	(1.29)	(0.36)
ln_nGDP_p	-0.18	0.72	0.048	-0.20
	(0.38)	(1.39)	(1.41)	(0.38)
ln_Ex	0.28	-0.73	-0.55	0.26
	(0.35)	(0.73)	(0.71)	(0.35)
ln_Im	0.36	-0.75	-0.76	0.38
	(0.35)	(0.77)	(0.76)	(0.35)
contig	1.70***			1.71***
	(0.56)			(0.56)
comlang_off	-1.85			-1.84
	(1.61)			(1.61)
colony	-0.60			-0.60
	(0.91)			(0.91)
dist	-0.00088			-0.00086
	(0.00057)			(0.00057)
ln_Access_r	-0.23			
	(0.39)			
ln_Access_p	-0.080			
	(0.40)			

	(13)	(14)	(15)	(16)
Type of Estimation	RE	FE	FE	RE
ln_COM_r		-0.24		
		(0.50)		
ln_COM_p		0.61		
		(0.53)		
ln_LEX_r			2.24**	
			(0.90)	
ln_LEX_p			0.36	
			(0.85)	
ln_OveralLib_r				-0.10
				(0.53)
ln_OveralLib_p				-0.10
				(0.53)
Constant	-23.1**	-63.5**	-30.1	-22.5**
	(11.3)	(29.8)	(31.5)	(11.3)
Observations	319	319	319	319
R^2		0.082	0.109	
AIC	.	862.5	853.2	.
BIC	.	915.2	905.9	.

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.4 Concluding Remarks

In the above section, we analysed the determinants of bilateral trade in rail services. We included four indices of market liberalization in rail transport services as the explanatory variables of the regressions.

Among all of these indices, only the First Level Liberalization Index (LEX) in the reporter (importing) country received significant positive coefficients in all regressions. This index shows the existing legal framework (law in the books). In other words it describes what are the legal requirements for market entry and to what extent does a regulatory authority support external Railway Undertakings. These results suggest that it the more liberalizing the legal framework indeed helps imports of rail services. However, our study did not reveal a clear relationship between remaining liberalization indices and trade in rail transport services.

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

The economic analysis of the institutional liberalization was concentrated on the rail sector. We used four indices measuring the market liberalization in rail transport services as the main explanatory variables of the regressions. Among all of these indices, only the LEX of the importing country turned out to be significant and positive coefficients in all regressions. This index it quantifies the legal requirements for market entry and to the extent of the support of the regulatory to the external Railway Undertakings. Our results suggests, that among all the measures, only the liberalization of the legal framework has had an significant impact on the volume of imports.

At the same time, results obtained using an alternative empirical approach, based on a gravity model, did not reveal a clear downward trend in the levels of trade barriers between EU countries and OECD countries over the analysed period.

The lack of a clear link between liberalization of the rail sector and trade in services can be attributed to the fact that the entry to the rail sector by independent operators has been limited by the infrastructure ownership and that in the majority of EU countries the rail infrastructure has been owned by incumbent state rail undertakings. Moreover, the potential competitors in Eastern Europe were discouraged to entry by the low quality of rail infrastructure, suffering from inadequate investment and low level of freight and passengers fares (while the incumbent operators enjoyed soft budget constraints thanks to public budget support). It has been also shown that independently from liberaliztion efforts the level of price-cost margin (PCM) in rail was fairly stable and low in comparison to other sectors. We argued that a low level of PCM in this sector represents the inefficiency of the firms and not the strength of competitive pressure. The effects of institutional liberalization are expected to be more pronounced in other transportation sectors. For example, in another study, we observed a reduction of estimated tariff equivalents of trade barriers in the case of air transportation.

Despite major liberalization achievements, Polish transportation sector is still far less competitive than the EU-15 member states. This relative underdevelopment is mainly due to a low level of infrastructural investments. Those investments have been dramatically low for rail and motorway sectors, whereas the situation is only slightly better in the case of air transportation. Recently, some major investments in motorways, airports and high-speed railway lines have been undertaken and supported by EU structural funds, thereby a quality improvement is expected in the next decade. However, in order to guarantee the conclusion of those investments, ongoing financial support from EU structural funds is crucial. At the same time, due to political fragility of EU financial procedures, there are worries that the available funds at the moment can be either reduced by year 2020. In this case the development of new forms of public and private partnership would be of help to pledge that investment plans are completed in due course with the expected results in terms of infrastructural endowments.

Turkey, on the other hand, has set ambitious targets for 2023, the 100th anniversary of the establishment of the Republic of Turkey in order to improve the performance and competitiveness of the transportation sector. It aims to expand highways by three times, almost double the length of divided roads, double the railway infrastructure capacity, expand considerably the length of high-speed railways, and increase also considerably the port, airport and air fleet capacities. In addition, Turkey aims to have fair competition in the provision of transportation services by liberalizing the four transport sectors in trade with the EU, which in turn requires the adoption and strict implementation of the EU *acquis* in the related transport sub-sectors.

The Polish and Turkish experience of liberalization of trade in transportation services revealed that the liberalization process within the context of EU integration is challenging. In particular, in the case of road freight transportation, the liberalization requires that the countries adopt and implement effectively the rules and regulations on market access and competition, prices and fiscal conditions, social conditions, technical conditions, road safety, and international transport networks. Poland as a member of the EU had to adopt and implement these rules and regulations. On the other hand, Turkey is a candidate country for EU accession, and is committed to adopt and implement the EU rules and regulations.

However, other countries may not have the prospect of EU accession. For those countries, in particular for the southern Mediterranean countries, at their present state of development the adoption and implementation of EU rules and regulations could be much more challenging and costlier than in the case of Turkey.

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