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Structural Transformation and Industrial Policy: A Comparative Analysis of Egypt, Morocco, Tunisia and Turkey and Case Studies

Study carried out by **FEMISE**

Structural Transformation and Industrial Policy
in Selected Southern Mediterranean Countries[1]

Executive summary

Structural change constitutes one of the main ingredients of economic development since the reallocation of resources is expected to generate higher overall productivity and therefore higher incomes. It is broadly defined as the reallocation of resources from low productivity activities (traditionally identified with agriculture) to high productivity activities (industry and services), while industrial policy could be defined as "any type of selective intervention or government policy that attempts to alter the structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention." (Pack and Saggi, 2006)

How much structural transformation has taken place in Euromed countries over the past few decades? What has been the role of industrial policy or lack thereof in the transformation process? Although these questions have been the subject of an intense debate internationally for some time, they have rarely been discussed systematically in the Middle East.

The objective of this executive summary (derived from a larger research project) is to explore patterns of structural change and industrial policy in four Euromed economies: Egypt, Morocco, Tunisia and Turkey.

The report has the following main policy messages.

1. Patterns of structural change

The pace of structural transformation was uneven among the four countries, with Turkey showing remarkable performance. Turkey was able to shift from being the largest agricultural economy (around of half of GDP in 1960) to one that is more services-based (expanding from a quarter of GDP to around 63% of GDP in 2011). Impressive industrialization also took place over time, raising the share of the industrial sector from a fifth of GDP in 1965 to 28% by 2011. The same process can be observed in Tunisia and to a lesser extent in Egypt. Meanwhile, Morocco's structural change was the slowest, with very little industrialization taking place over time¸ with the share of industry in employment and value added remaining almost constant at around 25-30 percent in the last two decades. The evolution of employment shares provides a similar message.

- *In all four economies large **productivity gaps** remain between different sectors but* contrasting patterns emerge among them. While in Turkey structural change had always a positive and large contribution to overall productivity growth, the contribution of structural change was limited in Egypt and Tunisia, and in fact negative in Egypt in 2003-2008. While both in Egypt and Turkey significant amount of labor was reallocated to services, in Turkey reallocation was towards high productivity sectors (in particular finance and insurance) but in Egypt was towards low-productivity service industries. In Tunisia productivity growth within services (especially finance and tourism) seems to have contributed most to overall productivity change.

- *Manufacturing suffers from **limited diversification** and is dominated by traditional activities.* In Egypt and Tunisia, the share of largest manufacturing industries in total manufacturing value added was close to 50 percent in 2006; this ratio was about 35 percent in Turkey, reflecting a somewhat higher degree of progress in manufacturing diversification. The share of medium and high-technology industries in total manufacturing was less than 30 percent in 2009 in all four countries, and only 9 percent in Tunisia. Moreover, manufacturing is dominated by traditional activities such as non-metallic mineral products and iron and steel which account respectively for 23 and 14% of manufacturing value added in Egypt and Morocco respectively. If petroleum refineries and chemicals are added, the figure goes up to 50% for Egypt and 30% for Morocco.

*- All countries have achieved some degree of **export diversification** over the years but have scored poorly with respect to export sophistication.* With respect to non-commodity exports Turkey and Egypt's export structures are slightly more diversified than those of Tunisia and Morocco (where this ratio is 61 and 77%, respectively). In Morocco, the share of top 5 exports goods in total non-commodity exports has increased between 1965 and 2010, reflecting a reduction of diversification. As of 2010-2012, the share of manufactured goods in total exports is close to 75% in Turkey and Tunisia, 65% in Morocco and only 47% in Egypt. Even though all countries made some progress in diversifying their exports into medium-technology products, the share of high technology products in the exports of all four countries remains quite low (between 4 and 8% on average).

2. Industrial policy

*It is generally useful to differentiate between **horizontal and vertical aspects of industrial policy**.* Horizontal policies would include neutral policies such as getting the macroeconomic fundamentals right, maintaining a competitive exchange rate, providing an educated workforce and improving the business environment; they can also include non-targeted interventions such as providing subsidies to R&D and training or other forms of across the board subsidies and trade policy. Vertical policies, by contrast, are designed to promote specific industries where governments intervene to "pick winners" by providing tax holidays, various forms of protection, subsidies or subsidized credit.

2.1. Horizontal Policies

- Macroeconomic stability: Large swings in economic activity, high inflation, unsustainable debt levels and exchange rate volatility can jeopardize structural transformation and overall inclusive growth. Turkey stands out as the country that has most frequently suffered from macroeconomic crises in the late 1970s, in 1994 and again in 2000 and 2001. It is also the country that has had longest episodes of very high inflation. However, reforms in the early 2000s have rendered the economy more resilient to shocks and have helped it weather the 2008 financial crises without devastating economic consequences. Egypt, Morocco and Tunisia did not experience major macroeconomic dislocations similar to Turkey. Despite this, the absence of a coherent set of macroeconomic policies including employment, trade, industrial, and social policies undermined the achievement of sustained economic growth and certainly did not contribute to growth-enhancing structural change.

*- Significant **allocation of resources to education** (5-6% of GDP in the last three decades) has not produced the desired market outcomes such as reducing unemployment or more sophisticated production.* The proportion of unskilled workers in total production workers employed in the manufacturing sector remains high (47% and 33% in Morocco and Egypt respectively). With a job market that does not provide educated population with appropriate employment opportunities, there are two main challenges: on the supply side there is a skill mismatch; and on the demand side there is a relatively slow structural change and inability to move towards more sophisticated products.

*- There is an emerging public policy awareness of **the importance of R&D** but effective support is negligible.* Morocco, Tunisia and Turkey have formally adopted some sort of a national innovation policy. All countries, except Egypt, which seems to maintain a rather low level, have increased spending on R&D since the 1990s but these spending levels still lag behind the level spent by emerging economies on R&D of about 2-3% of GDP.

2.2 Vertical policies

Vertical policies, which are designed to support the development of specific economic activities, have been the most controversial. Such policies may entail trade protections, directed allocation of credit, subsidized interest rates, various forms of tax incentives or special rules in public procurement that favor domestic suppliers.

While agreement among economists is still elusive, there are several emerging ideas related to the adoption of vertical policies that may reflect at least partial consensus.

All four Euromed economies share a similar evolution in the adoption of vertical policies:

- **Import substitution policies** were adopted during the post-independence years and were broadly similar across all 4 countries. The state took a leading role in planning the economy and often took direct control of industrial production, with the aim of promoting structural change and growth. High protection rates as well as non-tariff barriers such as import licenses and import quotas were adopted. Other features included heavy controls on domestic prices, a repressed financial system, and dominance of state owned enterprises in banking and what were seen as critical industries.

*- Partial reversal of central planning started in the 1970s or 1980s and was accompanied by a clear focus on **export promotion**.* In particular, active export promotion policies were more intense in Tunisia and Turkey than in Morocco and Egypt. In Tunisia the government created an "offshore" sector in 1972 and put in place generous fiscal and financial incentives to attract FDI and boost exports. Firms that exported all of their products enjoyed duty-free raw material and equipment imports, 10-year corporate tax holiday, free repatriation of profits and trade facilitation services. In Turkey, in the 1980s and early 1990s exporters could benefit from a multitude of export incentives (e.g. export tax rebates, deduction of 20% from taxable income for certain goods, subsidized credits, preferential allocation of foreign exchange and duty free imports).

*- The adoption of **structural adjustment reforms** starting the late 1980s and subsequent privatization was accompanied by an intensification of vertical policies.* All four economies used targeted policies throughout the last few decades. Privatization and investment incentives went hand in hand. In Egypt for example, a package of investment guarantees and laws were created for specific industrial sectors: 5-year tax holidays, 5% reduction in all customs duties on capital imports by companies registered under the Law, etc. Similarly, Morocco adopted a "multiplicity of investment promotion and tax exemptions schemes that seemed more dispersed and overlapping between 2002 and 2007. Also, while the SME programs were mostly horizontal, the Emergence Program launched in the 2000s targeted specific industries (e.g. automobile, aerospace, electronics, textile and food industry). The upgrading program in Tunisia was non-sector specific, but there were incentives given to specific support sectors such as the textile and apparel industries. Turkey moved away from sectoral interventions during the late 1990s and 2000s in line with the WTO and EU requirements and started to focus on regional incentives. *It is to mention that only Turkey and to some extent Egypt have put in place incentives with an explicit **regional orientation**. In Turkey, 36 targeted provinces with low GDP per capita benefited from, among others, a variety of investment*

incentives such as 80 to 100% exemption from personal income taxes. In Egypt, the 1997 law provided tax holidays up to ten years for companies established in the new industrial zones, new urban communities or remote areas and up to 20 years for those outside the Old Valley.

- *One of the most glaring missing elements of industrial policy implemented in the four countries is the **discipline element**.* In general, success against performance targets has not been used as conditions for future support. Tunisia stands out for having supported export orientation back in the 1970s, when the rest of the countries were basically closed economies. Even then, there were no measurement of the performance mechanisms to the extend that the state continued to support the textiles and clothing industry even in absence of serious restructuring in response to emerging global challenges.

- *Some elements of **transparency** were adopted especially in programs directed towards SMEs and (in the case of Turkey) regional incentives programs, and where* incentives followed clear eligibility criteria and were not subject to discretionary selection by the authorities. Evidence on programs directed to large enterprises is less clear as funds were sometimes spent with no oversight. By contrast the upgrading program in Tunisia does not seem to have such a conspicuous element of favoritism.

3. Conclusion

As an overall evaluation, the four Mediterranean countries have achieved some degree of structural transformation over time; in particular moving from the agricultural-based sector towards services and industrial sectors, but it is clear that this transformation is insufficient.

In Turkey, arguably one of the more successful among the four in terms of structural change and diversification, support programs actually had little sectoral selectivity. The emphasis rather was on regional employment, and an academic evaluation of these programs concluded that the program did generate higher employment growth in the targeted regions, albeit with some deadweight loss as well. Meanwhile, in terms of export diversification, both Egypt and Turkey performed better than the other two countries.

Governments in these four countries realize that this transformation is far from satisfactory, this is why we observe that their industrial policies are moving away from sectoral targeting towards regional incentives and in particular to include more ''horizontal' mechanisms such as support to R&D, environmental protection and incentives to SMEs.

It is likely that targeted industrial policy will become more popular in the future. So far, industrial policy is not pre-ordained to succeed or fail, and the real issue is how it is designed and implemented.

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Structural Transformation and Industrial Policy:

Volume I: A Comparative Analysis of Egypt, Morocco, Tunisia and Turkey

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This Report contains three volumes:

Executive Summary

Vol 1: Structural Transformation and Industrial Policy: A Comparative Analysis of Egypt, Morocco, Tunisia and Turkey

Vol 2: Structural Transformation and Industrial Policy: Case Studies

Vol 3: Structural Transformation and Industrial Policy: Annexes

Structural Transformation and Industrial Policy in Selected Southern Mediterranean Countries

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I. Introduction

This paper is about two topics and four countries. The two topics are structural transformation and industrial policy. The four countries are Egypt, Morocco, Tunisia and Turkey. After discussing the rationale and importance of structural transformation and industrial policy in the development process, we ask the following questions: how much structural transformation has taken place in these four countries over the past few decades? What has been the role of industrial policy or lack thereof in the transformation process? Although these questions have been the subject of an intense debate internationally for some time, they have rarely been discussed systematically in the Middle East.

Drawing on a vast theoretical and empirical literature, we make two assertions at the outset. First, structural transformation is synonymous with economic development. In fact, no country in the world has been able to develop without going through major structural transformation, which is defined as "the reallocation of economic activity across agriculture, manufacturing and services that accompanies the process of modern economic growth" (Herrendorf et al., 2013). This assertion finds its roots in the classical work of Lewis (1954), which demonstrated in a two-sector model that the movement of labor from traditional low-productivity sectors like agriculture to modern or high-productivity industrial activities spurs capital accumulation and economic growth.

Subsequent work added a variety of insights into what makes structural transformation successful. Contrary to the theory of comparative advantage which praises the merits of specialization, recent strands of the literature commends the virtues of diversification whether product diversification, export diversification and most recently export sophistication and the degree of connectedness of exported goods in the product space.

First, Hesse (2008) provides evidence that the diversification and the expansion towards the non-oil manufacturing sector countries were associated with more sustainable growth acceleration. He also finds that this pattern of diversification holds not only when economies move from relying on agriculture to manufacturing, but also when they move within the manufacturing sector itself. Why does this occur? This is because diversification exposes producers to a wider range of information, especially about foreign markets, which leads to innovation, further learning, increasing returns to scale and beneficial externalities (Hausman and Rodrik, 2003). In addition, integration into global production networks facilitates the transfer and adoption of technology (Rodrik, 2012).

Second, trade openness and higher export growth were found to be major drivers of economic growth (Harrison and Rodriguez-Clare, 2010). This process happens through four main channels. The first is the trade channel which generates welfare gains for countries with different capital-labor endowment ratios. Second, increased exposure to foreign markets fosters competition and leads to a reallocation of resources towards the most productive firms and sectors and increasing economies of scale. Third, trade encourages learning by doing and technological spillovers to faster productivity growth (Grossman and Helpman, 1989). Finally, trade openness mitigates rent-seeking behavior, which was particularly rampant in import substitution strategies (Krueger, 1974).

Arguing further, Hausmann, Hwang and Rodrik (2007) suggest that it is not the volume of exports *per se* that brings about economic growth, rather it is the diversification into sophisticated or high-value added exports within a country's comparative advantage. Such exports provide more opportunities for learning by doing and for technological and institutional upgrading and may thus generate continuing dynamic productivity gains. Along the same lines, several studies (e.g., Haussman, Pritchett, and Rodrik, 2005; Johnson, Ostry, and Subramanian, 2007; Elbadawi, 2002; Sekkat and Varoudakis, 1998) show that diversification into non-traditional *exports* is associated with accelerated growth.

Adding an additional dimension, Haussman and Klinger (2006), Hidalgo et al. (2007) and Haussman and Rodrik (2006) show that countries that produce high productivity or

sophisticated exports that are "closely connected" in what they call product space are able of growing faster. Put visually, if the product space is made up of trees (goods) from which monkeys (entrepreneurs) can jump to other trees, the ability to jump from one tree to another or to produce new products and undergo structural transformation depends on the proximity of the new products to their current product mix. This because it is less costly to exploit existing resources (markets, physical and human assets, norms, and institutions) that were set up for other preexisting activities to diversify into products that are in close proximity to the current basket of goods.

Finally, Imbs and Wacziarg (2003) have argued that there is a non-linear U-shaped relationship between economic diversification and income levels. Initially, as income increases, economies become more diversified until some very high income threshold after which further growth is associated with increased specialization.

In sum, it is safe to conclude that structural transformation is essential for economic development, a process which may involve benefits from movements of factors of production across sectors, product upgrading, penetration of new markets and/or acquiring new know-how.

Our second assertion is about industrial policy. Namely, while the theoretical arguments in favor of industrial policy are compelling, outcomes critically depend on how it is designed and implemented. Before elaborating the foundations behind this assertion, let's first define industrial policy. In this paper, we follow Pack and Saggi (2006), who define industrial policy as "*any type of selective intervention or government policy that attempts to alter the structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention or policy that attempts to alter the structure of production in favor of sectors that are expected to offer better prospects for economic growth in way that would not occur in the absence of such intervention in the market equilibrium.*"

The theoretical arguments for industrial policy rest fundamentally on the idea that markets, left to their own devises, are not likely to yield socially efficient outcomes because of externalities and coordination failures. In particular, markets are not likely to promote industries that generate large spillovers or knowledge diffusion, large simultaneous projects that require coordination, or activities involving informational externalities. In all of these cases, the private and social rates of return diverge, and only government intervention can bring about socially desirable outcomes. These arguments are behind much of the early calls for government intervention to speed up the process of development (for example, Rosenstein-Rodan, 1961 and Hirshman, 1958).

One popular extension of the above view is the "infant industry" argument. In this case, state support to selected industries is justified on the grounds that it allows these industries to "takeoff" by reducing production costs initially which will be more than compensated for over time as they undergo a process of learning by doing, thereby allowing new domestic industries to compete with well-established foreign competitors. Bardhan (1971) models learning by doing as a classic "Marshallian externality" concluding that when learning is unbounded, it is socially optimal to subsidize the infant industry. Support could take the form of protection from international competition, subsides of various kinds or tax exemptions.

Supporters of this view cite evidence that favors government intervention. Most of the evidence comes from East Asia, suggesting that active industrial policies played a crucial role in boosting the process of development (Johnson, 1982; Amsden 1989; Wade 1990; World Bank, 1993).

Compelling as they may, the above theoretical arguments have not gone unchallenged. Surely, there is consensus among economists that markets do fail and more so in developing than in developed countries. However, governments fail too, whether because of their limited capacity or corruption. Anne Kruger (1993) and Lal (1993) argued that government failure outweighs market failure, which renders industrial policy ineffective and even harmful in the form of encouraging rent-seeking behavior.

Others disputed the positive evidence of industrial policy in East Asia, and pointed out that similar policies have not worked in Latin America (Noland and Pack, 2003; and Pack and Saggi, 2006). Earlier, Baldwin (1969) criticized support to infant industries, arguing that this support should be withdrawn once they acquire the necessary knowledge and become profitable. And before that, Lancaster and Lipsey (1956) advanced the Second Best theorem, which says that removing one market failure in an economy with multiple market failures does not guarantee welfare improvement and may in fact make matters worse.

Government intervention has evolved over time. The pendulum swung from what some consider excessive intervention in the 40s, 50s and 60s under the umbrella of import substitution strategies to too little intervention in the 80s and 90s when markets gained dominance. Currently, most economists converge on what Rokrik calls "Ask Not Whether, But How". Indeed, Hausman and Rodrik (2003) demonstrate that the laissez-faire equilibrium is deficient compared to the social planner in addressing market failures resulting from the presence of informational externalities. In this context, industrial policy (aiming to achieve diversification) is a process of self-discovery of an economy's comparative advantage (macro level) and the investors' profitable ventures (at the micro level). It becomes strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them. Under this more balanced view, the search is for more effective ways of supporting structural transformation, including the form and focus of subsidization, its duration and how it is identified. Typically, support is preferred when it is given to R&D rather than selected industries, new industries rather than old, bounded by a sunset clause rather than open ended, and/or the result of a consultative process between the government and the private sector rather than driven fully by bureaucrats. More recently, Justin Lin (2010) argued that industrial policies should target activities that are "comparative advantage facilitating" (CAF)

rather than "comparative advantage defying" (CAD) in order to speed up the processes of structural transformation and innovation.

We begin in the next section by conducting a comparative analysis of the four case studies to ascertain whether these countries have undergone notable structural transformation in the last few decades or not. Next, we attempt to profile industrial policy in the four countries to see whether different policies are associated with observed outcomes. We then provide concluding remarks.

One additional point is in order before going any further. This paper draws on country cases prepared by Atias and Bakis (Turkey), Achy (Morocco), Ghali and Rezgui (Tunisia), and El-Haddad (Egypt). It complements other studies, including the study by Diop et al. (2012) and Gourdon (2010), which provided evidence on the extent of diversification and structural transformation of in MENA countries over the period 1980-2010. It overlaps with a study by the African Development Bank (2012), which reviewed structural transformation and industrial policy in Egypt, Morocco and Tunisia. And it builds on a similar analysis of Egypt (Galal and El Megharbel, 2008), Morocco (Harabi, 2008) and Turkey (Ersel and Filiztekin, 2008). The choice of the countries was guided by their variability rather than their similarity with respect to their state of development and diversification, pattern of industrial policy and prevailing political institutions.

Methodologically, it is easier to measure the extent of diversification and to characterize the pattern of industrial policy but not to establish causality between both. Moreover, it is difficult to fully account for the role of politics in shaping industrial policy. Nevertheless "it is better to answer the right questions imperfectly than to answer the wrong questions perfectly".

II. Structural Transformation and Diversification

In search for a pattern of structural transformation and diversification in the four countries, this section traces the changes in the shares of different sectors in economic activity, employment, productivity and export

diversification. We begin with a broad characterization of the four economies.

Country Characteristics

The four economies are diverse according to a number of measures (Table 1).In terms of size, Egypt and Turkey's populations of 70-80 million are around seven times that of Tunisia's and more than double that of Morocco. They are also the two largest economies, even though Turkey's GDP, equivalent to USD 775 billion, is almost four times that of Egypt and almost 17 times that of Tunisia, the smallest economy. According to the World Bank classification, all four countries belong to the middle income category. Nevertheless, Turkey and Tunisia belong to the upper income category while Egypt and Morocco belong to the lower one. Income gaps thus remain, as Turkey's GNI per capita is more than double Tunisia's and more than three times Morocco's the poorest economy of the four.

Between 1960 and 2011, all four countries experienced growth in the neighborhood of 4-5%, with Egypt and Tunisia posting slightly higher growth rates. This growth performance enabled these two countries to more than quadruple their GDP per capita income and for Morocco and Turkey to triple theirs (Figure 1). Starting out at similar levels of income in the early 1960s, Tunisia's convergence was noticeably faster than Morocco's or Egypt's. This is particularly disappointing for Egypt which on average achieved similar growth to Tunisia.

High growth rates did not translate in an increase in labor force participation rates, which remain low with only around half of the population actively searching for jobs. Not only that but all 4 countries have witnessed a reduction in participation rates over time, Turkey in particular experienced the sharpest drop.

Meanwhile, the achieved growth levels were not able to create sufficient jobs and unemployment has been a persistent problem in all four countries since the early 1990s. On average, unemployment is highest in Tunisia and Morocco, estimated at 15 and 13% and is around 9-10% in Egypt and Turkey. The only country

who has experienced a consistent decline in unemployment since the 1990s is Morocco. To a much lesser extent, this downward trend could be observed in Tunisia but was interrupted by the revolution in 2010.

To conclude, all four countries have achieved acceptable growth rates on average, generating some improvements in their per capita income. On the one hand, Tunisia's income convergence was fastest among the four, even compared to countries which achieved similar growth. On the other, Morocco was very slow to catch-up with the other countries. Finally, growth did not sufficiently contribute to job creation in all four countries.

Structure of Value Added and Employment

Structural change can be measured by the contribution of various sectors to GDP and employment. So how diversified are the four countries?

Diversification of Value Added

Between the 1960s and 2011, all four countries witnessed broad structural change expressed by an expansion of their industrial and services sectors and a consistent shrinkage of agriculture. This process was particularly rapid in the 1960s and 1970s. Afterwards, it seems to almost to have come to a halt in Egypt and Morocco but continued in the other two countries. As a result, the current GDP structure shows some disparities among the four. On the one hand, in Turkey and Tunisia, industry (as a share of GDP) is around a third, the services sector occupies 58-63% of GDP and the agriculture sector is small (below 10% of GDP). On the other hand, in Egypt and Morocco, agriculture remains important (14-15% of GDP), services account 50-55% of GDP. Egypt slightly larger industrial sector reflects an important share of oil manufacturing industries.

The pace of structural transformation was uneven among the four countries. It was most striking and impressive in Turkey as it was able to shift from being the largest agricultural economy (around of half of GDP) to one that is more services-based (expanding from a quarter of GDP to around 63% of GDP). Remarkable industrialization also took place over time,

raising the share of the industrial sector from a fifth of GDP in 1965 to 28% by 2011. The same process can be observed in Tunisia and to a lesser extent in Egypt. Meanwhile, Morocco's structural change was the slowest, with very little industrialization taking place over time.

Diversification of Employment

So was structural transformation accompanied by a reallocation of labor from agriculture to industry and services? To answer this section, we look at the sectoral composition of employment since the 1980s.[1] Given the data limitations prior to this date, we are unable to know what the effect of structural transformation during the 1960s and 1970s was on the reallocation of labor. Moreover, data on Morocco and Tunisia is sporradic and discontinuous.

It is difficult to discern a common pattern among all four countries (Figure 5). Tunisia is one clear-cut case where labor migrated from the contracting agriculture to the booming services sector. Consequently, agriculture which was once the primary employer has become the smallest and employment services currently expanded from a third to around half of workers. This migration left the share of industrial workers unchanged at a third of workers, as industrial value added experienced limited growth during that period. The opposite pattern emerges for Egypt. The contraction in the agriculture sector led workers to migrate entirely to the growing industrial sector and left the stagnant services sector with an unchanged share of workers (46%). Egypt's agriculture sector still remains an important employer of a bit less than third of all workers. In Turkey, the expansion of the services sector attracted labor from the agricultural sector, raising the share of employment in services from around a third to half of of total employment. One intriguing fact though is that labor continued to migrate to industry even though production stalled during that period. Finally, despite some changes in its productive structure between 1994 and 2011, Mororcco has not witnessed any change in its

employment structure. Agriculture continues to be the main employer, around 40% of workers, followed by services (37%) and then industry around 22%.

This section showed that structural change took place over time in all four economies. Indeed, the size of the agriculture sector has shrunk and economies have become more industrialized and services-based. Yet, this process was uneven among the four economies and some were more successful than others. At one end of the spectrum, industrialization in Turkey and Tunisia was impressive, and at the other end, Morocco structural change was the slowest, with very little industrialization taking place over time. Egypt stands somewhere in between. Generally, in all countries except Morocco structural transformation was accompanied by a reallocation of labor from agriculture to the other sectors.

Decomposing labor productivity growth

Labor productivity gaps

Based on the Lewis dual model, the literature has provided solid evidence of the existence of large labor productivity gaps among different sectors of the economy, especially in developing economies. This is true for the four economies in this study. And even though some of them like Turkey may have reduced dispersion over time, important gaps still remain (Atiyas and Bakis, 2013).

On the one hand, agriculture remains a low-productivity sector in Egypt and Turkey, estimated at about 40% of average productivity but accounts for two-thirds of average productivity in Tunisia (Atiyas and Bakis, 2013; El-Haddad, 2013 and Marouani and Mouelhi, 2013). On the other hand, productivity is highest in the services sector. In Turkey, financial sector productivity is about three times as high as manufacturing productivity. In Tunisia, the productivity in public utilities (a sector which employs only less than 1% of workers) is four times average productivity. Productivity in the transport and telecommunication sector is close to average productivity and that of financial sector is half. Egypt.

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[1] Due to data limitations, it is difficult to extent the analysis the sectoral evolution of employment to before the 1980s. Moroccan data are available only since 1994.

As for manufacturing, productivity is close to average productivity for Egypt and Turkey but only half for Tunisia (Atiyas and Bakis, 2013 and Marouani and Mouelhi, 2013; El-Haddad, 2013). El-Haddad (2013) shows that in the case of Egypt, overall productivity in industry could be inflated because of petroleum refineries sector where productivity is seven and a half times that of average manufacturing productivity and indeed shows that non-oil manufacturing.

Decomposing aggregate labor productivity growth

Rodrik and McMillan (2011) show that economy-wide labor productivity growth can originate from two main sources. First, it may originate from labor mobility from low to high productivity sectors and this is when structural change occurs. Alternatively, growth may just occur within sectors through capital accumulation, technological change or reduction of misallocation across plants and may not necessarily lead to structural change.

An interesting exercise would thus be to decompose overall labor productivity growth into productivity growth *within* sectors, and that arising from labor mobility *across* sectors. Rodrik and McMillan (2011) suggest the following decomposition expression:

$$\Delta Y_t = \sum_{i=n} \theta_{i,t-k} \Delta y_{i,t} + \sum_{i=n} y_{i,t} \Delta \theta_{i,t}$$

Where Y_t and $y_{i,t}$ refer to economy-wide and sectoral labor productivity levels, respectively; and $\theta_{i,t}$ stands for the employment share of sector *i*. The Δ operator denotes the change in productivity or employment shares between t-k and t. Hence, this expression states that overall productivity growth between t and t-k consists of two components: the first is the "within component of productivity growth" which is the weighted sum of productivity growth within each sector, where the weights are the employment share of each sector at the beginning of the time period. The second term captures the "structural change" resulting from the productivity effect of labor reallocation across different sectors. It is the sum of changes

in employment shares, weighted by the end of period sectoral productivity levels.

El-Haddad (2013), Marouani and Mouelhi (2013) Atiyas and Bakis (2013) undertake this decomposition of aggregate growth in labor productivity for Egypt, Tunisia and Turkey respectively. Turkey's experience stands in stark contrast with that of Egypt and Tunisia respect to three aspects.

First, aggregate labor productivity growth was on average between 2% in Egypt and Turkey between the early 1990s and the late 2000s. It was slightly higher, around 3% but for a longer period 1983-2008. All three countries witnessed an improvement in productivity growth in the late nineties or during the 2000s.

Second, aggregate productivity growth was driven by structural change in Turkey and very much less so in Egypt and Tunisia (Figure 9). In fact, the contribution of structural change to aggregate labor productivity growth was less than a quarter in Egypt and around a fifth in Tunisia. This contribution became negative after 2003 in Egypt and almost nil in Tunisia after 1995, a perfect illustration of the "growth-reducing structural change" (Rodrik, 2010). In contrast, in Turkey, structural change generally contributed significantly to aggregate productivity in almost all years between 1990 and 2010. In the 1990s, all productivity growth was due to structural change and there was no contribution from the within component. In the following decade, both within and between components became important drivers of overall productivity growth, respectively accounting for roughly about one third and two-thirds of the latter.

Third, the increase in productivity growth over time was accompanied by a reallocation of labor towards the services sector (for which labor productivity growth accounted for around 50% of aggregate productivity growth in all three countries). However, the main difference is that in Egypt, labor was reallocated towards low-productivity *services* sector probably in the informal sector while in Turkey, it moved to high-productivity sectors like financial services (Atiyas and Bakis, 2013). It is difficult to carry out analysis for Tunisia over time but it is clear

that productivity growth in services sector (finance and tourism) is contributing the most to overall productivity change.

To sum up, the decomposition of labor productivity growth shows that Turkey's growth was associated with structural change, i.e. labor was effectively reallocated to the most productive sectors like financial services. Meanwhile, this did not happen neither in Egypt nor in Tunisia as growth originated from within sectors.

Total Factor Productivity

Figure x shows that growth has largely been the result of factor accumulation rather than total factor productivity (TFP) growth. Moreover, TFP was higher in the 1960s in all three Arab economies than in the following decades, which was the period characterized by massive public investment. TFP growth has declined since and remained low and is even negative for Morocco and Turkey in the 1990s. This surprising trend may have reflected the injection of much needed capital in the 1960s and the possibility that this investment may not have been sufficiently productive to boost TFP in subsequent periods.

Diversification of the manufacturing sector

The period 1970-2011 is characterized by wide variations in the performance of the manufacturing sector among the four economies. Manufacturing growth was on average around 4-7% and the share to GDP varied between 16 and 20%.[2] In all countries except Morocco, growth of the sector outperformed GDP growth. With average growth close to 7% between 1970 and 2011, Tunisia has recorded the largest surge in manufacturing sector share to 18% of GDP from 11% of GDP. Turkey which initially had the largest manufacturing sector to begin with and remains so (19% of GDP) has also expanded the size of the sector over time but at a less faster pace. In contrast, Egypt and Morocco have the lowest share of manufacturing to GDP and this share slightly declined over time. This is a disappointing performance for Egypt where growth rates similar to those in Turkey did not

result into the same expansion of the manufacturing sector.

Manufacturing sector in Morocco is increasingly relying on TFP growth

Achy (2013) undertakes a decomposition of overall manufacturing growth into factor accumulation and total factor productivity growth. He shows that even though overall manufacturing growth has declined since the late 1980s (3.3%) to the 2000s (2.7%), the content of this growth has been evolving over time, from one mostly driven by labor accumulation to one with stronger contribution of capital and TFP. In fact, while growth of factor accumulation still accounts for 74% of manufacturing growth during the 2000s, its relative contribution has been declining over time in favor of TFP. The latter which had a negative contribution in late eighties, accounted for one quarter of the manufacturing value added growth in the last decade. Meanwhile, capital accumulation is increasingly emerging as the key source of the manufacturing sector's growth, as its growth contribution more than doubled between the late 1980s and the 2000s to 63% of overall growth. Moreover, the contribution of labour growth which almost solely accounted for overall manufacturing growth in the late 1900s dropped to just 11%. Achy explains that this fall is the effect of the partial shift of European demand on Moroccan labor in the outsourced labor-intensive apparel sector to more labor-cheap countries as well as the dismantling of Multi-fiber agreement.

The most commonly used statistic for measuring concentration is the Herfindahl index (sometimes called the Hirschman-Herfindahl index, HHI). This index sums the squared shares of each activity's value added in total manufacturing value added. In normalized form, the index takes values from 0 to 1, the higher bound representing greater concentration, as it is the case where the country only has one sector which accounts for total production. Using

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[2] Data on the manufacturing sector for Egypt available since 1988.

UNIDO data for only 3 countries, Egypt, Morocco and Turkey and for various years, the following formula was used

$$HHI = \frac{\sum_k (s_k)^2 - \frac{1}{n}}{1 - \frac{1}{n}}$$

where k is the share of value added in total value added, and n is the number of sectors.

Two observations can be made. First, the manufacturing sector in all three countries could be considered as "unconcentrated" given that the HHI never exceeded 0.15. Having said that, Turkey's manufacturing sector stands out as the most diversified and also became more so over time, particularly after 2002. Comparatively, Egypt and Morocco have witnessed limited change in the diversification of their manufacturing sectors over time. Egypt's uneven diversification trend, particularly the hike in the HHI in 2002 is primarily driven by oil manufacturing.

The low values of the HHI could misleadingly indicate that all four economies are fairly diversified. An alternative indicator would be to look at the shares of the top largest sectors in total manufacturing. In Egypt and Morocco, the top 5 largest sectors accounted for 50% of total manufacturing in 2006 while the other 50 industries account for the remaining half. This figure drops to a third for Turkey. The top 10 largest sectors account for more than two-thirds for Egypt and Morocco and more than half in Turkey.

High-value added manufacturing

Despite being at their initial stages of industrialization and need to develop their manufacturing capacity to grow, the specialization of the manufacturing sector is still geared towards the traditional sectors.

In general, the share of medium and high tech production in manufacturing value added remains generally low, never exceeding more than 30% for all four countries. This includes Turkey and Morocco which are best performers. Achy (2013) show that this is primarily the result of the entry of some foreign firms in the aviation and automotive industries in Morocco. Furthermore, he shows that innovation activities

remain weak in Moroccan firms. In fact, less than 10 percent of the manufacturing firms have an ISO certification, and only around 5 percent are using a technology under foreign license. Surprisingly, Egypt and Tunisia witnessed a decline in the share of medium and high-tech products in their value added over time.

Alternatively, manufacturing is dominated by traditional activities. In fact, Egypt and Morocco's manufacturing production is dominated by non-metallic mineral products and iron and steel which account respectively for 23 and 14% of manufacturing value added. If petroleum refineries and chemicals are added, the figure goes up to 50% for Egypt and 30% for Morocco. Other goods that are produced such as textiles, some food and beverages still cannot be considered as high-value added manufacturing. Meanwhile, the picture is less gloomy for Turkey which was able to specialize in the local manufacturing of some high value-added goods like motor vehicles and automotive industries.

In Morocco, Achy (2013) shows that the bulk of the manufacturing value added, which accounts for more than 80%, has not changed between 2000 and 2010. As for the remaining 20%, Morocco was able double the share of *high progress industries* in total manufacturing value added (which achieved the highest growth in terms of their value added) to 14% in 2010. Yet, this impressive performance largely reflects the entry of a number of firms in the aircraft and spacecraft industry, (and also electrical equipment and pharmaceutical products) like the American Boeing, the French Safran and other leading aviation companies in Morocco's manufacturing sector. In counterpart, Morocco has reduced the share of *high regress industries* to just under 3% of the manufacturing value added in 2010 down from 8.1% a decade earlier. This includes some traditional industries like textiles, leather and related industries which suffered fierce competition from cheap-labor countries, but also a number of other relatively sophisticated industries such as optical instruments and photographic equipments; manufacturing of television and radio receivers, sound or video recording; pesticides and other agro-chemical products and finally pulp, paper and paperboard.

Export diversification

All four economies have managed to increase their exports (of goods and services) over time. In particular, Tunisia more than doubled its export share to GDP since 1960 and is currently also considered the most globally integrated economy using this measure. Turkey's performance of exports is also impressive as they increased by more than ten-fold but given their low initial level, they still remain below their levels in Morocco and Tunisia. Despite starting out in a better off position, Egypt has seen the most modest improvement over time.

The current composition of exports in all four economies is dominated by merchandise relative to services exports though there are some variations among them. On the one hand, Tunisia is by far the largest exporter of merchandise goods (almost 40% of GDP) and all other three economies lag significantly behind this performance. Meanwhile, Morrocco's performance has been erratic driven by the rise of the international price of commodities (mainly phosphates and its derivatives) (Achy, 2013). On the other, services exports are highest in Morcco (around 13% of GDP). It is worthwhile to note that the expansion of services exports in Morocco was to a large extent driven by modern, relatively high value added non-commodity tradable activities such as information and telecommunication, financial services, business services, transportation and tourism related activities (Achy, 2013).

All countries have diversified their merchandise export basket as the HHI for exports indicates a clear reduction in the concentration of export structures between 1965 and 2010. Having said that, three observations could be made. First, with an HHI concentration index ranging between 0.04 and 0.08 in 2010, exports in all four countries could be considered as unconcentrated. Egypt's and Turkey's export structures are slightly more diversified than those of Tunisia and Morocco. In 2012, Egypt's export structure shows more concentration, probably reflecting a drop in some export items after revolution. Second, most of the diversification efforts took place in the 1980s, except for Egypt when it was in the 1990s. Because it had a highly concentrated structure to

begin with, Egypt is the country that achieved the most impressive export diversification over time reaching almost the same level as Turkey. Turkey, which currently has the most diversified export basket of the four, was also the most diversified initially and therefore showed the most modest – but consistent - progress over time. A third aspect worth highlighting is that for some countries like Egypt and Tunisia, the process of export diversification was not linear, with some progress taking place during the late 1960s and early 1970s but this process was reversed in the 1980s, as shown by a sharp increase in their concentration indices.

To get a clearer picture, we look at the HHI on the non-commodity exports.[3] The diversification pattern is similar to the one described above but two striking observations stand out. First, in all four countries, the structure of non-commodity manufacturing sectors was much more concentrated than the overall export structure in the early 1960s. For instance, Turkey's non-commodity exports were three times more concentrated than its overall exports and in Tunisia it was more than double. By 2010, the concentration of non-commodity exports was very similar to that of overall exports in both countries. In this regard, Egypt and Morocco stand in sharp contrast, especially in recent years. On the one hand, Egypt's non-commodity exports became significantly less concentrated than its overall exports since the early 2000s. In particular, in 2012, the concentration of total exports was five times that of non-commodity exports. On the other hand, Morocco's non-commodity exports are twice as concentrated as overall exports. Second, the diversification of non-commodity exports was more rapid and consistent over time, especially for Egypt and Turkey. Even though both countries suffered from highly concentrated non-commodity exports in the early 1960s relative to Morocco and Tunisia, (HHI was around 0.5), their diversification process enabled them to outperform them (HHI between 0.03-0.05). In fact, the concentration of Morocco's non-commodity export structure which was a third of

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[3] This excludes from overall merchandise exports the following items: food and live items, crude materials, mineral fuels and lubricants.

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that of Egypt and Turkey in 1965 increased to be four times as concentrated as that of Egypt and three times that of Turkey in 2010. Similarly, Tunisia's concentration of non-commodity export structure which was half that of Egypt and Turkey became triple that of Egypt and double Turkey's.

Looking at the shares of the top largest exports to total exports, Egypt and Turkey stand out as having the most diversified export structure. Top 5 exports account for around 40% of total exports and top 10 exports for around two-thirds. On the other hand, the corresponding figures for Tunisia and Morocco are 60% and above 75% respectively. Most countries undertook a first wave of diversification efforts starting the late 1980s or 1990s. A second wave was in the second half of the 2000s. Egypt is the country that has achieved the most remarkable export diversification over time. Top 5 exports accounted for 90% of exports in 1965 and this figure dropped to less than half by 2012. The same evolution can be traced in Turkey but it was more diversified initially.

Looking at non-commodity exports, two observations can be made. First, the same progress in export diversification can be observed over time for all countries except Morocco which export structure has become more concentrated between 1965 and 2010. Two, non-commodity exports are slightly more diversified than overall exports, except Morocco.

Following the recent literature arguing that it is the export of sophisticated or high-value added goods that achieve structural transformation, the sophistication of the export basket of the four countries is analyzed in this section.

Export sophistication

By 2011, all countries, except Egypt, exported at least two thirds of their total merchandise exports in the form of manufactures exports. This figure goes up to 78% in the case of Turkey. Egypt is the only country which started out in a better off position than the other countries, with a share of manufactures exports in merchandise exports of around 21% and yet it was able to only double that figure by 2011. Morocco's figures, which show a dramatic

improvement in manufactures exports from 5% in 1965 to 66% of total exports in 2011 should be viewed with caution as they include the share of re-exports of temporary admitted imports which have low domestic value-added and generate only limited backward linkages with domestic industries. Taking into account this adjustment, Achy shows that Morocco's manufactured exports have actually decreased from 50% in 1997 to 43 percent in 2010.

López-Cálix et al. (2010) explain that the decline in concentration ratios in MENA over time reflected only limited progress in the introduction of new products but rather lower concentration of traditional products. In fact, looking at a more disaggregate level of exports, we observe that within manufacturing exports, the composition of exports is dominated by traditional products like articles of apparel and clothing or textile yarn. To an extent, Morocco, Tunisia and Turkey have been able to shift some of their exports towards machinery and transport equipment, in particular towards electrical machinery. Turkey's exports for road vehicles have also increased.

Nevertheless, manufactured exports of the four economies are generally produced with low levels of skill and sophistication: in 2010, only less than 4 percent of manufactured exports are classified as high-technology, which is almost double the share in 1994. Morocco stands out as a best performer with a share of high-technology exports of close to 8% of manufactured exports.

Following by Hausmann and Rodrik (2003) and Hausmann, Hwang and Rodrik (2007), we present the measures of export sophistication. EXPY measures sophistication as the GDP per capita of the typical country with that export basket. By construction, rich countries have a high EXPY and poor countries have a low EXPY. But if one controls for GDP per capita, EXPY is a highly significant determinant of subsequent growth. Countries that have managed to export a relatively rich-country export basket, given their level of development, grow more rapidly than countries that do not. Countries "become" what they export, converging to the level of income of their

competitors. The content of a country's export package is thus important for growth.

EXPY is calculated by first measuring the sophistication of each product, PRODY, as the revealed comparative advantage weighted GDP per capita of each country that exports the good:

$$PRODY_{i,t} = \sum_c \frac{\left(xval_{i,c,t}\Big/X_c\right)}{\sum_i \left(xval_{i,c,t}\Big/X_c\right)} Y_c$$

Where $xval_{i,c,t}$ is the value of exports of good i by country c in year t, X_c is the total exports by country c and Y_c is the GDP per capita of country c. This product-level measure of sophistication is then used to measure the sophistication of a country's export basket as a whole. This measure, EXPY, is simply the weighted average of the PRODY of each good *(i)* that the country c exports with the weights being the shares of each good in the country's export basket X_c. It represents the income level associated with a country's export basket.

$$EXPY_{c,t} = \sum_c \left(\frac{xval_{c,t,i}}{X_{c,t}}\right) PRODY_{i,t}$$

The EXPY of the case studies along with those of Thailand and South Korea are reported in Figure 23 (in 2005 PPP international dollars). The export sophistication of all for countries have increased over time (except for Egypt between 2000-2009). EXPY is higher in Turkey and Egypt. However, EXPY in all four countries is lower than not only of high income South Korea but also of middle income Thailand as well.

To sum up, all four economies have become more globally integrated over time. Tunisia has become the most open economy of the four and Egypt remains the least open. In terms of export diversification, all four economies have also made progress over time, particularly during the 1980s and 1990s, but country variations stand out. Egypt's and Turkey's export structures are slightly more diversified than that of Tunisia and Morocco. In particular, remarkable diversification took place within the non-

commodity manufacturing, especially for Egypt and Turkey. In terms of export sophistication, at one end of the spectrum, Turkey currently export more than three quarters of its total exports in the form of manufactures goods. At the other end, Egypt barely exports a fifth. However, when measured by EXPY, sophistication in Turkey and Egypt are higher than Tunisia and Morocco.

Conclusion

To conclude, this section has shown that over the period 1960-2011, all four countries have modernized their production, away from agriculture to industry and services. This process was impressive in Turkey (and to a lesser extent in Tunisia) which was able to completely shift away its agriculture-based production (around half of GDP) to more productive sectors in both industry and services. In contrast, Morocco's structural transformation is still far from being complete and low-productivity agriculture production still accounts for a major part of GDP. On the microeconomic level, recent productivity improvements were associated with structural change only in Turkey, i.e. a reallocation of labor from low-productivity agricultural activities to high-productivity activities like financial services. Meanwhile, this process happened neither in Egypt nor in Tunisia as productivity growth originated from *within* sectors.

Turkey and Tunisia enjoy relatively larger manufacturing sectors though Tunisia recorded the largest surge bringing it up to 18% of GDP from 11% of GDP thanks to exceptional growth rates that are close to 7% between 1970 and 2011. Morocco, on the other hand, has experienced the opposite trend. The outcome of manufacturing diversification efforts is less impressive, with Turkey being the only country that witnessed tangible improvements since the 1990s. Nevertheless, manufacturing value-added remains concentrated in a few sectors. More worryingly, it remains dominated by traditional low-value added activities.

On a more positive note, all four countries have increased their trade openness over time and have been able to diversify their exports. Different patterns emerge. Egypt and Turkey

have been able to impressively reduce the concentration of their export structures, particularly their non-commodity export sectors. Tunisia's diversification record is less impressive. Moreover, Turkey is the country that was most successful in shifting the content of its export basket towards manufactured goods.

III. Industrial Policy

This section will identify and assess industrial policies and the institutions responsible for their design and implementation. In particular, it will analyze the nature of industrial policy over time and document these policies in terms of whether they are horizontal or vertical. Horizontal policies would include neutral policies such as getting the macroeconomic fundamentals right, maintaining a competitive exchange rate, providing an educated workforce and improving the business environment and; or they can include non-targeted interventions such as providing subsidies to R&D and training or other form of across the board subsidies and trade policy. Vertical policies are designed to promote specific industries where governments intervene to "pick winners" by providing tax holidays, subsidies or subsidized credit. In to assessing to what extent vertical policies were well-designed, the analysis would be guided by a number of design features that Rodrik (2008) recommended should be present in a modern industrial policy: the need to limit incentives to "new" activities, the use of automatic sunset provisions, the establishment of clear benchmark for success (or failure) of programs, the reliance on agencies with demonstrates competence and a degree of autonomy from politics, the identification of a high-ranking political principal with ownership of the industrial policy effort as a whole and the systematic use of deliberation bodies that engage the private sector.

Horizontal policies

A sound macroeconomic management affects economic performance which in turn affects the environment for private investment. It has also been argued that increased real exchange rate volatility may harm manufactured exports, and that exchange rate undervaluation could promote them. Education policies and outcomes are relevant to the extent that they affect labor force skills.

Macroeconomic management and doing business

Macroeconomic management

All countries except Turkey have avoided severe macroeconomic crisis between the late 1950s and 2012. In fact, the Turkish economy was frequently hit with economic crisis during its recent history. It was the first major developing country to face a payment crisis in the aftermath of the first oil shocks (in 1977) eventually leading to a sharp deterioration in terms of trade and a worsening current account, ultimately leading to a severe debt crisis in early 1980s (global). Moreover, it faced several foreign exchange rate crises in 1957-58, 1969-70, 1978-80, 1994 and 2001 which typically ended with IMF-supported programs involving stabilization with devaluation (Celasun, 1999 Celâsun and Rodrik, 1989). Recent currency crisis were also compounded by an increasingly leveraged and poorly regulated banking sector (Rodrik, 2009, Celasun, 1999 and Celâsun and Rodrik, 1989). Moreover, Turkey is also known for high inflation episodes, particularly during the late 1970s and 1980s. Having said that, it has been argued that the 2001 crisis has led the Turkish government to adopt much needed macroeconomic stabilization reforms in addition to other bold structural reforms including a highly capitalized and better-regulated banking sector and well-managed monetary, fiscal, and public debt policies. Recent analysis have shown that these reforms have rendered the Turkish economy more resilient and helped it weather the 2008 financial crisis without facing another full-fledged crisis and without devastating economic consequences (Macovei, 2009 and IMF, 2010; Alp and Elekdag, 2011)

As for the three Arab countries, they never witnessed any severe distress in economic fundamentals and were even considered to have fared relatively well in the aftermath of the 2008 global financial crisis. Having said, they all suffered from macroeconomic imbalances during the 1980s including high levels of debt, a shortage of foreign exchange reserves, wide current account and fiscal deficits (Figures 24

and 25). To restore these imbalances, IMF and World Bank reform programs were adopted during the 1990s. These programs also made a first attempt at reducing the role of the state in economic activity and also involved the partial implementation of Washington consensus structural reforms including trade liberalization, financial sector reform, price liberalization and privatization. Despite that, many perceive the region's economic transition as incomplete or not having reaped its full intended benefits in terms of growth (Harrigan and Said (2010) and Dasgupta et al. 2002). Finally, macroeconomic management may have been occasionally been hampered by bouts of high inflation (like in the 1980s or during the 2008 food crisis) (Table 8).

Doing business reforms

Other types of reforms that affect industrial policy are those related to investment climate because they are a potential driver of private investment. Typically, government could adopt policies that reduce the cost of doing business that range from improving domestic taxation to adopting simpler, more cost-effective and less time-consuming domestic regulations.

All four countries have adopted such reforms, especially during the 2000s, earning Egypt and Turkey the title of top reformers in the World Bank doing business report. Egypt, for example, dramatically changed taxes and tariffs in 2004, and significantly streamlined regulations to start a business and also has a one-stop shop for investors. Turkey also improved tax regulation, streamlined procedures for firm start-ups, reduced the time to register a business and simplified customs procedures. In addition it has completely overhauled its legal framework in 2003 and adopted a modern investment law. Morocco established a private credit bureau to facilitate access to finance; Tunisia strengthened investor protection and reduced customs processing delays by two days on average.

Despite these efforts, much still remains to be done, especially in Egypt and Morocco who have delayed rankings in the ease of doing business (Figure 26). Tunisia relatively enjoys the best ranking among the four countries thanks to the ease in trading across borders and investor protection but still also lag in other areas related

to starting, operating, and expanding businesses. For instance, access to credit requires important collateral because credit sharing information is inefficient and creditor's rights in bankruptcy are weak. As for Egypt, despite having implemented the most significant reforms to start a business among the four economies, it lags in all other area related to firm operations and business expansion, particularly those related to obtaining construction permits, enforcing contracts and resolving insolvency. In addition, protection of intellectual property rights remains weak with nearly 60% of PC software being pirated in Egypt (OECD, 2010). In addition, Egypt's dispute settlement mechanism in the national court system is very slow and cases can take several years. Moreover, even though Egypt is a signatory to all major international arbitration treaties, domestic courts do not always enforce awards granted to foreigners, and the process can be dragged out for years. This is a serious impediment to the attractiveness of Egypt's business climate. However, GAFI has opened a centre for the resolution of disputes with investors, and this may help speed up proceedings specifically related to investments (OECD, 2010).

Exchange rate management

It has been argued that increased real exchange rate volatility may harm manufactured exports, as it increases uncertainty about profitability (Freund and Pierola, 2008). Moreover, the recent literature has argued that a proactive strategy consisting of deliberate real exchange rate depreciation can promote exports diversification and growth could provide increased incentives for exports as it did for East Asian economies as argued by Balassa (1990). More recently, evaluation of economic policies in developing countries supported by empirical evidence have shown that a competitive or undervalued exchange rates and the ability to reallocate labor across sectors and more importantly towards the tradable sector locus of learning-by-doing externalities and technological spillovers (Rodrik (2008b) and Eichengreen (2007)). An under-valued exchange rate could also enhance welfare if the tradable sector generates positive externalities such as learning and technology diffusion for the rest of the economy.

Alternatively, a substantially overvalued exchange rate could compromise macroeconomic stability and lead to unsustainable current accounts; which is what happened in the 1980s Latin American debt crisis. Recent evidence shows that real overvaluation harms productivity growth and employment (Aghion et al., 2009 and Galindo, Izquierdo and Montero (2006)).

Table 9 summarizes the behavior of some exchange rate indicators in relation to manufacturing sector competitiveness over the period 1970-2012. In general, all four economies exhibit increasing REER volatility over time, particularly the 1990s and the 2000s, reflecting the move towards more flexible exchange rate mechanisms. Morocco and Tunisia seem to have experienced more sustained if moderate real depreciations over the last four decades. Egypt has experienced real appreciation in the 1980s and 1990s and Turkey, in the 1990s and 2000s.

REER volatility have been more or less moderate for Morocco and Tunisia and very much less so for Turkey and to a lesser extent Egypt. In the case of Turkey, this reflects exchange rate crisis both in 1994 and 2001 and then the naturally higher volatility associated with a floating exchange rate regime whereas the three other countries have more tightly managed regimes. As for Egypt, it experienced several distinct devaluations since the 1970s, the most recent one was in 2003 which was accompanied by a somewhat shift away from fixed regimes.

In terms of exchange rate misalignment, a recent IMF (2013) report estimates that Turkey's current exchange real effective exchange rate is 10-20 percent stronger than the level that can be explained by medium-term fundamentals. As the countries maintained fixed exchange rates at least until the 1990s, there is evidence of real exchange rate misalignment between 1970 and 2005. Table 10 reports the estimated deviations from equilibrium real exchange rates for the three Arab countries. Column 1 gives the average deviation between 1970 and 2005 and column 2, the percentage of periods with overvaluation. The table shows that Morocco suffered from an overvalued exchange rate during the whole period and that tat the mean

deviation of its real exchange rate was as large as 24%. Another interesting observation is that even though Tunisia real exchange rate was slightly overvalued on average and Egypt was undervalued, they both experienced several periods of overvaluation.

Moreover, Sekkat and Varoudakis (2002) provide empirical evidence over the period 1970-1994 that a reduction in the exchange rate misalignment in Egypt, Morocco and Tunisia turns out to have a positive effect on *manufactured exports*. Moreover, they show that all three countries experienced exchange-rate misalignment of approximately 16%, although Egypt largely drives up this number. Even more alarming, they estimate that in the absence of misalignment, export shares to GDP could have been higher by, respectively, 22%, 26% and 38% for textile, chemical, and food products. They also estimate the total loss of export shares amounting to 5% of GDP, due to the adverse impact of REER misalignment alone.

Education and skills

In an earlier section, we argued that structural change occurs when labor moves from low to high productivity sectors. In order for this reallocation to happen, labor must have the required education, knowledge, competence and skills to access the more productive jobs. These factors thus determine the dynamics and pace of structural transformation. Recent empirical analysis confirms that one important determinant of productivity growth associated with labor reallocation is education attainment (Lee and Malin, 2013). In general, this is because education enhances efficiency and productivity as well as facilitates innovation and technology adoption (Nelson and Phelps, 1966 and Barro, 1991). It is worthwhile to note that the focus of this section will be on higher education since it is the source of relevant cognitive, technical and creativity skills to labor market entrants. To the extent that higher education institutions deliver skilled workers and entrepreneurs that are able to solve complex problems, perform research, and develop ideas of more productive ways of production, they can foster innovation and lead industrial change. This is particularly true in today's world with the rapid expansion of knowledge-based industries which rely on

innovation and thus increasingly require high-skilled labor.

Given their demographic structure, all four countries have considerable human capital potential. Definitely aware of this potential, governments of the four countries have spent around approximately 5% of GDP between the 1970s and the 2000s, with Tunisia spending around 6% of GDP. These considerable efforts have contributed significantly to increasing literacy rates. Turkey enjoys the highest literacy rates close to 90%, far better than Morocco's 55%, with Egypt and Tunisia standing somewhere in between (Table 11).

However, most of spending is allocated to primary and secondary education leaving only limited resources to tertiary education. Turkey fares best in terms of spending on tertiary education which benefits from around 30% of public current expenditure on education, in Morocco half that amount is spent (Table 12). Similarly for Egypt, the share of education spending allocated to university education is approximately a fifth of total education spending while around 78% goes to pre-university education.

In tandem with the pattern of public spending on education, the supply of educated people has also expanded since the 1970s but remains also titled towards those who have a secondary degree. In fact, in Egypt, Tunisia and Turkey, more than 80% of students are enrolled in secondary education and only around a third is enrolled in tertiary schooling. Morocco clearly lags behind this performance

And even though a large number of people are graduating from the secondary education system, it seems that the quality of the education they receive is questionable. The performance of eighth grade students in all four countries is below average in the standardized international examinations in mathematics. Their score is way below South Korea's score (613) being the top performing country (table 13).

Similarly, the distribution of the labor force by education levels reflects the quality of the supply of graduates. The share of the workforce with a tertiary degree accounts for less than a fifth,

except for Morocco, where it is less than 10% (table 14). In Egypt and Morocco, around a third of the labor force is comprised of those who have less than a primary education. Moreover, World Bank enterprise survey data for those two countries show that the proportion of unskilled workers in total production workers employed in the manufacturing sector remains high, accounts for 47% and 33% in Morocco and Egypt respectively.

In this context, the issue of skills mismatch emerges consistently as a concern for business. At present, although the percentage completing a higher education degree has increased, the skills and knowledge gained from initial education and training are often poorly aligned with the needs of the labour market. World Bank enterprise surveys show that the share of firms who perceive that the inadequate education is a constraint on operations and growth is also high and is 50% in Egypt (table 15). This shows that much remains to be done in coordinating labor supply with the demands in the business sector.

Meanwhile, the job market does not provide the educated population with appropriate employment opportunities, and this has led to high unemployment among diploma holders and to a significant brain drain. The large youth population increases the demands placed on initial education and training, which in turn creates considerable pressure not only increase the supply of education and training but also to provide basic social services (health, housing, transportation). In this context, all four countries have to further develop and implement their policies of investing in human capital.

Support to Research and Development
Support to R&D activities could foster productivity growth. Governments could promote technology either directly by supporting the development of technologies (in space, defense, and the like) or indirectly by creating a climate favorable to innovation through various fiscal incentives. In addition, the government could foster linkages between business and university, developing business incubators, upgrading human capital, and implementing a range of enterprise-level technology upgrading

programmes. So what efforts have been deployed by the four countries in this area?

There is an emerging public policy awareness of the importance of R&D and to varying degrees, all four countries have made some progress in promoting R&D activities. Morocco, Tunisia and Turkey have formally adopted some sort of a national innovation policy. Furthermore, they have formulated long-term visions compatible with this policy. Turkey had set its science and technology strategy, priorities and objectives for the period of 2005-2010 based on a major program "The vision 2023 project" was adopted n the early 2000s, with the aim of implementing innovation policies over the period 2003-23. This new strategy defines a Turkish Research Area (TARAL) which aims to synergise research and technological development activities among the Scientific and Technological Research Council of Turkey (TÜBÝTAK), public agencies, non-governmental organisations, private sector companies and universities. Similarly in Tunisia, a National Programme of Research and Innovation was created in 2003 to respond to the needs of industry by developing their technological innovation and improving their competitiveness through applied research. A 'Vision of scientific and technological development in 2025' has been produced by Morocco setting priorities in research and examines strengths and weaknesses.

All countries except Egypt have increased spending on R&D since the 1990s. Tunisia has almost tripled R&D expenditure as a share to GDP, reaching 1.1 percent of GDP in 2009. Turkey also currently spend around 0.8% of GDP. These spending levels still lag behind the level of 2-3% of GDP spent by advanced economies on R&D. Egypt and Morocco lag behind this performance (figure 27).

In addition to this, countries have developed a range of support tools for research and development and have experienced a large variety of tools, most of which aim at diffusing knowledge, at linking universities and enterprises, and providing incentives to enterprises wishing to upgrade and include more R&D and knowledge components in their

processes. Most countries have built a substantial infrastructural base for R&D activities. This has included for instance the creation of focal points in the form of centres of excellence, the development of technology parks and incubators. In most cases, they have also set-up a multitude of public agencies to support R&D activities whether they are research institutions, or funds for providing technical assistance or financing innovative activities. For instance, in Turkey, some government agencies are in charge of providing financial support for industrial R&D (either in the form of long-term subsidized loans or subsidies), training, consultations, etc (OECD, 2004). Atiyas and Bakis (2013) show that the government has been increasingly allocating funds since 2004 through programs that aim to enhance the international competitiveness of industrial companies through higher R&D and innovation. According to Atiyas and Bakis, despite quadrupling the level of expenditure through these programs between 2004 and 2009, the number of project applications keeps increasing from about 360 in 2004 to about 1500 in 2009. In Egypt, the Science and Technology Development Fund established in 2007 is estimated to have supported 571 projects with a total budget of EUR 60 million (FEMISE report).

Most countries have benefited from EU financial support to modernize their industrial sectors. In fact, Turkey is associated with the EU Commission 7th Framework Programme (FP7) which is the EU's a financial tool to support research and development activities covering almost all scientific disciplines to promote and encourage the creation of European poles of scientific excellence. The EU has concluded bilateral Science & Technology cooperation agreements with, Egypt, Morocco and Tunisia. These agreements focus on strengthening the bilateral policy dialogues and promoting cooperation in science and technology. With EU financial support (EUR 250 million), combined with that from Egyptian government (EUR 103 million) and the Egyptian private sector (EUR 73 million Euros) with a total budget of 426 million Euros, the Industrial Modernization Centre (IMC) was established in 2000 as an independent body to modernize the industrial

sector. Another large program is an EU-supported agreement signed in 2007 (the Research Development and Innovation (RDI)) entitled Egypt to a grant of €11 million to support research, development and innovation initiatives and to more generally support the progressive movement of the economy from low to medium technology.

Turkey seems to be the only country that provides fiscal incentives for R&D activities. Atiyas and Bakis (2013) explain that the Ministry of Finance, with administrative assistance from a public agency responsible for promoting scientific and technological research in Turkey (TUBITAK), provide tax incentives for R&D investment, through an exemption from corporate taxes of 40% of companies' total R&D expenditures.

While it is difficult to assess the outcome of all these efforts, we look at some imperfect measures that could gauge their impact. Patent applications have increased for all countries but soared in Turkey during the 2000s (figure 28). Another measure is the ISO 9001 quality certificates issued (table 16).

Finally, Table 17 provides data on percent of firms with an internationally recognized quality certification and Percent of firms using technology-licensed from foreign companies in manufacturing. Turkey is ahead of Egypt and Morocco on both indicators.

"Targeted" Interventions

Compared to horizontal policies discussed above, policies that are designed to support the development of specific economic activities (be it in manufacturing or other industries) have been the most controversial.[4] Such policies may entail trade protection, directed allocation of credit, sometimes at subsidized interest rates, various forms of tax incentives or special rules in public procurement that favor domestic suppliers. One common objection against targeted industrial policy is that bureaucrats are not likely to have the necessary competences to identify deserving or winning industries better

than entrepreneurs. Hence there are many examples in history where government programs to support specific industries have been unsuccessful in developing those sectors, perhaps, because ex-post it was found out that the country did not really have the capacity to become competitive in those sectors or products after all. The second, perhaps more serious objection is one of political economy: once the Pandora box of sector or even firm specific intervention is opened, and once governments are given the discretion to use these various instruments of fiscal or financial support, they will be captured by interest groups. Under these circumstances, any support allocated to an industry will reflect not dynamic comparative advantage (see below) and potentially higher welfare for the country, but at least transfers to politically connected firms and at worst decreases in welfare due to misallocation of resources to uncompetitive industries or waste due to rent seeking activities. In this point of view, even if industrial policy has been successful in a handful of countries such as South Korea, such examples represent outliers rather than the rule.

The impact of industrial policy is difficult to measure, if anything because it is hard to get a handle on the counterfactual. Providing a full overview of empirical work on the impact of industrial policy is beyond the scope of this paper but suffice it to say that empirical evidence on the success of targeted industrial policy seems to be mixed. Rodrik (2008), based on productivity growth estimates of Bosworth and Collins (2003) argues that there is no hard evidence that suggests that import substitution policies of the 1960s and 1970s necessarily lead to lower productivity growth. Harrison and Rodriguez-Clare (2010a, 2010b) cite numerous studies that provide evidence on both successful and unsuccessful industrial policy. On a more recent note, Crusciolo et. al (2012) undertake a careful study of a program in the UK designed to support employment and they find that the program had a positive impact on employment, investment and net entry but not on TFP. Aghion et. al. (2010) find in a study on China that state subsidies had a greater impact on TFP,

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[4] The distinction between policies that target specific industries and those that do not may prove to be tenuous in many instances. For example, R&D support will clearly favor industries which are more prone to technological change

TFP growth and innovation in industries where the degree of competition is higher.

One emerging idea is that industrial policy should not be seen as consisting simply of blunt trade, fiscal or financial instruments. Blanket protection or subsidies may fail to address the binding market failures or coordination problems that hamper investment and productivity improvements. An alternative view is to see industrial policy as a process through which the public and private sectors collaborate to identify critical interventions that are required to make the industry more competitive. As argued in Rodrik (2008) the development of new products or industries is typically a complex process that requires a multitude of specific inputs. Such inputs would include specific intermediate inputs, skills, machinery and equipment as well regulations on a wide range of areas such as contracts or labor and product norms. The resolution of these bottlenecks would be impossible to achieve without deep specific-specific information that typically resides less in government agencies but more among the players of the industry. Note that such an approach to industrial policy (called "soft policy" by Harrison and Rodriguez-Clare, 2010b) would not necessarily start by the government picking specific industries for support but industries may be endogenously picked along the way. Design and implementation of such policy would require institutional mechanisms, often called deliberation councils, through which the private sector and government interact in a cooperative manner. Following Evans (1995), Rodrik (2008) calls this "embeddedness", an institutional feature that avoids the extreme situations of strict autonomy on the one hand and capture on the other.

Note that the institution of such a process, if it is going to have an impact at all, would necessarily imply that tools of public intervention are applied in a flexible manner. While flexibility is an advantage in developing responses to contingencies that cannot be foreseen, note that the discretion it entails would also generate opportunities for rent seeking and capture. The way to reduce this danger would entail designing mechanisms that would enhance the accountability of industrial policy. This can be achieved through a number of institutional features. A crucial component is transparency. This would require, for example, making the activities of deliberations councils open to public scrutiny through reporting requirements. Financial transparency would also add a lot to enhancing accountability. This would entail making public the amounts of public funds used as well as the identities of firms that receive public support. Another instrument that would enhance accountability and transparency is to clarify objectives and justifications of policy initiatives through "white papers" and other types of reports. Such reports would document the market failures that have been identified, the instruments that will be used to correct for these failures, and an ex-ante assessment of the costs and benefits of the various instruments. Rodrik (2008) adds that public agencies may be required to report in a clear manner their mandates as well as deviations of targets identified in the mandate, much similar to practices developed by central banks while pursuing inflation targeting.

In addition to embeddedness and accountability Rodrik (2008) identifies a third "design feature" of desirable industrial policy, namely the proper inclusion of "carrots and sticks". What is meant by this is that proper industrial policy should include both measures to encourage investments as well as those that would ensure discipline and performance. As emphasized by many in the literature, the "sticks" element seems to be what really differentiated industrial policy in East Asia in the 1960s and 1970s from those pursued elsewhere especially in Latin America (one could easily add Turkey). While in East Asia supported firms were also expected to reach performance targets, especially in international markets, such performance requirements were absent in any other countries. The discipline element requires that those firms that do not perform be denied further support and this ensures that failures to not plague industrial policy by encouraging authorities throw good money after bad. The discipline element is likely to have another desirable feature: Left to themselves, supported firms, especially those that have market power in domestic markets,

may generate high profits in protected environments but this would not reflect real gains in productivity, generating an illusion of success. Specific performance requirements may also correct for such distortions. A related element of discipline is termination: industrial policy is often plagued by an inability to withdraw from projects turned sour. Hence there should be mechanisms to terminate unsuccessful projects, and more generally, sunset clauses to prevent indefinite support.

One additional design feature that perhaps has not been sufficiently emphasized in the literature is evaluation. It was stated above that measuring the impact of industrial policy is difficult. In many cases, detailed data about industrial policy is not even available. Even when it is, it is rarely, if ever, used by authorities or independent observers to evaluate the impact of policy. This is important, because evaluation provides critical information that can be used to improve policy, or terminate it when such evaluation produces highly negative outcomes.

Country cases

The discussion above suggests a number of questions that can guide the analysis of industrial policy in specific countries:

Sectoral specificity: Did industrial policy target specific sectors or products to the exclusion of others.

Consultation and participation: Does the industrial policy framework entail mechanisms through which various stakeholders (business, labor, local community etc) can participate in formulation and implementation?

White paper/studies: Are there documents that explain and justify the industrial policy framework. Such documents may include white papers, industry studies or strategic planning documents that try to identify market failures, discuss how the proposed framework will address these failures and the potential costs and benefits of the proposed framework.

Instruments: What are the main instruments of industrial policy? For example: trade protection, tariff reduction for imported inputs and machinery, tax breaks, allocation of credit. Soft

instruments may include consultation mechanisms described above.

Discipline: Are there targets against which the performance of the supported firms can be measured? Are there measures that link future support to performance?

Eligibility: What were the rules regarding eligibility? Were they transparent? Were they objective (i.e. were there a set of qualifications that could be easily understood and interpreted in a common manner)? Or did eligibility criteria allow discrimination among firms to the advantage of, say, those that were politically connected?

Implementation: Is the implementation of industrial policy consistent with the legal framework or do public authorities exhibit discretion?

Transparency: Is the amount and destination of public funds distributed as part of industrial policy public? Can the public know the identity of the firms that receive public support?

Evaluation: Is there a system in place through which the impact of industrial policy is measured? Is any data collected?

Below we provide a summary of industrial policy in the countries included in the project. We then provide a general assessment.

Egypt

Egypt embarked on import substitution industrialization in the 1930s, in the aftermath of the 1929 great depression and the ensuing sharp decrease in world cotton prices. ISI intensified in the post-independence years starting the 1960s, with a complete shift to a planned economy with the state took direct control of industrial production, with the aim of promoting structural change and growth. This orientation was accompanied by a massive wave of nationalization in industry and trade. Price ceilings were common including on interest rates as was credit rationing, subsidies and administratively set exchange rates and wage controls.

At the same time, strategies were elaborated to channel investment into new industries and

promote structural change, spur economic growth and create employment. The state increasingly invested in the import-substituting industries to produce the primary and intermediate goods (chemicals, metals, paper, steel, fertiliser and textiles) needed by Egypt's agriculture and armaments industries, as well as higher technology consumption goods such as automobiles, TV and radio sets, white goods and pharmaceuticals (Galal / El-Megharbel 2005). During this period, industrial policies were highly selective: the state not only indirectly influenced flows of labour and investment into different economic sectors through discriminatory incentives (such as differential tax rates) but also very directly as the country's largest investor.

The period 1974-1990 is often called the "Open Door" (Infitah") policy period. In this period central planning policies were partially reversed with the adoption of partial liberalization. Reforms concentrated on the liberalization of the foreign exchange market and consumer imports. The government, which had already provided some incentives to the private sector in 1971 under law 65 (the establishment of free zones, provided safeguards to protect invested capital and granted tax exemptions and custom privileges), provided further incentives in 1974 Law number 43. These included multiple tax holidays and reductions for foreign private investors. All foreign capital was accorded comprehensive legal protection against expropriation as well as the right to be fully re-exported at any time. In 1977, these rights and provisions were extended to domestic private investors. The government also established new industrial cities.

Yet, some features of the old economic regime remained in place, in particular with respect to pricing and subsidy policies, import restrictions to protect domestic industry, the overwhelming public sector which remained a primary actor in production and maintained tight control over state enterprises and continued to monopolize public utilities.

In 1991, a structural adjustment program was adopted and some elements of industrial policy were phased out or reduced. With the adoption of the joint World Bank-IMF Economic Reform and Structural Adjustment Program (ERSAP), the government undertook a first phase of reforms that helped to shift the economy partly from central planning towards market-based mechanisms, more trade openness and a more leading role for the private sector. This included macroeconomic stabilization reforms, the introduction of a competitive exchange rate, partial price liberalization (including agricultural prices) 4, the liberalisation of interest rates and the removal of limits on lending to the private and public sectors (Subramanian, 1997). The government also reduced and rationalized tariff rates and lifted import bans. This phase also witnessed the privatisation of some public enterprises but not the financial sector.

In 2004, a new wave of reform was launched following the appointment of a new cabinet which included business people. The aims were stabilising the exchange rate, reducing and rationalising the tariff structure, drastic cuts in income tax rates and a streamlining of tax administration - and more efforts to reform the business environment and promote the private sector. Nevertheless, the shift to the market economy was never complete with the remaining important role of public sector, protection of domestic industries through both relatively high tariff rates (e.g. in the textile and clothing and food industries) as well as the substantial energy subsidies which primarily benefit capital intensive sectors.

During this period, the government has provided various investment incentives through tax cuts, export promotion and selective tax holidays given to specific sectors.

Across the board changes included a reduction in the corporate tax rate (in 1993 to 42% and to 34% in manufacturing and in 2005, the rate was slashed to 20%).

In terms of the trade regime, Egypt considerably liberalised its economy and opened it up to foreign trade during the 1990s and efforts intensified as of 2004. During the 1990s, reductions and exemptions from custom duties were given to certain industries (particularly consumer durables and assembly industries) as well as the use of local content requirements. In

2004, the government implemented significant across-the-board tariff cuts and a reduction in the number of tariff bands. The only products excluded from tariff cuts were alcoholic beverages, tobacco, and cars with an engine greater than 1,600cc.

An export development strategy was adopted in 2001 with the aim of: (i) reducing bureaucracy and overcoming marketing and financing obstacles; (ii) enhancing export performance in traditional markets such (EU, Arab countries, and the United States); and (iii) opening up new markets in MERCOSUR, the West African Economic and Monetary Union, and SADC. At the sectoral level, the strategy focuses on five priority areas: agricultural products, processed food products, textiles and garments, chemicals and pharmaceuticals, and building materials.

The government provides export finance (short- and medium-term loans and bank guarantees) through the Export Development Bank of Egypt (EDBE), established in 1983. An Export Credit and Guarantee Company (ECGC) was also established in 1992 to help exporters improve their marketing efforts and develop new markets. An export promotion fund was established in 2002 with a view to increase exports. According to the authorities, this fund does not grant any export subsidies. However, various incentives are granted to encourage export-oriented firms (like those located in free zones).

In 1997, investment incentives were given under the Investment Guarantees and Incentives Law including to specific industrial sectors: Tax holidays for five years for all investments; up to ten years for companies established in the new industrial zones, new urban communities or remote areas; and up to 20 years from the date of establishment for investments outside the Old Valley. Exemptions from stamp duty, and notarization and registration fees are provided for up to 3 years from registration in the Commercial Register. In addition, all customs duties on capital imports by companies registered under the Law are reduced to 5%. The tax holidays were abolished in 2005.

This law also eliminated all forms of discrimination against foreign investors and

allowed them to purchase land and real estate and to repatriate both capital and earnings. The law provides guarantees against confiscation; immunity from administrative sequestration; assurance of no controls on prices or profits; and the right to import and export inputs and final products without being required to use agents and export licenses.

With a view to attracting foreign investment, provide employment and promote exports, Egypt has been promoting the establishment of free zones since 1974 where investors are exempt from import tariffs and service charges, income taxes and the general sales tax. They are also exempt from customs taxes, general sales tax and any other taxes or duties for the duration of individual projects. There are no restrictions on the type of investment activities; many types of manufacturing and service activities take place in the free zones. Free-zone investors may sell all or part of their products on the Egyptian market after payment of the relevant customs duties on the goods.

Starting 2002, there was a move shift towards industrial parks, special economic zones (SEZs) or industrial zones (IZ), which provide more streamlined administrative procedures, tariff-free imports of inputs and equipment, a special taxation system with lower rates, and a special regime for labour relations, diverse services and improved infrastructure to upgrade the industrial structure. SEZs are targeted at specific activities (e.g. textiles and clothing) with infrastructure adapted accordingly. The government restructured its IZ development program in 2006 to grant Public Private Partnerships the right to long term land development, management and operation of these zones (ibid.).

An Industrial Development Strategy (IDS) was developed in 2005 with the goal of transforming the industrial sector into an engine of growth. The EIDS takes a vertical approach to industrial policy, focusing on selected manufacturing sectors that the government should support. The EIDS defines eight fields of action (to be portrayed in detail below): (i) human resources and entrepreneurship, (ii) access to finance, (iii) infrastructure, (iv) innovation and technology,

(v) quality assurance, (vi) enterprise competitiveness, (vii) exports and(viii) FDIs.

Under the IDS, strategic sectors were identified to benefit from special investment and export promotion efforts: Engineering, Food Processing, Chemicals & Pharmaceuticals, Textiles and Clothing, Building Materials, Furniture, Paper & Paperboard and Leather. The strategy explicitly excludes(i) companies in the tourism and hydrocarbon sectors, (ii) micro-enterprises (with fewer than 10 employees) and (iii) small companies (with fewer than 50 employees) – as well as (iv) non-manufacturing companies.

Loewe (2013) provides an assessment of industrial policy in Egypt in the last decade. First, Egypt's industrial policies between 2004 and 2011 consisted of three isolated strategies, each implemented by a different ministry. This led to a duplication of administrative structures, lack of coordination and gaps in responsibility. Second, the main instruments focused on medium-size to large, rather than micro- or small, enterprises. Although the latter firms were eligible for support, most funds went to companies that were already exporting or didn't need any government assistance to start exporting. Beyond this, different agencies were individually tasked to promote small, medium-size and large companies so that when a company graduated from one size class to the next it had to work with a new agency. Third, most instruments did not benefit Egyptian enterprises because they did not tackle the main constraints for business – especially (i) deficits in entrepreneurs' and workers' education and training, (ii) the rule of law, (iii) transparency and competitive fairness, (iv) private sector representation and (v) the availability of affordable land.

Morocco

Morocco followed import substitution policies throughout the 1960s and 1970s. Ss in many other countries, this was a period of high protection rates as well as non-tariff barriers such as import licenses, import quotas and exchange rate overvaluation. The trade regime started to be liberalized in the 1980s, which was paralleled by a number free trade agreements

and in particular an Association Agreement with the European Union signed in 1996 and implemented since 2000 with the objective to achieve a free trade area by 2012.

A distinguishing feature of economic growth during the liberalized period has been the very slow pace of structural change. The share of agriculture in total value added has stagnated at around 16-17 percent, whereas its share in employment was about 40 percent in 2008 (African Development Bank, 2012). Manufacturing growth has been slower than GDP growth and the share of manufacturing in total employment has declined from 16 percent in the early 1980s to 11 percent in 2010 (Achy 2013). These trends were reflected in exports, with the share of manufacturing firms engaged in exports from above 25% in the 1990s to around 20 percent in 2009-10 (Achy, 2013, Figure 8).

Following Achy, industrial policy in Morocco since the 1990s can be examined in three periods. In the 1990s the main focus was on privatization. This was a period of rapid decline of trade protection. In addition, during the 1990s relations between the state and business were restructured. According to Achy corruption campaigns against the business elite reasserted the power of the state but also created fears of arbitrariness. Rapid decline in protection coupled with "narrowing of margins of maneuver" of private sector encouraged entrepreneurs away from manufacturing into commercial and real estate businesses.

The second period, between 2002 and 2007, is characterized by "with a multiplicity of investment promotion and tax exemptions schemes that appear to be dispersed, overlapping and non-focused" (ibid, p. 19). At the same time, there were two initiatives where the private sector was targeted directly: The first was directed to large firms and relied on privatization revenues collected at the Hassan II Fund for Economic and Social Development. Achy reports that most of the projects were in textiles and subcontracting in the automotive sector. The Fund acquired financial autonomy in 2002 and could disburse public funds with no public oversight. Between 2002 and 2005 the Fund

disbursed DH 4.5 billion. Achy reports that while lack of data makes it impossible to examine the impact of the fund, anecdotal evidence "points to waste, discretion and discrimination." The assessment is consistent with the poor performance of manufacturing in the last decade but it is impossible to reach a credible conclusion since the counterfactual is impossible to assess.

The second was directed to SMEs and managed by the SME Agency (ANPME) and relied mostly on EU funding. The purpose was to assist SMES in "upgrading". According to Achy et. al. (2009), the "upgrading program" ("Programme de Mise à Niveau") was initially a private sector initiative backed by EU funding. During the 1990s, namely in the early stages of the program, the main concern of the government was restricted to ensuring that firms get access to finance. ANPME was established in 2002, and the government started to take a more proactive role. A special fund called the "National Fund for upgrading" (FOMAN) was established in 2003 and received financing from the EU and the Moroccan government. Upgrading policy covers a large number (almost 30 by 2007) of initiatives, including from programs of technical assistance, provision of guarantees to get access to banking resources, to programs supporting firms' equity and incentives to upgrade equipments. The FOMAN program provided support for physical investments for up to 40 percent of project cost with 2 percent interest rate and up to 80 percent for non-physical investments (eg technical assistance or consultancy). According to Achy (2013) between 2003-2007 about 1400 SMEs participated in the upgrading programs, and the average amount of support was USD 25,000. This was much lower than support provided to large firms under the Hassan II Fund for Economic and Social Development, where support sometimes reached USD 2.3 million per firm.

To summarize, it seems that in this period the Hassan II Fund was an important tool to grant financial support to specific enterprises, and with substantial discretion and little oversight. It seems there were no clear eligibility criteria and the expenditures of the fund were not part of the budget. By contrast, eligibility criteria for SME programs were clearer, but apparently these programs attracted less than expected interest.

In the third period the "Emergence Program" was launched with the direct support of the King. The program targets specific sectors (automobile, aerospace, electronics, textile and food industry (African Development Bank, 2012). Investment incentives (to foreign and domestic investment) may be granted under the general investment incentives regime (Investment Charter and its implementing decree), under Hassan II Fund for Economic and Social Development and for large projects through an agreement regime. Under the Emergence Program, program, the SME Agency (ANPME) manages two support schemes, one that aims to provide direct subsidies to support the growth of promising SMEs, and the second to support efforts by SMEs to increase productivity through efforts in areas such as marketing, finance, quality control, as well as supply management design and R&D. Under the first program (called "imtiaz") up to 20 percent of projects cost of investments (with a maximum of about USD 600,000) are financed. Firms are selected through a tendering process and candidates are evaluated by a special committee made of public and private sectors' representatives. The participation of private sector representatives into the selection of winners is an innovation that potentially may enhance accountability of the scheme. The application needs to be first approved by one of the banks sponsoring the "imitiaz" and then sent it to the ANPME. Under the second scheme (called "moussanada") the applicant company selects from a predefined list of benefits. The maximum amount of support can reach about USD 120,000. The imtiaz program targeted 50 SMEs per year and the number of approved projects in 2010 and 2011 were 33 and 47, respectively. The Moussanada scheme's objective was to reach 500 SMEs per year and 258 and 342 firms were supported in 2010 and 2011, respectively. Achy (2013) suggests that again, the cost of going transparent may be perceived to be higher than the benefits that SMEs could gain from participating in the

programs So far there are no studies that have examined the impact of the Emergence Plan.

Tunisia

An interesting aspect of industrial policy in Tunisia is the emergence of an export promotion strategy earlier than many other developing countries who shared with Tunisia an import substitution policy. A major problem Tunisia faced after independence was massive departure of foreigners who dominated economic activities until that time. Tunisia first responded by a public-led import substitutions strategy. This was a period with nominal and effective protection rates were very high and almost all imports required some kind of licensing and/or administrative approval (World Bank, 2008; Nabli and others 1999). In the early seventies, this policy was changed with one that emphasized both import substitution and export promotion along with the development of private sector. Specifically, the government created an "offshore" sector in 1972 and put in place generous fiscal and financial incentives to attract foreign direct investments (FDI) and boost exports. There was a particular focus on manufacturing, especially textile. Firms that exported all of their products enjoyed duty-free raw material and equipment imports, 10-year corporate tax holiday, free repatriation of profits and trade facilitation services (for example, "in-house" customs clearance). Heavy industry, transport, water and electricity were still reserved for the public sector (African Development Bank, 2012, p. 160).

The policy framework of import protection started to change in the 1990s and the government started to reduce trade barriers. The initial trigger was the launch of Economic Recovery and Structural Adjustment Program (ERSAP) in 1986. This program involved the reduction of tariffs and easing of quantitative restrictions on imports. Tunisia became a member of WTO in 1995 and entered an association agreement with the EU on 1995. The latter entailed the removal of tariffs and other trade barriers starting from 2008. Tariffs on EU industrial goods dropped from about 100 percent in 1996 to about 4 percent in 2007. Trade liberalization was accompanied

with further incentives: A 1992 law provided several benefits to offshore firms and firms in free trade zones and a 1994 law provided further incentives.

Liberalization in industry was accompanied by an upgrading program (mise a niveau) aimed at increasing the technological, marketing and organizational capacities of firms increasingly facing EU competition. There were also measures to facilitate integration into global markets, such as streamlined technical controls, improved customs procedures, and increased access to information on standards and technical regulations to raise transparency and meet international trade obligations (World Bank, 2008).

The response of the economy to these policy initiatives was overall positive. World Bank (2008) reports that exports were diversified away from fuel, with the share of fuel exports dropping from 52 percent in 1980 to 13 percent in 2006, and that of textiles increasing from 18 to 33 percent. After 1997, Tunis also participated in EU production networks and the share of "mechanical and electrical engineering" products increased from 9.5 percent in 1995 to 19 percent in 2006. As of 2008, Tunisia became one of Europe's top ten suppliers of electrical wiring systems.

Ghali and Rezgui's (2013) provide an overview and assessment of the two main components of industrial policy in Tunisia. The first is the manufacturing upgrading programme and the second is export promotion policy. The upgrading program ("Programme de mise à niveau de l'industrie") was launched in 1996 with a view to prepare enterprises to the requirements of free trade with the EU.

According to Ghali and Rezgui, the upgrading program went through three phases. In the first phase (1996-2000) the program helped consolidate the physical and intangible investments of all firms. In the second phase (2000-2005) there was an effort to improve the business environment that support industrial activities. The program aimed providing financial support to upgrade about 2000 private firms between 1995 and 2005 (Goaied and Jendoubi, 2007). Enterprises went through an

external audit focusing on finances and competitiveness; they also were required to submit an upgrading plan that could make them eligible for government financial support to modernize equipment, raise quality standards and strengthen balance sheets. The third phase after 2005 was characterized by the promotion of certification and standardization of products and processes and promoting innovation.

Overall, evidence presented in Ghali and Rezgui (2013) and earlier in this paper does suggest that Tunisia had a certain degree of success in structural transformation. Nevertheless, it also seems that the industrial policy of Tunisia has created a dualism in the manufacturing industry. There is a globalized "offshore" regime operating since export orientation started in the 1970s under quite liberal rules (10 years tax holiday, duty-free imports, fast trade procedures, free repatriation of profits, etc.) which coexists with the local "onshore" that does not enjoy global links (Word Bank, 2010, p. 44).

In any case, Goaied and Jendoubi (2007) found that the upgrading program had an effect on the technical efficiency of firms that participated in the program relative to firms that did not participate. However, Ghali and Rezgui's assessment, partly based on the 2010 assessment of the Tunisian Institute of Competitiveness and Quantitative Studies (ITCEQ), is that those program that were intended to enhance the sophistication of industry were not sufficiently implemented. Ghali and Rezgui emphasize that that while there has been a rapid increase in the share of labor force with tertiary education, because the demand for skilled labor in industry did not increase concomitantly, the rate of unemployment among university graduates is still very high. This is mainly due to the fact that some degree of diversification notwithstanding, Tunisian manufacturing was still dominated by small and medium enterprises concentrated in sectors that employ predominantly low-skilled workers. A similar finding is presented in World Bank (2010): "While the education system generates a large number of higher-education graduates, the economy is dominated by sectors that employ predominantly low-skilled workers" (p. vi).

Regarding export policy, Cadot et. al. (2012) evaluate the export promotion promotion program, FAMEX, which consists of matching grants provided to Tunisian firms to implement export business plans. Cadot et. al. find that "… compared to a control group, FAMEX beneficiaries successfully diversify in terms of export destination markets and products, and durably so. However, the beneficiary firms' total exports diverges only temporarily from the control group's total exports. One year after treatment, the differential in growth rates of total exports is not significant anymore. Three years after treatment, even export levels are no longer significantly different. Even though export destination and product counts remain significantly different throughout the sample period, the treatment group's diversification does not seem to translate into reduced export volatility." The author also find that there are no spillovers to firms that do not benefit from FAMEX.

It may be useful to point out that in Tunisia, along with a sustained effort to promote diversification exports of manufacturing industry, there were selective interventions in other sectors of the economy. One important case is the regulation of restrictions on investments in sectors such as tourism, air and maritime transport, telecommunications and real estate. Rijkers et. al (2013) show that authorization requirements and FDI restrictions in these sectors are correlated with the presence of politically connected firms as well as the start up of connected firms.

Turkey

Until 1980, Turkey followed an import substitution industrialization strategy. This was an economic policy regime characterized by very high protection from imports, heavy controls on domestic prices, a repressed financial system, dominance of state owned enterprises in banking and what were seen as critical industries. ISI ended in a deep crisis at the end of the 1970s. A radical economic program was launched in January 1980 following a military coup and was more or less followed through persistently ever since. Hence

the 1980s witnessed a fundamental transformation in the economic policy regime from import substitution industrialization towards trade liberalization, liberalization of domestic goods and financial markets, and liberalization of international finance. Foreign trade was liberalized first, during early and mid-1980s. Capital account liberalization was enacted in 1989 and implemented in 1990. A major step towards further liberalization was undertaken in 1996 through a Custom's Union (CU) with the European Union (EU). Output weighted average tariff rate was reported to decline from 75.8% in 1983 to 40% in 1990 and to 20.7% in 1994 (Özler and Yılmaz, 2009, p. 342). After the CU, For EU countries, tariff rates have been zero except for agricultural products. Togan (2003) estimated that the weighted mean tariff rate for countries with whom Turkey does not have a trade agreement was 5.9 percent in 1999.

An important dimension of the policy changes in the 1980s was a heavy emphasis on promoting exports. In the 1980s and early 1990s exporters could benefit from a multitude of export incentives such as export tax rebates, which compensated exporters for indirect taxes. In addition, for certain goods, 20 percent of export earnings could be deducted from taxable income and there were subsidized credits, preferential allocation of foreign exchange and duty free imports. There were also subsidies froma Resource Utilization Support Fund (later Support and Price Stabilization Fund). Many of these incentives had sectoral selectivity and net support across sectors varied greatly.

The impact of these support mechanisms have been controversial. There were widespread allegations of over-invoicing and corruption, through a net positive effect on exports have been found albeit the size of which whose was smaller when compared to the effect of real depreciation of the currency that was achieved during the 1980s.

Sectoral targeting of incentives continued on and off throughout the first part of the 1990s. In 1995 Turkey became a member of the WTO and entered a customs union with the European Union. Both of these meant that Turkey had to revise its incentive system in line with the WTO and EU requirements. As a result, starting with 1995 industrial policy moved away from sectoral targeting and started to focus on regional incentives, and more "horizontal" mechanisms such as support for research and development, environmental protection and subsidy programs for small and medium enterprises (SMEs). In the case of exports, subsidies based on export performance were replaced by incentives for participation in trade fairs, certification, product and brand promotion. Overall, Atiyas and Bakış (2013) state that since the 1990s there has been a tendency to increase the degree of objectivity in eligibility rules and a reduction in the heterogeneity and discretion in the application of individual instruments.

In the 2000s, incentives policy took an explicit regional orientation. A law passed in 2004 had the aim of promoting investments and employment in targeted provinces. What is noteworthy about this law is the absence of sectoral selectivity and the rather small set of instruments employed. The Law covered 36 provinces (where yearly GDP per capita was less than USD 1,500 in 2001) and offered newly created firms 80 to100 percent (for firms in industrial zones) exemption from personal income taxes (capped at the minimum wage) and exemption from employers' social security contributions, and a Treasury subsidy of 20 percent on their electricity bill. The law also provided for allocation of publicly owned land free of charge for firms employing at least 10 workers for at least 5 years. Investments in organized industrial zones were supported more strongly: For example social security contributions and income taxes of firms established in industrial zones were subsidized 100 percent whereas that ratio was only 80 percent for firms outside zones. Later coverage of provinces was extended and eligibility criteria changed.

The sectorally non-selective nature of the incentive system continued until 2009. In 2009, through a new law, incentives started to be provided on the basis of regions, sectors and size of investment. Also, a new category "large scale investment" was created under the new regime, whereby investments over minimum specific

thresholds in specific sectors also are eligible for incentives. The system was further changed in 2012. One important innovation in the new system was the introduction of incentives for "strategic investments". Accordingly, eligible sectors were defined as those where Turkey's dependence on imports are high (more specifically, where imports represent more than 50% of domestic demand). This new orientation was apparently based on high current account deficits and Turkey's perceived excessive dependence on imported inputs, even in industries with high export growth.

Atiyas and Bakış (2013) report the results of numerous studies that examine the impact of barriers to import competition on firms. The overall assessment is that trade liberalization had a positive effect on productivity growth. Generally productivity growth is higher in industries with higher import penetration. Betcherman et. al. (2010) study the impact of the 2004 law on regional employment and find that find that the subsidy programs did lead to faster employment growth in the eligible provinces, but also that there were sizeable deadweight losses in the sense that some of the jobs supported by the incentive program would have been created without any support. The impact of the new regime introduced in 2009 and 2012 have not been analyzed yet.

Atiyas and Bakış (2013) argue that manufacturing industry as well as exports went through significant structural change in the period when industrial policy was more or less neutral across sectors. They also point out that even though the system was neutral, their impact on individual industries could vary according to industry characteristics.

Overall evaluation

Here we provide a brief comparative overview of industrial policy along the questions posed above.

How extensively were targeted interventions used? All countries used them if not continuously throughout the last few decades. Turkey moved away from sectoral interventions during the late 1990s and 2000s, but they were re-introduced in 2009. Sectoral policies were used in Egypt throughout the last four decades,

even during the more liberal policy framework of the 2000s. While the upgrading program in Tunisia was non-sector specific, Tunisia also used sector specific support institutions, for example in the textile and apparel industries (Cammet, 2007). In Morocco, while SME programs were mostly horizontal, the Emergence Program launched in the 2000s did target specific industries.

One of the most glaring missing elements of industrial policy implemented in the four countries is the discipline element. In general success against performance targets have not been used as conditions for future support. To the extent that export performance contains in it an element of discipline,[5] Tunisia stands out for having supported export orientation even back in the 1970s, when the rest of the countries were basically closed economies. Even there (or Turkey in the 1980s for that matter, when incentives were provided for exports) it does not seem that there were any performance mechanisms. In fact, according to Ghali and Rezgui (2013) in Tunisia continuing support for textiles and clothing industry and the apparent absence of serious restructuring in response to emerging global challenges reveals "policy makers' myopia".

Above we had mentioned a number of institutional measures that can be adopted to enhance the accountability of the support programs. The country studies that some elements of transparency were adopted especially in programs directed towards SMEs and (in the case of Turkey) regional incentives. The mechanism used in Morocco to select participants to the "imtiaz" program (that is, the presence of a special selection committee made of public and private sectors' representatives) is suggestive of a degree of "embeddedness" of the program. The more sophisticated measures, such as specifying targets and explaining why they were not reached were not used.

A related issue is evaluation: There were no mechanisms through which governments

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[5] As argued by Rodrik (2004) conditioning subsidies on exports has the valuable feature that it ensures the incentives are reaped by winners (i.e., those that are able to compete in international markets) rather than the losers.

evaluated the success of the various programs they promoted. One counterexample in that respect is in Tunisia, where the Institute of Competitiveness and Quantitative Studies (ITCEQ) undertook an evaluation of the upgrading programme and several studies of competitiveness. More generally, however, to undertake a credible evaluation it is not sufficient to compare that benefit from programs with those that do not. What would need to control for both selection effects (for example, it could be that more productive firms choose to participate in the first place) and other unobservables that may affect performance. The fact that in Morocco, as Reported by Achy (2013), a lower than expected number of firms participated in the SME programs possibly reflects that firm characteristics not readily observable may be important determinants of participation.

Regarding objectiveness of eligibility rules, country studies suggest that in Tunisia and Morocco programs especially directed towards SMEs, and the regional incentives in Turkey seem to have enjoyed clear eligibility criteria; and they were not subject to discretionary selection by the authorities. Evidence on programs directed to large enterprises is less clear. In the case of Morocco, Achy (2013) argues draws attention to the fact that Hassan II funds could were spent with no oversight. Sometimes selection criteria may be clear but they may be designed to support politically connected and favored firms in the first place. Rijckers et. al. (2013) argue that this was the case with respect to investment restrictions in a number of non-tradable sectors in Tunisia. By contrast the upgrading program in Tunisia does not seem to have such a conspicuous element of favoritism.

As an overall evaluation, it can be said that clearly neither one of the four countries were as successful as South Korea in transforming their economies through targeted interventions. If successful at all, the gains were modest in comparison.

IV. Concluding Remarks

The literature has documented the importance of industrial development to the overall development of economies and structural transformation – the shift of capital and labour from low-productivity to high-productivity sectors, from an agricultural-based economy to an industrialized economy. Industrial development requires not only diversification, but diversification towards the production of higher value added and technology-intensive products (product sophistication), thereby increasing the product space and the range of capabilities and knowledge in an economy.

This paper has attempted to assess structural transformation and diversification in four Mediterranean countries Egypt, Morocco, Tunisia and Turkey. The final outcomes are mixed which makes benchmarking individual performances difficult. They have achieved a degree of structural transformation over time, becoming less agriculture-based and the sizes of their industrial and services sectors have expanded. They have also diversified both their manufacturing and export sectors over time.

Nevertheless, there are significant differences between the achievements of the four countries. At one end of the spectrum, the pace of industrialization was impressive in Turkey and Tunisia, and at the other end, Morocco structural change was the slowest, with very little industrialization taking place over time. Egypt stands somewhere in between. In particular, with respect to export diversification, Egypt and Turkey have made more progress than Tunisia and Morocco, particularly in relation to their non-commodity export sectors. Turkey is the only country that was able to shift the content of its export basket heavily towards the manufactured goods, while Egypt was very much less able to do so, even compared to Tunisia and Morocco. MENA exports have also been mainly concentrated in primary and consumer goods, and less so in high value added, high technology, intermediate, and capital goods, which have seen the fastest growth in recent years.

In general, in all four industrial policy moved away from sectoral targeting and started to focus on regional incentives, and more "horizontal" mechanisms such as support for research and development, environmental protection and

subsidy programs for small and medium enterprises (SMEs). In the case of exports, subsidies based on export performance were replaced by incentives for participation in trade fairs, certification, product and brand promotion (Yardımcı, n. d.). Nevertheless, sectoral policies have started to re-emerge.

In order to assess the limitations of past achievements in structural transformation, this paper has also attempt to assess past efforts in industrial policy.

Moving forward, in recent years, there has been growing acceptance of the important role of the State in driving the industrialization. Government could be allowed to "pick winners". However, focus has to be on the promotion of high quality activities (increasing returns) characterized by steep learning curves and dynamic imperfect competition, technological change, synergy and cluster effects. It is important to create new comparative advantages and not to stay within the existing low value added comparative advantages. In order to be successful, this requires risk-taking. There is a need for investments in innovation (public research and technology centres) as experimentation and innovation are essential.

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Figure 1: Evolution of GDP per Capita
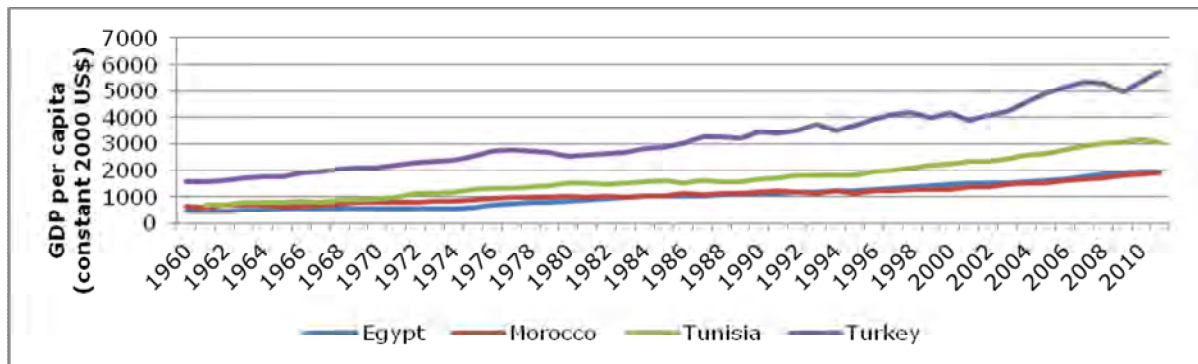
Source: World Development Indicators

Figure 2: Participation rates
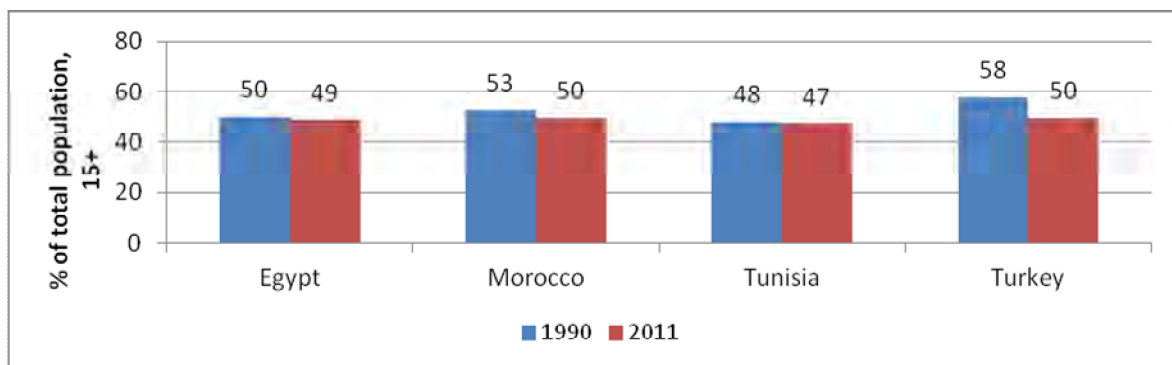
Source: World Development Indicators

Figure 3: Unemployment Rate (%)
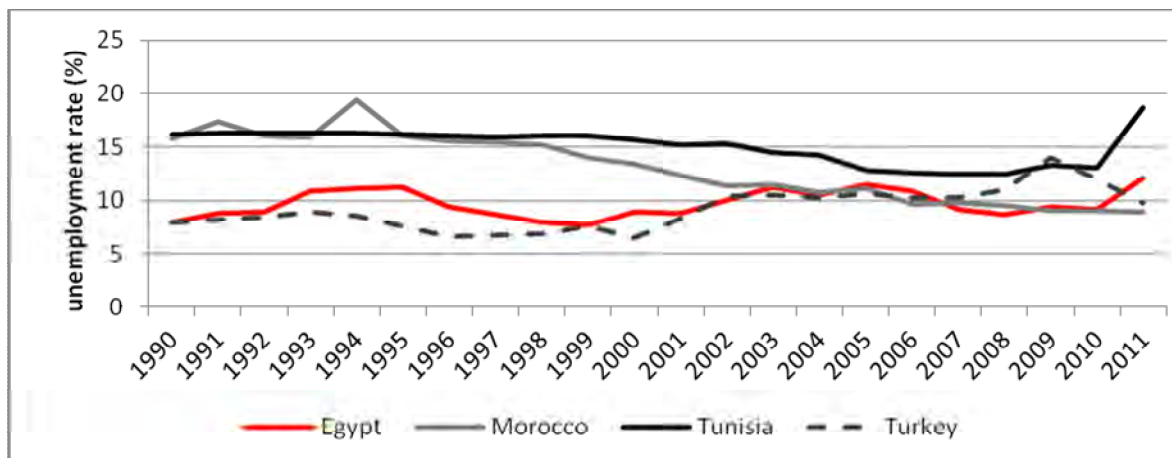
Source: World Development Indicators

Figure 4: Composition of GDP
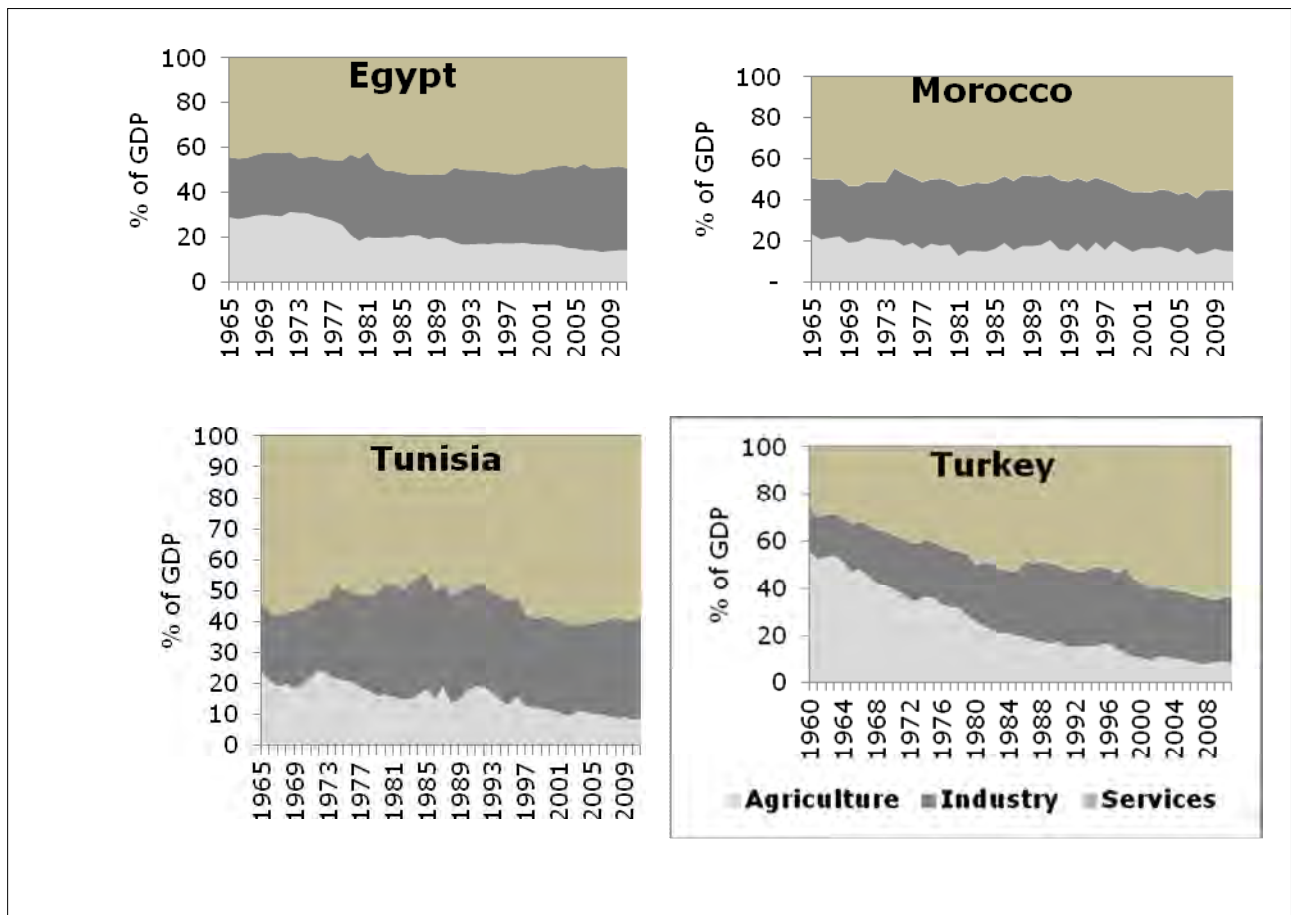
Source: World Development Indicators

Figure 5: Composition of Employment
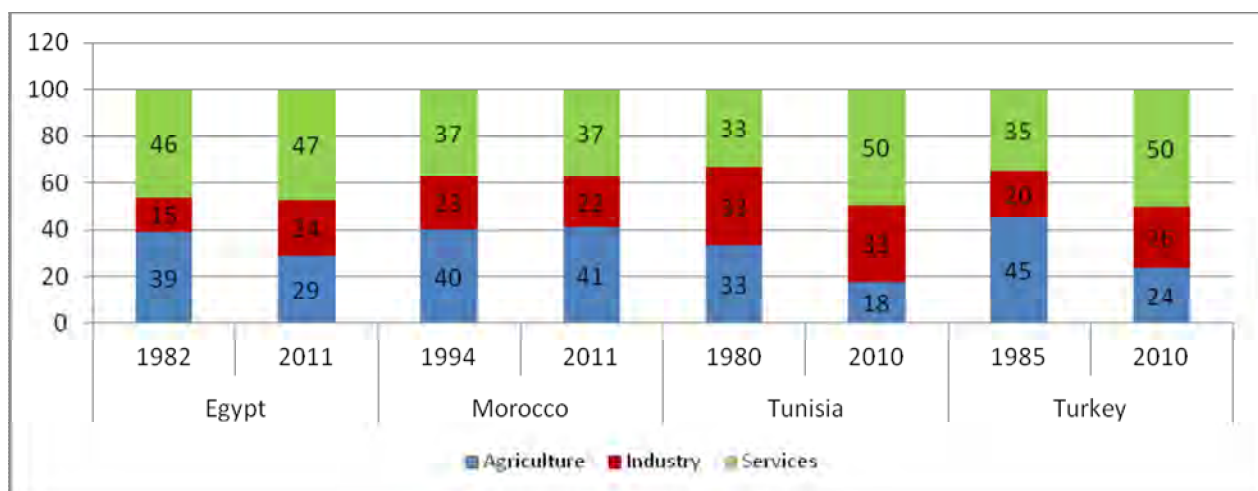
Source: World Development Indicators

Figure 6: Labor Productivity Gaps in Turkey, 2010
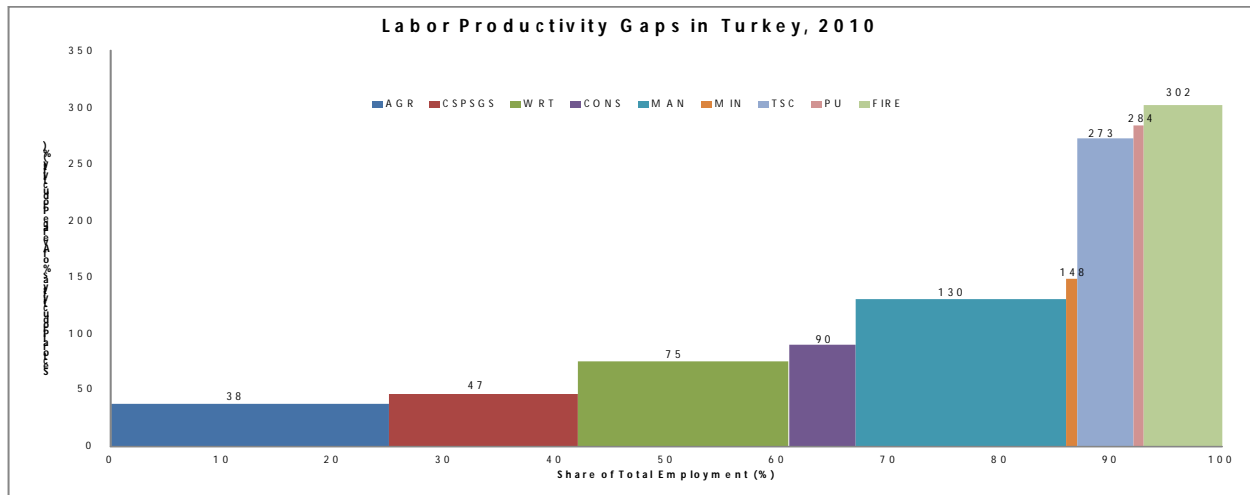
Source: Atiyas and Bakis (2013)

Figure 7: Labor Productivity Gaps in Egypt (output per worker 2008)
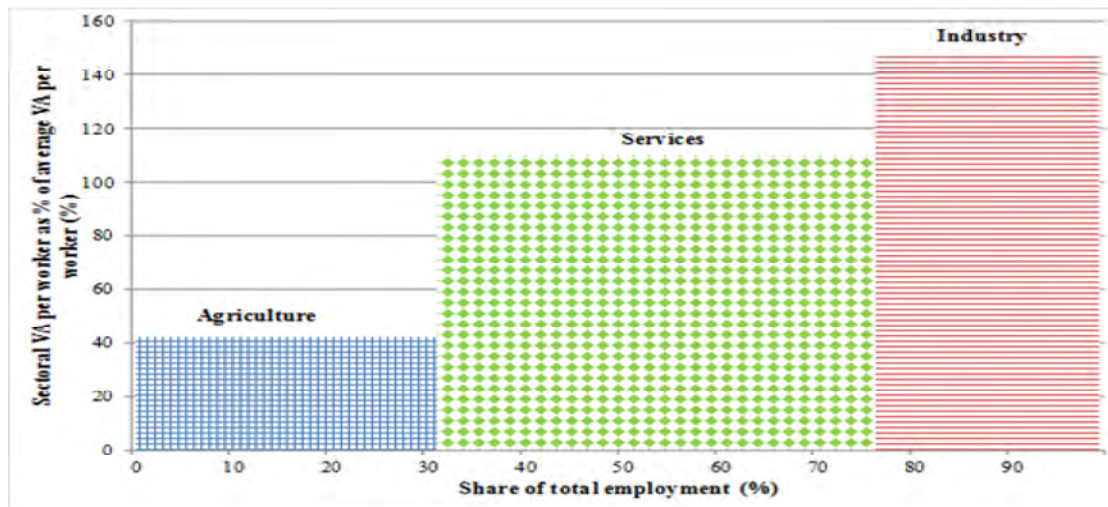
Source: El-Haddad (2013).

Figure 8: Labor Productivity Gaps in Tunisia (2005) (relative to overall productivity)
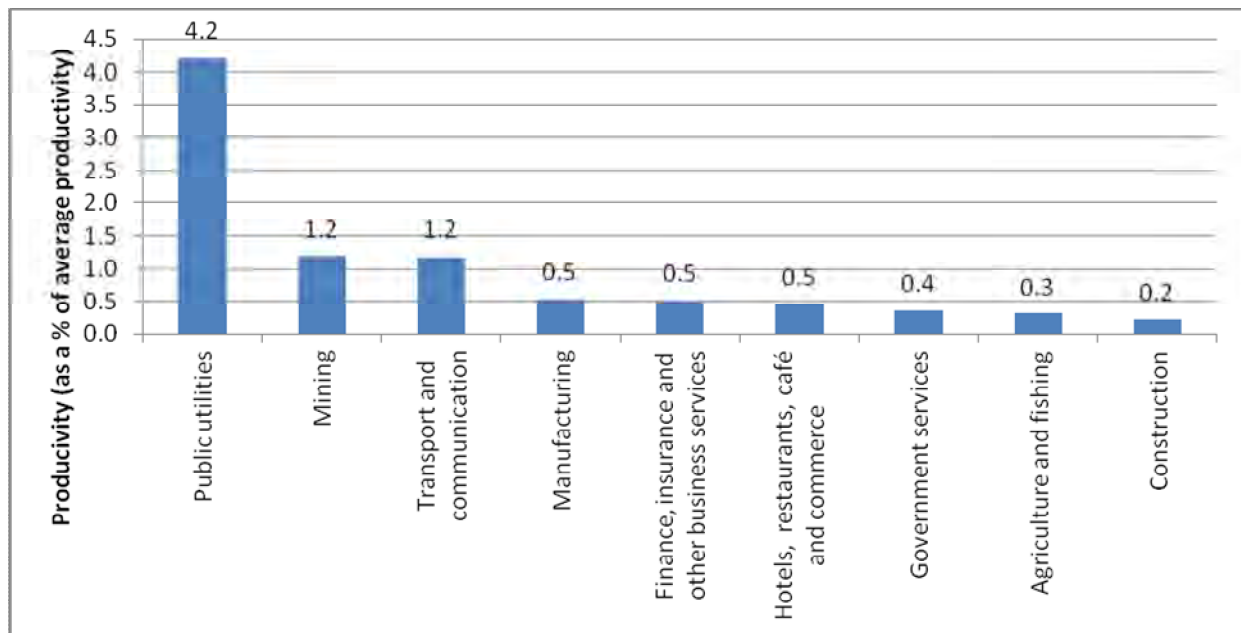
Source: Marouani and Mouelhi (2013)

Figure 9: Contribution of structural change to aggregate productivity growth in Egypt Tunisia and Turkey (%)
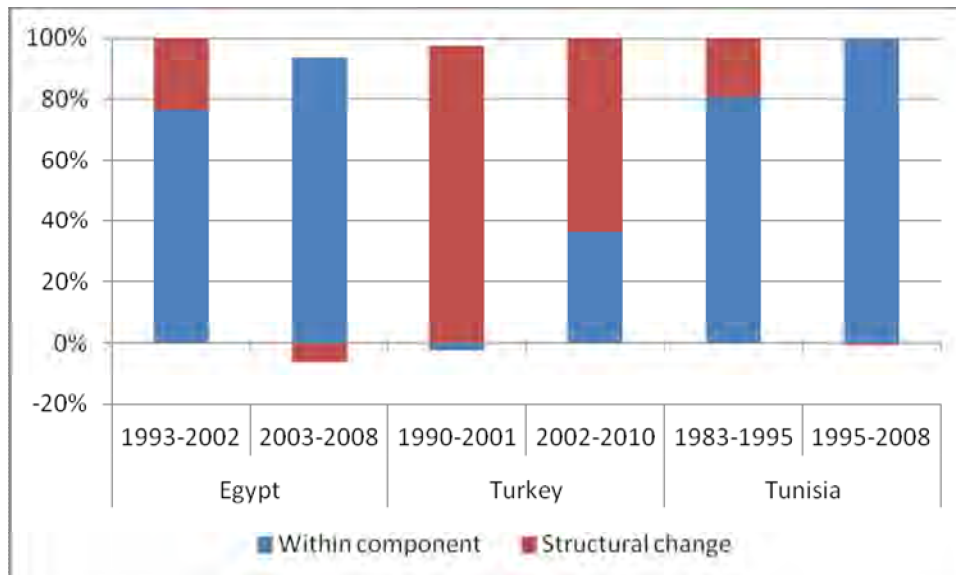
Source: Calculated by the authors based on Atiyas and Bakis (2013) El-Haddad (2013) and Marouani and Mouelhi (2013)

Figure 10: TFP estimates in selected Arab economies, 1960–2000 (%).
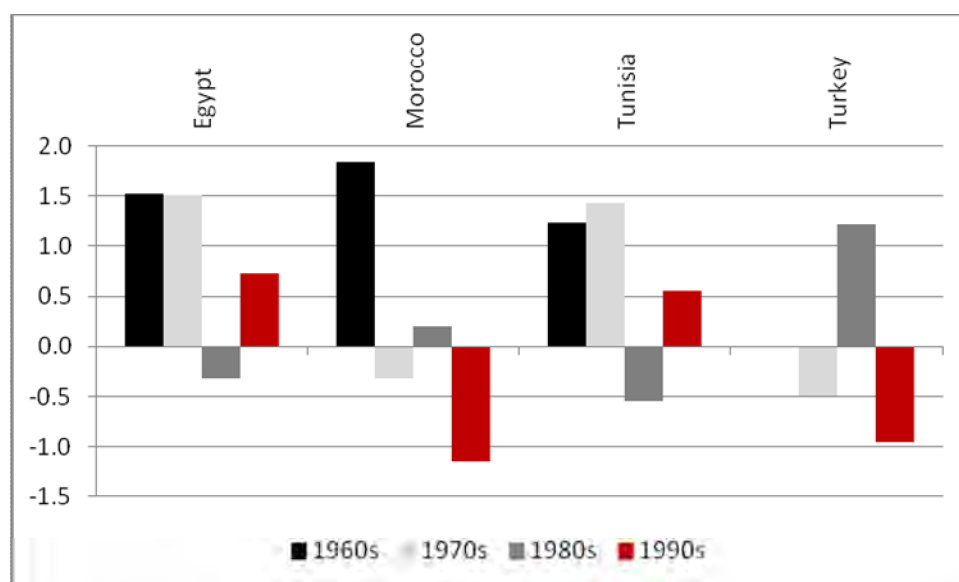
Note: TFP estimates are derived from a Cobb-Douglas production function with an elasticity of output with respect to physical capital of α=0.4.
Source: Keller and Nabli (2007).

Figure 11: Manufacturing as a share to GDP, 1969-2011
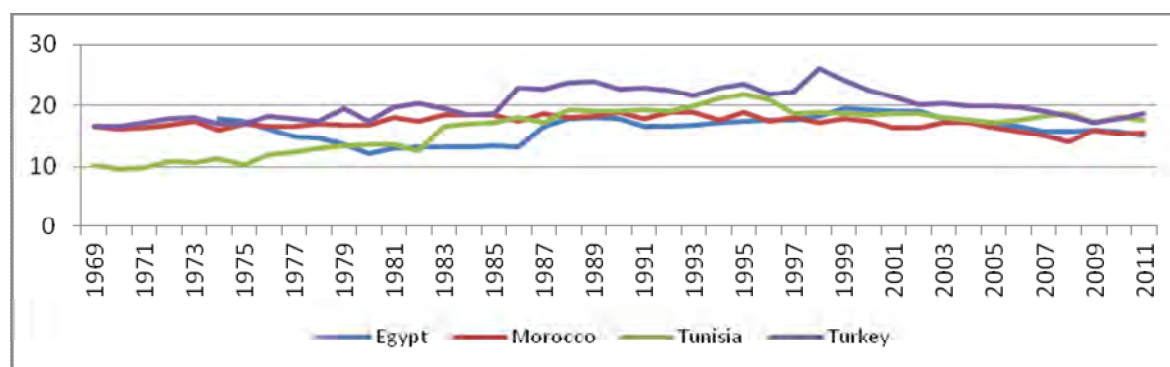
Source: World Development Indicators

Figure 12: Normalized HHI
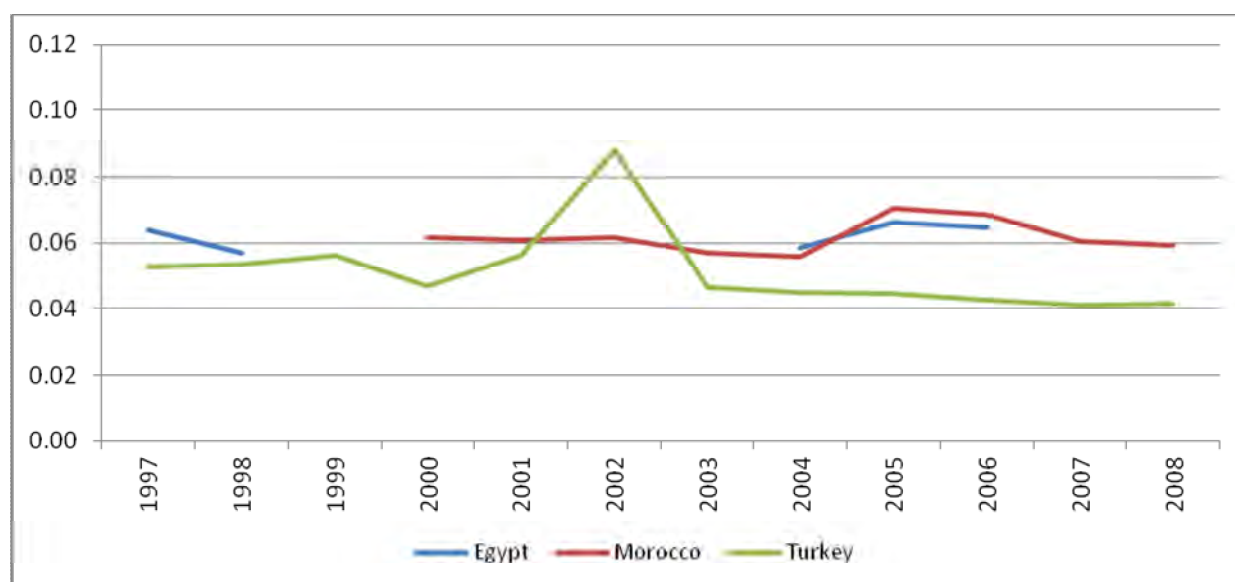
Source: calculated by the authors based on UNIDO data

Figure 13: Share of top largest sectors

| | Percent of total manufacturing value added | | | | | |
| | Egypt | | Morocco | | Turkey | |
	The share of the 5 largest sector shares	The share of the 10 largest sector shares	The share of the 5 largest sector shares	The share of the 10 largest sector shares	The share of the 5 largest sector shares	The share of the 10 largest sector shares
1997	47.9%	69.5%			38.9%	57.5%
1998	40.9%	64.6%			37.9%	55.1%
1999					39.0%	56.8%
2000			47.5%	68.6%	34.9%	56.3%
2001			46.6%	67.9%	39.5%	59.0%
2002	56.4%	73.0%	46.9%	68.6%	57.4%	80.0%
2003			42.8%	65.9%	38.2%	59.5%
2004	43.0%	63.7%	42.6%	65.9%	37.4%	58.3%
2005	47.5%	66.9%	46.6%	69.8%	35.8%	57.2%
2006	48.9%	69.0%	47.8%	68.6%	34.8%	57.3%
2007			46.0%	66.9%	32.9%	56.1%
2008			44.3%	64.7%	33.7%	55.2%

Source: calculated by the authors based on UNIDO data
High-value added manufacturing

Figure 14: Share of medium and high tech production in manufacturing value added

Source: World Development Indicators

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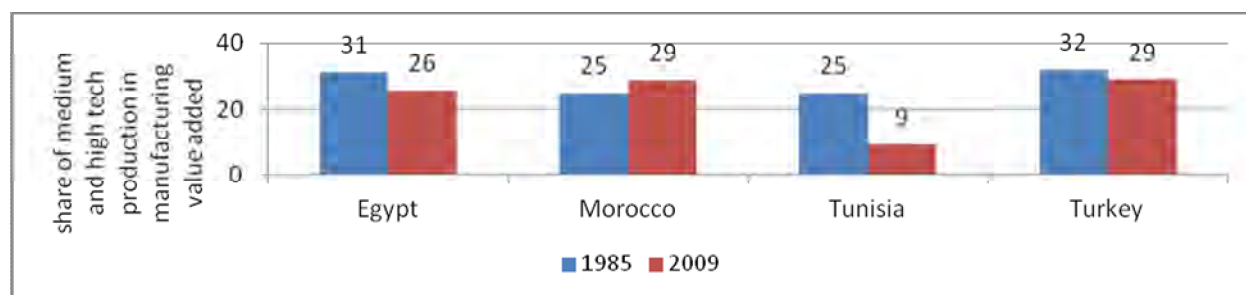
Figure 15: Merchandise and services exports (% of GDP)
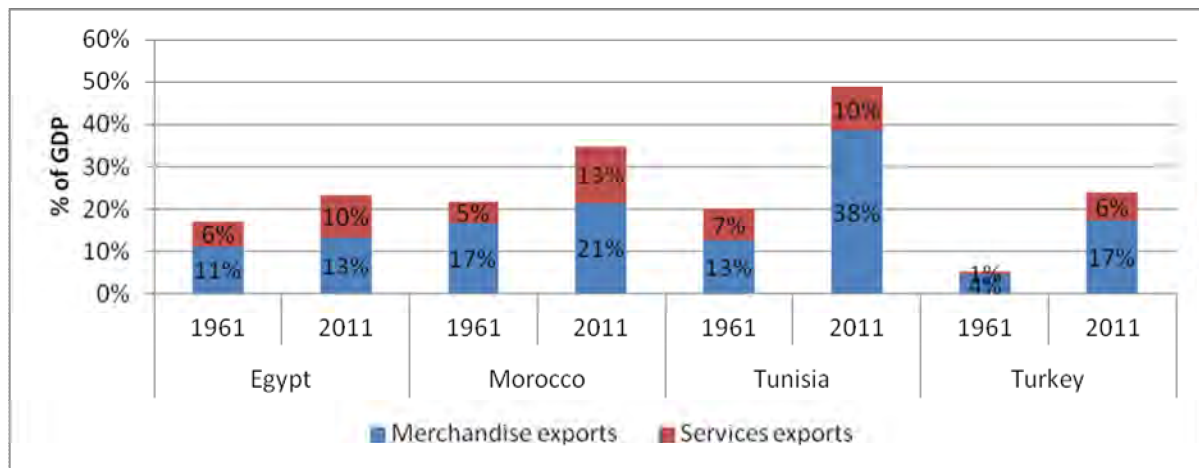
Figure 16: Export HHI over time
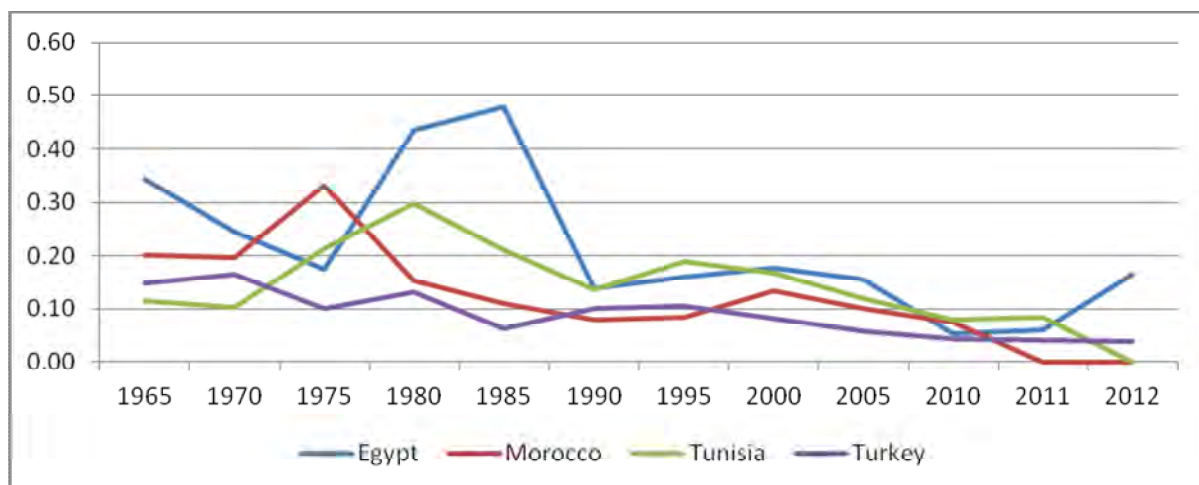
Figure 17: Evolution of export HHI (without commodities)
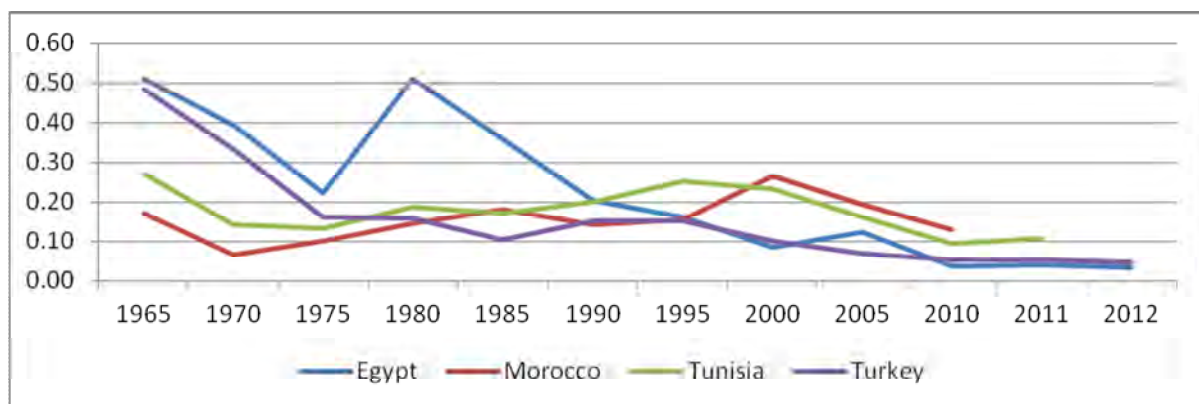
Figure 18: Share of top exports

	Egypt		Morocco		Tunisia		Turkey	
	Top 5	Top 10	Top 5	Top 10	Top 5	Top 10	Top 5	Top 10
1965	90.6	94.6	82.6	90.6	72.2	86.2	76.7	89.6
1970	85.6	91.8	77.9	86.9	65.6	84.4	77.3	89.2
1975	75.4	94.1	82.8	93.4	76.9	87.8	67.6	82.7
1980	93.3	97.0	77.2	93.8	83.4	91.2	69.5	80.7
1985	95.7	97.6	71.8	90.7	78.1	89.9	55.8	71.1
1990	72.9	87.2	62.2	84.6	67.5	83.0	65.1	75.8
1995	71.5	86.1	65.0	82.9	67.8	83.0	62.8	74.4
2000	68.0	79.5	69.2	86.6	70.3	83.6	55.9	72.2
2005	71.2	84.5	65.0	83.4	64.8	78.4	52.4	70.3
2010	45.1	64.3	57.7	79.3	58.9	74.6	46.3	65.4
2011	45.5	66.5	-	-	60.2	76.5	45.7	65.0
2012	45.5	65.8	-	-	-	-	43.6	65.5

Source: calculated by the authors based on Comtrade data

Figure 19: Share of top exports (non-commodity)

	Egypt		Morocco		Tunisia		Turkey	
	Top 5	Top 10	Top 5	Top 10	Top 5	Top 10	Top 5	Top 10
1965	89.2	93.8	66.2	85.5	91.3	97.3	97.1	99.1
1970	80.7	92.4	57.9	81.7	84.8	96.3	87.0	96.9
1975	81.9	94.6	69.2	82.9	80.8	94.5	80.4	91.9
1980	90.4	95.1	79.0	91.5	83.8	92.7	79.7	92.0
1985	90.5	96.8	85.1	93.8	80.1	89.8	55.8	82.4
1990	80.2	90.6	78.6	91.3	73.2	88.2	73.5	83.7
1995	78.2	89.4	75.2	87.6	74.8	89.0	70.8	82.1
2000	64.0	83.2	84.2	92.1	76.9	88.7	61.6	79.4
2005	69.8	89.0	80.5	90.0	69.5	84.3	48.0	77.6
2010	41.7	65.4	76.7	87.1	61.3	78.8	55.2	72.5
2011	44.5	71.5	-	-	63.0	76.9	54.9	72.4
2012	41.2	67.4	-	-	-	-	51.8	73.2

Source: calculated by the authors based on Comtrade data

Figure 20: Composition of exports, main categories (%)
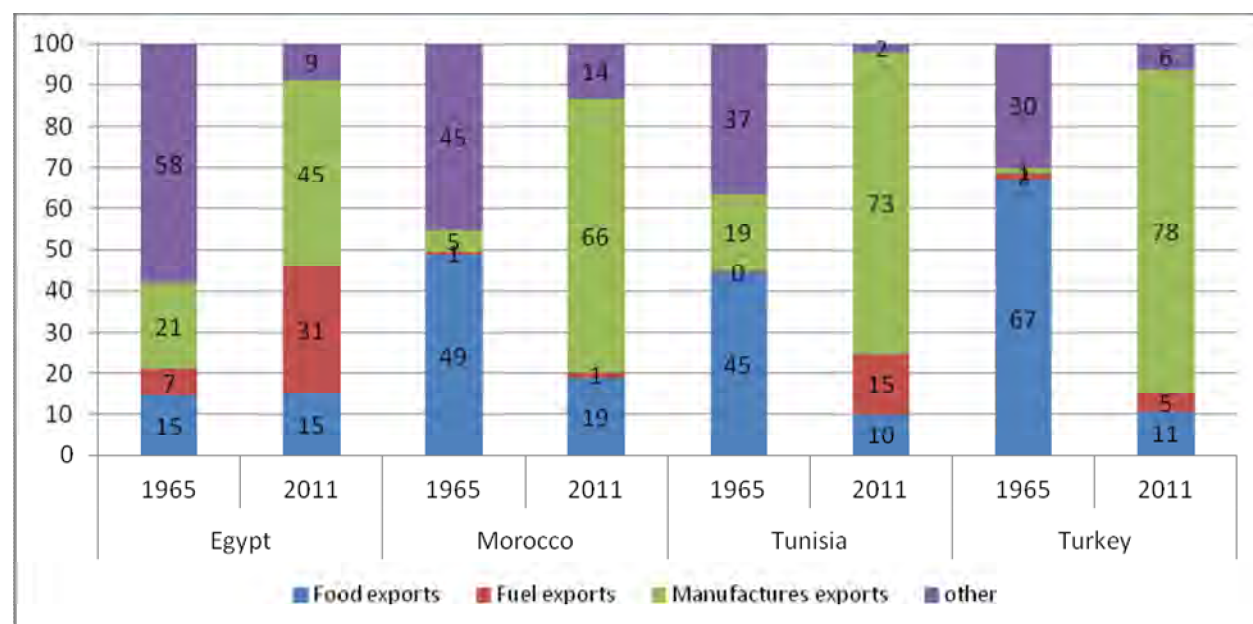
Source: World Development Indicators

Figure 20: Composition of exports, details (%)

	Egypt		Morocco		Tunisia		Turkey	
	1965	2012	1965	2010	1965	2011	1965	2012
Food and live animals	**13.9**	**12.1**	**43.9**	**17.8**	**18.3**	**6.1**	**36.9**	**8.3**
Fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof	*0.2*	*0.1*	*4.0*	*7.7*	*1.4*	*1.2*	*1.0*	*0.3*
Cereals and cereal preparations	*7.8*	*0.9*	*2.0*	*0.2*	*0.8*	*1.2*	*0.9*	*1.5*
Vegetables and fruit	*4.7*	*7.3*	*35.5*	*7.9*	*10.5*	*2.2*	*24.2*	*4.3*
Beverages and Tobaccco	**0.3**	**0.4**	**4.4**	**0.2**	**4.6**	**0.5**	**19.6**	**0.7**
Beverages	*0.1*	*0.0*	*4.4*	*0.1*	*4.5*	*0.2*	*0.1*	*0.2*
Tobacco and tobacco manufactures	*0.3*	*0.4*	*0.0*	*0.1*	*0.1*	*0.2*	*19.5*	*0.6*
Crude materials and mineral fuels, lubricants and related materials	**64.8**	**34.7**	**45.4**	**14.6**	**32.8**	**16.0**	**34.9**	**7.6**
Textile fibers and their wastes (non-manufactured)	*56.4*	*7.4*	*0.7*	*0.2*	*0.0*	*0.17*	*24.7*	*0.2*
Crude fertilizers and crude minerals (excluding coal, petroleum and precious stones)	*0.8*	*1.9*	*26.0*	*6.6*	*20.8*	*0.5*	*1.6*	*1.1*
Metalliferous ores and metal scrap	*na*	*na*	*12.8*	*3.0*	*5.8*	*0.0*	*2.3*	*0.0*
Petroleum, petroleum products and related materials	*6.6*	*21.7*	*0.2*	*3.3*	*0.1*	*14.4*	*1.2*	*4.6*
Fixed vegetable fats and oils, crude, refined or fractionated	**0.0**	**0.9**	**0.3**	**0.8**	**21.5**	**3.4**	**2.5**	**0.4**
Chemicals and related products	**0.7**	**15.2**	**0.6**	**19.6**	**14.6**	**7.0**	**0.7**	**5.2**
Manufactured goods and articles o.w.	**19.5**	**26.9**	**5.2**	**26.8**	**7.8**	**35.8**	**5.4**	**42.8**
Textile yarn, fabrics, made-up articles, n.e.s., and related products	*15.2*	*4.6*	*0.6*	*1.9*	*1.0*	*2.6*	*0.9*	*7.2*
Non-metallic mineral manufactures, n.e.s.	*0.9*	*4.1*	*0.6*	*0.3*	*0.4*	*0.9*	*0.1*	*2.5*
Iron and steel	*0.1*	*2.6*	*0.0*	*0.6*	*0.0*	*0.9*	*0.4*	*8.6*
Non-ferrous metals	*0.0*	*3.7*	*0.7*	*2.0*	*3.9*	*0.6*	*3.7*	*0.0*
Articles of apparel and clothing accessories	*0.3*	*4.3*	*0.5*	*16.9*	*1.1*	*18.6*	*0.0*	*9.4*
Footwear	*0.1*	*0.1*	*0.2*	*2.0*	*0.0*	*3.3*	*0.0*	*0.4*
Machinery and transport equipment	**0.4**	**5.1**	**0.2**	**19.0**	**0.3**	**31.1**	**0.0**	**24.5**
Telecommunications and sound-recording and reproducing apparatus and equipment	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*5.8*	*0.0*	*1.6*
Electrical machinery, apparatus and appliances, n.e.s., and electrical parts thereof	*0.0*	*3.8*	*0.0*	*14.8*	*0.0*	*18.0*	*0.0*	*5.9*
Road vehicles (including air-cushion vehicles)	*0.0*	*0.3*	*0.0*	*1.4*	*0.0*	*2.2*	*0.0*	*9.6*
Share of non-manufactured goods	**79.1**	**48.2**	**94.0**	**33.4**	**77.1**	**26.0**	**93.8**	**17.0**
Share of manufactured goods (incl. chemicals)	**20.7**	**47.2**	**6.0**	**65.4**	**41.4**	**73.9**	**6.1**	**72.6**

Source: calculated by the authors based on Comtrade data

Figure 21: Share of High-tech exports (% of manufactured exports)

Figure 22: Export Sophistication
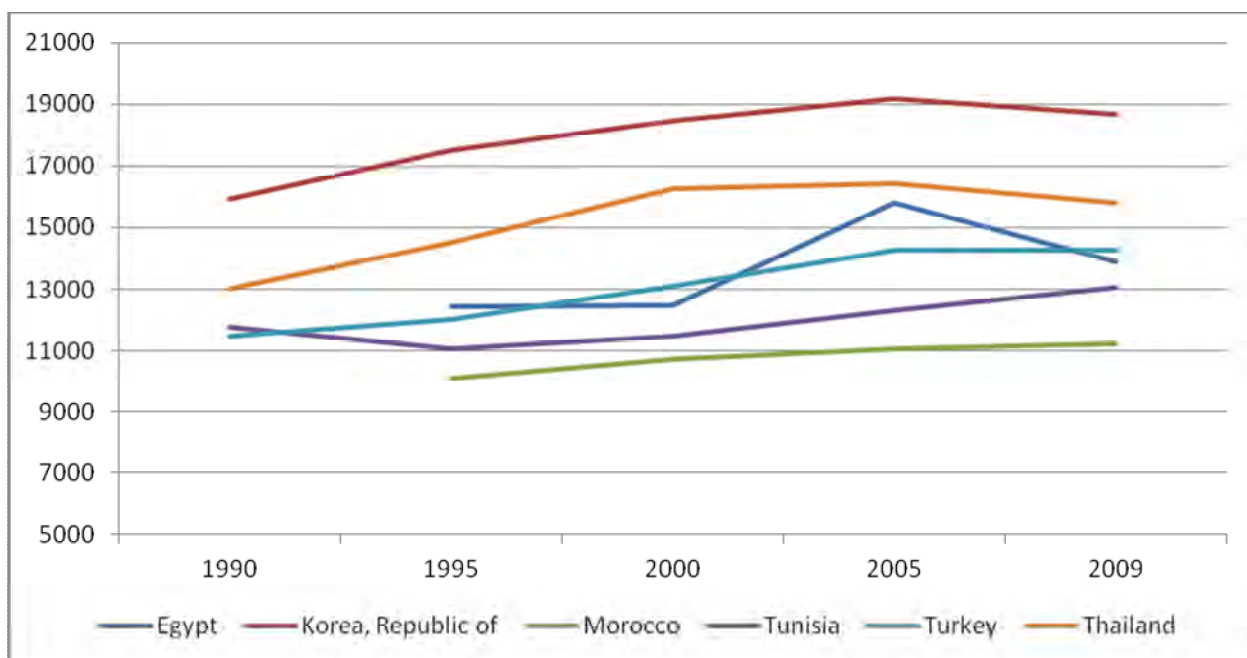
Figure 23: Current account (% of GDP)
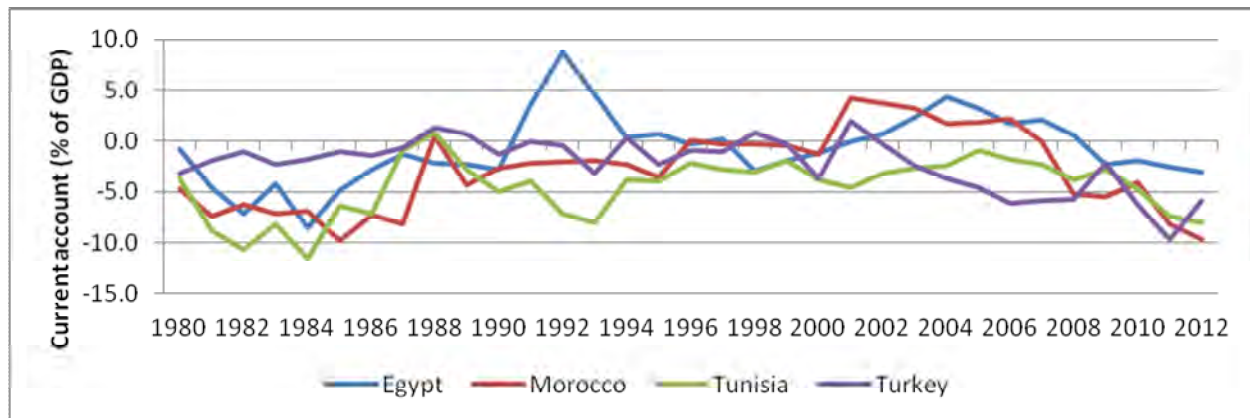
Figure 24: External Debt (% of GNI)
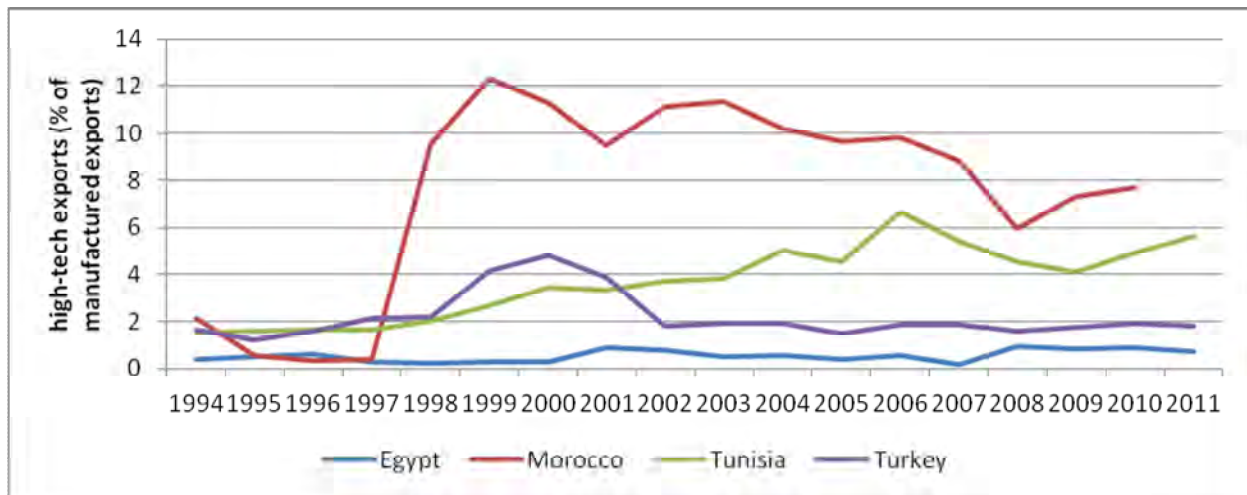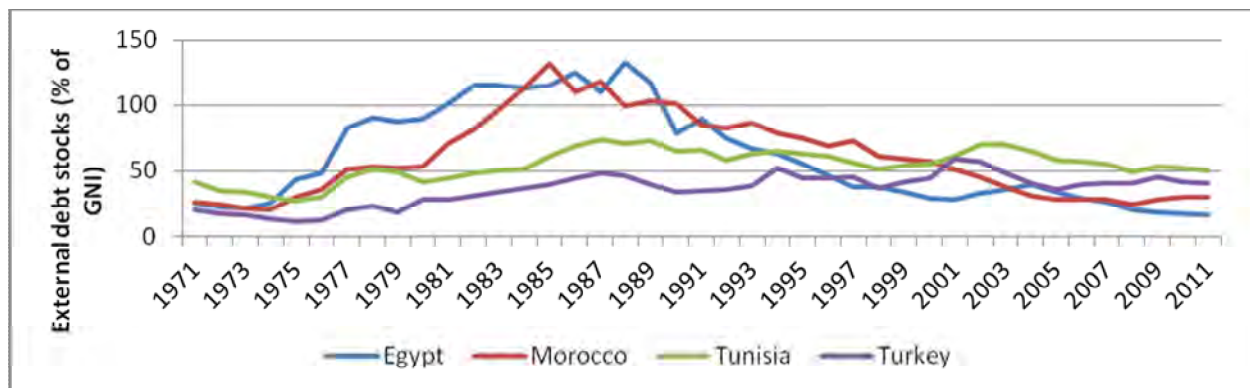
Figure 25: Country Rankings in the Ease of Doing Business Indicators
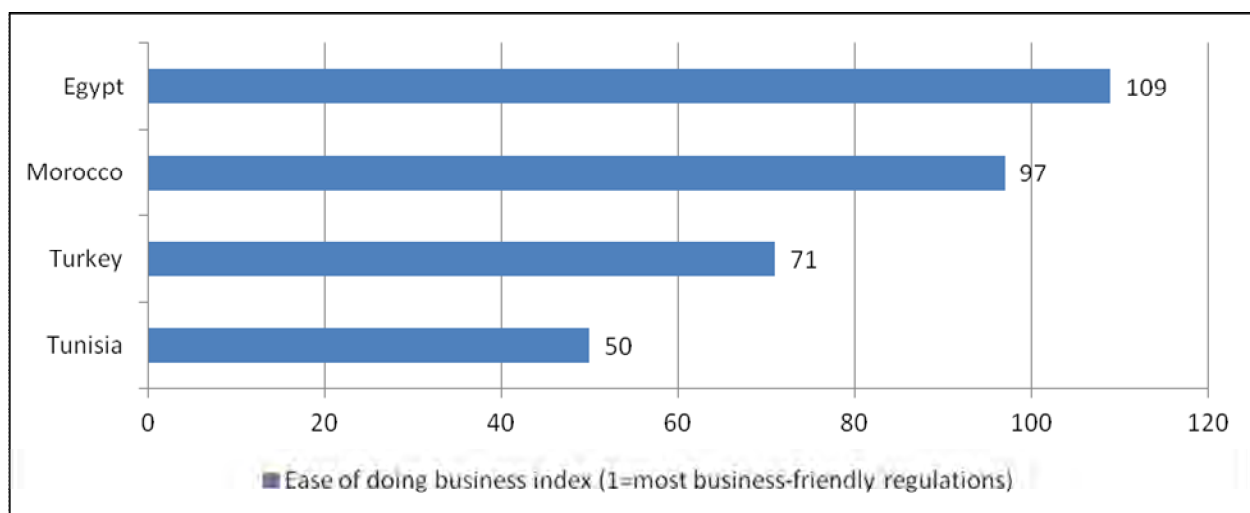
Figure 26: Research and development expenditures (% of GDP)
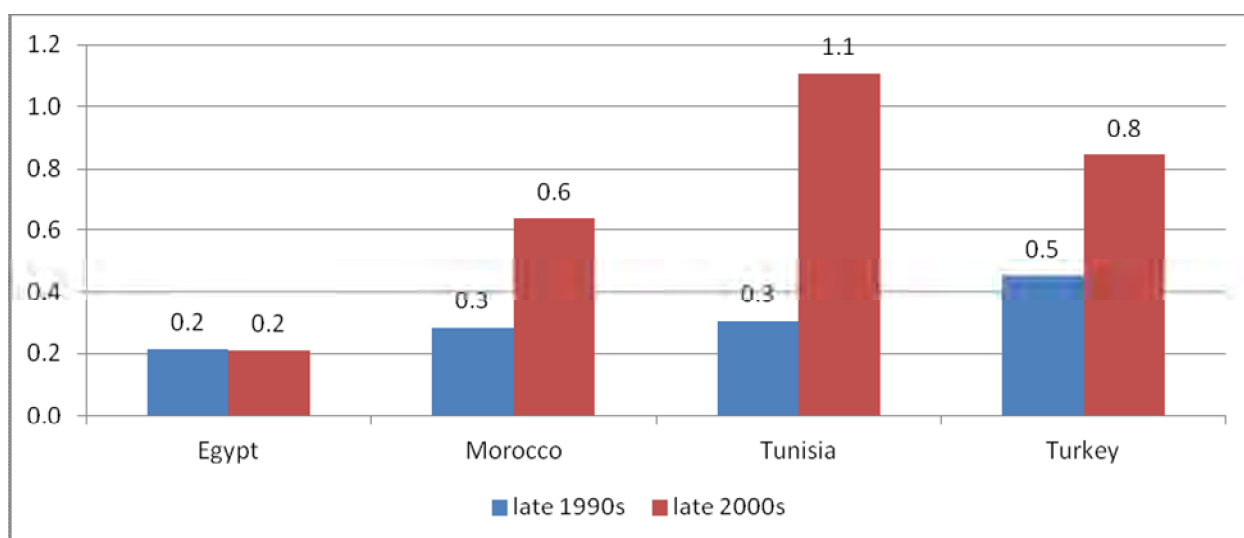
Source: World Development Indicators

Figure 27: Patent applications, residents
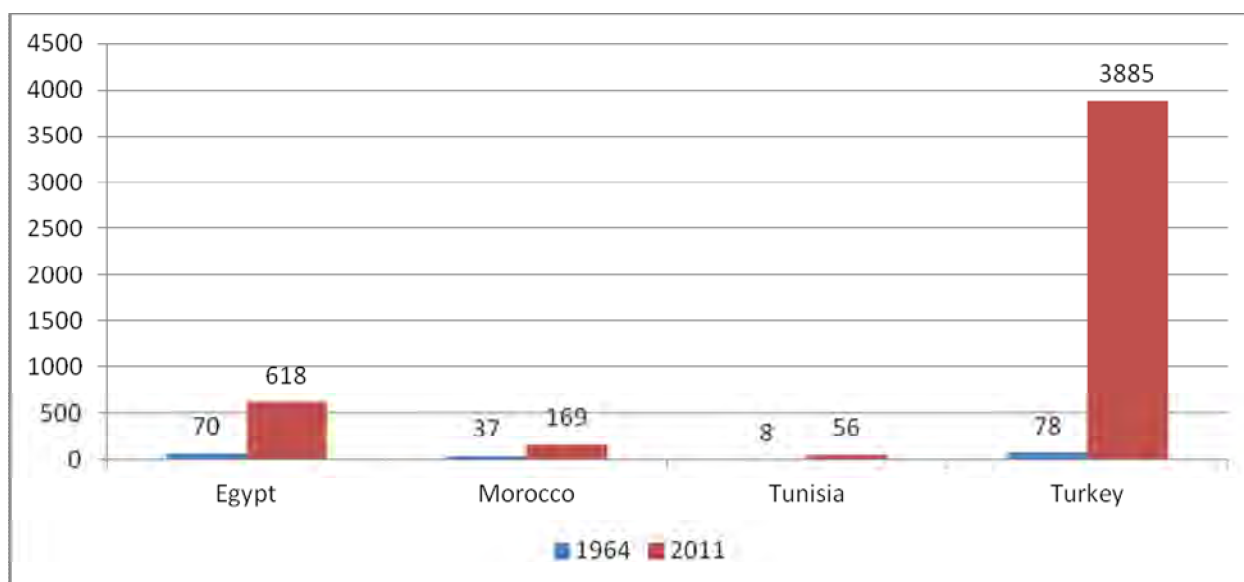
Source: World Development Indicators

Table 1: Population, Schooling and GDP per capita

	Population size (millions)	GDP per capita (constant 2005 US$)	GNI per capita, Atlas method (current US$)	
	2012	**2012**	**1965**	**2012**
Egypt	80.7	1560	402.5	2980
Morocco	32.5	2516	200	2960
Tunisia	10.7	3783	230	4150
Turkey	73.9	8492	470	10830

NB figure for Turkey is for 1967.

Source: World Development Indicators

Table 2: Average Growth Rates 1969-2011

	Agriculture	Industry	Services	GDP growth
Egypt	3.1	6.1	6.7	**5.3**
Morocco	5.1	4.0	5.3	**4.3**
Tunisia	4.2	4.9	5.5	**4.9**
Turkey	1.5	5.6	4.7	**4.4**

Source: Authors' calculations based on World Development Indicators Data

Table 3: Aggregate Productivity Growth

	Egypt		Turkey		Tunisia	
	1993-2002	2003-2008	1990-2001	2002-2010	1983-1995	1995-2008
Aggregate labor productivity growth	2	3	1.25	3.50	0.83	1.83

Source: Calculated by the authors based on Atiyas and Bakis (2013) El-Haddad (2013) and Marouani and Mouelhi (2013)

Table 4: Decomposition of productivity growth in Tunisia 1983-2008

	Agriculture	Mining	Manufacturing	Construction	Services of which	Public utilities	Aggregate productivity growth
within component	0.62	0.10	0.63	0.18	1.33	0.21	2.86
structural change	-0.46	(0.12)	0.12	(0.04)	0.65	4.30	0.15
Aggregate labor productivity by sector	*0.16*	*(0.02)*	*0.75*	*0.14*	*1.97*	*4.51*	*3.00*

Marouani and Mouelhi (2013)

Table 5: Decomposition of productivity growth: Egypt and Turkey

Egypt

		Agriculture	Industry	Services,	Total
	within component	50.40	65.80	(7.70)	108.50
	structural change	(37.70)	(13.80)	84.40	32.90
1993-2002	Aggregate labor productivity by sector	12.70	52.00	76.70	141.40
	within	(17.90)	34.00	228.30	244.40
	structural change	26.20	51.10	(93.60)	(16.30)
2003-2008	Aggregate labor productivity by sector	8.30	85.10	134.70	228.10

Turkey

		Agriculture	Industry	Services,	Total
	within	0.19	0.18	-0.4	-0.03
	structural change	-0.31	0.24	1.35	1.28
1990-2001	Total	-0.12	0.42	0.95	1.25
	within	0.54	0.8	-0.07	1.27
	structural change	-0.59	0.24	2.58	2.23
2002-2010	Total	-0.05	1.04	2.51	3.5

Derived from El-Haddad (2013) and Atiyas and Bakis (2013). El-Haddad is calculated on the productivity level rather than on the change

Table 6: Contribution to manufacturing sector value added growth

	1985-1989	1990-1999	2000-2011
Factor Accumulation	*133.3*	*73.9*	*74.1*
Labor	106.1	39.1	11.1
Capital	27.3	34.8	63.0
TFP	*-33.3*	*21.7*	*25.9*
Manufacturing growth	**3.3**	**2.3**	**2.7**

Source: Achy 2013

Table 7: Composition of manufacturing value added (%)

	Egypt (2006)	**Morocco (2009)**	**Turkey (2008)**
basic iron and steel	13.1	na	9.5
refined petroleum products	11.0	3.6	na
non-metallic mineral products n.e.c.	10.1	14.3	6.3
oher chemicals	9.6	7.7	na
pinning, weaving and finishing of textiles	5.3	2.2	4.7
other food products	5.2	5.3	4.9
Basic chemicals	4.5	3.9	6.7
Processed meat, fish, fruit, vegetables, fats	4.1	6.2	na
Wearing apparel, except fur apparel	3.3	7.0	5.7
Beverages	3.0	5.0	na
Tobacco	na	10.4	na
Motor vehicles	na	na	4.6
Plastic products	na	na	3.8
Parts/accessories for automobiles	na	na	3.5
Unspecified	na	na	5.4

Source: calculated by the authors based on UNIDO data

Table 8: Inflation Performance

	Average	**Volatility**	**Maximum**	**Minimum**
Egypt	9.4	6.5	23.9	-3.0
Morocco	4.7	4.0	17.6	-1.0
Tunisia	4.8	2.0	8.9	2.0
Turkey	34.8	30.6	110.2	0.4

Source: World Development Indicators

Table 9: Exchange rate and manufacturing competitiveness

Indicators	**1970-9**	**1980-9**	**1990-9**	**2000-10**	**2011-12**
Average REER changes					
Egypt	-8.34	10.63	7.18	-0.11	0.82
Morocco	-0.75	-3.34	0.88	-0.81	-2.36
Tunisia	-1.66	-1.86	0.13	-2.16	-1.50
Turkey	na	na	3.43	4.55	-7.70
Average volatility of exchange rates					
Egypt	3.48	3.71	4.84	13.5	6.35
Morocco	1.06	1.43	2.14	2.7	0.80
Tunisia	1.54	2.10	2.05	2.0	1.21
Turkey	na	na	14.83	15.6	7.56
Average share of manufactured value added in GDP					
Egypt	15.73	14.40	17.54	17.25	15.19
Morocco	16.67	18.02	18.17	16.09	15.50
Tunisia	11.39	16.44	19.75	18.04	17.63
Turkey	17.70	20.72	23.04	19.72	18.59
Average share of manufactures exports in total merchandise exports					
Egypt	27.09	19.20	37.42	32.31	45.06
Morocco	16.05	39.45	55.37	66.15	na
Tunisia	24.55	49.39	76.08	76.23	73.23
Turkey	19.47	52.29	72.98	81.84	78.31

Notes: The real effective exchange rate (REER) is from the IFS and KS; an increase (decrease) in REER denotes real appreciation (depreciation).
Volatility is computed, for a given year, as the standard deviation of monthly changes in the real effective exchange rate.

Table 10: Deviations from Equilibrium Real Exchange Rate, 1975-2005 (%).

Countries	Mean deviation of the RER	Periods with overvaluation (%)
Egypt	9.4	50
Morocco	-24.3	80
Tunisia	-1.4	63

Note: A negative value in column 1 means an overvalued RER on average during the whole period. The overall period was broken down into 8 five-year periods.
Source: Diop et al. (2012).

Table 11: Education indicators

	1970s	1980s	1990s	2000s
School enrollment, secondary (% gross)				
Egypt	36.2	52.3	70.2	80.6
Morocco	15.6	31.8	37.1	50.3
Tunisia	22.2	34.3	56.3	84.7
Turkey	30.1	41.5	57.1	83.1
School enrollment, tertiary (% gross)				
Egypt	11.1	17.1	18.5	30.2
Morocco	2.5	7.7	10.6	11.5
Tunisia	3.4	5.4	12.1	28.9
Turkey	6.6	7.9	18.6	35.5
Literacy rate, adult total (% of people ages 15 and above)				
Egypt	38.2	44.4	55.6	69.9
Morocco	na	30.3	41.6	54.5
Tunisia	na	48.2	59.2	76.3
Turkey	61.6	70.8	79.2	88.6

Source: World Development Indicators

Table 12: Percentage distribution of public current expenditure on education

	Primary	Secondary	Tertiary
Morocco (2004)	40.5	44.5	14.7
Tunisia (2005)	35.1	42.6	22.3
Turkey (2006)			28.8

Source: UNESCO Institute for Statistics

Table 13: Distribution of mathematics Achievement Scores

	8th grade	
	2007	2011
Egypt	391	na
Morocco	381	371
Tunisia	420	425
Turkey	441	452
Mean	500	

Source: The Trends in International Mathematics and Science Study (TIMSS)(*http://nces.ed.gov/timss/*)

Table 14: Composition of Labor Force by Education (%)

	Egypt (2012)	Morocco (2011)	Tunisia (2011)	Turkey (2012)
No education	31.2	34.9	9.5	9.0
Primary	11.1	43.3	33.1	34.7
Secondary	1.5	11.5	37.9	10.4
Vocational education	36.5			18.0
Tertiary	19.7	8.9	19.4	18.3
Other		1.4	0.1	9.7

Source: Egypt: CAPMAS. Other Countries: World Development Indicators

Table 15: Skills indicators from World Enterprise Surveys

	Proportion of unskilled workers (out of all production workers)	Percent of firms identifying inadequately educated workforce as a major constraint
Egypt (2008)	33.6	50.1
Morocco (2007)	47.1	30.9
Turkey (2008)	37.3	24.8

*This indicator is computed using data from manufacturing firms only
Source: World Bank Enterprise Survey

Table 16: Number of ISO 9001 quality certificates issued (per billion PPP$ GDP) 2011

Egypt	4
Morocco	1.6
Tunisia	4.77
Turkey	8.78

Source: World Development Indicators

Table 17: Quality Certification and technology licenses

	Percent of firms with an internationally-recognized quality certification	Percent of firms using technology-licensed from foreign companies*
Egypt (2008)	21.1	12.6
Morocco (2007)	17.3	12.8
Turkey (2008)	30	16.2

*This indicator is computed using data from manufacturing firms only Source: World Bank Enterprise Survey

Areas eligible for incentives under the 1997 Investment Guarantees and Incentives Law

Air transportation and directly related services
Animal, poultry and fish farming
Financial leasing
Hospital and medical centres offering 10% of their service capacity free of charge
Hotels, motels, boarding houses, tourist villages, tourist travel and transportation
Housing projects whose units are to be leased unfurnished for non-administrative purposes
Industry and mining
Infrastructure relating to drinking water, sewage, electricity, roads, and communications services
Oil services in support of exploration and the transport and delivery of natural gas
Overseas maritime transport
Production of computer software and systems
Projects funded by the Social Fund for Development
Reclamation and cultivation of barren and/or desert lands
Transport of goods in refrigerated vans; refrigerators for the preservation of agricultural products, industrial products, and foodstuffs; container depots and grain silos
Underwriting subscriptions to securities
Venture capital

Structural Transformation and Industrial Policy:

Volume II
Case Studies

Structural Transformation and Industrial Policy in Selected Southern Mediterranean Countries

Table of Contents

Structural Change and Industrial Policy in Turkey

by: İzak Atiyas and Ozan Bakış

1. Introduction

The purpose of this paper is to examine various aspects of structural change in Turkey and present an overview of the evolution of industrial policy especially in the last three decades. Turkey experienced high growth rates in the last decade. We provide data below that suggests that these growth rates entailed substantial growth in labor productivity as well as significant change in the composition of employment, value added and exports. Rodrik (2010) showed that aggregate productivity growth in Turkey contains significant structural change, that is, allocation of labor from low to high productivity sectors. We corroborate this result using both aggregate (national income) and micro data. We document significant changes in the composition of value added and employment within the manufacturing industry and in the composition of exports.

We also present an overview of industrial policy in Turkey. In particular, we discuss phases when investment and employment incentives contained sectoral selectivity, and when they were (more or less) neutral across sectors (but not across regions). One wonders to what extent industrial policy was responsible for structural change described above. Even though we do not provide any conclusive evidence, we do argue that a substantial part of these compositional changes actually occurred in a period when the incentive system lacked major selectivity across industries. At least for the time being we are led to conclude that structural change owed little to industrial policy. We do report, however, some evidence that regional incentives in the 2000s did have an effect on employment growth on a regional basis.

High growth in labor productivity notwithstanding, the performance of the Turkish economy in the last decade does have limitations. Even though exports have increased and diversified substantially the degree of sophistication of export products is not very high. Similarly, while the share of products with medium level technological content in total exports has increased over time, the share of products with high technological content is still very low. Moreover, there is also evidence that especially those sectors that have expanded most rapidly in the last decade have relatively weak backward linkages and import relatively larger portion of inputs such as raw materials and components. We review evidence and identify these shortcomings.

The paper is organized as follows. In section 2 we provide a brief overview of the macroeconomic and policy background. In section 3 we provide evidence on various aspects of structural change. Section 4 presents a discussion of the evolution of industrial policy as well as a general evaluation. Section 5 concludes the paper.

2. The Macroeconomic and Policy Environment

Up until 1980, Turkey followed what is generally known as an import substitution industrialization (ISI) strategy. This was an economic policy regime characterized by very high protection from imports, heavy controls on domestic prices, a repressed financial system, dominance of state owned enterprises in banking and what were seen as critical industries. ISI ended in a deep crisis at the end of the 1970s. A radical economic program was launched in January 1980 following a military coup and was more or less followed through persistently ever since. Hence the 1980s witnessed a fundamental transformation in the economic policy regime from import substitution industrialization towards trade liberalization, liberalization of domestic goods and financial markets, and liberalization of international finance. Foreign trade was liberalized first, during early and mid-1980s. Capital account liberalization was enacted in 1989 and implemented in 1990. A major step towards further liberalization was undertaken in 1996 through a Custom's Union (CU) with the European Union (EU). Between 40-50 percent of Turkey's exports in the last decade and a half have been made to EU countries, though this ratio has declined somewhat during and after the global crisis.

Liberalization was not accompanied by stabilization. Especially after 1987 and during much of the 1990s Turkey suffered high inflation rates, high real interest rates, high budget deficits and rapidly accumulating public debt. Budget deficits were primarily financed through issuance of government securities which were primarily held by the banking system. Banking supervision and

regulation was especially weak. Arbitrage opportunities offered by very high domestic interest rates induced the banking system to increase their foreign exchange risk over time. These developments culminated in a severe crisis in 1999-2000 during which almost half of the banking system was wiped out.

A "recovery program" program was launched in 2001 by the coalition government that was in power when the crisis occurred. Most of the reform elements contained in the program were subsequently adopted or continued with little change by the Justice and Development Party (Adalet ve Kalkınma Partisi, AKP) government that came to power after the elections of November 2002.

The post-2002 macroeconomic environment was radically different from the earlier two decades of liberalization. Between 2002-2010 GDP in Turkey grew at an average rate of 5.1 percent. The ratio of net public debt to GDP was reduced from 66 percent in 2001 to an average of 30 percent in 2008-2010. Inflation as measured by the annual rate of change of the GDP deflator was reduced from 53 percent in 2002 to 6-7 percent at the end of the decade. Real interest rates which were above 15 percent in 2001-2002 declined and remained below 5 percent after 2009. The banking system was consolidated and recapitalized, supervision and regulation of the banking system improved dramatically. With the establishment of macroeconomic stability the share of credits in total bank assets increased from around 30 percent in 2003 to around 50 percent in 2010 (Atiyas and Bakış, 2011). Anecdotal evidence suggests that access to credit improved substantially over the last decade, even for small and medium enterprises (SMEs). There is also evidence of improvements in institutions of economic policy through a strengthening of the legal and regulatory infrastructure necessary for the proper functioning of a modern market economy: measures were taken to curtail the discretionary powers of the government (partly by delegation of substantial rule making authority to independent regulatory authorities) to, strengthen the independence of the Central Bank and improve transparency overall (Atiyas 2012).

These developments took place in an overall international environment that was highly benign if not positively conducive to growth. The 2000s witnessed increased capital flows to emerging markets thanks to low interest rates in the US. In addition, in 2004 Turkey started accession talks with the EU. With improvements in the legal and regulatory infrastructure, these developments created amore favorable environment for foreign direct investment, which increased significantly in the 2000s, especially through privatizations.

Two major macroeconomic problems that Turkey has been facing, and which have not been resolved in the last decade are high current account deficit, and high unemployment rates. Indeed, in the last decade as well growth has been accompanied by high current account deficits, hovering around 5-10 percent of GDP between 2005-2011 (except for 2009 when growth rate of GDP was negative). Similarly, the unemployment rate was almost constant and above 10% during 2000s characterized by a relatively stable growth period. The fact that intermediate goods make up a large portion of total imports has recently led the government to entertain the idea that industrial policy may be one of the policy tools that may be used to attack the current account deficit and unemployment problems. The current account problem will be further discussed below.

3. Documenting Structural Change

Figure 1 and Figure 2 show the evolution of per capita GDP in Turkey in the last 4 decades. Data for Figure 1 are from the Penn World Tables 7.1 (PPP Converted GDP Per Capita - Chain Series- at 2005 constant prices) and those for Figure 2 are from Turkish Statistical Institute (TurkStat) (constant 1998 TL prices). What is noteworthy in that figure is that average incomes in Turkey have grown in a more uninterrupted and less erratic manner in the last decade relative to the earlier 2-3 decades. Per capita income was about 2000 current US$ in the second half of the 1970s; it was around 4000 US$ in the second half of the 1990s, and has reached a level of around 10,000 US$ by 2010. Clearly the last decade has been a period of more rapid growth than the earlier 2-3 decades.

Table 1 shows average growth of labor productivity (calculated as arithmetic average of annual log differences of GDP in constant TL prices divided by employment) over the

1980s, 1990s and 2000s. We provide two different periodizations. In the first one average labor productivity growth is presented in terms of calendar decades. In the second one, which we believe is more meaningful, the first period 1981-1989 covers the reform period prior to the liberalization of the capital count. The second period covers up to the end of 2001, including the crisis year, which appropriately belongs to the regime of the 1990s. The third period covers the years when the AKP has been in government. The 1980s appear to be a period of relatively high growth of labor productivity, albeit part of that is probably rebounding up from the crisis years in the second half of the 1970s. Growth in average productivity of labor almost doubled in the 2000s relative to the 1990s.

Productivity growth in the 2000s has been high in international comparison as well. Figure 3 shows a measure of growth of labor productivity (GDP – PPP per worker) for Turkey and a set of comparators over the 1990s and 2000s. The data is obtained from Penn World Tables. The figure shows that growth of labor productivity in Turkey in the 2000s has been quite high relative to many Central European and Latin American countries, but not as high as that in countries such as Romania, India and China. Note also that the improvement in labor productivity growth in Turkey in the 2000s over the 1990s is apparent in this figure as well.

3.1 Structural change: Aggregate (national income) data

Improvements in overall productivity are often associated with structural change, that is, relatively higher growth of inputs and output in relatively higher productivity industries. Figure 4 provides an aggregate picture of structural change in Turkey over a period of four decades. It provides data on the share of agriculture, industry and services in total GDP in current prices. The data comes from national accounts compiled by the Turkish Statistical Institute (TurkStat) and combines two series. The first series has base year 1987 and covers the period 1968-1997 and the second series has base year 1998 and covers the period 1998-2010.[1] The figure shows the

persistent decline in the share of agriculture and the persistent increase in the share of services. The share of industry increases from about 16-17 percent of GDP in the beginning of the period to about 22-23 percent in the new millennium. In the case of industry one notices a relative decline after the 1990s; indeed, a closer inspection of the data reveals that the share of industry reaches a maximum of 28 percent in 1998 but declines to about 22-23 percent towards the end of 2000s. The share of manufacturing is about 17-18 percent of GDP in the 2005-2011 period.

The category "services" is made up of a heterogeneous set of activities. Figure 5 provides data on the evolution of the more important components of services for the period 1998-2011. The most glaring changes are twofold: the decline in the share of financial intermediation from about 8-10 percent of GDP to about 4 percent of GDP and the increase in the share of "home ownership and dwelling" from about 4-5 percent of GDP to about 10-12 percent.[2] The former probably represents the impact of the 2000-2001 crisis on the financial sector during which a sizeable portion of the banking system was wiped out. There is an increase in the share of "transport, storage and communication" as well, from below 12 percent to close to 14 percent for most of the last decade.

Looking at sectoral composition of GDP in constant prices provides a somewhat different picture. In constant prices, the share of industry has increased from around 18 percent at the end of 1960s to about 26-27 percent in 2005-2011, with the share of manufacturing hovering about 23-24 percent in the latter period. By contrast, the share of home ownership and dwelling remains at about 4-5 percent. Hence part of the movement in sectoral shares expressed in current prices reflects rapid increases in household rental prices in the last decade, relative to manufacturing industry prices.

Sectoral price deflators are given in Figure 6. The figure shows that industry prices have increased slower than average. By contrast, the price deflator associated with home

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[1] For the period 1968-1997 TurkStat provides data on the share of agriculture, industry and services. For the 1998-2010 period, TurkStat provides data at a more disaggregated level. For that period, "Financial intermediation indirectly

measured" and "taxes and subsidies" have been proportionately distributed to individual sectors.
[2] This is household expenditure on dwelling rent including the owner-occupied elements.

ownership has increased almost 25-fold in a matter of 13 years. It is this phenomenal increase in the price of dwelling services that explains the divergence between the share of dwelling in GDP expressed in current vs. constant prices. We do not pursue this issue any further in this paper but this rapid increase in non-tradables prices is clearly worthy of further study.

Paralleling the change in the composition of GDP, the composition of employment has changed as well. This is displayed in Figure 7. The figure shows a steady decline in agricultural employment from about 47 percent in 1988 to about 25-26 percent in 2010. Note that the decline in the share of agriculture was steeper in the 2000s relative to the 1990s: about 7 percentage points between 1990-1999 and 15 percentage points between 2000-2009. There is a steady corresponding increase in the share of employment in services from less than 40 to over 55 percent in the same period. The increase in the employment share of industry has been less dramatic. It has increased from about 16 percent in the late 1980s to about 20 percent in mid 2000's and has remained there.

Decomposing overall productivity growth

Further insight into structural change can be obtained by decomposing overall growth in labor productivity into productivity growth within industries, and that arising from movement of labor from low to high productivity industries. One decomposition often used in the literature is as follows:

$$\Delta P_t = \sum_i s_{i,t-k} \Delta p_{i,t} + \sum_i p_{i,t} \Delta s_{i,t}$$

Here the Δ stands for the difference between time t and t-k, P and p_i stand for productivity of the overall economy and of sector i, respectively and s_i stands for the employment share of sector i. Hence the equation states that overall productivity growth between t and t-k consists of two components: the first is the productivity growth within each sector, weighted by the beginning of period employment shares. The second term is the sum of changes in employment shares, weighted by the end of period sectoral productivity levels. The second term is often called the structural change component.

Such an exercise has already been undertaken for the case of Turkey by Rodrik (2010). Here we update the results with more recent data and provide further details. We are also particularly interested in a comparison between 1990s and 2000s.[3] The sectoral employment data published by TurkStat follows NACE Rev.1 classification for 1988-2009 period, and NACE Rev.2 for the following years. We converted 18 NACE Rev.2 branch of activities into 9 NACE Rev.1 branch of activities so that we have 9 "sectors" for 1988-2010. The sectoral GDP data comes from 2 series published by TurkStat. The first series is the sectoral GNP series which follows ISIC Rev.2 classification and covers 1968-2006 period. The second series is the sectoral GDP series that follows NACE Rev.1.1 classification. It is published for the period 1998-2010. We managed to have an imperfectly consistent sectoral data for both employment and GDP by regrouping both employment and GDP data into the following 9 sectors: agriculture (AGR); mining (MIN); manufacturing (MAN); public utilities - electric, gas, water (PU); construction (CONS); wholesale and retail trade (WRT); transport, communication and storage (TSC); finance, insurance, real estate and business services (FIRE); community, personal and government services (CSPSGS).[4]

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[3] Unfortunately we cannot include the 1980s in this comparison as TurkStat does not provide sectoral employment data at this sectoral detail before 1988.

[4] For employment data we make the following transformation: "Agriculture", "Mining", "Manufacturing", "Electricity, gas, water" and "Construction" are common to both classifications. We regrouped "Wholesale and retail trade" and "Accommodation and food service activities" into WRT; "Transportation and storage" and "Information and communication" into TSC; "Financial and insurance activities", "Real estate activities", "Professional, scientific and technical activities" and "Administrative and support service activities" into FIRE; "Public administration and defense", "Education", "Human health and social work activities", "Arts, entertainment and recreation" and "Other social, community and personal service activities" into CSPSGS. For the GDP data we make the following transformations: in the GNP data we regrouped "Agriculture and livestock production", "Forestry", and "Fishing" into AGR; "Wholesale and retail trade", "Hotel, restaurants services" into WRT; "Financial institutions", "Ownership of dwelling", "Business and personal services", "Imputed bank service charges" into FIRE; "Government services", "Private non-profit institutions" into CSPSGS. Similarly in the GDP series we regrouped "Agriculture, hunting and forestry", "Fishing" into AGR; "Wholesale and retail trade", "Hotels and Restaurants" into WRT; "Financial intermediation", "Ownership and dwelling", "Real estate, renting and business activities" into FIRE; "Public administration and defense; compulsory social security", "Education", "Health and social work", "Other community, social and personal service

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The basic decomposition of growth in labor productivity is given in Table 2 for two periodizations, as before. The table shows that movement of labor from low to high productivity sectors has made a significant contribution to overall productivity growth. For the 1990s, almost all productivity growth is due to structural change. In the 2000s, structural change accounts for more than half of overall productivity change. As discussed by Rodrik (2010), Turkey resembles Asian countries, where the structural change components are often positive, rather than Latin American countries, where the structural change component is negative.

Averaging over decades hides significant volatility. Figure 8 presents the same decomposition on an annual basis. In almost all years (with the exception of 1995 and 2011) where productivity growth has been positive, the contribution of structural change has been positive as well, again pointing to the overall positive contribution of the structural change component to productivity growth.

Figure 9, taken from Rodrik (but updated with 2010 data) shows the average labor productivity of individual sectors in 2010, expressed as percentage of (weighted) average productivity. The x-axis in the table shows employment shares. The dispersion is quite high, ranging from agriculture where productivity is about 40 percent of average productivity, to public utilities, and the financial sector (FIRE), where productivity is about three times as high as manufacturing. Figure 10 plots for each year the variance of logarithm of sectoral productivities between the years 1988-2011. There is an overall declining trend, reflecting a slight convergence in the labor productivities across sectors.

Table 3 provides detailed data on the contribution of individual industries to overall productivity growth in the 1990s and 2000s. In each panel the first (last) row shows the percentage point contribution (percentage share) of each sector to the overall average annual productivity growth in that period.[5] The next two rows decompose that contribution to changes in the sectors'

productivity (multiplied by the employment share in the beginning of the period, the "within component") and changes in the sectors' employment share (multiplied by productivity at the end of the period, the "structural change" component). Hence during the period 1990-2001 the highest contribution to overall productivity growth came from the manufacturing industry: almost 34 percent of the overall average annual productivity growth of about 1 percent occurred in manufacturing. In the 2000s the largest contribution came from the manufacturing sector (MAN) and the financial sector (FIRE) accounting each for about 30 percent of overall productivity growth. Note that productivity increase within FIRE has been negative. In FIRE the overall positive contribution comes fundamentally from the structural change component. In fact, looking at the details reveals that the increase in the share of FIRE employment is relatively small; a much higher than average level of productivity (see Figure 9) gets multiplied by a small increase in employment, resulting in a sizeable structural change component. In MAN the contribution of increase in productivity (the within component) is large, and that of increase in employment share is smaller but still positive.

To summarize the main results so far: Turkey has experienced significant growth in overall labor productivity in the last decade. The increase in labor productivity is respectable in international comparison as well. The country has experienced significant structural change, whereby the employment and value added shares of agriculture has decreased and those of services, and to some extent, of manufacturing have increased.

Structural change has made a significant contribution to overall productivity growth, both in the 1990s and in 2000s. In fact, in the period 1990-2001 almost all of overall growth in labor productivity was due to structural change. During the 2000s, both productivity increase within industries and structural change were important in overall productivity growth, accounting for about one third and two thirds of the latter, respectively. Both manufacturing and the finance-real estate sector made significant contributions to overall productivity growth.

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activities", "Private household with employed persons" into CSPSGS.

[5] Both components scaled by the beginning-of-period overall productivity.

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Looking at micro data

The previous section showed that structural change contributed significantly to the overall increase in productivity in the 2000s. In this section we look at micro data to see if we can get additional insights into the evolution of labor productivity in Turkey.

Changes in the size distribution of output and employment

We start by comparing the size distribution of production over different periods of time. The distribution of output across firms of different size classes may reflect the impact of a number of influences. Smaller firms may have more constrained access to markets because of limited credit, or market foreclosure by larger firms, or other transactions costs that may work to the disadvantage of smaller firms. In environments where political connections are important, larger firms may enjoy more extended political connections that may enable them to access critical resources more easily. This may be especially relevant in Turkey.

The micro data used in this section is compiled by TurkStat. For the years 1980-2001 the data set consists of private *plants* with at least 10 employees and all state owned plants *in the manufacturing industry*. For the period 2003-2009 the data set contains all 20+ *firms* plus random samples of 1-19 firms accompanied with sampling weights *from all industries*. For the 2003-2009 period, there is also information on the employment and sales of all plants owned by the firms. In the comparisons in this subsection, years for comparisons were chosen so as not to correspond to crisis years. Also comparisons are carried out only for the manufacturing industry.

Table 4 displays the number of *plants* in the data set used in this section. The data set covers plants with at least 10 employees. In principle the data set should cover the whole population of firms within each size range but n practice we cannot rule out imperfect or incomplete coverage, hence care should be undertaken comparing the results. Comparing the periods 1985-86 with 1995-96, one notes the decrease in the number of plants with 10-19 employees and the corresponding increase in the number of firms with 20-49 and 50-99 employees. Most possibly this reflects the fact that some very small (10-19) plants grew and became firms with medium sizes. Still, it is not clear how to interpret the fact that the total number of plants does not increase between the 1980s and 1990s. In other words, it is hard to believe that there has been no new entry at a larger scale into the 10-19 category. It could be that some new plants in that size category were not covered by the surveys. The number of plants in the 2000s is much larger. While part of this is possibly new entry, it is also likely to reflect a more effective coverage of existing plants.[6]

Table 5 provides data on the share of plants in different size categories of total employment. We use sales from production rather than value added because value added is not available at the plant level for 2003-2009; in fact only sales is available at the plant level. Also, we assume that the distribution of sales from production across plants in each firm is the same as the distribution of sales across plants in each firm. The data reveals a fundamental change in overall market structure. Whereas plants with more than 500 employees accounted for 47 percent of employment and 57 percent of sales in 1985-86, these ratios have decreased to 22 percent and 35 percent respectively. These are very significant changes. There have been corresponding increases in the shares of smaller plants. For example, the employment share of plants with less than 50 employees has increased from 17 to 37 percent. The share of sales of the same group of plants increased from 11 to 23 percent.

Here a few comments are in order: The main question is, does the data reflect an actual decrease in the share of largest firms, or is this a statistical artifact due to changing scope of coverage of existing firms? Compare first the 1980s and 1990s. Here the shares of largest firms have decreased despite the fact that the total number of firms has remained relatively constant. This has to reflect a real

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[6] In 2006 the authorities started an "official statistics program" that established closer coordination between TurkStat, the Ministry of Finance, the State Planning Organization, the Social Security Institution etc. Data pertaining to 2006 and later is likely to be more reliable because coverage of firms reflects information obtained on a more coordinated basis. At the same time, however, starting with 2006 sales and value added figures were collected from accounting records firms provided to the Ministry of Finance, whereas in the earlier years these data were collected by firms' submissions directly to the survey questionnaire. Because of widespread tax evasion, official figures may be more distorted than data provided by the firms directly during survey implementation.

redistribution of sales towards smaller firms. We cannot be so sure about the 2000s. Clearly, the increase in the number of small firms is much larger than that of large firms. We cannot be sure to what extent this is true entry and to what extent it is better coverage. In this case, the increase in the coverage of firms may have played an important role in the increase in the employment and production share of smaller firms.

The table also shows average labor productivity, expressed as sales from production per employee. The average productivity of each size category is expressed as a percentage of the average productivity of firms with 10-19 employees. In all periods, average productivity increases with size. Moreover, the size distribution of average productivity shows remarkable similarity across time periods. The average productivity of 500+ firms is about 2.5-2.6 times those of 10-19 firms. The ratios for other size categories are also pretty constant over time. In short, larger firms are more productive and the gap pattern is quite persistent over time.

Decomposing labor productivity growth in the last decade

In this section we try to provide some additional details into the dynamics of overall labor productivity growth in the 2000s. In particular, following a standard decomposition method employed by Griliches and Regev (1995), we try to see the contribution of four dimensions to overall productivity growth from one period to the next. For that, let us define labor productivity of firm i in year t as:

$$p_{it} = \frac{Y_{it}}{L_{it}}$$

where Y_{it} denotes value-added and L_{it} employment (typically number of workers). It can be shown that growth in aggregate productivity between periods t and $t - \tau$ can be decomposed in the following way:

$$\Delta P_{t,t-\tau} = \sum_{i \in C} \bar{s}_i \left(p_{it} - p_{i,t-\tau} \right)$$
$$+ \sum_{i \in C} \left(s_{it} - s_{i,t-\tau} \right) \left(\bar{p}_i - \bar{P} \right)$$
$$+ \sum_{i \in E} s_{it} \left(p_{it} - \bar{P} \right)$$
$$- \sum_{i \in X} s_{i,t-\tau} \left(p_{i,t-\tau} - \bar{P} \right)$$

Here P is aggregate productivity, s_{it} and p_{it} are the employment share and productivity for firm i at period t and C, E and X stand for the set of continuing, entering and exiting firms, respectively. Bars over a variable indicate averages of the variable over base and end years. Hence the terms $\bar{s}_i$ and $\bar{p}_i$ stand for averages over periods t and $t - \tau$ and $\bar{P}$ is the mean of productivity for the industry over periods t and $t - \tau$. The decomposition indicates that aggregate productivity growth in the industry between periods t and $t - \tau$ can be decomposed into four terms. The first term is often called the "within-firm" or "intra-firm" effect and is the sum of productivity growth in each firm weighted by the mean share in employment. The second term is the "between-firm" effect expressed as the sum of changes in the employment share of the firm multiplied by the difference between average firm-level productivity and average industry-level productivity, averages being taken across beginning and end of period. The third term captures the contribution of entry and is positive if the productivity of new entrants is higher than the industry average. Finally, the last term is *minus* the contribution of exitors and increases aggregate productivity growth if the productivity of the exitors is less than the industry average.

It will be useful to describe briefly the data. Table 6 provides data on the total number of *firms* covered in the BSS data base. For each year t, continuing firms (Nc) refer to firms that were present in year $t - 1$ and are still present in year t. Entering firms (Ne) refer to firms that entered the data set in year t. Exitors (Nx) refer to firms that were present in $t - 1$ and are not present in year t. So for total number of firms at time t, N_t we have $N_t = Nc_t + Ne_t$ and $N_t = Nc_{t+1} + Nx_{t+1}$.

Notice that the number of entrants in the year 2004 looks excessively large, more than half of total firms in 2003. Indeed, the total number of firms increases by more than 50 percent between 2003 and 2005. This seems to be due to the fact that many firms were not captured by the data collection effort in 2003. (There are some additional anomalies in the data set, as will be discussed below.) Note also the large number of exiting firms in 2009, reflecting the effect of the crisis.

Labor productivity is defined as value added divided by the number of employees. Value added data has been expressed in 1998 prices through the use of sectoral GDP deflators[7].

Table 7 shows the (weighted) average productivity of continuing, entering and exiting firms. In the case of the economy as a whole, continuing firms' productivity is almost double those of entering or exiting firms. Productivity among entering and exiting firms is of similar order of magnitude, at least on average. Productivity among manufacturing firms is higher than economy-wide averages, as expected.

The decomposition of labor productivity growth is presented in Table 8.

The first thing to notice is the large drop in aggregate productivity between the years 2004 and 2005. This result is not consistent with data obtained from national accounts (see Figure 8) which shows an overall positive increase in productivity in 2005. We have not been able to come up with a meaningful explanation for this discrepancy. Note that the largest component of the decrease in overall productivity has to do with continuing firms, so characteristics of the large number of new firms added to the sample does not by itself explain the large drop in productivity. Indeed when the analysis is restricted to a balanced panel of firms with more than 20 employees, one still obtains the result that labor productivity has decreased by 19 percent in 2004-2005. In a balanced panel of manufacturing firms with 20+ employment, productivity has decreased by 20 percent between 2004-2005. Clearly either there is a systematic measurement error or the micro data is revealing something that national statistics does not capture. The last two rows of the table provides the arithmetic averages for the periods 2005-9 and 2006-9, over which period the micro data seem more consistent.

Continuing with our analysis of decomposition of productivity, we see that while in 2003-2006 the net replacement effect (the net contribution of entering and exiting firms) is substantial and positive for most of the period. Entering firms

are on average less productive than industry average but so are also the exitors, making the effect positive. Given that the productivity of entering and exiting firms are on average close to each other, this seems to be mainly because the number of exiting firms (especially in the crisis year of 2009) is higher than the number of entering firms. The net replacement effect is often more than 1 percentage point which is a relatively large number given that overall productivity growth is between -2 and 4 percent during those years. With respect to continuing firms, even though it is difficult to reach generalizations about whether the "own productivity" or "within" effect or the "between effect" is the dominant force driving the results, one might say that they are overall of equal magnitude.

Table 9 provides similar data for manufacturing firms. One interesting result is that while the "within" effect is still quite volatile, and in that sense similar to the results obtained for the whole economy, the "between" effect is quite persistent and always positive. Second, contribution of entry and exit is substantial and the net replacement effect is positive and around 1.5 percentage points in the later years. Again, this is quite substantial. This is despite the fact that productivity of entering firms is higher than those of exiting firms during those years and reflects the larger number of exitors relative to entrants. The reader is reminded of the fact that many of the exiters especially between 2008-2009 may actually still be operating in 2009 albeit with less than 20 employees. Still, the amount of overall downsizing in 2009 in manufacturing is quite large. In fact, it is mainly due to exitors that overall productivity growth in 2008-9 in manufacturing is positive (while it is negative for the whole economy, see Table 8).

Developments in the manufacturing industry

In this section we report changes in the structure of manufacturing industry. Table 10 shows the evolution of sectoral composition of value added in manufacturing since 1970. The data is taken from the UNIDO data set INDTSAT2, which provides data on 2-digit ISIC manufacturing industries. There is quite a clear pattern across time: The share of some traditional industries, such as food and beverages, tobacco and textiles have declined over time. By contrast, the shares of non-

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[7] We derive sectoral GDP deflators using European System of Accounts (ESA 95) based GDP series in current and constant prices (1998 base) published by TurkStat. The data are collected according to NACE Rev. 1.1 where we have 17 sectors identified by alphabetical letters A to Q.

metallic mineral products, machinery and equipment and motor vehicles have increased. The shares of basic metals and fabricated metal products have first declined and then increased. Overall, the table reflects significant structural change in manufacturing and also that this change has accelerated in the 2000s.

In order to evaluate these developments and put them into perspective, we can use the approach proposed by UNIDO (2009) and evaluate the degree of "sophistication" of these 2-digit industries and their evolution worldwide. The proposed approach ranks 28 2-digit industries according to the weighted average incomes of countries which tend to produce these goods. The ranking is done via an index (originally developed by Hausman, Hwang and Rodrik (2007) to evaluate export goods), called P-soph,[8] which is the weighted average of aggregate per capita income of all the countries that produce that good, where the weights are equal to the ratio of the value added share of that industry within the total manufacturing value added of that country to the world value added share of that industry.[9]

Table 10: Sectoral composition of value added in manufacturing industry in Turkey (%)

Table 11 shows the evolution of the global ranks of industries whose share in total manufacturing have increased or decreased in Turkey. We see that food and beverages, textiles and tobacco, whose shares have declined in Turkey ranked low in sophistication and further lost ground in the last two decades. Motor vehicles ranked very high in the 1970s and 1980s but have medium sophistication in the last 20 years. Machinery and equipment still is ranked quite high in terms of sophistication, hence the fact that the share of that industry as increased in Turkey is a positive development.

Table 11 also reports that the medical, optical and precision instruments is the globally highest ranking industry. The share of that in manufacturing in Turkey is very low.

It is also possible to rank countries according to the degree of sophistication of their manufacturing industries. Figure 11 plots the C-soph index against the per-capita income for a selected number of countries. The C-soph index is the weighted (by value added share) average of P-soph for each country.[10] The higher is C-soph, the more the structure of manufacturing of the country looks like that of a rich country. The figure shows that the degree of sophistication of the manufacturing industry in Turkey is below that of many countries, such as China, Thailand, Brazil, Mexico or India, with similar or lower level per capita GDP.

Table 12 provides measures of diversification of manufacturing industry in Turkey based on UNIDO 2-digit data on shares of manufacturing employment and values added. The HERFIND index is the sum of squares of sectoral shares. A lower index would imply a more diversified structure. According to that measure there has been an increase in manufacturing diversity since the 1970s. The measure LOGVAR, log of variance, also points to an increase in diversification especially in the 2000s. A lower GINI coefficient would imply a more equal distribution of shares and hence a more diversified structure. The message from the GINI coefficient is less straightforward, with an increase in diversification, followed by a relative decrease. The coefficient of variation also provides a mixed message. In terms of value added it seems the degree of diversification was almost constant in the last 20 years, though there is a decline relative to earlier periods. With respect to employment, diversification has decreased in 1990 but seems to have increased in the 2000s. Hence these standard measures of diversification overall seem to point to an increase in diversification in manufacturing in the last decade, but the evidence is noisy.

A final indicator, this time of structural change is provided by the Lawrence Index (LI; Lawrence, 1984). The LI summarizes changes in the composition of employment share across sectors.[11] The LI for Turkey calculated from

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[8] Hausman, Hwang and Rodrik call the index PRODY; see below.

[9] Let us y_i denote the real GDP per capita in constant prices (US\$ PPP 2000) in country i producing in sector j. Than the *Psoph* of sector j in country i is given by

$$Psoph_j = \sum_i \frac{x_{ij}/X_i}{\sum_i(x_{ij}/X_i)} y_i$$

[10] The index is computed as:

$$Csoph_i = \sum_j (x_{ij}/X_i) * Psoph_j$$

[11] The Lawrence index for structural change is computed as:

UNIDO data is shown in Figure 12. Significant structural change in the 2000s is apparent in the figure.

3.4 Structural change in exports

When the liberalization and export orientation of the Turkish economy started in 1980, the share of exports in GDP was a mere 5 percent. As shown in Figure 13 this share has increased and reached 20-25 percent in GDP in the 2000s. The figure shows that the period of rapid increases in exports relative to GDP was really 1980s and 1990s. By contrast, the 2000s seem a period of stabilization in the export orientation of the country; in fact, since the crisis, the share of exports in GDP has shown a relative decline, reflecting the fact that in the last year or two domestic consumption rather than exports has been the main source of growth. Nevertheless, since overall the 2000s were a period of rapid growth of GDP, the volume of exports continued to increase: exports have increased from about below 55 billion current USD in 2000-2001 to about 160 billion USD in 2010-2011.

What has really changed in the last decade is the composition of exports. A bird's eye view of this change is presented in Figure 14. Between 1998-2000, the share of agricultural goods has decreased from about 9 to about 4 percent, with a corresponding increase in the share of manufactured goods. The real change has occurred within exports of manufactured goods. The share of more traditional exports such as food and beverages and textiles and garments has decreased from a total of almost 50 percent to 25 percent. The increase has come from various manufacturing sectors but most notably from motor vehicles and trailers, machinery and equipment, basic metals, fabricated metal products and rubber and plastic products.

We continue to characterize the characteristics of Turkish exports. Figure 15 shows the share of export goods with medium technology (UNIDO definition) in total exports, calculated from the United Nations trade statistics database, Comtrade. This share has more than doubled from about 15 percent of total exports

in 1990 to 30-35 percent in late 2000s. The share of goods with high technology content is shown in Figure 16. This ratio is very low, about 3-5 percent of total exports. Hence, while there has been quite a substantial change in the composition of Turkey's exports, and while the technology content has increased in the last decade, Turkey has very limited exports of high technology goods.

Recently new measures have been developed to describe the characteristics of countries' export goods. One such measure, often referred to as the "export sophistication index" or EXPY, has been developed by Hausman, Hwang and Rodrik (2007). Intuitively, EXPY measures the "average income level" of the export basket of a country.[12] A higher EXPY means that the export basket of that country consists of goods that are more likely to be produced by richer countries. Figure 17 shows that Turkey's EXPY has increased over the last 20 years.[13]

Figure 18 and Figure 19 plot EXPY and GDP per capita for a selection of countries for the years 1990 and 2010, respectively. It can been seen that Turkey's export sophistication has improved somewhat relative, for example, to Brazil and Tunisia, reflecting, possibly the emergence exports such as automotives and machinery and equipment. However, in 2010, Turkey's EXPY is still below those of Mexico, China, Romania and Thailand, to give a few examples.

Another measure developed by Hausman and Hidalgo (2010) is called ubiquity. It measures the extent to which the export basket of a country is made of goods that are "unique".

$$LI_{it} = 0.5 * \sum_j \left| \frac{L_{ijt}}{L_{it}} - \frac{L_{ijt-1}}{L_{it-1}} \right|$$

L_{ij} is the employment in sector j in country i, L_{it} is the total employment in country i in year t

[12] Let y_i denote the real GDP per capita in constant prices (US$ PPP 2005) in country i. Then, the PRODY of good j is given by

$$PRODY_j = \sum_i \frac{x_{ij}/X_i}{\sum_i (x_{ij}/X_i)} y_i$$

Using PRODY we can compute EXPY for country i as a weighted index of the representative income associated with exports of country i

$$EXPY_i = \sum_j (x_{ij}/X_i) * PRODY_j$$

where weights are the shares of products in the total exports of country i.

[13] Exports and export shares are obtained from UN Comtrade (SITC Rev. 3, 3 digit). GDP per capita series are obtained from Penn World Tables 7, variable rgdpch (real GDP per capita, 2005 international constant USD, chain series) .

More specifically the index measures, on average how many other countries also export the products exported by a country. The higher the ubiquity index, the higher is the likelihood that the country's export goods are produced by other countries, and hence are less unique. Figure 20 provides a scatter plot of the average ubiquity index of Turkey and a set of comparator countries, against the GDP per capita of these countries in 2010. It can be seen that the ubiquity index of Turkey is higher than a number of countries with similar level of per capita income. Hence Turkey's exports are more "common" than those of Brazil, Thailand, Romania and China.

Taymaz et. al (2011) provide further insights into the characteristics of export growth in the last decade. When one examines products for which Turkey has relatively high market share in 2008, one sees that Turkey is more competitive (as measured by world market share) in products whose total world exports have relatively lower rate of growth between 2002-2008 (p. 70). Furthermore, at the product level, there is a negative correlation between the rate of change of Turkey's market share and the rate of growth of world market share for these products (ibid). Taymaz et. al. (2011) also examine unit prices of exports in the EU15 market. It turns out that over the 2002-2008 period, Turkey's market share in EU15 has increased more for products where the difference between average unit prices of total EU15 imports and those of EU15 imports from Turkey are largest. In other words, Turkey has expanded market share in products where Turkish prices are lower than average EU15 import prices. For example, in the case of motor vehicles, unit prices of imports from Turkey are on average 24 percent lower than average unit prices of overall imports (p. 71). By contrast, there is no negative relation between the average prices of the latest 12 member states of the EU. In other words, Turkey's competitors among the new members of the EU have been able to increase market share without having to reduce their prices (p. 72).

We now go to micro data to examine the distribution of exports across firms of different sizes. Above we documented that the share of small firms in total sales increased over the last three decades. We would like to see whether there has been similar redistribution of exports

towards smaller firms. Unfortunately data here is not comparable across decades, hence we concentrate on micro data from the 2000s. Table 13 shows the distribution of exports across firms of different size categories for the period between 2003 and 2009. The table is based on data on all firms and all sectors. Hence the data covers firms that do their own exporting, and those that purchase goods from other producers and then export them. Further below we report data on manufacturing firms only. It turns out that firms in the trade and manufacturing industries make up more than 95 percent of imports.[14] Even though trends are not completely clear cut, it seems that the share of largest firms in total exports of has increased in the 2000s. There is clear decrease in the share of 20-49 and 50-99 categories, but no clear trends arise for the other size categories. Table 14 provides similar data for manufacturing firms. The share of the 500+ firms in total exports of manufacturing firms is about 55-58 percent for most of the 2000s. Except for 2003 and 2009 (which is a crisis year) firms with more than 250 employees carry out around 70 percent of all exports. There seems to be a reduction of around 5-6 percentage points in the combined share of these two categories during the crisis year. We can conclude that the share of large firms in manufacturing exports is high. However, the export share of firms of smaller categories is likely to underestimate their true export activities since it may be the case that they do export goods but export them through intermediaries.

3.5 "Import dependence" of industrial production

One of the major macroeconomic problems Turkey has been facing is large current account deficits. There is a widespread perception, especially within the government, that large current account deficits have partly to do with what is considered to be excessive dependence of industrial production to imported intermediate inputs and machinery. The import dependence of Turkish industry has been examined by Saygılı et. al. (2010) in a research paper published by the Central Bank.

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[14] Smaller firms are predominantly in trade. Among firms of size 0-9, the share of the trade sector in total exports is about 90 percent. This share declines as firms get larger. Among firms with 500+ employees, the export share of the manufacturing industry is around 95 percent.

Saygılı et. al. (2010) document that intermediate goods imports of Turkey have increased 2.5 times more than the increase in manufacturing output between 1994-2008. This reflects in part the structural change in manufacturing discussed above. The share of traditional industries such as textiles and garments has decreased and the shares of motor vehicles, basic metals and fabricated metal products in manufacturing have increased. The expanding industries import a larger portion of their intermediate inputs and raw materials. As a result, according to the study, the share of imported inputs and raw materials in total inputs and raw materials has increased from 56 percent in 2002 to 62 percent in 2007.

The study attempts to investigate reasons behind firms' preferences for imported inputs as well as machinery and equipment. It relies on interviews carried out by 145 large firms that represent 50 percent of value added in their sectors (including textiles, garments, motor vehicles, white goods, machinery, basic metals, non-metallic minerals). Firms were asked about why they prefer to import intermediate goods and machinery, rather than procure them from domestic markets. In the case of intermediate goods, about 97 percent of firms surveyed indicated "absence of domestic production", and 75 percent indicated "quality and uninterrupted supply" and "lower cost" as reasons for importing. Only 24 percent indicated "foreign owners" (that is desire to procure from upstream elements of vertically integrated supply chains) as reasons for procuring intermediate inputs from import markets. In the case of machinery, "absence of domestic production" was chosen by 96 percent of firms, "quality and uninterrupted supply" by 72 percent and "lower cost" by 45 percent. Overall, 65 percent of firms indicate "absence of domestic production" as the most important reason for importing machinery, 19 percent indicate "quality and uninterrupted supply" and 8 percent lower cost. The ratios for raw materials and intermediate inputs are 53, 19 and 20 percent, respectively.

Taymaz, Voyvoda and Yılmaz (2011) provide further insights for the motor vehicles industry. They calculate contribution to trade balance of parts and components produced for the motor vehicles industry, as well as that of final goods. For final goods (both vehicles used as

consumption goods and those used as capital goods), while the contribution to trade balance was negative in 1998, it has become positive in 2002, 2007 and 2009. This of course reflects the increase in exports already mentioned. However, the contribution to trade balance for parts and components has remained negative throughout that period.

4. Industrial Policy

4.1 Evolution of the incentive regimes

While discussing industrial policy in Turkey, it is useful to make a distinction between the period up to the economic reforms that started in 1980 and the period after the reforms. As mentioned above, before 1980, and practically for most of the post-war period, Turkey followed a policy of "import substitution industrialization". This was a highly protected regime, so trade protection was a major component of industrial policy. A crucial aspect of the transformation towards a market-oriented economy in the 1980s was trade liberalization. Quantitative restrictions were significantly reduced, especially from 1984 onwards, and were practically eliminated by 1990. Tariffs were also reduced very significantly. Özler and Yılmaz (2009) report that "output-weighted average nominal tariff rate for the manufacturing industry declined from 75.8% in 1983 to 40% in 1990 and to 20.7% in 1994 (p. 342)." The trade policy environment was further radically changed by the establishment of the Custom's Union (CU) with the European Union in 1996. Hence especially since the 1990s trade protection has played a much less significant role in Turkey's policies towards industry.[15] The impact of trade liberalization and the CU on industrial productivity is discussed in section 4.4 below.

Returning to other tools of industrial policy, until 1960s there was not much in terms of providing subsidies to the private sector investments or exports (Eser 2011: 75).[16] After the coup of 1960 Turkey entered the so-called "planned era" and promotion of

[15] For EU countries, tariff rates are zero except for agricultural products. This is of course not true for imports from countries with whom Turkey does not have a free trade agreement. For example, Togan (2003) estimated that the weighted mean tariff rate for such countries was 5.9 percent in 1999.

[16] The only exception is the formation of the Turkish Industrial Development Bank in 1950 with support from the World Bank. The purpose of the Bank was to provide medium and long term credit to industry.

investments became a priority. The incentives were initially allocated by the Ministry of Industry and Ministry of Trade. In 1967 the "Bureau for the Development and Encouragement of Investments and Exports" was established under the Prime Ministry. In 1970 the State Planning Organization became responsible for incentive policy, through the formation of the Incentive Implementation Department (Teşvik Uygulama Dairesi, TUD). The department was transferred to the Ministry of Industry and Technology in 1970 and back to the SPO again in 1980. It moved to the Undersecretariat of Treasury and Foreign Trade in the 1990s. The concept of "investment deduction", meaning tax breaks for investments, was first created in 1963 through an amendment in the Income Tax Law. The concept of "Regions with Priority in Development" (RPD) was introduced in 1968, through the designation of 22 provinces as RPD. The "incentive certificate", the document that determines eligibility for incentives, was created during those years as well.

Promotion of investments through incentives was an important policy instrument that has been used in the post-1980 period. An important characteristic of the post-1980 period was that incentives were used not only to increase the overall level of investments but to direct investments to particular sectors. This was first done through a "positive list" of sectors that would be promoted. Later this practice was changed and a "negative list" was created denoting industries that would not be supported. Every year the sectors where investments would be promoted were decided through circulars. Besides priority sectors and regions, investments in organized industrial zones were supported as well.

An important dimension of the policy changes in the 1980s was a heavy emphasis on promoting exports. Indeed, in the 1980s and early 1990s exporters could benefit from a multitude of export incentives (Celasun and Rodrik, 1989; Arslan and van Wijnbergen, 1993). There were export tax rebates, which compensated exporters for indirect taxes. For certain goods, 20 percent of export earnings could be deducted from taxable income. There were subsidized credits. Under the export-credit-rediscount scheme, exporters holding certificates and reaching minimum levels of

exports could obtain preferential credit for up to 25% of their export commitment at rates far below market lending rates over the entire period. Exporters could benefit from preferential allocation of foreign exchange and duty free imports. Finally, exporters obtained support from the Resource Utilization Support Fund (RUSF) based on export values. This was discontinued in 1986 and after 1987, the Support and Price Stabilization Fund started to provide subsidies on the basis of export volume. This change was designed to reduce the incentive for over-invoicing of exports implied by value-based incentives. According to Arslan and van Wijnbergen (1993) these support schemes added up to about 15-25 percent of exports in 1980-87. Milanovic (1986) calculated that in 1980-84 there were large variations across sectors, ranging in ad-valorem equivalents of exports, from around 10 percent of exports in food and beverages to around 70 percent or above in metal products (quoted in Celasun and Rodrik, 1989). Hence as a general orientation, support in this period was implemented on a selective and sectoral basis.

There has been a controversy about the effect of these subsidies. There were widespread allegations of over-invoicing and corruption, corroborated by both Celasun and Rodrik and Arslan and van Wijnbergen. Regarding the impact of subsidies on volume of exports, Arslan and Wijnbergen found a positive effect, but whose size is much smaller when compared to the effect of real depreciation of the currency that was achieved during the 1980s.

The Resource Utilization Support Fund mentioned above deserves a special attention: First instituted in 1984 (Decision 85/10011) it provided cash grants reaching around 50 percent of investments.[17] This was actually one of the few cases where the government granted cash support to investments. There seems to be a widespread view that the RUSF did generate substantial investments.[18] The mechanism was implemented in the fiscally relatively comfortable years of the 1980s.

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[17] Eser (2003: 78).

[18] For example, Eser (2003:78) states that the RUSF resulted in large investments in the tourism industry such as five star hotels in western and southern regions of Turkey and manufacturing plants (especially textiles) in provinces such as Denizli, Usak, Kahramanmaras and Gaziantep.

Fiscal conditions became tighter towards the end of the 1980s and the RUSF was discontinued in 1991. Subsidies in terms of cash transfers were completely removed in 1995 (Eser 2003: 79). The incentive system started to rely predominantly on tax exemptions.

Sectoral targeting of incentives continued on and off throughout the first part of the 1990s. Starting in 1995, there was a significant change in the basic logic of the investment incentive system. In 1995 two important things happened. In February Turkey became a member of the WTO. In March, Turkey entered a customs union with the European Union. Both of these meant that Turkey had to revise its incentive system in line with the WTO and EU requirements. According to the WTO Agreement on Subsidies and Countervailing Measures (SCM), countries cannot adopt measures that are based on export performance or that discriminate in favor of domestic production. Measures that target the production of specific products or sectors are "actionable", that is, may be subject to a legal challenge. By contrast, subsidies that are not "specific" to sectors, and that have horizontal objectives such as those for regional development, research and development or environmental protection are outside the scope of the SCM. The customs union with the EU required that state aid in Turkey be harmonized with state aid rules of the EU.

As a result, starting with 1995 industrial policy moved away from sectoral targeting and started to focus on regional incentives, and more "horizontal" mechanisms such as support for research and development, environmental protection and subsidy programs for small and medium enterprises (SMEs). In the case of exports, subsidies based on export performance were replaced by incentives for participation in trade fairs, certification, product and brand promotion (Yardımcı, n. d.).

Overall, we can also state that since the 1990s there has been a tendency to increase the degree of objectivity in eligibility rules and a reduction in the heterogeneity and discretion in the application of individual instruments. A good example is the investment deduction: In broad terms, the investment deduction or allowance allowed companies to deduct a determined portion of their current year capital expenditures from the corporate tax base of that account year. The ratios varied between 40-100 and even 200 percent (Eser, 2011). Through law No. 4842 of 2003 the ratio was set at 40 percent and was applied in an automatic manner (that is, all investment expenditures became eligible (Eser 2011)). The investment deduction was abolished through law no. 5479 in 2006.

The incentive system evolved further in the 2000s. An important law in this period was Law No 5084[19] of 2004 which had an explicit regional orientation. The purpose of the law was to promote investments and employment in targeted provinces. What is noteworthy about this law is the absence of sectoral selectivity and the rather small set of instruments employed (see also Figure 21 below). The Law covered 36 provinces (where yearly GDP per capita was less than USD 1,500 in 2001) and offered newly created firms 80 to 100 percent (for firms in industrial zones) exemption from personal income taxes (capped at the minimum wage) and exemption from employers' social security contributions, and a Treasury subsidy of 20 percent on their electricity bill. The law also provided for allocation of publicly owned land free of charge for firms employing at least 10 workers for at least 5 years. Investments in organized industrial zones were supported more strongly: For example social security contributions and income taxes of firms established in industrial zones were subsidized 100 percent whereas that ratio was only 80 percent for firms outside zones.

The scheme was changed through Law No. 5350 of May 2005. The new law increased the coverage of targeted provinces to 49, increased the amount of subsidies and changed (in some cases toughened) eligibility requirements. This time to be eligible for subsidies newly created firms had to employ more than 30 workers and old firms had to increase their employment by at least 20 percent. Eventually the coverage of the law was further extended: for example, the law was amended so that the personal income tax exemption would include all employees of

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[19] Law No. 5084 on the Encouragement of Investments and Employment and Amendment of Certain Acts, published in the Official Gazette dated 06.02.2004, No. 25365.

all enterprises employing at least ten workers (Eser, 2001:109).[20]

A new incentive system was launched in 2009.[21] This time the purpose was stated as to "direct the savings toward the investments with high added value, to increase the production and employment, to ensure the sustainability of the investment tendency and sustainable development, to encourage large-scale investments with high content of technology and research and development, to increase direct foreign investments, to overcome regional development differences, and to support research and development activities regarding the conservation of the environment". The 2009 regime re-introduced sectoral selectivity. In fact, the 2009 regime differentiated incentives according to regions, sectors and the size of investment. On the regional dimension, one perceived problem with the system introduced through Law 5084 was that among the 49 provinces covered, more advanced provinces attracted higher volume of investments. Hence the 2009 regime divided the provinces of Turkey into four different groups according to their socio-economic development in 2001 and differentiated support instruments and amounts across the groups. Within each region, priority sectors were identified. For example, while in the more developed regions (first and second) the emphasis was on high-technology industries, priority in the less developed (third and fourth) regions in the south and south-east was placed on agriculture, light manufacturing, tourism, health and education. Finally, a new category "large scale investment" was created under the new regime, whereby investments over minimum specific thresholds in specific sectors also are eligible for incentives.

The system was further changed in 2012.[22] One important innovation in the new system was the introduction of incentives for "strategic investments".[23] Accordingly, eligible

sectors were defined as those where Turkey's dependence on imports are high (more specifically, where imports represent more than 50% of domestic demand). Only projects with a minimum of 50 million TL investments generating more than 40% of local value added will be supported. The 2012 regime divided Turkey into six regions, and in region 6 (the least developed region) all investments are to be promoted.[24] The new regime also reduced the minimum investment thresholds for the large scale investment incentives. It introduces the notion of "priority investments" in areas such as mining, education, railroads, test facilities and wind tunnel, and priority investments are to be supported by instruments designed for Region 5 even when those investments are carried out in regions 1-4. Organized industry districts have been promoted by most packages. The 2012 package also strengthened incentives that promote investments in organized industry districts. Joint ventures established by 5 or more partners in an industry and which promote "integration" in the common industry of activity also receive marginally stronger incentives.

Figure 21 compares the main provisions of the incentive regimes in the 2000s. One can see that after 2009 the incentive regime has become more complicated both in terms of number of instruments and in terms of the way targets and eligibility are defined.

The emergence of support for "strategic investment" deserves special attention. This is thought in part as a remedy against what is seen as excessive dependence on imported inputs of industry, which, as discussed above, is in turn seen as partly responsible for large current account deficits inflicting economic growth. To develop remedies to the "import dependence" problem the government initiated an "Input Procurement Strategy" (GITES, Girdi Tedarik Stratejisi), the purpose of which is stated as "achieving stability, efficiency and productivity in the procurement of inputs, reducing import dependence and improving

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[20] Law No 5615.

[21] Decision No. 2009/15199 on state aids towards investments, Official Gazette dated 16.07.2009.

[22] Decision No. 2012/3305 on State aids towards investments, Official Gazette dated 19.06.2012.

[23] In official presentations, the 2009 system is described as standing on three pillars: The "general investment incentives scheme", "the regional investment incentive scheme" and the "large scale investment incentive scheme." The 2012 regime has a fourth pillar, namely the "strategic investment incentive scheme". See "The Framework of New Investment

Incentives Program In Turkey" by the Ministry of the Economy at http://www.economy.gov.tr/index.cfm?sayfa=A67B52CC-0629-8F39-A84C6FE830713E30

[24] The least developed region gets larger support. Most importantly, employer and employee social security contributions and personal income taxes (up to a cap) will be exempted for 10 years.

competitiveness of exports". The strategic investments component of the new incentive system is supposed to have grown out of the GITES strategy, with the purpose of reducing imports through projects that aim domestic production of imports. Even though how this component of the new system will be implemented is not clear, the purpose of the scheme seems to be to promote import substitution without resorting to trade barriers.

How can we characterize the incentive system? The absence of major sectoral selectivity in the 2000s lead us to characterize the incentive system as largely "neutral" in the last decade. It was mostly Comparative-Advantage-Facilitating and did not contain any "leapfrogging". The most recent changes implemented in 2009 and especially in 2012 reflect a change in these characterizations. Especially with the introduction of sectoral orientation, identification of priority investments and strategic investments, the new direction of the incentive regime has Comparative Advantage Defying characteristics and leapfrogging aspirations. It may be underlined, though, that in the case of "strategic investments", the incentive mechanism encourages some degree of self-selection. That is, instead of specifying specific sectors or products, the eligibility criteria are set as "high import levels", meaning within the set of such industries, it will be up to the private sector to determine which particular products or industries they would like to invest in.

4.2 Quantitative data on the incentive system

We now provide some data on the evolution of incentives over time. Data is very limited and there has been no effort on the part of the government to measure the impact of the incentives. Table 15 provides summary data on the number of incentive certificates granted, the volume of investment benefiting from incentives and private gross fixed capital formation for the period 1988-2008. The end of the 1980s and early 1990s stand out because in many years during that period the amounts of investments benefiting from incentives are larger than actual investments by the private sector. It seems that many investment projects that received incentive certificates were actually not carried out. Unfortunately the data does not allow seeing whether those investments which were not carried out

received any cash support. The situation gets corrected in the late 2000s where investments obtaining incentive certificates make up a relatively small portion (often around one quarter) of total private investments.

Table 16 provides data on the sectoral distribution of incentives over the 1980-2008 period. The manufacturing industry projects account for about 57 percent of all incentive certificates, 40 percent of investments supported by incentives and 60 percent of employment envisaged under the supported projects. Within manufacturing industry, textiles and apparel account for 33 percent of certificates, and 40 percent of investments and employment. Food and beverages account for 15 percent of certificates, 9 percent of investments and 12 percent of employment. The next important industry is motor vehicles with shares 9, 14 and 7, respectively (Eser, Table 3.4). One could wonder whether the share of manufacturing has increased in the last decade but this does not seem to be the case. Between 2005-2011 the share of manufacturing in the number of certificates, investment volume and employment has been on average 56 percent, 39 percent and 57 percent, respectively.[25]

4.3 Incentives for research and development (R&D)

Public support for research and development exists since the 1990s, however resources have been limited until recently.[26] The main public agencies responsible for conducting R&D related support programs are the Scientific and Technological Research Council of Turkey (TUBITAK), Technology Development Foundation of Turkey (TTGV) and Small and Medium-size Industry Development Organization (KOSGEB) affiliated with the Ministry of Industry and Trade. In addition, the Ministry of Finance, with administrative assistance of TUBITAK, provides tax incentives for R&D investment, through an exemption from corporate taxes of 40 percent of companies' total R&D expenditures. Among these agencies, TUBITAK is by far the most important source of public funds (Table 17). TUBITAK conducts several programs but the private sector is specifically targeted by the industrial R&D support programs managed

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[25] Data from the Ministry of Economy website.
[26] This section draws on Tandoğan and Pamukçu (2011).

jointly by the Technology and Innovation Support Programs Directorate of TUBITAK (TUBITAK-TEYDEB) and the Undersecretariat of Foreign Trade (DTM). Here DTM provides the funds and TUBITAK serves as a referee institution (Tandoğan and Pamukçu, 2011). The objective of these programs is to enhance the international competitiveness of industrial companies through higher R&D and innovation (ibid). Expenditures from this program have increased substantially since 2005, from about 81 million USD in 2004 (PPP) to about 357 million USD (PPP) in 2009. Number of project applications has similarly increased from about 360 in 2004 to about 1500 in 2009 (TUBITAK 2011, p. 17).

The TUBITAK-TEYDEB programs support the projects in the following areas: (i) machinery and manufacturing technologies, (ii) electrical and electronics, (iii) information technologies, (iv) materials, metallurgical and chemical technologies, (v) biotechnology, agriculture, environmental and food technologies. About 50-60 percent of eligible expenses are supported through grants. (Tandoğan and Pamukçu, 2011, p. 4). In 2007 TUBITAK-TEYDEB also launched a new program targeting specifically small and medium enterprises (SMEs) providing grants up to 75 percent of eligible SMEs' first two R&D projects (ibid). Tandoğan and Pamukçu show that the share of SMEs in total project applications increased significantly after the new launch of the new program.

4.4 Evaluation of industrial policy in Turkey

We start the evaluation of industrial policy in Turkey by reviewing the impact of trade liberalization that occurred in the 1980s and 1990s. Özler and Yılmaz (2009) examine the impact of reduction in trade barriers during the period 1983-1996. They estimate plant-level total factor productivity (TFP) and compare weighted average of productivity growth across import competing, export oriented and non-traded industries. They find that productivity growth is highest in import competing industries.[27] They then estimate the effect of declines in nominal protection rates on plant-level productivity. They find

statistically significant productivity improvements resulting from reductions in protection rates. Taymaz and Yılmaz (2007) focus on the period 1985-2000. Their main findings are as follows: overall total factor productivity growth declines after the CU. However, TFP growth in import competing sectors is positive after the CU. They then undertake a regression analysis and find that when they regress plant level TFP on (lagged) import penetration rates, the effect of the latter is positive even after the CU. Hence these studies suggest increase in imports pushed firms to increase their productivity.

We now turn to the incentive system. The Turkish incentive system can be evaluated on a number of dimensions. Possibly the most important dimension is the evaluation of its impact, which is not an easy thing to do for a thorough evaluation has to come to grips with the counterfactual. Here we first summarize several studies that attempt to examine the impact of the various incentive schemes.

Ersel and Filiztekin (2008) undertake an evaluation of the incentive programs for the period 1980-2000. They proxy sectoral intensity of incentives through total volume of investment certificates to the actual investment volume. They measure the impact of this variable on sectoral productivity growth, employment growth and investment, controlling for sector fixed effects. They find that investment incentives either have no effect on these variables, and in the few cases where there is a significant effect (as in the case of investment), it is negative. They also report findings from a survey carried out on businesses that benefited from incentives: 64 percent of respondents indicated that they would have decided to invest even if incentives were not offered. This finding points to sizeable deadweight losses.

Regarding the incentives embodies in Laws No. 5084 and 5350 the OECD (2008, p. 144) has reported that the number of registered workers in eligible provinces increased by 66 percent between 2003-2007, while only by 47 percent in other provinces. This, by itself is not proof of positive impact since eligible provinces could have been on a higher growth path to start with for other reasons. Betcherman et. al. (2010) use a difference-in-difference approach to measure the impact of

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[27] Import competing industries are those where the import penetration rates (imports as a share of sectoral output) is larger than 15 percent.

subsidies provided by laws No. 5084 and 5350 on provincial employment and number of establishments both in levels and growth rates. The study uses data compiled by the Social security Administration at the level of provinces, containing information on the number of registered workplaces, registered employees, total taxable earnings that are subject to contributions, and social security premiums. The authors find that the subsidy programs did lead to faster employment growth in the eligible provinces. Depending on specification and constitution of control groups, additional employment varies between 5-10 percent for Law No. 5084 and 10-15 percent for Law No. 5350. However, Betcherman et. al. also find that the number of jobs subsidized were much larger than the estimated net gains in the number of jobs: between 47 and 78 percent of subsidized jobs under the Law No. 5084 programs and between 27 and 46 percent of jobs created under the Law No. 4350 program would have been created without the subsidy. Again, these findings reflect sizeable deadweight losses in the impact of these incentives.

Can we say anything about the sectoral impact of incentives? We have already mentioned that Ersel and Filiztekin find no such impact for the period 1980-2000. We have also documented above the rather serious change in the composition of manufacturing value added especially in the 2000s. The change in the composition of exports during the 2000s documented above was even more impressive. However, for most of the 2000s the incentive system did not have a sectoral selectivity; the latter has been re-introduced after 2009. Hence from this we can conclude that at least in the 2000s, the changes in the sectoral composition of manufacturing industry and exports did not come about as a result of deliberate targeting of industrial policy. This does not necessarily mean that the incentive system did not have a sectorally differentiated impact. For example, in a study on Chinese firms Aghion et. al. (2012) find that "if subsidies are allocated to competitive sectors (as measured by the Lerner index) or allocated in such a way as to preserve or increase competition (i.e if they are more dispersed across firms in the sector), then the net impacts of subsidies on productivity or productivity growth become positive and significant. In other words, targeting can have

beneficial effects depending on both the degree of competition in the targeted sector and on how the targeting is done." This raises the possibility that even neutrally designed incentive schemes may have non-neutral effects across sectors. Moreover, it could be the case that incentives may have affected overall investments beyond their sectoral destination. These are interesting questions warranting further research.

Regarding the impact of research and development support programs, Tandoğan and Pamukçu (2011) investigate the effect of *TUBITAK* –TEYDEB support program over the period 2003-2005 and 2003-2006. Their data set contains a total of 237 observations of firms that have received subsidies. They use the propensity score matching method to pair firms that receive and do not receive R&D subsidies. They supplement this with difference–in-differences to control for macroeconomic trends and unobserved heterogeneity. They find that for the period 2003-2005 they find a positive effect of subsidies on R&D intensity (R&D expenditures divided by total sales) and R&D expenditure per employee of beneficiary firms but not for the period 2003-2006. They also test whether subsidies have an impact on output variables such as export intensity, sales, labor productivity and wage rate but they do not find any effect, perhaps due to the fact that such subsidies take a longer time to have any impact (Tandoğan and Pamukçu 2011, p. 14). Taymaz and Özçelik (2008) undertake a similar study for the period 1993-2001 and they also find an albeit smaller effect of public support programs on private R&D intensity (in their case defined as R&D expenditure divided by output).

Another set of dimensions through which the incentive system can be evaluated has to do with institutional characteristics. Especially in the 2000s, it seems the Turkish incentive system has been implemented on a relatively non-discriminatory basis. It does not seem that there has been a systematic and widespread effort to favor, for example, politically linked firms (although a few significant episodes of favoritism, more linked to privatization rather than the incentive system, have appeared in the press). Eligibility criteria have been quite clear and objective. Hence in its description of the 2012 regime, OECD 2012 states: "The new

system preserves a number of positive features of the preceding regime: i) eligible beneficiaries are identified on the basis of explicit criteria and rules, minimizing room for administrative discretion; ii) no distinction is made according to firm ownership (public versus private or domestic versus foreign); and iii) no trade protection is involved, in contrast to incentive policies applied in a number of other emerging countries". We will see whether the implementation of instruments targeting "strategic investments" will be carried out on a non-discriminatory basis as well. However, the system so far does have a number of important weaknesses.

One important weakness has been volatility: namely important components of the incentive regime have changed very frequently, even in the 2000s. This makes the system unpredictable. Regarding transparency: all incentives granted are published in the Official Gazette, an important achievement in terms of transparency. But there has been very little transparency in terms of process. Incentives have been determined through Cabinet Decisions without any justifications or public consultation.

Another important problem is one of coordination: There have been many disparate programs with few links between them. For example, R&D subsidies may have little impact in promoting innovation or investments in new sectors, unless there is a complementary effort to develop skilled labor in the relevant industries. Hence incentives may need to be complemented by education and training policies to develop the necessary human capital. [28]

Filiztekin, Barlo and Özgür (2011) emphasize another characteristic of the *regional* dimension of the incentive systems: Namely that the incentive system is excessively centralized, excessively hierarchical and does not try to engage the active participation of regional stakeholders. Moreover, whatever participation exists is biased in favor of representation by business. A more effective structure would allow more active platforms for public consultation at the local level and more participation by local stakeholders in the decision making process.

Finally and maybe most importantly, there is no impact evaluation. Ideally the incentive system should be set up so as to include data collection efforts that can be used to evaluate the impact of the various components. Lack of impact evaluation is a major weakness of the incentive system.

5. Conclusion

In this paper we examined various aspects of structural change in Turkey and provided an overview of industrial policy in the last three decades. We have shown that there has been a significant increase in labor productivity in the 2000s. Decomposition of the increase in labor productivity using aggregate data shows that the structural change component, that is, the reallocation of labor from low productivity (agriculture) to high productivity (industry and services) sectors has made a significant positive contribution to aggregate productivity change, a result already established by Rodrik (2010). We further show that, various sorts of data problems notwithstanding, micro data pertaining to the 2000s also reveal an overall positive contribution of reallocation. Micro data also reveals a significant redistribution of sales and employment across firms of different sizes: The shares in output and employment of largest firms have declined over time.

There has also been a significant change in the composition of exports. The share of traditional exports such as textiles and garments has decreased over time and the shares of medium-level technology products (such as motor vehicles, basic metals and machinery) have increased. At the same time, we have also showed that the share of high-technology products is still very low. The degree of sophistication of exports basket of Turkey is still low compared to a number of comparator countries such as Mexico, China, Romania and Thailand. Also, those industries whose contribution to exports has increased over time also exhibit higher dependence on imports of intermediate inputs such as raw materials and components.

Regarding industrial policy, we have documented the crucial role of trade liberalization and customs union with the EU. We have shown that sectoral selectivity of investment and employment incentives has

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[28] The recent literature documents evidence of Capital-Skill complementarity, e.g. (Krussel et al., 2000; Goldin and Katz, 1996).

decreased over time and has made a comeback recently. We have argued that over time the incentive system has become less discretionary and eligibility criteria have become quite objective and transparent. Regarding impact, we have reported some positive impact on regional employment in the 2000s, and positive impact of research and development incentives. However, in the 2000s the incentive system was not designed to achieve sectoral selectivity, although that does not preclude the possibility that its impact across sectors may have varied depending on sectoral characteristics such as the degree of competition.

We have identified several weaknesses in the institutional characteristics of the incentive regime. We have especially underlined the fact that the incentive system does not have any mechanisms for evaluation.

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Structural Transformation and Industrial Policy in Morocco

[Document Subtitle]

by: Lahcen ACHY*

1. Overall overview of the country's experience

The manufacturing sector in Morocco, similarly to other South Mediterranean countries, emerged in the sixties and the seventies with the support of import substitution policies. Manufacturing firms took advantage from high protection rates as well as non-tariff barriers such as import licenses, import quotas and exchange rate overvaluation. Since the early 80s, Morocco's policymakers, faced by large internal and external macro-economic imbalances, have gradually shifted from import substitution and public sector led-growth to trade openness and privatization. The process of market-oriented economic reforms accelerated in the nineties along the lines of the Washington consensus with the objective of putting the economy on a higher efficiency path that would result from exposure to stronger domestic and international competition.

In addition to its commitments to liberalize trade under the WTO, Morocco entered into various regional and bilateral trade agreements among which the Association Agreement with the European Union signed in 1996 and implemented since 2000 with the objective to achieve a free trade area by 2012. Morocco has also joined the Greater Arab Free Trade Agreement (GAFTA), Agadir Agreement and signed important bilateral free trade agreements such as those with the Unites States and Turkey. As a consequence, the country reduced tariffs and other obstacles to trade such as non-tariff barriers (NTB's). A liberal attitude towards FDI has been adopted to stimulate their involvement in the economy. In the same vein, the authorities reformed foreign exchange regime in the late 1980s and early 1990s towards market-based exchange rate determination and established current account convertibility since 1993.

Policymakers hoped that such reforms would ultimately foster economic growth, promote industrialization, stimulate exports and provide job opportunities for Morocco's rapidly growing labor force. Three decades later, Morocco's economy has not achieved the expected progress. The country's economic growth lagged behind most developing and emerging economies, the importance of the manufacturing sector in the economy has been shrinking over the years and its position on its traditional markets squeezed under the pressure of more dynamic competitors. Morocco's manufacturing sector continues to suffer from structural weaknesses stemming from its excessive specialization in few industries either intensive in unskilled labor or natural resource-based; exports remain mostly undiversified, exhibit low technological content and depend heavily on few markets.

The purpose of this paper is to examine the links between industrial policies implemented in Morocco over time and such meager outcomes.

The paper first investigates the process of structural change in Morocco and the evolving importance of the manufacturing sector. It also measures the degree of export diversification and sophistication. The role of factor accumulation versus total factor productivity is also covered.

In a second part, the paper provides an overview of the instruments and processes of industrial policies implemented since the nineties, with reference when relevant to earlier periods, and investigate the extent to which the outcomes uncovered can be related to those instruments or the way in which they were implemented. A specific emphasis is put on identifying policy-shifts and the role of political economy factors in triggering them.

Morocco offers an interesting case of how industrial policy has been smoothly transformed in the context of liberalization and privatization in order to continue to serve the purpose of rent-distribution, private sector control and the exercise of power. Resources and regulatory functions of some government's institutions may have shrunk or weakened in the era of economic liberalization. Nevertheless, the "state power's" entry points for regulation and control have mutated and expanded and new spheres of power exercise have emerged.

2. Morocco's missing structural change

Structural change of the economy refers to the shift from primary production, such as agriculture and mining to manufacturing; and in manufacturing from natural-resource-based to more sophisticated, skill- and technology-

intensive activities[1]. Some developing economies have been able to become part of the worldwide industrialization process with their manufacturing sector boasting higher growth rates than agriculture. Others countries, among which Morocco, remain on the margins of the industrialization processes.

The purpose of this section is to analyze the structural patterns of production in Morocco and assess the extent to which it has shifted from primary to more sophisticated and elaborated activities. The aim pursued here is also to put Morocco's experience in a regional and international perspective by comparing it to a sample of developing and emerging countries.

Slow structural change with a recent shift towards services

During the period 1965-2011, Morocco's productive structure approached through sectoral GDP decomposition has overall witnessed little change. One can divide the period covered into three relevant sub-periods. A first sub-period spans from late sixties to mid-seventies characterized by a relative stability of Morocco's GDP decomposition with the share of agriculture, industry and services around 20, 30 and 50 percent of GDP respectively. The second sub-period, which runs from mid-seventies to late nineties, shows a relatively stable share of industry above 33 percent of GDP and more fluctuations in both agriculture and services. Finally, a third sub-period begins in the late nineties with a rapidly growing service sector and a steady decline of both industry and agriculture.

The share of agricultural value added in total GDP remains high and oscillates between 15 and 18 percent depending on weather conditions[2]. Agriculture's contribution to GDP averaged 17 percent during the decade 2000. The sector provides jobs for more than 4 million individuals, which is the equivalent of 40 percent of the Morocco's workforce. Three factors seem to be crucial in explaining the role of agriculture in job provision in Morocco. First, the unsecure property rights of agricultural land that stems from a complex

ownership structure with a mixture of customary, religious and modern legal rules. The second is the high fragmentation of land as seven out of ten farmers own, on average, no more than two hectares. Both factors prevent farmers from obtaining loans or properly benefiting from government subsidies, and make it difficult for them to sell their properties on the market. The third factor is high illiteracy rates in rural zones, which limits mobility of the rural labor force out the unskilled jobs in agriculture. Unsurprisingly, the three factors are largely policy-related.

The share of industry, on the other hand, represented one third of GDP in the eighties and remained relatively stable through the nineties. With trade liberalization and intensive penetration of imports, its contribution to GDP declined, however, to 27 percent of GDP on average in the last decade. Conversely, the share of the service sector moved upward from an average of 50 percent in the early eighties to 56 percent of the GDP currently. Most of the change has taken place during the last decade and was driven largely by the boom in telecommunication and financial services. As these activities are characterized by their relatively high labor productivity, the shift in GDP's contribution between industry and services was achieved without any noticeable change in their employment shares in the total workforce, which stood at 24 and 36 percent respectively. The challenge for Morocco is to make use of the progress achieved in services to enhance productivity and efficiency in both agriculture and manufacturing.

In addition to addressing institutional deficiencies in the design and implementation of industrial policies, the structural change in Morocco would require from policymakers to put more emphasis on education and the quality of human capital.

The manufacturing sector: Is Morocco a paradox?

Unlike other developing and middle income countries, the share of Morocco's manufacturing value added in GDP has been on a constant decline since the mid-nineties. While, manufacturing value added represents on average 25.4 percent of GDP in the Middle income countries (MICs) and 21.6 percent in

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[1] Memedovic, O. (2009), Structural change in the world economy: main features and trends, UNIDO.

[2] Nearly 85 percent of the agricultural land is rain-fed. Nearly three-quarters of arable land is used for growing cereals, with an average output of $250 per hectare per year.

developing countries (LDCs)[3], it has always remained under 20 percent in Morocco's recent history. More worrying, the manufacturing sector contribution to GDP has been hovering around 15 percent in recent years.

The manufacturing sector also fell short of expectations in terms of job creation. On average, the sector contributed by an average of 10000 jobs out of more than 120 000 new jobs created every year in the whole economy during the last decade[4]. As a consequence, the share of manufacturing sector in total employment, which accounted for 16 percent in early eighties, decreased to 11 percent by 2010.

Since the eighties, the manufacturing sector real value added has grown at a rate either close or below 3 percent. Unlike Morocco, the manufacturing sector has been the key driver of economic growth in many developing and emerging countries in Asia, Latin America as well as in the MENA region as portrayed in the figure. Average yearly growth of the manufacturing sector value added reached 7 percent during the period 2000-2010 in the group of Middle and low income countries and exceeded 4 percent in the group of Arab countries.

To assess the extent to which factor accumulation (capital and labor) or total factor productivity (TFP) is the source of the poor performance of Morocco's manufacturing sector, the classical growth accounting approach is used. The approach decomposes the manufacturing sector real value added growth into three components: capital, labor and TFP, which is also known as Solow's residual, obtained once capital and labor contributions are accounted for.

The estimation of the capital stock is based on the perpetual inventory method (PIM), which accumulates real investment series. The validity of this approach requires: the availability of real investment series longer than expected lifetime of assets, the stability of investment deflator being used to deflate current price of investment series and a reasonable estimate of the depreciation rate. As the series of investment in the manufacturing

sector are only available since 1985, the initial capital stock could not be neglected. Therefore, the 1985 capital stock for the entire Morocco's economy is computed using gross fixed capital formation series available since 1960. The initial capital stock is then derived on the basis of the average share of the manufacturing sector value added in GDP. Finally, contributions of capital, labor and TFP are computed using Morocco's ministry of finance estimate of capital elasticity in the manufacturing sector (0.37)[5]. The results are presented in the table (2) for three sub-periods: 1985-1988; 1990-1999 and 2000-2011.

The contribution of labor to the manufacturing value added growth has sharply declined over time. The share of growth generated by labor amounted to 11 percent in the most recent period compared to 42 percent in the nineties. Conversely, capital accumulation is increasingly emerging as the key source of the manufacturing sector's growth. The relative contribution of capital increased from 27 percent in late eighties to 37 percent in the nineties before it jumped to 64 percent in the most recent sub-period. The appreciation of the Moroccan currency, may have also favored imports of capital equipment, increasing the capital-labor ratio to the detriment of labor[6]. Similarly, the relative contribution of TFP has been growing over time. While TFP had a negative contribution in late eighties, it accounted for one quarter of the manufacturing value added growth in the last decade.

What do these results mean?

On one hand, the magnitude of the manufacturing sector growth is low and underperforms regional and developing countries' averages. On the other hand, the content of this growth has been evolving from one mostly triggered by labor accumulation to one with stronger contribution of capital and TFP.

In the eighties, the manufacturing sector in Morocco benefited from massive outsourcing

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[3] Based on the UNIDO data and Word Bank's World Development Indicators

[4] Author's calculations based on employment data provided by Morocco's high Commissariat for Planning

[5] Ministry of Finance (2003), "The total factor productivities", Department of forecasting and financial studies, Morocco

[6] Different reports and articles have emphasized the issue of Morocco's exchange rate overvaluation among which: World Bank (1999), "Kingdom of Morocco: Private Sector Assessment update", WB (2006), "Kingdom of Morocco: Country Economic Memorandum", Lahcen Achy and Khalid Sekkat (2003), "The European Single Currency and MENA's Exports to Europe", *Review of Development Economics,* vol. 07 Issue 4.

with Europe in the apparel sector. Such trend was met with substantial creation of unskilled jobs and minimal capital accumulation. The entry of other more competitive labor cheap countries in the global market and the dismantling of Multi-fiber agreement shifted part of the European demand away from Morocco.

Over the past decade, private sector in Morocco recorded an unprecedented dynamism with the share of private sector investments in the GDP exceeding 25 percent up from less than 20 percent in the nineties. The manufacturing sector, however, hardly created new jobs and the number of firms has been shrinking due to high exit rates[7].

A the same time, a number of firms such as the American Boeing, the French Safran and other leading aviation companies have entered Morocco's manufacturing sector and built increasingly sophisticated factories. More recently, the French company Renault has invested $1.5 billion in a factory in the North of Morocco with the capacity to produce some 147 000 per year[8].

In addition to its geographical proximity with Europe and the multiple free trade agreements Morocco has implemented, these companies have also been attracted by the generous incentives provided to them by the state. To what extent such allocation of public resource is worthwhile depends on the externalities these leading international companies will exert on the rest of the economy (transfer of technology, demand on domestic products and services and creation of new jobs). Such issue needs a proper investigation in future research.

Limited product diversification and sophistication

The recent wave of investments in relatively sophisticated industries has been shifting the content of the manufacturing sector growth but does not fundamentally change its specialization patterns. The latter represents a key factor to account for the divergence in growth performance between Morocco and other developing and emerging countries.

Morocco's manufacturing sector is less diversified and more specialized in industries intensive in unskilled labor or natural resource based. The industries of food and beverages, tobacco, textiles, wearing apparel, leather and non metallic mineral products together represent approximately 60 percent of the manufacturing value added in Morocco and less than 30 percent, on average, in developing countries- not including China-. On the other hand, the industry of radio TV and communication equipment, which is hardly emerging in Morocco with less than 1 percent of the manufacturing value added, accounts for 10 percent in the benchmark of developing countries. The industries of motor vehicle and other transport equipment represent 10 and 3.1 percent of the manufacturing value added, respectively, in the benchmark and in Morocco. Finally, the industry of electrical machinery and equipment, which is usually seen as the Morocco's engine for industrial diversification, accounts for 4.6 of the manufacturing value added compared to 6 percent in the benchmark of developing countries.

A more sophisticated measure of diversification frequently used in the literature is the Herfindahl-Hirschman Index (HHI), which sums the square of the share of each industry's value added in the total manufacturing sector value added. To compute such index for Morocco, we rely on industrial data at 4-digit level (220 industries).

In relative terms, the degree of diversification has first declined in the early nineties (higher values of HHI), remained quite stable from mid nineties to early 2000 and has no clear trend since then. The key message of HHI values as shown in the figure is that the degree of diversification of the Morocco's manufacturing sector has not gone through any significant change over the last two decades.

The absolute values of HHI seem to indicate somehow that the manufacturing sector in Morocco is fairly diversified. Such finding, however, can be misleading due to the extreme low value added of a large number of industries and the dominance of few industries. The 10 largest industries at 4-digit level accounted for 50 percent of the total manufacturing value added in 2010 and the 20 largest made up to two thirds of it. On the

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[7] A relevant question is why private investors choose to invest in other sector instead of manufacturing. Is there any policy-bias against the manufacturing (incentive schemes, transactions costs, labor quality and cost…).

[8] http://www.bbc.co.uk/news/world-africa-16967027

other hand, the value added of the 110 smallest industries hardly account for 4 percent of the total manufacturing value added. Such figures clearly confirm the strong specialization and poor diversification of the manufacturing sector uncovered earlier based on two-digit level data.

In order to further investigate the pattern of diversification in Morocco, we identified the industries (at the four digit level) that achieved the largest progress in terms of their value added and those that had the worst performance during the period 2000-2010. The first group of industries (*high progress industries*) accounted for 14 percent of the manufacturing sector value added in 2010 up from 7 percent in 2000. The most remarkable industries in the group are: aircraft and spacecraft industry, electrical equipment and pharmaceutical products.

The second group made of industries that have been strongly shrinking (*High regress industries*) accounted for 2.6 percent of the manufacturing value added in 2010 down from 8.1 percent a decade earlier. In addition to textiles, leather and related industries that one would expect to decline due to the fierce competition from cheap-labor countries, a number of other relatively sophisticated industries have also been weakening such as optical instruments and photographic equipments; Manufacturing of television and radio receivers, sound or video recording; pesticides and other agro-chemical products and finally pulp, paper and paperboard.

A part from these two groups (high progress and high regress industries), the bulk of the manufacturing value added, which accounts for more than 80 percent, has not changed during the period from 2000 to 2010.

The propensity of manufacturing firms to engage in innovation activities remains extremely weak in Morocco. The Investment Climate Assessment (ICA) survey that took place in Morocco in 2004 revealed that less than 10 percent of the manufacturing firms have an ISO certification, and only around 5 percent are using a technology under foreign license. On the other hand, approximately 45 percent of the firms declared that they are engaged in product innovation and one third in process innovation. Product innovation is mostly undertaken internally except for 17 percent of firms who have developed new product lines with their clients, 5 percent with their suppliers and only 1 percent with universities.

3. Morocco's Exports: Size, concentration and diversification

Exports are key factor in structural change. The ability to export reveals the capacity of a country to compete on international markets. The literature has shown what matters most for sustainable growth, structural change and people's welfare is the composition of exports and the extent to which they are diversified. A country exporting few primary commodities, such as oil, mining products or agricultural produces; can exhibit a high ratio of merchandize exports to GDP with poor economic and social performance. There are at least three channels through which export diversification can boost economic growth. First, export of every new variety can be assimilated to an innovation that requires knowledge and creative effort. Such knowledge produces externalities that end up improving productivity. Second, export diversification through new industries boosts growth by enhancing output growth of other industries via backward and forward linkages. Third, export diversification fosters economic growth over long periods of time as it reduces the swings in export revenue and curbs macroeconomic volatility that can hold back investment decisions. To account for the extent of export diversification, we suggest a variety of indicators used in the literature.

Size of Merchandise exports

During the three most recent years, the behavior of merchandize exports to GDP ratio has been erratic driven by the rise of the price of commodities on the international markets, including phosphates and its derivatives[9], in 2008 and the impact of the economic and financial crisis since 2009.

These years put aside, the share of merchandize exports in GDP increased from 13 to 18 percent in the eighties and remained broadly stagnant hovering around 20 percent since the mid-nineties. In absolute value,

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[9] According to the Morocco's foreign exchange office, the average price of fertilizers increased by 138 percent in 2008 compared to 2007 and declined by 66 percent in 2009 compared to 2008. The average price of phosphoric acid expanded by 250 percent and shrunk by 70 percent respectively in 2008 and 2009.

Morocco's merchandize exports amounted to US $ 17.7 billion in 2010. Tunisia, with one third of Morocco's population, reached a roughly similar value of exports with US $ 16.5 billion.

The share of manufactured exports

One important dimension of diversification can be approached by the share of transformed products through the manufacturing sector in total merchandise exports. Some products may be originally from agriculture or mining but undergo a process of transformation before they are sent abroad. In the early eighties, the share of manufactured exports stood below 30 percent of merchandise exports. It increased steadily during the eighties and approached 60 percent in mid-nineties and then began to decline between 1995 and 1997. While the share of manufactured products continued to rise in both Tunisia and Turkey it has stagnated in Morocco during the last decade.

The jump that occurred in 1998, however, reflects a change in the method used by Morocco's foreign exchange office in recording trade data. Since 1998, all re-exports of imports under temporary admission (TA) are counted as exports[10]. The share of re-exports of temporary admitted imports accounted for 70 percent of Morocco's merchandise exports in 2010 up from 40 in 1997. The issue with this category of exports is that they have low domestic value-added and generate only limited backward linkages with domestic industries. Once manufactured exports are adjusted to account for the 1998 change, as shown in figure 7, it appears that the content of Morocco's exports in the manufactured products has actually decreased from 50 percent in 1997 to 43 percent in 2010. Such finding lends support to the Morocco's processes of de-industrialization emphasized earlier.

Another indicator that reveals the erosion of the Morocco's manufacturing sector dynamism is the share of the firms engaged in the activity of exports. The figure 8 shows that, roughly three firms out of ten direct at least part of their production to external markets in the early nineties. During the last two decades, this share has been on steady decline and stood below 20 percent by 2010.

Export concentration

An alternative way to assess the extent of export diversification is to examine the share of the major export products in merchandize exports. A low export diversification would occur if only a few products dominate the composition of exports, which also indicates a high export concentration. The value of exports of the major categories are added up and calculated as a percentage of merchandize exports for each year. The figure 9 depicts the share of the most important 5, 10, and 20 products in Morocco's merchandise exports during the period 1980-2010.

The three versions of export concentration indexes provide, roughly, similar patterns during the last three decades. From the figure, one can divide the whole period into three relevant sub-periods. During the eighties, the concentration of Morocco's exports declined indicating a clear trend towards diversification. The share of the most important 5 products declined from 60 to less than 40 percent in a decade. The behavior of export concentration changed in the early nineties with export indexes going up. The sudden decline in export concentration in 1998 is due to shift in the method used by Morocco's foreign exchange office in recording trade data. As indicated earlier, all re-exports of imports under temporary admission (TA) are counted as exports since 1998. By expanding merchandise exports, such shift led mechanically to lower concentration indexes. During the third sub-period, which began in 1999, the magnitude of export concentration seems stagnant[11].

The Herfindahl-Hirschman Index (HHI) based on export data at four digit level data provides a similar story. The degree of export diversification has first increased in the eighties (declining HHI index), increased in the early and mid nineties and remained quite relatively stagnant since early 2000. The key message of HHI values as shown in the figure 10 corroborate previous findings based on the manufacturing sector value added.

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[10] For exports produced under the regime of "temporary admission", raw materials are temporarily imported and processed and final outputs re-exported.

[11] The erratic behavior in the last three years is essentially driven by the high volatility of the price of phosphate and its derivatives on the international markets.

The degree of diversification of the Morocco's exports has not experienced any significant change over the last two decades. Clothing, crustaceans and mollusks (seafood), phosphoric acid, electronic devices (transistors) and phosphate emerged as the five key Morocco's export products in 2000. In 2010, the list has not significantly changed. The five most contributor products appeared in the following order: clothing, phosphoric acid, wires and cables for electricity, fertilizers and phosphates.

Technological composition of exports

The changes in the composition of Morocco's exports by technological intensity are portrayed in the figure. Merchandize exports are divided into three categories: "low", "medium" and "high" technology based on the OECD approach.

Since the early nineties, the share of low technology products in total exports fell from 59 percent of exports to 37 percent. Exports of medium technology content, on the other hand, gained steadily in share of total exports from 40 to 60 percent over the same period. Despite, this gradual substitution of low technology-products by medium-technology ones, the process remains slow and limited compared to Morocco's competitors on its traditional markets (the European Union). The share of exports with high technological content, which stand as the most dynamic market worldwide, went up from to 6 percent in 2000 from 1 percent in 1993. Paradoxically, however, this share declined to 3 percent by end of 2011.

Exports of services

The positive part of the Morocco's structural change process comes from the service sector. The increase in the service sector contribution to GDP was to a large extent driven by modern, relatively high value added non-commodity tradable activities such as information and telecommunication, financial services, business services, transportation and tourism related activities. As a consequence, Morocco's exports of services increased steadily during the past two decades. The share of services in Morocco's total exports (merchandise exports and services) went up to more than 45 percent from less than 30 percent

in the early nineties[12]. Morocco earned US $ 12 billion from exporting commercial services in 2010. Its market share in the world export services of 0.32 percent is three times higher compared to its market share in the worldwide merchandise exports.

Although, it declined from more than 70 percent in the late nineties to 54 percent more recently, Morocco's exports of travel services (tourism revenues) remain the key component of services exports. International transportation services, on the other hand, generate roughly 20 percent of services exports and their contribution has been relatively stable over the last two decades. Finally, the category of "other non commercial services" appears as the most dynamic component of Morocco's services exports. This category, which includes communication services, computer and information services, financial and insurance services and construction services; accounted for more than 26 percent of services exports in 2010 up from 13 percent a decade earlier. This contrasts significantly with emerging countries. In South Asia, for instance, information and communication technology and finance are leading exports in services; making up to 68 percent of services exports[13].

4. Industrial policies: Instruments, Processes and Politics

Morocco achieved meager outcomes in terms of structural change; the county has been lagging behind in its industrialization process with modest product and export diversification. There has been a turning point in the Morocco's itinerary towards industrialization located in the late eighties and early nineties. The nineties has been a lost decade for manufacturing and non-manufacturing with a modest 2.26 percent GDP growth and anemic manufacturing sector growth of 2.16 percent. During the last decade (2000-2010), GDP growth reached 4.55 percent but growth in the manufacturing sector did not exceed 2.71 percent.

The purpose of this part is to examine industrial policy (IP) instruments administered in Morocco since the nineties, with reference when relevant to earlier periods, and

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[12] The erratic behavior recorded in the last years can be attributed to the impact of the financial crisis and Arab spring.
[13] Rouis, Mustapha (2012), "Maghreb Economic Integration: Time for Action", African Development Bank.

investigates the extent to which the outcomes uncovered can be related to those instruments or the way they were implemented.

Based on the Morocco's experience one can distinguish four categories of industrial policy (IP) instruments: *(a)* policies that alter ownership of capital such as the Moroccanization implemented in the seventies and the privatization of public enterprises that started in Morocco in the late eighties, *(b)* trade policies and other related regulations that can differ from one sector to the other to reflect policy preferences, *(c)* fiscal incentives granted to investors of which some are horizontal and other are more specific to sectors, regions or related to the size of the investment and finally *(d)* direct grants and subsidies allocated to a selected number firms based on a set of criteria.

While the impact of trade policies in Morocco received some empirical interest, very few studies have been devoted to the political economy motivations of industrial policies and their impact on the manufacturing sector.

Based on the shifts in industrial policies implemented in Morocco since the beginning of the nineties, the whole period can be divided into three sub-periods.

The first covers the nineties with a clear focus on the privatization policy. It was also a period with tumultuous dynamics in Morocco's state-business relations.

The second sub-period started in early 2000 and ended in 2007 with a multiplicity of investment promotion and tax exemptions schemes that appear to be **dispersed, overlapping and non-focused.** Yet, such schemes were costly and often ignored in the public discourse. At the same time, the authorities designed a double track system of direct support to firms. The first, which operates through Hassan II Fund for Economic and Social Development, directed to large firms and draws on privatization revenues. The second, which is managed by the SMEs' National Agency (ANPME) through "industrial upgrading" programs is devoted mainly to small and medium-sized enterprises (SMEs) and rely mostly on the EU funding.

The third sub-period that began in mid 2000s was an attempt to endow the state with a more active and visible role in promoting and administering industrial policies. Many instruments that existed before have been repackaged and re-defined in order to fit within a comprehensive framework called "Emergence Program" (Take-off Program) with a direct endorsement by the Moroccan king. For instance, the "upgrading policy", labeled "competitive modernization" under new program has been revisited and endowed with more funding for the state budget. A new version of the "Emergence Program" has been approved in 2009 and has been one of the key government's policy pillars.

The nineties: Decade of reforms and new dynamics in state-business relations

The Moroccan authorities decided in the early nineties to accelerate the reform process and move towards sectoral and microeconomic reforms. The decade of the eighties was the decade of Macro-economic stabilization policies. Morocco managed in less than a decade to drastically reduce both its budget and current account deficits. It had also increased its manufactured exports and private sector investment[14].

Two factors need however to be accounted for in assessing the performance of the eighties. The first is the impact on the Moroccan economy of favorable external shocks stemming from better weather conditions starting from 1984 and lower oil prices starting from 1986. The second is more policy driven as Morocco maintained a strong support to the manufacturing sector through trade protection (tariffs and licenses) and exchange rate devaluation. In its 1999 report on the private sector, the World Bank acknowledged that the 40 percent real depreciation of the Moroccan dirham in the early 1980s was crucial in strengthening the competitiveness of Moroccan products.[15]

Understating the role of both factors, Morocco's experience was referred to by the IMF and the WB as having real chance of becoming a success story. The World Bank recognized later that it was excessively bullish in its assessments of Morocco's economic future.

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[14] WB (2000), "Moroccan manufacturing sector at the turn of the century: Results of the Firm Analysis and Competitiveness Survey (FACS-Morocco 2000)
[15] WB (1999), Private sector assessment update

Trade barriers had been reduced: quota coverage went down from 66 to 15 percent of imports, the range of import levies was substantially decreased, and most export taxes were eliminated. Foreign exchange controls were relaxed, achieving full convertibility of the current account in early 1993. Price and margin controls were lifted for many goods, and, after a slow start, the privatization program took off in 1993. In the same year, it was also decided that directing credit to exporters was no longer necessary. The Government's program of financial sector reform was seen as sufficiently advanced and that the country can rely on an efficient, market-determined allocation of financial resources[16].

In the 1990s, Morocco's manufacturing sector and its overall economy have shown a weak performance. In addition to policy related factors, Morocco had to face a number of external challenges. First, the EU, the major market for Moroccan exports, experienced an economic slowdown that reduced its capacity to import. Second, the opening of Eastern Europe provided the West of Europe with new opportunities to invest in countries with cheap labor closer to the EU markets. Third, cheaper Asian textiles also began to compete with Moroccan exports.

Many countries, as they become richer, have been driven out of labor-intensive sectors because of rising wages. Yet, they managed to sustain their exports' growth by producing more sophisticated products that use higher technology and skilled labor. Morocco failed to have a similar response due its poor human capital and modest investment in research and development. A steady appreciation of the real effective exchange rate estimated to 22 percent between 1990 and 2000, has worsened its competitive position. Meanwhile, many of the countries that compete with Morocco have seen real devaluations of their respective currencies. As a result, Morocco's real exchange rate has appreciated 42% relative to China's and 64% relative to India's over the decade of the nineties[17].

Economic reforms and the shift from the state as a key player to a market-led economy imposed a number of political reforms to adapt to the "new era". The private sector had been operating under the umbrella of the state with a position of "follower" and "loyal supporter" of the regime and the Morocco's business association (CGEM) up until the mid 1990s was as an organization close to the state and apolitical[18].

The growing role of the private sector in the economy, the dismantling of trade protection and the erosion of rents and favors to which large entrepreneurs had access, pushed the business association (CGEM) to take a different shape. The new bureau elected in 1994, signaled a different tone with a strong emphasis put on the need for a private sector that is structured, organized and strong[19]. The CGEM emerged as outspoken business association with independent positions from the state. It became more active and called publicly for a level playing field and more transparency in the process of awarding public procurement contracts[20].

For the first time, it appeared that the interests of the regime and the business association may no longer be converging. Ironically, the change within the business association was first promoted by the state seeking to weaken those within the CGEM who opposed liberalization reforms as it threatened their privileged economic positions. The King Hassan II in person urged the CGEM to restructure and become more representative of the whole spectrum of business interests, including more members from small and medium-sized enterprises[21].

To counteract the emergence of the private sector as autonomous social force, the state used a double-track strategy in which it combined coercion and cooptation.

First, the state (through the Ministry of Interior) conducted an anti-corruption campaign in 1995-1996 referred to by the

[16] WB (undated), "Morocco: Country Assistance Review" (http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/34CBCE38B5A9A46F852567F5005D438D)
[17] WB (2000), "Moroccan manufacturing sector at the turn of the century: Results of the Firm Analysis and Competitiveness Survey (FACS-Morocco 2000)

[18] Farid Boussaid (2010), "State-Business relations in Morocco"
[19] Sater, James (2002), "Civil Society, Political Change and the Private Sector in Morocco: The Case of the Employer's Federation", *Mediterranean Politics, Vol.*7 Issue 2.
[20] Denoeux, Guilain (2007), "Corruption in Morocco: Old Forces, New Dynamics and a Way Forward", *Middle East Policy Vol.* 14 Issue 4.
[21] Farid Boussaid (2010)

authorities as the "clean-up campaign". The campaign started as a campaign against drug trafficking and smuggling, but soon companies and businessman became targets of the campaign. The "tacit pact" under which businesspeople can enjoy virtual immunity from prosecution, as long as they are politically loyal, can no longer be taken for granted[22]. The campaign ended in June 1996 with a 'gentlemen's agreement' between the CGEM and the Minister of Interior. The agreement offered an amnesty and in exchange the CGEM committed to strive for a more ethical environment within the business community[23]. The key message sent by the "anti-corruption campaign" was that the regime cannot tolerate that the private sector it has nurtured and longtime supported become an independent and strong social force. Through its coercive campaign, "the central state" showed that it was in control and could not be challenged even in the era of market reforms.

Second, in addition to the "the gentlemen agreement", the business association was being granted a place within the political process through the 1996 constitutional amendment by the adoption of the (*bicameral legislature*) with two chambers. The "lower chamber" or chamber of Representatives elected by popular vote, and the "upper chamber" or Chamber of Counselors made up of representatives elected by professional and business organizations, labor unions, communal councils and chambers of commerce. Three-fifth (3/5) of the "upper chamber" members are elected by regional electorate colleges and two-fifth (2/5) are selected by electoral colleges of representatives of professional associations. The bicameral system provided the legal basis to institutionalize a system of representation and participation of business interests in the law making and social negotiations. Ultimately, such arrangement allowed the "central power" to co-opt the emerging business leaders and guarantee their formal participation in the policy-making process.

As a consequence, the business association (CGEM) has evolved to become more representative of the private sector in its dialogue with the Government. It opened its doors to smaller firms and to federations of companies outside the manufacturing sector and regional offices[24]. Yet, its margins to maneuver have been strictly regulated. Beyond its political economy meaning, this episode seemed to have produced lasting effects on the development of the manufacturing sector. It has been characterized by a rapid erosion of protection and incentives: the situation was qualified by Morocco's Country Economic Memorandum authored by the World Bank in following terms: "*Too much discipline..., with inadequate and insufficient incentives for economic restructuring*". The lack of trust in the state and the fear of its arbitrariness (as appeared in the "*clean up campaign*") pushed domestic investors to commercial and real estate businesses with shorter cycles and much lower transaction costs at the expense of manufacturing activities.

The episode of redeployment of public action

The sub-period that started in the late nineties and continued through the decade 2000 was characterized by the emergence of new forms of state interventions. The assumption that more market means by default less state, widely assumed, did not apply to Morocco.

Instead of heavy state intervention policies, the authorities implemented multiple schemes for investment promotion that appear to be **dispersed, overlapping and non-focused.**

At the same time a double track system of direct support to firms was implemented. The first, which operates through Hassan II Fund for Economic and Social Development, directed to large firms and draws on privatization revenues. The second, which is managed by the SMEs' National Agency (ANPME) through "industrial upgrading" programs is devoted mainly to small and medium-sized enterprises (SMEs) and rely mostly on the EU funding.

Multiple incentive schemes with no comprehensive vision

Despite the existence of a large number of regulations that qualify as IP instruments, the government had no explicit and comprehensive vision of what the country wants to achieve. Overall the arsenal of regulations was costly as shown in the table 6 and ineffective in

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[22] Denoeux, Guilain (2007)

[23] Stater (2002)

[24] WB (1999)

promoting a dynamic process of productive diversification.

Resources and regulatory functions of some government's institutions may have shrunk or weakened in the era of economic liberalization. Nevertheless, the "state power's" entry points for regulation and control mutate and expand and new spheres of power exercise emerge. A prominent example is provided by the "The Hassan II Fund for Economic and Social Development" established in 2000 and that receives 50 percent of privatization revenues. Such fund bears part of the costs incurred by enterprises in some industrial sectors[25] up to 10 percent of the project's cost capped at DH 20 million (the equivalent of **US $ 2.5 million**). Between 2000 and 2005, the Fund contributed in **111 projects** with over DH **4.5 billion**. Most of the projects are concentrated in textiles sector (51 percent) and sub-contracting in the automotive sector (31 per cent)[26].

The Hassan II Fund, which was initially a "special account", a vehicle that moved privatization proceeds out of the budget with no governmental or ministerial control. The Fund was transformed in January 2002 into a public establishment with legal personality and financial autonomy. The Fund allowed the central state to have a powerful tool of distribution of public money with no oversight. Arguments of sophistication of public policy and need to overcome administrative bureaucracy are often used to justify the reliance on technocratic structures at the expense of a more classical political process of decision-making.

In the absence of a complete database of firms that benefited from the various incentives and no assessment of either their relevance or effectiveness, anecdotal evidence points to waste, discretion and discrimination.

Upgrading of SMEs: too many tools, too little impact

Upgrading of the manufacturing firms in Morocco was initially very intimately linked to the Association Agreement (AA) with the

European Union signed in 1996 and that entered into effect in 2000. For most Moroccan stakeholders, the logic behind upgrading is straightforward. The AA implies a shift in Morocco's relationship with the European Union from "preference" to "reciprocity". Under the AA, Morocco granted tariff concessions on industrial products for the EU according to the schedule presented in the table 7. In exchange, through MEDA funds and other sources of funding, the EU agrees to support the process of manufacturing firms' upgrading to be able to face competition. Anecdotal evidence argued at the time that without upgrading, only one third of the manufacturing firms would survive with AA entering into force.

Unlike its attitude with regard large enterprises, Morocco's state positioned itself in retreat with regard to the upgrading process and limited its role to correct market imperfections, improve the business climate, provide adequate infrastructure, and modernize the financial sector. Officially, this approach steamed from a simplistic diagnosis of the manufacturing sector's weaknesses that put too much focus on access to finance as the major obstacle to firms' competitiveness. In other words, barriers to access to finance, constrains investment and block the upgrading process. Therefore, the government needed to improve credit supply by promoting banking sector competition, mobilizing external funds and setting up guarantee funds.

The government's approach evolved over time to better meet the request of firms for modernization and upgrading. Since the enactment of Law No. 53-00 forming Charter for Small and Medium Business, SME promotion has been elevated, at least in the official discourse, to a public policy priority. The SMEs charter[27], issued in 2002 defines an SME as any enterprise with a maximum permanent payroll of 200, an annual turnover (excluding tax) of less than DH 75 million and with the total annual balance sheet that does not exceed DH 50 million. In addition, the SME should be administered directly by natural persons who own it, co own it or have shares in it, provided that not more than 25 per cent of its capital or voting rights are held by

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[25] Since 2008, the sectors are limited to: textiles-clothing and made-up textile goods; manufacture of equipment for the automotive industry; manufacture of components for electronic assemblies and sub-assemblies; manufacture of equipment for the aeronautics industry; nanotechnology-related manufacturing; and microelectronics and biotechnology.

[26] WTO (2009), Morocco: Trade Policy Review, page 66.

[27] The Dahir No. 1-02-188 of 23 July 2002, enacting Law No. 53-00

non SMEs. For newly created SMEs (those in existence for less than two years) to be eligible, they must have undertaken an overall initial investment program not exceeding DH 25 million and comply with an investment/job ratio not exceeding DH 250,000

The authorities admitted that they need to abandon their liberal approach and adopt a more proactive approach by being involved in the process of the upgrading including the establishment of an appropriate institutional framework for the promotion, coordination and support of firms. The establishment in 2002 of a coordination structure: the National Agency for the promotion of SMEs (ANPME), the establishment of the National Committee of Upgrading (CNMN) in December 2002, consisting of representatives of public and private sectors reflect a new attitude on the part of the Moroccan government vis-à-vis the upgrading of enterprises.

Since its creation in 2002, the National agency for the promotion of SMEs (ANPME) aimed at easing access to credit for SMEs by providing its assistance through a number of general and sectoral financing schemes. Several guarantee funds facilitate financing of their investments for SMEs or other enterprises.

The main program of upgrading was a component of Modernization of SMEs business support program financed by the European Union through the MEDA funds. This program was endowed with an operational budget of 13 million Euros, of which more than 11 million Euros were allocated to direct support to enterprises, and the rest to general studies. The program supports 90 percent of the cost of the action of technical assistance. The rest (10 percent) is financed the beneficiary and must be paid before the start of the operation support.

The National Upgrade Fund (FOMAN) set up in 2003 provided financial support for business upgrading program through co-funding physical investment and technical assistance projects by the ANPME and the banks. Financing physical investment is provided for up to 40 per cent of project's cost with 2 percent interest rate (excluding VAT) and with a ceiling of DH 5 million. Financing for "non-physical" investment is available for up to 80 percent of the cost of the assistance and advice,

with a ceiling of DH 400,000. To be eligible it is necessary to operate in industry or services related to industry with at least three years of activity and a balance sheets that do not exceed DH 70 million and DH 25 million, respectively. The Restructuring of Textiles and Clothing Sector's Fund (FORTEX) created in 2002 provided support to the textiles and clothing subsector. Until 2008, Upgrading programs in Morocco fully relied on external funding. For the first time, the 2008 state budget allocated 100 million DH in support to SMEs upgrading[28].

The survey conducted on a sample of 84 firms that have benefited from upgrading programs (Euro Maroc Enterprise) over the period 2002 and 2004 shows that financial support provided represented between 3 and 5 percent of turnover for small firms (those with less than 50 employees) and between 0.5 and 3 percent for middle-sized firms (between 50 and 200 employees).

Overall, the Moroccan upgrading policy during the period 2003-2007 lacked cohesion and consistency. It was made by a "patchwork" of some thirty different "support services" with diverse content and eligibility criteria set by the specific objectives and areas of intervention of each of the donors. The ANMPE, which was in charge of administering the upgrading policy, had limited human and financial resources.

There are extremely few studies that attempted to empirically assess the firm-level impact of upgrading programs implemented in Morocco.

Achy et al. (2009[29]), using a stochastic frontier model to estimate the technical efficiency revealed that the difference between upgraded firms and non-upgraded ones is very small. The paper shows that such difference existed years before the implementation of the upgrading program and remained over the whole period under study. The unexpected stability of technical efficiency over the years for both upgraded and non-upgraded firms

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[28] On average, the government allocates directly or indirectly (through different exemptions) the equivalent of 5 billion DH. The state budget allocated to upgrading would then represent no more than 2 percent of the public resources allocated in various forms to the private sector.

[29] Achy, L. et al. (2009), "Restructuring and Efficiency in the Manufacturing Sector: a Firm Level Approach Applied to Morocco", Economic Research Forum working paper.

seems to explain why upgrading programs failed to attract a large number of firms.

The trade-off between constraints imposed on firms that wish to join upgrading programs (in terms of cleaning their positions with the tax administration and social security and opening their accounts to the ANPME) and the modest outcome they can achieve; measured here in terms of technical efficiency gains, led to a lack of interest in the program by most of the firms. For those firms that joined, subsidies perceived appear to be too small to exert a substantial and significant impact on their technical efficiency. In five years, the "upgrading programs" covered some 1400 firms. More than 55 percent of the firms benefited under two programs (SMEs Modernization and FOMAN Technical assistance), and received an average subsidy of **roughly US $ 25 000**. This is incommensurate if compared to grants allocated to large firms under Hassan II Fund for Social and Economic Development that reach as much as US $ 2.3 million for each firm.

The government decided later to shift towards a much more proactive support policy within a comprehensive sectoral strategy, "the Emergence Program", to boost industrial sector's competitiveness via the creation and promotion of tech parks, new generation of industrial zones, trade facilitation measures and provision of training and skilled labor.

The most recent period: "Emergence Program"

The *Emergence Program*[30], adopted by the government aims to improve Morocco's technological infrastructure, as well as its investment and trade support facilities. The program focuses on offshoring[31] and industrial sector modernization to make it more competitive. Eight sectors have initially been selected as drivers of growth: French and Spanish-language offshoring/near-shoring, the agro-food industry, the seafood industry, textiles, the automotive, aeronautics and

electronics sectors through the establishment of free zones[32], and industrial crafts.[33]

Investment incentives (to foreign and domestic investment) **may be granted under the general investment incentives regime** (Investment Charter and its implementing decree[34]), **under Hassan II Fund for Economic and Social Development and under the agreement regime**[35].

Under the Emergence Program, the ANPME is in charge of administering two key support schemes: the first one is "Excellence" (*Imitiaz*) and the second is "Support" (*Moussanada*). The ANPME changed the process and eligibility conditions based on its past experience and began to set quantitative targets for its action.

Imitiaz scheme: "Picking winners"

The purpose of "Imitiaz" is to provide direct financial support of the most promising SMEs and allow them to expand in terms of size, profitability and value added by subsidizing their investment programs that can span over three years. The government subsidy can amount to as much as DH 5 million (approximately $ 600 000) for each selected firm, representing a maximum of 20 percent of the project's cost (All taxes included). The beneficiary firms are selected through a national competitive call for tenders' process. The selection is taken care of by a special committee made of public and private sectors' representatives. The application needs to be first approved by one of the banks sponsoring the "Imitiaz" and then sent it to the ANPME. The government's target is to provide support to 50 firms every year under the *Imitiaz* scheme. In 2010, only 33 applications have

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[30] The program Emergence, according to the government, is expected to boost GDP growth by 1.6 percentage points over ten years, creating some 440,000 direct and indirect jobs and reducing the trade deficit by 50 per cent.

[31] A Strategic Offshoring Council was established and tasked with following up on the program.

[32] The "MED Zones" program is designed to speed up the development of industrial outsourcing to Morocco's border areas with a view to supplying the European market. It concerns the automotive, aeronautics and electronics industries.

[33] The strategy for the crafts sector revolves around the emergence of five to ten leading export oriented operators, specialized by sector and having production, innovation and marketing capacities, and around the modernization of local distribution.

[34] Dahir No. 1-95-213 of 8 November 1995, enacting Framework Law No. 18-95 laying down the Investment Charter; Decree No. 2-00-895 of 31 January 2001, implementing Articles 17 and 19 of Framework Law No. 18-95, as supplemented by Decree No. 2-04-847 of 22 October 2004.

[35] Agreements are concluded in the case of large-scale investments (DH 200 million and higher). The 2011 Budget Act introduced a **National Investment Support Fund** in the form of a specially funded account that essentially replaces the support provided by the Hassan II Fund.

been granted "Imitiaz" subsidy. Three factors explain such lack of interest in the Imitiaz scheme. The first is the insufficient dissemination of information across the country. The second is the inability of many firms to write a viable funding proposal. The third factor is the unwillingness of a large number of firms to have transparent accounts (for fiscal and social misconduct).

The 33 projects approved in 2010 planned total investment of 666.4 million DH. The projects are expected to create an additional turnover of 9.98 billion DH over five years, an additional valued added of 3.08 milliard DH and provide some 1964 new jobs. The total government's subsidy offered to them amounted to 113.3 million DH, which is on average 3.43 million DH per project. In 2011, 47 projects have been approved for a planned total investment of 1,028 billion DH. The projects are expected to create an additional turnover of 15.3 billion DH over five years, an additional valued added of 4.7 billion DH and more than one billion in terms of corporate taxes. The 47 projects are expected, on the other hand, to provide 4519 new jobs. The total government's subsidy granted to them amounted to 174 million DH, which is on average 3.7 million DH per project. Out of 80 projects approved in 2010 and 2011, 75 are in manufacturing and only five projects belong to the service sector.

Moussanada scheme

The purpose of "Moussanada" is to subsidize SMEs projects to improve their productivity through three forms of support. The first is functional programs that benefit firms regardless of their sectors and cover strategy elaboration, business and marketing, finance, quality control, and organization and management. The second is more technical and sector specific programs. The latter include production processes, supply management, design, R & D, etc. Three sectors have been given priority: textiles and leather, agro-food and automobile. SMEs can choose from a pre-set menu of support packages those that best fit with specific needs. For both functional and technical support, the state subsidy can account for up to 60 percent of the cost of the support within a limit of (roughly $ 70 000) for each firm. The third form of SMEs support is the sector-specific information technology (IT) program. It can cover up to 60 percent of support cost within a limit of (roughly $

47 000) per firm. As firms apply for different subsidies, each one may be granted up to US $ 117 000. This more than four times the limit of subsidies under the former program.

The goal of Moussanada is to provide support for 500 firms every year. Paradoxically, due to limited interest from the firms, only 258 firms benefited from Moussanada in 2010. In 2011, the number increased to 341 firms but still below the target. Taking both years together, the ANMPE has been able to achieve 60 percent of its goal (599 firms instead of 1000).

The most recent figures show that up to the end of May 2012, 634 firms benefited from Moussanada: 18 percent in textiles, garment and leather, 15 percent in services related to industries, 14 percent in chemicals, 12 percent metallic and mechanical industries. Some 62 percent of the grants went to firms located in Casablanca's region and 9 percent in Rabat's region. One third of all support interventions focused on quality and labeling, 26 percent to information systems and 11 percent to development strategy and investment. Only 4 percent of interventions were concerned with productivity and cost reduction and 3 percent with human resource management. There are so far no available data that allow us to assess the impact of these recent programs.

5. Conclusions

During the period 1965-2011, Morocco's productive structure approached through sectoral GDP decomposition has broadly witnessed little change. The share of industry represented one third of GDP in the eighties and remained relatively stable through the nineties. With trade liberalization and intensive penetration of imports, its contribution to GDP declined, however, to 27 percent of GDP on average in the last decade. Conversely, the share of the service sector moved upward from an average of 50 percent in the early eighties to 56 percent of the GDP currently. Most of the change has taken place during the last decade and was driven largely by the boom in telecommunication and financial services. As these activities are characterized by their relatively high labor productivity, the shift in GDP's contribution between industry and services was achieved without any noticeable change in their employment shares in the total workforce, which stood at 24 and 36 percent respectively.

Based on the shifts in industrial policies implemented in Morocco since the beginning of the nineties, the whole period can be divided into three sub-periods. The first covers the nineties with a clear focus on the privatization policy. It was also a period with tumultuous dynamics in Morocco's state-business relations. The growing role of the private sector in the economy, the dismantling of trade protection and the erosion of rents and favors to which large entrepreneurs had access, pushed the business association to become more active and called publicly for a level playing field and more transparency. To counteract the emergence of the private sector as autonomous social force, the state resorted to double-track strategy in which it combined coercion and cooptation.

The second sub-period started in early 2000 and ended in 2007 with a multiplicity of investment promotion and tax exemptions schemes that appear to be dispersed, overlapping and non-focused. At the same time, the authorities designed a timid intervention program of "industrial upgrading" restricted to small and medium-sized enterprises (SMEs) and that rely mostly on the EU funding. Morocco's government positioned itself in retreat with regard to the upgrading process and limited its role to correct market imperfections, improve the business climate, provide adequate infrastructure, and modernize the financial sector. The government approach steamed from a simplistic diagnosis of the manufacturing sector's weaknesses that put too much focus on access to finance as the major obstacle to firms' competitiveness.

The third sub-period that began in 2007 was an attempt to endow the state with a more active and visible role in promoting and administering industrial policies. Many instruments that existed before have been repackaged and re-defined in order to fit within a comprehensive framework called "Emergence Program" (Take-off Program). The "upgrading policy", labeled "competitive modernization" under the new program has been revisited and endowed with more funding from the state budget. A new version of the "Emergence Program" has been approved in 2009 and has been one of the key government's policy pillars.

In the absence of a complete database of firms that benefited from the various incentives, it is hard to come up with a rigorous analysis of the relevance or effectiveness of industrial policies in Morocco. A number of outcome indicators reveal, however, that the process of structural transformation has been slow and fallen short of expectations. Unlike other developing and middle income countries, the share of Morocco's manufacturing value added in GDP has been on constant decline since the mid-nineties. While, manufacturing value added represents on average 25.4 percent of GDP in the Middle income countries (MICs) and 21.6 percent in developing countries (LDCs), it has always remained under 20 percent in Morocco's recent history. More worrying, the manufacturing sector contribution to GDP has been hovering around 15 percent in recent years.

Although private sector recorded an unprecedented dynamism with the share of private investments in the GDP exceeded 25 percent in the last decade up from less than 20 percent in the nineties, the manufacturing sector hardly created new jobs and the number of firms has been shrinking due to high exit rates. The sector contributed by an average of 10000 jobs out of more than 120 000 new jobs created every year in the whole economy during the last decade. As a consequence, the share of manufacturing sector in total employment, which accounted for 16 percent in early eighties, decreased to 11 percent by 2010.

In the meantime, a number of firms such as the American Boeing, the French Safran and other leading aviation companies have entered Morocco's manufacturing sector and built increasingly sophisticated factories. More recently, the French company Renault has invested $1.5 billion in a factory in the North of Morocco with the capacity to produce some 147 000 per year. In addition to its geographical proximity with Europe and the multiple free trade agreements Morocco has implemented, these companies have also been attracted by the generous incentives provided to them by the state.

The recent wave of investments in relatively sophisticated industries has been shifting the content of the manufacturing sector growth but does not fundamentally change its

specialization patterns. The latter represents a key factor to account for the divergence in growth performance between Morocco and other developing and emerging countries. Morocco's manufacturing sector is less diversified and more specialized in industries intensive in unskilled labor or natural resource based.

The propensity of manufacturing firms to engage in innovation activities remains extremely weak in Morocco. Less than 10 percent of the manufacturing firms have an ISO certification, and only around 5 percent are using a technology under foreign license. On the other hand, approximately 45 percent of the firms declared that they are engaged in product innovation and one third in process innovation. Product innovation is mostly undertaken internally except for 17 percent of firms who have developed new product lines with their clients, 5 percent with their suppliers and only 1 percent with universities.

The degree of diversification of the Morocco's exports has not experienced any significant change over the last two decades. Clothing, crustaceans and mollusks (seafood), phosphoric acid, electronic devices (transistors) and phosphate emerged as the five key Morocco's export products in 2000. In 2010, the list has not significantly changed. The five most contributor products appeared in the following order: clothing, phosphoric acid, wires and cables for electricity, fertilizers and phosphates.

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Structural Transformation and Industrial Policy

in Selected Southern Mediterranean Countries: Tunisia

by: Sofiane Ghali and Sami Rezgui

Introduction

During the last five decades, Tunisia has experienced different development strategies. To ensure a balanced development of the economy after independence, the authorities at that time felt that it was necessary to reorganize its main sectors through a restructuring of the agricultural sector via a large-scale land reform, a promotion of services sector mainly supported by tourism and the development of an industry in line with the colonial legacy of heavy industries (iron and phosphate) to better respond to the needs of local consumption in terms of manufactured products.

The industrial policy (IP), named "policy of industrialising industry" (*politique d'industrie industrialisante),* that was adopted in the 1960s aimed initially to build the foundations of a new industrial sector largely state financed. Indeed, this policy was called to contribute to a balanced distribution of industrial activities at a regional level and to support the emergence of a structured manufacturing industry. During the 1970s, manufacturing industry observed a dual strategy of import substitution (IS) and export promotion. In the mid-1980s and after the stabilization programme, an increasingly outward-oriented market strategy has been adopted boosted notably by the Free Trade Agreement (FTA) signed with the European Union (EU) in 1995.

As pointed out by Erdle (2011), Tunisian IP led to mitigated performances: on one hand, Tunisia is still highly dependent on both a handful of foreign markets and a handful of industrial sectors whose main focus is on simple assembly activities although there is a qualitative upward trend in some sectors. On the other hand, there is still a dichotomy between *on-shore* and *off-shore* sectors depriving the former from technological externalities, between *import-substituting* and *export-oriented* businesses forming economic enclaves, and finally, between the *few large firms* operating at near the technology frontier and the *many small firms* lacking innovation capacities.

In face of such mitigated performances of manufacturing, the relevance of a recent classification of Tunisia as a fast growing middle income country (Unido, 2009) should be questioned. While such a classification has been giving some motives of satisfaction to policy makers and international financial institutions, a recurrent question asked before and after the 2011 political change is the following: was such a classification broadly reflecting a real socio-economic success of Tunisia? More particularly, to what extent it reflects a structural transformation of the Tunisian economy sustained by a successful industrial development strategy?

Tunisia has few natural resources endowments and its oil resources have declined over the years. It is still conserving its agrarian traditions and continuing to bet on services activities a large part of which is vulnerable to external chocks (like tourism). And, like many developing countries, it followed a voluntary IP that was reinforced by a voluntary openness to international investments through the 1972 law to attract foreign investors notably in low-skilled labour intensive industries, engaging the Tunisian manufacturing much more in an international trade in tasks than in products.

Meanwhile, Tunisian policy makers have been applying the recipes of "*old structuralism*" based on heavy state intervention in the competitive sector most of the time masked by the imperative of protecting an infant manufacturing industry which, for some sectors, reduces to protecting some state-owned enterprises developing activities in the commercial sector. This policy has been abandoned and policy makers engaged in a privatization program and adopted incentives to boost a private sector-led development[1]. However, encouraging private investments notably through the 1993 fiscal incentives law led much more to a distribution of fiscal privileges without any positive discrimination in favour of prior investments. And while the incentive policy was beginning to reach its limits, part of the private business sector was favouring short term speculative investments (such as real estate) at the expense of more long term productive investments (such as technology). In addition to fiscal incentives misallocation, policy competition[2] was also reduced to state favouritism and distribution of

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[1] . The renunciation to this policy has mostly been under pressure from international financial institutions such as the World Bank and IMF.

[2] . Based notably on the 1995 law on competition and prices and the creation of a "Competition Council" (Conseil de la concurrence) few years later.

privileges, the latter playing a major role in the strengthening of anti-competitive practices within a private sector where "situation rents" and "capture" of state became a rule[3].

By contrast, countries like South Korea, China and India where the authorities were strongly interventionist have later better performed[4]. Between Tunisia and those countries succeeding their structural transformation, the difference lies in the strategies initially defined and the way these strategies were applied. Tunisian authorities were more engaged in a short term oriented interventionism with no clear guidelines and largely serving rent seekers interests. South and South East Asia countries governments opted for a more "intelligent" interventionism, the latter encompassing state's ability to maximize future benefits of openness to trade by opportunely adopting adequate medium and long term measures to construct managerial, organizational, institutional and technological country's capabilities. These capabilities are essential to build a structural transformation that leads to higher development path. However, from "*new structuralism*" perspective, this transformation calls for a new type of state interventions where the state would play the role of promoter and facilitator of industrial diversification through an optimal management of market imperfections (Hesse, 2008**;** Harrison and Rodriguez Clare, 2009; Lin, 2010).

We propose in a first part (section 1) to examine the overall Tunisian economic performances starting from macroeconomic indicators (GDP growth, GDP per capita...). The macro analysis is intended to put Tunisia's GDP growth performances into perspective and to discuss other determinants that contributed to the success of some benchmark economies such as South Korea. Focusing on sectoral transformation of the Tunisian economy will put in evidence the situation of some services supposed to support industrial

activities and the situation of the manufacturing sector itself, relying on specific indicators (Value added, employment, TFP, export sophistication...).

In a second part (section 2), Tunisia's IP choices will be reviewed over a long period. This review aims to see to what extent structural transformation in relation to Tunisian manufacturing happened. Finally, economic and institutional governance impact on Tunisian IP will be analyzed.

Section I: Overall performances of the Tunisian economy: did a structural transformation really occur?

1.1 A preliminary evaluation based on some macro indicators

Throughout the past five decades, Tunisia has observed quite respectable real GDP growth rates which allowed it to boost its development if one refers to the increased level of its GDP per capita. However, Tunisia real GDP growth has followed a saw tooth pattern and the exceptional rates achieved depend to a large extent on some positive shocks (*figure 1*).

Indeed, apart from the exceptional real growth rates observed for the early 60s and 70s, Tunisia has been achieving an average of 5% annual real GDP growth over the last two decades. However, nine years after the structural adjustment (1986-1994) and on the eve of the signing of the association agreement, Tunisia was realizing a modest 2.4% real growth rate and the regional integration with the E.U did not significantly affect its real growth (figure 1). In addition, due to business cycle synchronization with its main trading partners (E.U countries), Tunisia has suffered the consequences of the global crisis, although the rate of 3% achieved in 2010 suggests that external shocks were more or less absorbed[5] (IMF, 2010).

The Tunisian relative performances expressed in terms of real GDP growth also prevented Tunisia from achieving a rapid and significant level of development despite the significant improvement in its standards of living (education, health, poverty reduction...) thanks notably to a mastered demographic transition.

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[3] . The competition council, an institution meant to deal with these anti-competitive practices had a narrow room of manoeuvre. Its chairman is appointed by the head of state and political pressures faced by this institution called into question its credibility as an institution supposed to be independent.

[4] . It should be mentioned that these countries share the similarity of choosing to boost their growth without relying initially on FDI and trade integration. Moreover, South Korea's state interventionism which was favouring conglomerates allowed the emergence of national champions that stimulated growth performances of the economy.

[5] . Thanks to exceptional fiscal measures adopted by the authorities in 2009 to save the exporting sector from the dramatic decrease in exporting activities.

Based on GDP per capita (*figure 2*), we observe that Tunisia came to double its GDP per capita within a period of 30 years moving up from 4,074 U.S $ in 1980 to 8,508 U.S. $ in 2010, while over the same period, a country like South Korea came to more than quadruple its GDP per capita moving up from a 5,544 U.S. $ in 1980 to 26,774 U.S. $ in 2010. Korea's economic growth is correlated to its manufacturing export performances (Page, 1994). Moreover, as pointed out by Rodrik (1995), Korea's export performances should be related to a sound investment policy that was adopted by the government and which consists in favouring priority industries through investment subsidization and facilitation of access to credit. As illustrated by Kim (2012), Korea's development process took place in three stages: a factor accumulation stage during 1960s and 1970s that leaded to the expansion of light industries; a stage of investment in heavy and chemical industries during 1980s and a stage of investments in R&D and innovation during 1990s and 2000s that contributed to the expansion of Korea's high tech industry[6]. This last stage would explain to a large extent Korean export performances of high tech products.

Attracting foreign direct investment (FDI) has helped Tunisia expand its exporting sector by creating an offshore platform dedicated totally to exporting activities. However, FDI realised in manufacturing did not contribute to the expected technology transfer that could enhance the technological content of industrial exports as the larger part of FDI was initially addressed to light manufacturing (textile and clothes particularly). Consequently, beyond the amount of FDI attracted by Tunisia, the quality of these investments did not meet the need of reducing the technological gap between the provider and the receiver.

It is worth noting that since the 1960s, the share of net FDI inflows in GDP in South Korea is less than the one observed in Tunisia (*figure 4*). As argued by Noland and Pack (2007), South Korea relies much more on the purchase of licences[7] to get technology instead

of relying on FDI. However, where investment needs exceeded savings, foreign investment became a necessity to fill the gap (Kim, 1995, ibid.p195).

Tunisia has never had a power to choose the FDI it receives. This can be explained by the desire of the government to use FDI promotion as a mean to create jobs. Then, as evidenced by the incentives offered both in the 1972 Law and in the 1993 unified investment incentives law, policy incentives for FDI was in no way based on a selective approach, the fiscal advantage being the same whatever the sector concerned by the investment. A lack of such a selective approach has also encouraged opportunistic behaviours on the part of some investors (particularly in the clothing industry) that often took the advantages offered as part of a hit and run strategy.

It should be noted however that the downward trend in savings in Tunisia since the mid-60s offers neither the means of a selective FDI policy nor the necessary margins in terms of financial autonomy.

Moreover, while the decline in energy resources was anticipated since the mid-70s, Tunisian authorities of that time did not engage serious reflexions to capitalize national savings in the financing of an economy supported both by a performing industry and a performing services sector that helps to enhance its technological capabilities.

As evidenced by figure 5, South Korea relied on its own increased national savings to finance its development. But aside internal financial resources, South Korea also relied on highly skilled human resources (Noland and Pack, 2007). Indeed, despite the importance of the Tunisian budget allowed to higher education[8] and the free (or quasi free) access to universities, Tunisian skills formation policy reached its limits over the last 20 years and the education system as whole was not ready to face the new economic challenges (T. Abdessalem, 2010).

As shown in *figure 6*, Tunisia was observing low tertiary enrollment ratios between the 1970s and the mid-1980s. However, during

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[6] The Electric and Electronic Industry became a leading industry in South Korea since the 1990s. For more details on the evolution of top ten leading industries from 1970s to 2000s in South Korea, see Table 2 in Kim (2012).

[7] In 1987, Tunisia spent in royalty and license fees 1206,8 thousand US $ while South Korea spent 574300 thousand US $.

In 2011, Tunisia spent 12075,7 thousand US $ while South Korea spent 7301700 thousand US $ (WDI, 2012).

[8] . In 2008, public higher education spending represented 2.04 % of GDP compared to 1.3% in 1998 and about 6.5% of total public expenditures in 2008 compared to 3.37% in 1998.

this period, higher education sector has been able to provide both private and public sector with mid and top level managers. Since mid-1990s, the increasing tertiary enrolment ratio fells much more in a policy of mass formation in general education programs creating by this way a structural unemployment dilemma (World Bank, 2010). By contrast, South Korea who offered a greater access to higher education has favoured more technical formation programs provided by universities that are classified among top 100 universities in the world (Noland and Pack, 2003). Finally, while South Korea was able to recover its expatriated skills to benefit from their experiences abroad, no active policy is adopted in Tunisia to counteract the brain drain.

In fine, if Tunisia has managed to get a good report on its overall macroeconomic management, hence earning international financial institutions respect, it remains that its macroeconomic performances observed over a long period do not seem to reflect the true potential of an emerging economy that may in a short term attain the status of a newly industrialized country. Focusing particularly on indicators such as GDP per capita, savings, FDI, skills formation and export quality, it seems, more than half a century after its independence, that Tunisia is still at the beginning of the road that leads to a high growth path sustained by a powerful industry.

1.2 Sectoral transformation of the Tunisian economy

Since the early 1980s, Tunisian economy has gradually shifted away from agriculture and non-manufacturing towards services and to a lesser extent to manufacturing industries. However, and as evidenced by figure 7, the contribution of key sectors (agriculture, industry, services) has not changed dramatically.

Indeed, while the contribution of agriculture to GDP has been declining since 1990, the more significant contribution to GDP of private services and non commercial services (the latter representing public utilities and administration services) suggests a service based transformation of the Tunisian economy despite an industrial sector (manufacturing and non manufacturing) contribution to GDP of around 30% over the period 1983-2011.

Unsurprisingly, the transformation of the Tunisian economy expressed in terms of sectoral contribution to GDP was accompanied by a sectoral reallocation of employment in favor of market and non-market services (figure 8). As a whole, employment in services accounted for more than half of total employment in 2011 (compared to 33%[9] in 1975), the largest part accruing to private services with 32% (compared to 22% in 1975).

Meanwhile, the share of agriculture in total employment decreased by almost half moving from 38% to 17%, and the employment share of the industrial sector (manufacturing and non-manufacturing) remained stable at around 30%.

The finding of a shift towards a service economy challenges services capacity to play a key role in enhancing performance of other sectors and particularly the industrial sector. In this respect, available data on the entire services sector and notably market services show that their performance are quite remarkable compared to industry and agriculture. As evidenced by figures 9 and 10, services realize the best performance both in terms of value added and absorption rate of skilled workers.

However, this positive assessment of the whole services hides some disparities that exist in the various types of services offered. For example, the performance of transport and communications services measured in terms of growth of labour productivity remains significantly higher than that of other services (table 1).

As evidenced by table 1, the negative growth rate of labour productivity in financial and insurance services is quite disappointing for a category of services being among main backbone services that are aimed to sustain productivity growth. Moreover, regulatory reforms, privatization and the more openess of financial services decided in the framework of multilateral agreements does not seem to contribute to greater efficiency of the sector[10] if one takes into consideration the high cost of financing and credit rationing suffered by

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[9] . This percentage corresponding to the sum of market and non-market services employment share in 1975.

[10] . To these reforms, we should also add the consolidation of the financial sector and especially tax incentives decided in favour of the constitution of provisions for non-performing loans.

small and medium size firms (World Bank, 2007).

As regards transport and communication services performance, significant labor productivity growth should not overshadow the shortcomings of the sector where barriers to entry are high and competition between operators remains low. Indeed, costs of communication services remain high and their quality remains perfectible compared to other countries such as Morocco. Finally, regarding transport services, their greater openness to competition is far from assured particularly in air transport where authorities are still hesitating to engage in an open sky. Moreover, taking into account the predominance of state monopoly on air transport (passengers and freight) and maritime transport, it is unlikely that the sector could observe a significant decrease in prices on a short term horizon unless a deep restructuring of its most representative companies (Tunisair and CTN) is operated[11].

To summarize, the service sector's productivity did not follow its rising weight in the economy. In addition, following OECD classification of knowledge-intensive services, table 2 shows that if the share in GDP of these services has increased steadily, some of the services classified under the same category saw their contribution decline in time (financial services and business services). Thus, it is to be assumed that as a support to other sectors, particularly industry, Tunisia has been able to rely more on the boom in ICT and communication services.

Ranked second after the service sector, industry has observed some transformations despite the apparent stability of its share in GDP. In face of the relative decline of non-manufacturing industries especially in terms of GDP share, value added and skilled labor allocation, manufacturing has become more and more as an alternative to the development of the Tunisian industry.

In overall and over a long period, the manufacturing sector has been able to consolidate its strengths in various ways: by attracting more and more skilled labor, by observing an average growth of labor

productivity in the order of 2.3% during the period 1983-2008 and by enhancing progressively the technological content of its production.

However, as shown by table 3 and despite an average growth rate of 5 % over the period 1983-2010, the manufacturing value added growth has sharply declined over time.

The growth accounting approach (see annex I for methodology) and the breakdown of the labor by level of education allows us to conclude that for the whole period labor contributed 46% to the V.A growth , while the contribution of TFP was near 51% . The decomposition into sub-periods shows a clear trend in favor of TFP at the expense of labor and capital.

However, it can be observed that the contribution of the labor with a secondary level of education (LSE) to the growth of the value added was by far the highest among all factors of production as it was 32.2% throughout the period considered (1983-2010) less than that of the TFP (51%). But, we have to point out, that during the last period (2006-2010), the tertiary educated workers and TFP are increasingly emerging as a key source of manufacturing growth, which could be considered as a main benefit of the upgrading program implemented after the signature of the FTA with the E.U.

The analysis within manufacturing confirms previous results. However, it should be noted that while in food processing, Mechanical and Electrical, Chemical and rubber and Other Manufacturing the contribution of skilled labor approximated by tertiary educated workers has been important and rising during the last period (2006-2010), the situation is quite different in the other industries. In the textile and leather industry, the secondary educated workers have been dominating key sources of value added growth, while in Construction Material and Glass, the negative contribution of the tertiary educated workers seems to indicate that the technology used in this sector is rather intensive in low skilled labor (see Tables 32-37 in annex 1).

But this positive trend and all the programs launched to let Tunisian enterprises acquire the necessary capacities to face competition with the E.U does not seem to have an impact neither on the share of tertiary highly educated

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[11] More details on air transport services are given in a 2007 World Bank Report.

workers (see figure 11 above) nor on the share of technology intensive industries in GDP (table 5).

Although showing a positive trend, the share of high-technology manufacturing industries in GDP remain negligible (table 5). However, Communications and Semiconductors, Pharmaceuticals and Computers and Office Machinery industries have doubled their share in GDP between 1985 and 2007 while Aerospace and Scientific Instruments industries have seen their share in GDP stagnate. The development of the latter should be sensitive to the installation of a production unit by Airbus.

Taking into account the Tunisian industrial classification, the manufacturing sector experienced a rebalancing process between, Textiles, Clothing and Leather (TCL) and Mechanical and Electrical sectors which moved in opposite direction (figure 12). The rise and relative decline of textiles and clothing illustrates two successive transformations in Tunisia's manufacturing sector since the 1970s: a period of rapid diversification away from fuel exports which dropped from 52 percent in 1980 to 13 percent in 2006 and a gradual diversification away from low value added textiles and clothing towards light mechanical and electrical manufacturing which now dominates exports.

But what is problematic, as shown by figure 13, is that textiles and clothing and the mechanical and electrical engineering which are Tunisia's largest exporters and making up about 60 percent of total exports of goods have the lowest value-added rates and are subject to intense competition in European markets.

On the other hand, the distribution of the employed labor force by level of education shows that there is a remarkable evolution of the national average of share of graduates of higher education from 1.6 % in 1975 to 17.3% in 2011 (Fig 11). However, this change does not occurred in the same way in the manufacturing industries since it was noted that during the same period these shares were 0.5% and 10.3% respectively (Fig 11). But it should be noted that these changes have not been the same in all sectors. Thus in the chemical sector they jumped from 2.4% to 22.5% for the same period, while in the Textile

and leather sector they rose from 0.2% to 3.7% (Fig 14).

Looking to export performances, Table 6 shows that from the year 2000 Tunisian manufacturing exports experienced a relative change in their technological content. The share of medium and high-tech exports has been increasing slowly while low-tech exports are declining significantly. The share of the latter dropped significantly from 56.7 percent in 1995 to 38.3 percent in 2009. This gave way to a slow rise in the export of products classified as medium-low tech (from 6.1 to 11.2 percent of total exports), medium-high (17.4 to 30 percent) and high-tech (1.8 to 6.5 percent).

The rise in medium tech exports observed over the last decade or so is explained by the fact that in the mid-1990s, Tunisia abandoned its ambition to build "made in Tunisia" cars and focused on automobile parts and components, in which the country has developed real expertise over the years. The "local content" partnerships built with EU automakers rapidly led to increased participation to EU automobile production networks (France, Italy and Germany mainly) and a double digit growth in exports of engineering and electrical machineries since 1997. As of 2010, this category has overtaken textiles and clothing as Tunisia's largest export sector, accounting for 30 percent of total exports (against 9 percent in 1995).

1.3 Export performances of the Tunisian manufacturing: An in-depth analysis

A. Manufacturing firms profile: An overview

This overview is intended to capture the relative importance of major industries in relation to key variables such as firms' distribution by exporting regime, firms' capital structure ownership, employment, output, value added and exports.

Until 2009, there were 5,756 companies with more than 10 employees in the Tunisian manufacturing. More than half of these companies were operating in two industries: textile and clothing (36%) and food (18%). Over these 5,756 companies, 2,740 are totally exporting units representing 48% of total manufacturing firms. As shown in table 7, the firms that are registered under totally exporting

regime are mostly located in textile and clothing.

According to table 8, textiles and clothing is also the industry that displays the highest proportion of foreign capital companies. Thus, over 1,184 companies totally foreign owned in all manufacturing, more than half (640 companies) belong to this industry.

It should also be noted that foreign capital enterprises totally exporting are highly concentrated in textiles and clothing as shown in table 9.

However, textiles and clothing predominance in terms of exporting firms, foreign capital presence and employment remains quite relative. Indeed, table 10 shows that in total manufacturing, this industry ranks third in terms of production share and second in terms of value added share.

The relative dominance of textiles and clothing in Tunisian manufacturing is further confirmed by its export performances observed over a relatively recent period (2004-2008). Even if textile and clothing exports represent the largest share of total manufacturing exports, it remains that other industries were observing an upward trend in their exporting shares.

As evidenced by table 11, electrical and electronic exports representing more than fifth of total manufacturing exports in 2008 experienced an annual average growth rate of 23% over the period 2004-2008, while over the same period, exports of textile and clothing have increased at a modest average annual rate of 4%. At the same time, other industries such as chemicals, Mechanical and Metallurgical were also realizing important export average growth rates and increasing export shares in total manufacturing exports.

To what extent this recent export dynamic should be considered as the outcome of a real qualitative change in Tunisian manufacturing exports? To answer this question, a more disaggregated analysis is needed to assess performances observed both at industry and product levels. For reasons of data availability, this disaggregated analysis will be conducted only over the period after the FTA agreement.

B. Disaggregated analysis of manufacturing exports: from industries to products

B.1. ISIC classification analysis

Export performances within industries will be evaluated using standard Grubel Lloyd (GL) intra industry trade (IIT) index and the export market share growth decomposition proposed by Deruennes (2006). The relevance of these two indicators is twofold: identifying Tunisian manufacturing specialisation trends and assessing their viability on the EU targeted market.

GL index is used to assess the ability of manufacturing industries to produce a set of standard differentiated products according to "*horizontal specialisation*" scheme (Krugman, (1980); Dixit and Norman, 1980)). The values reported in table 12 are computed on an industry basis using the *International Standard Industrial Classification* (ISIC code) and taking in account observed exports and imports values over the world market for each industry classification.

Results reported in table 12 show that over the period 1995-2010. Tunisia has been progressively developing an IIT based on horizontal specialisation in specific industries such as Electric and Electronic and to a lesser extent in Plastic and Paper. The growing GL index values observed for ISIC 31 and 32 reflects the intra trade increase within the Electric and Electronic industry. However, GL index values corresponding to ISIC 17 and 18 that represent textiles and clothing have declined over the period considered[12]. This result contrasts with the position of textiles and clothing as a major exporting industry. It also demonstrates that Tunisia was losing ground in its specialisation in standard textiles and clothing which is particularly alarming in the context of the end of the Multifiber Agreement.

Beyond this illustration of IIT based on standard quality goods, one need further investigations on Tunisian manufacturing ability to offer vertically differentiated exported goods following the distinction operated by Greenaway, Hine and Milner

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[12]. See annex 3 for GL index used and data on imports and exports of ISIC 17 and 18.

(1995) between horizontal and vertical (high and law quality) IIT. For this purpose, we refer to a recent study realised by Trigo Catalina (2009) who analysed IIT with EU-15 of some Mediterranean Bordering Countries (MBC) such as Morocco Algeria, Tunisia, Egypt and Turkey taking in account the decomposition of IIT into horizontal IIT and low and high quality vertical IIT.

As evidenced in table 13 for the year 2004, Tunisia was much more engaged in vertical IIT than horizontal IIT relatively to its total IIT which is the case for all the countries considered. However, while Turkey was realizing 17% of its vertical IIT in high quality products, most of Tunisian vertical IIT was in low quality (14.8%). It could be then assumed that the association agreement has not significantly participated to an increased specialization of Tunisian manufacturing in high quality goods at least nine years after the FTA with E.U.

Moreover, specialisation trends within Tunisian manufacturing seem more problematic with regard to the viability of exports addressed to EU trading partners markets. Following the export share growth decomposition proposed by Duerennes (2006)[13], the viability of exports should be analysed taking in account three possible effects: the first one (*performance effect*) reflects the ability of each industry to enhance its export share on the targeted market. The second one (*positioning effect*) reflects the quality of the geographic positioning (i.e. to what extent the targeted market is dynamic) of the exports of each industry. The third effect (repositioning effect) is a combination of the first and the second effect.

Starting with textile and clothing industry, it appears according to table 14 that textile (ISIC 17) was observing a steady growth of its export share[14] due to an improvement in its export share on the EU market (performance effect) and in the quality of the geographic positioning of its exports (positioning effect). However,

the clothing industry (ISIC 18) performances have declined significantly. This result is quite problematic at several levels: while textile represents only 1.8% of total textile and clothing enterprises (with only 9 totally exporting firms), clothing represents 68% of total firms in the industry. Moreover, clothing was realising cumulated investments representing 65% of total investment in textile and clothing industry over the period 2004 and 2008 and taking up the major part of European FDI oriented to Tunisian manufacturing.

Furthermore, and as is evidenced in table 14, the dramatic decrease of "global effect" in clothing is explained essentially by a strong decrease in its "performance effect" (values – 0.333%; -0.38 and -0.302). This means that all things being equal (share of clothing in European imports constant), Tunisian clothing was losing export shares on the EU market which is its principal client. The "positioning effect" values (-0.099; -0.051; 0.014) suggests that Tunisian clothing exports were affected by a declining demand over the first and second sub-periods (1995-2000; 2000-2005) the latter sub-period corresponding to the terminal phase of the multifibers agreement (MFA). However, some compensation (though insufficient) is observable over the last sub-period (2005-2010). This compensation is attributable to the evolution of European producers' strategy by the end of the MFA, which consisted to leave low quality clothing products to the east and south Asia producers and to reinforce their capacities in medium and high quality where they have stronger comparative advantage particularly in marketing. Subcontracting clothing activities to Tunisian operators in line with this new scheme could also maintain the competitiveness of European clothing producers.

However, it's worth noting that by the end of the MFA and beyond, it becomes more evident that the Tunisian clothing industry was facing more difficulties even on its principal export destination as reflects its 2008 ranking with respect to Asian competitors (table 15).

Unless Tunisia makes efforts to strengthen the competitiveness of the clothing industry particularly by hardly reducing logistics and transportation costs[15], European firms'

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[13] . The methodology underpinning this decomposition is summarized in *annex 2*.

[14] . The relative performance of the Tunisian textile should be more broadly attributed to a strong competition on the world textile market in a context of declining global demand growth and a better export geographical distribution of strong competitors such as Turkey and East and south Asia (see Unido report, 2009, figures 4.2 page 42).

[15] . Logistics performance index rank for 2007 provided by the Unido report (2009) for Tunisia and the Tunisia's competing

temptation to delocalize production of medium and high quality products in east and south Asia will be growing and this would spell the end of the Tunisian clothing industry.

Alongside clothing, one of main Tunisian exporting industry, leather and footwear (ISIC 19), was observing an important decrease in its "performance effect" meaning that it began to loose export shares on the EU market particularly over the period 2000-2010. The main characteristics of leather and footwear industry summarized in table 16 could help to understand its declining performances.

As shown in table 16, leather and footwear industry has considerable advantages: the majority of firms are totally exporting and a strong FDI presence. However, the indicators underlined in bold, show that the branch has also many weaknesses: only 2,7% of the firms are ISO certified, investments are weak and the upgrading programme destined to the branch did not really boost these investments.

By contrast, Metallic, Machinery and Electrical equipment industries represented respectively by ISIC 28, ISIC 30, ISIC 31 and ISIC 32 appears to be promising industries and the Tunisian government was placing great hopes to insure a structural change of the Tunisian manufacturing particularly through the Electric and Electronic industry which includes ISIC 31 et 32. As evidenced by table 16, ISIC 31 representing electrical equipments realised best performance over the period 2000-2005 pushed particularly by the increased growth of the European automobile industry over this period. However, ISIC 31 observed a negative global effect over 2005-2010 which could be linked to the crises of the European automobile sector that began in early 2008. It is worth mentioning that the main products of ISIC 31 are cables and cable harness used in the automobile industry and switching and control apparels. These two products represent respectively 46,8% and 30,8% of total exports of the electrical industry with 86% of these exports addressed to EU countries.

ISIC 32 corresponding to radio, television and communication equipment seems to be a "rising value" in terms of global effect notably

over the period 2005-2010. This industry was realizing good "performance effect" meaning that it is gaining export shares (value of 0,107) despite the declining dynamic of the European market (positioning effect value of -0,01). ISIC 32 representing the electronic industry has three main products: electronic components, telecommunication products and industrial electronics. These products represented respectively 47%, 16% and 20% of total exports of the industry over the period 2004-2008.

In brief, pattern and trends of Tunisian manufacturing specialization did not observe a significant change especially after the association agreement. Notwithstanding the emergence of an Electrical and Electronics industry that relies heavily on the dynamics of the European automobile market, manufacturing exports remains vulnerable. Indeed, the European market is offering few prospects for the textile and clothing which is a major part of Tunisian manufacturing exports, unless Tunisia develops other capacities on specific niches such as technical textiles. However, Electrical and Electronic industry intended to fill the loss of markets shares registered in the textile and clothing can play a leading role in manufacturing exports through greater diversification of markets and more sophisticated products.

B.2. SITC product classification analysis

A product oriented analysis of exports requires more disaggregated data. In this regard, a three digit level SITC (*Standard International Trade Classification*) data on Tunisia's world exports covering the period 1995-2010 is used to identify Tunisia's main products exported. Insofar as these products are sufficiently representative of manufacturing exports, their revealed comparative advantage and the characteristics of the markets to which they are exported will be examined.

Over the 257 products corresponding to SITC classification, a mean export share (MES) is computed for each product over the whole period 1995-2010. Hence, for each year, export share of product i is computed by dividing Tunisian product i exports on Tunisian total exports of the 257 products. Then, a simple annual mean of export share (MES) of product i is calculated on the entire period. Our

countries is as follows: Honk Kong (8); China (30); Turkey (34); India (39), Indonesia (43), Tunisia (60), Bangladesh (87); Morocco (94).

calculations led to the identification of 10 key products representing Tunisia's top 10 manufacturing exports on the world market (table 17).

As evidenced by table 17, top 10 manufacturing products exported by Tunisia over the period 1995-2010 are quite representative. Indeed, product codes figuring in table 17 represent 64.8% of total Tunisian manufacturing exports. If we exclude energy products which represent 9 %, best export products totalize more than half (55.8%) manufacturing exports, much of which is dominated by clothing industry products (31.5%). Electrical products represented by SITC codes 772 and 773 rank second with an average share of 8.5% followed by chemicals represented by SITC codes 522 and 562 positions (7.8%), leather products with SITC code 851 (4.2%) and food products (SITC code 421) realising 3.8% of total manufacturing exports.

It should be noted however that the revealed comparative advantage (RCA) of these products has not changed in the same way during the period considered. Indeed, RCA values reported in table 18 show that only product codes 772 and 773 belonging to Machinery and Electrical Industry observed a strengthening of their RCA.

By contrast, the revealed comparative advantage of clothing products represented by codes 841 and 842 declined prominently on the different sub-periods. Beyond the downward trend of clothing products RCA, further investigation based on the export dynamics (ED) index[16] shows that exports of these products target declining markets over the period 1995-2010 meaning that these products would no longer have any strategic interest for the manufacturing sector. It should be noted that ED index allows a commodity classification by comparing commodity i export share variation between two years denoted ΔS_d and world's export share variation denoted ΔS_w for the same commodity. ED index values reported in table 19 were computed taking the difference between 2010 and 1995

and values of 3 and 4 are to be considered as bad classifications[17].

As evidenced by table 19, 70% of Tunisia's top 10 manufacturing exports over the period 1995-2010 are situated in bad positions. Moreover, excluding SITC position 333 which belongs to the extractive industry, it appears that all clothing products are classified in the category of "*Strategic Retreat*" while representing 31.5% of total manufacturing exports. Chemical products corresponding to SITC codes 522 and 562 are to be considered as "*missing opportunities*" while the only satisfaction comes from SITC position codes 772 and 773 belonging to Machinery and Electrical industry and which represent "*Rising Stars*" products[18].

However, if electrical products represented by SITC positions 772 and 773 reveal a true potential for manufacturing export diversification that could offset the decline of clothing exports, it remains that the level of sophistication of position products 772 and 773 remains low. Based on Hausman, Hwang and Rodrik (2007), an implicit productivity indicator (PRODY) is computed [19] to appreciate the sophistication level of all SITC product positions[20]. Among the 257 positions

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[17]. The classification is operated in the following manner:

- ED takes value 1 if $\Delta S_d \succ 0$ *and* $\Delta S_w \succ 0$. In that case, the commodity is classified as a "*Rising Star*".

- ED takes value 2 if $\Delta S_d \succ 0$ *and* $\Delta S_w \prec 0$. In that case, the commodity is classified as a "*Falling Star*".

- ED takes value 3 if $\Delta S_d \prec 0$ *and* $\Delta S_w \succ 0$. In that case, the commodity is classified as a "*Missing Opportunity*".

- ED takes value 4 if $\Delta S_d \prec 0$ *and* $\Delta S_w \prec 0$. In that case, the commodity is classified as a "*Strategic Retreat*".

[18] Although we were dealing only with top 10 exports which are well representative of Tunisia's manufacturing exports, we decided to focus on an enlarged spectrum of products with a revealed comparative advantage for both 1995 and 2010. Combining RCA and ED index, the initial SITC sample (257 products) used reduces to a sub sample of 39 SITC products. The enlargement of the exporting products spectrum does not significantly change the picture. However, it appears that the TCL industry can rely on some promising niches such as product codes 612 (Manufactures of leather, n.e.s.; saddlery & harness), 658 (Made-up articles, of textile materials, n.e.s) and can exploit some missing opportunities represented by product codes 843 (Men's or boy's clothing, of textile, knitted, croche) and 844 (Women's clothing, of textile, knitted or crocheted). n.e.s = Not Elsewhere Specified (see SITC classification).

[19]. The methodology underpinning the computation of PROD indicator is summarized in *annex 2*.

[20]. Implicit productivity indicator (PROD) was computed for 257 products belonging to the SITC Revision 3 classification and exported by 23 countries: Argentina, Austria, Belgium, Brazil, Canada, China, Denmark, Deutschland, Finland, France,

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[16]. This index is inspired from the *World Bank Handbook on Trade and Development.*

corresponding to SITC classification, only 20 product positions showing the highest implicit productivity level are selected. The product sample named "Top 20" ranks products according to their average implicit productivity computed over the period 1995-2010 and measured in thousand US dollars. Table 20 provides Tunisia mean export share (MES) for the same 20 SITC positions over the same period.

As shown in table 20, machinery (*SITC positions 716; 718; 725; 727; 744*), paper (*SITC positions 251; 641*) and chemicals (*SITC positions 531; 541; 542*) are among the most sophisticated products[21]. It is worth noting that Tunisian "rising stars" products represented by SITC positions 772 and 773 do not figure in this top 20. Moreover, in relation to this product selection, Tunisia realizes a small exporting share. Summing up Tunisia's export share for the 20 SITC positions, we obtain a 1%. From this point of view, Tunisia lags behind some Central East Europe countries and is largely overtaken by Jordan whose performance is mainly explained by its ability to export pharmaceutical products which figure among most sophisticated products (SITC 542).

However, reasoning on the top 20 would give an incomplete picture on the sophistication potential of a country's exports. Therefore, the extension to all products is necessary. The measure of export sophistication index (EXPY) proposed by HHR[22] allows to compute an export sophistication value (or revenue) proportionally to the implicit productivity level of each product exported.

Following this procedure, results evidenced in figure 16 shows that Tunisia and other countries in the MENA region achieve quite comparable performances in terms of export sophistication with a notable exception for Jordan and Turkey. It is to be assumed that these two countries were favoured by higher exporting shares of other sophisticated products that do not appear in the top 20.

Beyond the absolute measure of export sophistication based on HHR indicator, it is to be noted however that the Tunisian potential of export sophistication remains below what is predicted by the level of its GDP per capita[23]as shown in figure 17. This means that Tunisia is called to expand its technological capabilities in the context of an industrial policy targeting manufacturing products with high potential of sophistication.

Section II: Structural transformation and IP in Tunisia

According to Pack and Saggi (2006), " industrial policy is basically any type of selective intervention or government policy that attempts to alter the sectoral structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention, i.e., in the market equilibrium. Policies designed to improve the productivity of individual sectors and firms are a subsidiary but often pursued objective. At a general level, there is room for government intervention either when markets are characterized by some distortions (such as externalities or presence of market power) or because they are incomplete (for example futures markets for many goods simply do not exist)."

The analysis of the Tunisian manufacturing sector presented in section 1 demonstrates that Tunisia was beginning to suffer the constraints of its growth model by the end of the 2000s. Indeed, weak prospects for textile and clothing industry which remained unskilled intensive labor and the insufficient sophistication of a rising mechanical and electrical industry could not meet the challenge of unemployment and particularly unemployment among graduates of higher education. Meanwhile, policy makers' awareness of the necessity to enroll in a new productive model came somewhat late. While a new production model based on innovation-driven productivity was at the heart of the Tunisian IP started in the mid 2000s, it remains that many things has been programmed simultaneously and over a relatively short period of time (within five years): strengthening the foundation of a knowledge-based economy, increase the share of R&D

Hong Kong, India, Italy, Japan, Korea (south), Malaysia, Mexico, Spain, Singapore, Sweden, Switzerland, United Kingdom, United States.

[21] . Hence, our computations are in accordance with the ranking of manufacturing activities according to their sophistication level operated by Eberhardt and Teal (2007) and Unido (2009).

[22] . HHR (2007) method of computation of an export sophistication index is detailed in *annex 2*.

[23] . The relationship between export sophistication and GDP per capita growth has been initially studied by Imbs and Wacsiarg (2003) and later by Carrere and al. (2007).

expenditure, encourage firms, through fiscal incentives to make greater innovative efforts, building technology poles, etc..

Although these public investments are necessary, they often need time to produce significant results provided they are allocated efficiently. Moreover, even if the various measures adopted reflect the interest of policy makers to promote a national system of innovation, the approach adopted has not been free from improvisation. Hence, the scientific research department, initially attached to the Ministry of Higher Education, was later transferred to the Ministry of Industry and once again attached to the Ministry of higher education. In 2007, the authorities decided to create the Research and Innovation Promotion Agency (ANPRI) without assigning to it a specific mission while at the same time, the National Upgrading Bureau (Bureau de mise à niveau) was piloting all upgrading programs. The dissemination of the results of research activities listed in national priority fields (agriculture, energy and water, biotechnology, health ...) was not obvious and the expected impact on the industrial sector was not clearly established in the absence of any serious evaluation. The creation of decentralized technological poles did not favor the expected networking effects within these poles. Furthermore, lacking technological attractiveness, these technological poles have not generated major interest from large multinationals (except ICT pole of El Ghazala) as evidenced by the absence of any strategic technology partnerships. Finally, investments that would carry technology (investissements technologiquement porteurs) and which are intended to support the commitment of the manufacturing sector in a sophistication process have not found the necessary financial support.

But, this lack of financial support cannot explain everything, even if it remains crucial. Indeed, a structural transformation supported by innovation requires a serious commitment of the private sector in a sophistication process based on "self discoveries" as evidenced in Hausmann and Rodrik (2003). However, self discoveries are costly to develop and the private sector would not engage in them as it could not earn their entire private returns in presence of externalities. In other words, neither private firms would be sufficiently incited to engage in self discoveries nor the financial sector would accept to assume their risks. This situation induces a sub optimal investment level in self discoveries.

In the case of Tunisia, the return on technology investment would be adversely affected in part by the absence of an intellectual property rights protection system anchored to the standards of developed countries. In another part, private sector would perceive returns on investment in technology as being low especially as the system of governance is not acting in the sense of reducing transaction costs. Ultimately, even most risk-lovers potential investors will prefer the status quo.

From this condensed summary, a series of question arises: first of all, it should be asked to what extend the desired structural transformation of the Tunisian economy was initiated on a good foundation? Secondly, if the manufacturing sector was intended to be the locomotive for this transformation, then to what extent the implemented IP was consistent with the allocation of resources devoted to it? Finally, beyond the pursued IP, was the promoter of the structural transformation guarantying to it the optimal economic and institutional governance?

Answers to these questions will be guided by the evaluation of policies conducted over recent periods and especially beyond 1995, year of the signing of the association agreement with EU. In a first step (2.1), it will be necessary to focus the actions that have been undertaken to engage a structural transformation in line with an innovation-driven growth model. In a second step (2.2), an assessment of industrial policy choices will be established. This assessment will highlight inconsistencies between the means used to achieve the goal of higher productivity - major challenge for any industrial policy within the meaning of Pack and Saggi (2006)- and the specific goal of technological catch-up sought by policy makers through a structural transformation based on manufacturing. In a third step (2.3), it will be necessary to show how economic and institutional governance of Tunisian IP imposed constraints on the development of a new model of production based on private initiative.

2.1 Innovation-driven structural transformation: what has been done in Tunisia?

The Tunisian production model is characterized by the dominance of sectors intensive in low-skilled labor and where value-added rates are significantly low (Figure 13). This is particularly the case of the export sectors such as manufacturing and tourism. The growth of these industries means greater demand for unskilled labor.

Consequently, to remain competitive and to absorb highly skilled workers, Tunisia needs to progress in the value chain and the technological ladder and promote new investments in skill intensive sectors which will require further reforms to strengthen competitiveness and promote the emergence of new sources of growth.

In order to assess the ability of the Tunisian economy to succeed this transition, we propose in a first part to benchmark Tunisia in the knowledge economy vis-à-vis a set of countries (2.1.1). The second part will focus on the manufacturing sector and notably on the various programs supporting its upgrading and promoting its exports (2.1.2).

Tunisian investments in the knowledge economy

Can be defined as investment in knowledge "*expenditure on activities to improve the existing knowledge and/or acquire new or disseminate knowledge*" (DSTI, OECD, 2001). We can attempt to capture Tunisia's creation of knowledge effort and performance through a few indicators/factors typically considered important: education and training, innovation, and equipment and ICT services.

Investment in education

It should be noted that Tunisia stands out compared to the average of the groups to which it belongs (low average income and MENA) as well as the average of the other groups by a remarkable effort in education spending both at the national level, and at the level of expenditure per student. The result is that the school enrolment rate for the age group 6-24 years rose from 37.4% in 1975 to 53.1% in 1984 and near 70% in 2003, with parallel shift of the enrolment rate in higher education from 5.7% in 1984, to 12.5% in 1994 and 23.2% in 2001, with the aim to reach 30%. The enrolment rate the age group 6-14 years reached 94.5% in 2009.

The public spending on education accounted for 7.1% of GDP and 20.5% of the total public expenditures in 2007. The higher education spending rose from 3.8% of the total public expenditures in 1980 to 4.8% in 1990 to reach 6.5% in 2008 (table 3), and its proportion to GDP has almost doubled between 1990 and 2008, with a stabilization at 2.0% since 2004. Therefore, in less than ten years the number of students has almost tripled, from 113,000 in 1995-1996 to 327,000 in 2004-2005 to finally reach 346.000 during the 2009-2010 academic year.

Investment in R&D

The R & D intensity which is measured by the ratio of expenditure on R & D relative to GDP is influenced by the level of development of the country, the skills level of the labor force, the public expenditures on armaments, and the industrial specialization, i.e. the relative share of high-tech industries. At the level of OECD which shows the highest average, Israel and Sweden dominates with the highest rates (4.66% and 3.70% of GDP in 2008) followed by Japan, South Korea, Switzerland, Finland and the United States. Ireland and South Korea experienced the highest growth rates in the 1990s. Moreover, if we compare the spending, China ranked in third position in 2003 after the United States and Japan, and according to the forecasts for 2011 with $ 153.7 billion it should supplant the Japan ($144,1 billion).

Tunisia provided since 1998 remarkable efforts to catch up by raising the ratio of Gross Domestic Expenditure on R&D (GERD) relative to GDP from 1% in 2004 to 1.25% in 2009. This effort enabled him to overtake Turkey and India and to move closer to China. The same performance was realized at the level of the R&D personnel which allowed Tunisia to improve the ratio of Total researchers for one thousand jobs. This ratio which stood at 2.6 in 1998 rose to 3.5 in 2002 and 6.0 in 2008. It is certainly higher than that of Turkey and China, but still very far from that of South Korea and certainly of that of U.E with which the Tunisia established a Free Trade area. This F.T.A is and will put more Tunisian companies in direct competition with their European partners. This raises the problem of their ability to cope with this

competition when we see in table 5, that in 2008 Tunisian R & D effort was funded at only 18.9% by local companies compared to near 55% in the E.U, 45% in Turkey and near 74% in Korea. One possible explanation is the structure of Tunisian companies. According to a recent study of World Bank (World Bank, 2010), more than 95% of Tunisian companies are small, which limits their capacity to innovate.

Information and Communication Technology (ICT) expenditures

As defined by the OECD, ICT spending covers the software and services, equipment and telecommunications services. On average the OECD countries spend 7% of their GDP in ICT much of which relates to telecommunications. Since 1997 spending increased significantly.

According to Artus (2004), this phenomenon lies to the fact that the development of ICT has multiple effects on the economy. The main ones are rapid growth in productivity, a decline in structural unemployment and the increase of the average qualification of the population. He concluded by noting that that the level of qualification of the whole population or young people is the highest in countries where the development of ICT is the fastest (USA, Japan).

With regard to Tunisia, the latest available data show that the share of ICT spending increased from 4.8% of GDP in 2000 to 6.0% in 2007. It should be noted here that a substantial share of expenses is allocated to telecommunications services. In addition, we note that relative to GDP, expenditures of Tunisia are at the same level as those of Egypt and France, but significantly less than those of China, Morocco and in particularly of those of Jordan and South Africa. Furthermore, the contribution of ICT to the GDP growth continued to grow. Indeed, this contribution increased from 3.9% in 2001, to 8% in 2006 and reached 10% in 2008.

Manufacturing upgrading and export promotion policy

The Tunisian increasing integration through trade liberalization was likely to increase competitive pressure on its manufacturing sector. Textile, clothing and leather industry whose main exports target the European market was particularly concerned, and competitive pressure were called to intensify further in this industry by the end of the Multi Fibre Agreement (MFA) originally scheduled for year 2005 and extended for a supplementary period of 3 years.

In this context, Tunisian policy makers have opted for manufacturing upgrading combined with a new strategy of export promotion. Before detailing the actions adopted to support these strategic choices, it is important to note that Tunisia has opted for partial and gradual trade openness:

▪ Tunisian trade liberalization was more pronounced *vis-à-vis* its strategic business partner namely the European Union (EU). However, Tunisia is still continuing to be less opened to trade with other regions around the world excepting Arab countries engaged in the Agadir Agreement and those involved in the GAFTA.

▪ Tunisian trade liberalization with the EU was gradual. Policy makers have opted for a gradual tariff dismantling based on four lists of products offering by this way the necessary adjusting period for local industries producing final goods at low competitive potential. Since 2008, no tariff is applied on imports coming from EU. Moreover, the expected negative impacts on fiscal revenue were partly offset by VAT and other local tax (consumption tax).

While fixing its geographical trade orientation and planning its trade openness through a precise timetable for tariff dismantlement, Tunisia has embarked on an inevitable modernization path of its industry. At that time, namely the mid-90s, Tunisia's industrial and trade policy seemed to suffer no inconsistency. There are several reasons for this: On one hand, EU has been and remains the main Tunisian trading partner. On the other hand, while trade regionalization became an inescapable reality, Tunisia had to follow a trend that is supposed to offer many advantages: accessing a wider market with a great economic potential and putting the necessary pressure on a protected and poorly performing manufacturing sector.

However, the global crisis of 2007 that affected the economic dynamism of the EU has led some influential analysts to challenge Tunisia's integration choice in this economic space while proposing a country's trade integration with other more dynamic areas24. But even if the position of these analysts is understandable, it remains paradoxical, for at least three reasons: First, since November 2012 Tunisia has negotiated and obtained the status of privileged partner from the EU. Second, assuming that Tunisia has been "able" to initiate other regional agreements (with Southeast Asia for example) there is reason to question if the country could cope with stronger competitive pressures! It should be noted that referring to the most recent Tunisia's trade policy review (WTO, 2005), Most-Favoured Nation (MFN) tariffs applied by Tunisia to the rest of the world were significantly higher than mean tariff rates all sectors included. Third, it makes wondering if such new agreements could allow the funding of Tunisian industrial upgrading as was the case under the FTA with EU?

Finally, it's worth noting that the crisis affecting South-East Asia countries at the end of the 90s has not led them to question their regional integration. Taking appropriate measures, these countries have achieved an out of crisis at the top thanks notably to innovation and technology (Kim, 2012).

Tunisian Manufacturing upgrading programme

Upgrading program of the Tunisian industry (PMN) was launched in 1996. Its main objective was to prepare Tunisian enterprises to the requirements of free trade with the EU. Concretely, this program should enable firms to improve their competitive position in terms of price and quality of goods exported and to enhance their technical and business expertise

to adapt to the needs of the European market demand.

The PMN consisted of three phases: a first phase of five years (1996-2000) devoted mainly to prepare Tunisian industry so that it can adapt to international competition. During this phase, the upgrade has helped consolidate the physical and intangible investments of all firms and contributed notably to the financial restructuring of small and medium enterprises.

The second phase (2000-2005) corresponds to the phase of consolidation of the upgrade through improving the business environment by promoting public services that support industrial activities (industrial zones, providing utilities, promotion of economic information...). This second phase also resulted in building support structures such as the creation of technical centers.

The third phase beyond the year 2005 corresponds to the phase of modernization of the industry through the promotion of certification and standardization of products and processes, the development of coaching and the intensification of innovation effort. Upgrading of the industry mobilized a budget of about $ 2.5 billion, 60% of which was financing the first phase and 40% financing the second. This funding mechanism was further complemented by an array of tax incentives in particular with regard to the third phase leading to go beyond the measures contained in the Investment Incentives Code of 1993. It should be noted that the choice of beneficiary companies was made on the basis of advice given by specialized institutions (INNORPI, API) and the banking sector when the funding provided by the State does not cover all the needs of financial upgrading of the firm.

Table 21 gives an idea on the distribution of the upgrading effort between different industries as well as the number of recipient firms according to their industry affiliation.

Export promotion policy

Tunisian export promotion policy does not build on a real strategic trade policy. From the perspective of the manufacturing sector, the dynamics of exports has been engaged since the early 70s through the enactment of Law 72-83 providing incentives for foreign direct investments in off- shore activities, later supplemented by the law of investment

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24 . A 2008 report evaluating Tunisian exports competitive position realized by the Tunisian Institute for Competitiveness and Quantitative Studies (ITCEQ, its French acronym) was particularly insisting on the limits of Tunisia's foreign trade anchorage vis-à-vis EU. In this report, it is indeed stated that "*nearly 80% of Tunisian exports are addressed to a low dynamic market, namely the EU, against only 20% oriented to generally expanding markets (NAFTA, South East Asia and the Arab World)*". The same report then states that "*it is imperative for Tunisia to geographically diversify its exports, as the tariff dismantling under FTA with the EU would be likely to strengthen foreign trade with this area to the detriment of other areas (diversion effect)*".

incentives (Code d'Incitation aux Investissements, French acronym) of 1993, which generalized the granting of incentives for on-shore activities partially exporting and even for activities in the sheltered sector.

Export promotion is mainly ensured by CEPEX created in 1973 under the authority of the Ministry of Commerce. Its main missions consist in assessing export assistance and organizing export promotion actions (trade fairs, foreign exhibitions, visits of prospective buyers...). CEPEX has a budget of more than 20 Million TD. This organization also manages the fund for the promotion of exports (FOPRODEX, French acronym) created in 1985 and dedicated in part to funding, in the form of grants and loans, export transactions (including partial subsidization of transport costs). FOPRODEX also supports market studies and provides assistance missions to firms (market prospecting, advertising, access to foreign markets, training of specialized staff, and recruitment of higher education graduates). Finally, foreign trade insurance is entrusted to COTUNACE, a public institution established in 1984.

Beyond the large number of stakeholders involved in the mechanisms of export support (Ministries, CEPEX, technical centres, Chambers of Commerce, Mixed Chambers, professionals and other decentralized structures) which poses serious coordination problems, strategic thinking of export promotion is the prerogative of the High Export Council (CSE, French acronym), created in 1997, which will be transformed a few years later (in 2000) in the High Council of Export and Investment (CSEI, French acronym) put under the Head of State.

Apart from sectoral strategic positioning studies which are not very informative in their summarized versions[25], the only official document available is the *« National Consultation on Exports »*, conducted in 2006 by the Ministry of Commerce and Handicrafts and involving all stakeholders (including professionals). Despite its highly political connotation, this document nevertheless gives an idea about the main axes of the export promotion strategy adopted at that time. Outside services, the consultation sets

priorities on 3 industries: textile, clothing and leather (TCL), Mechanical and Electrical (IME) and agribusiness (IAA). The imperative of exports upgrading is also cited.

Regarding access to foreign markets and trade facilitation, main components of the export promotion policy, Tunisia has benefited from two Export Development Programs (PDE, French acronym) financed by the World Bank and known under EDP1 (launched in 1999) and EDP 2 (launched in 2004). These two projects each were having a FAMEX (Access Facilitation to Foreign Markets) component. Budget funds are shared between the State, the World Bank and beneficiaries firms.

Sectoral distribution of FAMEX budget was consistent with the choice of priority industries. This observation is verified taking into account the belonging sector of recipient firms. Hence, FAMEX funded half of companies belonging to TCL, IME and IAA (Lakhoua and Fehri, 2006).

On trade facilitation, financial assistance provided by the World Bank under EDP1 and EDP2 has reduced the cost and duration of foreign trade operations through the automation of customs procedures. Reforms implemented have indeed led to the realization of the project "liasse unique" for customs documentation and permits also computerized transmission of documents via a centralized computer system called *Tunisia Trade Net* (TTN). Specifically, this reform has led to a significant reduction in the transit time of goods in Tunisian ports notably for products not requiring specific control (in case of such products, the clearance time reduced from three days to 10 minutes).

2.2 Structural transformation and IP: was the approach adopted successful?

Investments in Knowledge economy: mitigated results!

The immediate output of the investments in knowledge economy can be approximated by three indicators: Education and training, performance in terms of technological innovation and the diffusion of ICT.

The results of the investment in education

Table 23 shows the distribution of the employed population by level of education. We note that between 1975 and 2008, there

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[25] . Available on Innovation and Investment Promotion Agency (APII) website in the form of brief summaries.

were eight-fold increase of the labor force with a level of tertiary education, a significant increase of the employed labor force with a secondary level and a remarkable regression of the share of the illiterate. Moreover, the share of graduates in science and engineering increased from 32 to 37% of the total of graduates between 2003 and 2009. What seems consistent with the effort made by the authorities in the field of education.

But what is not in concordance with the effort made by the State in the field of education, is the structure and the unemployment rate by level of education of the workforce (tables 24 and 25). Indeed, in both cases workers with the highest level of education see their situation deteriorate during the period. Thus, between 1975 and 2008 graduates of tertiary education have seen their share in the unemployed increasing dramatically to represent a quarter of the unemployed and at the same time their unemployment rate multiplied by ten.

Table 25 shows that in 2008, there is a clear discrepancy between the rate of unemployment of the highly educated workers and that of the non-qualified. Indeed, the rate of unemployment among graduates of tertiary education is much higher than the national average while that of workers without qualifications is lower. These figures confirms that intense utilization of low skilled labor is one of the main characteristics of the Tunisian production model.

This phenomenon has some effects on the labor composition by qualification (Table 26). Indeed, the share of high-skilled workers ranged from 2.5% in 1975 to 3.5% in 2004, which is significantly below the rate displayed by the OECD countries[26] . The share of workers with medium qualification ranged between 5.8% and 6.3% during the same period, which gives a rate of 90% for the unskilled workers in 2004.

This phenomenon is due, as already mentioned, to the structure of the Tunisian industry which is dominated by SMEs (small more than medium). It is also due to the mismatch between the supply and demand for skills, and also to the indirect cost of labor, to the rigidity of the labor market, and to the

protectionism which benefited to Tunisian enterprises for a long time, etc. To try to resolve the problem of the mismatch, government set up a network of Higher Institutes of Technological Studies with the underlying objective of training a labor force more adapted to the needs of the small firms (training of technicians in various field).

Two consecutive programs have been implemented, the Tunisian industrial restructuring program (Programme de mise-à-niveau) and the industrial modernization program, in addition to many incentives to increase the hiring of graduates from the University in order to increase the ratio of qualified workers over non-qualified workers. To fully achieve their objectives, they must fit into a perspective of complementarity between technology policy and the reform of the markets of labor, products and capital and the reforms of education and training.

Results related to the innovation effort: patent deposits

In terms of technological performances, the most common indicator is the patent. He is regarded as the output of R & D spending. The invention stock existing at the international level is distributed unevenly. In 2010, approximately 71% of the patent applications at the level of the triadic family (USPTO, EPO, Japan) was performed by the U.S, Japan and Germany, with a growing share of China and Korea

At the level of Tunisia (table 28), 6320 patents have been deposited between 1983 and 2009. The analysis by origin shows that 82% of patents have been deposited by nonresidents. Also over the period 1975-2008, of 53 applications to USPTO only 23 were selected.

If we look to the profile of the depositors over the 1990-2004 period (Table 29), they are mainly broken down into three categories: Firms, individuals and research centers. If we take into consideration all the depositors, we may observe that 77% are firms, 20% are individuals and 3% are research centers. Furthermore, if we take into account the patents deposited by foreigners, we notice that nearly 92% were made by firms. But the trend is reversed entirely when we consider the patents deposited by nationals. In fact, 70% of the patents were deposited by individuals and only 20% by firms whereas 10% were made by

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[26] In 2004 the share of professionals and technicians in the services sector was between 20% and 45% and between 7% and 27% in the manufacturing sector (OECD, 2007).

research centers (affiliated to three big engineering schools: those of Tunis, Sfax and Gabes).

This situation raises important questions with regard to the assessment of the inventive activity within the Tunisian economy. The patents deposited by individuals give rise to two problems: the first is that the effort which was made is hard to quantify and the value itself of the patent is not certain. The second is that the patent, in most cases, has little chance of being exploited except if the individual himself undertakes to apply it subject to an investment. One possible solution would be to involve the venture capital.

Some studies that have analyzed the behavior of French firms which deposit European patents comes to the conclusion that the firm's size and its appurtenance sector play a crucial role on the firm's propensity to patent. Furthermore, they concludes that the percentage of the innovating firms which patent goes up as the number of employees on its payroll gets higher. In absolute value, the funds and employees devoted to research are an increasing function of the size of the enterprises. The number of inventions, linked to the research efforts, follows to a rising curve in relation to this size. So does same as the number of the deposited patents.

The policy of setting-up technological parks along with incentives to investment in R&D should normally bear fruit in the medium term both at the level of the share of the private sector in R&D spending and at the level of patent deposits.

Weaknesses of manufacturing upgrading and the export promotion strategy

Weaknesses of the manufacturing upgrading programme

The Tunisian industrial upgrading program (PMN, its French acronym) has been subject to periodic evaluations both by authorities (ITCEQ, 2010) and occasionally by other independent studies (Femise, 2007; Jendoubi and Goaied, 2007).

Academic analysis of PMN has shown that compared to firms not benefitting from this program, those who have adopted it performed better through enhanced technical efficiency

(Jendoubi and Goaied, 2007). A Femise report realized in 2007 proposed to evaluate similar PMN in different countries (Algeria, Morocco, Egypt and Tunisia). Concerning Tunisia, it was concluded that the implementation of this program did not affect country's technological indicators. Finally, from the perspective of local public institutions, companies involved in PMN were able to better integrate and appropriate knowledge (ITCEQ, 2010, p15-16) compared to firms not covered by this program (sample control).

The observation of the progress of this program until March 2009 shows that it benefitted to all manufacturing sectors but with uneven distribution investments between the 2962 beneficiaries.

As evidenced by table 30, PMN's investments allocation was more directed towards the accumulation of physical capital at the expense of intangible assets, the share of investment in equipment representing almost 8 times those in intangible assets despite the incentives granted for intangible assets. Indeed, the premium rate paid with respect to the cost of these intangible investments has increased from 50 to 70% since 2005. However, it is well known that the returns on intangible investments are delayed in time and that their contribution to firm's productivity occurs in medium to long term. Therefore, the support to intangible investments was not synchronized especially with international practices and also with the needs of short term technological catch-up and faster convergence.

In addition, the data reported in table 30 above corresponds to cumulative investment until 2009 first quarter, reflecting a true offset to the options selected from the year 2005 and consisting in a transition to a new generation of investments called PTI (Priority Technological Investments), part of phase II of PMN program untitled "*structuring programs and related*"[27] and whose components are: The adoption of quality standards, *Coaching,* financial restructuring and IPO (Initial Public Offering) program, the equipment of research laboratories and networking.

It should be noted that the stated objectives of PMN's phase II was the sustainability of

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[27] . Phase I consisting in firm's environment upgrading. Further details are available in (ITCEQ, 2010)

Tunisian companies and the mastery of technology and innovation, objectives expected to contribute to greater firms and country's competitiveness. However, according to ITCEQ, structuring and related programs supposed to be carrying a larger industrial sophistication were insufficiently implemented. This is illustrated by the implementation of the specific networking program[28] which has reach only a 60% completion rate and the IPO program with a completion rate of 24%. All this in a context where funding innovative activities by traditional banking sector did not play in full (the rate of non-performing loans explaining credit rationing by banks) as well as SICAR, a financial product supposed to be adapted to leverage risky innovative projects. Box 1 provides all PMN's program deficiencies as identified by ITCEQ in their 2010 report:

Box 1: PMN's major deficiencies as identified in 2010 ITCEQ Survey

Corporate Finance

- Financial institutions other than banks are not involved enough in the financing of investments (SICAR, 1.5%; Leasing 3%, Stock Exchange Market, 0.67%).

-The guarantees required by banks are considered severe reaching 155% of the loan amount

Company management

- The contribution of PMN appears insignificant in matters relating to financial management and personnel management.

Human Resources

- The PMN has not exerted a significant effect on improving the qualification of human resources.

ICT

- The activity of e-commerce has not progressed sufficiently in recent years.

R & D[29] and Innovation

- Collaborations are mostly limited to R & D firms.

- There is a lack of information about the incentives offered by the State.

- There is a lack of innovation in marketing

- There is a virtual absence of partnerships between companies in innovation.

- There is a weakness in terms of networking.

- There is an obvious weakness in the acquisition of patents and licenses and the registration of trademarks.

- An important part of innovation projects is not completed due mainly to lack of funding.

Structures involved in the upgrading process

- Services quality of some structures are deemed unsatisfactory

- Slow release of investment premiums due to administrative delays in certain structures.

- Poor communication about the program supported by industry upgrading office (Bureau de mise à niveau). The absence of official statistics hampers any attempt at serious evaluation to guide public authorities.

- The multitude of stakeholders in the implementation and monitoring of PMN increases inertia (time and transaction costs).

Firm's Competitiveness

- Firms involved in PMN were not sufficiently encouraged by this program to have a more

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[28] It is significant to note from the survey conducted among companies by ITCEQ that 70% of companies who declare developing innovative activities confirm their low involvement in partnerships preventing them efforts duplication of R & D investments. A more recent survey (2012) carried out by the Arab Institute of Business Managers (IACE, French acronym) on a sample of 400 firms also shows that entrepreneurs have very little interest in the opportunities offered by network externalities.

[29] . Estimation of research and development efforts in Tunisia is subject to many amalgams between basic research, applied research and research and development. Furthermore, evaluating R & D activities must be done with appropriate measures, particularly in terms of capital investment, and the most appropriate measure of R & D output should be the number of patents. In the absence of accurate measurements, it is difficult to have a reliable estimate of the intensity of private sector R&D efforts. Finally, it should be noted that the available data on Tunisian R&D is confusing operating expenses and capital expenditures thereby masking the real effort undertaken in terms of technology capital accumulation.

Source: ITCEQ (2010)

This global review of PMN's shortcomings identified in Box 1 above clearly demonstrates a shared responsibility of policy makers, the financial sector and private managers.

The record previously established on PMN covers the period 1996-2009 and was published in 2011. Did the Tunisian Ministry of Industry, Energy and SMEs ignored PMN's shortcomings during that period? Did it resolve these shortcomings? In 2008, this Ministry realized a study entitled "National *Industrial Strategy Horizon 2016*". A reading of the summary of this study shows that industrial upgrading is an essential objective to ensure greater sophistication of Tunisian exports. Furthermore, the study focuses on the limits of cost-based strategy adopted so far, given the strong Asian competition on niches based on cost competitiveness. The same study also highlights the importance of developing collaborative networks organized around specialized clusters in textile clothing and leather (Cluster of Monastir), food and beverages (Cluster of Bizerte), mechanical, electrical, and electronic equipment(Cluster of Sousse) and ICT (clusters of Tunis El Ghazala and Sfax).

Although it provides the bulk of a roadmap for an industrial strategy designed to enhance industrial performances and exports sophistication, this study is in contradiction with the reality of the PMN program at that time. Indeed, comparing PMN program performances and the ambitious objectives fixed in this strategic study, it is to be concluded at the existence of a real time-inconsistency problem. Said differently, it makes wondering how to implement such an ambitious industrial strategy without having previously resolved all deficiencies of the PMN program and especially the structuring part of it (phase II).

Weaknesses of the export promotion strategy

Tunisia's export promotion policy had some shortcomings that we locate in the following four aspects.

a. Limited impact of FAMEX

According to a recent World Bank research paper (Cadot and al., 2012) evaluating the Tunisian FAMEX export promotion program, it is clearly evidenced that this program did not affect significantly the growth rates and the export levels of beneficiaries compared to non-beneficiaries firms. Moreover, even if the exports of beneficiaries did remain more diversified, this diversification did not translate into lower volatility of exports and FAMEX program did not contribute to reduce this volatility probably due to the failure of beneficiaries in their experiment of new markets/products, to their choice of risky destinations or to a possible correlation between returns on their existing exporting markets and those newly targeted. Finally, the same study concludes that FAMEX program did not produce spillover benefits to non-beneficiaries firms.

As underlined by Cadot and al., FAMEX program should be considered much more as a matching-grant than a pure subsidy. However, one should ask to what extent would Tunisian exporting firms had been able to diversify their exporting markets without such a program? We think that this question is important especially as the authors discovered that "*FAMEX firms performed worse in terms of export growth than control firms in the early stages of the global financial crisis*" (ibid, p20).

b. Limits of foreign trade funding

In this regard, we particularly insist on the intervention *of the Guarantee Fund of Pre-Shipment Export Financing* (FGFEAE, French acronym), attached to COTUNACE, created in collaboration with the World Bank in 1999, which was funded to the tune of U.S. $ 5.4 million and administered by the Risk Committee Approval (CAR, French acronym). The shortcomings of foreign trade funding are reflected by the relationship between credit guarantees and additional exports recorded. Specifically, the FGFEAE has not really responded to the needs of exporters who

continued to have problems financing their export activities from banks due to lack of coordination and risk assessment by the fund which helped blocking of funds (World Bank, 2005).

c. Incentive policy scheme

The few available estimates of the incentive policy[30] tend to show that incentives were directed largely to protected sectors such as the agriculture sector (11% of the fiscal incentives) and real estate (17% of the fiscal incentives) and on the other hand the enterprises benefited only 41% of the total fiscal incentives. Moreover, the incentives distribution reveals that most used policy incentive instrument are exemption from corporation tax (41%), duty exemption (34%) while investment premiums represented only 13%. Beyond the fact that agriculture is strategic for Tunisia, the incentives provided for the exporting sector were uniformly distributed. Thus, no positive discrimination in favour of exports quality and priority investments in terms of technological support was adopted. Finally, while policy incentives was originally designed to support investment, it seems that incentives became the principal motive of investment as 40% of investment projects were implemented thanks to fiscal incentives. It is worth noting that while the later involves the use of state resources in terms of tax revenues forgone, the investment premiums which represent a disbursement should, in the case of Tunisia, be used in priority to promote the technology intensive investments.

d. Trade facilitation

According to *Enabling Trade Report,* which provides a composite measure of trade facilitation based on nine pillars (WEF, 2012), Tunisia continues to observe an evident competitive disadvantage in the quality and availability of transport services and transparency of administrative procedures at borders with the intensification of corruption in customs confirmed by ITCEQ (2012) investigation. These two assessment criteria are therefore among the main factors handicapping Tunisian exports. With regard to logistics performance as measured by LPI index, Tunisia recorded according to 2012 classification, a decline from the 53th place in

2006 to 61st place in 2012 and is overtaken by some direct competitors' countries as shown in the following table 31:

2.3 Political economy of structural transformation and IP in Tunisia

Tunisia's IP studied throughout this report show that policymakers intervened either by vertical measures targeting specific sectors or by horizontal measures with more inter-sectoral scope. While the industry upgrading program and manufacturing export promotion fell more into the category of vertical interventions, all measures taken in favor of knowledge based economy, the various incitative measures (fiscal measures) and measures aimed to cope with market failures fall into the category of horizontal interventions. The results highlighted previously lead to the conclusion that both vertical and horizontal interventions have not produced the desired effects and structural change is still pending. The explanation of these results can, a priori, return both the quality trade-offs within each type of intervention and the quality tradeoffs combining the two types of intervention. However, as pointed out in Nabli and al. (2007), industrial policy is a very complex mechanism and therefore it is not enough to choose the right "ingredients" (promoting R & D and innovation, training skills, creating institutions) to get to "cook" "good food" (make a structural change based on a successful industry). In the field, what can make good governance to a successful structural change is comparable to what can bring the "art of cooking" to food refinement.

Regarding the quality of IP governance, regardless of the nature of IP measures taken and trade-offs operated, one should take in account the following aspects: the circumstances surrounding the choices made, power relations established between the main actors (State, private sector, trade unions) and the profile of the actors involved. Theses aspects allow understanding why structural change in Tunisia supported by industry has not been successful so far. In what follows, we propose to shed light on issues that fall within the political economy of structural change discussed mainly from an IP point of view.

We can start first by the circumstances of the signing of the association agreement with EU.

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[30] . I.T.C.E.Q (2008) and Ghazouani, K. (2011).

On paper, this agreement is expected to be beneficial for the private sector given the economic opportunities it offered in terms of market expansion and economies of scale. However, the reforms carried out to promote the private sector in the wake of structural adjustment plan had not yet reached their objectives. By the end of these reforms, Tunisia did not count on world-class companies to lead the industry. With the exception of two or three private companies with advanced technologies in the field of wiring, the remaining companies and especially the textile and clothing had not the means to conquer seriously international markets. Ultimately, if successful companies have seen in the association agreement an extension of their efforts to increase their productivity and sit their internationalization strategy, structurally non-performing companies have seen more of an opportunity to maintain their activities through hidden subsidies. As is known, in addition to the economic opportunities it offered, the negotiated association agreement guaranteed a shared funding of the industrial upgrading and a gradual opening to competition. We can then understand not only the interest of some companies who would enjoy a windfall but also the more or less soft endorsement of UGTT (unique labor union at that time) given that the agreement could not have negative social impacts in the short term. Moreover, this agreement gave the state the opportunity to maximize its own political utility through enhancing state credibility by locking the economy into an irreversible set of reforms. More generally, it was though that coming to be the first South-Mediterranean signatory country would give Tunisia an advantage in terms of determining the content of the agreement (Bechri and Naccache, 2003).

The early stages of IP implementation following the signing of the association agreement were preparatory stages to the final stage of competition programmed by the end of tariffs dismantling. Meanwhile, manufacturing sector was preparing itself making the necessary investments while the state piloted the implementation of the industrial upgrade through the creation of new institutions (Upgrading office, Bureau de Mise à niveau) and the restructuring of others such as Investment Promotion Agency that was split

into two separate agencies giving rise to the creation of the Foreign Investment Promotion Agency, FIPA. Government also launched an ambitious program of overall upgrade by completing the industry upgrading with a series of administrative reforms. In short and during the early stages, Tunisian government was implementing its IP system of governance.

However, despite the importance of financial resources and the institutional device it has mobilized, Tunisia's industrial structural reform based on PMN has not been guided by a clear "industrial vision". In addition, as PMN became a "state affair", structural reform itself became hostage to a highly politicized management (Hibon, 2006).

It is worth remembering that from the beginning of PMN in 1996, government has bet on the involvement of leading entrepreneurs who were among first beneficiaries of this program. This is not in itself objectionable insofar leading firms could, with the contribution of PMN, support international competition. In addition, this allowed political power to deal directly with large family owned companies that could be "Tunisia's future conglomerates"[31].

However, while becoming privileged interlocutors of political power, selected leaders were also "called" to relay "State's pedagogy of PMN" which considers adherence to PMN as a "patriotic choice" (Cassarino, 1999). Reading between the lines, some entrepreneurs submitting later to PMN did it not only by economic expediency (looking for financial and tax incentives) but also by political endorsement. But, curiously, other entrepreneurs that did not apply for PMN justified their choice by their fear of exposing themselves to a thorough check of their financial situation[32]!

What about industrial vision in all this? It originally belonged to leading entrepreneurs to propose outlines of an industrial vision given their experience and know how. However, such role for leading entrepreneurs was not part of the task sharing decided in the industrial upgrading management. As proof, public authorities, on the recommendation of

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[31] . At that time, fiscal measures were decided in favor of the formation of groups of companies to promote Tunisian conglomerates.
[32] . Cassarino, op.cit

an international consulting firm, proposed in 2008 their "own" industrial vision recorded in a document entitled "*National Industrial Strategy for 2016*"[33].

Moreover, in the official document dealing with the "National Consultation on Export," policy makers insisted on the priority to be given to mechanical, electrical, food processing, textiles, clothing and leather industries. If the choice of mechanical and electrical is strategically justified[34], arbitration for textile and clothing offers an interesting insight into the political economy of Tunisian industrial upgrading.

Indeed, several studies have confirmed the risks faced by Tunisian textile and clothing in the context of the removal of quantitative restrictions by the end of textile-clothing agreement (ATV, French acronym): CETTEX[35] - Gherzi[36] study (2004), academic studies realized by Chaponnière, Cling and Marouani (2004, 2005) and the World Bank study published in 2006. While academic studies could only provide predictable trends, the World Bank study gave a precise quantification: From the first month of 2005 (coinciding with the end of the ATC), Tunisia already lost 5.8% market share over its main export destination of textiles and clothing, the European market. These results confirm the sector vulnerability.

In addition, it was clear that neither quotas restoration decided unilaterally by Europeans and Americans nor the additional three years grace period[37] could allow a profound reorganization of the Tunisian textile and clothing industry.

This flashback leads us to two important questions: First, why policy makers continued to provide support to an industry despite its structural weaknesses[38]? Then, why a serious

restructuring of the sector has not occurred at least since the commitment into the Tunisian industrial reform in 1996?

The answer to the first question is straightforward: Until 2010, government considered textile and clothing as "strategic to the national economy" as it is "the largest sector of the manufacturing industry in terms of exports, employment and value added"[39]. Faced with such arguments, the choice of policy makers to support textile and clothing appears rational. However, by focusing the near-term reality of the sector, these arguments reveal policy makers' myopia!

The answer to the second question is less obvious because it requires returning to endogenous causes of textile and clothing industry inertia and, more broadly, on government's expectations about industrial upgrading management.

Indeed, it is important to remember that Tunisian textile and clothing industry is heavily dominated by an older generation of entrepreneurs more involved in garment activities. Accustomed to protectionism which guaranteed them safe markets; this generation of entrepreneurs established a strong lobby within the employer's organization (UTICA)[40]. However, it is difficult to assess their lobby power and even less its influence on policymakers' arbitration in favor of textile and clothing[41].

But, political management of PMN provides tangible explanations. Indeed, being aware that opening up to international competition could challenge a fairly large number of companies in the manufacturing sector[42] and more particularly those in the textile and clothing by the end of AVT, policymakers anticipated difficulties through the implementation of a

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[33] . « Stratégie Nationale Industrielle à Horizon 2016 ».

[34] . Cf. Table 11.

[35] . Technical Textile Centre, an institution under the Ministry of Industry.

[36] . International consulting firm specialized in the field of textile and clothing.

[37] . Quota restoration was from 2005 until the end of 2007.

[38] . Structural weakness of the sector is reflected in part by the lack of an efficient textile industry. This weakness will be "compensated" by the conclusion of a trade agreement with Turkey. But this agreement also allowed Tunisia to meet rules of origin imposed by the EU within the framework of the Association Agreement.

[39] . See Textile and Clothing Monograph, APII, 2010.

[40] . Note in passing that the former head of the UTICA was himself engaged in clothing business.

[41] . In light of estimates given by Nabli et al. (2007) for 2001, lobby power in the Tunisian manufacturing sector is larger than the average observed in the MENA region (ibid, p153). Lobby power is measured "as an interactive between the size of manufacturing exports in total exports, and the share of manufacturing exports among the top four export categories at the three-digit ISIC" (ibid, p158).

[42] . According to *a rule of thirds* admitted even by policymakers themselves: a third of companies will survive trade liberalization, a third will be in great difficulty and a third will disappear.

first social safety net: *The law on firms in difficulty*[43].

Enacted in 1995 and revised in 1999 and 2003[44], this law was designed to help companies with financial difficulties by offering them Friendly Settlements solution. However, this law poses two major problems: First, it paves the way for opportunistic exploitation of Friendly Settlements as it authorizes debts payment suspension even before the conclusion of any agreement between debtors and creditors. Then, it forces creditors to accept debts payment suspension that may affect their financial situation. Ultimately, this law provides a social response to an economic problem and, therefore, it can distort competition (Cassarino, 1999).

The second social safety net set up by the government in 2007 is *the law on economic initiative*[45]. In theory, this law could have been a strategic pillar for the industrial sector reform by contributing to the emergence of a new generation of innovative entrepreneurs. In addition, and without minimizing the importance of entrepreneurship, one of major areas of the law, it once again provides a "social response" to graduates' unemployment that became increasingly problematic.

Finally, it is paradoxically in what could have been the strength of this law that lies its weakness. Indeed, at a time when political power would send a strong signal in accordance with the principles of equal opportunity by promoting individual initiative (Article 1 of the law), the granting of economic privileges to those belonging to the close circle of the political power and those around was in full swing.

The question of privileges is certainly not specific to Tunisia as shown in a recent report by the World Bank (2009) for the MENA region. Moreover, it makes sense to denounce unfair privileges that take different forms (inequality in the payment of taxes and other payroll taxes, land distribution, sale of public enterprises at dumped prices ...) and which are harmful as they raise opportunism, discredit state institutions, fuel corruption and destroy the willingness of economic operators to

adhere to horizontal reforms. But we should not believe that the issue of privileges is in the "all black" or "all white". At some point, we have discussed the privileges granted to South Korea conglomerates. Far from wanting to idealize the Korean case, however, there are indisputable facts. The country has an excellent command of the field of electronics and is positioned successfully in the global automotive industry, while 50 years ago it produced mainly textiles. What reaction should we have in face of South Korean challenge?

Following Hausmann and Bustos (2012), the challenge of sophistication of exports put Tunisia between the choice of a JJJ (jobs, jobs, jobs) industrial strategy or an SB (strategic beth) strategy, the latter being more consistent with the objective of sophistication. However, the stress of graduates' unemployment increases the temptation to opt for the JJJ strategy at the expense of sophistication. But let's be realistic and forget to think that Tunisian exports sophistication can be done in a snap. Let's learn first how to initiate a process of sophistication. It could be in strongly promoting trade in tasks in the field of electrical and electronics. This is not a vision of mind when we know that LG has recently decided to produce HDTV's motherboard in Tunisia.

Let's take another example: environment. In 2007, the International Labour Office (ILO) launched a series of programs on green jobs. The growing interest in green growth is also confirmed in a recent world investment report (WIR, 2012) and Tunisian policy makers seems to be sensitive to these projects referring to an OECD report in which we learn that Tunisia is preparing a suitable legal and economic framework to promote green investments (OECD, 2012). Here may be the strategic niche over which we could build in order to be part of the circle of countries capable of producing low-cost batteries of electric cars. This is a niche to be encouraged as it could serve the national interest and, consequently, deserves to be favored as long as the governance approach is sound and transparent. Meanwhile, it is certainly not with the recent (March 2013) draft revision of the investment code which is more of electoral utility maximization that Tunisia will be put on the road of structural change!

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[43] . « Loi sur les entreprises en difficultés économiques ».

[44] . See www.iort.gov.tn

[45] . "Loi sur l'initiative économique", see www.iort.gov.tn

Section III: Conclusion and policy recommendations

Tunisia has managed to maintain a satisfactory ranking in terms of its overall competitiveness despite the vicissitudes of the revolution. Based on 2011 GCR report, Tunisia held the 40th place out of 142 countries when it ranked 32th place in 2010 (GCR 2011). According to 2011 classification, Tunisia overtakes countries such as Poland, Portugal and Slovakia.

Unfortunately Tunisia has not been ranked in the *Global Competitiveness Report* of 2012 for reasons related to its economic situation one year after the revolution. In addition, an assessment of Tunisian economy competitiveness set for the year 2010, according to ITCEQ own approach (ITCEQ, 2011), shows that Tunisia is in a good position for current competitiveness (internal and external competitiveness), but its position in terms of potential competitiveness (weighting factors with deferred productivity such as technology) remains very modest.

We are now in 2013 and the situation has dramatically changed. While macroeconomic stability, political regime and national security were guaranteed before the revolution, the post revolution era is marked by a relative deterioration in macroeconomic fundamentals, a very uncertain political situation and a flickering security. This context strongly affects economic activity and the results of a recent survey (ITCEQ, 2012) conducted with private managers shows that the lack of security affects their future expectations. This survey also revealed that the business climate has deteriorated further when we could expect the opposite after the revolution. Paradoxically, the perception of the business climate at the international level as reflected in the *Doing Business* ranking goes against the meaning of the shortcomings identified by the business community.

In terms of economic policy choices, we believe that the current and future decision makers must ultimately manage a double bind: stabilize the macroeconomic framework without compromising sectoral policies and particularly industrial development which is called to contribute to both internal (employment) and external objectives (trade balance).

Regarding the subject of this study, we believe that IP trade-offs must balance short-term requirements such as unemployment decrease and medium and long term requirements such as technological expertise that should help the economy shifting to a sustainable trade balance deficit.

Our investigation has shown that if the expected structural transformation of the Tunisian economy did not really occur, it is because the country was not sufficiently and efficiently prepared in advance for this transformation. More specifically, the structural transformation of the Tunisian economy was unlikely to happen through industry given the IP adopted which was suffering several shortcomings: a belated commitment in a targeted industrial strategy, an inconsistency between the IP objectives and the allocation of technical, human and financial means to achieve them and an enabling environment constrained by a poor economic governance. These shortcomings would explain the low performances of Tunisian manufacturing exports both in terms of diversification and sophistication more than fifteen years after the FTA signed with EU.

On the other hand, there is a broad consensus that Tunisia's past growth model of cheap labor and competitiveness in low value-added sectors is no longer tenable. Tunisia needs to move up the value chain and the technological ladder and promote new investments in skill-intensive sectors.

In the same vein, we have to draw attention to the fact that Tunisia has implemented an elaborate system of innovation and technical support to firms composed of 8 sectoral technical centers designed to support firms in 8 sectors, 147 research laboratories and 615 research unit, numerous technoparks to promote innovation, an institute for standard and property right protection (INNORPI), an agency for the promotion of research (APR), an agency for industrial promotion (API) and an agency for agricultural investment promotion (APIA).

The above institutions are complemented by a number of public programs, aimed at providing incentives for innovation. These include: Le Dispositif de Mobilité des Chercheurs

(Program for mobility of researchers), la Prime d'investissement en R&D (PIRD, research investment premium), le Régime d'incitation à l'innovation dans les technologies de l'information (RITI, a fund dedicated to innovative projects in the area of information technology), les investissements technologiques à caractère prioritaire (ITP), le Programme National de Recherche Innovation (PNRI), le Fond de Développement de la Compétitivité industrielle (FODEC), le Fonds Commun de Placement à Risque (FCPR), le Programme de valorisation des résultats de la recherche (research valorization program). This system is completed by three major programs, Programme de mise-à-niveau (industrial upgrading program), programme de modernization industrielle (industrial modernization program) and Programme de Mise à niveau des services (services upgrading program) that attempt to support investment in new technology and enhance organizational and managerial capacity of firms,

But the problem is that this abundance does not mean efficiency. The preliminary results of the 2010 Innovation survey conducted by the World Bank and the "Tunisian Institute of Competitiveness and Quantitative Studies" (ITCEQ) shows that the most popular programs are the PMN (44%), the certification services offered by INNORPI and others specialized agencies (38%) and FODEC (30%). These programs are frequently mentioned not because of the importance of the premiums they offer but rather because of their seniority in the date of entry into service. However the other programs intended to directly support innovation (RITI, PIRD, PNRI,...), are either unknown or not considered as important for various reasons such as administrative constraints discouraging companies to join them, the lack of technical skills able to evaluate the submitted projects, the lack of information on programs and their contents, etc....

According to this survey the major constraints to innovation can be classified into three groups:

- The funding and the costs of innovation were judged as the most severe constraint by respectively 71% and 68% of the surveyed firms. More specifically the costs of financing (71%), lack of funds within the enterprises (55%) and the requirement of strongly elevated guarantees (54%) constitutes real obstacles to innovation.

- Another group not less important concerns the constraints relating to the lack of skilled staff (47%), administrative constraints (46%) and domestic taxes (43%) that hamper the innovation activities.

- A third group of disparate constraints deals with the labor legislation, the exchange rate policy and the lack of competition. If appropriate measures will not be implemented, these constraints will grow and would affect the performances of innovative companies.

Taking into account all the above strength and weaknesses, we think that two paths are worth exploring. The first one is to strengthen competitiveness of the manufacturing in order to benefit from the expected expansion of the international demand for some technology intensive products which would help to reduce the volatility of exports revenues, and lay the groundwork for more rapid productivity growth. Indeed, and according to the French Treasury Department (Direction Générale du Trésor, 2012), in 2022 the world demand will be mainly oriented towards three manufactured products: Electronic, automobile and chemicals (excluding pharmaceuticals). It was estimated that together they will represent a potential global market of approximately $1 000 billion. They are followed by machinery, agricultural products, agrifoods and textile and clothing.

The second one, which is not exclusive of the first, is to move towards and invest massively in the green economy. According to an ILO report (2012), "the transformation to a greener economy could generate 15 to 60 million additional jobs globally over the next two decades and lift tens of millions of workers out of poverty". The report adds that "Tens of millions of jobs have already been created by this transformation. For example the renewable energy sector now employs close to 5 million workers, more than doubling the number of jobs from 2006-2010. Energy efficiency is another important source of green jobs, particularly in the construction industry, the sector hardest hit by the economic crisis. For example in the United States, three million people are employed in environmental goods

and services. In Spain, there are now more than half a-million jobs in this sector. Net gains in employment in the order of 0.5 - 2 per cent of total employment are possible. In emerging economies and developing countries, the gains are likely to be higher than in industrialized countries, because the former can leapfrog to green technology rather than replace obsolete resource-intensive infrastructure. Brazil has already created just under three million jobs, accounting for some 7 per cent of all formal employment". But more important this strategy will have an impact on a number of key sectors as agriculture, energy sector, resource-intensive manufacturing, recycling, energy and resource-efficient buildings, transport, etc... Of course assuming that strong investment in skills, in infrastructure and targeted support to enterprises, notably SMEs will be assumed

To sum up, an acceleration of the structural transformation of the economy is needed. For that a number of pre-requisites need to be met. A deep reform of the technical education system and the training centers, since there is a mismatch between the economy and the education sector. Strengthening the financing of innovation and a profound reform of the national system of innovation which is quite complex. Establish a link between investment incentives and national priorities and abolish the distinction between on-shore and off-shore investments. But more important, better governance is to be placed at the centre of policy making to ensure the success of this transformation which will need also a political stability and a secure environment.

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Breaking the Shackles:

The Structural Challenge of Growth
and Transformation for Egypt's Industrial Sector

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1. Introduction

Government policies in Egypt to support industrial development have changed to reflect shifts in the underlying approach to economic development. After the military coup of 1952, Gamal Abdel Nasser overthrew the monarchy, declared Egypt a republic in 1953 and full independence from the United Kingdom in 1956. He was committed to Egypt's economic development through state-led, inward-looking import substitution industrialization (ISI) on a slogan of "from the needle to the rocket." After his death, Nasser was succeeded by Anwar El-Sadat in 1971 who reversed nationalist-socialist development and took steps to integrate Egypt into the international global capitalist market,[1] primarily through the open door policy or the "Infitah" policy. Nevertheless, he retained main features of Nasser's import substitution policy and the public sector remained a large political and economic power. Hosni Mubarak succeeded Anwar El-Sadat following his assassination in 1981. Mubarak deepened Egypt's integration into the international global capitalist system and initiated an economic reform and structural adjustment program (ERSAP) in 1991. This program aimed at achieving macroeconomic stability while starting a comprehensive structural reform, promoting market orientation, both decentralizing and liberalizing the economy. Mubarak has taken some major economic reforms in 2003 that will have a lasting effect on any remaining import substitution strategies. The reforms include a dramatic slashing of customs and tariffs.

Structural change, that is a long term, persistent shifts in the sectoral composition of an economy is the essence of economic development (cf Ricardo 1817; Kuznets 1971; Pasinetti1981; Roderick 2007). This process involves the move away from primary sectors such as agriculture and mining towards manufacturing. Within manufacturing it is an orientation away from natural resources based activities – such as petroleum, basic textiles and clothing and the food industry - to higher value added more sophisticated skill and technology intensive

subsectors, such as electronics and computers. This shift also includes the movement of labor to higher productivity sectors and should not necessarily be confined to manufacturing; it could include processing industries (e.g. agro-industry) and certainly includes services. The process of structural transformation itself eventually induces an increased share of high end, high value added services such as finance and communication to support industrial production (UNIDO 2009; Lall 1999), as has been witnessed since the 70s in many industrial countries. Additionally, modern industrial production has become increasingly information intensive in activities such as design, process management and advertising (Lall 1999). Nevertheless, manufacturing remains crucial if a country is to avoid running into balance of payments problems, especially since many services continue to be non-tradable (Change 2003).

This paper investigates the extent to which Egyptian industrial policy has achieved structural transformation and economic diversification. Diversification has been argued to benefit developing countries in the early stages of growth (cf. Hesse 2008; Cadot, Carrere and Strauss-khan 2009). The paper also discusses the structure of leading manufacturing sectors and ways to eliminate binding constraints on growth and transformation.

2. Economic Growth

Changes in GDP have generally followed closely both general policy trends for each period but also external factors. The first half of the sixties witnessed high growth rates (9.2% in 1965, Figure 1), a reflection of the concerted efforts of the first five year plan. During the war period (1966-1973), when development efforts halted, this growth rate has fallen back reaching its lowest level by the end of 1973 (0.7%). Growth was restored during Sadat's Open Door Policy, the highest the economy has ever reached. But this higher growth was only a reflection of massive foreign exchange inflows of oil exports, Suez Canal revenue, workers' remittances, tourism and foreign aid (El-Haddad 2010; Essawy 2007; Abdel Khalek *et al.* 1997; Said el al. 1995). In return for Egypt's peace with Israel foreign aid – mostly from the US -

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[1] He also changed allies from the USSR to the US.

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started pouring into Egypt in the beginning of the 70s peaking to just under $110 per capita in 1991 (Table 1). But these windfall funds instead of being directed to productive uses or to solving the country's structural problems were primarily directed to finance this period's consumption boom including consumer subsidies and more public employment (Said et *al.* 1995). As a result these high growth rates were not sustained, and soon real GDP growth rates have fallen since the mid-80s, with the collapse in oil prices, recording an average of 4% during 1985-1989 *(ibid.).*

Contractionary policies under ERSAP slowed down GDP growth, but since 2002 the serious efforts to open up the economy and promote exports have restored some growth. The financial crisis of 2008 combined with deeper trade liberalization has set the economy back. This is the macro explanation (or dimension) of the country's observed growth. But the devil lies in the detail, which is a major purpose of this paper.

2. Structural Transformation: Is There Any?

The process of structural transformation has a number of connotations, mostly based on observing patterns of development across countries. One of the oldest definitions is the move away from primary sectors such as agriculture and mining towards manufacturing (Ricardo 1817; Kuznets 1971; Chenery and Syrquin 1975; Pasinetti 1981). Within manufacturing it refers to a shift away from light industries, consumer goods and natural resource based activities such as petroleum basic textile and clothing and/or the food industry towards higher value added subsectors like chemicals, machinery and sophisticated skill and technology intensive sectors (e.g. electronics and computers). More recently it has been demonstrated that the transformation towards heavy industries and more sophisticated capital goods induces an increased share of high end high value added services, such as design, process management, finance and communication (UNIDO 2009; Lall 1999). Other recent notions of structural transformation involve diversification (Imbsand Wacziarg 2003, Klinger and Lederman 2004 and later Hesse 2008) as well as the movement of labor from

low to higher productivity sectors (Rodrik 2010). All these concepts are dealt within the paper, where we examine structural transformation in the Egyptian Economy, if any. If so, in which direction and of what magnitude?

2.1 Structural Transformation: Production
Sectoral Value Added
There has been a modest increase in sectoral value added with both industry and services growing faster than agriculture since the beginning of the Open Door Policy in 1973 (Figure 2).

Table 1 and Figure 3 below give share of value added in GDP by sector, periodised by the main policy structural breaks.[2] Successive periods have seen a move away from agriculture. Agriculture's share of GDP has halved from just under 30% during the second half of the sixties to 14% throughout 2003-2010. This reduction is mirrored in a rising share for services, which now account for around half of GDP. The share of industry shows a moderate increase, oscillating around 30% prior to the most recent policy shift in 2003, and nearer 35% thereafter.

Services Sector Value Added
In the 1980s, two-thirds of service value added came from two sectors: trade and the inflated government sector, both with one third each. Over time the service sector has become more diversified, with the share of these two sectors falling to just over one half (23 and 28 per cent, respectively) by the first decade of this century. The largest increases have been in financial services, communication, hotels and restaurants and social security payments. Both financial services and communication have more than doubled their modest share in GDP (to 3.7 and 2.8% of GDP respectively), the former from a particularly negligible base of 0.1% in the 1980s. Housing and real estate has also been increasing, with a share of 6% in total services in the last decade.

Industrial Value Added
Non-manufacturing industrial sectors (e.g. mining, construction, electricity) have consistently out-performed manufacturing since

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[2] Table 2 gives a slightly different breakdown, more of a decade breakdown, so as to confirm main trends.

the mid-70s, except for a few years in the 1990s. The strong growth of non-manufacturing has been most marked since 2003, the year that marks our latest structural break. This trend is analyzed below.

Manufacturing Value Added

After the 50s - Egypt's period of serious industrialization efforts - manufacturing average growth rates have been modest never exceeding 7%. This is in stark contrast to a country like South Korea with an impressive manufacturing growth rate of over 17% for over two decades (Table 3). As a result Korea's share of manufacturing as a percent of GDP tripled from 10% in the 60s to under a third (30%) since 1988- double that of Egypt (16%) (El-Haddad 2010). For Korea manufacturing *IS* indeed the engine of growth.

The structure of manufacturing has shifted markedly toward the resource-based chemicals and petroleum sector[3] (Figure 5). The sector has grown fast since the early 80s, substantial oil discoveries in 1982,[4] coupled with the hike in oil prices since the second oil crisis of 1979, have boosted the sector. Prior to the nineties traditional light industries were also growing. Light industries have been dominated by textiles and clothing; and food, beverages and tobacco, and to a lesser extent fabricated metal product industries, mainly the automotive industry. Since the early 1990s these light industries have shrunk sharply whilst resource based chemicals and petroleum more or less maintained their output. Hence light industries' share in manufacturing value added has dramatically declined from 55% to 31% between the 60s and the first half of 2000, mainly in favor of the petroleum sector growing to just less than half of all Egyptian manufacturing (Table 4 and Figure 6).

Again this pattern of growth is in stark contrast to South Korea where the rise in Korean heavy industry was caused by a structural shift away from the textiles, food, beverages and tobacco toward chemicals, non-metallic mineral products

and basic metals sectors in the 1960s and 70s, followed by the outstanding shift toward the more sophisticated, ever growing machinery and transport equipment sector since the early 80s (see the steep increase in the sector's share in manufacturing VAD, Table 4 and Figure 1 in Annex). These changes reflect the Heavy and Chemical Industry Plan (HCIP) launched in 1973 to move the country beyond "easy import substitution" to reduce Korea's dependence on imported machinery, chemicals and transport equipment. Whilst direct state ownership realized this objective for upstream petrochemicals and steel sectors (e.g. the Pohang Iron and Steel Company, POSCO), industrial estates were built to accommodate private-sector ventures in electronics and machinery sectors. HCIP's goal of deepening and upgrading Korea's exports, and hence the industrialization process, was achieved through pushing Korea into an emerging niche for standardized capital and intermediate goods, exports would follow, allowing economies of scale and efficiency (Haggard, 1990 in El-Haddad 2010).

The importance of the petrochemicals industry stems from the fact that its output is used as inputs for the production of intermediate chemicals and industrial products such as plastics, paints, and packaging. But the data presented in Figure 7 shows that the Egyptian chemical and petroleum sector is dominated by the even lower VA sector of petroleum refineries, especially since the late 1980s. Some growth in favor of higher VA activities, such as industrial chemicals and other chemical products, has taken place since 1992, a year after the ERSAP was initiated. But this share has fallen back with the rise in that of petroleum refineries since 1998.

Productivity Decomposition

Labor productivity growth can be decomposed into two parts, one arising from improvements in productivity within sectors and that arising from labor movements from low to high productivity sectors. The greater the labor movement, i.e. the second part relative to the first part the greater the extent of structural change (e.g. Foster-

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[3] The 2-digit ISIC code 35 revision 2 sector is called manufacture of chemicals and chemical, petroleum, coal, rubber and plastic products in full.

[4] In the Gulf of Suez and in the Western desert.

Haltiwanger-Krizan[5] 2001; Rodrik 2010). This can be represented by the following equation:

$$\Delta P_t = \sum_{i=n} \theta_{i,t-k} \, \Delta p_{i,t} + \sum_{i=n} p_{i,t} \, \Delta \theta_{i,t}$$

Where ΔP is the change in the economy's overall productivity or productivity growth between periods t and k. p_i is sector i productivity; θ_i is the employment share of sector i. Productivity growth of sector i, i.e. the first term on the RHS denotes productivity growth within each sector weighed by beginning of period employment shares. The second term on the RHS, referred to as the structural change component, is the sum of change in employment shares, weighted by sectoral productivity levels at time t.

This analysis is presented here by first considering productivity gaps, which illustrate the potential for productivity growth through structural change.

Productivity Gaps

In developing countries productivity gaps are large between sectors of the economy and within any one sector, as seen by the large dispersion in value added per worker across Egypt's three main sectors (Figure 8). Average productivity in industry is more than three times that in agriculture. The same is true within manufacturing (Figure 9 at the 2 digit level and Figure 10 at the 3 digit level) where the lowest productivity sectors have productivity levels which are less than a third of average productivity level (e.g. textiles and clothing). In contrast the petroleum refineries sector has productivity which is seven and a half times that (748%) of the average.

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[5] The Foster-Haltiwanger- Krizan method (2001) breaks aggregate productivity growth into five components, commonly called the within effect, the between effect, the cross effect, the entry effect, and the exit effect, as follows:

$$\Delta P_t = \sum_{i \in C} \theta_{it-k} \Delta p_{it} + \sum_{i \in C} \Delta \theta_{it}(p_{it-k} - P_{t-k}) + \sum_{i \in C} \Delta \theta_{it}$$
$$+ \sum_{i \in N} \theta_{it}(p_{it} - P_{t-k}) - \sum_{i \in X} \theta_{it-k}(p_{it-k} - P_{t-k})$$

Employment is not concentrated in the most productive sectors. Agriculture still employs one third of all workers, and whilst textiles and clothing employ around a third the petroleum sector accounts for less than 3 percent (2.9%) of all manufacturing employees.

Decomposition of Aggregate Value Added: A Labor Lens

Table 5 depicts the decomposition results for aggregate value added per worker in the period 1993-2002 and the subsequent period ending just before the financial crisis in September 2008.[6] Overall productivity growth, that is the change in value added per worker, was $US141.6 and $US228 in the first and second periods respectively. Structural change is concentrated in the first period, amounting to a third of productivity growth in this period (33/141=33%). But as of 2003 structural change has been negative (-16%), which is not surprising since labor has been completely stagnant in industry with little movement between agriculture and services since 2002. As Figure 13 shows the moderate shift of 10% away from agriculture and into higher productivity services took place during 1993-2002 but has stopped since. The negative structural shift in the later period is largely on account of movements within services. Whilst the structural growth enhancing component amounted to $US84.4 during the first period it turned negative during the second period ($US-93.6), indicating that the displaced workers may have later ended up in less productive activities within services, what Rodrik (2010) calls growth-reducing structural change (Table 6).

A recent ADB publication (ADB 2012) confirm that employment in high-productivity service activities, such as banking, insurance and finance, have grown very slowly, while employment in low-wage, low-productivity (and largely informal) sectors such as informal trade (e.g. street vendors) and small scale repair shops have been rapidly growing. No further detail can be provided at the aggregate level due to lack of sectoral data with the exception of manufacturing to which I now turn.

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[6] We were unable to decompose productivity growth for other periods due to lack of employment data

Decomposing Productivity in Manufacturing

Overall productivity growth in manufacturing has been moderately positive for three quarters of the 30 years from 1977-2006 the exceptions being 1978-1979, 1988-1991, 2002 and 2006 (Figure 14). Productivity changes are overwhelmingly explained by within sector growth, not structural change (note the dominance of the blue parts in the columns).

Table 7 gives each sector's contribution in overall productivity growth within each period as a percentage of overall manufacturing productivity growth during that period. A positive sign next to the number indicates that the sector's contribution has been positive. The table is sorted by the last period 2004-2006 starting from the largest positive contributors to productivity growth. Petroleum refineries have been the top contributor to productivity growth since the early eighties with the exception of 1992-2002 where it came second after the food sector. During 1982-1991 it contributed over 80 percent of all manufacturing productivity growth and during 2004-2006 it contributed just under a half. A clear shift from light industries to intermediate industries is evident. For example, the food sector's contribution dropped from 40% in the second half of the 70s to just 4% in 2004-2006. Similar trends are evident in textiles and to a lesser extent in clothing (wearing apparel compare to the analysis above).

Table 8 decomposes productivity growth for the top 10 performers in manufacturing during 2004-2006 over five periods. Only half of these (MEE, PPNE, F, EMAS and RP) have contributed favorable structural shifts in labor during the last period (2003-2008). The plastic sector has contributed with the greatest labor movement (0.08 of overall productivity growth of $US2.94 during that period) followed by machinery and electrical machinery. This is so since they are relatively new sectors and so have potential for structural change. For the other older sectors which are mostly capital intensive it becomes increasingly difficult to absorb additional labor (petroleum refineries, other non-metallic mineral products (e.g cement and ceramics), industrial chemicals, paper, transport equipment and non-ferrous metal basic

industries (e.g. aluminum). These sectors have contributed in earlier periods with some

In summary, services have been growing fast and now account for half of Egypt's GDP. Services are dominated by trade and the Egyptian inflated government sector. The service sector has become more diversified over time, with the share of trade and government services falling from 67% to just over one half by the first decade of this century. The largest increases have been in financial services, communication, hotels and restaurants and social security payments.

Industry's share has been stagnant at around a third for nearly 20 years, leaving agriculture to claim the balance (~14% of VA). Within industry, manufacturing average growth rates have been modest, never exceeding 7% since Egypt's period of serious industrialization efforts in the 1950s, resulting in a low share in GDP of 16%. In fact, the share of manufacturing has sharply deteriorated relative to other sectors such as mining, construction and electricity; which have been growing persistently faster since 2003. With the abrupt decline in light industries from the early 1990s, the share of the petroleum sector rose to around half of Egyptian manufacturing, reflecting the country's dependence on natural resources. The petroleum and chemicals sector itself is dominated by the lower value added activity of petroleum refineries, with some – albeit temporary – increased share in industrial chemicals since 1992 (peaking at 70% of total VA in 1992 and falling to 50% by 2003).

Productivity decomposition results show that growth-enhancing structural change occurred during 1993-2002 with the moderate movements of labor from the lower value added agriculture sectors to higher value ones in services, e.g. tourism and Suez Canal.[7] However, this trend was reversed during the following period (2003-2008) where growth in services was predominantly non-structural indicating that the displaced workers may have later ended up in less productive activities within services, most likely informal; this process is what is called

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[7] Unfortunately, disaggregated data on employment in services at the 2 and 3 digit levels are not available to the author.

growth-reducing structural change. Hence the most recent period reversed earlier favorable trends with the implication that the limited growth in the higher value added sectors such as communication and financial services was accompanied by limited labor mobility into these sectors. Indeed, there is evidence that employment in largely informal low-wage, low-productivity sectors such as trade (e.g. street vendors) and small scale repair shops have been rapidly growing, which are, as discussed below, a symptom of Egypt's increasingly rigid labor market.

Manufacturing productivity growth throughout the 30 years, 1977-2006, was predominantly non-structural, largely affected by the growth of the chemicals and petroleum sectors. Marked shifts away from light industries such as textiles and clothing in favor of the chemicals and petroleum sector have gradually taken place. But the top contributors to productivity growth such as petroleum refineries have been unable to bring about inclusive growth-enhancing structural transformations, reflecting the un-dynamic nature of the Egyptian economy and once again its labor market.

2.2 Structural Transformation: Exports

"You are what you export" is an old message highlighted in a fresher dress. There is a positive relationship between income per capita and export diversification (Cadot, Carrere, and Strauss-Kahn 2011), and the more sophisticated a country's exports are the more likely it is to grow faster in the future (Hausmann, Hwang, and Rodrik 2007). This section explores structural transformation in Egyptian exports in terms of all three dimensions: destination, quantity and quality. Before embarking on the analysis, a quick review of Egypt's trade balance is presented.

Trade Balance

Egypt's import bill has persistently outgrown that of export earnings (Figures 15 and 16). The gap was greatest during the open door policy in the 1970s, when consumption boomed, peaking at 50% of GDP, US$20.5 billion in 1980 (in 2000 prices, US$9.8 billion in current values). Contractionary measures of the ERSAP have most likely caused both exports and imports to

contract but have also reduced the gap. Since 2003 both exports and imports have risen with the gap nearly eliminated (Figure 15), though some gap has emerged as exports fell more than imports since 2008.

In 2011 total exports accounted for 24% of GDP, equally divided between merchandise and service exports with 12% each. Prior to the crisis exports accounted for a larger share of GDP, just under a third during 2005-2009 (30%), yet compared to the MENA average of 50% Egypt lags behind (ADB 2012).

In contrast to merchandise trade, Egypt's services have been doing relatively better, with a positive trade balance since 1984 (Figure 17). The share of merchandise exports in GDP has been declining since the 60s until around 2001 after which they started to pick up, until the financial crisis in 2008. Suez Canal (transportation) and tourism (travel) revenues are the main positive contributor to the services' trade balance (80% in 2009 Figures 18 and 19), with the latter growing since 1998 whilst the former has been stagnant. Other higher value added commercial services grew until the mid 90s after which they remained stagnant, falling since 2004. Whilst growth in tourism is positive, tourism in Egypt does not sufficiently exploit higher value services such as adventure tourism and so has potential for expansion.

Merchandise Export Breakdown

Manufacturing exports have been rising steadily during the period 1980-2004 with average growth rates of just under 11% for 20 years throughout 1981-2002 (Figure 20 and Table 9), now accounting for 57% of overall merchandise exports.

There has been an apparent marked structural transformation, especially with the six percent decline in the resource based crude petroleum and natural gas sector during 1990-2002. With greater trade liberalization and so increased competition this relatively impressive growth was not sustained after 2005. This set back was exacerbated by the financial crisis of 2008. On

the other hand the hike in oil prices,[8]–along with other sector specific factors discussed below - has brought about double digit real growth rates for the petroleum sector in the five years since 2003, but then also turning negative after the financial crisis. As a result the share of the petroleum sector in total merchandise exports increased reaching around 40% of total merchandise exports by 2011 (Figure 21), reversing earlier diversification and merchandise export transformation trends. Nevertheless, in absolute terms manufacturing is still outperforming the crude petroleum and gas sector to date.

Manufactured Exports Structure

But were manufacturing really sufficiently diversified during the past 30 years? How sophisticated were these exports? Were they dominated by resource based manufacturing activities or more advanced higher value added ones? The following sections will answer to these questions.

The textiles and clothing sector (TC) has been growing at a modest rate since the early nineties up to 2004 (Figure 22). The end of the multi fibre agreement (MFA) in 2005, has brought the country into direct competition with China, India, Pakistan, Bangladesh, Indonesia and even Turkey which were quota constrained under the former MFA. But Egypt has been protected by the Qualifying Industrial Zone (QIZ) protocol with the US and Israel since the end of 2004, and by the Euro-Mediterranean Partnership agreement with the European Union (EU) the following year. Nevertheless, in 2008, the industry accounted for 26.4 percent of industrial production, total value added of LE 33.5 billion and close to 10 percent of the country's exports. TC enterprises account for a fifth of all industrial sector firms, being the largest single employer with over 400,000 workers (El-Haddad 2012).

But TC moved to second place in importance behind the resource based chemicals and petroleum sector in 1998, which soon supplanted TC. There has been some positive export growth in basic metals since 1999 (e.g. iron and steel,

aluminum), fabricated metals (e.g. autos, machinery and boilers) and other manufacturing particularly paper products which have been growing at impressive real rates since the 80s, continuing to grow even after the crisis with a real growth rate of 19% 2009-2011 (Table 10). The food sector is also amongst the fastest growing, except during 2004-2008. It seems that after the crisis the food sector absorbed a lot of the displaced labor, growing at 18% in 2009-2011 compared to negative growth rates for the other sectors (see Tables 1 and Figure 2 in Annex for more details).

Just as for chemicals and petroleum value added (presented above) the sector's exports themselves are also dominated by petroleum refineries, though industrial chemicals (e.g. fertilizers, pesticides and plastics) have been growing faster especially since 2003 and refineries falling back (Figure 23). However, the absolute value is not that impressive with a peak of US$2.3 billion in 2010 (see Figure 2 for 3-digit level detail and Table 1 in Annex).

Diversification

Cross country evidence supports a U shaped relationship between growth and concentration (inverse of diversification) (Imbs and Wacziarg 2003, Klinger and Lederman 2004, later Hesse 2008, for MENA countries see Diop, Marotta and Demelo, eds. 2012 WB forthcoming), with the implication that the effect of export diversification is non-linear. But this relationship is best seen as a correlation as the nature and direction of the causal relationships is a matter of some debate. For example, according to Hesse (2008) and Cadot, Carrere, Strauss- khan (2009) poor countries benefit from diversification while rich benefit more from specialization. So what do the trends presented above tell us formally about diversification?

The previous analysis can be summarized utilizing four concentration/diversification indices namely: GINI, the normalized HHI and the Theil Index (Figure 24) and the concentration ratio (CR). All four indices confirm the trends above and show increased concentration since 1991 with the dominance of the chemicals and petroleum - at around a fifth of all merchandise exports in 2009-2011, Table

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[8] Note that the series are deflated using the export unit value index and so volatile oil price effects may still have their bearing even on the real series.

11 and Table 1 in Annex) and TC sectors - at just under 10% - and to a lesser extent basic (8.3%) and fabricated metals (6.5%) and the food sector (5.4%) following a period of balanced growth among all merchandise exports (compare to Figure 22 above). At the 3-digit level the top five exports during the past two years have been industrial chemicals, petroleum refineries, non-ferrous metal basic industries, clothing and food, together they account for 32% (CR5) of all merchandise exports (Table 12). Earlier textiles were in the top 5 exports but have lost their position since 2004 to industrial chemicals.

Sophistication

As has been stressed for decades, it is a change in the quality and sophistication of what a country exports that matters for structural transformation and ultimately economic growth (e.g. Ricardo 1817; Kuznets 1971; Chenery and Syrquin 1975; Pasinetti 1981). More recently Hausmann, Hwang and Rodrik (2007) have come up with a specific measure (EXPY) for the sophistication of a country's export basket. EXPY measures the productivity level associated with a country's export basket or the average income level of that country's export basket. The higher the measure the more similar is the export basket to that of rich countries. In the following analysis Egypt's EXPY will be analyzed comparatively. But before that a measure for the technological content of Egypt's exports calculated by the WB is presented.

Reflecting the decline in agriculture, exports of primary products have significantly fallen from three quarters of Egypt's exports in 1981 to a fifth by 2004 (Figure 25). Low technology exports have been rising at first, but declining since the late 90s, a reasonable favorable trend if it was offset by high technology exports. But in Egypt these represent less than 1% and medium technology exports have risen at a trifling rate since 1987. Instead - the point stressed so many times in this paper - resource based exports (e.g. natural gas and crude petroleum) have been persistently on the rise since the early 80s into 2005 with the exception of a few years early 90s.

Like Egypt the Philippines is a lower middle income country. At the start of the 1990s, EXPY

in the Philippines was at a similar level to that for Egypt a couple of years later (Figure 26).[9] But in less than a decade the Philippines sustained export diversification into technologically more sophisticated products, taking it up to level comparable to high income countries, whereas Egypt's EXPY remains well below.[10]

Egypt's EXPY is comparable to that of other MENA countries, outperforming Tunisia, Lebanon and Morocco but superseded by the gulf countries (Qatar, Oman, Kuwait, Saudi Arabia and even Iraq; see Figure 27. In comparison, China's EXPY has been rising steadily to the levels of the more advanced countries. India's EXPY is also rising though at a much slower pace compared to China.

Like income inequality and diversification the relationship between EXPY and GDP per capita is log-linear (Figure 28). In 1994 Egypt was slightly above the regression line (the red dot), that is doing better than expected for a country with its income level. Fifteen years later, by 2009 however, the country's position was exactly on the line (Figure 29A) (closer to the linear regression line, Figure 29B) indicating a worsening in its export basket (Figure 27).

To sum up in, relative terms the country's exports as a percent of GDP lag behind those of the MENA region. Merchandise and service exports account for roughly equal shares of GDP (~12% in 2011), but only the latter enjoys a positive trade balance.

There has been structural transformation in Egyptian exports. But this structural transformation has not been particularly favorable, and then only sometimes. In services, tourism has been growing fast, tourism and travel contributing around 80% of service exports – that is service exports are highly concentrated. Tourism has been growing faster since the late 1990s than commercial services which have higher value added, partly as the

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[9] Through extrapolation Egypt's EXPY in 1991 would be very close to that of the Philippines that year.

[10] I take the hike in Egypt's EXPY since 2004 with caution, since it does not exist in studies that have computed it for Egypt. I take it here to be an outlier.

tourist sector has not ventured much into higher value activities (e.g. adventure tourism).

Primary exports have contracted with the decline in agriculture. Manufacturing exports on the other hand have sustained a real growth rate of over 10% for 20 years (1981-2002), and now account for 57% of all merchandise exports. With the decline in crude petroleum and natural gas sector exports during the same period, this increased share appeared to be a remarkable structural transformation.11 But since the beginning of the decade and prior to the crisis the resource based petroleum sector has grown at double digit real growth rates (~ 30%), much faster than growth in manufacturing. As a result it now singlehandedly contributes a significant ~40% of total merchandise exports (2011).

Within manufacturing, there has been gradual transformation in and out of light industry exports such as textiles and clothing and the food sector has taken place. But since around 1998 these exports were supplanted by the resource based chemicals and petroleum sector, which largely consists of low value added petroleum refineries with some modest growth from industrial chemicals - sustained even after the crisis (e.g. fertilizers, pesticides and plastics) – and non-ferrous metal basic industries (e.g. aluminum). With the sharp growth in refineries especially since 1998 diversification in manufacturing has regressed since 2003. The top five 3-digit manufacturing exports more than doubled their share in Egyptian exports since 2003 (~30%). These exports have never included sophisticated products such as electrical machinery and equipment.

Sophistication and technology content measures confirm these trends. EXPY, an export sophistication index, shows deterioration in the 15 years between 1994 and 2009. With the decline in primary exports, manufacturing exports have moved in and out of low technology commodities but these were replaced by resource based natural gas and crude petroleum exports not high tech products. Medium technology products have also been rising at a negligible rate, re-enforcing the

increased dominance of resource based exports (at 50% of all Egyptian exports in 2004).

So what are the forces behind these trends? Are the reasons mainly external, or did industrial policy play a role? If policy mattered, was it macro industrial policy or rather sector specific policies? There is a straight answer to these questions: a bit of both. Many different forces have left their mark on the structure and orientation of Egyptian value added and exports. The following section discusses these in greater detail.

3. History and Overview of Egyptian Industrial Policy

Egypt took its first steps of industrialization toward the end of the 1800s. But manufacturing development was slight until the late 1940s. More explicit attention to industrial policy emerged since 1952, since when Egyptian industrial policy falls into broad two periods: inward-looking import substitution industrialization from the late fifties to the early seventies, and gradual liberalization thereafter. These can be further sub-divided to give four distinct periods overall. The following section describes industrial policy for each of these four periods, briefly for the earlier periods.

3.1 Import Substitution Industrialization (1952-1972)

The global commodity crises in 1920, 1921, and 1926 followed by the great depression of 1929, and particularly the sharp decrease in world cotton prices, led Egypt toward import substitution. Government policies in Egypt to support industrial development have changed to reflect shifts in the underlying approach to economic development. Inward-looking development strategies dominated much of the thinking of several newly-independent countries, such as India and the Maghrib countries, in the second half of the 20th century. In terms of industrial policy, such an orientation resulted in the adoption of import substitution industrial strategy (ISI). At the heart of ISI is the infant industry argument: protecting baby industries from external competition of well-established rivals will push these industries to grow, gradually becoming able to successfully compete in international markets.

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[11] Still of course nothing compared to the 17% manufacturing growth in South Korea.

The county moved toward a planned economy in the 1960s that the country shifted to a pure planned economy. The move was triggered by government frustration at the inability of the private sector to meet the large investment targets set out for 1957 (Abdel-Khalek, Soliman *etal.* 1998). This orientation was accompanied by a massive wave of nationalization which included the industrial and financial trade structures of the economy. With the drafting of the first 5 year plan (1960/61-1964/65), the state took increasingly direct control of industrial production, with output levels determined by planners rather than the market.).

Traces of ISI are still evident despite the application of the ERSAP and the latest reforms of 2003. Import substitution called for an active industrial policy of which trade policy is just one element. Price ceilings were common including on interest rates as was credit rationing, subsidies and administratively set exchange rates and wage controls (El-Haddad 2010). Mabro and Radwan (1976) argue that the dependence of the ISI strategy on imported inputs, and the large expenditures on construction and subsidies combined with limited exports and declining labor productivity generated a huge foreign currency shortage resulting in Egypt's first and second payment crises' in 1962 and 1965 respectively (cf. Mabro 1974; Waterbury 1983).

Whilst Waterbury (1983) is right to blame Egypt's poor economic performance on inefficiency this is not the only factor. There were also external factors (e.g. cotton harvest infestation (1961), the Yemen war (1962), nationalization bill paid to the UK, defense expenditures and of course the deferral of US food for peace shipments after (1965) and later defense expenditures relating to the (1967) and (1973) wars. In fact, development efforts almost came to a halt during 1965-1973 as funds were re-directed toward military objectives (El Said 1995).

Land reform was carried out to redistribute rural assets,[12] but it was also planned to free substantial agricultural capital to be placed in industry. Agriculture – despite remaining fully

private - was also used as a resource base for the industry, again through price controls, yield planning and cooperatives (Kenawy 2009) amongst other things. But the private sector refused to follow this plan. Nasser's military regime and the land reform's wrest on private property created a crisis of confidence and trust between the government and the private sector. As a result, rather than reinvesting their profits, private sector industrial firms enlarged their dividend payments. Dividend's share of profits increased from 59% in 1954 to 80% in 1958. In addition, instead of investing in industry private investment was directed to urban real estate, nearly doubling between 1954 and 1958 reaching a value of LE 59 million (Mead 1967, in Waterbury 1983).

Earlier in the paper, increases in real growth rates and in industry were highlighted as a result of Nasser's serious industrialization efforts particularly during the first five year plan. But these rates were not-sustainable not just for the external factors highlighted above but also because of internal shortcomings. Industrial policies were primarily price based neglecting competitiveness in favor of other (social) policy goals. Individual incentives were ignored and policy targets were mistakenly thought to be achieved through command and control.

3.2 Open Door Policy (1973-1990)

Nasser's successor, El-Sadat, reversed the nationalist-socialist development strategy, integrating Egypt into the international global capitalist market, largely through the open door policy or the "Infitah" policy. This period was one of partial liberalization. Reforms concentrated on the liberalization of the foreign exchange market and consumer imports. Business regulations were simplified, providing incentives under law number 43 for the year 1974 to attract private capital. After Mubarak succeeded El-Sadat in 1981 he deepened Egypt's integration into the global capitalist system.

Both El-Sadat and Mubarak retained some main features of Nasser's import substitution policies. There were only minor modifications to pricing and subsidy policies, government continuing to apply many of the ISI tools to achieve industrial

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[12] The first land reform in 1952 placed a ceiling on individual landholdings of 200 feddans.

development (cf. El-Haddad 2010; Abdellatif 2000).

The public sector remained a large political and economic power as the government maintained tight control over state enterprises and continued to monopolize public utilities (cf. El-Haddad 2010; Kenawy 2009). Both corruption and inefficiencies prevailed the inflated (bureaucracy of the) public sector. The influx of foreign capital, much in the form of aid – the price paid by the US in return for Egypt's peace accord with Israel- diverted attention away from the inefficiency of domestic production, especially those in industry particularly manufacturing. Foreign aid during this period mostly went to support food subsidies to fend off potential uprisings[13] and the spread of terrorism provoked by negative sentiments towards peace with Israel.

In contrast to the consumption phase that dominated the seventies and much of the eighties, there was a slight shift back toward industrial development in the late 80s (Figure 4). Pressure on foreign exchange resources following the two oil price shocks in 1973 and 1979, prompted importing firms to switch to industrial activity. These moves were supported by the establishment of new industrial cities and import restrictions to protect domestic industry (El-Said 1995), the latter introduced to deal with the severe negative trade balance since the initiation of the open door policy (Figures 15 and 16). But it was too late. By the end of the 1980s per capita GDP was falling. In addition, the country faced a severe budgetary deficit and large accumulated debt. External debt grew by more than 10 fold from less than US$2 billion in 1970 to about US$21 billion in 1980, and to roughly US$50 billion in early 1990 (Hamza et. al 2012).

3.3 Economic Reforms: 1991-2010

In response to growing severity of the economic situation, in 1991 the government initiated an IMF and World Bank-supported Economic Reform and Structural Adjustment Program (ERSAP) to achieve macroeconomic stability

and stronger market orientation, decentralization, liberalization and privatization of the economy. Since 2003, further economic reforms were introduced on all fronts to promote deeper market and outward orientation.

Four key policy areas are discussed in this paper: 1) the general policy framework (or setting) and business environment; 2) building industrial capabilities; 3) promoting global linkages; and 4) sectoral policies. Table 2 in the Annex details industrial policy categorized under these headings since the beginning of the 1990s to 2010. I distinguish between those policies adopted in the 1990s and those in the first decade of this century so as to examine policy shifts between the two periods. The policies are also classified into active and neutral.

Active, vertical or hard policies are selective interventions to induce competitiveness or "latent comparative advantage" (Amsden 1989; Wade 1990; Chang 2002; Pack 2000), whereas neutral or horizontal implement functional policies to promote across the board competitiveness (Reich 1998; Pinder 1982). Linking the two periods is the gradual abandonment of earlier hard industrial policies. What distinguishes the last decade is the move away from simply liberalizing the economy as in the 1990s, to steps toward implementing interventions to address imbedded structural problems of the industrial sector. Neutral is taken here for policies with across the board effect, i.e. those benefiting the entire economy, active are those that would solely influence industry and/or manufacturing.

Several of the later reforms discussed in this paper were implemented in cooperation with the EU. Under the 2001 association agreement with the EU, which became effective in 2004, Egypt signed an agreement for 250 million euro in technical assistance to support Egypt's industrial modernization program (IMP) – the largest amount ever committed by the EU to a single project in the Mediterranean partnership area (European Commission 1999). To stress principles of a partnership this sum was matched by 106 million euros provided by the Egyptian government and 74 million euros provided by the beneficiaries. In parallel, the Ministry of

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[13] Recall the bread upheaval in 1977 following Sadat's raising of bread prices.

Industry and Technology with the assistance of UNIDO, formulated a complementary program, the Egyptian National Program for Industrial Modernization, to improve the capacity of industrial institutions such as the Ministry of Industry. The two programs were combined in an integrated industrial modernization program (IIMP) which aimed at enhancing SME competitiveness, assisting the Ministry of Industry in policy reform and upgrading capacity of professional associations and local consultancy (UNIDO 2003).[14]

3.4 General Policy Setting and the Business Environment

Fiscal, Monetary and Trade Policy

Economic Reform and Structural Adjustment (1991-2002): ERSAP provided a framework for monetary, fiscal, and external trade policy reforms. The newly-liberalized regime relaxed controls on price and interest rates, reducing subsidies (e.g. a gradual liberalization of some utilities prices, mainly electricity and gas) through a tighter fiscal policy, moves toward a liberalized foreign exchange market,[15] with more flexible and unified exchange rate as well as reduced restrictions on FOREX trading; a reduction in tariff rates; and lifting of import bans (i.e. elimination of non-tariff barriers (NTBs)). Nevertheless, reductions and exemptions from custom duties and escalating tariffs were utilized to encourage certain industries, particularly consumer durables and assembly industries,) as well as the use of local content requirements. Ministerial decree # 304/198916 stated that the Ministry of Industry decides on local content requirement for every assembly industry.

The tariff structure was also rationalized with successive reforms throughout the 1990s, reducing tariff dispersion and bands.

Liberalization - particularly trade - has been increased by Egypt joining the World Trade Organization (WTO) in 1995. Overall these policies eased distortions in the economy and at the macro level reduced inflation,[17] budget[18] and trade deficits (Figure 15 and 16).[19] Nevertheless, many features of the economy in earlier periods remained. First, excessive public ownership at 72%, 61% and 41% of capital, output and value added respectively during 1992-1997 (Abdellatif 2003). Second, protection of domestic industries through both relatively high tariff rates (e.g. in TC, food industry) as well as the substantial energy subsidy which benefited capital intensive sectors the most (Table 14).

In summary, Egypt protected products that can be, or actually are produced, locally. This is in stark contrast with Asian countries which protected industries that are subject to considerable economies of scale such as automobiles, televisions, steel and petrochemicals (cf. Amsden 1989, Edwards 1992).[20] Hence, while Egypt merely sought to reinforce its existing comparative advantage, Asian countries *created* theirs. For example, Korea had a two track liberalization system in the 1980s whereby protection was withdrawn from industries that had become internationally competitive (i.e. they were placed on the high track) but extended to advanced technology products (Trade and Development Report 1994). Hence pattern of protection and subsidies is far from uniform.

During this period and that of Sadat, mixed signals were provided, simultaneously encouraging the private sector whilst supporting and praising the public one. The two governments provided cheap state credit to the public sector (Moheb 1999), which is the same

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[14]The Industrial Modernization Center (IMC) was established in 2000 as the implementing executive arm of IMP. The IMP focused on three distinct areas: 1) enterprise modernization; 2) industrial sector upgrading; and 3) industrial policy and sectoral support. It concentrated on enterprises more than ten workers, whilst the Social Fund for Development supported those with less than 10.

[15]Although it remained a fixed-peg regime. The pound was devalued by 15% in 1991 then remained fixed around 3.4 LE per US$ up to 1999 (El-Ebiary 2009).

[16] This law is included in this period of analysis as an exception since it has implications for trends seen in the data.

[17]from 22% in 1990/91 to 3.7% 1998/99

[18]from 20% in 1990/91 to 1.3% of GDP during 1998-1999

[19]As a result Egypt's World Bank country classification improved to lower middle income country category.

[20] In the same way they protected some industries but not others they also protected some firms within any one industry but not others. Not only did South Korea, for example, support certain industries but the entire chain of operation related to the output of that industry. And so incentives for import substitution were also provided for firms in the upstream industries that provide these exporters with their supplies (Trade and Development Report 1994).

as increasing effective rates of protection for public production, and bailed out public sector companies in crisis, so that these companies operated under a "soft budget constraint".[21] The soft budget constraint is another way of fostering inefficiency.

Too many people had a stake in the public sector: management, the army of workers it employed and those private sector elites who got awarded contracts for the large public sector (e.g. the famous construction company El-Mukaueloon El-Arab). In Egypt corruption was mixed with a desire not to antagonize public sector employees and civil servants resulting in substantial inefficiency. Whilst also a dictatorship, in Korea the government suppressed labor and corruption was used effectively to create the "Chaebols". The Chaebols are large diversified business groups which now control South Korean society (Hyundai, Samsung, Daewoo and Lucky Goldstar represent the four major giant-Chaebols, El-Haddad 2010), which were behind the drive to a modern efficient economy..

Period of Deeper Market Orientation (2003-2010):During this period the government followed an expansionary fiscal policy to stimulate demand, the budget deficit reaching 9.5% of GDP in 2010/2011 (CBE 2011). At the same time the tax regime was rationalized with some attempts to build the tax base. Tax holidays provided under law 8[22] were abolished by law 94 in 2005 (Ministry of Investment 2006) and a new tax law (number 91 for 2005) unified tax rates, reducing the corporate tax rate to 20%. Sales tax was extended to wholesale and retail in 2001 (Femise 2004). In 2004 the general sales tax range was extended to 5%-45% (WTO

2005),[23] though capital goods were exempted from sales taxes in 2006 (Abdellatif 2008). A new industrial energy policy was introduced in 2007 to gradually remove the energy subsidy more so for capital intensive industries,[24]but, conversely, financial subsidies were provided to projects in Upper Egypt (Ministerial Decree 719/2007).

The central bank announced inflation targeting as its primary goal (law 88/2003). In 2001 a crawling peg exchange rate was adopted and a managed float as of 2003 (El-Ebiary 2009). The pound was devalued through 2001-2004 between 6-30 percent each year (Table 15).

Substantial consecutive tariff reductions were introduced, reaching an average of 9% by 2004 (Ministry of Finance 2004), markedly reducing effective rates of protection on practically all industries (Table 14). Reductions in escalating tariffs also took place (WTO 2005). According to ministerial decree 1230 in 2004, all taxes and charges on imports were removed (*ibid.*). Further rationalization of the tariff structure was introduced, reducing brackets to just six and removing inconsistencies, so similar inputs became subject to the same tariff bracket (Ministry of Finance 2004).

Customs valuation procedures were simplified through applying General Agreement on Tariffs and Trade (GATT) agreement on customs valuation (decree 765/2001). Instead of import bans, technical and safety specifications were used as a non-tariff barrier (WTO 2005). To simplify trade and customs regulation government passed and amended over 15 legislative acts since 2004 (ADB 2012). Egypt is rolling out its Trade Net electronic trade document system[25] to connect all agencies to a single electronic point transaction. Trade reforms included programs to build capacity inside the Ministry of Trade and the Customs Administration such as the EU funded Technical Enhancement Program (TEP).

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[21]"Softening of the budget constraint occurs when the strict relationship between expenditure and earnings has been relaxed because excess of expenditure over earnings will be paid by some other institution, typically the state. A further condition of softening is that the decision maker expects such external financial assistance with high probability, and this probability is built firmly into his behavior" Kornai, 19?? Kornai, the first one to use this terminology, argues that there are different ways to soften the budget constraint of the firm: through 1) soft subsidies, 2) soft taxation, 3) soft credit and; 4) soft administrative prices (ibid.). For a recent literature review on soft budget constraints see Maskin (1999). For work on the soft budget constraint in China see Qian and Roland (1997).

[22] See the following section on investment law 8 for the year 1997.

[23] For goods and services not specified in the law the sales tax is 10% (WTO 2005).

[24] And to also remove their free zone status as of 2008.

[25] That is covering more agencies over time, rather than all at once

All these measures resulted in a significant improvement in Egypt's trade tariff restrictiveness index (Table 16). Nevertheless, despite improvements in the overall trade restrictiveness index, Egypt is doing worse in relation to comparators: government officials resist implementation of the laws as prescribed, additionally petty corruption still exists (despite streamlining) thus keeping transaction costs high (El-Haddad 2012). For example, a study of the new customs valuation agreement comparing it to the WTO Valuation Agreement, found that Decree 765 fell short in two important areas: the definition of "actual value" of imported goods and the Customs Authority's right to reject the importer's declared price based on variance from similar, or identical goods (GAIN Report Number: EG3023). As a result the overall index, which includes non-tariff barriers, shows Egypt's unfavorable position, despite the significant improvement over time.

Steps toward a Better Business Environment

The government took some steps to encourage private investment by providing incentives and improving the business environment so as to reduce regulations and transaction costs throughout the two periods.

Direct Promotion of Private Investment

Economic Reform and Structural Adjustment (1991-2002): In 1991 law number 203[26] started the process of privatization of public sector companies which in turn reduced public sector dominance in manufacturing, especially in heavy industries (ADB 2012). In addition, since the mid-90s a number of infrastructure services such as electricity generation, port, distribution network and port services (WTO 1999) were opened to the private sector. This move partially explains the rise in services and the electricity sector within industry (Figure 2 and 4) during that period. But again privatization efforts were stalled for fear of political unrest.

The most profound and controversial investment incentive provided during this period was under law number 8 for the year 1997. This law

granted 20 incentives including tax exemptions for projects falling under its list of activities[27] for 5 years from start up, with the possibility of being extended to 20 years for projects established outside the "old valley" and 10 for those established in the new industrial zones.

But industrial zones were not new, being first established in the 1970s by laws 65 for the year 1971 and 43 for 1974 to encourage exports (see below) and attract private investment (El-Haddad 2010). These zones provide better infrastructure, introduce advanced technology and are hoped to create job opportunities, being treated as offshore areas in which firms are granted tax exemptions and custom privileges.[28]Some free zones offer complete exemption from private and corporate income taxes. Other benefits are low land rental and utilities rates (ADB 2012). Industrial zones on the other hand were intended to be independent industrial towns. The second generation of industrial zones were mostly established in new cities, e.g. Al Badr and Al Obour. In the 1990s there were 88 zones[29] (Asal 2009; IDA 2012; UNIDO 2004).

A global income tax law was passed in 1993 - prior to the 1997 law-exempting corporate dividends to avoid double taxation and lowering the corporate tax rate to 42% and to 34% in manufacturing (El-Haddad 2010).

But despite earlier attempts to ease complicated investment procedures (e.g. law 230 of the year 1989) which simplified and unified investment procedures (Abd El-Khalek, *et. al.*, 1998), investment continued to be discouraged by what

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[26] The public enterprise sector law.

[27]These are: reclamation and cultivation of barren and desert land, animal, poultry and fish production; manufacturing and mining; tourism: hotels, hotel flats, motels, resorts and tourist transportation; transport of goods; air transport and related services; sea transport; oil services relating to digging and exploration, as well the installation of natural gas facilities and natural gas transport; housing projects for non-administrative purposes; infrastructure projects for drinking water, sewage, electricity, roads and communications; medical facilities; financial leasing; underwriting subscription to securities; venture capital; computer software and high-tech products; projects funded by the Social Fund for Development.

[28] For more detail on investment laws in Egypt see Soliman et. al. (1998), Fadia Abdel Salam (2005).

[29] These are: Industrial Zones in Governorates (68), Industrial Zones in New cities (16), Free Zones (6), Economic Zone in Suez (1), East Port-said Industrial Zone (1), Heavy Industrial Zones (27).

is termed "bureaucracy of investment", which was a reflection of Egypt's poor business environment(Moheb 1999).

In response, law number 8 also granted the Minister's Council the right to allocate free land for investment projects and various tax exemptions (cf. Abdelsalam 2005). The law also allowed the General Authority for Investment and Free Zones (GAFI) to approve any investment request as long as the business is one of the 16 sectors listed in the law. Prior to that, for some categories (e.g. military products) the investor was required to get approval from the relevant ministries before s/he can contact GAFI (UNCTAD 1999).

Whilst in principle liberalization was occurring, the discretionary element in a number of these policies resulted in widespread corruption through crony capitalism, which has come to light since the January 25th revolution. Moreover, the application, implementation and enforcement of these incentives was too bureaucratic (e.g. long delays in implementation due to inefficiencies causing high transaction costs) and so tax collection, customs administration procedures, entry and exit procedures and regulations remained complicated and again discretionary in many cases (e.g. decided upon by tax collectors and customs officials) (cf. Ghoneim 2005; UNCTAD 1999; Fawzy 1998; Galal 1996).

Credibility problems were also a drag on Egypt's development during this period. Continuous changes in the laws, even though encouraging investment, were perceived as ad hoc, "arbitrarily made by the president and could therefore be also arbitrarily changed" (Moheb, 1999, pp.??). Issues of credibility and businessmen fear of arbitrary policy reversal were also stressed by Galal (1996) in his analysis of results of a survey of 43 manufacturing firms. The mixed signals (see above) provided by Mubarak - and earlier by Sadat - intensified the credibility problem. The public sector was still glorified because of fear of political instability instigated by workers in public enterprise. Again and most notably, the pattern of support kept loss making firms alive, and so the soft budget constraint, and not just for

the public sector. Tax and custom exemptions and the energy subsidy were granted based on location or sector or uniformly but were never linked to performance.

Period of Deeper Market Orientation (2003-2010): More investment incentives were provided later in law 13 of the year 2004 and in 2005 under the provisions of the presidential decree number 30 and the new tax law (#91). Decree 30 gave the prime minister the authority to grant further tax exemptions, energy price subsidies, make exceptions from general investment regulations for projects aiding the transfer of technology to Egypt, improving Egyptian worker skills or enhancing the quality of Egyptian products. Whilst the incentives may be desirable, the discretion in which they can be awarded is not. The tax law on the other hand placed the regaining of trust between tax authorities and tax payers at its forefront.

A positive achievement in this period is the "One Stop Shop", established in GAFI's headquarter to carry out enterprise registration procedures. The investor will not have to seek approval from different government bodies in order to establish his/her project, rather all relevant delegates from the relevant governmental agencies are placed together "under one roof" (law 94/2005 http://www.gafinet.org/profile.htm, 09/03/2008, see also the Investment Policy Review, 1999, UNCTAD 2005). The same law simplified and streamlined entry and exit procedures through unifying company establishment and tax collection procedures (the latter through tax law number 91 of 2005).

These measures have resulted in an improving business environment: since 2004 the World Bank's Doing Business report has three times listed Egypt as one of the world's top ten performers in implementing reforms concerning government regulations to attract foreign investment. For example, the number of days to register property fell from 193 days in 2008 to 72 days in 2011,and the cost of starting a business from as a percent of income per capita from 66% in 2004 to 28% in 2008 and further to 20.4 in 2010. But Egypt remains in the bottom 20% for enforcing contracts (# 147 of 183

countries in 2012). Likewise, competitiveness has not improved over the same period, in comparison to other countries (Table 17).

Finally, privatization has sped up (CARANA 2002) and in 2010 the private public partnership (PPP) law was enacted (#67/2010) to set a framework for PPP infrastructure and public utilities projects.

> *Intellectual Property Rights, Competition Policy, Consumer Protection and the Labor Market*

Economic Reform and Structural Adjustment (1991-2002):Intellectual property rights were governed by treaties as old as the 1950s (WTO 1999, ADB 2009); and the labor market by the 1981 labor law with limited dismissal rights, substantial firing costs and significant restrictions on the use of foreign labor at all levels. The government removed public sector employment guarantees for graduates, rationed enrollment by the Ministry of Education and increased the waiting period for government appointments (Assaad 1997). This policy was an improvement to earlier periods of the public employment drive in the early 1960s when government guaranteed employment for every secondary and postsecondary graduate, lifetime job security and numerous other benefits such as public health insurance, associated with these jobs (*ibid.*). Total public sector employment in the sixties was estimated to be 20 to 30 percent above production requirements, despite which the public sector work force continued to grow by 5% per year over the period 1971-1976 (Waterbury 1983).

Moreover, consumer protection laws.and enforcement of these laws, were weak and there was no competition law or framework in practice. The latter was necessary with increased market orientation to control anti-competitive behavior of firms, such as collusion and predatory action against potential entrants or existing rivals.

Period of Deeper Market Orientation (2003-2010): Laws to improve Egypt's market orientation have been introduced across the board: the Intellectual Property Rights law[30] was issued in 2002, the competition law[31] in 2005, and the consumer protection law[32] in 2006. The 2003 unified labor law was also issued allowing more flexibility in the labor market.

3.5 Global Linkages: Promoting Foreign Investment and Exports

a) Foreign Investment

Economic Reform and Structural Adjustment (1991-2002): In addition to the privileges offered by Egypt's various free zones, the 1997 investment law eliminated all forms of discrimination against foreign investors. For example, foreign investors became able to purchase Egyptian land and real estate and to repatriate both capital and earnings. The companies' law (number 3/1998) allowed foreign investors to own up to 100% of a company based in Egypt with the exception of the oil sector which still requires Ministry approval on all projects and operations. Compared to the 1980s FDI has improved in the first half of the 90s, i.e. prior to the passing of the 1997 law (Figure 30, Table 18) but it was mostly concentrated in the dominant extraction industries (i.e. oil, gas, iron and phosphates) and related up-stream processing. But it is also increasing in manufacturing and services. Current FDI is much higher than that of comparators (ADB 2012).

Foreign direct investment is net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows total net, that is, net FDI in the reporting economy from foreign sources less net FDI by the reporting economy to the rest of the world.

Period of Deeper Market Orientation (2003-2010): Whilst reducing red tape and streamlining administrative regulation, the earlier generation of free zones focused on

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[30] number 82

[31] number 3

[32] number 12

importing goods and re-exporting to other destinations, to special economic zones or industrial zones. In response, there was a move away from traditional free zones to industrial parks, special economic zones (SEZs) or industrial zones (SIZ), which provide more streamlined administrative procedures, diverse services and improved infrastructure to upgrade the industrial structure. SEZs are targeted at specific activities (e.g. textiles and clothing, media) with infrastructure adapted accordingly (ADB 2012). The government restructured its IZ development program in 2006 to grant Public Private Partnerships the right to long term land development, management and operation of these zones. Around the same time investment zones were created by a ministerial decree (law number 19/2007). The trade balance for free zone activities had been negative during the ERSAP period only turning positive starting 2002 (*ibid.*). Finally, the other significant measure was the transformation of GAFI from being a regulator to an investment promoting agency.

b) Export Promotion

<u>Economic Reform and Structural Adjustment (1991-2002):</u> Exports measures can be divided into those eliminating export bias and export promotion efforts. All non-tariff barriers on exports were abolished between September 1996 and June 1997 (WTO 1999). As discussed above, law number 8 promoted exports by establishing free zones with simplified procedures and tax and custom privileges and exemptions compared to other locations (UNCTAD 1999). Exporters were allowed duty free imports - through the import temporary admission and the duty drawback systems - provided these will be re-exported in a more processed form.[33] Export finance was provided through the Export-Development Bank of Egypt (EDBE) and the Egyptian export guarantee company (WTO 1999). Government also undertook some promotion of exports through bilateral and multilateral trade agreements (e.g.

GAFTA, several bilateral trade agreements with Arab countries, COMESA).

<u>Period of Deeper Market Orientation (2003-2010):</u>Free zones to SEZs and IZs and QIZs were upgraded with better infrastructure, further simplification of their procedures, and tax and customs concessions also remained to further promote exports and investment (Ministry of Foreign Trade 2003).

The draw back and temporary relief systems were meant to be uniform, i.e. all firms exporting were entitled to them. But in reality often producers with access to political power or connections, or those capable of greasing the hands of bureaucrats, were provided with these incentives or provided them in a timely manner (El-Haddad 2010, 2012). In addition, obtaining these benefits was excessively bureaucratic with large transaction costs (Ghoneim 2005). And so, in 2002 these were computerized and their procedures simplified (Ministry of Foreign Trade 2003).

Of most importance are the latest reforms undertaken by the Ministry of Finance (see business environment above) which streamlined customs procedures. Consequently, average clearance time dropped by 50% to the range of 3-5 days (World Bank, 2006). In addition, large investments in Egyptian port infrastructure encouraged exports and investment more generally. As a result Egypt ranks 4th out of 19 Arab countries on the trading across border index, and 60th out of all 181 countries (World Business Report 2008).[34]

The provision of export financing was extended to the National Bank of Egypt (NBE), having been previously restricted to the EDBE and the guarantee company (Ministry of Trade 2003).

Elimination of anti-export bias was further reinforced through the reductions in tariffs and customs referred to above, which had earlier made production for the domestic market artificially more profitable. Whilst no statement on an overvalued pound can be made without

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[33] These systems allow exporters temporary relief of tariff and tax payments and to be reimbursed for incurred insurance (which equals the value of tariffs and taxes that would otherwise be levied were the imported materials not used as export inputs) as long as the imports are used as inputs to their final exports within one year of being imported.

[34]The trading across border index looks at the procedural requirements for exporting and importing a standardized cargo of goods. Every official procedure is counted -- from the contractual agreement between the 2 parties to the delivery of goods -- along with the time necessary for completion

rigorous analysis reliance on petroleum exports and other forms of rent (e.g. workers' remittances, Suez Canal revenues and massive foreign aid flows) undermined competitiveness. And so the continual depreciation of the exchange rate up to 2004 also made exports more competitive (Table 15).

Additional trade agreements were ratified including the QIZ agreement with the US and Israel (2004), the Egypt-EU partnership agreement and the FTA with Turkey, all of which allow Egyptian products duty- and quota free access to these markets conditional on rules of origin.

The IMC and Social Fund for Development have been actively engaged in export promotion through trade fairs and trade missions (IMC 2009; MoFT 2003). More generally several government agencies support exporters in marketing, training, funding and market research. However, there are too many agencies playing similar roles, and not all agencies are cost effective (ADB 2012; Table 3 in Annex gives a comprehensive list of all agencies). These agencies often lack coordination and the institutional capacity to implement reforms and supervise incentives, which would be the case even in the absence of corruption (El-Haddad 2010).

In contrast to earlier export support, for the first time financial support was granted to exporters on the basis of performance indicators, thus utilizing incentives. The Export Development Fund was established in 2002 (law 155), providing support as a percent of the total value of exports.[35] However, the institutional relationship between the private sector and government were deficient. Allegations of corruption have been made regarding the administration and transparency of this fund. Unlike in Egypt in Korea for example Korean businessmen were both supported and disciplined (cf. Amsden, 1989, Haggard, 1990, 1995; and more generally applicable to all NICs: Galal and El-Megharbel, 2006). Export targeting arrangements were specified in detail by issuing licensing to individual companies allowing them

to produce a particular range of products but conditional on the company achieving specified export targets. Many researchers have stressed that the profits from the captive domestic market were used to countersign possible losses in an uncertain export market (e.g. cross subsidization; cf. Amsden 1989; Wade 1990; Trade and Development Report 1994). And so import control was combined with export promotion and inward-orientation towards the domestic market with outward-orientation (El-Haddad 2010).[36]

These polices were achieved by state planning and a very strong commitment by the Koren President Park. Monitoring of performance was an integral part of this success story. Progress in meeting export targets was monitored at monthly meetings of cabinet members, business men and government officials chaired by the president himself (*ibid.*). As Elbadawy and Gelb (2010) put it, enforcement mechanisms in Asian countries were superior involving clear targets, incentives, recognition of superb (export) performance, ruthlessness in privilege termination if targets are not met[37], and committee monitoring structures that guarded against capture.

3.6 Industrial Capabilities

A country's productivity depends on its productive capabilities (cf. Lall 1992, 1996, 2001a, 2001b, 2003 and, Hausmann and Hidalgo 2009). The set of productive activities determine productivity which in turn determines the level of sophistication of a country's products (Hausmann and Hidalgo 2009). Industrial capabilities are divided into human resources and technical capabilities for workers, firms and physical infrastructure.

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[35] Textiles and clothing were the top beneficiary accounting for around 57% of the fund's funds.

[36] It has been said over and over that incentives should be linked to performance (e.g. Galal and El-Megharbel, 2006, Amal Refaat 2003, Handoussa 1988). However the new stipulation relevant to the import of raw materials under the "temporary admission" system runs entirely counter to this suggestion. A representative from the Ministry of Health must be present at a factory while the inputs are being used in production. The impracticality of the stipulation is at least twofold: 1) incentives are linked to production rather than exports (which are directly linked to competitiveness); and 2) delegating to a representative opens the door to side payments and favors.

[37] And so rents were provided on a competitive basis to those individual industries and firms able to achieve the government's "economic" goals of rapid development (El-Haddad 2010).

Human Resource Development

Economic Reform and Structural Adjustment (1991-2002): The Ministry of Education is the prime agency responsible for human resource development, along with multiple agencies responsible for technical education and vocational training at the secondary, entry and post entry levels to the labor market. On the other hand the Productivity and Vocational Training Department[38] affiliated to the ministry is the main body responsible for industrial vocational training. For years Egypt's vocational education and training system has been run down, underfunded, deficient and in need of modernization. There is no systematic information on worker training within the private sector. In 1990 in an attempt to prepare students to industrial and agricultural labor market, the government established Industrial and Agricultural Vocational Secondary Experimental Schools.

There was not a systematic approach to human resource development but ad hoc projects such as the German-funded Mubarak-Kohl Dual System pilot training project initiated in the 10th of Ramadan Governorate. It drew strongly on the German dual system under which students divide the week between attending in the technical secondary school and in companies for practical training, hence MKI-DS. It was done in partnership with the Ministry of Education (MoE) which provided schools, technical equipment, and teachers for two days per week. For the rest of the week the companies trained the apprentices sometimes also paying them a small salary (Essa 2002).

Towards the end of the period the National Skill Standard project was implemented in 2000, to establish skill standards and to set procedures for testing and certifying trainees. It is funded by the Social Fund for Development and is supported by a team of local and international consultants (led by the British Council) in cooperation with employers.

Period of Deeper Market Orientation (2003-2010):This period has witnessed substantial efforts on the human resource front,

the effectiveness of which is discussed below. The industrial skill training center was established in 2005 to promote vocational training. The Industrial Training Council was established in 2006 mainly coordinating and supervising all vocational and technical training activities related to the Ministry of Trade and Industry. The attention given to vocational education and training (VET) has resulted in the formulation of the Technical Education Strategy (2011/2012 –2016-17) which provides a framework for technical education in Egypt. The strategy was developed by the Ministry of Education with the aim of establishing an efficient technical education system (UNESCO website).

Two major projects were implemented during that period namely: 1) the EU- funded Technical Vocational Education and Training (TVET) program; and 2) extension of the Mubarak-Kohl Dual System.

Technical Vocational Education and Training (TVET) program

Realizing the deficiency of technical education and vocational training systems in Egypt in meeting the skill requirements of the expanding modern private sector the EU national indicative program (2002-2004) proposed a Technical Vocational Education and Training (TVET) program with the objective of assisting the government in raising human resource capabilities by supporting the reform of key components in the TVET system, intending to bring about a coordinated and radical reform that transforms the entire sector (European commission, Egypt country strategy report (2002-2006) & National indicative program (2002-2004)). And so the Technical Vocational Education and Training (TVET) program was launched in 2005.

The EU TVET program, with an amount committed by the EU of over 25 million€ and 33 million by the government of Egypt (ADE-DRN,2010), had three basic goals: 1) to build Enterprise-TVET Partnerships (ETPs) in three major sectors namely: manufacturing, tourism and construction[39] in a way that creates a

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[38] In Arabic مصلحة الكفاية الإنتاجية والتدريب المهنى

[39]12 sectoral ETPs are established, these are: ready-made garments; industrial engineering; building and construction materials; food

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dialogue between TVET training providers and technical schools on the one hand and the private sector which constitutes the demand for skill; 2) improve the quality of practical skills and develop competence for the skills levels; and 3) enhance the national TVET reform process and national TVET reform structure (ADE-DRN,2010). National regulatory bodies were introduced as a basis for a decentralized demand driven TVET (UNDP 2010). The desire to make it demand driven is to ensure the future ETPs self-financing through sole reliance on private sector funds. A similar project, launched in 2004, is the skill development project which is funded jointly by the World Bank and the government of Egypt with a total budget of 12.5 US$ million to stimulate private sector demand for training (ADE-DRN 2010).[40]

According to the EU country evaluation report (2010), the EU-TVET program has managed to achieve some positive outcomes in achieving goals (1) and (2) of the project. However, it was less successful in achieving goal (3), till now the project is still focusing on the provision of short term courses to meet the immediate needs of e enterprises. Studies report that progress in the reform of the TEVT system in Egypt is rather slow. Technical education and vocational training in Egypt still suffer from the complexity of the system, separation of education and training and inability to develop a flexible and high quality response to the different qualification needs of the various economic subsector or sub-systems needed by a growing private sector (ETF 2008).

The EU continues its support to reforming TVET in Egypt, recently announcing a €50 million program building on the first phase of support. New activities will be organized around three components: (a) improving TVET system governance, (b) enhancing relevance and quality of TVET: in particular of Technical Secondary Schools and the Vocational Training Centers in various areas such as Tourism and Agriculture and; (c) promoting transition to employment through the development of programmes which match labor market demand (<.http://europa.eu/rapid/press-release_IP-12-1207_en.htm?locale=en>).

Mubarak-Kohl Dual System[41]

The Mubarak-Kohl Initiative DS was expanded with a governance structure that was argued to be unique to Egypt reflecting mainly the partnerships between employers and the government. It was no longer a development agency pilot, but a program fully owned and implemented by the Ministry of Education and the industrial partners. The initiative has been identified a success in a number of studies including a European training foundation study in 2007, a tracer study conducted by CID consultancy for GTZ in 2009, and an ILO study in 2001. On the positive front about 85% of all graduating students were offered employment, they made about 20-30% higher salaries compared to regular technical secondary school graduates, employers who hired them acknowledged their skills (CID 2009). Moreover, a dialogue between the private sector and the government was initiated and teachers benefited and curriculums were enhanced (ibid). On the negative side, number of admissions and participating firms were limited (10,200 students, 1900 firms). Teachers training, curriculum development and school infra-structure and equipment were under- funded due to limited government resources. In addition, the program disproportionately benefited urban men compared to rural ones and compared to women. Most importantly there is evidence that graduates of the program pursue graduate studies rather than enter into the labor market (ibid.).

Human resource development goes beyond vocational training to education at all levels. With population growth Egypt's free education system has placed severe constraints on the quality of education, which lost quality for quantity. Various initiatives have taken place but none addresses the main source of the problem (the free education).

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processing industries; woodworking and furniture industries; printing and mass media; leather and leather tanning industries; chemical industries; building and housing construction; civil engineering; tourism (travel agents, diving and commodities); and hotels and restaurants (TVET program website ?).

[40]These two projects are coordinated through the Industrial Training Council (ITC).

[41]German support over the period from 1994 to 2007 (i.e. including the pilot phase) totaled. 28.5 million Euros (Adams, 2010).

Technological Capabilities and Technical Assistance

Economic Reform and Structural Adjustment (1991-2002): The Mubarak science city was established in 1993 with the vision of housing 12 research centers (ARTI 2008) to develop technological capacity. In addition, in 1995 the Social Fund for Development provided support for technology incubators to foster technology based start-ups and small enterprises in high tech activities, which may seem optimistic for small enterprises. Business development services or technical assistance was provided by NGOs and through aid programs (IQ 2007).

The Industrial Modernization Center's Supplier Development Program promoted technology transfer for local suppliers aimeding to link them to multinational companies operating in Egypt such as General Motors Egypt, Mercedes, Proctor and Gamble and others (IMC 2009). This strategy suits the growing interest in Original Equipment Manufacture (OEMs), which had positive effects on the competitiveness of the automotive industry in Egypt (AmCham 2011). Under OEM foreign companies subcontract local firms to produce the exact product of that company which it then markets through its distribution outlets under its brand name. This approach was a key technology transfer route for South Korea, creating direct links between exporting and productivity and technological capability improvement (Trade and Development Report 1994).

Period of Deeper Market Orientation (2003-2010): A number of institutions were established to effect institutional change, e.g. the Supreme Council of Research Centers was established to improve coordination of research efforts across all ministries. As a specific example, the National Quality Program was implemented to improve basic technology infrastructure in meteorology. R&D financing schemes started to take place through the Science and Technology Development Fund. Business Development Services were now provided through the IMC rather than just NGOs as before. An Upper Egypt incentive package has been provided by the IMC. Nevertheless, it is not clear how all these new institutions are interlinked and whether they coordinate in any form.

Generally speaking the state in Asian countries played a strong role in the acquisition and development of technology. In Korea, the state promoted overseas training of Korean managers and engineers and negotiated the acquisition of technology licenses and coordinated technology negotiations. Combined with a state focus on education the country became successfully involved in "reverse engineering" or in "de-packaging" technology. It successfully chose which technologies to import, adapted these foreign technologies to local conditions and most importantly improved upon technology imports and generated new technologies domestically (cf. Edwards 1992; Lall 1991). In contrast, until recently Egypt has failed to systematically promote technology transfer, and there is little evidence of adopted technologies being diffused to power growth of technologically more sophisticated sectors.

Sectoral Policies

Economic Reform and Structural Adjustment (1991-2002):As stated above law number 8/1997 specified a number of economic activities which would be eligible for privileges including the tax holiday and repatriation of profits. These included industry and manufacturing.

Period of Deeper Market Orientation (2003-2010): In 2005 the Industrial Development Strategy (IDS) was developed with the goal of transforming the industrial sector into an engine of growth. Under the IDS the government identified strategic sectors to provide them with special investment and export promotion efforts namely: engineering, food processing, chemicals and pharmaceuticals, textiles and clothing, building materials, furniture, paper and paperboard and leather (MIT-ERF 2006).

4. Overall Assessment of Industrial Policy

This section analyses the extent to which the trends presented in the first parts of the paper are attributable to industrial policy and sums up.

4.1 Sectoral Growth

Growth of the Petroleum and other Resource Based Sectors

The privileges under law number 8 for 1997 were granted to industry (see above), including "mining", "oil services relating to digging and exploration", "installation of natural gas facilities and natural gas transport" and "housing projects" amongst other things. As a result contracting firms in petroleum, gas and mining concession agreements were exempt from income taxes and their imported machinery and equipment are exempt from customs duties.

The Political Economy of Oil and Gas

The Ministry of Petroleum controlled and oversaw all contracts in the sector in a non-transparent way which operated within a closed circle. It is alleged that a few of the shura and people council members single-handedly controlled the entire gas and petroleum chain from depots to filling stations to distribution outlets (Abdel Khalek El-Watan newspaper 28th October).

There is a lot of rent to be made in this sector, not only in allocating concession (Production Sharing Agreements for exploration and development) and export agreements but also in the black market resulting from the substantial energy subsidy in the form of price ceilings. Egypt is one of the largest subsidizers of petroleum in the world. In 2007/2008 the subsidy amounted to LE71.2 billion accounting for just under a quarter of GDP.[42] Six petroleum products were subsidized: natural gas, LPG, gasoline, kerosene, diesel and mazot (fuel oil, AmCham 2009). Various members of the Ministry are now being tried for selling subsidized products in the black market. Not only is the allocation of exporting agreements questioned but also export sale prices. For example, an allegation against the Minister of Petroleum for selling natural gas for $1.5 per unit to the US Apache company as opposed to $3.00 as specified by the new industrial energy policy and related law (1795 for 2008) for a period of 25 years is under investigation (Al

Yom Alsabee' 2012). One can assume that the Minister, and other people involved in the deal, benefitted from this price difference.

But gas and petroleum are the sectors an oil exporting country would eventually want to diversify away from. Developing that sector was the government's explicit plan. But were the reasons purely economic? From a political economy point of view the huge subsidy to the sector's various products was provided to buy the silence of the middle classes over restricted political freedoms, corruption, violations of human rights and unemployment. Petroleum and chemicals sector products were increasingly for domestic consumption only. It is only as of the early 1990s that Egypt began to have some surplus for export (Figure 31). And so petrol and natural gas played a similar role to that provided by public sector employment – that is to pay off middle classes. Only both were unsustainable.

Industrial Policy Effects: are there any?

So did industrial policy shape the growth of this sector? I argue here that the answer is yes. Was law 8 in specific responsible for that? To that the answer is no. It's true that the 1997 investment law further encouraged this resource based sector. But, as Figure 5 (and Figure 4 for mining to a lesser extent) clearly shows, the structure of manufacturing (sector's value added) has markedly shifted toward petroleum and chemicals before the law as introduced in 1997, in fact since the early 1980s peaking in 1989 and more or less staying there during the 1990s (to just less than a half of all manufacturing).

So what prompted this structural shift even before the enactment of this law? There were two distinct forces, only one of which was to do with industrial policy, both pushing in the same direction. These shaped industrial structural transformation since the early 1980s and into the nineties:

1) Law 65 for 1971 establishing the first generation of free zones and investment law 43 of 1974 and its 1977 amendment[43, 44]generously

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[42] Prior to 2007 energy subsidies were not separately recorded in the state budget (AmCham 2009).

[43] The sectors included in law 43 are: 1. industrialization, mining, energy, tourism, transportation and related fields. 2. reclamation and cultivation of barren land under long-term tenancy (not to exceed 50 years, with a possible renewal for an additional 50 years), and projects for developing animal production and water

granted foreign investment guarantees against nationalization, relaxed labor regulations, a 5-8 year exemption from profit taxes, foreign employees' an exemption from taxes on salaries in Egypt, approval of importing equipment…etc. without a license, approval to use the most favorable exchange rate for movements of capital and profits and expediting the approval procedure for proposed projects amongst other incentives.

Since Law 43 included mining and energy, the big oil multinationals were encouraged to dig and explore in Egypt. As government wanted to promote this sector these investors did not face the average "bureaucracy of investment" mentioned earlier. The General Authority for Investment and Free Zones which was established by the same law was basically the authority implementing the law and supervising the investments. It was this agency which has the discretion to expedite approval – as stipulated by the law – or instead keep files pending.

Given these earlier laws, law 8 and the companies law 3 of 1998[45] had little effect, though it may have done had laws 65 (1971) and 43 (1974) not been in place. And the overall effect of the laws was simply to make less

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wealth. 3. projects for housing and for urban development (the division of land into parcels and the construction of new buildings together with the public utilities connected therewith), with building to be completed within a period specified by the authority's board of directors, and with no obligation on the part of the state to vacate this property. 4. investment companies which channel funds to the fields enumerated in this law. 5. investment banks, merchant banks and reinsurance companies whose transactions are effected in free currencies. 6. banks engaging in local currency transactions, provided these are joint ventures in which local Egyptian capital holds at least 51 percent. 7. construction activities in regions outside agricultural areas and the perimeters of existing cities. 8. construction contracting activities undertaken by joint stock companies in which there is at least 50 percent egyptian capital participation. 9. technical consulting activities by joint stock companies in partnership with foreign consultants (on projects within the scope of activities defined in this law when their services are indispensible to these projects) approved by the authority's board of directors. priority projects are those designed to generate exports, encourage tourism or reduce the need to import basic commodities, as well as those which require technical expertise or make use of patents or trademarks with a worldwide reputation (law 43 for 1974).

[44] Note that these laws also encouraged tourism explaining a large part of the transformation toward tourism as of the 80s (Figure 3 and for exports Figure 18)

[45]Which allowed foreign companies to own up to 100% of an Egyptian based company (see above).

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onerous rules, regulations and bureaucracy which had been put in place by government anyway, but in a preferential manner. Without any of the laws there would still have been structural transformation. The laws promoted development of certain sectors. But there would have been more growth had the edifice of government controls not been in control in the first place.

2) Dutch Disease: the influx of foreign exchange inflows in Egypt, from Suez Canal revenues, worker remittances, initial oil exports, and the massive sums of foreign aid pouring into Egypt beginning of the 70s peaking to just under $110 per capita in 1991 (Figure 32, Table 19), was a prescription for Dutch disease – at least in the earlier period prior to 2000. This influx appreciated the real exchange rate as the price of tradables to non-tradable increased, making the country's tradable sector less competitive, and thus pulling resources toward primary specialization where the country's comparative advantage now lies in. This is of course compared to a (hypothetical) situation where no such foreign exchange inflows have occurred.

Some may argue that Dutch disease isn't applicable in Egypt since light industries (TC and food and to a lesser extent the medium industry of fabricated metals) were also growing rapidly throughout the 1980s. But these industries shrunk sharply since the early 1990s (Figure 5), possibly on account of contractionary ERSAP policies (e.g. reduced government spending, the levying of sales tax, see above) and declining foreign exchange income (Figure 33). A similar decline did not take place in the petroleum sector. After this abrupt decline textiles and clothing, food and beverages and the fabricated metal industry started to slowly grow again from a very low base in 1991 but never matching the level of the petroleum sector (Figure 5 and 6).

Trends in Light and Medium Manufacturing Industries

Manufacturing industries' exports (i.e. excluding crude petroleum) have been growing since 1983 (Figure 20), with an accelerated growth rate between 1988-1995, supported by the successive

devaluations 1988-1995,[46] which were most significant in 1988-1991 (Table 20) and increased outward orientation. These factors boosted textiles and clothing exports during that period with a fast rate of growth (Figure 22) and to a lesser extent some export growth in basic (e.g. steel and aluminum), fabricated metals (e.g. autos, machinery and boilers), food and in other non-metallic mineral products particularly cement and the paper sector. The following section will outline both external factors and sectoral specific policies which have played an important part in the trends observed in the data.

Textiles and Clothing

Sectoral trends in textiles and clothing (TC) are affected by a combination of industrial policy and external factors. Outward orientation in textiles and clothing in particular was effected through the end of the clothing subsidy for the large captive domestic market in the early 1980s and later liberalizing cotton trade in 1994, and, of course tariff, reductions starting in the 1990s. The former explicitly reduced anti-export bias in this industry (El-Haddad 2012). In addition to the devaluations in 1989-1995 (Table 20), these policies have resulted in a steady rise in exports since the late 1980s with an accelerated rate as of 1988, slowing down since 1995.

The apparent paradox of steadily increasing exports but declining (1989-1990) and then stagnant value added (1991-1998) can be explained by three factors which have both reduced real *domestic* consumption of *domestically produced* TC: 1) the devaluations of 1988-1995, coupled with increased import content of TC, pushed up TC prices in the domestic market, 2) termination of the clothing subsidy; 3) trade liberalization has meant that imports have gradually replaced production for the domestic market and even more so since the beginning of the decade when tariffs on TC were further slashed (Figure 34A (nominal), Figure 34B (real), Figure 5).

Just as textiles and clothing real exports were steadily rising (Figure 22), the phase-out of the Multi Fibre Agreement in 2005 has gradually subjected textiles and clothing to normal WTO rules. Hence Egyptian exporters are brought into direct competition with China, India, Pakistan, Bangladesh, Indonesia and even Turkey which were quota constrained under the former MFA. As a result exports declined in 2005. The end of the quota system could have had more severe consequences for Egypt's ability to penetrate export markets had they not been moderated by the Qualifying Industrial Zone protocol (QIZ, December, 2004) with the US and Israel, and by the Euro-Mediterranean Partnership agreement (as of 2005) with the European Union (EU) which allow Egyptian textile products duty- and quota free access to these markets conditional on rules of origin.[47] Hence Egypt is benefiting from the fact that other previous beneficiaries of the MFA are losing market share. Already adversely affected by the changing global environment, the financial crisis in 2008, made things worse for this sector (El-Haddad 2012).

Fabricated Metals: Automobiles

The increase in the fabricated metal industry, basically an assembly manufacturing activity, is most likely a consequence of the local content requirements specified in ministerial decree 304 for 1989 (see policies above). Once assemblers satisfy the local content requirement they enjoy customs exemptions of imported components, which encouraged several foreign companies to enter the Egyptian market (AmCham 2011). The corresponding jump in exports is quite clear since 1989 (Figure 22).

The Industrial Modernization Center's Supplier Development Program (see above) started around the same time. It is not possible to disentangle any effects of the program from that of the local content requirement.

Like the rest of manufacturing, this sector was also likely affected by devaluations during 2001-2004 (Table 15), showing up as another acceleration in export growth during 2001-2007 (see also AmCham 2009). However, increased investment and export promotion efforts outlined above, and the improved business

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[46]Causing relative competitive improvement in tradables.

[47] For more information on the European Mediterranean Partnership agreement cf. El-Haddad 2010; Ministry of Trade and Industry 2008a; Kheir-El-Din and Ghoneim 2005, and on the QIZ agreement cf. El-Haddad 2010; Ministry of Trade and Industry 2008b; Institute of National Planning 2006.

environment cannot be dismissed as contributing to this increase. But once again disentangling this combined effect is difficult. Whilst the devaluations have positively contributed to exports growth they shrunk domestic demand as of 2002 (Figure 5) since they made imported cars equally expensive (because of the large imported content of domestically assembled cars). As a result whilst exports were rising value added (and output) for the industry declined since 2002 (see also AmCham 2009).

Basic Metals

Investment incentives attracted private investment to this sector since the early 1990s which ended government's monopoly over steel production in Egypt (Selim 2006). But since Ezz Steel Rebars acquired 28% of the shares of government controlled Alexandria National Iron and Steel Company in 1999 and the two companies consolidated their marketing operations under the name Ezz-Dekhela Steel (EZDK). EZDK controlled 62% of the domestic market. The company's competitive edge is increased by it being the only vertically integrated steel company in the country, which should allow it to enjoy lower unit costs. Exports of steel have boomed since 2000 (Figure 22). The government imposed barriers to entry for other vertically integrated structures into the industry through outright rejection of licenses and large import tariffs (20%) to protect the domestic market (*ibid*.).

There are two possible arguments in defense of this strategy. The first is based on an active industrial policy argument, whereby the domestic market was kept captive as a reward for good export performance. The alternative is protecting the position of the dominant company in which the state has a stake. The reason government gave for the favored position of EZDK was that steel production is intensive in energy use and so it now rather licenses labor intensive industries. Ahmed Ezz is currently serving prison time being found guilty with unlawful acquisition of shares, tax evasion, money laundering and embezzlement of public funds in September 2011. The minister of investment and five of EZDK officials are found guilty of giving out the license for two public steel companies to Ahmed Ezz for free and

without a public tender. What has come to light since the revolution suggests the second political economy reason as the main motivation.

In 2007, after the press has been building public awareness on the issue, and the Egyptian Competition Authority's report on steel published, four more producers were granted licenses, although some of these were subsequently withdrawn by court ruling.

Regardless of the detail, all policies above including the 2001-2004 devaluations, combined with the specifics of the sector have boosted export, production and value added growth (Figure 22, Figure 35) of basic metals to flourish as of 2000. Again disentangling the effects of separate policies is an impossible task. But on the other hand it is clear that these trends benefited specific people tied to political power.

The Cement Industry (other non-metallic mineral products)

Together with the steel industry, cement forms the backbone of the Egyptian construction and real estate market. Construction and to a lesser extent real estate absorb a large part of low skilled, mostly illiterate, informal employment.

Value added has grown (Figure 35) in response to: (i) substantial energy subsidy, giving significant cost savings for such energy intensive industry, (ii) privatization, and (iii) removal of price constraints in 1991. In 2008 just six multinationals controlled 85% of Egypt's cement manufacturing through their control of nine of Egypt's 13 grey cement companies (Table 21).

Significant profits attracted entry, but entry has been largely restricted since the beginning of the decade on the grounds that it is an energy intensive highly polluting industry. If this claim is true one would imagine that the obvious solution would be to liberalize energy prices rather than restrict entry, which was finally done in 2007. The obvious reason for limiting entry was one of protecting the few national cement companies and their workers from competition.

Despite barriers to entry, fierce competition amongst multinationals in the market has slashed prices, virtually driving higher cost national companies out of the market. In response, the

minister of the public enterprise sector sealed a deal with all companies to fix prices at a level higher than free market prices, and divide the market between existing companies. Hence higher cost companies were guaranteed a market share. Had there been a competition law this practice would be deemed anti-competitive, being a case of price fixing and market allocation.

In the absence of a competition policy, firms were encouraged to continue this practice, constrained entry, facilitating anti-competitive practices even further. Only in 2008, after the Egyptian competition law was enacted and the market investigated by the Egyptian Competition Authority (ECA 2008), did the courts find producers guilty of collusion for the 20 months from 2005 (May) -2006 (December), i.e. the period immediately following enactment of the law.

China's huge demand for cement since the beginning of the decade has increased world prices tremendously, so Egyptian producers have turned to the export market (Figure 36). Increased world prices were mirrored by equal increases in domestic prices. From a structural industrial transformation perspective this would be a favorable trend as it will relatively shrink the size of the growing non-tradable construction and real estate sectors in the face of growing input prices. But the government has other issues to fear. Laying off masses of informal workers in construction and real estate sector will have dire consequences, bringing about social unrest and provoking opposition from the fat cats in real estate. As a result the government restricted cement exports, imposing a 12US$ per ton export duty in February 2007 later raised to 15.5 just six months later. Government has further restricted exports through an outright ban throughout April-September 2008 (Figure 36).

The phase-out of energy subsidies –for both electricity and natural gas starting in 2007 has caused significant increases in costs throughout 2008, which caused a corresponding increase in cement prices. In 2009 in another attempt to control local cement prices the minister of Trade and Industry once again banned exports for 4

months, but also reduced cement import clearing from 30 to just 3 days (GIH 2009b).

But Egyptian cement has a competitive edge with prices per ton at least LE100 ($\cong$ $20) lower than regional competitors, e.g. Jordan, Saudi Arabia and Sudan, implying that freeing imports will not achieve that much of a reduction in domestic prices. Granting more licenses would have been more effective to effect somewhat lower prices rather than the export ban. But the Egyptian government is as usual obsessed with measures of control and its own short term, short sighted objective function rather than deal with the deep structural problems facing the economy including the structure of the labor market.

4.2 Sectoral Growth Quality

Egypt's product sophistication has been modest and worsening over time. Primary exports have declined in favor of resource based natural gas and crude petroleum and within manufacturing petroleum refineries. High tech exports are almost absent at just 1% of all exports in 2009. Moreover, concentration levels of a limited number of sectors are on the rise. Finally, apart from some structural transformation in the 1990s, there has been almost no labor movement from low to high productivity sectors during the last decade. It follows that the improved export performance since 2003 until the financial crisis is non-sophisticated, or at best not sufficiently sophisticated. ADB (2012) describe it as a one-time response to devaluation and import liberalization instead of a fundamental improvement in export potential. That is, the structural constraints on diversified high quality growth have not been overcome by industrial policy to date.

In the 1990s industrial policy failed to achieve sophistication. There is a negative relation between protectionism and performance in Egypt. Sectors favored through protection, and so reduced competition, have performed worse and have lower total factor productivities compared to sectors with lower barriers to entry, subsidies and effective rates of protection (Galal and El-Megharbel 2005).

Hausmann and Klinger (2007) set up a framework for the study of product space. Countries move towards 'nearby activities' over

time but seldom jump to activities requiring a different (usually better) set of their current productive capabilities, i.e. seldom "leapfrog". ADB (2012) utilize this framework to specify three different country strategies for diversification or combinations thereof:

(1) moving to products close to a country's current product space making them more likely to succeed.

(2) moving to products that are more sophisticated thus improving productivity and achieving higher growth in the future; and

(3) moving to products with a higher strategic value to move them to densely populated areas in the product space which in turn opens more future opportunities, and thus makes future diversification easier.

For Egypt ADB identify the following points. First, Egypt's long time leading manufacturing sector, clothing, is close to Egypt's product space given its set of capabilities, but that the sector has low sophistication. But on the other hand, given its sophistication level, TC are more strategic compared to, say, fruits. Second, that whilst electronics, pharmaceuticals and machinery are most strategic for Egypt they are also the most distant from its set of capabilities. In the language of Justin Lin (2009, 2010), these sectors should be seen as comparative advantage defying. Third, petrochemicals (e.g. industrial chemicals such as fertilizers, paints and coating and other chemicals such as pharmaceuticals), construction material (e.g. steel and cement) and metal products (e.g. fabricated metals) are the nearest with higher sophistication. Construction materials on the other hand provide a balance compared to petrochemicals and garments for instance, the former being more sophisticated but less strategic while the opposite is true of garments. Finally, sectors like construction materials, equipment, miscellaneous chemicals and garments are sectors Egypt can still capitalize given the potential market to be captured both at home and overseas.

The 2005 Industrial Development Strategy picked engineering machinery and equipment, automotive components, labor intensive consumer durables, biotechnology and life sciences as strategic sectors. It also chose to continue support to strategic but less sophisticated sectors such as textiles and clothing; leather and paper. Finally, it went for pharmaceuticals and chemicals characterized by intermediate levels of sophistication but that are not so distant from Egypt's current set of capabilities compared to the strategic ones.

This choice of sectors was fairly balanced in terms of Egypt's product space. There has been some improvement in a few of the strategic sectors such as life science and biology but absolutely no improvement in engineering machinery and equipment, which stayed at their level of sophistication since the 1990s (ADB, 2012). Figure 23 above shows that there has been some growth in relatively more sophisticated industrial chemicals, escalating since 2000, hiking again since 2003, with less growth in other chemicals. Textiles and clothing and construction material have also improved the few years prior to the crisis. But this improvement does not represent fundamental improvement in export capacity.

5. Conclusion: Breaking the Shackles

The final conclusion is that industrial policy during the last decade has indeed brought about an improvement, but it is not a remarkable one and it is certainly not sufficient to address the country's severe economic problems like widespread unemployment, underemployment and low productivity. Most importantly industrial growth has been captured; it has favored the cronies and public sector companies. Not just in the steel and cement industries but even in TC where the largest exporters were very close to decision making (El-Haddad forthcoming ERF conference). The QIZ agreement was initially rejected by the government on political grounds. Aware of the threats of phasing out of the quota system, businessmen pressured the government into signing the protocol, requiring Egypt to rush negotiations and so accept relatively unfavorable terms and conditions compared to those of Jordan (Institute of National Planning 2006). But also, in other sectors allegations of bribes, embezzlement, and continued milking of the

public sector are being made post revolution, such as the allocation of Export Development Fund resources discussed above. Public sector managers are accused of profiting from deals with private sector contractors and foreign suppliers.

The question then is how can Egypt break the shackles imposed by years of mismanagement, poor governance and excessive regulation and the resulting structural constraints on growth and structural transformation as basis for sustained quality growth? The following section outlines two policy pillars toward achieving that.

5.1 Active/Hard/Vertical or Comparative Advantage Defying Industrial Policy

The sectors specified in the 2005 industrial strategy are fairly balanced, so targeting sectors is desirable. Success in targeting strategic sectors is not completely ungrounded. Egyptian labor costs in these sectors will be competitive. That is not the case for textiles and clothing where Egypt competes with relatively lower labor cost countries such as Vietnam and Bangladesh (Table 22). But in electronics it would be competing with higher labor cost areas like Japan and Europe with obviously some competition from lower labor cost countries such as China. It is important to stress that it is not just diversification that industrial policy should be after but also a greater level of value added within any one industry. So within the petroleum sector it is the higher value added more sophisticated activities which should be targeted such as industrial chemicals and pharmaceuticals. It is not being proposed that levels of crude petroleum or petroleum refineries should be reduced but rather that growth of the other upstream activities should be improved to bring about a favorable structural transformation.

Likewise, Egypt should move up the clothing value chain through targeting high end export markets but with a focus on products for which Egypt has some specialized experience (e.g., carpets), and in simple products, such as linen, where the proximity to the raw material provides a cost advantage. The possibility can be explored of high-value exports using Egypt's long staple (LS) and extra long staple (ELS) cotton but also

through the use of new materials such as microfibers.[48] The advent of new materials (e.g. manmade fibers) and the rise of American pima cotton have indeed reduced world demand for Egyptian cotton. Nevertheless, in 2009 Egypt's unprocessed cotton exports still accounted for about 15 percent of the country's total TC exports. Processing these at home so as to capture value added is recommended.[49] In other words, support should be provided to those firms that are investing in fine cotton spinning technology, those that are placing themselves into competition with Japan and Italy, which is the path taken by Indian, South Korean and Pakistani firms to whom the country is now losing market share. These countries have become major importers of Egypt's superior quality cotton. In other words, extra support should be targeted to those exporters entering high end market niches, utilizing Egypt's high quality cotton fibers to produce equally high quality fine yarns, fabrics and clothing. These incentives need not be confined to industry but can also include services such as tourism, telecommunication and the financial sector.

But reversing the situation is not as easy as it sounds. Immense investments are required. Market failures of various types create externalities making social returns to these investments greater than private ones. Thus investment is below the socially optimal level. Externalities may come from coordination failures, financial and credit constraints (cf. Scitovsky 1954; Pack and Westphal 1986; Okuno-Fujiwara 1988), information, knowledge and technology spillovers (cf. Murphy, Shleifer and Vishney 1989; Hausman et. al 2007; Hausman and Rodrik 2003) and weak risk spreading institutions that face risk averse economic units. Hence these externalities need be internalized. Public private partnerships are one possibility. Other incentives such as those provided by India to support spinning producers who use Indian cotton as input may be considered. For example, the government bears

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[48] Since technological advances allow producing fine yarns from less expensive cotton lint.

[49] In the final market the difference is substantial; a woven Japanese produced shirt is sold for $120 while its Egyptian yarn content amounts to just $5.

the difference between commercial and concessional interest rates. Government also contributes nearly 20 percent of the infrastructure of these firms (Shura Council 2010).

More generally, a number of aspects must be borne in mind about any type of provided incentive be it fiscal, trade, financial or in the form of subsidies. First, these incentives should be performance-based, measured by sophistication or export volume. If the latter, then the incentive should be granted based on the value added portion and not on the final value of exports. Tying performance to incentives is key to successful incentive structures as shown by the Asian experience. Additionally, incentives should be finite, that is provided for a pre-announced limited period to avoid the soft budget constraint, as seen with Korea's dual track liberalization policy.

Incentives of an active competition policy involving barriers to entry should also be finite. In markets where entry is a costly and risky process excessive competition should be prevented so as to ensure a minimum amount of reasonable profit to early entrants. Drawing on the Asian experience sometimes "sequencing new entrants" is sensible. In Japan, for example, staggered entry was usual, whereby the Ministry of International Trade and Industry (MITI) permit entry to one firm or very few firms at a time, allowing it to achieve economies of scale and high profits before introducing more competition (Trade and Development Report 1994).

There are two points to be stressed here. Markets in Egypt, and in the Middle East in general, are constrained by excessive barriers to entry especially in the approval of licenses. Entry into both the steel and cement industries has been restricted to protect public sector companies and profits for the state and the cronies. Barriers to entry have also been used to prevent the collapse of the real estate sector, a clear case of policy capture. Policy capture takes place when government goals are altered to serve political ends, e.g. re-election or in non-democratic countries the pleasing of superiors or special interest groups -in this case businessmen- to

maintain government positions. In Egypt the interests of consumers did not influence these policies, though consumers do benefit from a range of politically sensitive subsidies. Generally, cases of protection are where government is involved in production or has a stake in private sector firms such as the telecommunication sector (El-Haddad and Attia 2012). The experience of the telecoms sector shows the danger of government with a financial stake in a private enterprise (Vodafone, and similarly Ezz Dekhela for steel). It provides an incentive to distort that market to generate government revenue through firm profits. Hence the best way the state should intervene in markets is as a regulator, keeping each individual market player at arm's length and with an eye on overall welfare. A conflict of interest law will help clarify and enforce this position.

The substantial barriers to entry are reflected in average firm age across the MENA region which is 10 years more than that in Eastern Europe or Asia, and the numbers of firms per person being less than a third those in Eastern Europe (The Economist 2012). Our parts of the world tend to protect insiders, so it is important to note that entry barriers advocated above follow a different logic one of enhancing long-term overall social welfare and competitiveness. Second, staggered entry creates a first mover advantage for the earlier entrants and has been awarded in a discretionary manner. Tackling discretion will be dealt with in the following section.

In summary, tax and customs exemptions, subsidies and entry barriers are all equally acceptable alternative incentive mechanisms. Once implemented they do work. There are external factors, most notably exposure to global competition, which make incentives ineffective, and so transformation harder. Some of these factors can be dealt with through trade agreements and efforts to use under-utilized preferential systems such as the US Generalized System of Preference (GSP).[50] But on the

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[50]The Generalized System of Preferences (GSP) is a voluntary, unilateral, non-reciprocal system through which developed countries offer developing countries concessional access to their markets for some products. Egypt benefits from non-reciprocal

internal front improving the effect of incentives is conditional upon a number of neutral or horizontal policies that raise the competitiveness of the entire economy and guard against capture.

5.2 Neutral/Soft/ Horizontal or Comparative Advantage Facilitating Industrial Policy

Institutional Reform: Governance and Bonfire of Controls

Egypt is near the top of the list of countries with excessive regulation and controls. Business in Egypt suffers from a bureaucracy that is both excessive and inefficient. It is excessive in that the degree and time required for business registration and other reporting requirements are beyond those necessary for a market economy, and so constrain the growth of that economy. It is inefficient since government has been slow to adopt modern technologies, such as IT-based systems, or to reform the bureaucracy itself. Government civil servants need a change in their mindset if they are to contribute to Egypt's growth, rather than hinder it. The old ways, including carelessness, petty corruption and control for control's sake, are deeply ingrained in the system.

For the sake of argument I assume that government itself is keen on eliminating the productivity loss associated with inflated use of command and control, excessive bureaucracy and petty corruption. To sidestep these rigidities, government created parallel institutions through the many discretionary laws and presidential decrees particularly during the last decade (e.g. law 13 for 2004, presidential decree 30 2005 both giving the prime minister substantial discretion). But these laws and decrees themselves create even more and greater opportunities for rent seeking, hence, in the absence of good governance, transforming a potentially honest government into a corrupt one. In contrast, in developed countries there are plenty of checks and balances, and safeguards. Decisions like these would normally have to go to the responsible ministry with a committee approval, combined with independent ex-post

checks on the review process, all of which has to be properly documented.

It follows that a comprehensive institutional reform for all public institutions is warranted and a number of factors need to be simultaneously addressed:

the quality of bureaucrats needs to be enhanced. Wade (1995) argues that in Korea for example tendencies for rent seeking and inefficiencies by the bureaucracy were inhibited due to the fact that the civil service employed the most talented individuals with technical training who therefore conducted themselves with intellectual and technical integrity. To attract better quality in the future public hiring should be based on merit and wages raised (financial resources to do that will be discussed in the following). Results of these appointments should be placed in the public domain to guard against corruption.

Improved incentives, both rewards and penalties, coupled with strict monitoring will help bring about a changed mindset, but more concerted and direct efforts led from the top, with the president and ministers themselves using public resources in transparent, accountable and efficient manner, are needed. In Korea civil servants were isolated from interest group pressures and the bureaucracy subject to multiple sources of independent monitoring which ensured decent conduct. In Egypt however, while the Administrative Central Auditing Agency in principle supervised, public accountability was almost always absent with one or two exceptions prior to the 2011revolution.

To facilitate implementation of incentives, performance targets themselves need to be streamlined. Non-complicated incentive structures such as *clearly specified* key performance indicators and export targets with limited brackets will be easier to enforce. These policies are similar to what Egypt managed in the case of streamlining the tariff structure (see Noland and Pack on the importance of measurable indicators 2008).

The state should continue to build on pre-revolution efforts of providing the appropriate regulatory framework which feed into a

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preferences under the GSP of Australia, Belarus, Bulgaria, Canada, Japan, New Zealand, Norway, the Russian Federation, Switzerland, and the United States (WTO 2005; Ministry of Trade and Industry 2008c).

continued improvement in the business environment. These policies should include a bonfire of controls and a non-arbitrary incentive system. Selective or targeted incentives are not the same as favoritism. Equality of opportunity amongst all those eligible should be ensured. To further guarantee against capture, nepotism checks and balances need be put in place through higher levels of transparency and accountability in all government institutions. To this end government should disseminate business rules and prevent any obstructions to the flow of information to all productive entities. There is a public right to information on how public funds are spent, which would include publishing which firms benefit from which subsidies, tax breaks and so on.

A draft civil service law has been discussed during the last three years or so. Advances to abandon rigid civil servant labor regulations should be at the forefront of future reforms. And the right to information act is long overdue. The improved use of IT-based systems is a common feature to all factors outlined above, which will ensure transparency, create open access to information and opportunity and thus reduce chances of corruption and capture.

Capabilities: Education, Infrastructure and the Labor Market

Increasing productivity is a key challenge for the coming years. Improving education and physical infrastructure are prerequisites for higher productivity being possible for a wide range of sectors.

Egypt has a very unbalanced labor force with high levels of illiteracy among the working class, but a large number of, largely un- or under-employed, graduates. A modern economy requires a broad base of well qualified and disciplined workers. So Egypt needs to sweep out poor quality and malpractice from the public education system with more attention to quality primary, secondary and vocational government education. Better infrastructure in free zones deals only partially with relatively poor levels of infrastructure. The interventionist role of governments in Asia has been remarkable with respect to providing high quality infrastructure. They have undertaken heavy investments in infrastructure foreseeing the cost savings it will bring about.

But heavy investment in education and infrastructure requires substantial funds. Freed resources can come from abandoning the poorly targeted energy subsidy (except as a selective, conditional incentive), abandoning across the board free university education,[51] continued divestiture of, or public stock offerings for, public enterprises, engaging in more public private partnerships in public utilities, and capitalizing on both Arab and western foreign aid. Finally a well-managed property-based tax is needed to broaden the tax base. It should not be beyond the capacity of local authorities to register property ownership, and enforce collection of taxes at a higher level than present.

Again transparency and accountability are conditions of success. Transparency implies improved provision of, and access to, information about basic economic statistics (release and publication of datasets and databases), use of oil and gas revenues and public procurement and contracts for citizens and civil society. In the words of World Bank president, Zoellick (2011), transparency signals integrity, communicates respect for the public and treats public office as a trust. It will also enable rigorous evaluations of policy, such as impact evaluations, which is currently lacking in Egypt, which can, in turn, improve public policy.

Labor market rigidities have been reflected in negligible mobility into more productive sectors during the past 20 years. In a recent global ranking of labor market efficiency, Egypt ranked 134th out of 134 countries (Egyptian National Competitiveness Council 2009).[52] Efforts to introduces dynamism into the labor market and improve labor mobility include easing of labor regulations, but improved labor market agility is also linked to other markets such as housing and the need for better transport infrastructure. Relocating to take advantage of employment opportunities by middle class

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[51] Scholarships should be both merit and need based.

[52] The indicator "labor market efficiency" is composed of ten sub-indicators grouped under the two components of labor market flexibility and use of talent.

citizens who live in properties governed by the old rent law will be costly for them, thus hindering mobility. The same argument does not apply for the wealthy who have already moved to relatively high cost suburb luxury properties. But firms require workers from a range of skills backgrounds, so it is imperative to create public housing nearby high end compounds to achieve the some of the needed mobility.

Elbadawi and Gelb (2010) suggest conditional transfers to subsidize private employment.[53] For an oil-exporting government and certainly one with masses of unemployed revolutionary youth this is sensible. As opposed to public employment the benefits of such a subsidy exceeds its costs; these benefits include dynamic effects of promoting the private sector and avoiding civil unrest.

Finally, all these efforts should be coupled with reasonable policies to manage the exchange rate to avoid reduced competitiveness of traded sectors and limit the flow of resources into non-traded sectors such as construction and real estate (cf. Elbadawi and Gelb 2010; Hausman and Velasco 2005). To date government has just been patching up problems, as shown in the discussion of the cement sector. Efforts have focused on preserving employment – the status quo – rather than providing incentives to ensure a sector which better meet's the country's needs. Other benefits of subsidizing employment and of government investment in infrastructure, including low cost housing, is that it may well offset reductions in employment in high-end construction (from which I propose government extract more income) whilst at the same time effecting growth enhancing structural transformation and improving across the board competitiveness.

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by: İzak Atiyas and Ozan Bakış

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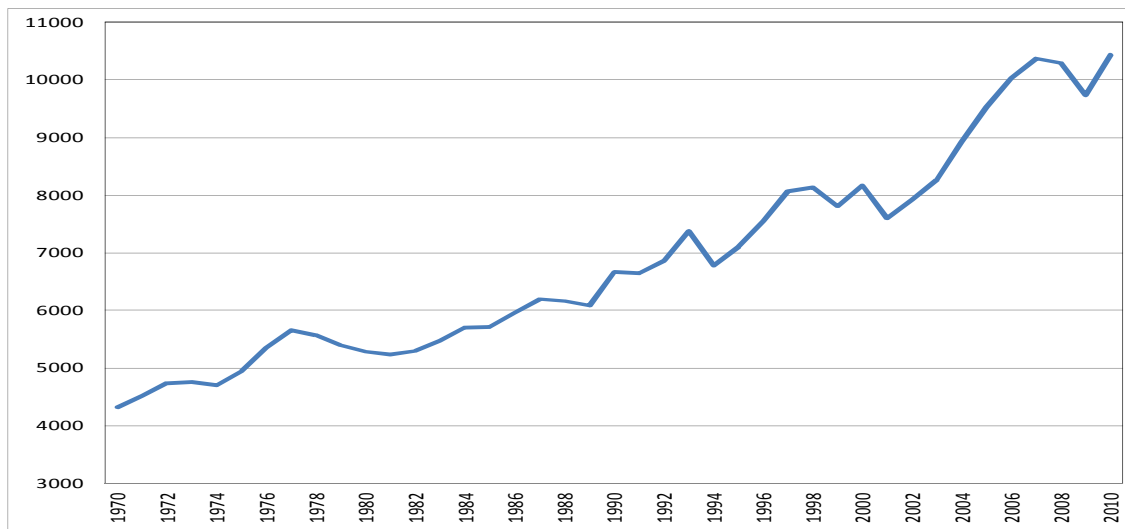
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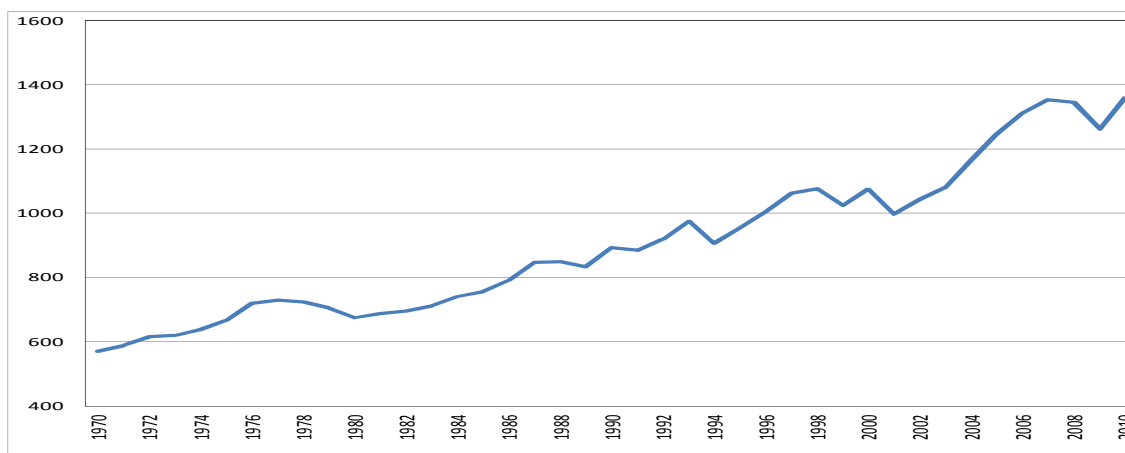
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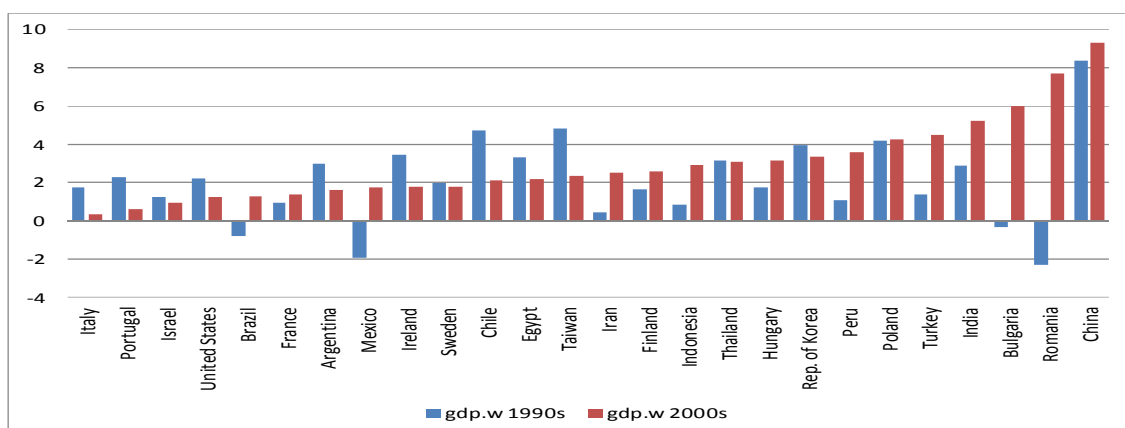
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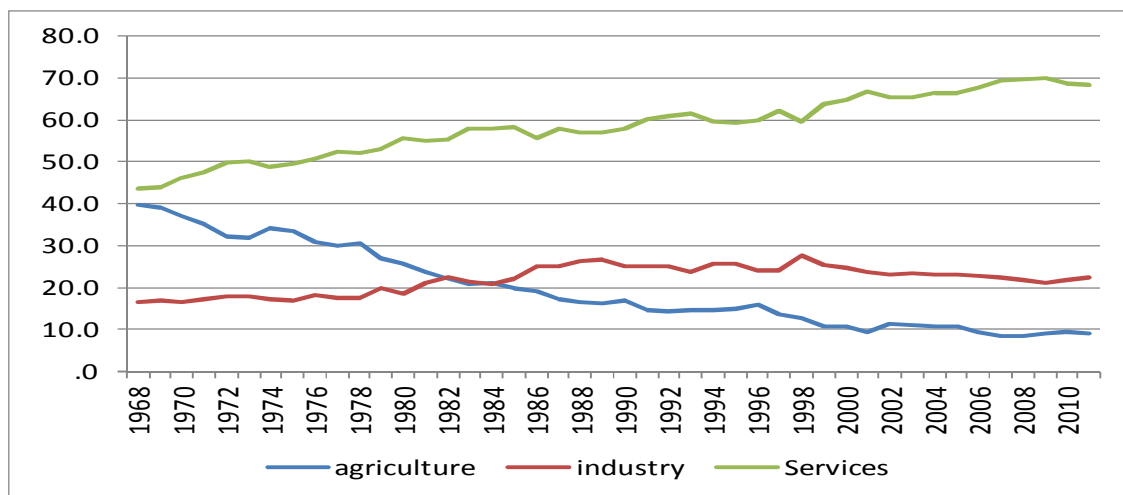
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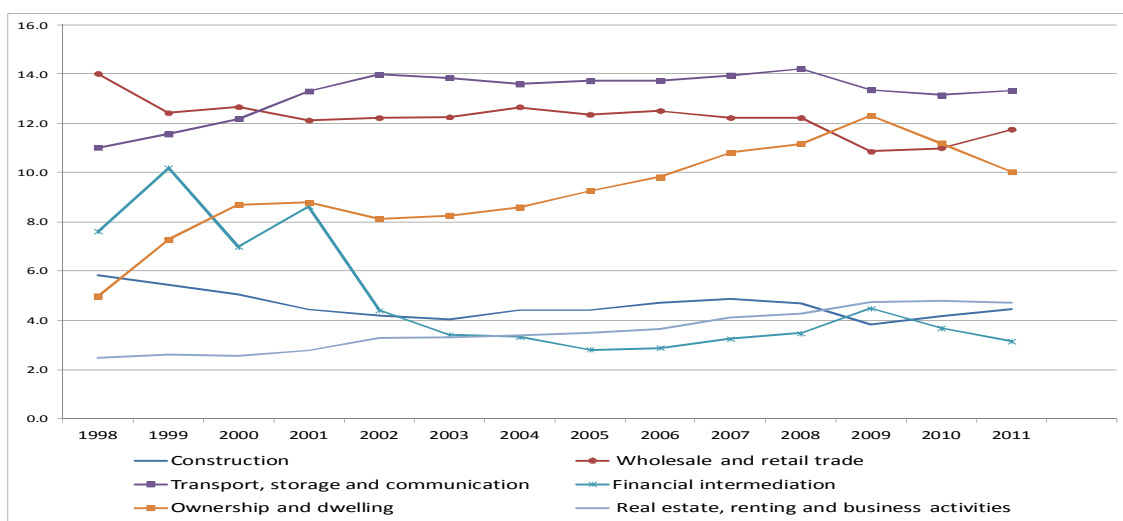
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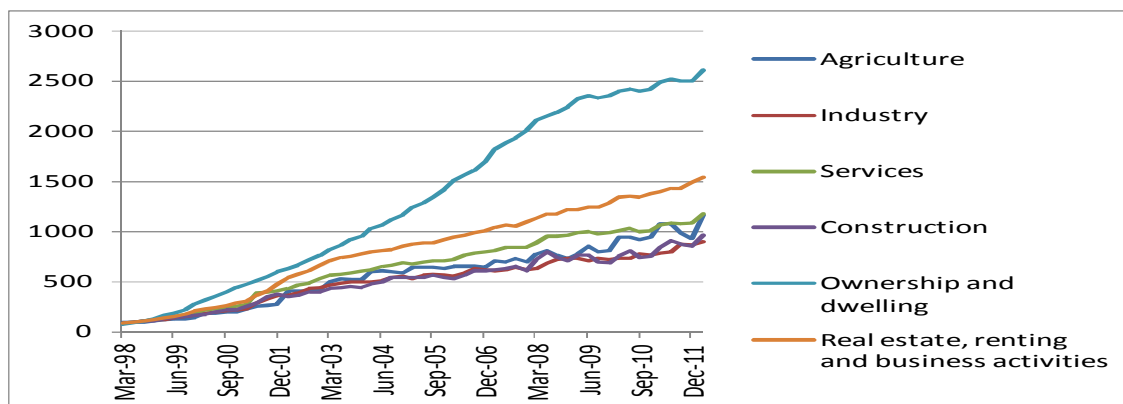
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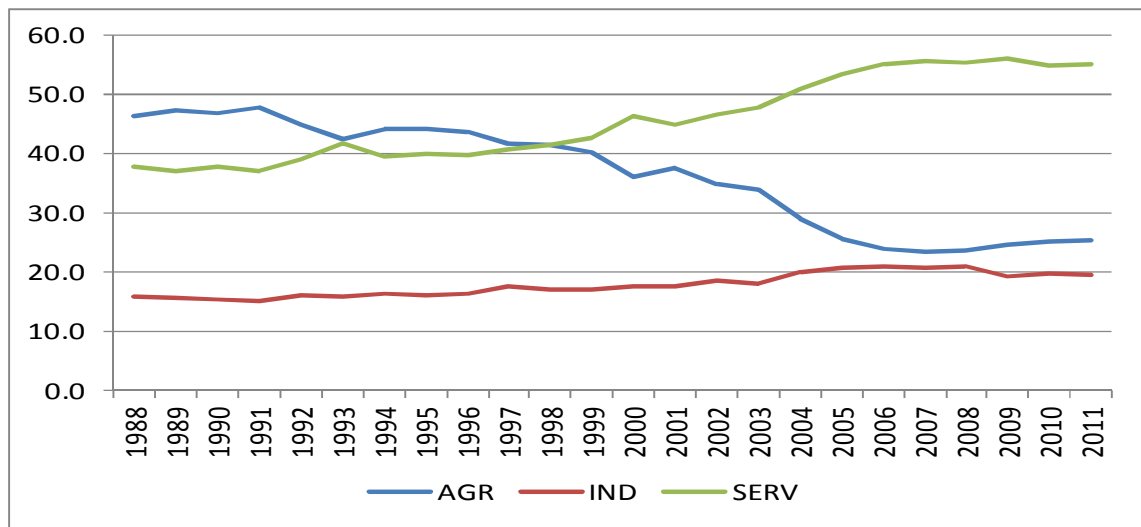
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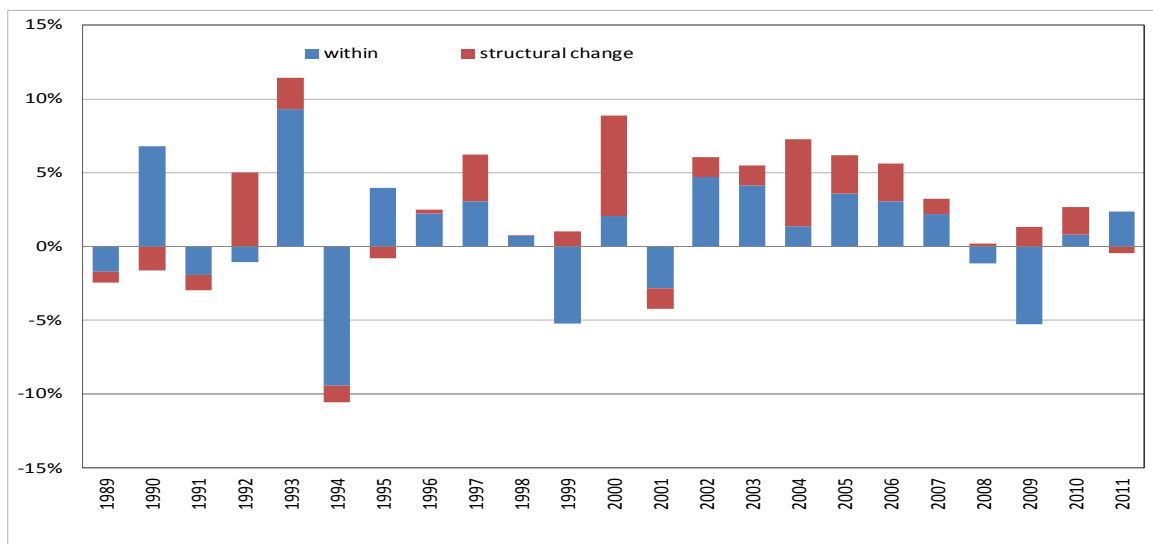
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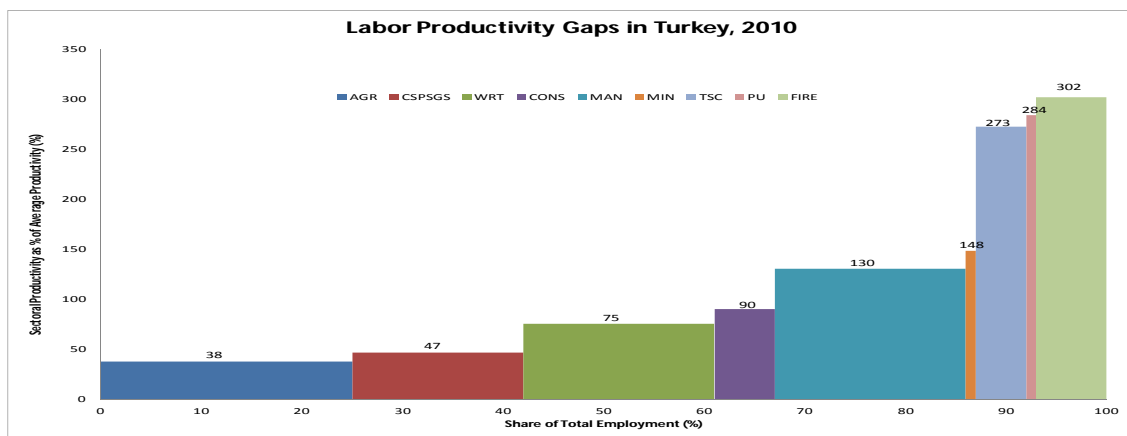
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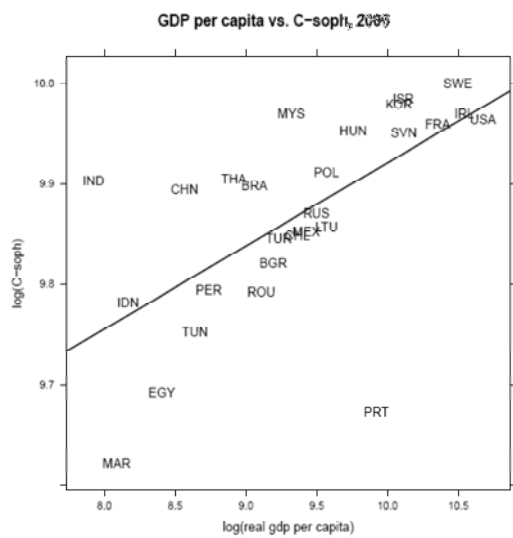
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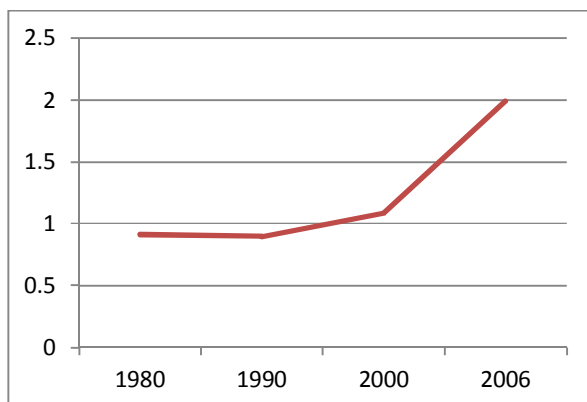
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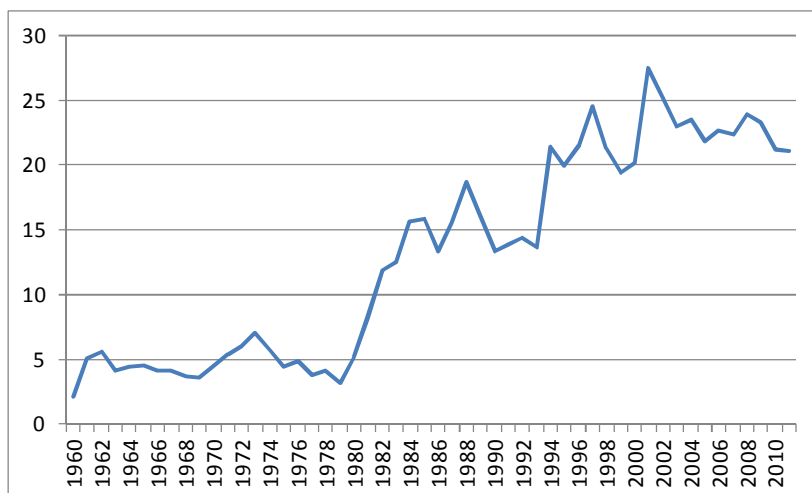
Figure 14: Composition of exports (%)

	1996	2000	2010
AGRICULTURE AND FORESTRY	9.27	5.97	4.33
MINING AND QUARRYING	1.59	1.44	2.36
MANUFACTURING	88.38	91.87	92.61
Food products and beverages	10.57	6.61	5.89
Tobacco products	0.41	0.44	0.26
Textiles	16.44	16.61	9.60
Wearing apparel	20.80	19.50	9.32
Luggage, saddlery and footwear	0.95	0.68	0.58
Products of wood and cork	0.30	0.23	0.50
Paper and paper products	0.54	0.59	1.05
Printing and publishing	0.21	0.15	0.12
Coke, petroleum products and nuclear fuel	1.12	1.08	3.65
Chemicals and chemical products	5.36	5.03	5.01
Rubber and plastic products	2.20	2.81	4.29
Other non-metallic minerals	3.36	4.04	3.50
Manufacture of basic metals	9.62	8.09	12.67
Manufacof fabricated metal prod(exc machinery)	1.99	2.38	4.37
Manufacture of machinery and equipment	3.57	4.95	7.96
Office, accounting and computing machinery	0.09	0.23	0.12
Electrical machinery and apparatus	3.32	2.97	4.27
Communication and apparatus	1.36	3.46	1.71
Medical,precision and optical instruments, watche	0.24	0.27	0.36
Motor vehicles and trailers	4.20	6.28	13.05
Other transport	0.67	3.18	1.46
Furniture	1.07	2.27	2.88

Source: TurkStat

Figure 15: Share of exports with medium technology content (%)

Med. Tech. Exports share, Turkey
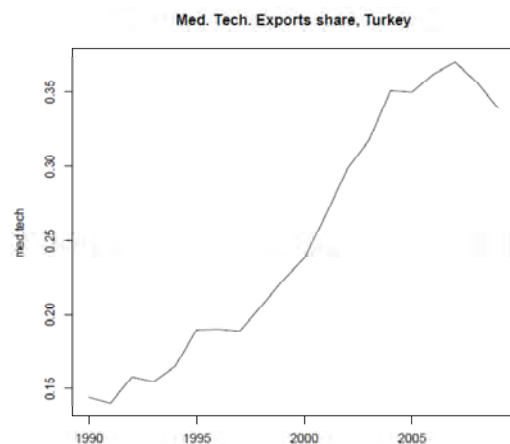
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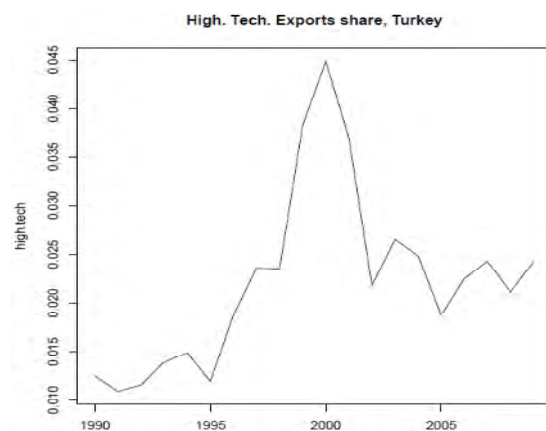
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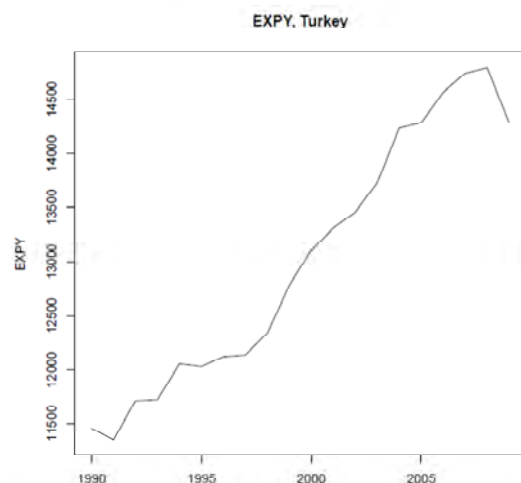
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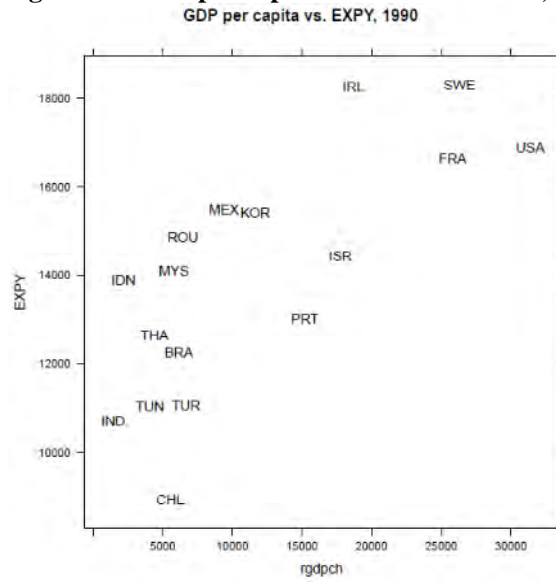
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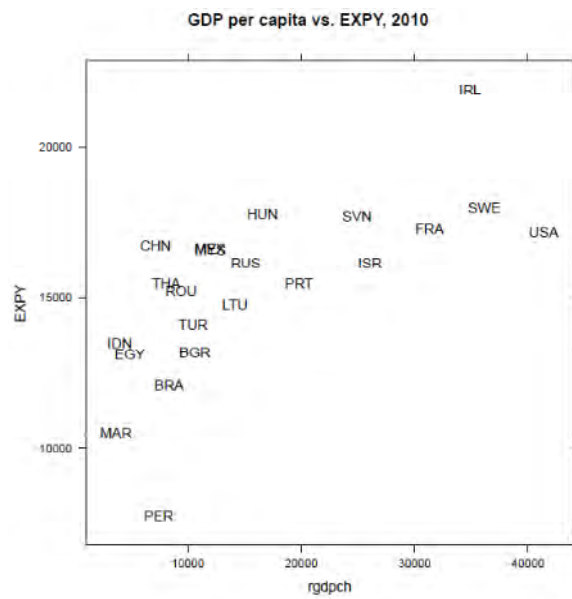
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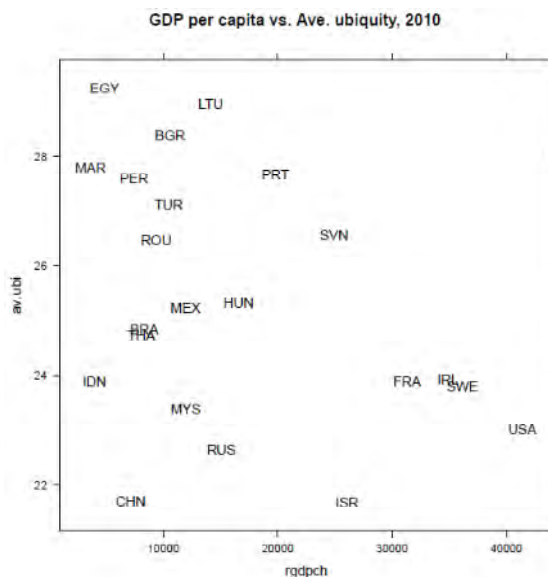
Figure 21: Incentive regimes in the 2000s

	Regional Scope	Incentive Instruments	Are support degrees differentiated by region?	Sector selection	Horizontal areas	Large-scale investments	Support for clusters
Incentive Law No 5084[8]	36 provinces where income per capita is below 1500 US dollars	• Tax and insurance premium discounts • Energy support • Free land assignment	○	○	○	○	○
Incentive Law No 5350 that updated Law No 5084[9]	13 provinces added to the 36 covered by Law No 5084	• Tax and insurance premium discounts • Energy support • Free land assignment	○	○	○	○	○
The system adopted in 2009[10]	Entire Turkey (26 NUTS-2 Regions divided into 4 regions by the level of socioeconomic development)	• Tax and insurance premium discounts • Free investment area • Customs tax exemption • VAT exemption • Interest rate incentives	●	●	○	●	○
The new incentive system drafted and announced on 5 April 2012	Entire Turkey (Turkey is divided into six regions on the basis of the latest socioeconomic development index announced by the Ministry of Economy)	• VAT exemption • Customs tax exemption • Tax discount • Insurance premium discount • (on minimum wage) • Interest rate incentives • Free investment area • Income tax withholding incentive • VAT rebate	●	●	●	●	●

Source: Acar and Çağlar 2012.

Table 1: Average Growth of Labor Productivity (% per annum)

1981-1990	3.42	1981-1989	3.01
1991-2000	2.08	1990-2001	1.86
2001-2010	2.36	2002-2010	3.24

Source: Calculated from TurkStat data. Arithmetic averages of annual log differences.

Table 2: Decomposition of aggregate productivity growth (%)

	1990 - 1999	2000 -2010	1990 - 2001	2002 -2010
Within component	0.00	1.22	-0.03	1.28
Structural change	1.01	1.78	1.28	2.22
total	1.00	3.00	1.24	3.50

Source: TurkStat

Table 3: Decomposing average annual productivity growth: The sectoral details (1990-2010)

		AGR	MIN	MAN	PU	CONS	WRT	TSC	FIRE	CSPSGS	All
1990-2001	Perc. point contrib. to LP growth	-0.12	-0.02	0.43	0.07	-0.07	0.14	0.40	0.33	0.09	1.24
	Within component	0.19	0.11	0.07	-0.07	-0.11	-0.37	0.29	-0.26	0.12	-0.03
	Structural change	-0.31	-0.12	0.36	0.14	0.04	0.50	0.11	0.59	-0.03	1.28
	Perc. sh. in LP growth	-9.44	-1.25	34.30	5.59	-6.02	10.90	32.14	26.61	7.17	100
2002-2010	Perc. point contrib. to LP growth	-0.05	0.01	1.03	0.09	0.22	0.50	0.64	1.06	0.00	3.50
	Within component	0.54	0.02	0.78	-0.02	-0.05	0.39	0.35	-0.63	-0.11	1.28
	Structural change	-0.59	-0.01	0.25	0.11	0.27	0.11	0.29	1.69	0.11	2.22
	Perc. sh. in LP growth	-1.39	0.34	29.29	2.57	6.29	14.25	18.28	30.35	0.01	100

Source: TurkStat

Table 4: Size distribution - Number of plants

	s010-019	s020-049	s050-099	s100-249	s250-500	s500+	Total
1985	4535	3500	1128	748	393	342	10646
1986	3572	3416	1205	820	392	359	9764
1995	2943	3827	1451	1191	476	339	10227
1996	2881	3974	1552	1310	494	368	10579
2006	16501	13621	3489	2636	770	441	37458
2007	18942	13317	3614	2822	793	464	39952

Table 5: Evolution of size distribution of plants in manufacturing

		Employment size category					
		s010-019	s020-049	s050-099	s100-249	s250-500	s500+
share in employment	1985-6	0.060	0.112	0.086	0.129	0.148	0.466
	1995-6	0.040	0.124	0.104	0.192	0.167	0.373
	2006-7	0.116	0.211	0.119	0.201	0.130	0.224
share in sales from production	1985-6	0.029	0.076	0.065	0.105	0.157	0.567
	1995-6	0.021	0.075	0.079	0.155	0.194	0.477
	2006-7	0.067	0.162	0.101	0.180	0.145	0.345
average productivity (relative to plants with 10-19 employees)	1985-6	1.00	1.39	1.57	1.68	2.19	2.50
	1995-6	1.00	1.18	1.49	1.58	2.28	2.50
	2006-7	1.00	1.33	1.47	1.56	1.94	2.67

Table 6: Number of firms in the BSS sample

	All firms				Manufacturing			
	Total	Continuing firms	Entrants	Exitors	Total	Continuing firms	Entrants	Exitors
2003	28233				14056			
2004	32657	23502	9155	3358	16372	11697	4675	1598
2005	45123	26378	18745	4721	18896	13186	5710	2146
2006	45544	36863	8681	7575	19916	17090	2826	2106
2007	44175	40146	4029	5398	19505	17798	1707	1879
2008	42125	37781	4344	6394	19028	17379	1649	2380
2009	37939	34033	3906	8092	16542	15242	1300	3574

Note: firms with 20+ employees

Table 7: Weighted average of productivity

	all firms			manufacturing		
	C	E	X	C	E	X
2004	6978	5303		7816	4744	
2005	5880	3100	3984	6103	2954	4366
2006	5697	2913	2570	6604	3306	2506
2007	5502	2680	2917	6421	3194	3319
2008	5770	2340	2242	6973	3069	2597
2009	5633	3073	3161	7004	3922	3093

Table 8: Decomposition of growth in labor productivity: micro data all industries

time	Aggregate productivity growth	Continuing firms	Continuing firms: within	Continuing firms: between	Entering firms	Exiting firms
y03-y04	3.78	5.70	5.21	0.49	-3.15	1.24
y04-y05	-20.95	-14.43	-13.27	-1.17	-8.87	2.35
y05-y06	2.42	2.07	3.63	-1.56	-4.25	4.60
y06-y07	-0.92	-1.85	-0.10	-1.75	-2.08	3.02
y07-y08	3.88	2.18	2.04	0.14	-2.86	4.56
y08-y09	-1.77	-2.81	-2.77	-0.04	-2.63	3.67
2005-9	0.90	-0.10	0.70	-0.80	-2.96	3.96
2006-9	0.52	-0.65	-0.04	-0.61	-2.63	3.80

Table 9: Decomposition of growth in labor productivity – Micro data manufacturing firms

time	Aggregate productivity growth	Continuing firms	Contnuing firms: within	Continuing firms: between	Entering firms	Exiting firms
y03-y04	2.26	5.77	3.89	1.89	-4.70	1.19
y04-y05	-22.86	-17.82	-19.71	1.89	-6.34	1.30
y05-y06	12.11	12.01	10.06	1.95	-3.48	3.59
y06-y07	-1.33	-1.74	-2.81	1.06	-2.39	2.80
y07-y08	7.81	5.96	3.64	2.33	-2.23	4.08
y08-y09	1.04	-1.86	-4.04	2.18	-1.82	4.72
2005-9	4.91	3.59	1.71	1.88	-2.48	3.80
2006-9	3.11	1.49	-0.37	1.86	-2.23	3.85

Table 10: Sectoral composition of value added in manufacturing industry in Turkey (%)

	1970	1980	1990	2000	2006
Food and beverages	16.4	14.0	11.9	12.5	10.7
Tobacco products	9.8	4.3	4.0	5.2	1.7
Textiles	13.8	14.2	11.2	10.5	11.4
Wearing apparel, fur	0.7	1.1	3.7	4.6	6.4
Leather, leather products and footwear				0.6	1.0
Wood products (excl. furniture)	0.9	1.1	0.6	0.7	1.2
Paper and paper products	2.6	1.9	1.9	1.8	2.0
Printing and publishing	1.9	0.9	1.5	3.6	1.8
Coke,refined petroleum products,nuclear fuel	15.4	14.5	17.3	12.0	2.1
Chemicals and chemical products	6.5	10.2	9.9	10.1	6.8
Rubber and plastics products	2.8	3.0	2.7	3.6	4.8
Non-metallic mineral products	5.2	6.8	8.2	6.6	9.4
Basic metals	10.6	9.9	6.9	5.4	9.6
Fabricated metal products	4.5	3.6	3.1	3.1	4.7
Machinery and equipment n.e.c.	4.0	4.7	4.9	5.0	7.9
Office, accounting and computing machinery				0.2	0.1
Electrical machinery and apparatus	1.4	4.3	5.1	2.6	3.1
Radio,television and communication equipment				2.1	1.8
Medical, precision and optical instruments	0.1	0.1	0.3	0.6	0.5
Motor vehicles, trailers, semi-trailers	2.8	5.0	6.0	6.6	8.7
Other transport equipment				0.7	1.5
Furniture; manufacturing n.e.c.	0.5	0.4	0.6	1.7	2.8
Recycling					0.0
Total manufacturing	100.0	100.0	100.0	100.0	100.0

Source:UNIDO

Table 11: Sophistication ranks of ISIC 2-digit industries

	1970	1980	1990	2000	2006
Food and beverages	16	16	20	20	20
Tobacco	18	18	23	23	23
Textiles	17	17	22	21	21
Wearing apparel, fur	14	10	19	19	19
Non-metallic mineral products	13	13	18	18	17
Basic metals	5	8	8	6	16
Machinery and equipment n.e.c.	1	2	5	4	2
Medical, precision and optical instruments	6	1	6	1	1
Motor vehicles, trailers, semi-trailers	4	5	11	11	12
Furniture; manufacturing n.e.c.	9	12	12	16	18

Source: Calculated from UNIDO data

Table 12: Measures of diversification in Manufacturing

	1965	1970	1980	1990	2000	2005	2006
Employment							
GINI	0.57	0.52	0.48	0.46	0.52	0.52	0.52
HERFIND	0.14	0.13	0.11	0.10	0.10	0.09	0.09
COEFVAR	1.27	1.16	1.00	0.93	1.10	1.06	1.02
LOGVAR	0.37	0.32	0.25	0.20	0.28	0.52	0.50
Value added							
GINI	0.54	0.50	0.47	0.44	0.45	0.45	0.46
HERFIND	0.12	0.10	0.10	0.09	0.08	0.07	0.07
COEFVAR	1.11	0.96	0.89	0.83	0.84	0.83	0.85
LOGVAR	0.40	0.38	0.37	0.24	0.25	0.43	0.47

Table 13: Distribution of exports across firm size categories

	Employment size category						
	s000-009	s010-019	s020-049	s050-099	s100-249	s250-500	s500+
2003	10.9	5.4	17.2	10.4	11.1	11.1	33.9
2004	10.7	7.9	16.1	9.6	10.0	9.2	36.6
2005	9.2	2.7	18.9	8.5	13.4	9.7	37.6
2006	6.9	6.9	16.9	6.5	13.1	9.4	40.2
2007	13.3	4.7	13.3	5.9	12.7	9.7	40.3
2008	9.3	7.3	9.5	7.5	12.7	10.1	43.6
2009	14.9	5.0	10.4	6.6	14.0	11.3	37.7

Table 14: Distribution of exports across size categories - Manufacturing firms

	size category						
	s000-009	s010-019	s020-049	s050-099	s100-249	s250-500	s500+
2003	4.2	2.6	7.3	6.5	14.6	15.5	49.4
2004	1.2	2.0	7.5	6.3	13.4	13.3	56.2
2005	1.0	1.3	8.6	6.7	14.1	13.0	55.4
2006	1.1	1.6	8.1	6.0	13.1	12.6	57.5
2007	1.0	1.5	6.9	5.5	13.7	12.9	58.6
2008	1.9	3.0	5.5	5.7	13.2	12.8	57.9
2009	4.4	2.5	6.8	6.1	13.9	15.0	51.2

Table 15: Investment Incentives and actual investments (1988-2008)

	No. of Incentive documents	Investment volume envisaged (current USD)	Private fixed capital formation (current USD)
1988	2.742	26.616	20.614
1989	3.257	37.507	21.606
1990	3.141	25.422	31.309
1991	1.775	21.374	32.538
1992	1.553	34.909	34.315
1993	3.051	166.122	46.029
1994	1.394	44.508	32.677
1995	4.955	102.765	44.987
1996	5.024	42.312	49.381
1997	5.144	35.808	52.366
1998	4.291	19.309	49.153
1999	2.968	18.555	36.186
2000	3.521	14.994	42.067
2001	2.155	9.164	22.954
2002	3.002	9.672	28.815
2003	3.876	14.159	41.529
2004	4.078	12.769	68.463
2005	4.304	17.198	85.819
2006	3.09	16.177	100.131
2007	2.365	20.238	116.729
2008	2.448	21.851	117.85

Eser (2011)

Table 16: Investment incentives: sectoral distribution 1980-2008

Sector	No. of Documents	%	Investment Volume current million USD)	%	Investment volume (million USD, 2008 prices)	%	Employment (thousand)	%
Agriculture	4,863	5.9	8,395	1.0	13,203	1.0	133	2.8
Mining	3,037	3.6	10,699	1.3	16,731	1.3	189	3.9
Manufaturing	47,427	57.3	350,064	41.6	509,664	40.0	2,901	60.5
Energy	998	1.2	77,035	9.1	123,019	9.7	46	1.0
Services	26,485	32.0	396,098	47.0	611,152	48.0	1,524	31.8
Total	82,810	100.0	842,290	100.0	1,273,769	100.0	4,792	100.0

Source: Eser (2011)

Table 17: Public R&D Support for Enterprises in Turkey

	2006	2007	2008
TUBITAK	215.0	215.0	175.0
UFT	42.0	63.5	n/a
KOSGEB	5.4	4.6	6.5
TTGV	35.6	35.4	35.5
Ministry of Industry and Trade	11	16.9	17.6
Total	319.0	353.4	252.6

Source World Bank: 2009 (UFT: Undersecretariat of Foreign Trade.)

Structural Transformation and Industrial Policy in Morocco

[Document Subtitle]

by: Lahcen ACHY*

Figure 1: Morocco's GDP Decomposition (1965-2011)
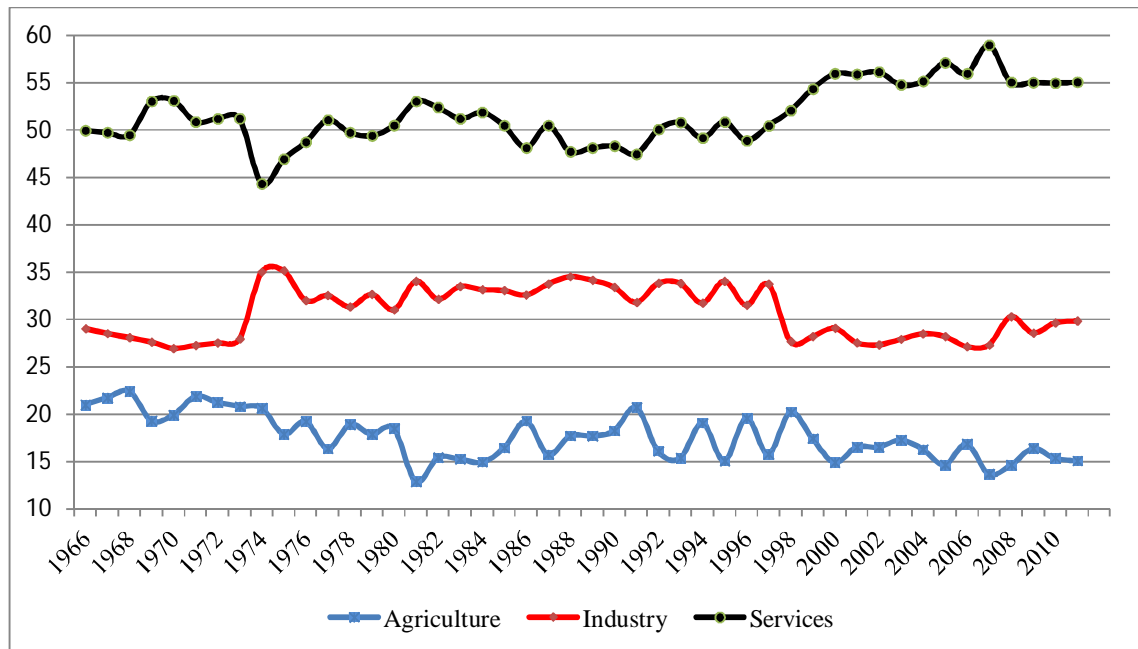
Source: World Development Indicators (2012)

Figure 2: Morocco's share of manufacturing value added in GDP (1965-2011)
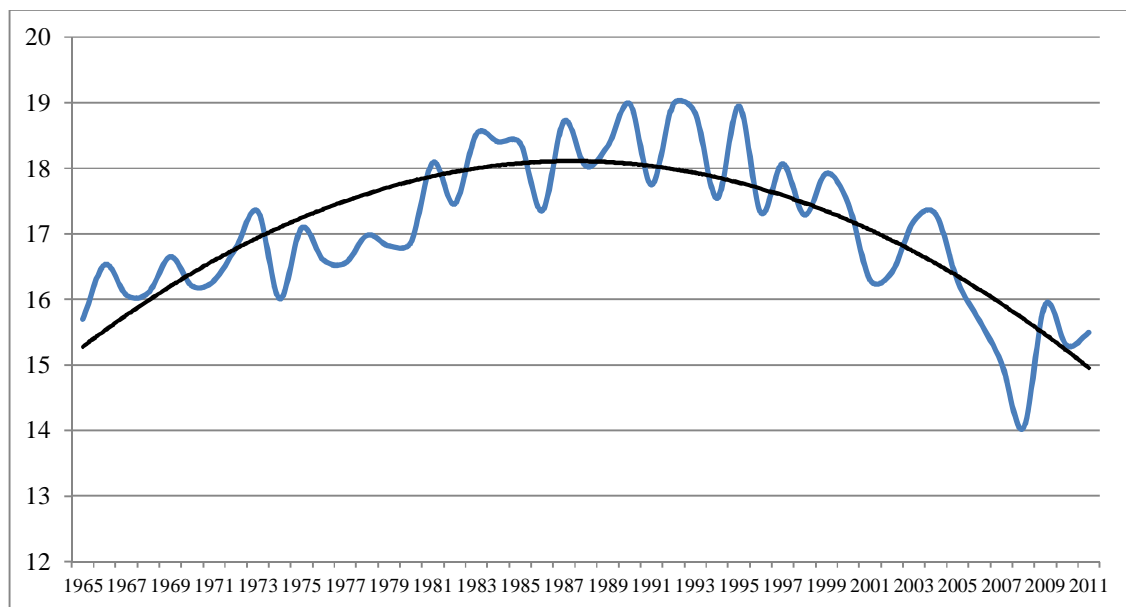
Source: World Development Indicators (2012)

Figure 3: Manufacturing value added Average annual growth rate 2000-2010
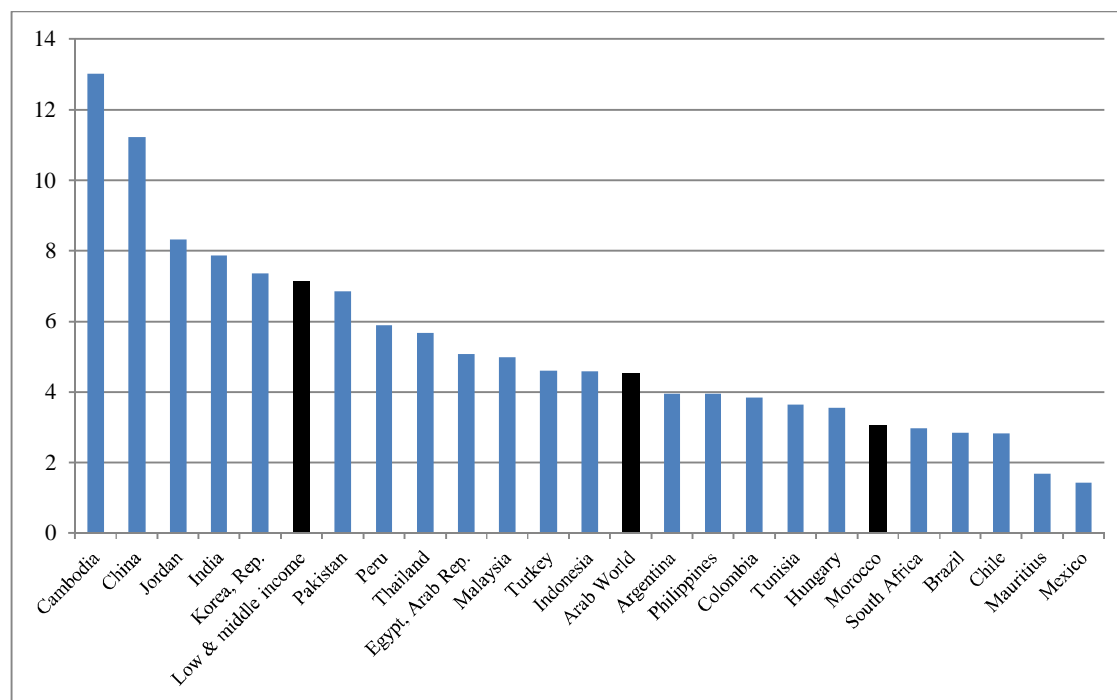
Figure 4: Private investment and total investment (% of GDP)
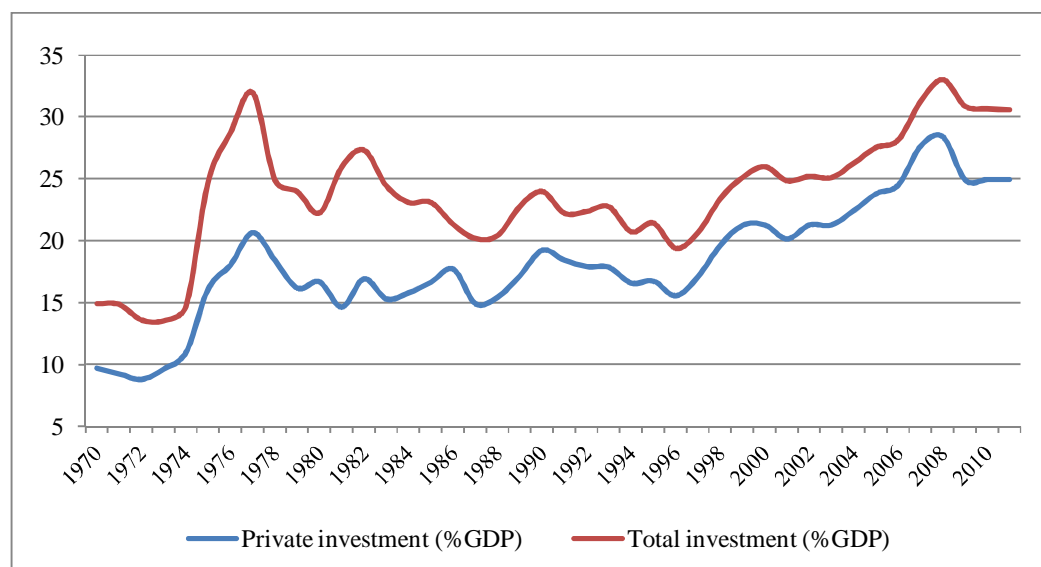
Figure 5. The Herfindhal Hirshman Index (manufacturing value added 4-digit level)
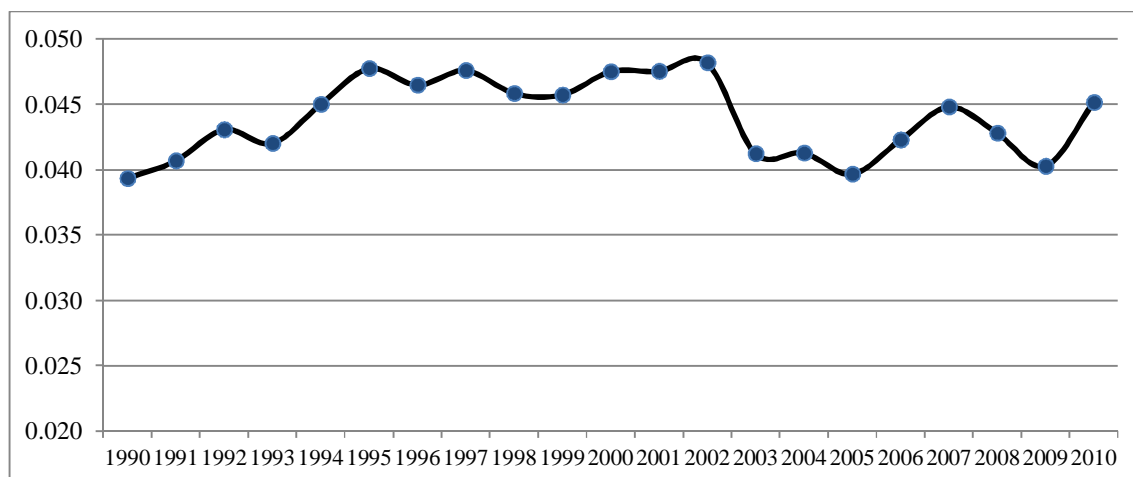
Figure 6: Share of merchandize exports in GDP
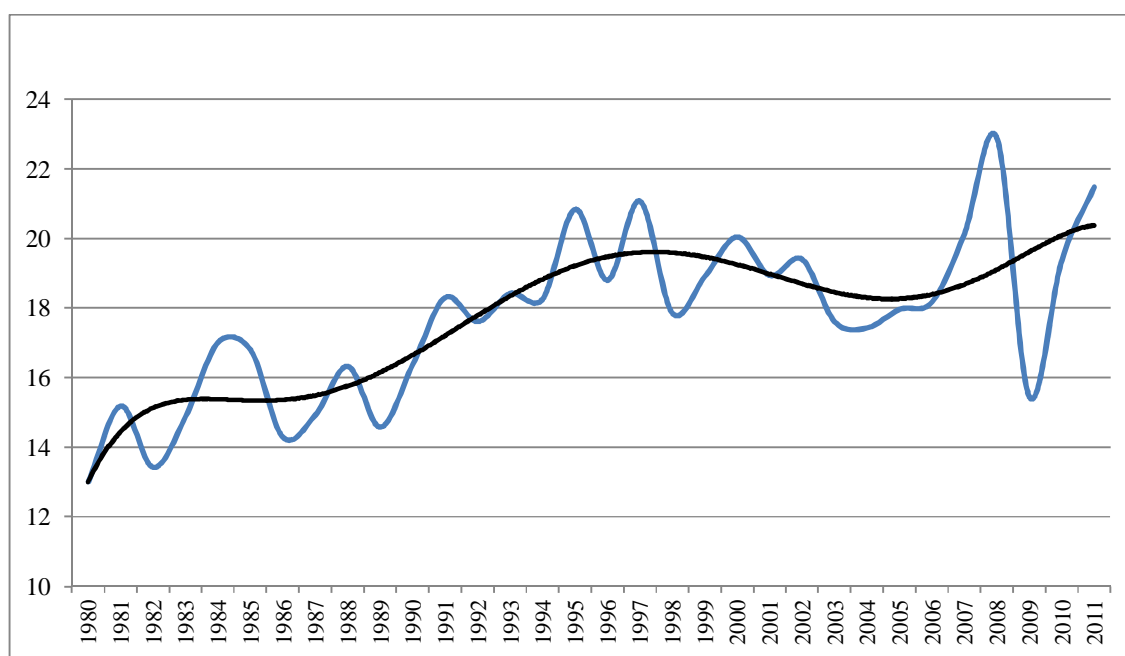
Figure 7:Share of manufactured exports in merchandize exports
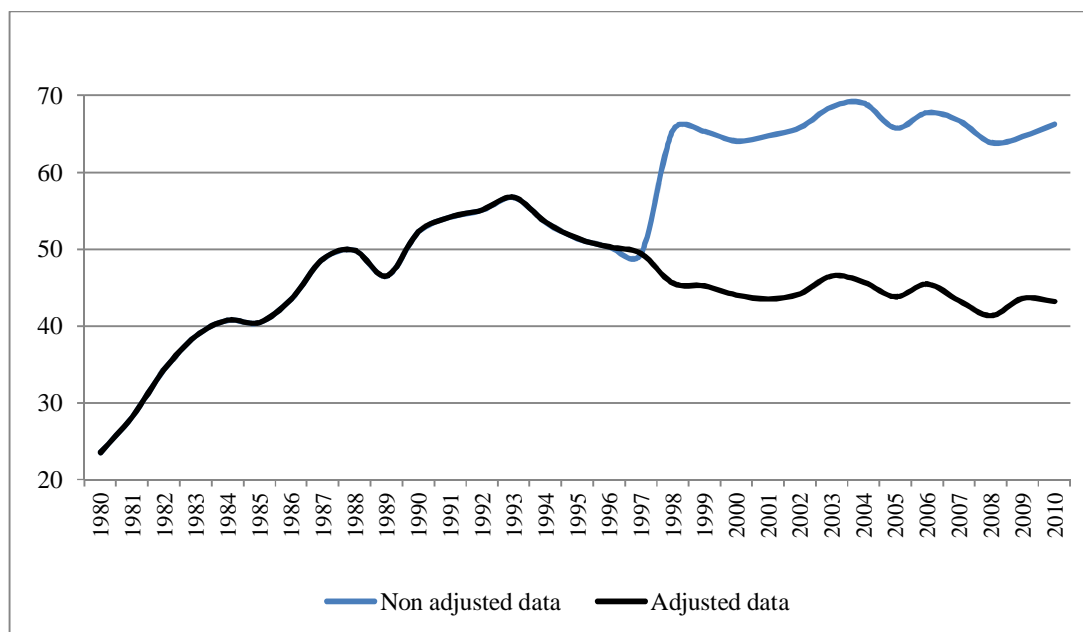
Note: Since 1998 all re-exports of imports under temporary admission (TA) are counted as exports. The adjusted data removes this component of exports in order to obtain a homogenous series of manufactured exports in merchandize exports over the whole period.
Source: World Development Indicators and Morocco's Foreign Exchange

Figure 8: Share of manufacturing firms engaged in exports
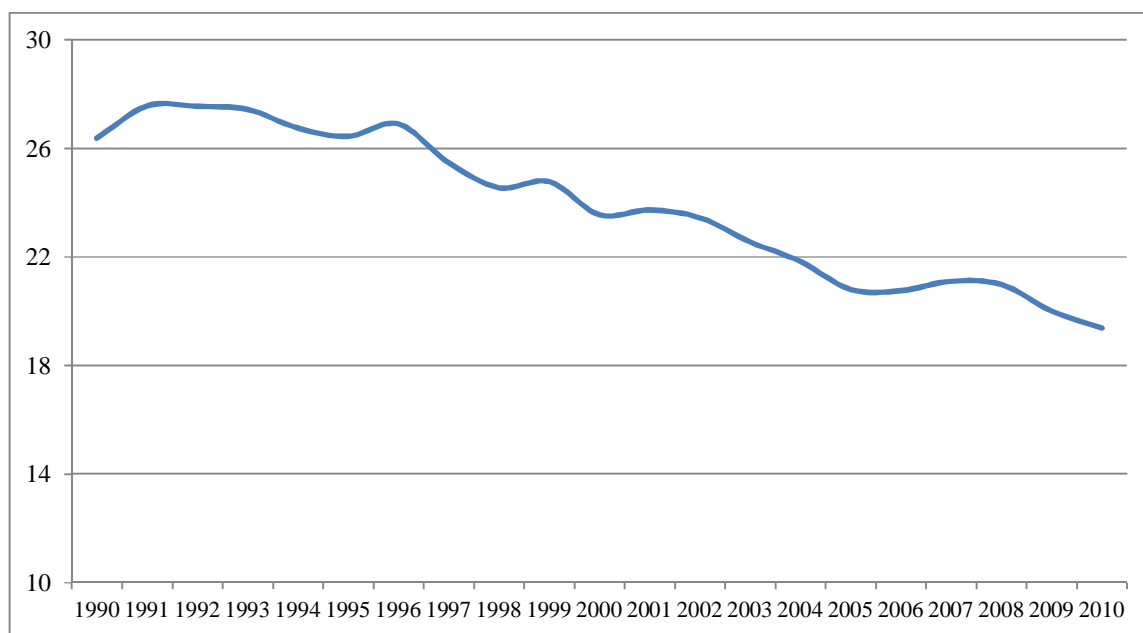
Source: based on the annual census of Morocco's manufacturing sector

Figure 9: Share of the major 5, 10 and 20 products in Morocco's merchandize exports
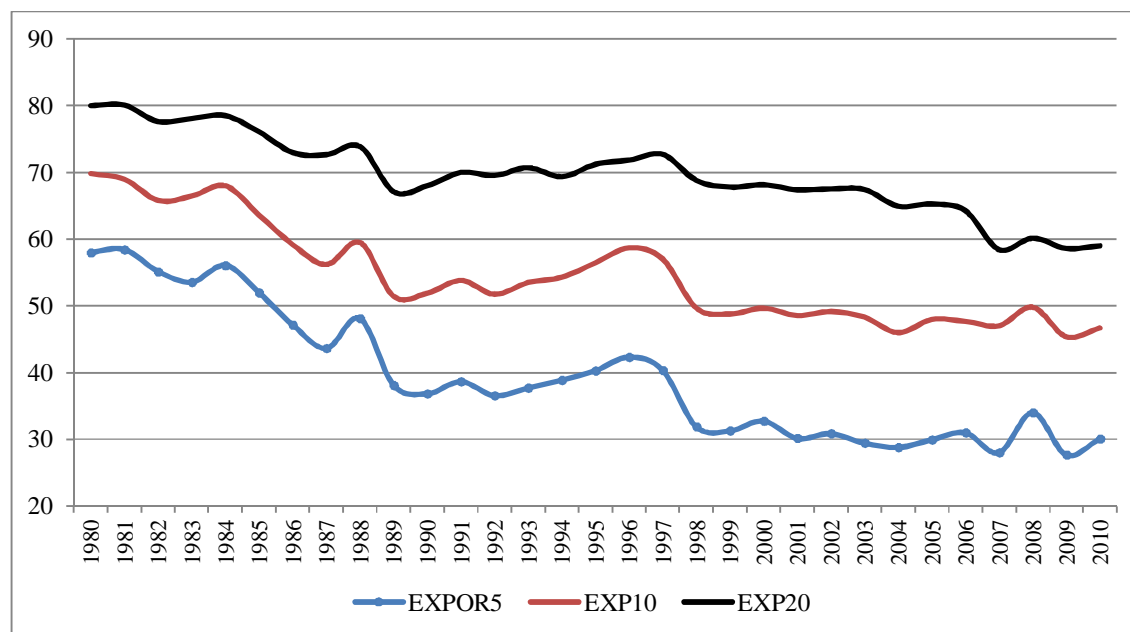
Source: World Bank and Morocco's foreign exchange

Figure 10: Export diversification (HHI 4-Digit)
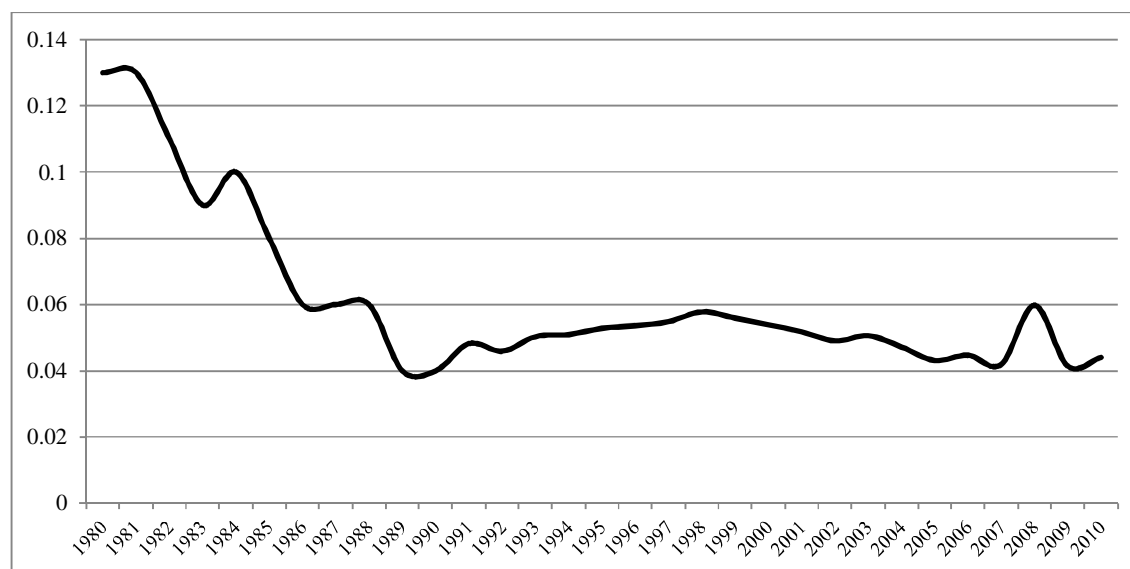
Source: World Bank and author's calculations based on Morocco's foreign exchange Office data.

Figure 11: The technological content of Morocco's exports

Figure 12: Share of export services in total exports

Figure 13. Composition of services exports
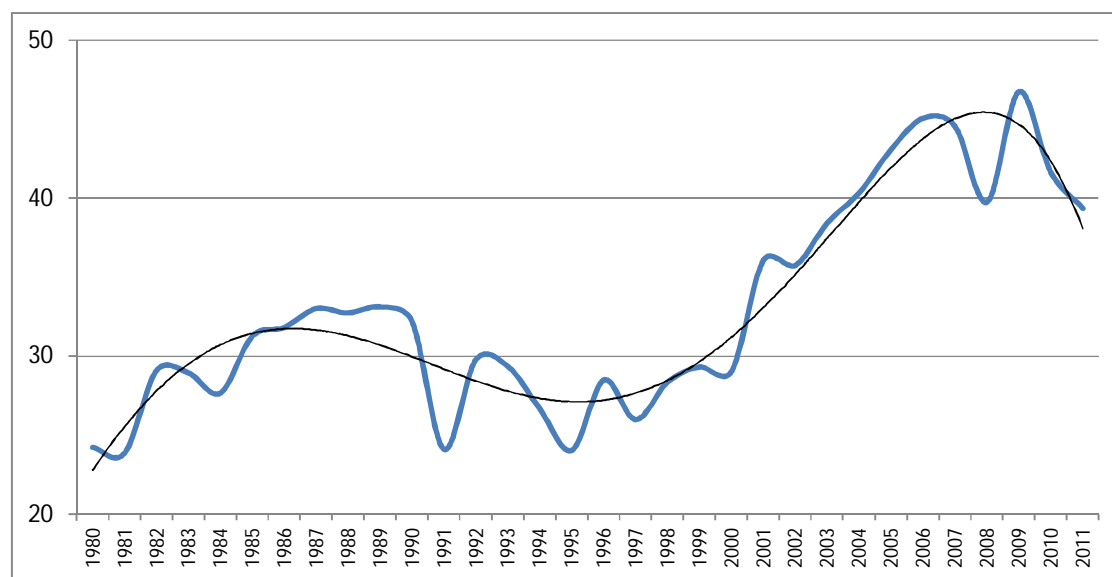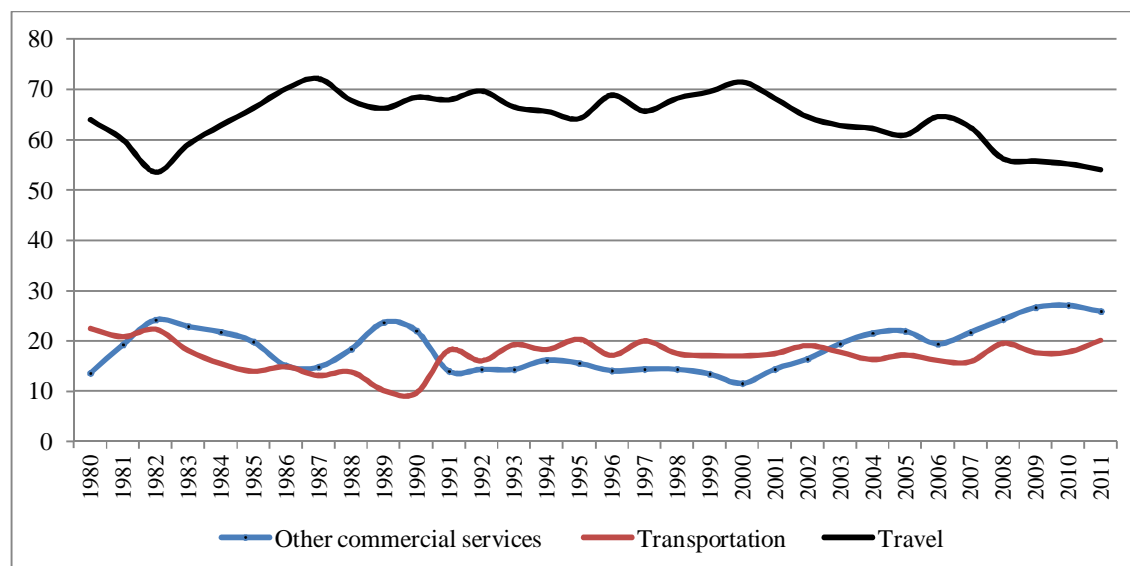
Source: Author's calculation based on Morocco's foreign exchange office and WTO data.

Figure 14. Morocco's Tariffs on manufactured products
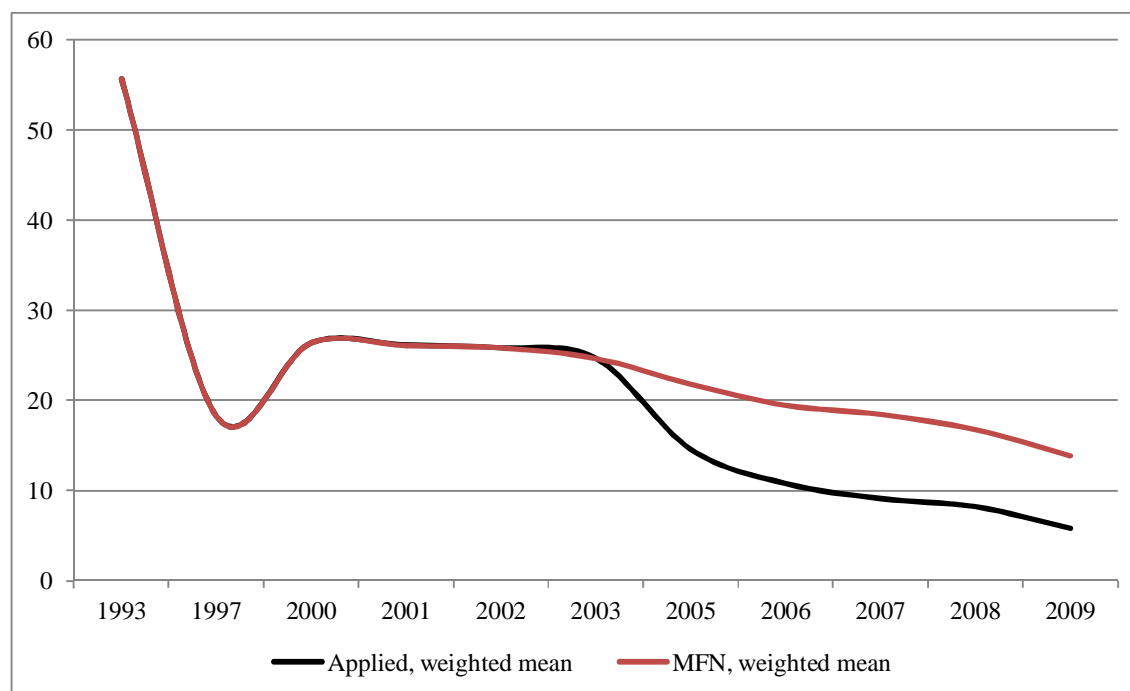
Source: Tariff profile, World Trade Organization.

Table 1: Average real growth of manufacturing value added and GDP in Morocco

	1965-1979	1980-1989	1990-1999	2000-2011
Manufacturing growth	5.48	3.17	2.26	2.71
GDP growth	6.64	3.44	2.16	4.55

Source: Author's calculation based on World Development Indicators (2012). The real growth uses constant (2000$ US) values of GDP and manufacturing value added.

Table 2: Sources of Morocco's manufacturing sector value added growth

	1985-1989		1990-1999		2000-2011	
	Contribution	Share	Contribution	Share	Contribution	Share
Labor	3.5	105	0.9	42	0.3	11
Capital	0.9	27	0.8	37	1.7	64
TFP	-1.1	-32	0.5	21	0.7	25
Total	3.3	100	2.3	100	2.7	100

Source: Author's calculations based on WDI and Morocco's Ministry of industry data.

Table 3: Comparison of the structure of the manufacturing value added between Morocco and Developing countries' group (2009)

	Morocco	Developing countries
15 - Food and beverages	23.1	16.09
16 - Tobacco products	10.1	1.43
17 – Textiles	3,3	3.62
18 - Wearing apparel, fur	6.9	2.54
19 - Leather, leather products and footwear	1.2	0.85
20 - Wood products (excl. furniture)	0.9	1.12
21 - Paper and paper products	1.1	2.49
22 - Printing and publishing	1.3	1.73
23 - Coke, refined petroleum products, nuclear fuel	3.7	7.13
24 - Chemicals and chemical products	1.9	10.98
25 - Rubber and plastics products	2.4	3.37
26 - Non-metallic mineral products	15.1	4.90
27 - Basic metals	3.1	5.16
28 - Fabricated metal products	4.5	3.71
29 - Machinery and equipment n.e.c.	1.2	4.61
30 - Office, accounting and computing machinery	0.1	2.42
31 - Electrical machinery and apparatus	4.6	6.00
32 - Radio, television and communication equipment	0.6	9.81
33 - Medical, precision and optical instruments	0.8	0.50
34 - Motor vehicles, trailers, semi-trailers	2.0	5.68
35 - Other transport equipment	1.1	4.06
36 - Furniture; manufacturing n.e.c.	1.2	1.77
Total Manufacturing	**100**	**100**

Source: UNIDO database and Morocco's manufacturing survey data. The benchmark of developing countries does not include China.

Table 4: Industries with the largest progress in their value added growth (2000-2010)

Industries	Average annual growth 2000-2010	% in the 2000 MVA	% in the 2010 MVA
Manufacture of machine tools	54,3	0,000	0,019
Manufacture of games and toys	48,6	0,001	0,029
Manufacture of other non-metallic mineral products	45,8	0,105	2,743
Manufacture of coke oven products	28,7	0,002	0,014
Manufacture of instruments for measuring, checking, testing	21,7	0,059	0,252
Production, processing and preserving of meat and meat products	21,4	0,085	0,352
Casting of metals	21,0	0,035	0,141
Manufacture of aircraft and spacecraft	*21,0*	*0,161*	*0,645*
Forging, pressing, stamping and roll forming of metal	19,4	0,057	0,199
Manufacture of electrical equipment n.e.c.	*18,8*	*1,039*	*3,475*
Other first processing of iron and steel	18,8	0,011	0,035
Manufacture of non-ferrous metals	16,5	0,228	0,629
Manufacture of jewellery and related articles	15,3	0,057	0,143
Manufacture of pharmaceuticals products	*14,5*	*2,184*	*5,074*
Recycling of non-metal waste and scrap	12,5	0,003	0,005
Manufacture of railway and tramway locomotives and rolling stock	10,2	0,056	0,089
Total	17,1	**7,0**	**14**

Source: Author's calculation based on the annual census of Morocco's manufacturing sector. MVA: refers to the current value of manufacturing value added.

Table 5: Industries with the largest regress in their value added growth (2000-2010)

Industries	Average annual growth 2000-2010	% in the 2000 MVA	% in the 2010 MVA
Optical instr. and photographic equipment	-31,48	0,046	0,001
Rubber products	-17,60	0,622	0,054
TV and radio receivers	-11,77	0,008	0,001
Knitted and crocheted fabrics	-9,87	0,184	0,039
Pesticides and other agro-chemical products	-9,76	0,145	0,031
Other products of wood	-9,21	0,287	0,066
Veneer sheets and other panels and boards	-8,07	0,396	0,102
Pulp, paper and paperboard	-6,66	1,693	0,509
Cutlery, tools and general hardware	-6,36	0,188	0,058
Other special purpose machinery	-6,14	0,036	0,011
Preparation and spinning of textile fibers	-5,36	1,507	0,520
Leather clothes	-5,12	0,086	0,031
Miscellaneous manufacturing n.e.c.	-5,04	0,263	0,094
Carpets and other textiles	-5,04	0,636	0,227
Steam generators, except central heating hot water boilers	-4,84	0,055	0,020
Rubber products	-4,15	0,561	0,220
Other transport equipment n.e.c.	-3,55	0,005	0,002
Textile weaving	-2,42	1,402	0,657
Total	**-5.91**	**8,1**	**2,6**

Source: Author's calculation based on the annual census of Morocco's manufacturing sector. MVA: refers to the current value of manufacturing value added

Table 6: Tentative estimate of the cost of Industrial Policy measures in Morocco

Measure	Estimated cost[36]	
	2009	**2010**
New creations: Exemption from or refund of value added tax (VAT) on capital goods, equipment and tools (period of 24 months)	83	102
Exporting enterprises are exempt from corporate tax (IS) and Income tax (IR) for a period of five years, after which there is a 50 per cent reduction in the IS (for that part of turnover that is exported) and a 20 per cent reduction in IR. • Corporate tax exemptions • Income tax exemptions	1845 107	1997 115
For enterprises **exporting services**, including hotels, the exemption or reduction only applies to turnover in foreign currency. • Corporate tax exemptions • Income tax exemptions	336 66	319 71
Enterprises established in Tangier are eligible for a 50 per cent reduction in the IS or IR for a period of five years • Corporate tax exemptions • Income tax exemptions	459 55	492 59
Enterprises located in provinces and prefectures fixed by decree • Income tax exemptions	136	146
Free export zones (ZFE) • Corporate tax exemptions **for the first 5 years**, followed by a reduction for the next 10 years	51	55
Investments worth DH 200 million or more are exempt from customs duty on imports of capital goods and also exempt from VAT on imports. (36 months of the company's existence). • Customs duties' exemptions • VAT exemptions	591 64	260 23
Automotive industry: Exemptions of customs duties on imports of products, materials, accessories and sets needed to manufacture "economy cars" ("affordable cars") • Customs duties	638	365
The Hassan II Fund for Economic and Social Development[37] bears a part of the costs incurred by enterprises in some industrial sectors[38]. • The construction or purchase of buildings: 30% of the cost (maximum unit cost of DH 2,000/m², excl. taxes • The purchase of capital goods: Maximum of 10% of the cost (excluding import duties and charges) • Max contribution to any single project 10% of investment and capped at DH 20 million. **Eligibility**: new investment projects (creation or expansion) submitted by investors whose overall investment is more than DH 5 million, excluding taxes, and provided that the amount invested in capital goods is more than DH 2.5 million, excluding taxes.[39]	Between 2000 and 2005, the Fund contributed in 111 projects with over DH **4.5 billion**: Textiles sector (51 per cent), and sub-contracting in the automotive sector (31 per cent)[40]. **Roughly DH 900 million per year.**	
Total (in million of Moroccan dirham)	**5 331**	**4 904**

Source: Author's calculation. Unit Moroccan Dirham, approximately $ 1 = DH 8

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[36] The estimated cost is based on the Morocco's Ministry of Finance Report on fiscal spending (2010)

[37] The Hassan II Fund for Economic and Social Development was established in 2000.

[38] Since 2008, the sectors are limited to: textiles-clothing and made-up textile goods; manufacture of equipment for the automotive industry; manufacture of components for electronic assemblies and sub-assemblies; manufacture of equipment for the aeronautics industry; nanotechnology-related manufacturing; and microelectronics and biotechnology.

[39] HT means excluding customs duty and taxes.

[40] WTO (2009), Morocco: Trade Policy Review, page 66.

Table 7 : Schedule of tariff dismantling under the FTA Agreement with the European Union

Dismantling year	Raw material	Intermediate products	Products not manufactured locally	Products manufactured locally
0 (Mars 2000)	25%	25%	25%	
1	25%	25%	25%	
2	25%	25%	25%	
3	25%	25%	25%	10%
4				10%
5				10%
6				10%
7				10%
8				10%
9				10%
10				10%
11				10%
12				10%

Source: The Ministry of Foreign Trade, Morocco.

Table 8: Firms that benefited from upgrading programs in the period 2003-2007

Source of funding	Number of firms	Number of actions
Euro Maroc Enterprise	364	709
FOMAN technical assistance	371	432
Modernization PME	412	642
ISTIMRAR technical assistance	69	69
FOMAN Co-funding	59	59
Walloon Export Agency (AWEX)	16	16
Investment promotion unit (Italy)	177	177
Industrial and technological development center (Spain)	203	203
German Cooperation (GTZ)	135	135
New Business Opportunities (NBO/USAID)	74	74
Total	**1 415**	**2 516**

Source: ANPME.

Structural Transformation and Industrial Policy

in Selected Southern Mediterranean Countries: Tunisia

by: Sofiane Ghali and Sami Rezgui

Figure 1: Real GDP growth rates
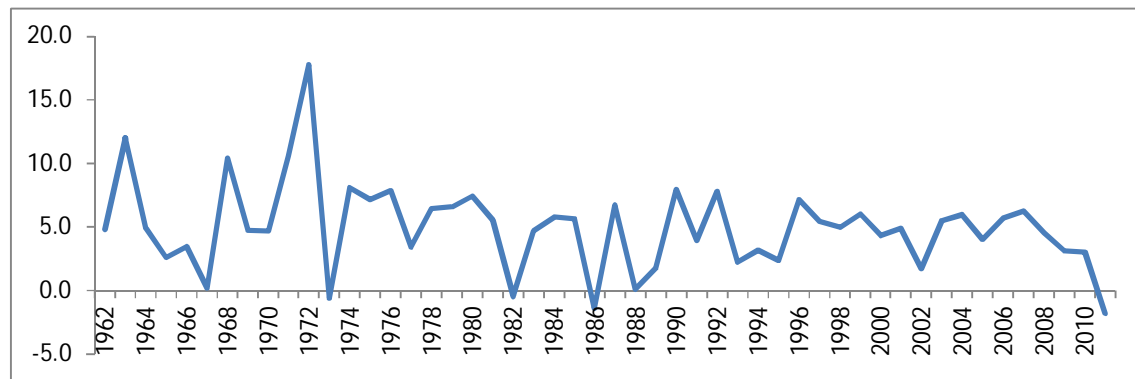
Figure 2: GDP per capita, PPP constant $ 2005
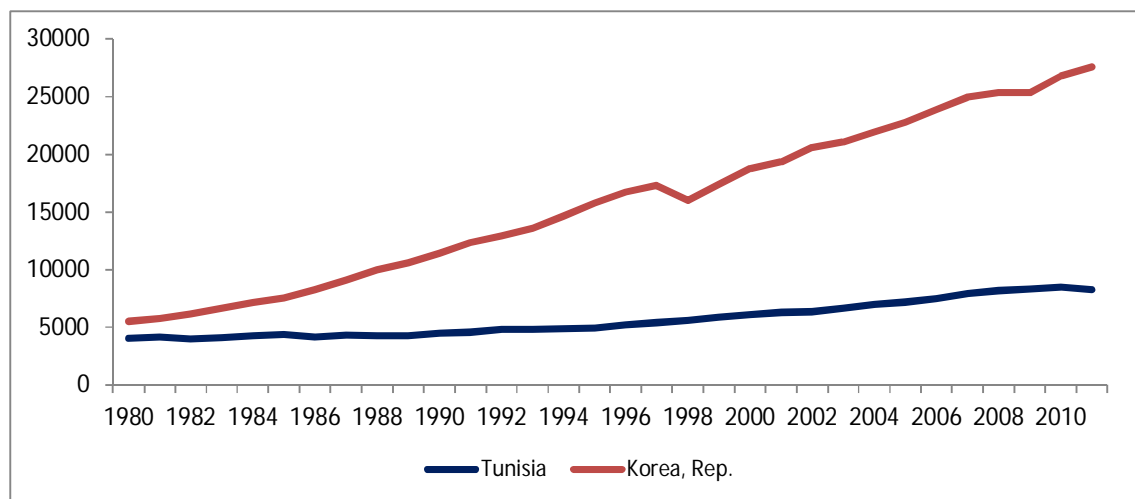
Figure 3: High-technology exports (% of manufactured exports)
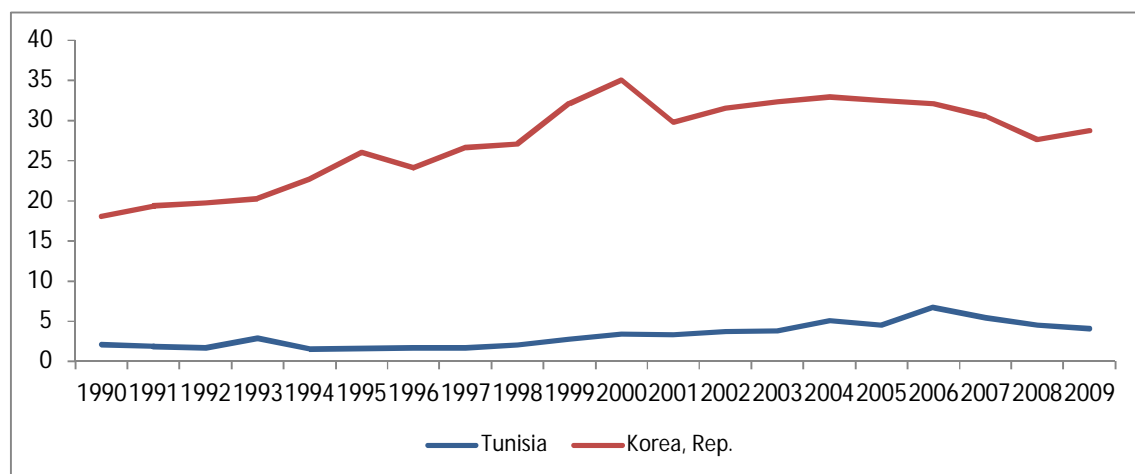
Figure 4: Net FDI inflows as % of GDP
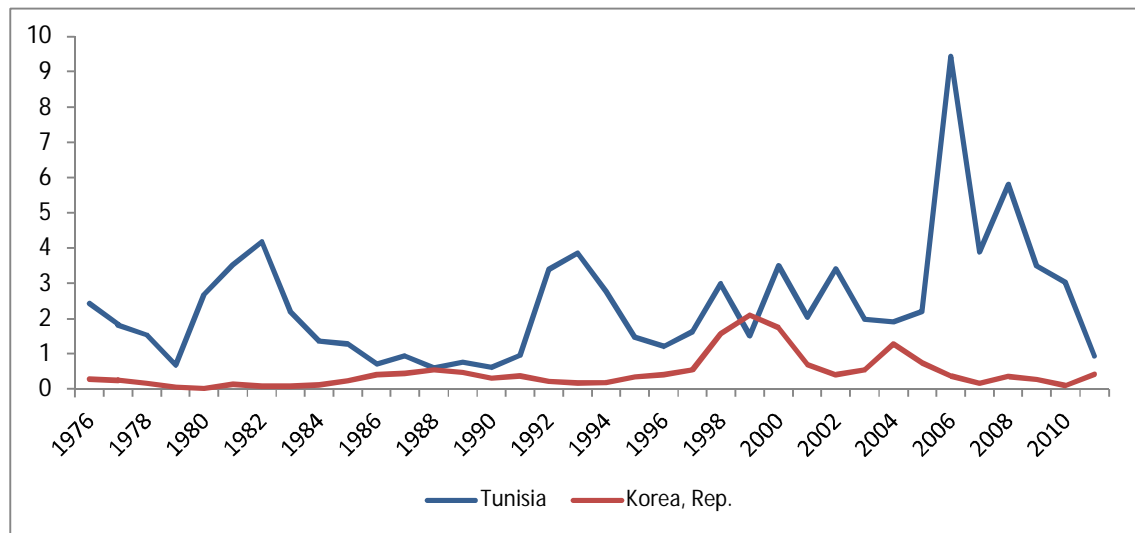
Figure 5: Savings as % in GDP
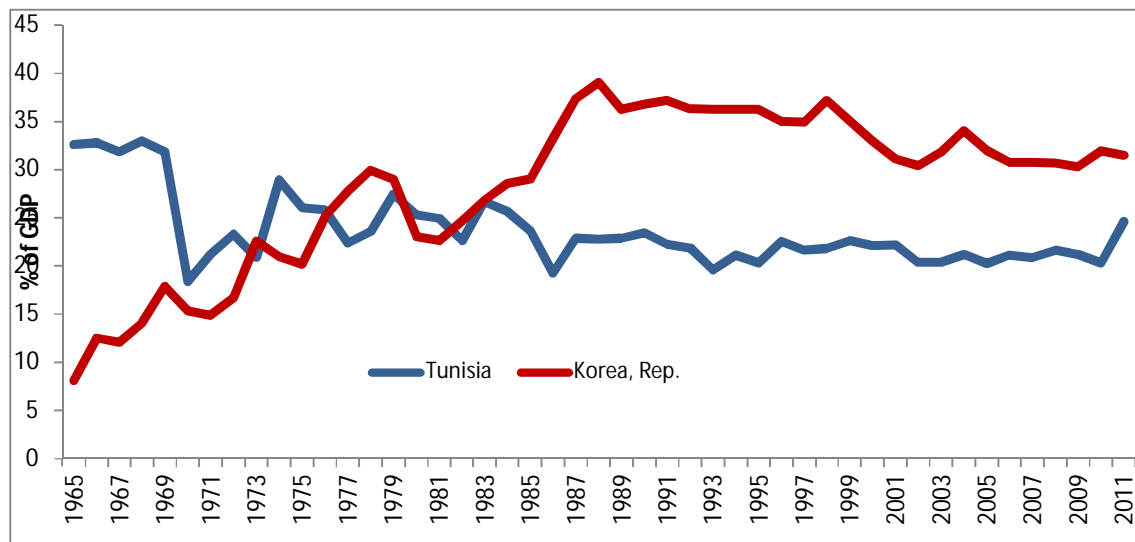
Figure 6: Enrollment in tertiary education, percent
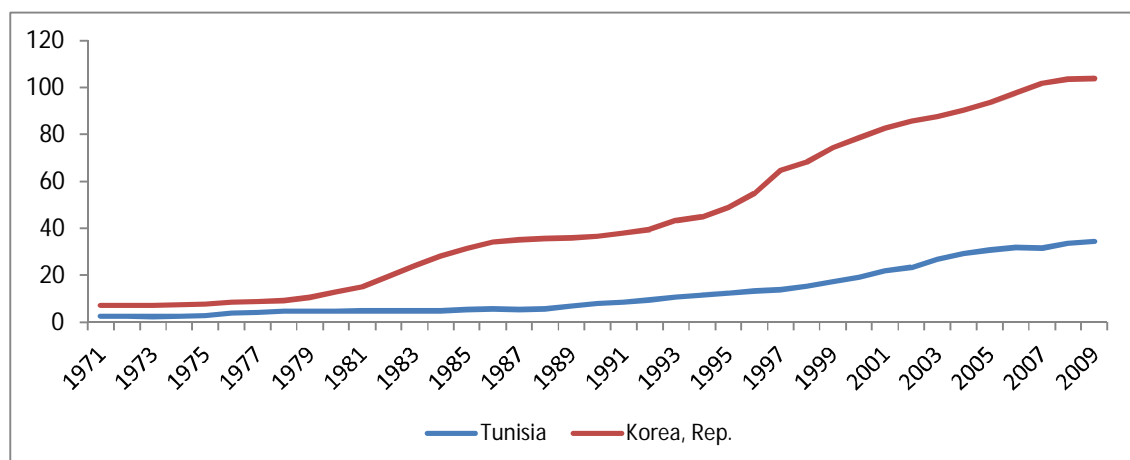
Figure 7: Sectoral transformation of the Tunisian economy
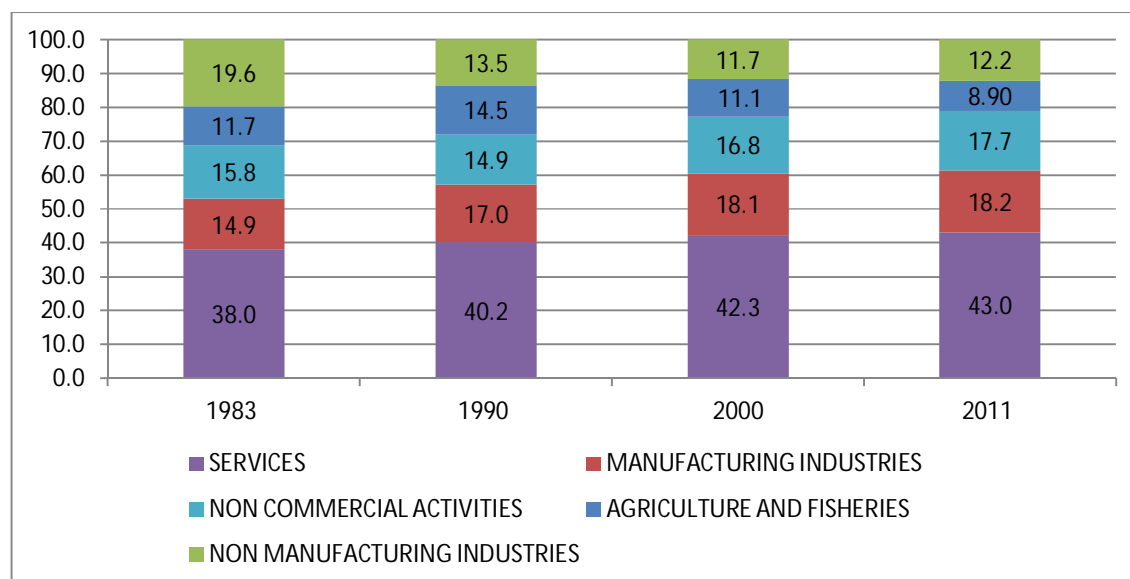
Figure 8: Employment distribution by sector (in %), comparison between 1975 and 2011
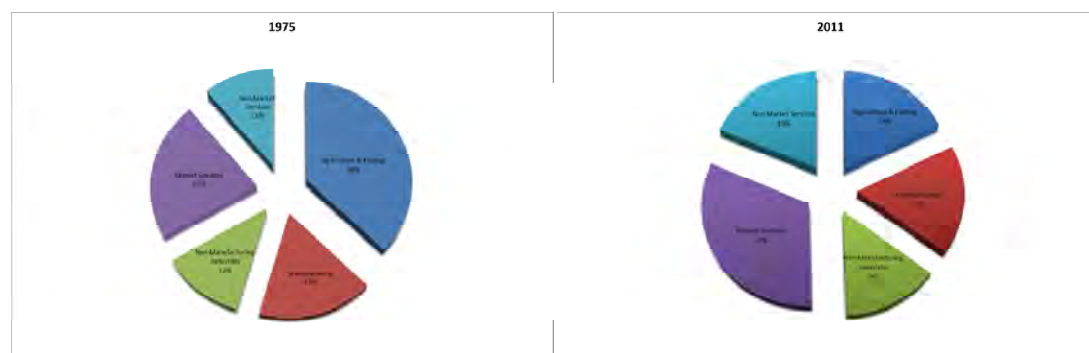
Figure 9: Evolution of Value-added by sector (in TD)
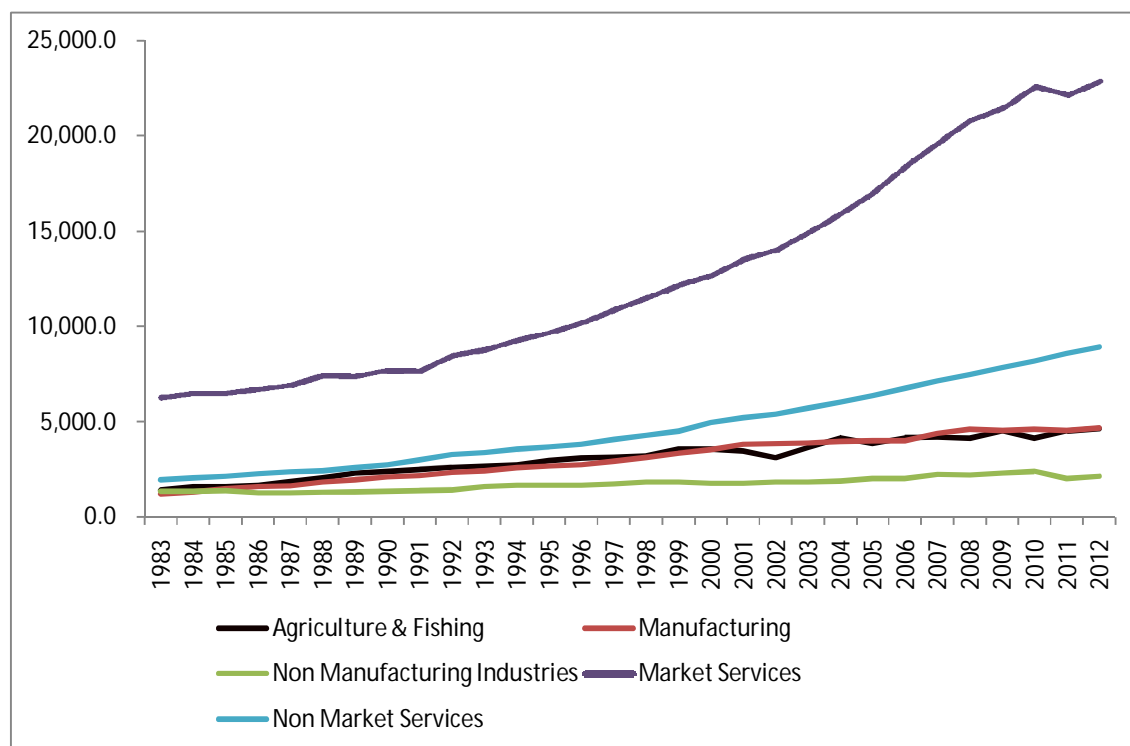
Source: INS, ITCEQ, Author's calculations

Figure 10: Absorption rate of tertiary educated workers by sector(%) (1975, 2000, 2011)
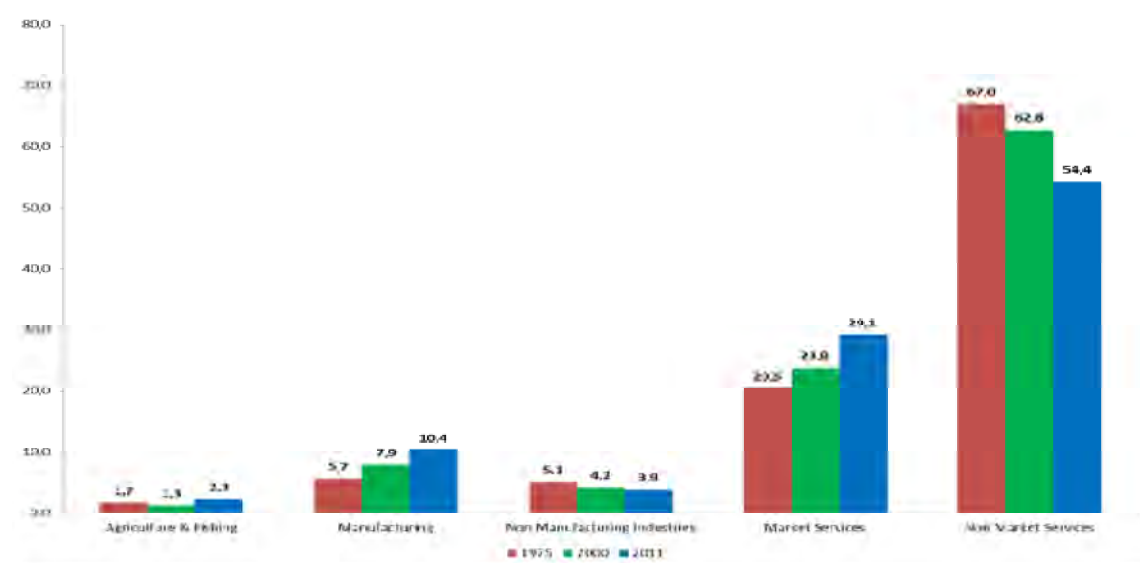
Source: INS, ITCEQ, Author's calculations

Figure 11: Share of highly skilled workers[*] by sectors (%) (1975, 2000, 2011)
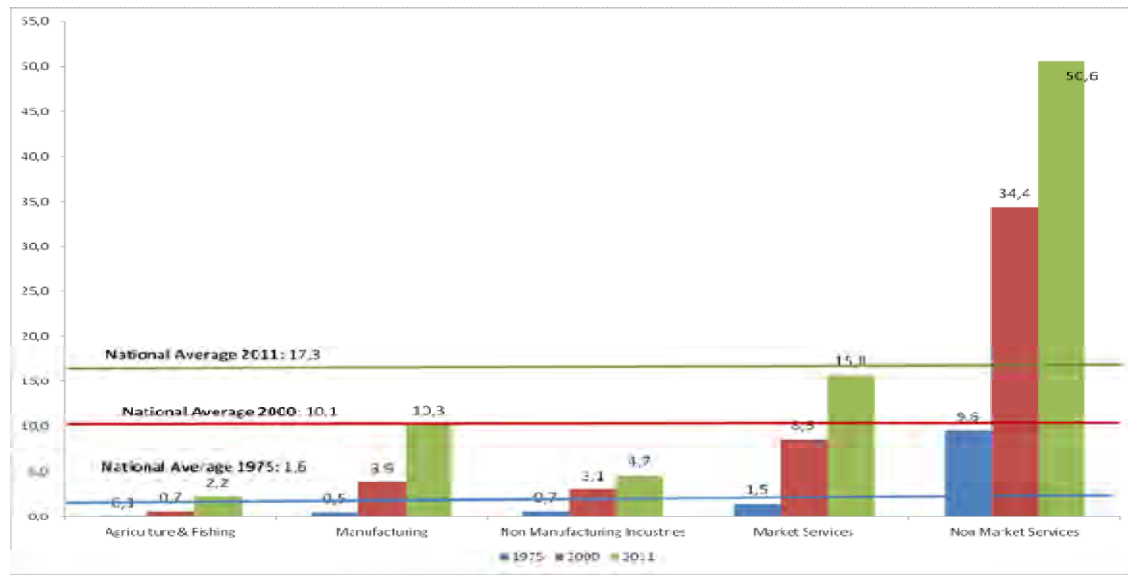
[*] Tertiary-level graduates
Source: INS, ITCEQ, Author's calculations

Figure 12: Share of Textiles and clothing and Mechanical and Electrical in GDP (%)
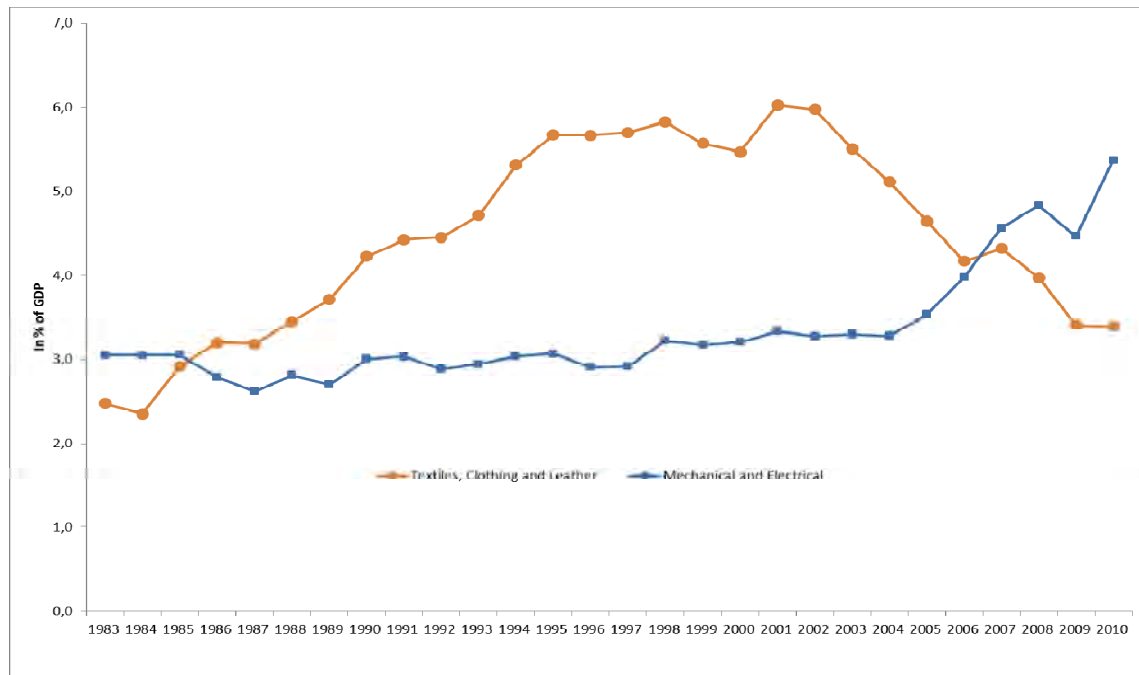
Source: INS, ITCEQ, Author's calculations

Figure 13: Value Added as a % of Gross Output, 2008
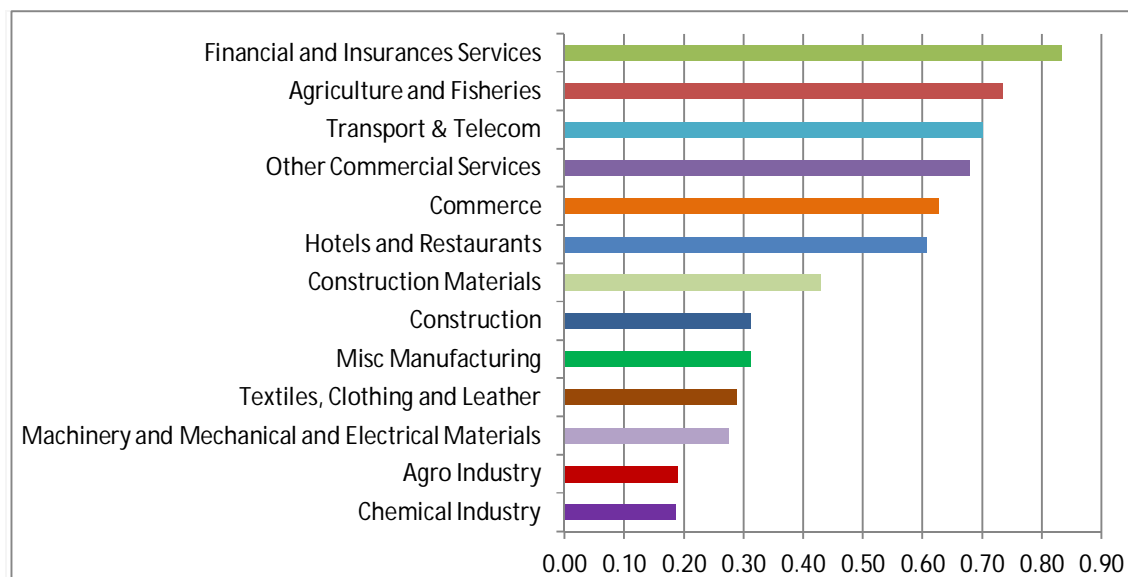
Source: INS, ITCEQ, Author's calculations

Figure 14: Share of tertiary educated workers in the manufacturing sectors (%)
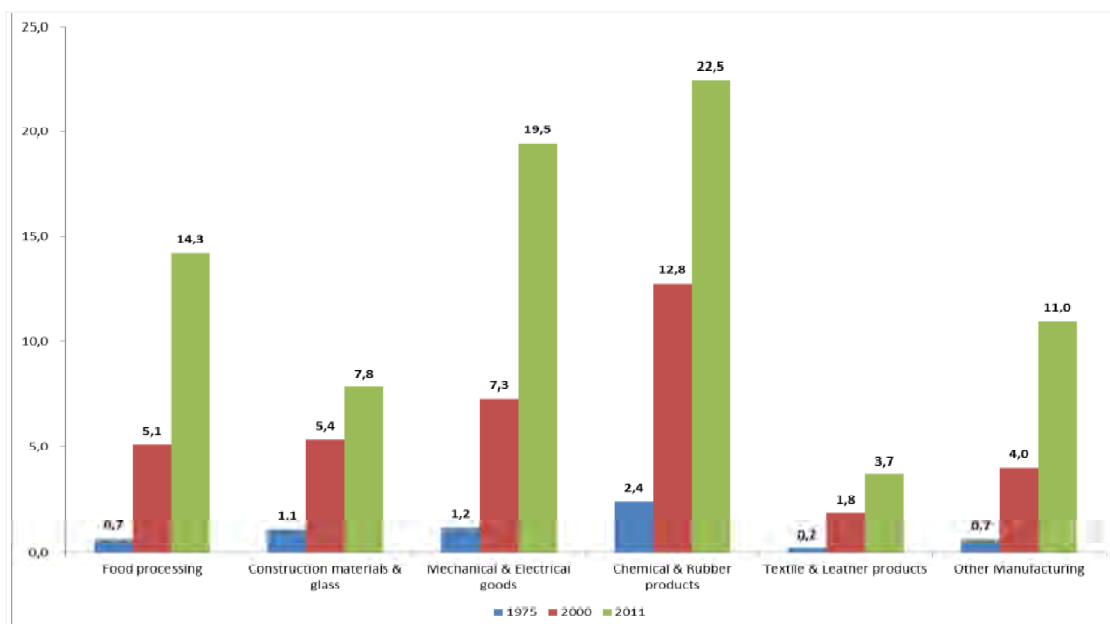
Source: INS, ITCEQ, Author's calculations

Figure 15: Cumulated export share (%) for top 20 sophisticated products in selected countries
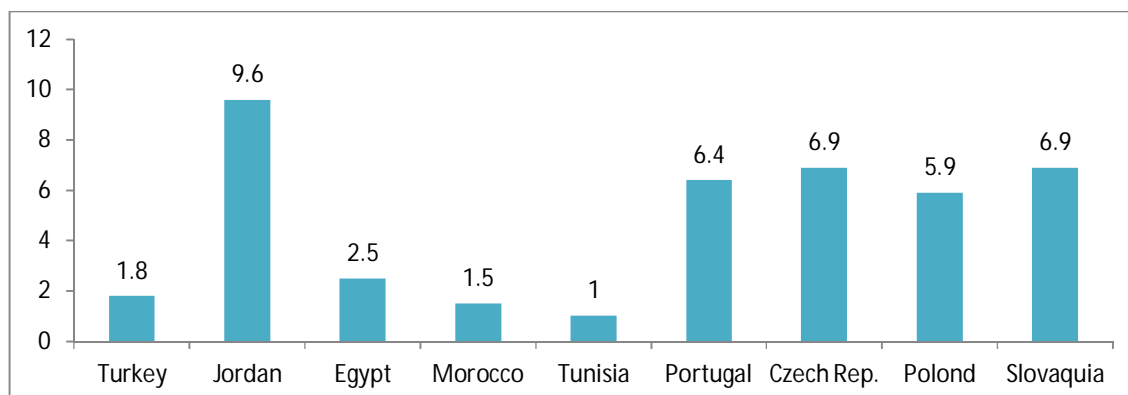
Source: authors 'calculations

Figure 16: Estimated export sophistication values[*] in selected Mena countries for year 2010
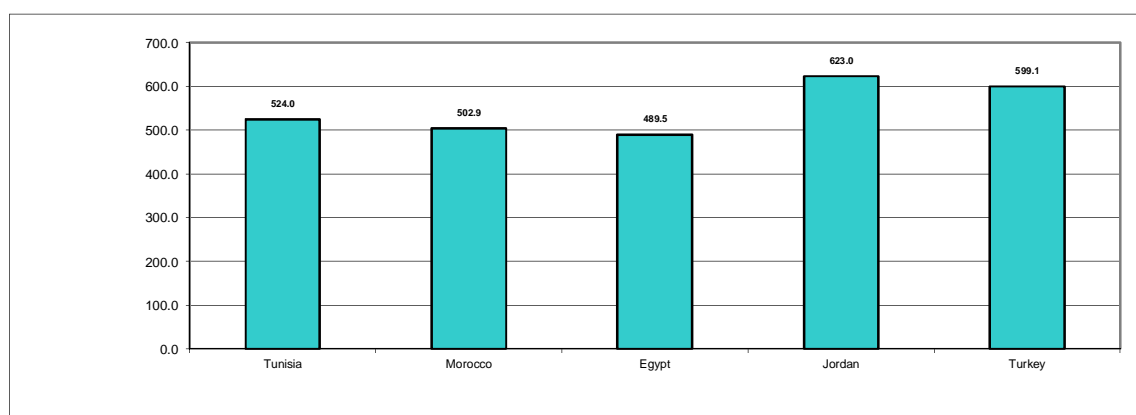
Source: authors 'calculations   *Values in thousand US $ (constant 1995)

Figure 17: Correlation between export sophistication and GDP per capita[18] for some selected countries (Estimation for year 2010).
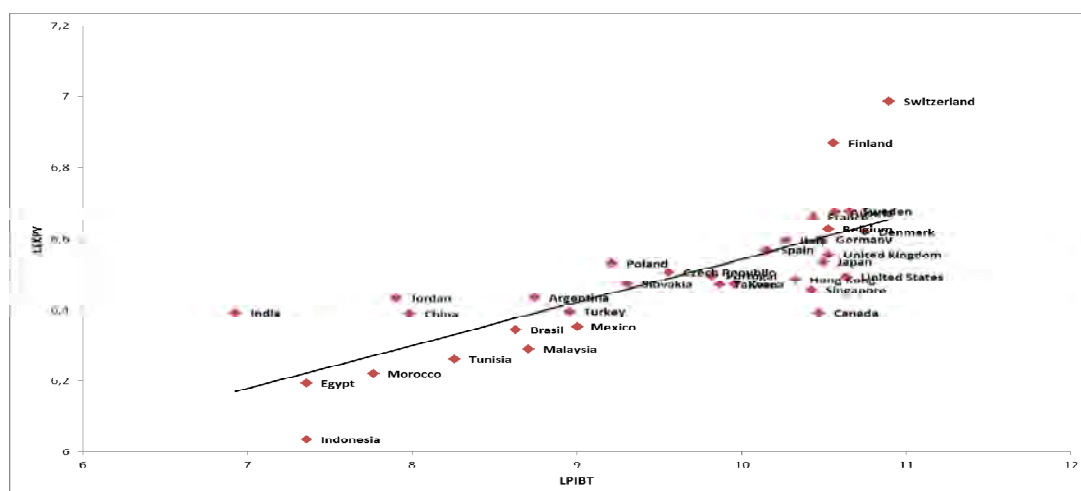
Source: authors' estimations.

Table 1: Comparison of labour productivity[*] accross services (Period 1983-2008)

Type of services	Mean Labour productivity	Annual growth rate of labour productivity (%)
Construction	2.4	2
Government services	4.6	1.9
Finance, insurance and others	7.3	-0.01
Transport and communication	10.7	4.9
Public utilities	49.5	1.2

[*]Labour productivity corresponds to value-added per worker
Source: Marouani and Mouelhi (2013)

Table 2: Tunisia, Share of selected services in nominal GDP, 1985-2007 (%)

	1985	1990	1995	2000	2005	2007
ICT industries.	3.5	3.8	4.2	4.4	5.6	6.2
Commercial knowledge-intensive services *.	6.0	6.0	6.8	6.8	7.4	7.9
Business services.	1.6	1.5	1.7	1.6	1.2	1.2
Financial services.	1.1	1.0	1.1	1.0	0.8	0.8
Communications services.	3.3	3.6	3.9	4.1	5.4	5.9

*Commercial knowledge-intensive services include business, financial, and communications services; education and health.
Source: N.S.F, Science and Engineering Indicators 2008 and 2010.

Table 3: Value Added (V.A) growth of the Manufacturing Industries by sources[*] (%) (Average growth rate, 1983-2010 and various sub-periods)

		1983-2010	1983-1987	1987-1991	1991-1996	1996-2001	2001-2006	2006-2010
Value Added		**5.0**	**7.6**	**7.3**	**4.6**	**6.5**	**1.1**	**3.3**
	LP	0.1	0.3	0.2	0.6	0.3	-0.5	-0.4
Labor	**LSE**	1.6	3.2	1.8	1.9	1.2	1.3	0.5
	LSU	0.6	0.9	0.3	0.6	0.4	0.8	1.0
Capital	**KB**	0.2	0.3	0.2	0.2	0.2	0.2	0.1
	KE	-0.2	0.6	0.1	-0.6	-0.5	-0.2	-0.1
TFP		2.6	2.4	4.9	1.9	4.9	-0.5	2.2

LP: None and Primary, LSE: Secondary, LSU: Higher education , KB: Capital building,
KE: Capital equipment, TFP: Total factor productivity
[*] See annex 2 for methodology
Source: authors calculations and INS.

Table 5: Tunisia, Share of selected industries in the nominal GDP, 1985-2007 (%).

	1985	1990	1995	2000	2005	2007
High-technology manufacturing industries *.	0.2	0.3	0.4	0.4	0.4	0.4
Communications and semiconductors.	0.1	0.2	0.1	0.1	0.1	0.2
Pharmaceuticals.	0.1	0.1	0.2	0.2	0.2	0.2
Scientific instruments.	0.04	0.04	0.03	0.03	0.04	0.04
Aerospace industry.	0.05	0.04	0.04	0.03	0.03	0.03
Computers and office machinery.	0.0	0.01	0.01	0.01	0.01	0.01
All manufacturing industries.	18.2	18.5	19.9	19.6	17.2	16.6

*High-technology manufacturing industries include aerospace, communications and semiconductors, computers and office machinery, pharmaceuticals, and scientific instruments and measuring equipment.
Source: N.S.F, Science and Engineering Indicators 2008 and 2010.

Table 6: Share of Manufacturing industries by technology levels in the Tunisian total export (%)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total High Tech	1.8	1.8	2.1	2.7	1.8	2.0	1.9	2.2	2.6	2.7	3.1	2.9	4.5	5.4	6.5
Total Medium High-Tech	17.4	18.4	18.2	20.1	19.4	18.6	20.2	20.5	20.3	21.2	22.4	21.7	24.0	31.3	29.9
Total Medium Low Tech	6.1	4.2	4.1	4.1	4.0	3.8	3.8	5.5	7.3	6.9	8.0	10.2	10.0	11.0	11.2
Total Low Tech	56.7	55.5	57.7	57.5	57.8	53.1	53.7	54.0	53.6	53.2	47.6	45.3	40.9	34.7	38.3

Source: Diop Ndiame and Sofiane Ghali, 2011.

Table 7: Distribution of manufacturing firms by industry and regime (Data for 2009)

Industries	Exports less than 75%	Totally exporting	Total
Textile and Clothing	343	1752	2095
Food	869	164	1033
Plastics, Paper and Cardboard	577	165	742
Mechanical and Metallurgical	411	163	574
Construction Mat., Ceramics and Glass	399	28	427
Electric and Electronic	128	219	347
Leather and Shoes	84	213	297
Chemicals	205	36	241
Total Manufacturing	**3016**	**2740**	**5756**

Source: Investment Promotion Agency, Manufacturing Industry Monograph (2010)

Table 8: Distribution of manufacturing firms according to their capital structure (Data for 2009)

Industries	100 % Local capital	Mixed Capital	100% Foreign Capital
Textile and Clothing	1129	326	640
Food	926	84	23
Plastics, Paper and Cardboard	556	71	115
Mechanical and Metallurgical	397	67	110
Construction Mat., Ceramics and Glass	370	36	21
Electric and Electronic	125	80	142
Leather and Shoes	143	41	113
Chemicals	169	52	20
Total Manufacturing	**3815**	**757**	**1184**

Source: Investment Promotion Agency, Manufacturing Industry Monograph (2010)

Table 9: Distribution of manufacturing firms with foreign partnership by industry and regime (Data for 2009)

Industries	Exports less than 75%	Totally exporting	Total
Textile and Clothing	32	934	966
Food	48	59	107
Plastics, Paper and Cardboard	46	140	186
Mechanical and Metallurgical	40	137	177
Construction Mat., Ceramics and Glass	41	16	57
Electric and Electronic	30	192	222
Leather and Shoes	3	151	154
Chemicals	49	23	72
Total Manufacturing	**289**	**1652**	**1941**

Source: Investment Promotion Agency, Manufacturing Industry Monograph (2010)

Table 10: Share of employment, production and value added by industry in total manufacturing (Data for 2008)

Industries	Employment (%)	Production (%)	Value Added (%)
Textile and Clothing	41	12.3	15.6
Food	14	22.7	24.2
Plastics, Paper and Cardboard	8	6.9	9.9
Mechanical and Metallurgical	7	8.5	9.5
Construction Mat., Ceramics and Glass	6	5.9	8.9
Electric and Electronic	13	10.4	12.2
Leather and Shoes	6	13	4.3
Chemicals	5	20.5	15.5
Total Manufacturing	**100**	**100**	**100**

Source: Investment Promotion Agency, Manufacturing Industry Monograph (2010)

Table 11: Share of manufacturing exports by industry over the period 2004-2008 (Data in %)

Industries	2004	2005	2006	2007	2008	MAGR*
Textile and Clothing	42.1	39.2	34.7	33.3	27.3	4.0
Food	11.5	10.9	12.5	10.4	9,8	11.0
Plastics, Paper and Cardboard	4.5	4.2	4.9	5.4	5.3	20.0
Mechanical and Metallurgical	6.5	7.1	8.0	10.0	10.2	29.0
Construction Mat., Ceramics and Glass	1.6	1.8	2.1	1.9	2	22.0
Electric and Electronic	17.5	19.2	20.9	22.3	22.3	23.0
Leather and Shoes	5.8	6.0	5.7	5.6	4.7	10.0
Chemicals	10.5	11.5	11.2	11.1	18.5	33.0
Total Manufacturing	**100**	**100**	**100**	**100**	**100**	**16**

*MAGR = Mean Annual Growth Rate over the period 2004-2008 (in %)
Source: Investment Promotion Agency, Manufacturing Industry Monograph (2010)

Table 12: Tunisian IIT [standard GL index]

ISIC Code	Industries	GL1995	GL 2000	GL 2005	GL 2010
ISIC 15	Manufacture of food products and beverages	0,146	0,177	0,220	0,238
ISIC 16	Manufacture of Tobacco products	0,785	0,731	0,678	0,478
ISIC 17	Manufacture of textiles	**0,228**	**0,206**	**0,198**	**0,160**
ISIC 18	Manufacture of wearing apparel	**0,235**	**0,236**	**0,176**	**0,158**
ISIC 19	Leather; manufacture of luggage and footwear	0,240	0,475	0,290	0,406
ISIC 20	Manufacture of wood and of products of wood and cork	0,094	0,103	0,172	0,209
ISIC 21	Manufacture of paper and paper products	0,362	0,436	0,419	0,454
ISIC 24	Manufacture of chemicals and chemical products	0,256	0,244	0,305	0,239
ISIC 25	Manufacture of rubber and plastics products	**0,405**	**0,512**	**0,526**	**0,607**
ISIC 26	Manufacture of other non-metallic mineral products	0,366	0,570	0,471	0,516
ISIC 27	Manufacture of basic metals	0,241	0,222	0,157	0,200
ISIC 28	Manufacture of fabricated metal products	0,447	0,312	0,382	0,502
ISIC 29	Manufacture of machinery and equipment	0,160	0,146	0,253	0,344
ISIC 30	Manufacture of office, accounting and computing machinery	0,085	0,033	0,262	0,335
ISIC 31	Manufacture of electrical machinery and apparatus n.e.c.	**0,717**	**0,752**	**0,804**	**0,810**
ISIC 32	Manufacture of radio, television and communication equipment	**0,414**	**0,318**	**0,415**	**0,711**
ISIC 33	Manufacture of medical, precision and optical instruments	0,360	0,437	0,695	0,683
ISIC 34	Manufacture of motor vehicles, trailers and semi-trailers	0,155	0,181	0,447	0,395
ISIC 35	Manufacture of other transport equipment	0,099	0,043	0,220	0,266

Source: Unctad statistical database and authors' calculations

Table 13: Vertical and Horizontal IIT with EU-15 for MBC countries

Countries	IIT Total	Horizontal IIT	Vertical IIT		Inter Industry Trade
			Low quality	High quality	
Turkey	31,6	11,5	3,1	**17**	68,4
Tunisia	28,5	6,5	**14,8**	7,2	71,5
Morocco	19,0	4,1	9,9	5	81,0
Egypt	13,8	2,2	3,6	8	86,2
Algeria	4,7	3,1	1,3	0,3	95,3

Source: Trigo Catalina (2009) ; Data for the year 2004 (values in %)

Table 14: Sectoral export market share decomposition for Tunisia's exports destined to EU-27 (values in %)

ISIC code	Industries	Period 1995 -2000				Period 2000 -2005				Period 2005 -2010			
		Perform effect	Position effect	Repositi effect	Global effect	Perform effect	Position effect	Repositi effect	Global effect	Perform effect	Position effect	Repositi effect	Global effect
ISIC 15	Manufacture of food products and beverages	-0,011	0,011	0,000	0,000	0,009	-0,003	0,001	0,008	-0,004	-0,010	0,002	*-0,012*
ISIC 16	Manufacture of tobacco products	0,005	0,000	0,000	0,005	0,062	0,007	0,007	0,076	0,012	-0,003	-0,001	0,008
ISIC 17	Manufacture of textiles	-0,022	0,032	-0,004	0,006	0,040	0,037	0,013	0,090	0,058	0,059	-0,020	0,097
ISIC 18	Manufacture of wearing apparel	-0,333	-0,099	0,041	*-0,391*	-0,380	-0,051	0,002	*-0,428*	-0,302	0,014	0,003	*-0,285*
ISIC 19	Leather; manufacture of luggage and footwear	0,110	0,035	-0,003	**0,142**	-0,004	0,055	0,002	**0,052**	-0,068	0,018	0,001	*-0,049*
ISIC 20	Manufacture of wood and of products of wood and cork	0,017	0,005	0,003	0,025	0,012	-0,005	-0,002	0,005	0,024	-0,003	-0,002	0,018
ISIC 21	Manufacture of paper and paper products	0,015	0,000	0,000	0,016	0,018	-0,002	-0,001	0,015	0,007	0,003	0,004	0,014
ISIC 24	Manufacture of chemicals and chemical products	-0,016	-0,030	0,003	*-0,042*	-0,005	-0,015	0,002	*-0,018*	0,006	0,006	-0,001	0,011
ISIC 25	Manufacture of rubber and plastics products	0,033	0,001	0,002	0,036	0,039	0,000	0,000	0,039	0,035	0,000	0,000	0,034
ISIC 26	Manufacture of other non-metallic mineral products	-0,003	-0,005	-0,004	*-0,012*	0,002	0,003	0,005	0,011	-0,010	0,004	0,002	*-0,005*
ISIC 27	Manufacture of basic metals	0,004	-0,004	-0,001	*-0,001*	-0,008	0,015	-0,013	*-0,006*	-0,004	0,004	0,000	0,000
ISIC 28	Manufacture of fabricated metal products	-0,065	0,017	-0,013	*-0,061*	0,012	-0,002	0,000	0,010	0,059	0,002	0,002	0,063
ISIC 29	Manufacture of machinery and equipment	0,000	0,000	-0,001	*-0,002*	0,009	0,001	-0,001	0,008	0,030	0,001	0,000	0,031
ISIC 30	Manufacture of office, accounting and computing machinery	-0,002	0,000	0,000	*-0,002*	0,015	0,000	0,000	0,015	0,028	-0,001	0,000	0,027
ISIC 31	Manufacture of electrical machinery and apparatus n.e.c.	0,073	0,003	0,004	0,081	0,177	0,032	0,009	0,218	0,070	0,023	-0,012	0,081
ISIC 32	Manufacture of radio, television and communication equipment	-0,030	0,009	-0,005	*-0,026*	0,013	-0,002	-0,001	0,010	0,107	-0,001	0,013	0,119
ISIC 33	Manufacture of medical, precision and optical instruments	-0,002	-0,003	-0,001	*-0,005*	0,065	-0,002	0,010	0,073	0,033	-0,002	-0,001	0,030
ISIC 34	Manufacture of motor vehicles, trailers and semi-trailers	0,006	0,000	0,000	0,006	0,038	0,000	0,001	0,039	0,015	0,005	0,001	0,021
ISIC 35	Manufacture of other transport equipment	-0,002	0,003	-0,002	*-0,001*	0,001	0,002	0,001	0,003	0,023	0,001	0,003	0,028

Global effect = Perform effect + Position effect + Repositioning effect

Source: Unctad statistical database and authors' calculations

Table 15: Tunisia's positioning among EU clothing providers in 2008

Countries	Exports (in Billion Euros)	Rank
China	21,77	1
Turkey	8,86	2
Bangladesh	4,34	3
India	3,83	4
Tunisia	**2,56**	**5**
Morocco	2,50	6
Indonesia	1,19	7
Hong Kong	1,68	8

Source: Tunisian Investment promotion agency, textile and clothing monograph (2010).

Table 16: Leather and footwear industry, main indicators (until year 2008)

Indicators	Values
Percentage of firms producing totally for exports	71%
Percentage of firms with 100% foreign capital	70,8%
Employment share of 100% foreign capital firms	90%
Percentage of exports destined to UE countries (France and Italy)	76%
Coverage ratio (exports / imports)	189%
Percentage of firms ISO certified	**2,7%**
Percentage of investments (% of total manufacturing investments)	**3%**
Investments realized within the upgrading programme (% of total manufacturing industries)	**3,7%**
Main sub-branch	Footwear

Source: IPA sectoral monograph (2010)

Table 17: Tunisia's Top 10 manufacturing exports over the world, Mean Export Share (MES), values in %

Codes	Products (SITC, Rev.3)	MES 1995-1999	MES 2000-2004	MES 2005-2010	MES 1995-2010
845	Articles of apparel, of textile fabrics, n.e.s.	12,3	15,5	11,4	13,0
841	Men's clothing of textile fabrics, not knitted	17,2	11,7	6,6	11,5
333	Petroleum oils, oils from bitumin. materials, crude	6,7	7,8	11,9	9,0
842	Women's clothing, of textile fabrics	9,7	8,0	4,1	7,0
562	Fertilizers (other than those of group 272)	5,3	4,4	5,0	4,9
773	Equipment for distributing electricity, n.e.s.	4,0	5,0	5,4	4,8
851	Footwear	4,1	4,8	3,7	4,2
421	Fixed vegetable fats & oils, crude, refined, fractio.	4,1	2,9	4,4	3,8
772	Apparatus for electrical circuits; board, panels	2,0	3,8	5,0	3,7
522	Inorganic chemical elements, oxides & halogen salts	4,1	2,2	2,3	2,9
	Total	**69,5**	**66,1**	**59,8**	**64,8**

Sources: Unctad statistical data base and authors' calculations.

Table 18: RCA of Tunisia's top 10 manufacturing exports over the world market

Codes	Products (SITC, Rev. 3)	1995	2000	2005	2010
845	Articles of apparel, of textile fabrics, n.e.s.	13,0	13,7	14,6	12,4
841	Men's clothing of textile fabrics, not knitted	23,9	19,4	18,5	14,0
333	Petroleum oils, oils from bitumin. materials, crude	1,8	1,8	1,3	1,6
842	Women's clothing, of textile fabrics	13,1	11,6	8,5	7,5
562	Fertilizers (other than those of group 272)	15,7	22,6	16,9	14,0
773	Equipment for distributing electricity, n.e.s.	4,7	7,3	9,6	8,9
851	Footwear	3,9	6,2	6,7	5,2
421	Fixed vegetable fats & oils, crude, refined, fractio.	17,6	27,2	25,0	20,4
772	Apparatus for electrical circuits; board, panels	1,3	2,3	3,6	3,6
522	Inorganic chemical elements, oxides & halogen salts	11,9	11,8	7,5	7,0

Source: Unctad statistical database and authors' calculations

Table 19: Export Dynamics (ED) of Tunisia's top 10 manufacturing exports over the world

codes	Products (SITC, Rev. 3)	MES (1995-2010)	ED Index (1995-2010)
845	Articles of apparel, of textile fabrics, n.e.s.	13,0	4
841	Men's clothing of textile fabrics, not knitted	11,5	4
333	Petroleum oils, oils from bitumin. materials, crude	9,0	1
842	Women's clothing, of textile fabrics	7,0	4
562	Fertilizers (other than those of group 272)	4,9	3
773	Equipment for distributing electricity, n.e.s.	4,8	1
851	Footwear	4,2	4
421	Fixed vegetable fats & oils, crude, refined, fractio.	3,8	4
772	Apparatus for electrical circuits; board, panels	3,7	1
522	Inorganic chemical elements, oxides & halogen salts	2,9	3

Source: Unctad statistical database and authors' calculations

Table 20: Top 20 sophisticated products ranked by PRODY and Tunisia's export shares over the period 1995-2010

Codes	Products (SITC, Rev.3)	PRODY (Constant 1995 US $)	Tunisia MES (%)
212	Furskins, raw, other than hides & skins of group 211	2802,3	0,0
885	Watches & clocks	1727,0	0,13
725	Paper mill, pulp mill machinery; paper articles man.	1493,9	0,02
016	Meat, edible meat offal, salted, dried; flours, meals	1388,7	0,0
641	Paper and paperboard	1365,1	0,19
541	Medicinal and pharmaceutical products, excluding 542	1137,9	0,03
542	Medicaments (incl. veterinary medicaments)	1099,3	0,13
351	Electric current	1095,2	0,002
248	Wood simply worked, and railway sleepers of wood	1086,7	0,002
727	Food-processing machines (excluding domestic)	1018,7	0,02
675	Flat-rolled products of alloy steel	982,9	0,002
012	Other meat and edible meat offal	949,7	0,05
531	Synth. organic colouring matter & colouring lakes	943,8	0,002
024	Cheese and curd	943,3	0,075
811	Prefabricated buildings	939,8	0,016
251	Pulp and waste paper	926,3	0,14
716	Rotating electric plant & parts thereof, n.e.s.	916,5	0,11
718	Other power generating machinery & parts, n.e.s.	904,0	0,03
896	Works of art, collectors' pieces & antiques	902,9	0,002
744	Mechanical handling equipment, & parts, n.e.s.	893,4	0,04
	Total	-	**1%**

Source: Unctad statistical database and authors' calculations

Table 21: Upgrading effort distribution by sector (until 2007)

Industries	Beneficiaries Firms	Investments in MTD
Food processing	322	750
Leather and Shoes	189	148
Chemicals	137	262
Other Industries	330	506
Const. Mat, Ceramics and Glass	122	754
Mechanical and Electrical	300	628
Textile and Clothing	1054	758
Total	2454	3806

MTD= Million of Tunisian Dinar
Source: Upgrading Office (Bureau de Mise à Niveau)

Table 22: FAMEX program components

Activities	Amounts disbursed Millions $US	Share in % Total programme
Market prospection	2.665	23.9
Promotion	4.113	36,9
Product development	1.515	13,6
Firm development	1.169	10.5
Foreign subsidiary creation	1.688	15.1
Total	11.150	100

Source: Cadot and al., 2012.

Table 23: Distribution of the employed labor force according to the level of education (%) Tunisia

	1975	1989	1997	2000	2002	2004	2008
None	55.7	32.7	19.5	17.4	15.4	14.5	11.9
Primary	28.9	38.6	41.9	40.6	40.3	37.9	36.6
Secondary	13.7	23.9	30.3	31.9	33.4	34.9	36.7
Higher	1.7	4.8	8.3	10.1	10.9	12.7	14.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: INS

Table 24: Distribution of the unemployed by educational level, all of the economy (%)

	1975	1989	1997	2000	2002	2004	2008
None	46.7	21.6	12.1	10.1	12.5	12.7	4.4
Primary	42.3	51.1	53.4	45.6	44.5	42.4	31.1
Secondary	10.9	25.9	30.8	37.7	35.0	36.3	40.0
Higher	0.2	1.3	3.6	6.6	8.0	8.6	24.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: INS

Table 25: Unemployment rate by educational level, all of the economy (%)

	1975	1989	1997	2000	2002	2004	2008
None	13.6	11.1	11.1	9.8	12.8	12.7	5.7
Primary	21.6	20.1	20.4	17.3	16.6	15.7	12.3
Secondary	13.0	17.1	17.0	18.0	15.9	14.7	15.3
Higher	1.8	5.0	8.1	10.9	11.6	10.2	21.6
Average	15.8	15.9	16.8	15.7	15.3	14.2	14.2

Source: INS

Table 26: Labor composition by qualifications (%)

	1975	1989	1997	2000	2002	2004
Senior executives and engineers	2.5	3.3	3.5	3.2	3.4	3.5
Technicians	5.8	6.1	6.5	6.1	6.3	6.3
Foremen	8.2	7.7	7.6	6.8	6.7	6.6
Machine operators	67.1	72.2	72.7	74.6	74.7	74.8
Manual workers and trainees	16.3	10.6	9.6	9.3	8.9	8.8

Source: INS, IEQ

Table 27: Patents applications originating from Tunisia

	Patent Office	1995-2008
	Algeria	1
	Germany	5
	Australia	6
	Brazil	3
	Canada	5
	China	4
	Egypt	4
	United States (USPTO)	24
From Tunisia to	France	14
	Japan	1
	Morocco	2
	Mexico	3
	European Patent Office (EPO)	16
	Poland	1
	Korea	3
	Romania	1
	Tunisia	702
	Turkey	1

Sources: USPTO, EPO, INNORPI.

Table 28: Tunisian Patents applications

In Tunisia by origin (INNORPI)			
	Residents	**Non-résidents**	**Total**
1983-2009	1108	5212	6320
In the United States (USPTO)			
	Patents applications	**Patents grants**	
1975-2008	53	23	

Source: INNORPI, USPTO.

Table 29: Profile of patents depositors, Tunisia, 1990-2004. (%)

	Firms	**Individuals**	**Research Centers**
TOTAL	77.0	20.0	3.0
Foreign patents	92.0	6.0	2.0
Domestic patents	20.0	70.0	10.0

Sources: INNORPI and author calculations.

Table 30: PMN's investments distribution by nature (End of March 2009, data in M.TD)

Branches	Total	Physical Investments	Intangible Investments	Diagnostic*
Food processing	961	867	89	5
Leather and Shoes	174	131	40	2
Chemistry	359	321	35	3
Other Industries	658	585	67	6
Const. Mat, Ceramics and Glass	957	901	54	2
Mechanical and Electrical	847	727	115	6
Textile and Clothing	966	770	178	18
Total	4922	**4302**	**578**	42

MTD= Million of Tunisian Dinar
* Investments aimed to assess the internal management of the company (financial, technical, commercial and human resources)
Source: Investment Agency Promotion and Industry Upgrading Office (Bureau de Mise à Niveau).

Table 31: Logistics Performance Index: comparison between Tunisia and a sample of countries

Rank	Countries	LPI	Customs	Infrastructure	Transport	Logistics
26	Czech Republic	3.51	3.31	3.25	3.42	3.27
29	Malaysia	3.44	3.11	3.50	3.50	3.34
30	Poland	3.44	3.12	2.98	3.22	3.26
34	Portugal	3.34	3.31	3.17	3.02	3.31
38	Slovak Republic	3.24	2.79	3.00	3.05	3.15
39	Turkey	3.22	2.82	3.08	3.15	3.23
61	Tunisia	2.84	2.43	2.56	3.36	2.36
81	Jordan	2.74	2.31	2.69	3.11	2.49
92	Egypt, Arab Rep.	2.61	2.11	2.22	2.56	2.87

Source: World Bank (2012).

Table 32: Value Added (V.A) growth of the Food processing Industries by sources (%), (Average growth rate, 1983-2010 and various sub-periods)

		1983-2010	1983-1987	1987-1991	1991-1996	1996-2001	2001-2006	2006-2010
Value Added		**4.5**	**5.9**	**6.9**	**3.6**	**3.1**	**3.7**	**4.6**
	LP	0.8	2.9	2.8	0.1	0.1	-0.1	-0.6
Labor	LSE	1.8	3.1	3.1	1.5	1.9	0.9	0.3
	LSU	0.6	0.5	0.1	0.5	0.7	0.3	1.4
Capital	KB	0.3	0.1	0.1	0.3	0.5	0.3	0.2
	KE	-0.1	0.1	-0.2	-0.5	0.0	0.1	-0.1
TFP		1.3	-0.7	1.0	1.7	-0.2	2.2	3.5

LP: None and Primary, LSE: Secondary, LSU: Higher education, KB: Capital building,
KE: Capital equipment, TFP: Total factor productivity

Table 33: Value Added (V.A) growth of the Construction materials & glass Industries by sources (%), (Average growth rate, 1983-2010 and various sub-periods)

		1983-2010	1983-1987	1987-1991	1991-1996	1996-2001	2001-2006	2006-2010
Value Added		**3.7**	**-4.9**	**10.1**	**3.8**	**5.3**	**3.8**	**3.8**
	LP	0.1	1.4	0.5	-0.3	0.5	-0.8	-0.2
Labor	LSE	0.8	1.9	1.0	0.7	0.7	0.2	0.5
	LSU	0.3	0.6	0.4	0.2	-0.03	0.7	-0.1
Capital	KB	0.2	0.4	0.2	-3.7	-0.2	0.3	0.2
	KE	-1.4	0.5	-3.2	0.3	-1.9	0.02	0.4
TFP		3.7	-9.7	11.3	6.5	6.4	3.4	2.9

LP: None and Primary, LSE: Secondary, LSU: Higher education, KB: Capital building,
KE: Capital equipment, TFP: Total factor productivity

Table 34: Value Added (V.A) growth of the Mechanical and electrical goods Industries by sources (%), (Average growth rate, 1983-2010 and various sub-periods)

		1983-2010	1983-1987	1987-1991	1991-1996	1996-2001	2001-2006	2006-2010
Value Added		**5.8**	**-1.9**	**2.0**	**6.2**	**8.5**	**7.5**	**11.4**
	LP	0.6	2.1	0.8	0.04	0.3	0.1	-0.1
Labor	LSE	2.4	4.7	1.8	2.5	1.6	2.8	1.0
	LSU	1.3	1.4	0.7	0.7	0.3	2.4	2.1
Capital	KB	0.2	0.4	0.3	0.1	0.02	0.1	0.1
	KE	0.1	0.9	0.4	-0.4	-0.3	0.04	0.2
TFP		1.3	-11.4	-1.9	2.6	6.5	2.0	8.2

LP: None and Primary, LSE: Secondary, LSU: Higher education, KB: Capital building,
KE: Capital equipment, TFP: Total factor productivity

Table 35: Value Added (V.A) growth of the Chemical and rubber products Industries by sources (%), (Average growth rate, 1983-2010 and various sub-periods)

		1983-2010	1983-1987	1987-1991	1991-1996	1996-2001	2001-2006	2006-2010
Value Added		**3.9**	**11.5**	**1.1**	**5.1**	**4.4**	**0.8**	**0.8**
	LP	0.5	2.4	0.9	0.0	0.7	-0.5	-0.2
Labor	LSE	1.8	6.0	1.9	1.7	-0.1	1.2	0.6
	LSU	1.6	4.9	0.5	1.3	0.02	1.6	1.7
Capital	KB	0.3	1.9	0.04	0.04	0.02	-0.03	0.1
	KE	-0.8	1.4	-1.8	-1.9	-1.4	-0.7	0.2
TFP		0.5	-5.1	-0.5	4.0	5.1	-0.8	-1.6

LP: None and Primary, LSE: Secondary, LSU: Higher education, KB: Capital building,
KE: Capital equipment, TFP: Total factor productivity

Table 36: Value Added (V.A) growth of the Textile and Leather products Industries by sources (%), (Average growth rate, 1983-2010 and various sub-periods)

		1983-2010	1983-1987	1987-1991	1991-1996	1996-2001	2001-2006	2006-2010
Value Added		**4.0**	**4.9**	**7.8**	**6.9**	**6.9**	**-3.5**	**1.7**
	LP	-0.7	-2.8	-1.9	1.2	0.4	-1.0	-0.7
Labor	LSE	1.4	2.5	1.5	1.9	1.1	1.0	0.1
	LSU	0.2	0.3	0.1	0.2	0.2	0.3	0.1
Capital	KB	0.2	0.04	0.2	0.3	0.3	0.2	0.1
	KE	0.01	0.01	0.02	0.0	0.0	0.0	0.0
TFP		2.9	4.8	7.7	3.2	4.8	-3.9	2.1

LP: None and Primary, LSE: Secondary, LSU: Higher education, KB: Capital building,   KE:
Capital equipment, TFP: Total factor productivity

Table 37: Value Added (V.A) growth of the Other manufacturing Industries by sources (%), (Average growth rate, 1983-2010 and various sub-periods)

		1983-2010	1983-1987	1987-1991	1991-1996	1996-2001	2001-2006	2006-2010
Value Added		**3.7**	**2.1**	**4.6**	**5.6**	**3.8**	**2.4**	**3.5**
	LP	0.7	2.5	1.8	0.7	-0.1	-0.1	-0.4
Labor	LSE	1.7	3.9	1.5	1.9	1.2	1.3	0.7
	LSU	0.5	0.4	0.2	0.6	0.3	0.2	1.3
Capital	KB	0.2	0.1	0.1	0.3	0.4	0.3	0.2
	KE	0.1	0.5	0.5	0.1	-0.2	0.1	-0.5
TFP		0.5	-5.3	0.5	2.1	2.2	0.5	2.3

LP: None and Primary, LSE: Secondary, LSU: Higher education, KB: Capital building,   KE:
Capital equipment, TFP: Total factor productivity

Annex 2

Methodological annex

1- Growth accounting:

In order to evaluate the contribution of the different factor of production to the sectoral growth, we adopted the growth accounting methodology in line with the work of Jorgenson and Griliches (1967), Barro (1999) and Liang and Mei (2005). Here we must draw attention that Jorgenson and Griliches (1967), Jorgenson, Gollop and Fraumeni (1987) and Barro (1998) who have shown the importance of disaggregation of factors of production by types or qualities to reduce errors in measures and to understand the impact of each category on growth.

Given our goal, we opted for a breakdown of labor according to three different types over the period 1983-2010: None and Primary (LP), secondary (LSE), higher education (LSU). The series are only limited to the manufacturing industries, which has forced us to limit the scope of our analysis.

Physical capital is defined as the sum of structures and equipment capital stocks. To calculate the rates of return on buildings and equipment we followed the method used by the World Bank (World Bank, 1995). Assuming that interest payments are fully deductible, as they are in Tunisia, the user cost of physical capital is defined as: c = q (r (1 - t) + d), where *q* is the physical capital deflator (specific to each sector and each component of the capital stock), *r* is the real lending rate, *t* is the corporate tax rate, and *d* is the depreciation rate (again specific to each sector and component of the capital stock). Fiscal and financial incentives have not been taken into account. The user cost for total capital is the weighted average of the user costs for buildings and equipment. As equipment depreciates faster than buildings the user cost of equipment is higher than the user cost of buildings.

The lending rate used is the money market rate plus three percentage points. Different preferential sectoral interest rates were not taken into consideration.

To simplify the calculation, a 50% flat tax rate is applied for 1983-88, and after the tax reform in 1989 the normal corporate tax of 35% is applied for 1989-2001. Different tax rates for wholly exporting and agricultural enterprises and various tax holidays have not been considered.

The average depreciation rate is of 2.9% for building and 6.7% for equipment which gave a weighted average rate of 5.5%.

2- Export market share growth decomposition: the method of Deruennes (2006)

To simplify the demonstration, let's suppose an exported good i belonging to an industrial **sector noted b**. We note:

P_{ij}: the weight of good *i* in country j total imports (M^j) so that $P_{ij} = \dfrac{M_i^{\,j}}{M^{\,j}}$, with $M_i^{\,j}$ representing imports of good i by country j.

$x_{ij}^{\,T}$ is the share of country T exports of good *i* denoted E_{ij}^{T} in country j imports of the same product implying: $x_{ij}^{\,T} = \dfrac{E_{ij}^{\,T}}{M_i^{\,j}}$

Global export market share of country T for good *i to country j* denoted (X_{ij}^{T}) is given by:

$$X_{ij}^{\,T} = P_{ij} \times x_{ij}^{\,T} = \frac{E_{ij}^{\,T}}{M^{\,j}}$$

Let's note $\Delta(X_{ij}^{\,T})$ the export market share growth of country T for good i to country j between two instants $0\,and\,1$:

$$\Delta(X_{ij}^{\,T}) = [X_{ij}^{\,T}]_1 - [X_{ij}^{\,T}]_0$$

According to the preceding formula, we have:

$$\Delta(X_{ij}{}^T) = [P_{ij}]_0 \Big[[x_{ij}{}^T]_1 - [x_{ij}{}^T]_0 \Big]$$
$$+ [x_{ij}{}^T]_0 \Big[[P_{ij}]_1 - [P_{ij}]_0 \Big]$$
$$+ \Big[[P_{ij}]_1 - [P_{ij}]_0 \Big] \Big[[x_{ij}{}^T]_1 - [x_{ij}{}^T]_0 \Big]$$

Summing on the i goods corresponding to a particular sector b[46] we obtain an export market share growth decomposition formula for sector b written as follows:

$$\Delta_b (X_{ij}{}^T) = \sum_i [P_{ij}]_0 \Big[[x_{ij}{}^T]_1 - [x_{ij}{}^T]_0 \Big]$$
$$+ \sum_i [x_{ij}{}^T]_0 \Big[[P_{ij}]_1 - [P_{ij}]_0 \Big]$$
$$+ \sum_i \Big[[P_{ij}]_1 - [P_{ij}]_0 \Big] \Big[[x_{ij}{}^T]_1 - [x_{ij}{}^T]_0 \Big]$$

The left hand side term designates the "global effect" (export market share growth of sector b) and the right hand side terms correspond to its decomposition in 3 effects:

- The first term is called "*performance effect*". A positive value for this effect reflects country T's ability to enhance export market share of sector b in country j.
- The second term is called "*positioning effect*". A positive value for this effect reflects the quality of the geographic positioning of sector b exports on the targeted country j market.
- The third term is called "*repositioning effect*". A positive value for this effect would mean that sector b is gaining export market shares in an expanding country j market or loosing export market shares in a declining country j market. As the repositioning effect takes usually low values, it is interpreted as a residual effect.

3- Measure of Implicit productivity Index (PRODY): Hausman, Hwang and Rodrik (2007)

Hausman, Hwang and Rodrik (HHR) proposed a two stage methodology to measure export sophistication. In a first stage, an implicit productivity index (PRODY) is calculated. Assuming that j countries (j =1,..J) produces a commodity k, the implicit productivity index of commodity k denoted PRODY$_k$ is given by:

$$PRODY_k = \sum_j \frac{(x_{jk}/X_j)}{\sum_j (x_{jk}/X_j)} Y_j$$

With Y_j corresponding to GDP per capita of country j and the term $\dfrac{(x_{jk}/X_j)}{\sum_j (x_{jk}/X_j)}$ corresponding to RCA measure of country j for commodity k.

4- Measure of export sophistication index: HHR (2007)

Export sophistication index is computed on a country base. For Tunisia, export sophistication index denoted EXPY$_{TUN}$ is given by:

$$EXPY_{Tun} = \frac{x_{1Tun}}{X_{Tun}} PRODY_1 + \frac{x_{2Tun}}{X_{Tun}} PRODY_2 + ... + \frac{x_{KTun}}{X_{Tun}} PRODY_K$$

The term $\dfrac{x_{kTun}}{X_{Tun}}$ designates commodity k (k = 1,...,K) export share in Tunisia's total exports.

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[46] . Unlike direct mapping to other classifications through the available tables, correspondence SITC (Rev.3) and ISIC (Rev.3) that we operated is based on both the product description and the explanatory Unctad document on ISIC description available for the year 2002.

Annex 3:

GL index used and data on imports and exports for ISIC 17 and 18.

GL index used :

$$GL = [1 - \frac{\sum_{i}^{n}|X_i - M_i|}{\sum_{i}^{n}(X_i + M_i)}] * 100$$

Data on imports and exports for ISIC 17 and 18

ISIC 17: Imports and Exports in thousands U.S $

	1995	2000	2005	2010
Imports	1528770	1425841,9	1952460,7	2569893,6
Exports	337157,9	292033,7	474770,5	651111,8

Source: Unctad statistical database and authors' calculations

ISIC 18: Imports and Exports in thousands U.S $

	1995	2000	2005	2010
Imports	283946,5	276795,1	283823,4	275784,7
Exports	2134073,7	2073096,2	2945741,1	3206490,6

Source: Unctad statistical database and authors' calculations

Breaking the Shackles:

The Structural Challenge of Growth
and Transformation for Egypt's Industrial Sector

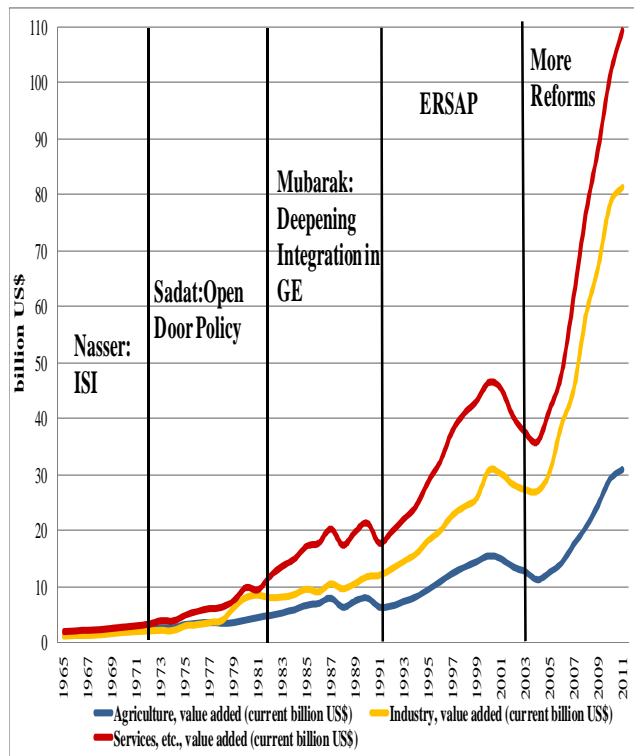by: Amirah El-Haddad

Research Team:

Rama Said

Marian Adel

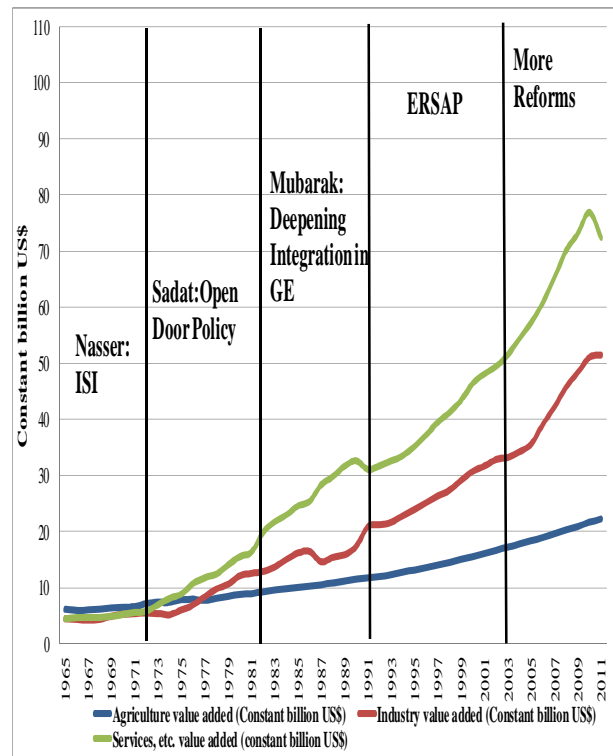**Figure 1: Evolution of GDP & GDP Growth (1961-2011)**
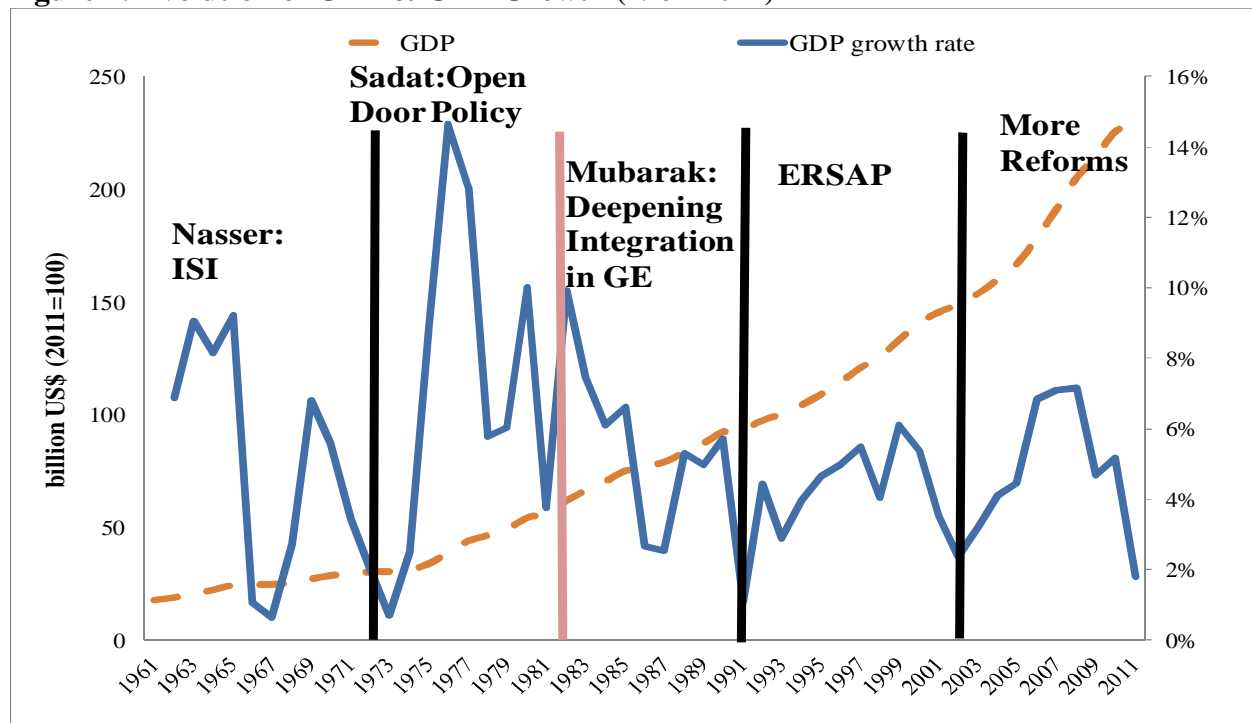
Notes: GDP deflated by GDP deflators from WDI, WB, 2012
Source: Author's calculations based on WDI, WB, 2012.

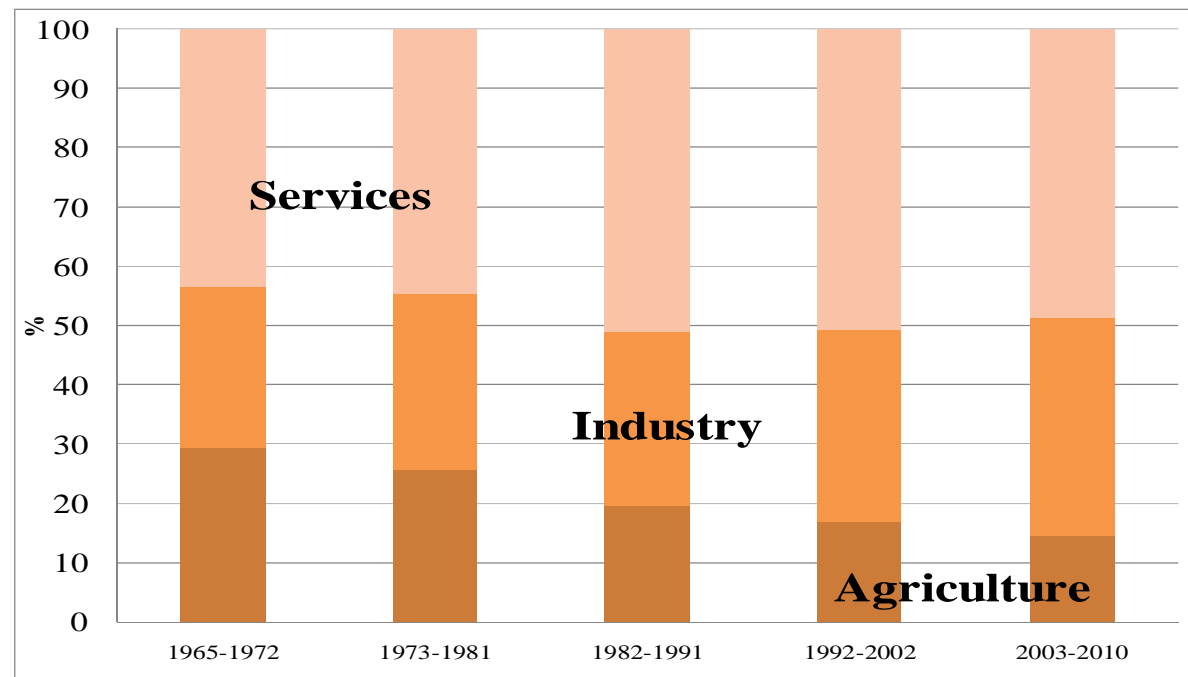**Figure 2: Sectoral Distribution of Value Added (nominal and real)**
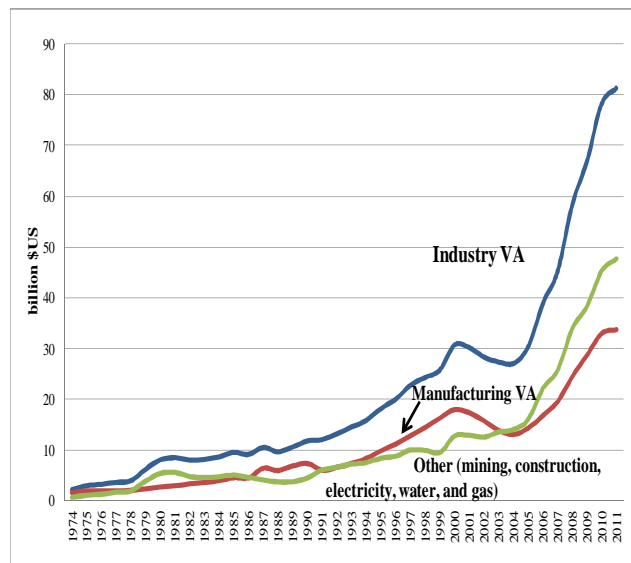

Source: WDI, WB, 2012

Source: WDI, WB, 2012

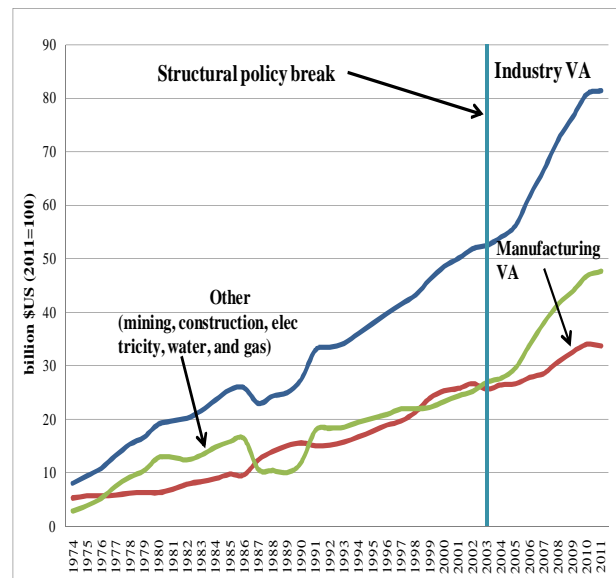**Figure 3: Evolution of Sectoral Value Added in Gross Domestic Product**

Source: Author's calculations based on WDI, WB, 2012

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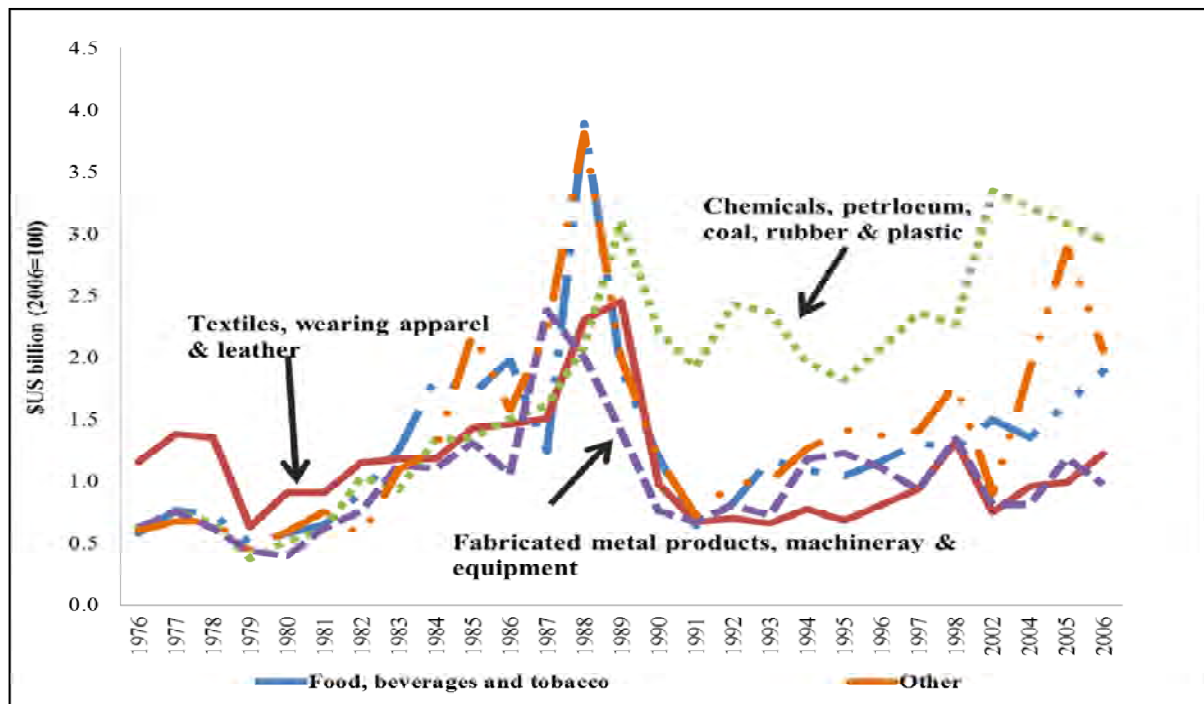**Figure 4: Breakdown of Industrial VA (nominal and real)**

Source: WDI, WB, 2012

Source: WDI, WB, 2012. Notes: VA deflated by GDP and Industry value added deflators from WDI, WB, 2012
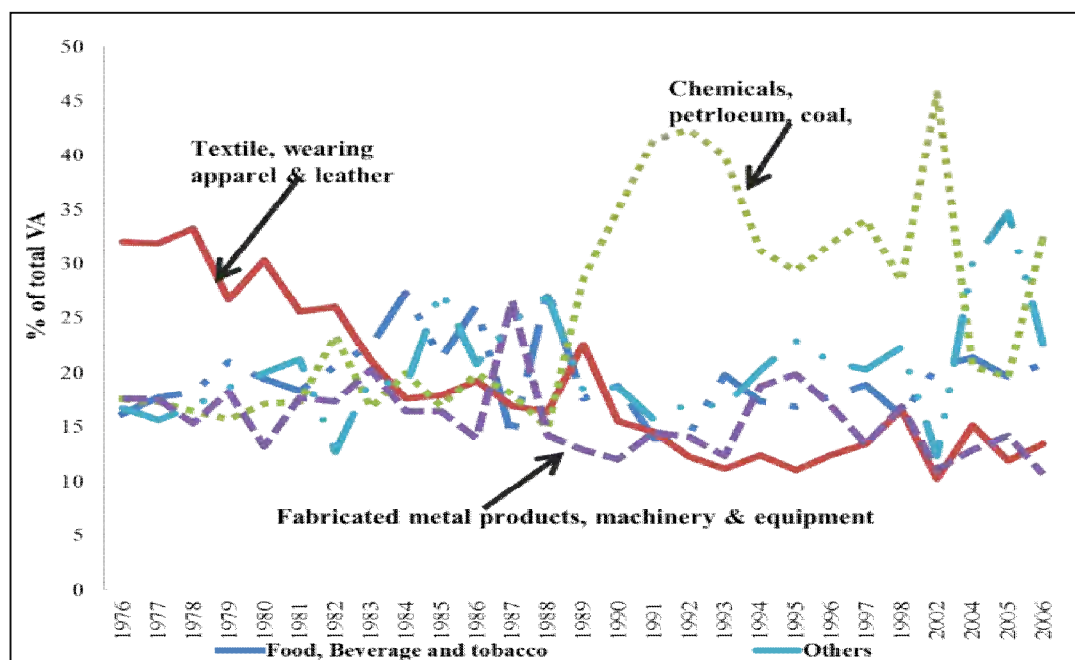
Figure 5: Breakdown of Manufacturing VA (in constant billion $US, 2-digits)

Note: Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006. VA deflated by manufacturing unit value index from Development Prospects Group, WB, 2012. Other includes: manufacture of wood and wood products, including furniture, manufacture of paper and paper products, printing and publishing, manufacture of non-metallic mineral products, except products of petroleum and coal, basic metal industries, and other manufacturing industries.
Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.

Figure 6: Breakdown of Manufacturing Value Added (1976-2006, 2 digit)

Note: Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISI revisions (3) and (2) performed by author for 1997-2006. Other includes: manufacture of wood and wood products, including furniture, manufacture of paper and paper products, printing and publishing, manufacture of non-metallic mineral products, except products of petroleum and coal, basic metal industries, and other manufacturing industries.
Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.
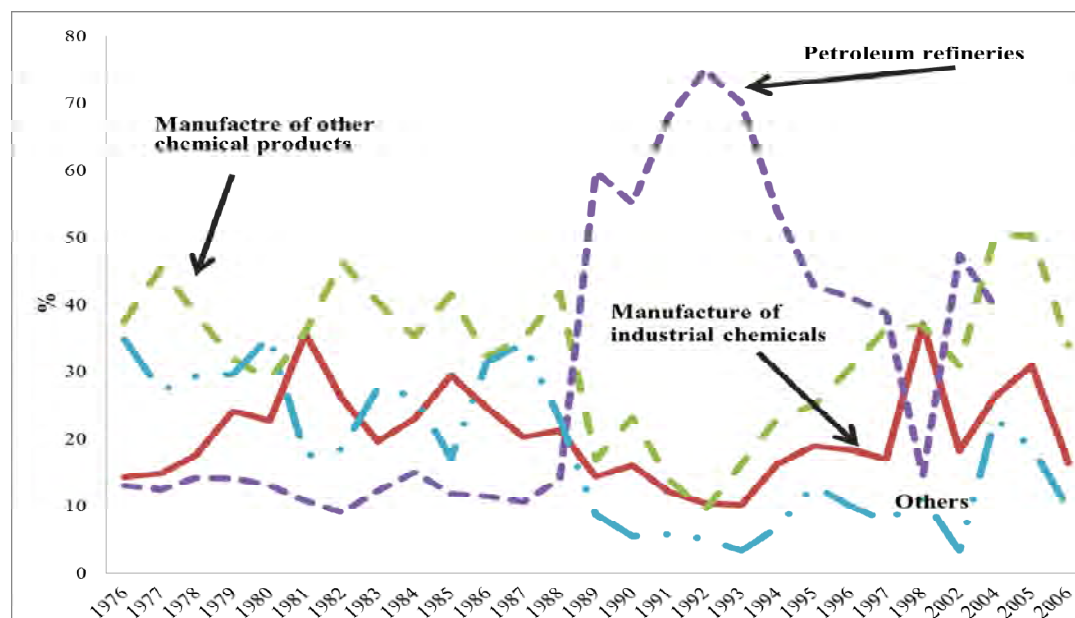
Figure 7: Breakdown of Chemicals and Chemical, Petroleum, Coal, Rubber & Plastic Products VA (1976-2006, ISIC 35, 3-digits)

Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.
Note: Data by TPP for 1976-1998based on ISIC revision 2. Hence, concordance between ISIC revision (3) and (2) performed by author for 1997-2006. Others include the manufacture of miscellaneous products of petroleum and coal, manufacture of rubber products, and the manufacture of plastic products not elsewhere classified.

Figure 8: Labor Productivity Gaps in 2008 (labor value added per worker)

Note: Sector employment is calculated by multiplying sectoral employment share and total employment (ages 15+)
Value added deflated by deflators calculated from WDI, WB, 2012.
Source: Author's calculations based on WDI and Jobs databases, WB, 2012.

Figure 9: Labor Productivity Gaps in Manufacturing (output per worker2006, 2 digits)

Notes: Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006. Output deflated by manufacturing unit value from WB, development prospect group, 2012. Other sectors were removed for space preserving.
Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.
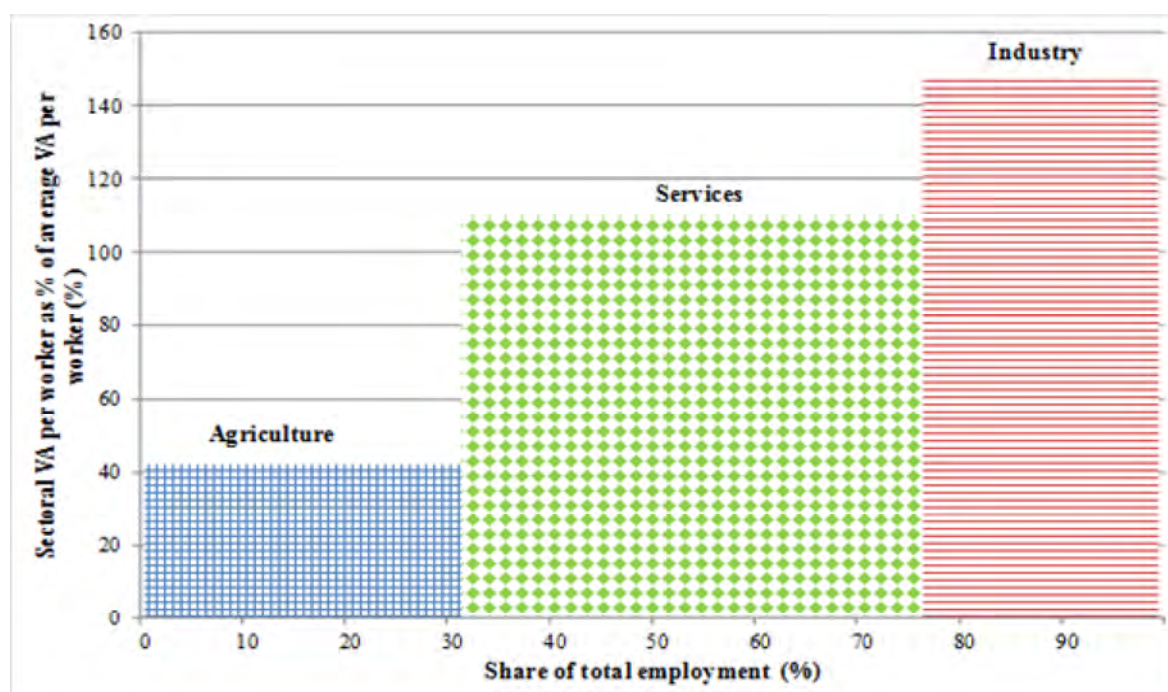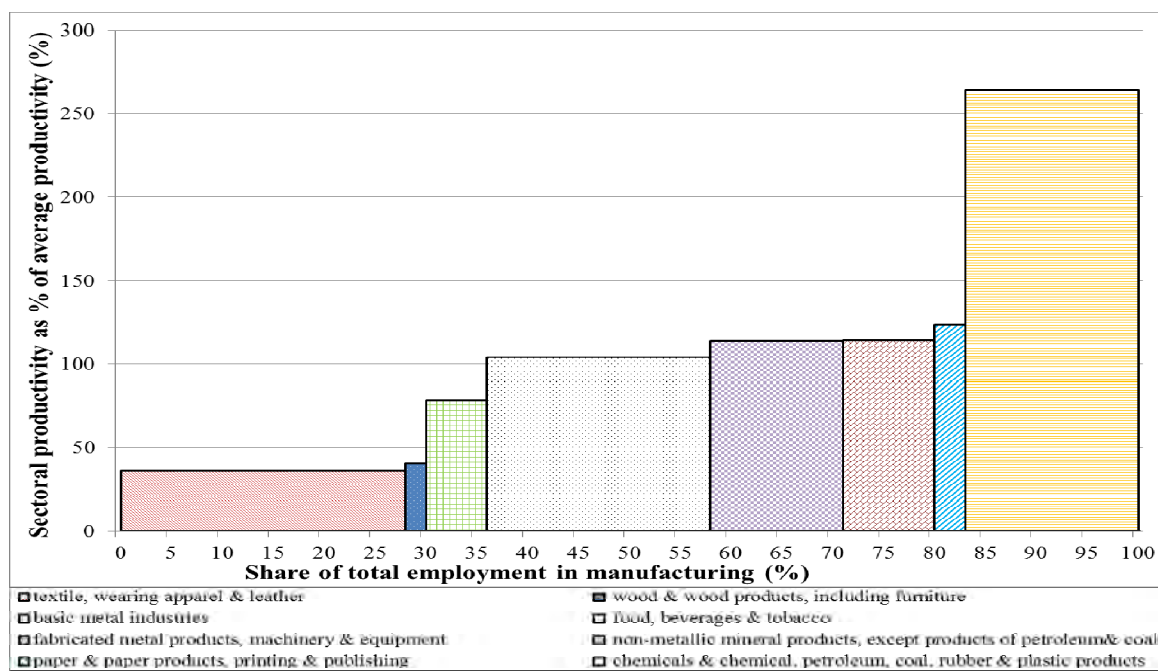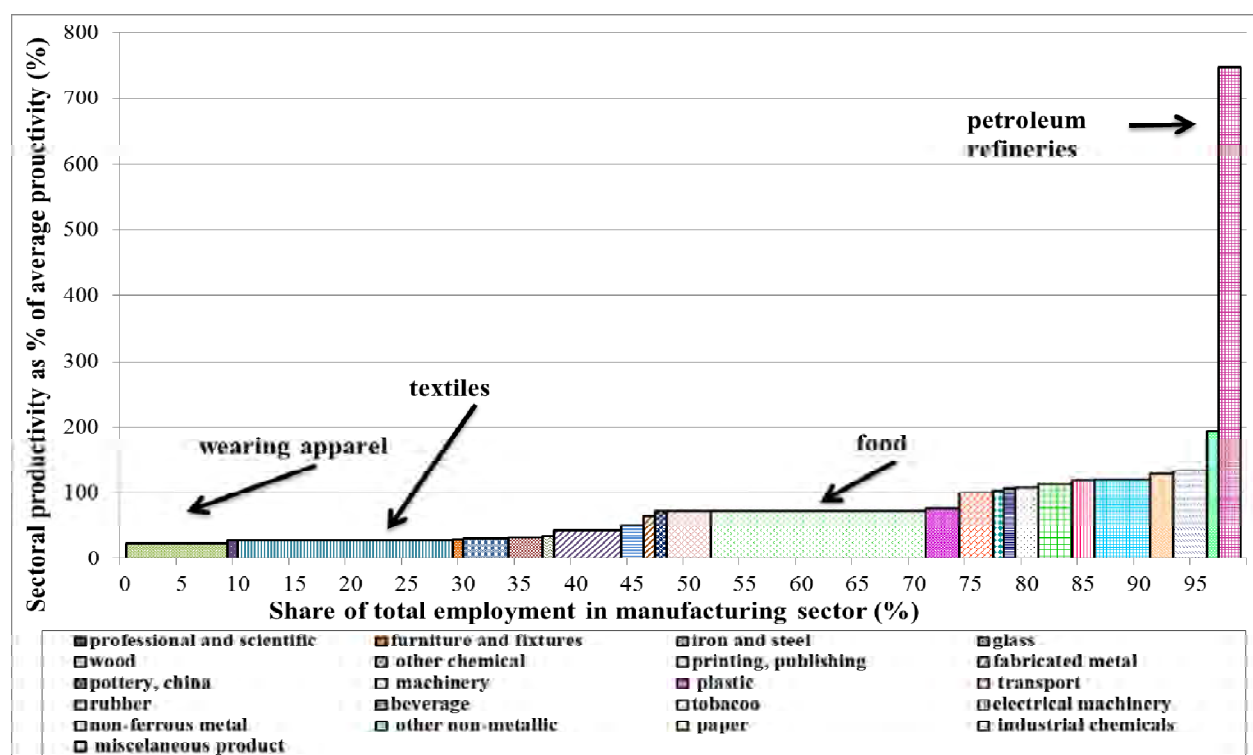
Figure 10: Labor Productivity Gaps in Manufacturing (output per worker 2006, 3 digits)

Notes: Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006. Output deflated by manufacturing unit value from WB, development prospect group, 2012. Other sectors not classified above, footwear, and leather sectors were removed from the figure for space preserving purposes.

Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.

Figure 11: Dispersion in Manufacturing Productivity (in output per worker 1976-2006, 2-digit)

Note: Utilized 9 manufacturing sectors at the2 digit level for ISIC revision 2. Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006. Output deflated by manufacturing unit value from WB, development prosepect group, 2012

Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.
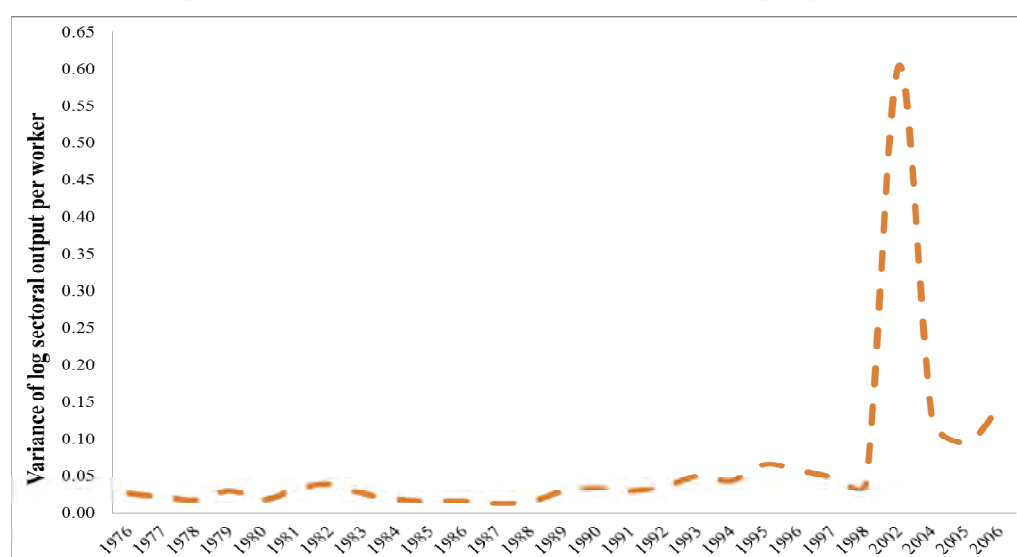
Figure 12: Dispersion in Manufacturing Productivity (in output per worker 1976-2006, 3-digit)

Note: Utilized 29 manufacturing sectors. Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006. Output is deflated by manufacturing unit value from WB, development prospect group, 2012
Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.

Figure 13: Evolution of Employment (1980-2008)

Source: WDI, WB, 2012

Figure 14: Manufacturing Productivity Growth Decomposition (output per worker in $US 2006=100)

Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.
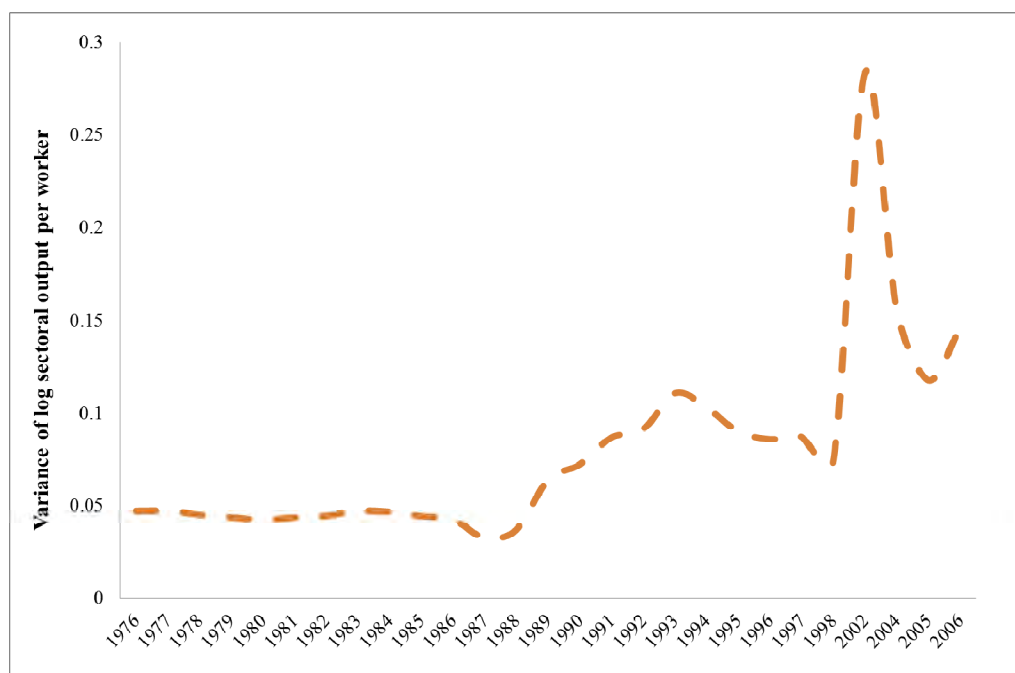Note: Utilized 9 manufacturing sectors at the 2-digit level. Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006.
Output is deflated by manufacturing unit value from WB, development prospect group, 2012
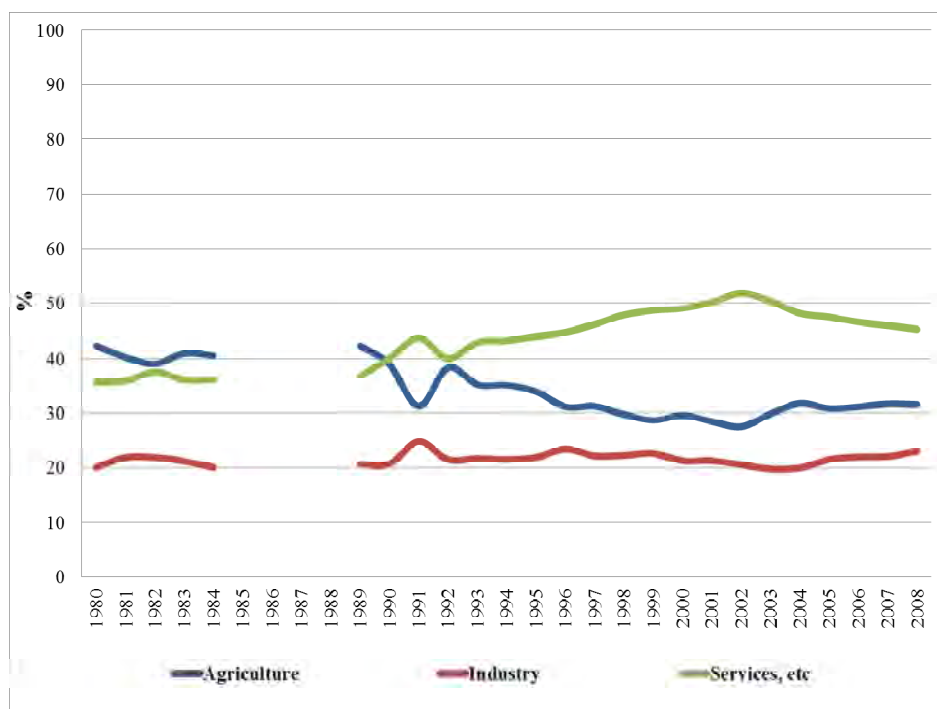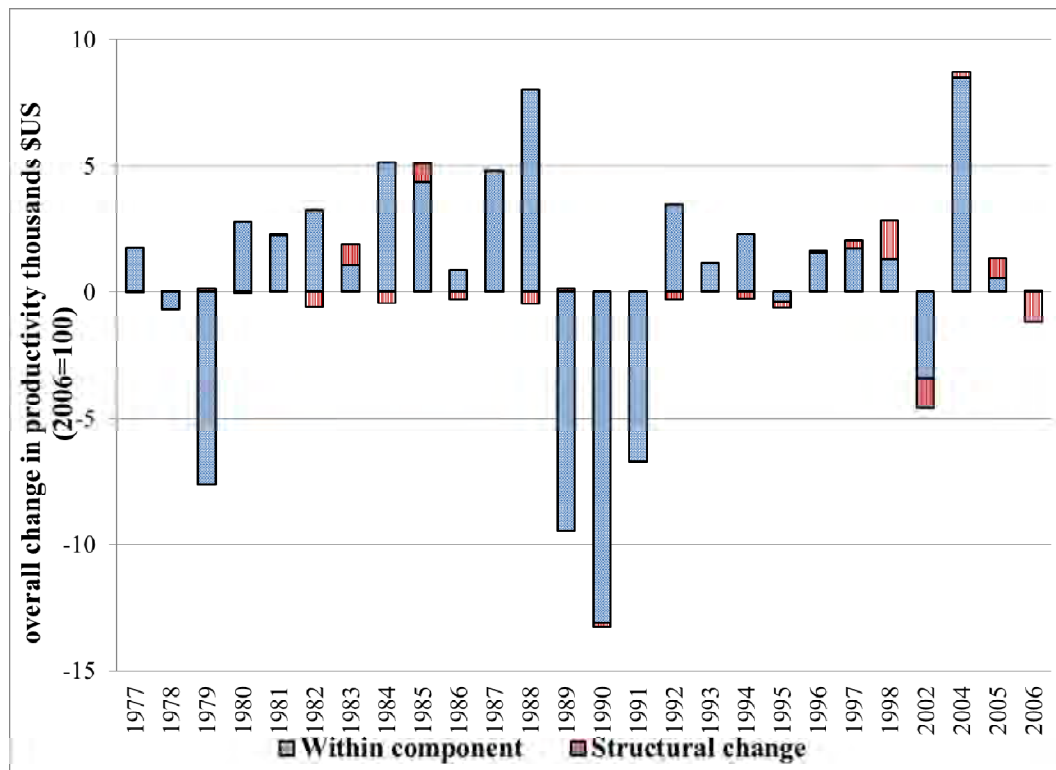
Figure 15: Share of Exports and Imports in GDP (1960-2011)

Source: WDI, WB, 2012

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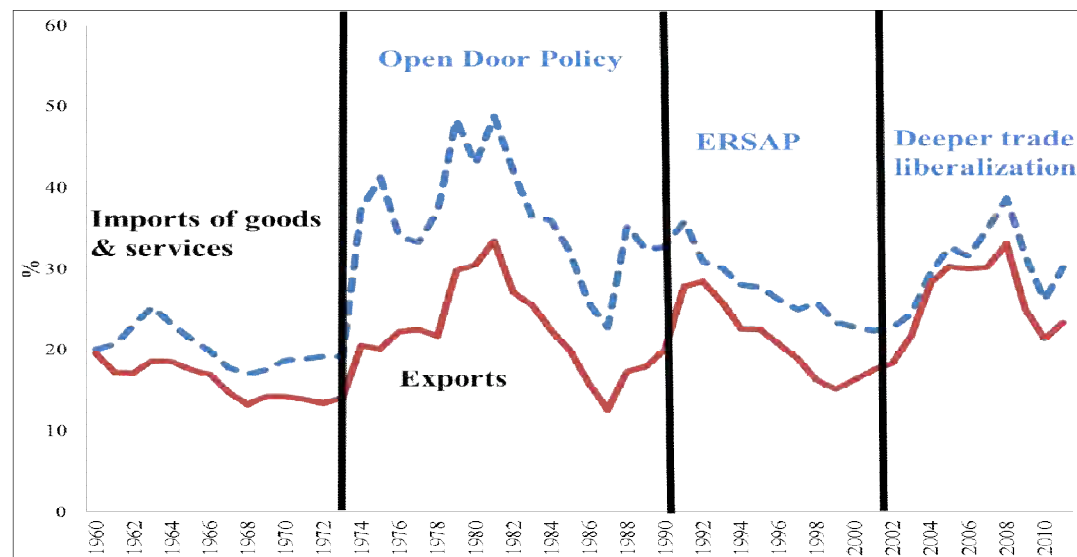
Figure 16: Evolution of real Exports and Imports (1960-2011)
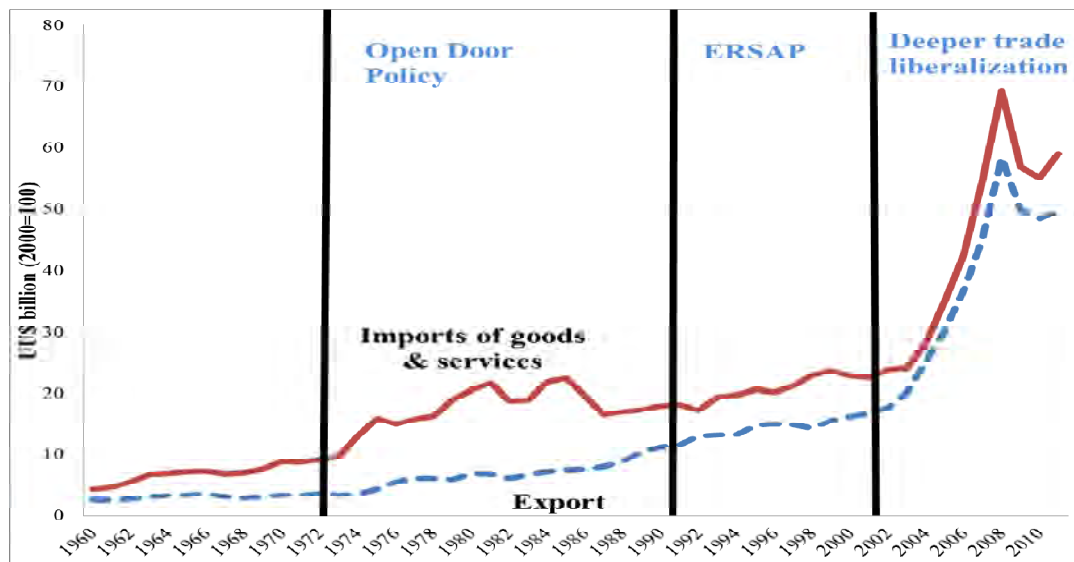
Note: Trade in services include transportation, travel, and other services (communications, construction, insurance, treatment of freight insurance, international insurance, financial, computer and information, royalties and license fees, other business services, merchanting and other trade-related services, operational leasing (rental), miscellaneous business, professional, and technical services, personal, cultural, and recreational and government services n.i.e.) as indicated by IMF's Balance of Payments Manual (1993).
Source: WDI, WB, 2012.

Figure 17: Merchandise and Service Trade in GDP (1961-2011)

Share of Merchandise Trade in GDP
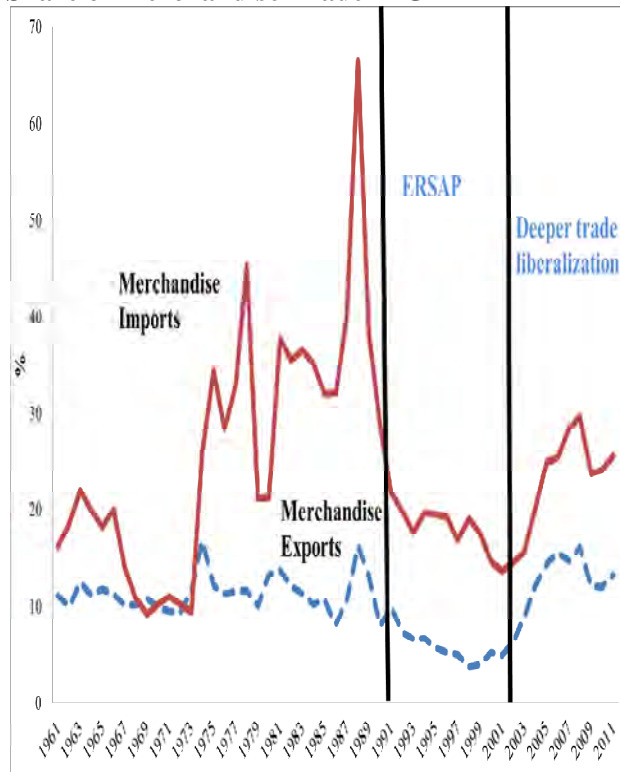
Source: Author's calculations based on WDI, WB, 2012

Share of Service Trade in GDP
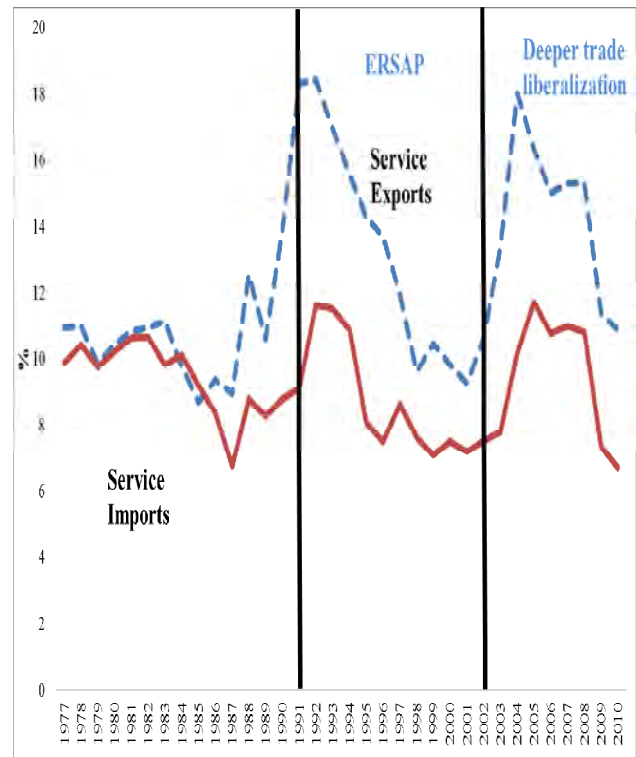
Source: Author's calculations based on WDI, WB, 2012

Figure 18: Real Service Export Structure (real billion US$, 1980-2010)
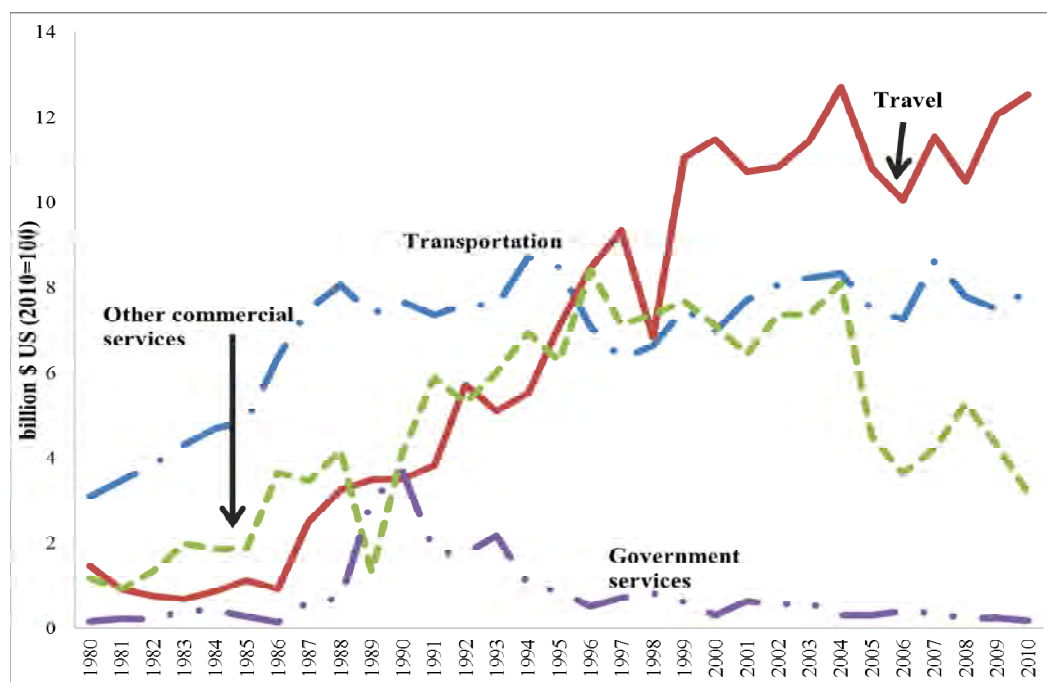
Note: Communications services include, construction, insurance services, financial services, computer and information services, royalties and license fees, other business services, personal, cultural and recreational services
Exports deflated by export unit value index calculated from WDI, WB, 2012
Source: Author's calculations based on WTO, 2012

Figure 19: Real Service Export Structure (% in total service exports, 1980-2010)
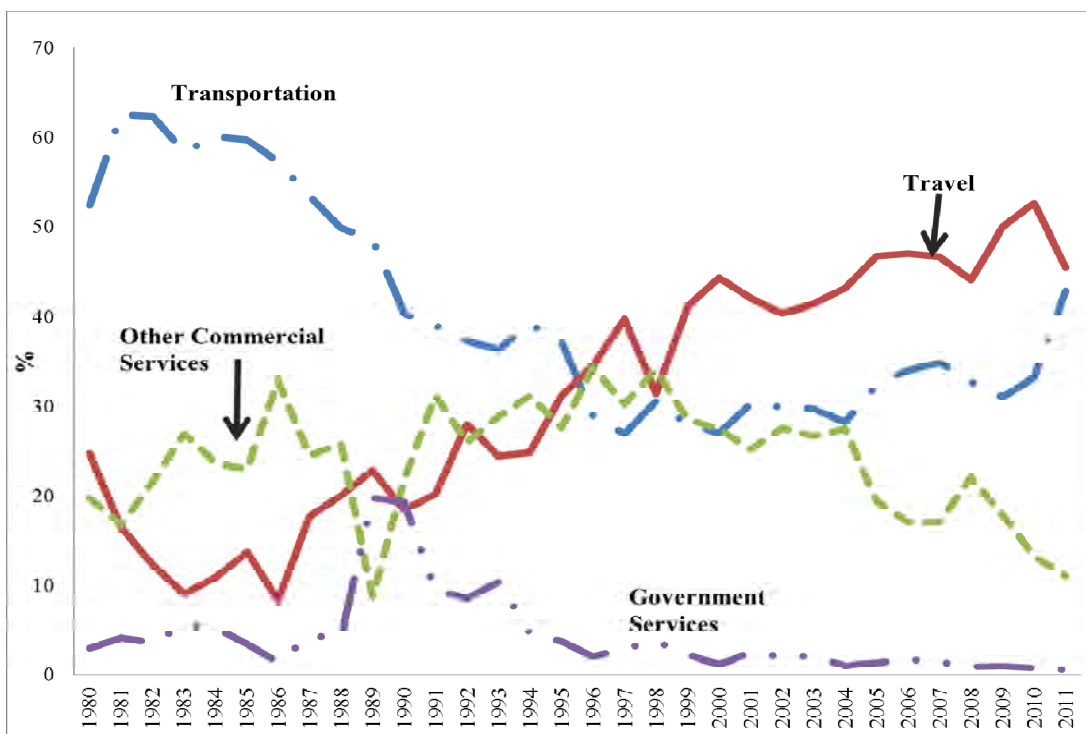
Source: Author's calculations based on WTO, 2012

Figure 20: Merchandise Export Breakdown (1980-2010) (billion US$ 2000=100, 2-digits)
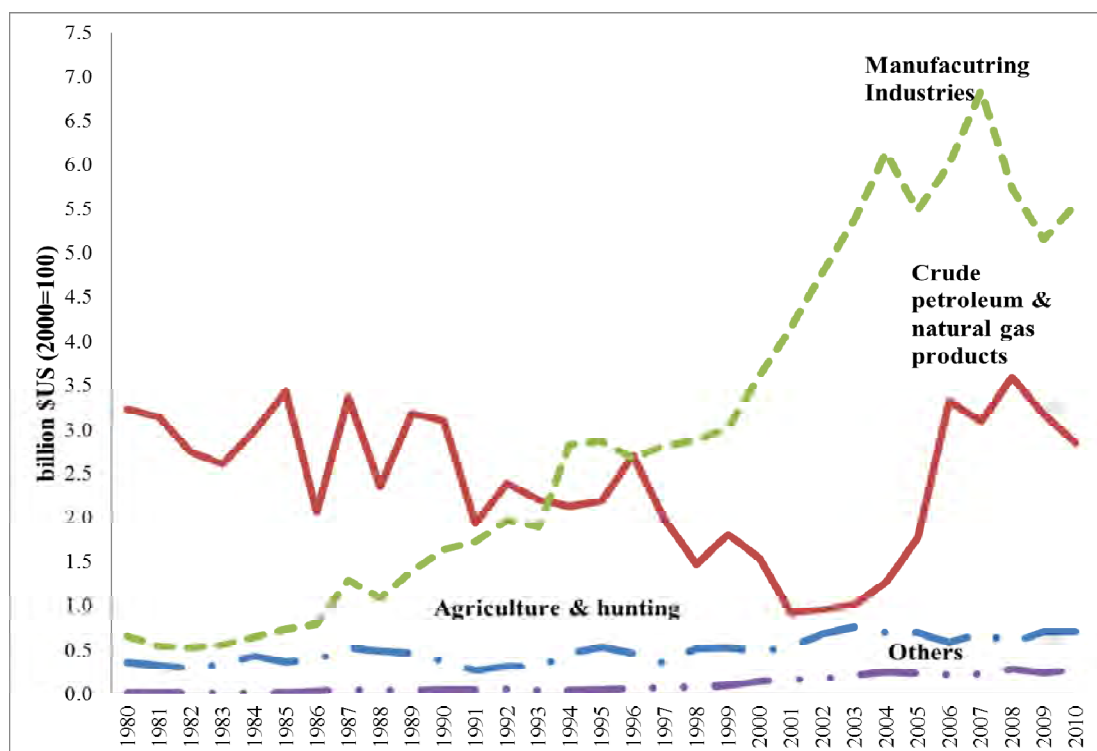
Notes: Exports deflated by export unit value index calculated from WDI, WB, 2012. Other exports include forestry and logging, fishing, coal mining, metal ore mining, other mining, and electricity, gas and steam.
Source: Author's calculations based on WITS mirror data, 2012.

Figure 21: Merchandise Export Breakdown (1976-2011, 2-digits)
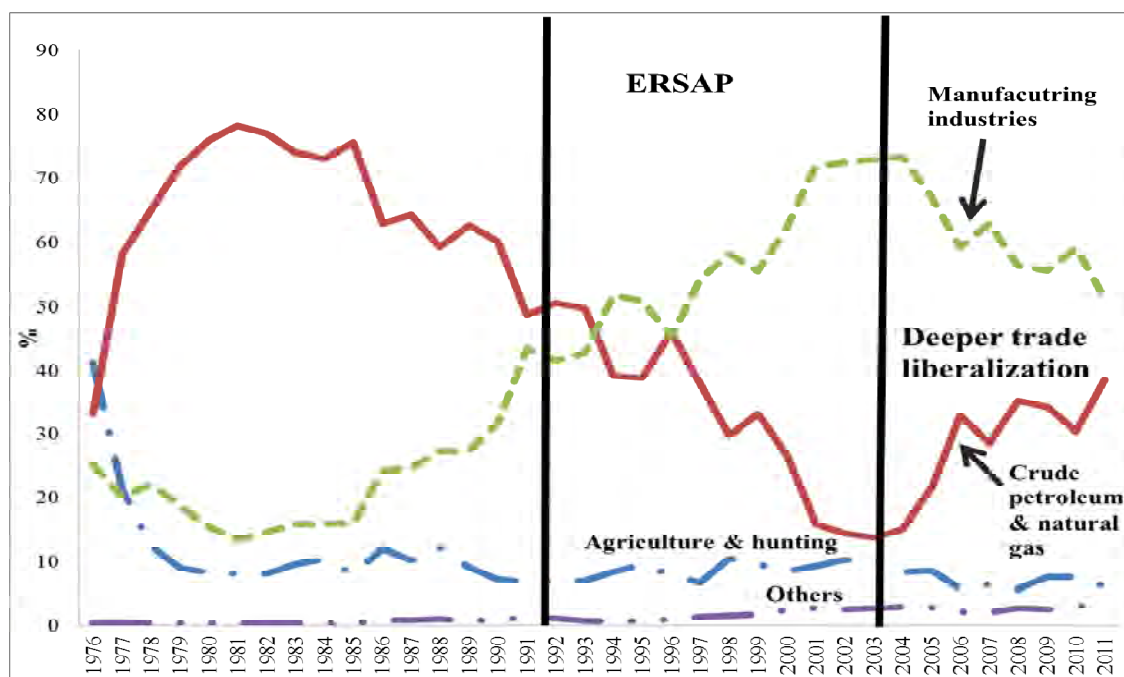
Note: Others include forestry and logging, fishing, coal mining, metal ore mining, other mining, and electricity, gas and steam
Source: Author's calculations based on WITS mirror data, 2012

Figure 22: Real Manufactured Exports Structure (1980-2010) (billion US$ 2010=100, 2-digits)
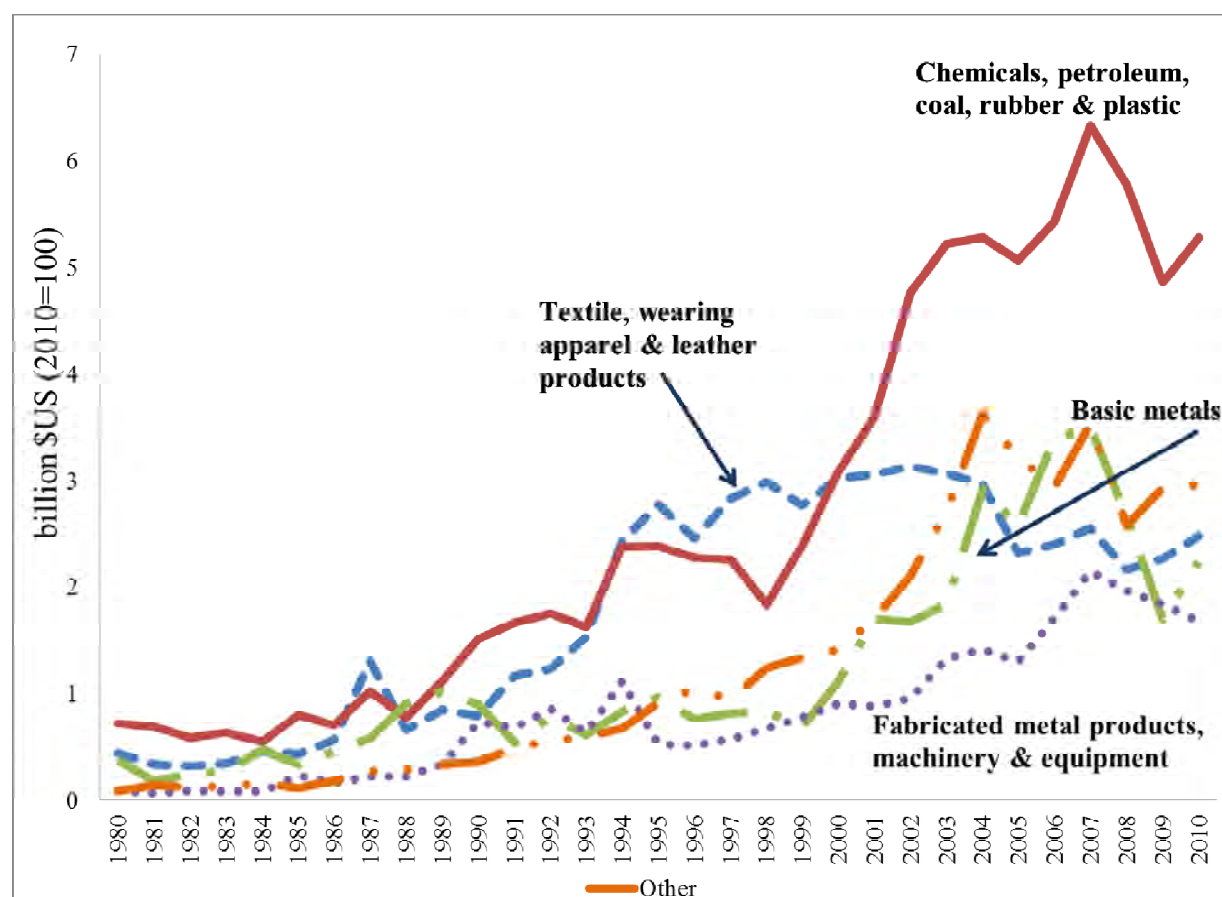
Note: Exports deflated by export unit value index calculated from WDI, WB, 2012
Other includes manufacture of food, beverages and tobacco, manufacture of wood and wood products, including furniture, manufacture of paper and paper products, printing and publishing, manufacture of non-metallic mineral products, except products of petroleum and coal, and other manufacturing industries.
Source: Author's calculations based on mirror WITS data, 2012.

Figure 23: Breakdown of Manufacture of Real Chemicals, Petroleum, Coal, Rubber & Plastic (3-digits)
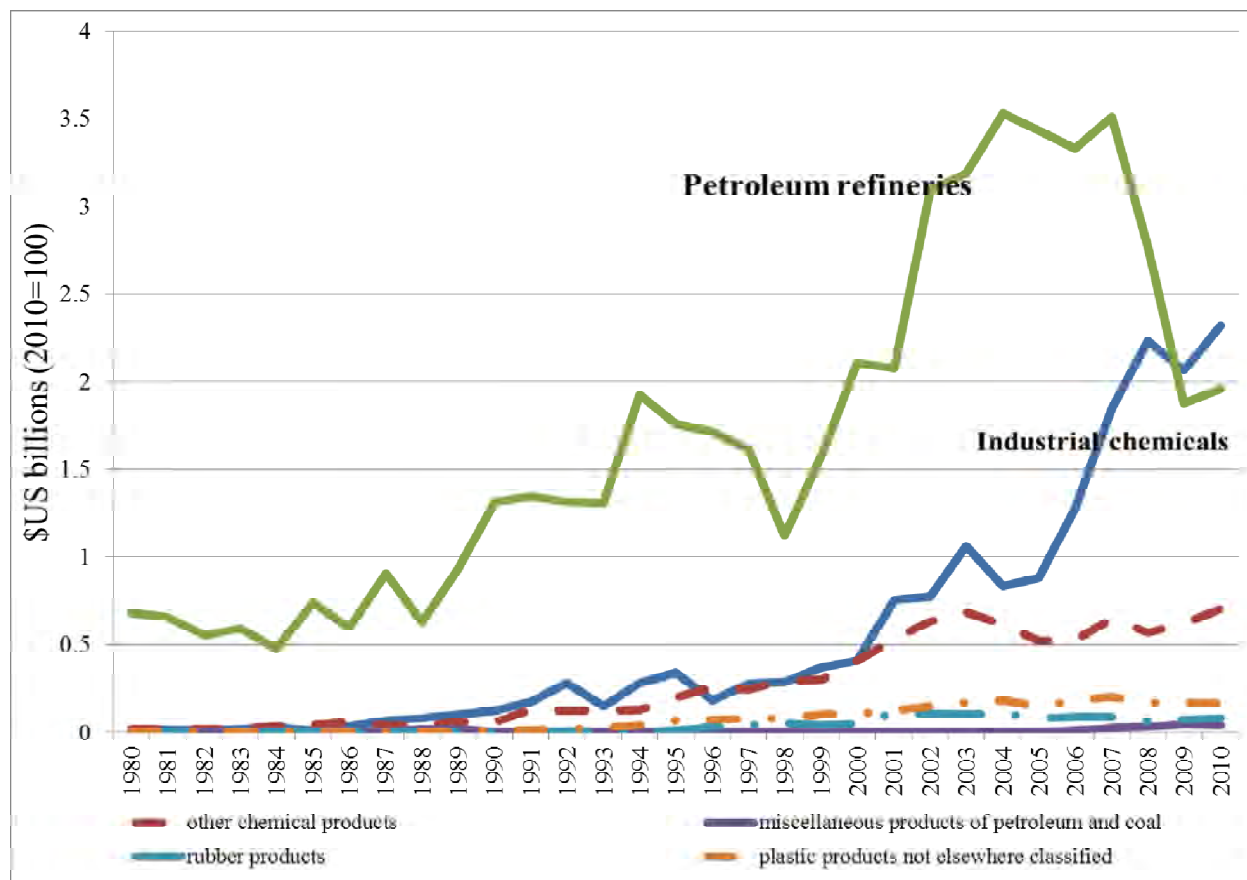
Note: Exports deflated by the export unit value index calculated from WDI, WB, 2012.
Source: Author's calculations based on mirror WITS data, 2012.

Figure 24: Diversification of Manufactured Exports: HHI, GINI & Theil (1981-2011)
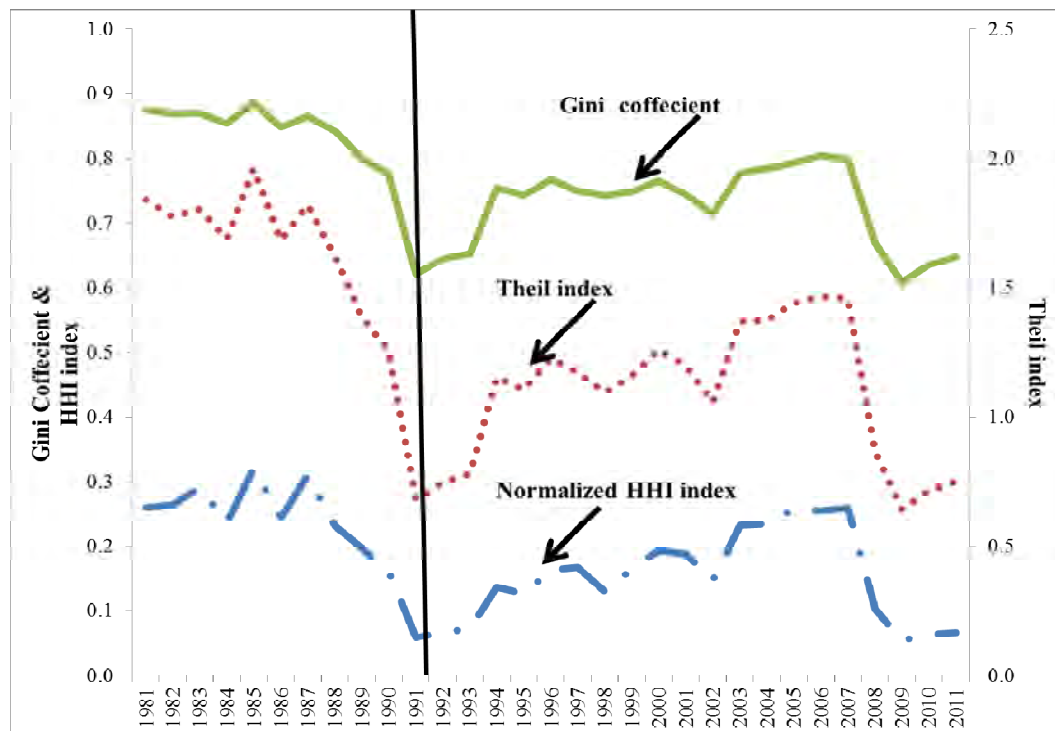
Source: Author's calculations based on mirror WITS data, 2012

Figure 25: Export Breakdown by Commodity Technology Content
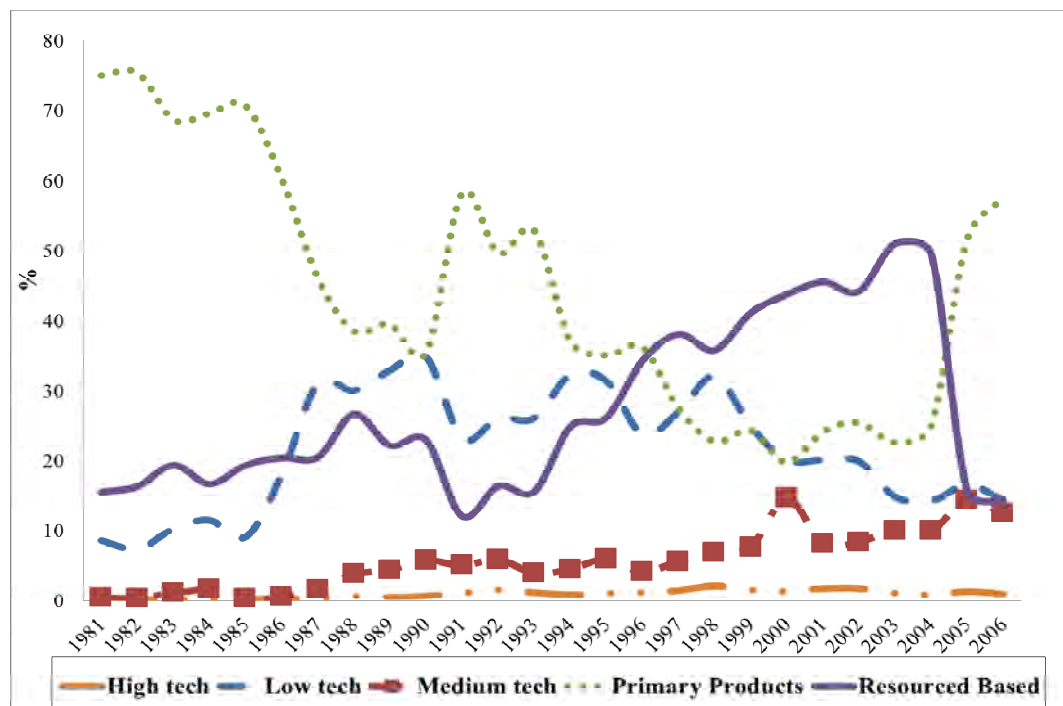
Notes: The measure of high-technology exports includes products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.
Source: The Economic Policy and Debt Department (PRMED), WB, 2012

Figure 26: Egypt's EXPY versus a Group of High Income Countries

Figure 26: Egypt's EXPY versus a Group of High Income Countries

Figure 27: Egypt's EXPY versus other MENA and Select BRIC Countries

Figure 28A: GDP per capita and EXPY in 1994, selected countries

Figure 28B: ln GDP per capita and ln EXPY in 1994, selected countries

Figure 29A: GDP per capita and EXPY in 2009, selected countries
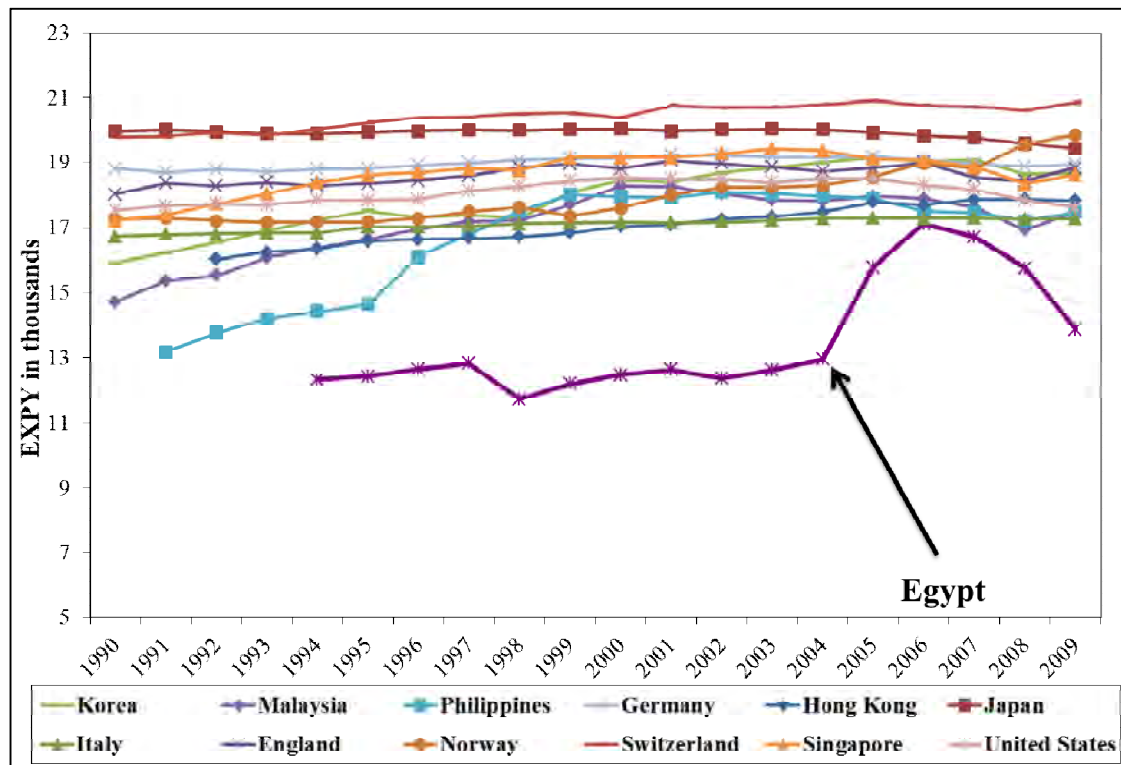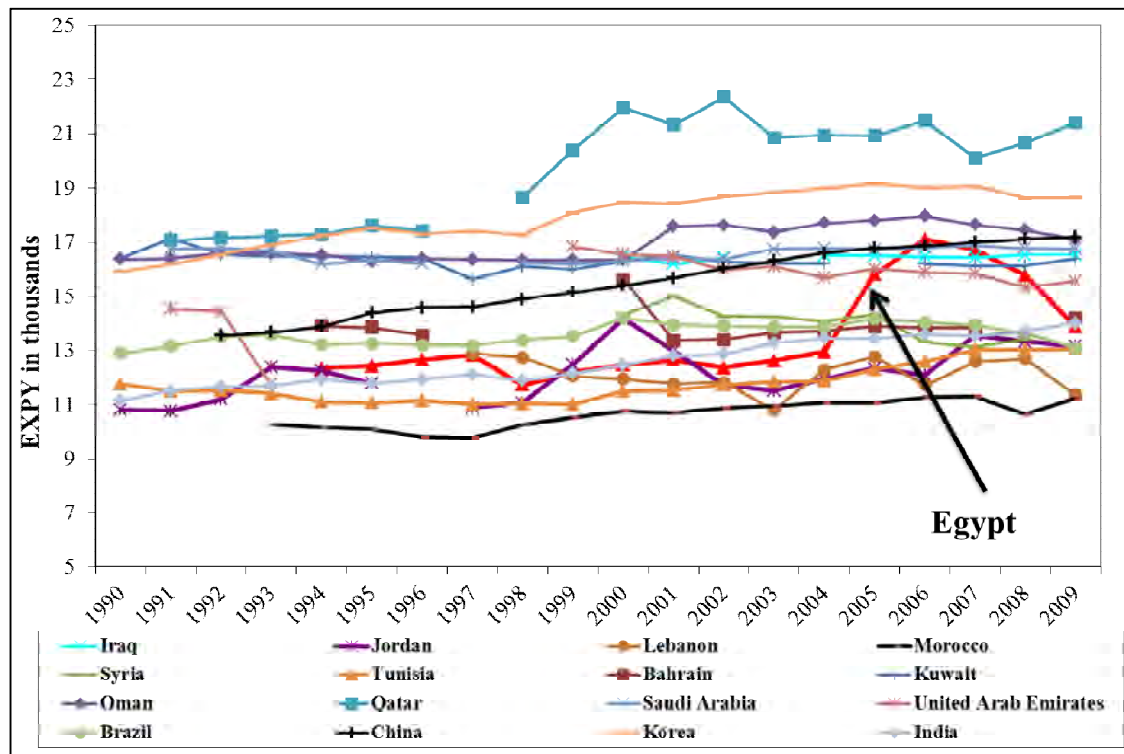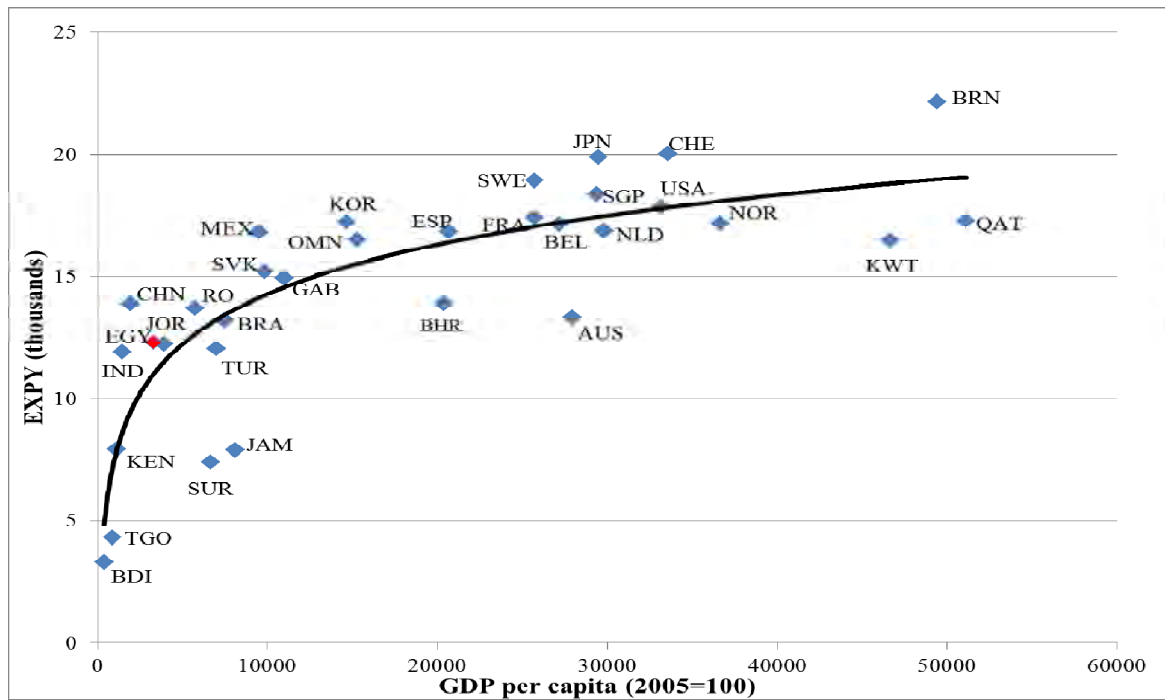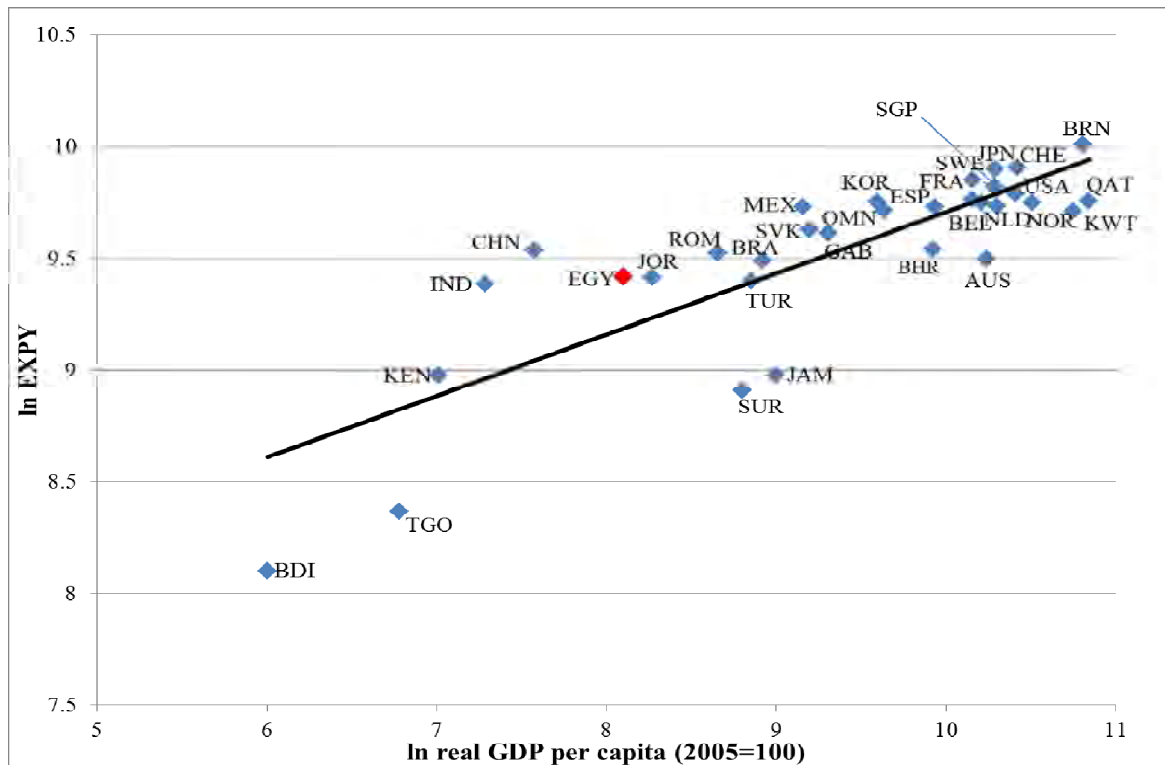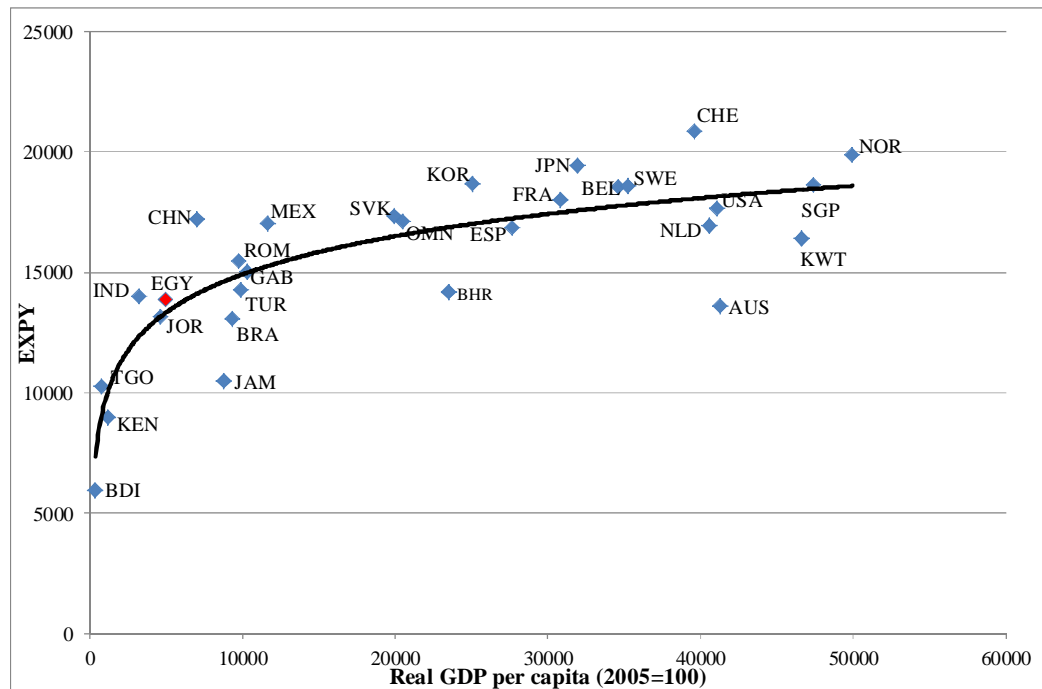
Source: Author's calculations based on data provided by Atiyas and Bakı.(UN Comtrade, 2012 for exports and exports share and Penn World tables, 2012 for GDP per capita). Note: 3 digit export data.

Figure 29B: ln GDP per capita versus ln EXPY in 2009, selected countries
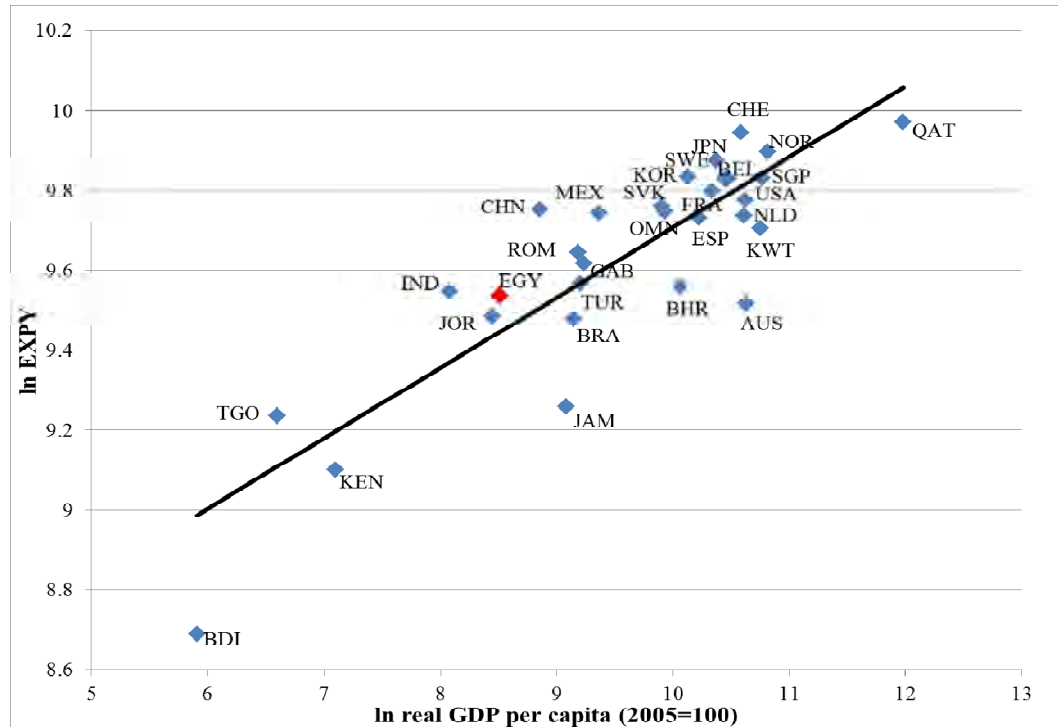
Source: Author's calculations based on provided by Atiyas and Bakı.(UN Comtrade, 2012 for exports and exports share and Penn World tables, 2012 for GDP per capita). Note: 3 digit export data.

Figure 30: Foreign Direct Investment net Flows and Growth Rates
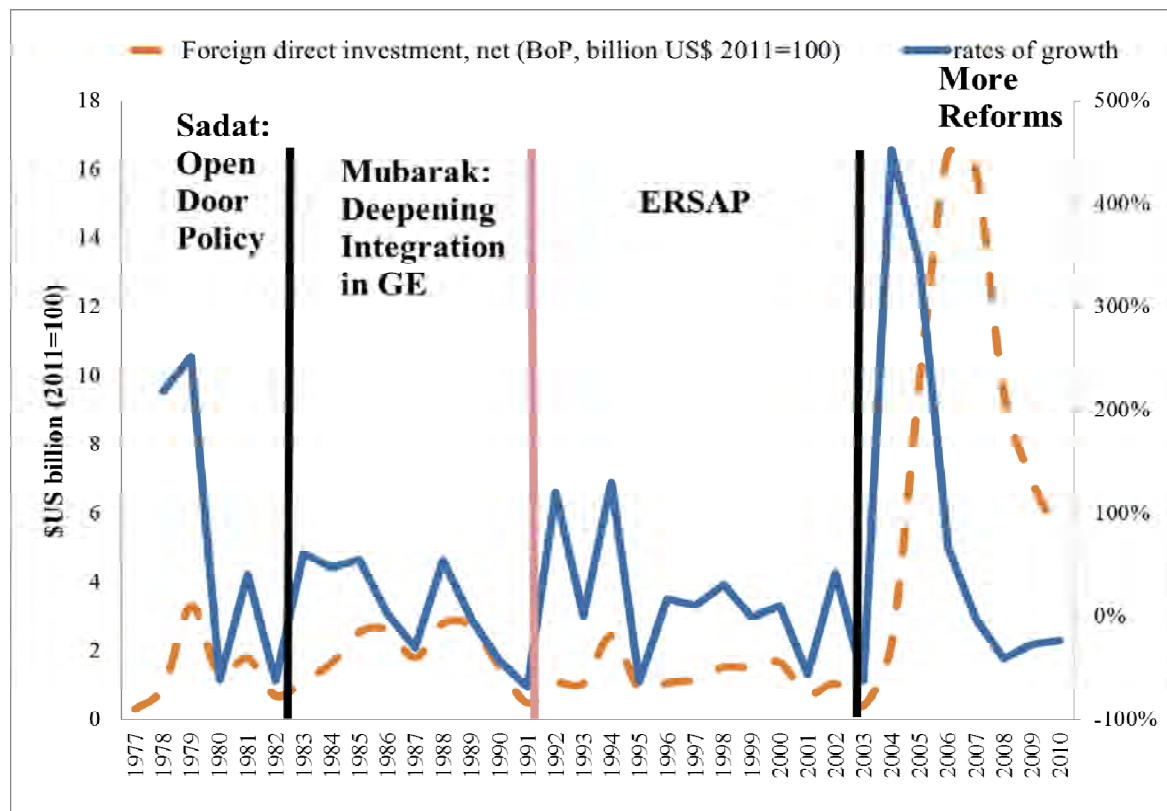
Source: Author's calculations based on WDI, WB, 2012. Note: FDI deflated by GDP deflator from WDI, WB, 2012

Figure 31: Chemicals and Chemical, Petroleum, Coal, Rubber and Plastic Products (output, VA, exports, and domestic consumption) billion US$
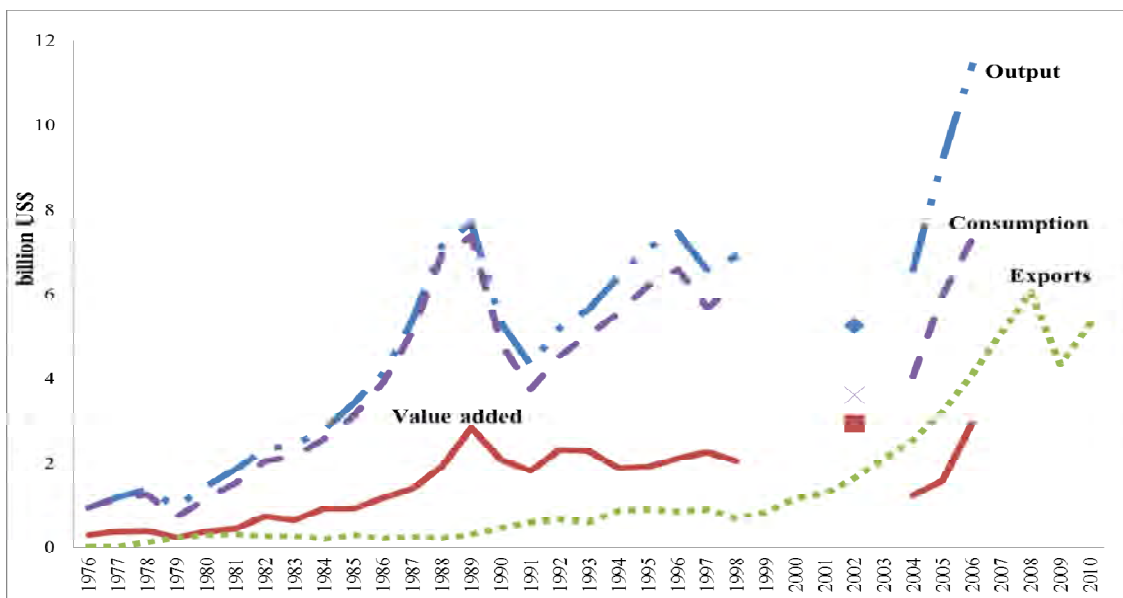
Note Data by TPP for 1976-1998based on ISIC revision 2. Hence, concordance between ISI revisions (3) and (2) performed by author for 1997-2006. Domestic consumption of domestically produced TC= production-exports

Source: Author's calculations based on Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006. WITS data, 2012 for mirror trade data.

Figure 32: Per Capita Aid Inflows (1960-2004)
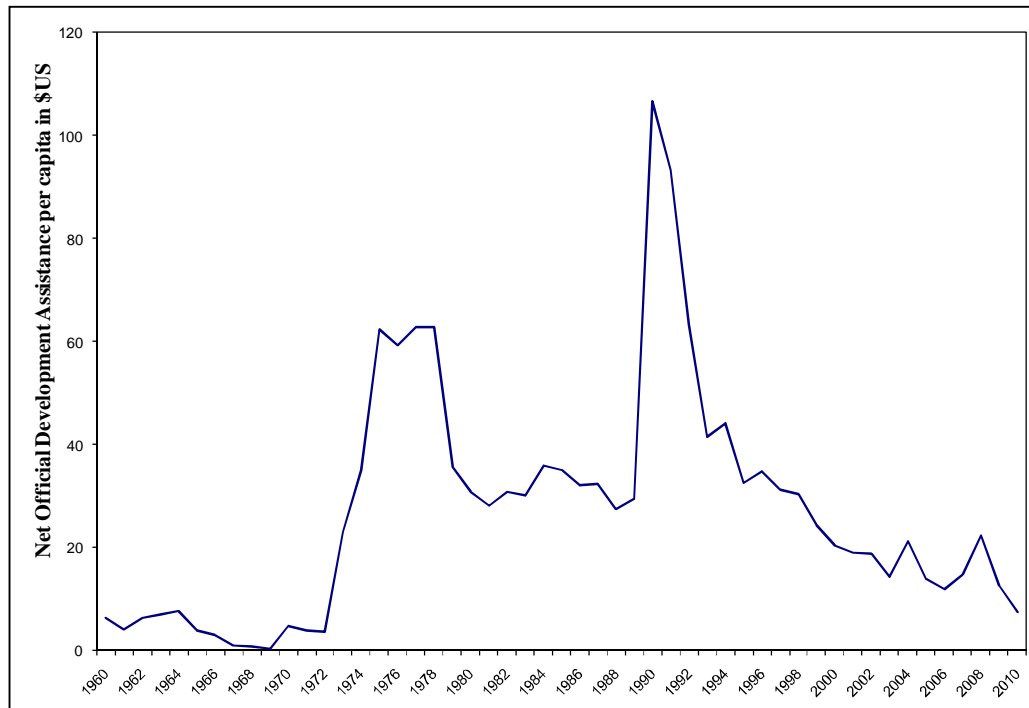
Source: World Development Indicators 2012

Figure 33: Real Foreign Exchange Inflows (1980-2010)
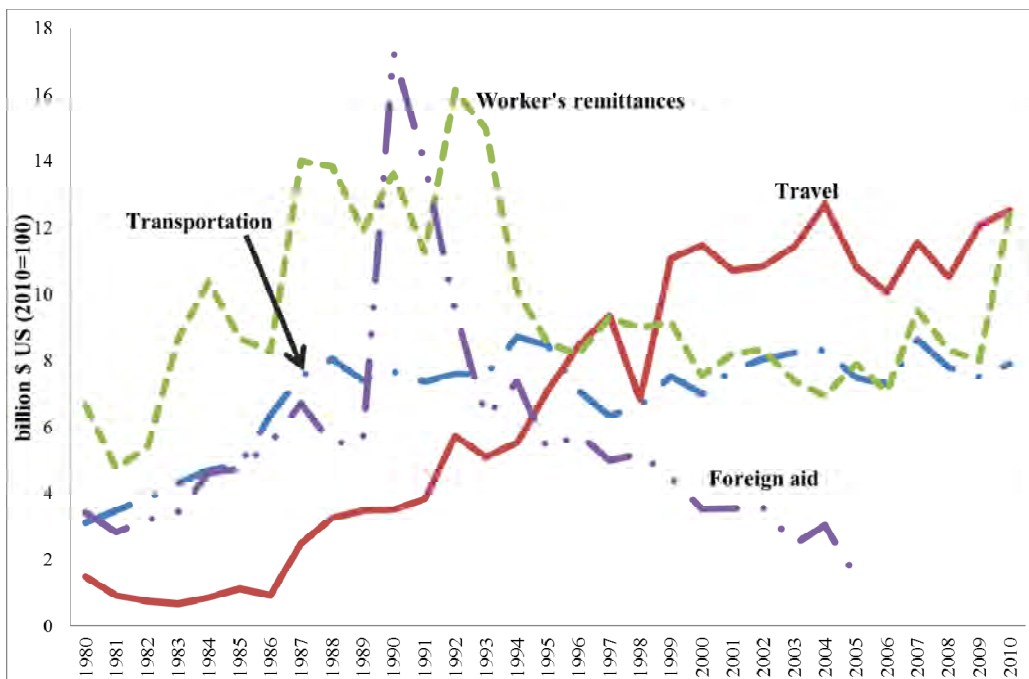
Note: Series deflated by export unit value index calculated from WDI, WB, 2012
Source: Author's calculations based on WTO, 2012 for travel and transportation; WDI, 2007 for foreign aid; WDI, 2012 for worker's remittances.

Figure 34A:Textiles, Clothing & Leather (Production,VA, Exports, Imports, Consumption)

Figure 34B: Real Textiles, Clothing & Leather (Production,VA, Exports, Imports, Consumption)

Figure 35: Basic metal and Non Metallic Mineral VA (3 digit level, billion US$)

Figure 36: Basic Metals and Non-Metallic Mineral Export Structure
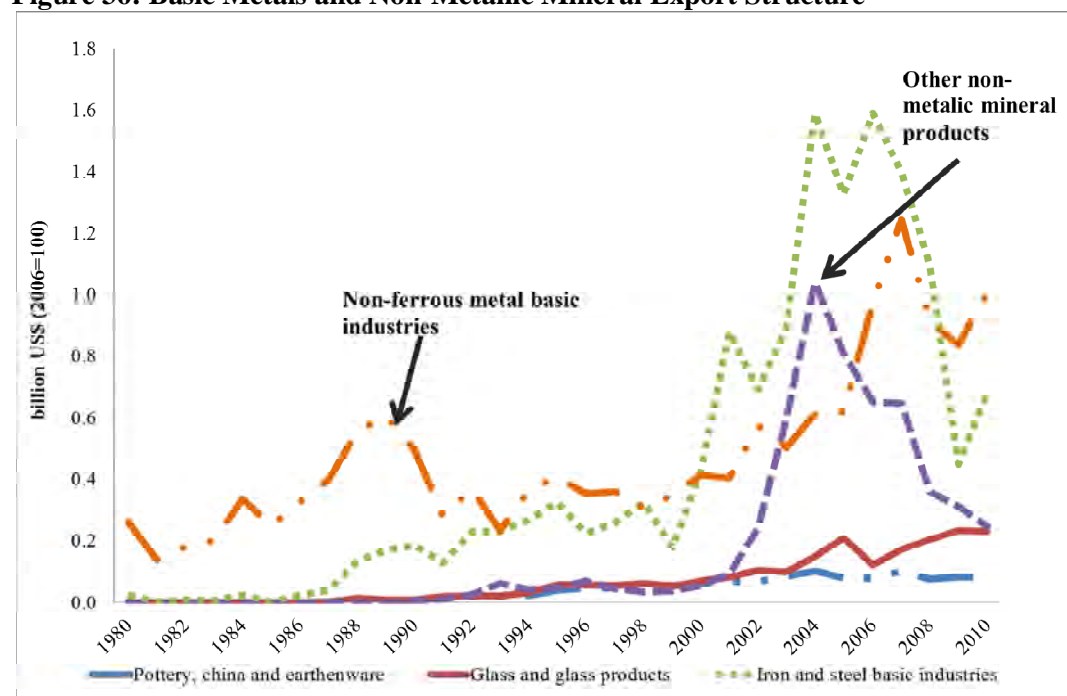
Table 1 : Evolution of Sectoral Value Added in Gross Domestic Product

	1965-1970	1971-1980	1981-1990	1991-2002	2003-2010
Agriculture	29	26	20	17	14
Industry	27	30	29	32	37
Services…etc.	44	45	51	51	49

Source: Author's calculations based on WDI, WB, 2012.

Table 2: GDP Structure (LE million, %)

	Average 80s			Average 90s			Average 2000s		
	LE mil.	% in GDP	% in total services	LE mil.	% in GDP	% in total services	LE mil.	% in GDP	% in total services
Total Commodity Sectors	**24403**	**48.2**		**101341**	**49**		**355247**	**51.1**	
Production Services Sectors	**15925**	**31.5**	**60.8**	**67498**	**32.6**	**64.0**	**201704**	**29.0**	**59.4**
Transportation	2752	5.4	10.5	11460	5.5	10.9	29560	4.3	8.7
Communication	591	1.2	2.3	2495	1.2	2.4	19298	2.8	5.7
Suez Canal	892	1.8	3.4	6186	3.0	5.9	20073	2.9	5.9
Trade	8859	17.5	33.8	34519	16.7	32.8	79340	11.4	23.4
Insurance	2069	4.1	7.9	9637	4.7	9.1	5555	0.8	1.6
Financial Services	40	0.1	0.2	186	0.1	0.2	25864	3.7	7.6
Hotels & Restaurants	723	1.4	2.8	3016	1.5	2.9	22013	3.2	6.5
Social Services Sectors	**10252**	**20.3**	**39.2**	**37903**	**18.3**	**36.0**	**137771**	**19.8**	**40.6**
Housing & Real Estate	1398	2.8	5.3	3784	1.8	3.6	19715	2.8	5.8
Utilities	154	0.3	0.6	776	0.4	0.7	2631	0.4	0.8
Social Security	44	0.1	0.2	143	0.1	0.1	19638	2.8	5.8
Gov., Social, and Personal Services	8657	17.1	33.1	33200	16.1	31.5	95787	13.8	28.2
Total Services Sectors	**26177**	**51.8**	**100**	**105401**	**51**	**100**	**339475**	**48.9**	**100**
Grand Total (GDP)	**50580**	**100**		**206742**	**100**		**694722**	**100**	

Note: Commodity sectors = agriculture + industry & mining + petroleum & products+ electricity +construction
Trade = wholesale and retail trade
Government, social and personal services = public government, education, health & others
Utilities here include water only. Electricity is included in the total commodity sectors.
Source: Author's calculations based on Ministry of Planning, 2012.

Table 3: Egypt versus South Korea Manufacturing Growth Rates p.a.

	50s	60s	70s	80s	90s	1991-2002	2000-2005	2000-2010	2003-2010
Egypt	10.4	3.5	5.8	7.2	6.2	6.3	3.9	5.1	5.0
S. Korea	n.a.	16.7	18.6	11.0	7.6	7.8	8.4	7.4	6.6

Source: Author's calculations based on:
1) Mabro and Radwan, 1976 for 50s and 60s (Egypt)
2) CAPMAS various issues for 80s (Egypt)
3) World Development Indicators (WDI), 2007 for 90s-2010 (Egypt) and for 60s-2010 (South Korea)

Table 4: Composition of Manufacturing Value Added (light versus heavy)

	60s	70s	80s	90s	2000-2006
			% of manufacturing VAD		
Light Industries					
Egypt	55	51	43	30	31
S. Korea	47	40	31	20	14
Heavy Industries					
Egypt	19	21	24	24	25
S. Korea	19	24	34	45	52
Other Manufacturing					
Egypt	25	28	34	45	44
S. Korea	34	35	35	35	34

Source: Author's calculations based on WDI, WB, 2012
Note: light industries = food, beverages and tobacco + textiles and clothing
heavy industries = chemicals + machinery and transport equipment

Table 5: Aggregate Productivity Growth Decomposition (VA per worker in $US 2011=100)

	1993-2002	% in total productivity Δ	2003-2008	% in total productivity Δ
within sector	108	77%	244	107%
structural change	33	33%	-16	-7%
Total Δ in value added per worker	141	100%	228	100%

Note: Sector employment is calculated by multiplying sectoral employment share and total employment (ages 15+)
Value added deflated by deflators calculated from WDI, WB, 2012
Source: Author's calculations based on WDI and Jobs databases, WB, 2012.

Table 6: Sectoral Productivity Growth Decomposition (VA per worker in $US 2011=100)

	1993-2002				2003-2008			
	Agriculture	**Industry**	**Services**	**All**	**Agriculture**	**Industry**	**Services**	**All**
Contribution to overall productivity growth	12.7	52.0	76.7	141.4	8.2	85.1	134.7	228.0
Due to change in productivity	50.4	65.8	-7.7	108.5	-17.9	34.0	228.3	244.4
Due to change in employment share	-37.7	-13.8	84.4	-6.6	26.2	51.1	-93.6	-16.3
% change in overall growth	9%	37%	54%		4%	37%	59%	

Note: Secotor employment is calculated by multiplying sectoral employment share and total employment (ages 15+)
Value added deflated by deflators calculated from WDI, WB, 2012
Source: Author's calculations based on WDI and Jobs databases, WB, 2012.

Table 7: Sectoral Contribution in Overall Manufacturing Productivity Growth (3-digits)

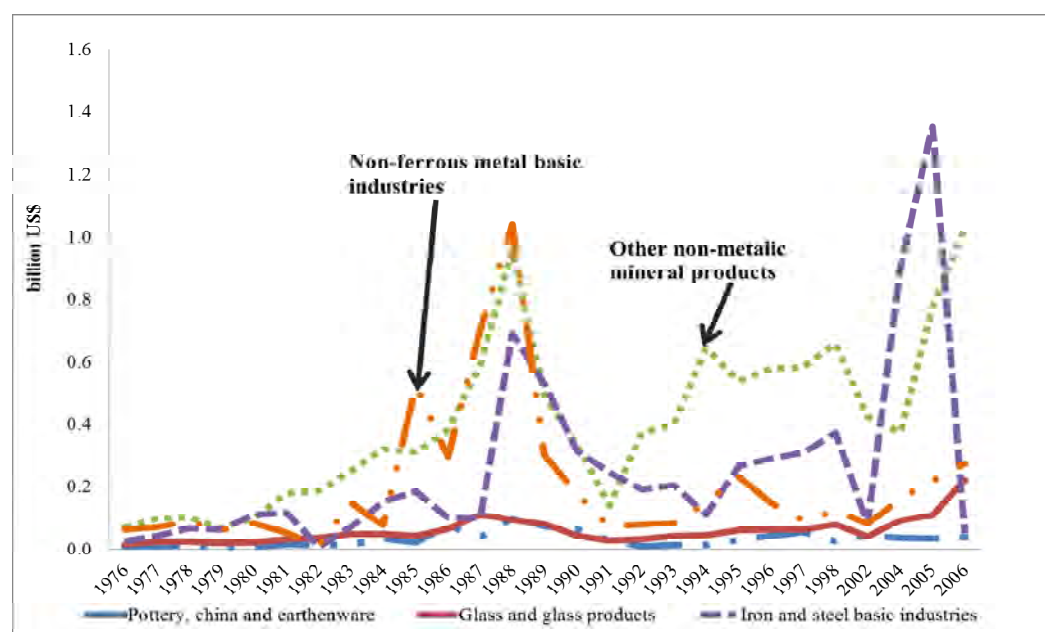|	1977-1981		1982-1991		1992-2002		2004-2006	
Petroleum refineries	5%	-	82%	+	26%	+	46%	+
Other non-metallic mineral products	7%	+	4%	+	7%	+	13%	+
Machinery except electrical	4%	+	4%	-	2%	+	6%	+
Plastic products not elsewhere classified	5%	+	2%	+	1%	-	5%	+
Industrial chemicals	13%	+	1%	+	3%	+	5%	+
Food	40%	-	20%	-	29%	+	4%	+
Electrical machinery apparatus, appliances & supplies	16%	+	11%	-	5%	+	4%	+
Paper & paper products	7%	-	3%	+	3%	+	4%	+
Transport equipment	6%	+	13%	-	3%	+	4%	+
Rubber products	1%	+	5%	-	1%	+	3%	+
Non-ferrous metal basic industries	5%	-	11%	-	2%	+	3%	+
Textile	41%	-	53%	-	2%	-	3%	+
Fabricated metal products, except machinery & equipment	1%	-	5%	-	4%	-	3%	+
Wearing apparel, except footwear	3%	-	5%	+	5%	+	3%	+
Beverage	1%	-	1%	-	3%	+	3%	+
Glass & glass products	1%	-	2%	-	1%	+	3%	+
Printing, publishing & allied industries	8%	+	12%	-	1%	+	1%	+
Miscellaneous products of petroleum & coal	2%	-	16%	-	2%	+	1%	+
Leather & products of leather, leather substitutes & fur, except footwear & wearing apparel	2%	-	1%	-	0%	+	0%	+
Wood & wood & cork products, except furniture	2%	-	2%	-	0%	-	0%	+
Furniture & fixtures, except primarily of metal	0%	-	0%	+	1%	+	0%	+
Pottery, china & earthenware	0%	+	3%	+	0%	-	0%	+
Tobacco	42%	-	30%	-	4%	+	0%	+
Other	1%	-	0%	-	0%	-	0%	+
Footwear, except vulcanized or molded rubber or plastic footwear	4%	-	1%	-	0%	-	0%	-
Professional & scientific, & measuring & controlling equipment not elsewhere classified, & of photographic & optical goods	3%	+	0%	+	1%	+	1%	-
Other chemical products	2%	+	8%	-	2%	+	1%	-
Iron & steel basic industries	10%	-	4%	-	9%	+	12%	-
Overall Productivity Growth	-0.29		-0.22		0.95		2.94	

Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006.

Output deflated by manufacturing unit value from WB, development prospect group, 2012

Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.

Table 8: Sectoral Decomposition of Manufacturing Productivity Growth, by selected periods and sectors (3-digits)

1977-1981	PR	ONMMP	MEE	PPNE	IC	F	EMAS	PP	TE	RP	NFBMI
Contribution to overall productivity growth	-0.01	0.02	0.01	0.02	0.04	-0.12	0.05	-0.02	0.02	0.00	-0.02
Due to Δ in productivity	-0.01	0.00	0.02	0.00	0.01	-0.16	0.05	-0.01	0.02	0.00	0.00
	55%	-10%	160%	28%	27%	137%	93%	35%	125%	-157%	30%
Due to Δ in employment share	-0.01	0.02	-0.01	0.01	0.03	0.04	0.00	-0.01	0.00	0.01	-0.01
	45%	110%	-60%	72%	73%	-37%	7%	65%	-25%	257%	70%
% Δ in overall growth	5%	-7%	-4%	-5%	-13%	40%	-16%	7%	-6%	-1%	5%
1982-1991	**PR**	**ONMMP**	**MEE**	**PPNE**	**IC**	**F**	**EMAS**	**PP**	**TE**	**RP**	**NFBMI**
Contribution to overall productivity growth	0.18	0.01	-0.01	0.00	0.00	-0.04	-0.02	0.01	-0.03	-0.01	-0.02
Due to Δ in productivity	0.15	0.06	-0.06	-0.01	0.01	-0.17	-0.06	0.01	-0.09	-0.01	0.03
	84%	733%	677%	-386%	417%	371%	249%	82%	308%	72%	-131%
Due to Δ in employment share	0.03	-0.05	0.05	0.02	-0.01	0.12	0.04	0.00	0.06	0.00	-0.05
	16%	-633%	-577%	486%	-317%	-271%	-149%	18%	-208%	28%	231%
% Δ in overall growth	-82%	-4%	4%	-2%	-1%	20%	11%	-3%	13%	5%	11%
1992-2002	**PR**	**ONMMP**	**MEE**	**PPNE**	**IC**	**F**	**EMAS**	**PP**	**TE**	**RP**	**NFBMI**
Contribution to overall productivity growth	0.24	0.07	0.02	-0.01	0.02	0.27	0.05	0.03	0.03	0.01	0.02
Due to Δ in productivity	0.12	0.05	0.02	0.02	0.09	0.31	0.07	0.05	0.06	0.01	0.01
	50%	78%	95%	-244%	391%	114%	143%	195%	247%	58%	51%
Due to Δ in employment share	0.12	0.02	0.00	-0.03	-0.07	-0.04	-0.02	-0.02	-0.04	0.00	0.01
	50%	22%	5%	344%	-291%	-14%	-43%	-95%	-147%	42%	49%
% in overall growth	26%	7%	2%	-1%	3%	29%	5%	3%	3%	1%	2%
2004-2006	**PR**	**ONMMP**	**MEE**	**PPNE**	**IC**	**F**	**EMAS**	**PP**	**TE**	**RP**	**NFBMI**
Contribution to overall productivity growth	1.35	0.38	0.18	0.14	0.14	0.13	0.12	0.11	0.10	0.10	0.10
Due to Δ in productivity	1.37	0.46	0.15	0.06	0.17	0.09	0.09	0.12	0.22	0.08	0.12
	102%	123%	81%	44%	119%	74%	70%	115%	214%	76%	118%
Due to Δ in employment share	-0.02	-0.08	0.04	0.08	-0.03	0.03	0.04	-0.02	-0.12	0.02	-0.02
	-2%	-23%	19%	56%	-19%	26%	30%	-15%	-114%	24%	-18%
% Δ in overall growth	46%	13%	6%	5%	5%	4%	4%	4%	4%	3%	3%

Notes: Data by TPP for 1976-1998 based on ISIC revision 2. Hence, concordance between ISIC revisions (3) and (2) performed by author for 1997-2006.

Output deflated by manufacturing unit value from WB, development prospect group, 2012

PR: petroleum refineries, ONMMP: other non-metallic mineral products, MME: machinery except electrical, PPNE: plastic products not elsewhere classified, IC: industrial chemicals, F: food, EMAS: electrical machinery apparatus, appliances & supplies, PP: paper & paper products, TE: transport equipment, RP: rubber products, NFBMI: non-ferrous basic metal industries.

Source: Author's calculations based on: Trade, Production and Protection database (1976-2004) for 1976-1996 and UNIDO database, 2012 for 1997-2006.

Table 9: Period Average Real Merchandise Export Growth Rates (2-digitS) in million US$, base year 2010, 2-digits

	1981-1989	1990-2002	2003-2005	2006-2008	2009-2010
Agriculture & hunting					
nominal	363	432	956	1425	1772
growth rate	-0.7	6.9	23.7	12.1	7.5
real	1060	1184	1901	1646	1873
growth rate	4.3	5.9	1.3	-4.3	10.3
% in merchandise exports	9.7	8.3	9.1	6.0	7.6
Crude petroleum & natural gas products					
nominal	2706	1881	1878	7715	7508
growth rate	-0.1	-4.7	52.0	58.2	-12.0
real	7596	5145	3557	8816	7962
growth rate	4.2	-6.3	23.5	32.5	-10.9
% in merchandise exports	69.7	37.7	16.8	32.2	32.3
Manufacturing					
nominal	733	2741	7565	14142	13399
growth rate	5.4	12.9	28.2	20.3	-1.4
real	2222	7487	14969	16375	14135
growth rate	10.9	10.7	5.3	2.4	-1.3
% in merchandise exports	20	52.5	71.2	59.5	57.3
Other					
nominal	20	77	310	565	644
growth rate	9.3	16.5	37.1	27.9	-0.7
real	63	211	609	640	679
growth rate	16.3	14	12.7	7.1	-1.1
% in merchandise exports	0.6	1.5	2.9	2.3	2.8

Note: Other exports include forestry and logging, fishing, coal mining, metal ore mining, other mining, and electricity, gas and steam
Source: Author's calculations based on WITS mirror data, 2012

Table 10: Real and Nominal Growth of Paper and Food sectors in million US$, base year 2010 2-digit

	1976-1980	1981-1993	1994-2003	2004-2008	2009-2011
Food, beverages and tobacco					
nominal	40	63	286	1019	1293
growth rate	27.0	15.0	17.0	23.4	-5.2
real	75	184	769	1379	1575
growth rate		15.9	16.8	3.0	17.8
% in merchandise exports	4.1	1.6	4.9	5.5	5.4
Paper and paper products, printing and publishing					
nominal	4	14	44	207	337
growth rate	17.4	24.1	13.4	31.9	-1.4
real	9	39	117	269	393
growth rate		23.0	12.2	8.9	18.8
% in merchandise exports	0.5	0.3	0.7	1.1	1.4

Note: Exports deflated by export unit value calculated from WDI, WB, 2012.
Real sector data cover the period 1980-2010
Other sector include forestry and logging, fishing, coal mining, metal ore mining, other mining, and electricity, gas and steam
Source: Author's calculations based on WITS, 2012.

Table 11: Top 10 Manufacturing Exports' Share in total Merchandise Exports (%,2-digits)

	1976-1980	1981-1993	1994-2003	2004-2008	2009-2011
Chemicals & chemical, petroleum, coal, rubber & plastic products	5.4	9.1	19.3	22.2	20.7
Textile, wearing apparel & leather industries	4.6	6.7	18.8	10	9.6
Basic metal industries	3.7	4.9	7.2	12	8.3
Fabricated metal products, machinery & equipment	1.3	2.9	5.4	6.7	6.5
Food, beverages & tobacco	4.1	1.6	4.9	5.5	5.4
Non-metallic mineral products, except products of petroleum & coal	0.1	0.2	2	5.2	2.8
Paper & paper products, printing & publishing	0.5	0.3	0.7	1.1	1.4
Wood & wood products, including furniture	0.4	0.1	0.7	0.7	0.4
Other manufacturing industries	0.1	0.2	0.6	0.3	0.2
Total Manufacturing	20.2	26	59.6	63.7	55.3
Others	0.4	0.7	1.8	2.6	3.2
CR5	19.1	25.2	55.6	56.4	50.5

Source: Author's calculations based on mirror WITS data, 2012

Table 12: Top 10 Manufacturing Exports' Share in total Merchandise Exports (%,3-digits)

	1976-1980	1981-1993	1994-2003	2004-2008	2009-2011
Industrial chemicals	0.15	0.73	2.98	5.48	9.74
Petroleum refineries	4.89	7.67	12.92	13.37	7.63
Non-ferrous metal basic industries	3.31	3.90	3.46	4.51	5.61
Wearing apparel, except footwear	0.16	1.58	8.60	5.07	4.77
Food manufacturing-1	3.97	1.37	3.58	4.36	4.45
Textiles	4.16	4.87	9.32	4.17	4.19
Iron and steel basic industries	0.40	1.02	3.74	7.48	2.77
Electrical machinery apparatus, appliances and supplies	0.30	0.31	0.95	2.06	2.56
Other chemical products	0.35	0.54	2.34	2.31	2.40
Fabricated metal products, except machinery and equipment	0.14	0.24	1.00	1.35	1.58
Other	2.48	3.80	10.70	13.73	10.34
Total manufacturing	20.32	26.03	59.59	63.89	56.04
CR5	12.48	15.25	31.53	32.79	32.20

Source: Author's calculations based on mirror WITS data, 2012

Table 14: Estimates of Effective Rates of Protection (selected industries, excludes NTBs and subsidies)

ISIC Code	Sector	Private Industries		Public Industries	
		2009	1998	1998	2009
1711	Manufacture of containers, boxes of paper & paper board	242	-11083	529	na
1721	Textile products except garments	229	84	na	na
1722	Tire & tube industries	98	849	111	38
2102	Manufacture of carpets and rugs	92	64	176	na
2101	Manufacture of electrical appliances &housewares	79	83	193	na
2412	Manufacture of soap, perfume & cosmetics	77	58	385	-1225
2423	Manufacture of jewelry & related articles	66	33	na	na
2424	Manufacture of glass & glass products	58	38	72	212
2511	Iron & steel basic industries	23	31	29	21
2610	Manufacture of pulp, paper & paper board articles	21	40	60	29
2694	Non-Ferrous metal basic industries	18	28	24	16
2710	Spinning & Weaving and finishing textiles	16	46	47	16
2720	Manufacture of motor vehicles	16	58	219	36
2893	Manufacture of drugs & medicines	6	6	6	6
2921	Manufacture of agricultural machinery & equipment	5	11	16	na
3110	Manufacture of cutlery, hand tools, & general hardware	5	34	34	na
2930	Manufacture of electrical industrial machinery & apparatus	5	26	na	na
3410	Manufacture of fertilizers and pesticides	0	21	31	-2
3811	Manufacture of cement, lime & plaster	-2	32	30	-1
	Average	45	85.6	122.5	37

Source: Alberto and Foster (2011).
Notes: Calculation is based on WTO integrated database of HS6 tariffs (2009) & Information in Al- Iskandarani for costs of importables in total output and tariffs 1998. na. corresponds to industries not appearing as public sector in CAPMAS sources. Average calculations does not include group 2102 for private sector, and 2424 for public sector

Table 15: Exchange Rate (LCU per US$, period average, 2001-2004)

	Official exchange rate	rate of change
2001	3.97	14%
2002	4.50	13%
2003	5.85	**30%**
2004	6.20	6%
2005	5.78	-6.74%
2006	5.73	-0.79%
2007	5.64	-1.70%
2008	5.43	-3.60%
2009	5.54	2.06%
2010	5.62	1.40%
2011	5.93	5.53%

Source: World Bank database

Table 16: Trade Restrictiveness Indices (1995-2002 versus 2003-2009)

Country/ Region	Trade tariff restrictiveness index		Overall trade restrictiveness index	
	1995-2002	2003-2009	1995-2002	2003-2009
Arab Common Market (trade weighted average)	15.89	7.97	36.34	26.84
Lower Middle income (trade weighted average)	11.16	8.25	21.01	16.47
High income (trade weighted average)	5.17	3.91	10.14	9.10
World	9.07	7.28	16.41	13.93
Egypt	13.17	6.71	38.90	28.83

Source Author's calculations based on WB, World Trade indicators (2009/2010)

Table 17: Global Ranking, Competitiveness and Business Environment

Year	GCI Score	GCI Ranking	Doing Business Ranking
2006	4.1	52 (117)	165 (175)
2007	4.1	63 (125)	165 (175)
2008	4	77 (131)	126 (175)
2009	4	81 (134)	114 (175)
2010	4	79 (133)	106 (183)
2011	3.88	94 (142)	94 (183)
2012	3.73	107(144)	110 (183)

Note: The Global Competitiveness Index score ranges from 1-6 with 6 being the most competitive. In 2012 Switzerland had the highest score (5.74), Chad the lowest (2.87).
Source: GCI Report and Doing Business 2011, World Bank

Table 18: Foreign Direct Investment, (net BoP, million US$)

	1977-1981	1982-1991	1992-2002	2003-2010
FDI	579	810	765	5791
Growth rate	124%	2%	27%	94%
FDI (2011=100)	1517	1791	1291	8343
Rates of growth	112%	1%	22%	89%

Note: FDI deflated by GDP deflator from WDI, WB, 2012
Foreign direct investment is net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows total net, that is, net FDI in the reporting economy from foreign sources less net FDI by the reporting economy to the rest of the world.
Source: Author's calculations based on WDI, WB, 2012

Table 19: Foreign Aid Inflows in Million Current $US (1960-2010)

	Aid per capita current $US	% of GNI	Foreign Aid
1960s	4	3%	122
1970s	35	12%	1457
1974-1978	57	19%	2332
1979-1990	38	6%	1942
1991-1996	52	7%	3090
1997-2004	22	2%	1520
2005-2010	14	1%	1067

Source: Author's calculations based on World Development Indicators 2012

Table 20: Exchange Rate (LCU per US$, period average, 1980-2001)

	Official exchange rate	rate of change
1980-1988	0.70	0%
1988	0.70	0.00%
1989	0.87	23.81%
1990	1.55	78.85%
1991	3.14	102.45%
1992	3.32	5.86%
1993	3.35	0.93%
1994	3.39	0.97%
1995	3.39	0.21%
1996	3.39	-0.02%
1997	3.39	-0.08%
1998	3.39	-0.02%
1999	3.40	0.21%
2000	3.47	2.26%
2001	3.97	14%

Source: World Bank database

Table 21: Cement: Market Shares (2008)

Company	Market Share
National Cement	7.4
South Valley Cement	0.2
Misr Cement Qena	5
Misr Benisuef Cement	4.3
Sinai Cement	6
Ameryah Cement	7.8
Alexandria & Benisuef Cement	8.4
Assuit Cement	12.7
Egyptian Cement Company	20.5
Italcementi (Suez+Helwan+Torah)	27.7

Note: National Cement is state owned, Egyptian private sector companies are: South Valley Cement, Misr Cement Qena and Misr Benisuef Cement.

Source: Global investment House, 2009b.

Table 22: Unfavorable Cost Structure: Labor Cost (2006)

	Wage per hour in US$	Equivalent to LE
Egypt	0.82	4.5
China (mainland)	0.48	2.6
Sri Lanka	0.46	2.0
Pakistan	0.37	1.5
Bangladesh	0.28	1.5
Vietnam	0.28	1.5

Source: Adapted from World Bank (2006). Exchange rate used is LE 5.5 to the $.

Annex

Figure 1: Composition of S. Korean Manufacturing VA (1963-2005)
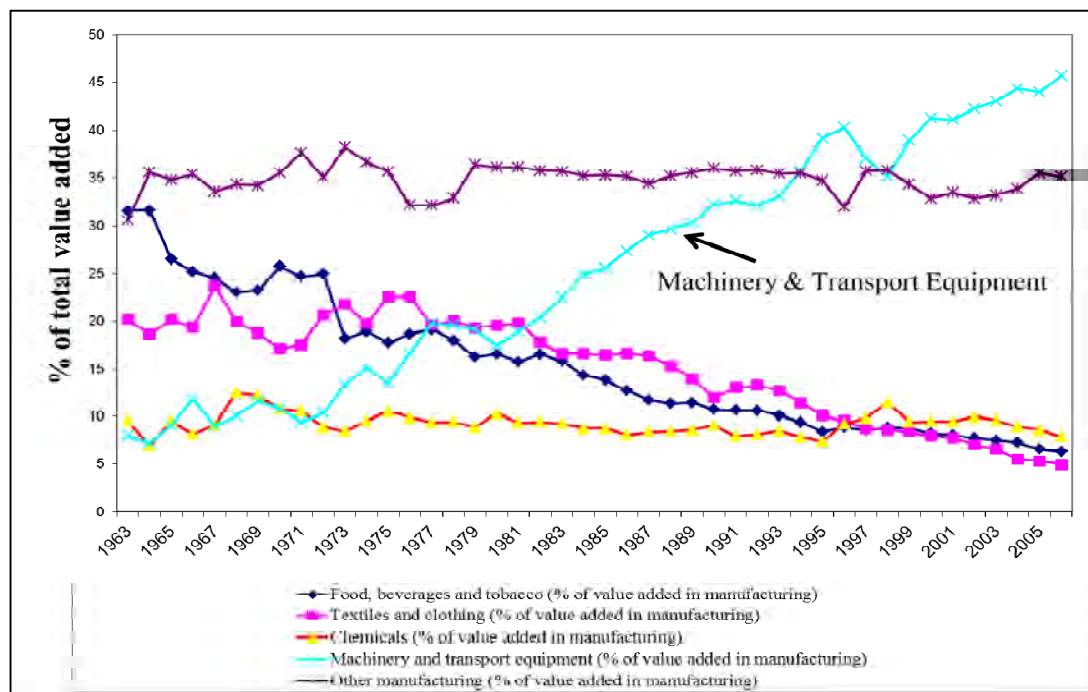
Source: WDI, The World Bank, 2007

Figure 2: Manufactured Exports Structure 3 digits
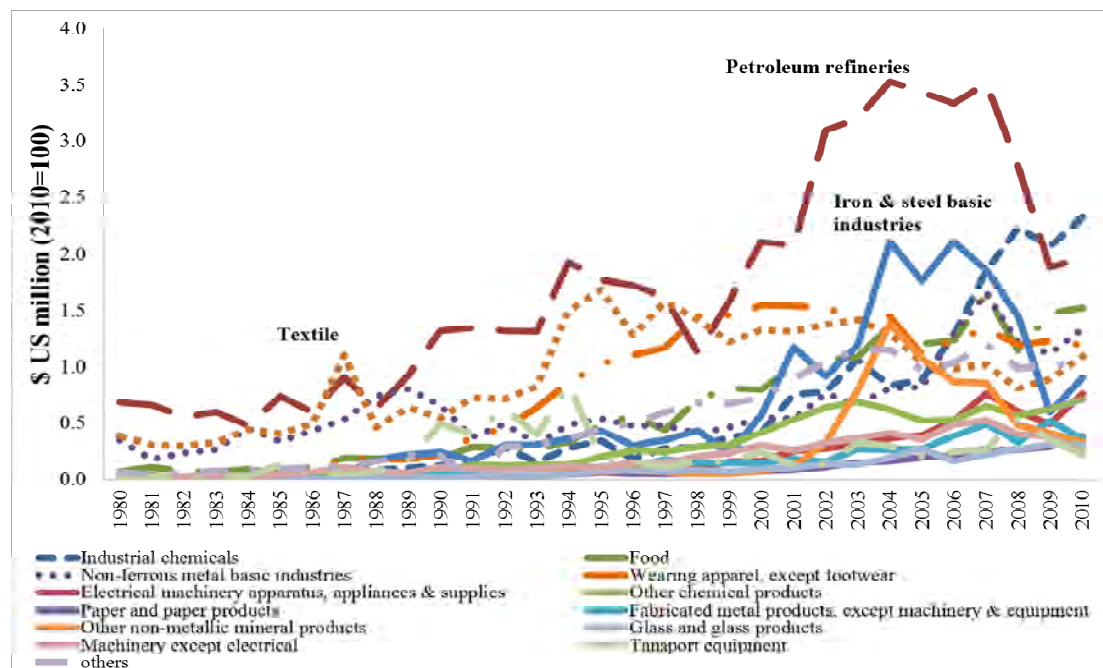
Source: Author's calculations based on mirror WITS data, 2012. Note: Exports deflated by export unit value index calculated from WDI, WB, 2012. Other includes leather and products of leather, leather substitutes and fur, except footwear and wearing apparel, plastic products not elsewhere classified, furniture and fixtures, except primarily of metal, pottery, china and earthenware, professional and scientific, and measuring and controlling equipment not elsewhere classified, and of photographic and optical goods, rubber products, tobacco, printing, publishing and allied industries, other manufacturing industries, miscellaneous product of petroleum and coal, beverage industries, footwear, except vulcanized or moulded rubber or plastic footwear, and wood and wood and cork products, except furniture.

Figure 3: Manufactured Exports Structure (% 1980-2010, 2-digit)
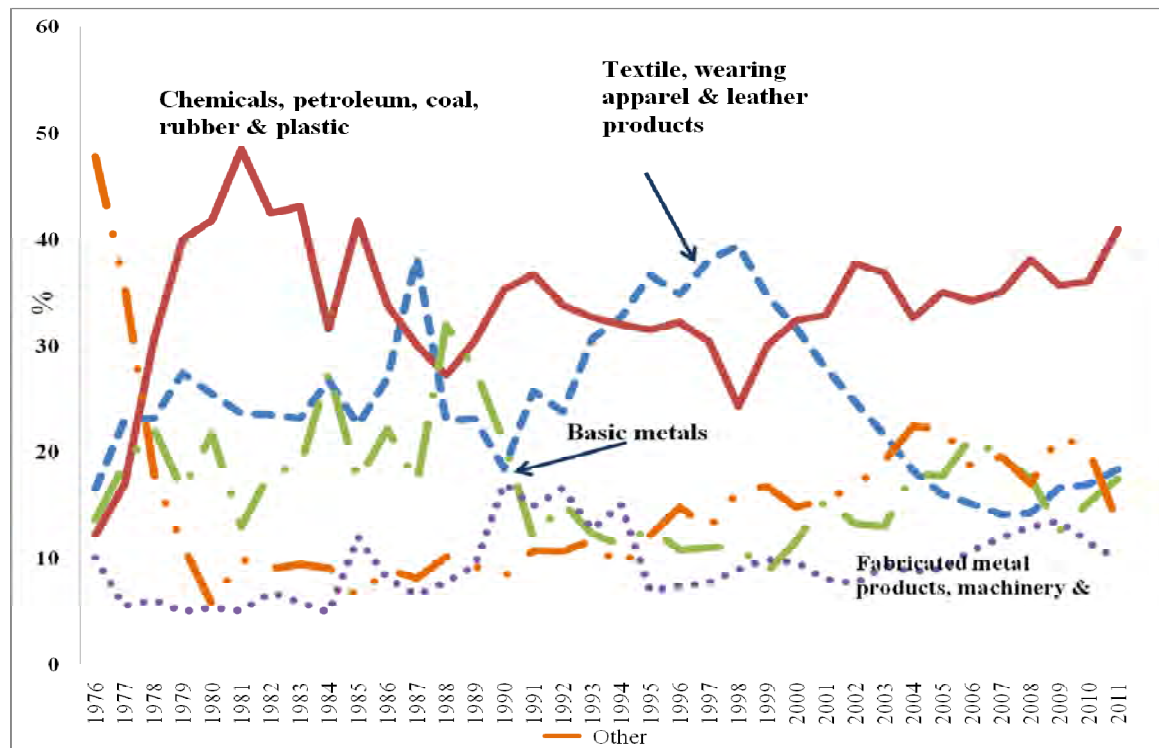
Note: Other includes manufacture of food, beverages and tobacco, manufacture of wood and wood products, including furniture, manufacture of paper and paper products, printing and publishing, manufacture of non-metallic mineral products, except products of petroleum and coal, and other manufacturing industries.

Source: Author's calculations based on mirror WITS data, 2012.

Table 1: Breakdown and Growth of Nominal and Real Merchandise Exports in million US$, base year 2010, 2-digit

	1976-1980	1981-1993	1994-2003	2004-2008	2009-2011
Agriculture and hunting					
nominal	221	343	523	1268	1706
growth rate	47.3	-0.7	12.1	15.9	-0.4
real	934	992	1404	1728	1873
growth rate		0.6	11.9	-4.0	10.3
% in merchandise exports	18.4	8.9	9.1	7.0	7.1
Mining and quarrying					
nominal	1468	2567	1651	5541	8315
growth rate	206.7	0.3	-4.3	61.6	2.6
real	8547	7217	4411	6888	7962
growth rate		1.0	-5.2	32.4	-10.9
% in merchandise exports	60.9	64.3	29.5	26.6	34.4
Manufacturing					
nominal	375	1035	3447	11886	13346
growth rate	107.9	9.1	12.6	23.2	-4.1
real	1747	3005	9246	15967	14135
growth rate		10.1	11.8	2.2	-1.3
% in merchandise exports	20.3	26.1	59.6	63.8	55.3
Food, beverages and tobacco					
nominal	40	63	286	1019	1293
growth rate	27.0	15.0	17.0	23.4	-5.2
real	75	184	769	1379	1575
growth rate		15.9	16.8	3.0	17.8
% in merchandise exports	4.1	1.6	4.9	5.5	5.4
Textile, wearing apparel and leather industries					
nominal	94	264	1064	1809	2315
growth rate	138.6	14.6	9.3	13.2	3.4
real	445	771	2855	2484	2378
growth rate		16.7	8.5	-6.1	7.2
% in merchandise exports	4.6	6.7	18.8	10.0	9.6
Wood and wood products, including furniture					
nominal	3	5	41	134	100
growth rate	867.5	51.8	14.6	25.3	-32.4
real	3	14	109	178	132
growth rate		52.0	13.8	3.7	-19.1
% in merchandise exports	0.4	0.1	0.7	0.7	0.4
Paper and paper products, printing and publishing					
nominal	4	14	44	207	337
growth rate	17.4	24.1	13.4	31.9	-1.4
real	9	39	117	269	393
growth rate		23.0	12.2	8.9	18.8
% in merchandise exports	0.5	0.3	0.7	1.1	1.4
Chemicals and chemical, petroleum, coal, rubber and plastic products					
nominal	136	363	1127	4202	5011
growth rate	207.7	9.1	14.7	23.7	-1.3
real	729	1037	3023	5578	5072
growth rate		9.1	14.0	2.4	-3.6
% in merchandise exports	5.4	9.1	19.3	22.2	20.7
Non-metallic mineral products, except products of petroleum and coal					
nominal	1	10	124	893	662
growth rate	-6.6	87.7	28.8	21.5	-16.1
real	1	28	329	1272	789
growth rate		91.5	26.6	0.9	-5.9
% in merchandise exports	0.1	0.2	2.0	5.2	2.8
Basic metal industries					
nominal	74	189	420	2243	2027
growth rate	146.5	9.0	15.6	34.3	1.8
real	379	566	1127	3013	1972
growth rate		11.0	14.5	11.4	-2.4
% in merchandise exports	3.7	4.9	7.2	12.0	8.3
Fabricated metal products, machinery and equipment					
nominal	21	118	309	1318	1547
growth rate	82.7	26.8	13.5	31.7	-13.3
real	93	341	828	1708	1765
growth rate		26.1	12.7	9.4	-7.4

	1976-1980	1981-1993	1994-2003	2004-2008	2009-2011
% in merchandise exports	1.3	2.9	5.4	6.7	6.5
Other manufacturing industries					
nominal	2	8	34	62	54
growth rate	111.0	16.6	20.2	4.7	-4.1
real	10	25	90	86	57
growth rate		19.5	18.6	-12.2	-13.3
% in merchandise exports	0.1	0.2	0.6	0.3	0.2
Others					
nominal	7	27	104	481	783
growth rate	106.7	9.5	21.7	30.3	15.5
real	36	82	280	639	679
growth rate		11.5	20.3	7.1	-1.1
% in merchandise exports	0.4	0.7	1.8	2.6	3.2

Note: Exports deflated by export unit value calculated from WDI, WB, 2012.

Real sector data cover the period 1980-2010

Other sector include forestry and logging, fishing, coal mining, metal ore mining, other mining, and electricity, gas and steam

Source: Author's calculations based on WITS, 2012.

Table 2: Industrial Policy Matrix (1990-2010)

Policy Domain/Action	90s	(2000-2010)
Policy Framework Setting		
Fiscal Policy (FS)		
Address the large and growing fiscal deficit PT: N	Appling a tight(FS), reducing deficit to 1.3% of GDP in 1998-1999	Following an expansionary fiscal policy to stimulate demand, which has led to an upward trend in budget deficit as % of GDP to reach 9.5% in 2010/2011
Use of tax holidays to encourage investment PT: A	Investment law #(8)/1997 included tax holidays to encourage investment in mandated sector and regions**	Abolished by law (94)/2005
Tax rate PT: N	Global income tax law was passed in1993, according to which the corporate tax rate for services is 40% and 34% in manufacturing	New tax law #91/2005 unified the tax rates & reduced the corporate tax rate to 20%
Subsidies PT: A	-Energy is highly subsidized despite efforts toward liberalization -Liberalization on prices including industrial and agricultural goods, electricity and transportation -Electricityprices reached 69 % of long run marginal costs in 1992 ?? edit From What i understand, In the ERSAP program the electricity prices should be adjustment until it is equated with the long run marginal cost by june 1995. Accordingly the (31%) is the subsidy. On Thu, Nov 8, 2012 at 9:36 AM, Amirah El-Haddad <amirah.elhaddad@feps.edu.eg> wrote: what do u mean by that: - Electricity prices reached 69 % of long run marginal costs in 1992	-Reduction of energy subsidy on energy intensive industries starting mid 2007 -Financial subsidy to projects that start production or are under construction in upper Egypt. According to Ministerial Decree 719/2007 firms are paid LE15,000for every created job with a maximum of 25% of project's total investments of the project and subject to other restrictions.
Sales tax PT: N	General tax law #11/1991 was enacted. In 1998 the applied rate was between 5%-25% for goods, and 5%-10% for services	-In 2001 general sales tax coverage was extended to wholesale and retail levels -General tax rates in 2005 ranged between 5%-45%Goods and services not specified in the Law are subject to a rate of 10% -Removal of sales tax off capital goods in 2006
Monetary policy		
Differentiated interest rates PT: A	Non-applied	Non-applied
Interest rate setting	As of 1991 banks were allowed to set their own borrowing and lending rate guided by the interest rate on treasury bills. Subject to a ceiling of 12% per annum on 3-month deposit interest rate Direct instruments (e.g. quantitative and administrative determination of interest rates using credit and interest rate ceilings) were abolished for the private and the public sectors starting 1992 and 1993, respectively	
Inflation control PT: N	Credit ceiling on the banking system to control inflation, but the monetary policy was directed at preserving the exchange rate under the fixed-peg regime	According to law #88/2003 controlling inflation is the primary goal of Egypt monetary policy
Exchange rate policy		
The presence of multiple exchange rate PT: A	In October 1991 the exchange rate was unified and non-bank dealers were allowed to deal in foreign exchange	Multiple exchange rates during the period (1999-2002) with the black market rate higher than the CBE announced rate by 10%
Exchange rate system PT: N	-In 1991 a fixed- peg exchange rate system was applied. -The Exchange rate was devalued in 1991 by 15% then remained fixed around 3.4	-Jan 2001: Crawling peg exchange rate system(The exchange rate was devalued several times) -Jan 2003: Managed Float exchange rate system (the exchange rate was devalued to reach 6.03 L.E/US$ in

Policy Domain/Action	90s	(2000-2010)
	L.E/US$ until 1999	June 2003)
Trade Policy		
High tariff rates to protect industry PT: A	Repeated tariff reductions in years 1991, 1993, 1994, 1996, 1997, 1998 to reach an average of 19.9 in1998	Tariff reduction in 2004 to reach an average of 9%
Tariff escalation PT: A	In 1998 the following tariff rates was applied (14.3% on raw material, 20.2% on semi-processed goods and 32.9% on fully processed goods.	Present, in 2005 the following average tariff rates was applied (4.8% on raw material, 10.6% on semi-processed good &28.2% on fully processed goods)
Rationalization of the tariff structure. PT: N	Tariff reforms in years 1991, 1993, 1994, 1996, 1998. Reforms included reducing tariff dispersion, tariff bands and reductions of tariff rates	In 2004 Tariff amendments -Reduction of tariff brackets from 27 to only 6. -Removing inconsistences in tariff structure (similar inputs became subject to the same tariff bracket).
Other taxes and charges PT: A	Imports subject to -1% for inspection -2% on commodities subject to customs of 5%-29% -3% on commodities subject to customs of 30% -4% on commodities subject to customs over 30%	Elimination of all other taxes & charges according to the ministerial decree 1230/2004
Use of non-tariff barriers on imports PT: A	Lifting of import bans -Items previously allowed only conditional entry into Egypt, or on the "banned" list, have gradually been lifted from the list. A list of 105 commodity groups in 1991 was reduced to 3 (25 commodities) by 1998. In 1999 the list solely comprised clothing and poultry products. -By 1999 Egypt had no import quotas. -Licenses and prior approval for imports are no longer required; these were abolished in July 1993 by Ministerial Decree 288 FOR TC THESE WERE REPLACED BY PROHIBITIVE IMPORT TARRIFS. AMIRAH. ?	-Use of technical specifications and safety reasons as non-tariff barriers to trade -Pursuant to Decree 580/1998, automobiles can be imported only during the year of their manufacture; this effectively bans the import of second-hand cars. -Import prohibitions were lifted on most textile and clothing products in 2004, through Ministerial Decree 161/2004.
Application of customs valuation procedures PT: N	Under Egyptian legislation, transaction value forms the basis for customs valuation. Under Article 22 of the Customs Law, value is determined by the c.i.f. price of the good at the date of registering the customs statement, including, inter alia, the cost of transport, freight, insurance, commission and brokerage. A service and inspection charge of 1% is also charged on the c.i.f. value of all imports. According to the authorities, an additional service charge of 2% or 3% is levied on goods subject to import duties of 5% to 29%, or 30% and above, respectively	Application of the WTO agreement on customs valuation according to decree 765/2001, according to which imports are valued on the basis of the invoice presented by the importer
Customs duty exemptions ? see detail underneath table PT: A	Customs exemption law 186/1986 as amended concentrating on capital and intermediate goods	Customs exemption law 186/1986 as amended, concentrating on capital and intermediate goods
Encouraging the use of local content PT: A	-Ministerial decree # 304/1989 : Ministry of Industry decides on local content requirement -Incentive measures in the form of customs duty reductions to promote the establishment and development of certain industries in the country. The reductions in customs duty, which are offered to assembly industries, depend upon the proportion of local content and can go up to a maximum of 75% of the full tariff rate -in 1993 local content was set at 60% liable to fall to 40% for passenger cars	Tariff reductions are also available for assembly industries; the reduction rates depend on the local content in the assembled product
Negotiation of bilateral/ regional trade agreements	The presence of multiplebilateral/ regional trade agreements includingCOMESA, GAFTA	More trade agreements signed including Agadir protocol, EU association agreement, QIZ protocol, FTA with turkey.

Policy Domain/Action	90s	(2000-2010)
PT: N	GET MORE FROM ADB	
Building capacity within the Ministry of Trade and Customs Authority Administration of the Ministry of Finance. PT: N		-Application of the Trade Enhancements Programs (TEP a&c) funded by the EU
Business environment and transaction costs		
Consumer protection law PT: N	Numerous laws and decrees dealing with consumer protection, the main one being law#48\1941 concerning commercial fraud	Issuance of consumer protection law# 67 /2006, unifying all laws and decree related to consumer protection, establishing a consumer protection agency and specifying penalties for violation
Competition law PT: N	No competition law in place although the Law of Supplies and Commerce forbids competition-reducing activities such as collusion and hoarding	Enacting the law of Protection of Competition and Prohibition of Monopolistic Practices (law#3/2005).
Labour laws and public employment PT: N	-Applying law# 137/1981 which limited the employer right to dismiss employees -public sector employment guarantees for graduates removed, enrollment rationed by the Ministry of Education, waiting period for government appointments increased.	Enacting the Unified Labor Law #12/2003 allowing more flexibility in the labour market
Intellectual property rights PT: N	-Member of the main international treaties on intellectual property rights since 1950 (Paris Convention for the Protection of Industrial Property). -Several Laws governing property rights since 1950.	EnactingIntellectual Property Rights law # 82/2002.
Privatization and public sector PT: A	Enacting law #230/1991, to starting the process of privatization of the Egyptian public sector companies.	Speeding up of the privatization process
Public private partnership PT: N	Since the mid-1990s, the government has opened to the private sector a number of infrastructure services, such as port services, and energy generation and distribution networks. In general,most new projects are run as build-own-operate-transfer (BOOT) schemes	Enacting the PPP Law #67/2010 for partnership with the private sector in infrastructure and public utilities .
Simplifying and streamlining entry and exit procedures and regulations. PT: N	Under law# 8 of 1997 GAFI automatically approves any investment request as long as the project is one of the 16 sectors listed in law	-Unification of company establishment procedures according to law (94)/2005 -In Jan 2005 Establishment of the one stop shop at the general authority for investment and free zones
Tax collection procedures PT: N	Complicated	Tax law #91/2005 simplified tax collection procedures
Streamline customs administration procedures to reduce clearance times. PT: N	In late 1999, Egypt established a register of trustworthy importers and exporters	The customs administration has improved inspection and clearance activities. Advanced clearance centres have been established at the ports of Alexandria, Cairo, Port Said, and Suez to simplify entry procedures. The use of computers and x-ray equipment has also helped to improve efficiency and, according to the authorities, the average clearance time has been reduced to between 30 minutes and three days, depending on the size and sensitivity of the consignment
Industrial Capabilities		
Human resources		
Enhancing the quality of formal technical and vocational training system PT: A	-In 1995 the start of the application of Mubarak-kohl project as a major training program	-Expand the Mubarak – kohl project (MKI-vetEP). -The supreme council of human resource development issued a paper entitled in 2002 "Policy Statement on Skill development in Egypt" to define government's strategic objectives for TVET -During 2009, the prime minister launched an initiative for the design of a specific TVET strategy,that was approved in August 2009 -Formulation of Technical Education Strategy (2011/2012 –2016-17) which provides a framework for technical education in Egypt. The strategy was

Policy Domain/Action	90s	(2000-2010)
		developed by the Ministry of Education with the aim of establishing a technical education system
Raising of private sector demand to training PT: A		Application of skill development project aiming at stimulating private sector's demand for training launched in 2004, (funded by the WB and GoE with overall project budget is US$ 12 .5 million) in addition to EU-TVET which aimed at building Enterprise-TVET Partnerships (ETPs) launched in 2005 (UNDP 2010) (budget committed 25,276,489)
Establish skills standards PT: N		-Application of the national skill standard project in 2000, aiming at establishing skill standards and setting procedures for testing and certifying trainees. -Application of national qualification framework
Vocational training Institutional change PT: A		-Establishment of industrial training centre in 2006. -Application of EC-TEVT policy reform project starting 2005 aiming at developing decentralized quality technical and vocational training institutes that depend on market demand, and developing key building blocks for a model TVET system by introducing national regulatory bodies as a basis for a decentralized system of demand driven TVET
Technological capabilities		
Technological institutional change PT: N		-Establishment of the supreme council of research centres in 2000 to improve coordination of research efforts at the national level across all ministries. -The establishment of the information technology industry development agency (ITIA) according to law#15/2004
Strengthen the technological infrastructure PT: N	-Establishment of Mubarak science city in 1993with a plan to house 12 research centers and institutes	-The first four institutes inside the Mubarak science city were inaugurated in 2000 -Implementation of the national quality program to Improve basic technology infrastructure in meteorology, standards, testing and quality
Strengthen interactions between industry and research institutions PT: A		Just two IMC program: 1) linking industry to university education and; 2) youth initiative, scientific research and development program) Program has 4 different schemes: a-Scheme (1)- for the benefit of national industry with budget up to 5 million L.E b-Scheme (2)- for the benefit industrial sector with a budget up to 5 million L.E c-Scheme (3A)& (3B)- for the benefit of Egyptian industrial companies with a budget up to one million L.E & 1.2 Million L.E respectively d-Scheme (4)- for the benefit of Egyptian industrial companies with budget up to 250 thousand L.E
Provision of R&D financing schemessuch as risk-capital measures, loan and equity guarantee schemes, seed funds. PT: N		Establishment of science and technology development Fund in 2007 to support the Egyptian innovation capabilities
Foster technology based- start-ups and small enterprises in new and existing high tech activities PT: N	The social fund of development support the establishment of technology incubators since 1995	Continuation of previous efforts
Technical assistance to enterprise		
Cluster development programs PT: A		Confined to a program applied by the IMC focusing on the Artisan industries
Increasing access to finance PT: A		-Providing Credit guarantee programme by credit guarantee company -Establishment of Private equity funds. -Finance through leasing companies. -Equipment grant scheme administered by the IMC. -Technical assistance to IMC clients in loan file preparation

Policy Domain/Action	90s	(2000-2010)
		-Establishment of Nile stock exchange for SMEs
Business development services PT: A	In January 1996, the Government of Egypt (GoE), represented by the Social Fund forDevelopment (SFD) and the Government of Canada, represented by the Canadian International Development Agency (CIDA), entered into an agreement to establish andimplement the Small and Medium Enterprise Development Upper Egypt Project (SMEDUP)	-Provided by the IMC via business resource centres (BRCs), services provided cover areas related to management practices; marketing export promotion & public relation; human resource development; finance; productivity; quality; technology and know-how transfer; information technology and management information system; energy saving & environmental service; governance & corporate sustainability -Projects to support business development services, and enterprise development funded by CIDA. This includes "Business development services support project during (2005-2010), and Egypt enterprise development project (2008-2013)
Thousand FactoriesProgram Planned for implementation during (2006-2011) PT: A		Provided by IMC with the aim of assisting new factories / expansions to have a strong start through integrated service packages, which are designed to address projects' needs in their early stages, according to their competitiveness level, starting from pre-start-up through start-up.
Upper Egypt incentive package PT: A		-Incentives provided by IMC in support to upper Egypt governorates including: Reduction in enterprises' share in IMC's business development services cost by 50% &first year free technical assistance to new factories (during pre-start-up and start-up stages) ? so idea of non-finite support
Infrastructure		
Industrial infrastructure PT: A	The presence of 88 industrial zones	-Upgrading the industrial zones infrastructure. -Establishment of a new generation of industrial zones
Promoting global linkages and integration into the global economy		
Investment promotion efforts		
Establishment of Special Economic Zones (SEZ) law PT: N	Non-applied	Law#83\2002, only one SEZ was established
Establishment of investment zones PT: N	Non-applied	Law#19/2007
Promote and facilitate investment: PT: N	Non-applied	As of 2005 the transformation of GAFI from investment regulator to an investment promoter & facilitator
Eliminate discrimination against foreign investors PT: N	Law #8/1997 eliminated all kinds of discrimination against foreign investors	Non-applied
Promoting linkages with local supplies PT: A	Non-applied	Suppliers development program under IMC which aims at upgrading & modernizing local suppliers to major Multi-National Companies (MNCs) operating cross-sectoral in Egypt, such as: General Motors Egypt, Mercedes, Procter and Gamble, Cadbury; Unilever, Kraft, Schneider and others
Export promotion		
Elimination of anti-export bias		
Use of non-tariff barriers on exports PT: A	All non-tariff barriers on exports were abolished between September 1996 to June 1997	Non-applied
Export promotion efforts		
Establishment of free zones & simplification of its procedures PT: N	Promoting the establishment of free zones under law #8/1997	Upgrading the free zones infrastructure &simplification of its procedures
Application of temporary admission and duty drawback PT: N	Weak enforcement and complicated procedures	Computerization &simplification of procedures
Tax concessions	To encourage exports, Egypt provides tax	Continuation of tax concessions for free zones

Policy Domain/Action	90s	(2000-2010)
PT: N	(and tariff) exemptions for companies established in any of its public free zones	
Financial support to promote exports PT: A		Establishment of export promotion fund according to export promotion law#155/2002.
Availability of export finance, insurance and guarantee PT: N	Limited to the role of the Export-Development bank of Egypt (EDBE) & the Egyptian export guarantee company.	-April 2004, an agreement between MIT & El Ahly bank of finance export for small exporters -In April 2004 an agreement between MIT & El Ahly Bank To finance barter trade agreements.
Marketing and market access PT: N	-Singing of trade agreement. -Promotion of exports via the government agencies.	-Singing of trade agreements. -Support participation in trade fairs and organization of trade missions via IMC export promotion and development program. -Promotion of exports via government agencies.
Sectoral policies		
Sectoral focus PT: A	Law #8/1997 specified a number of economic activities which would be eligible for the tax holiday, which included the industrial sector; however no attention was given to specific industrial activities within the industrial sector.	Promoting investment and exports in a number of sectors as follows: -Engineering - Food Processing -Chemicals & Pharmaceuticals -Textiles & Garments -Building Materials -Furniture -Paper & Paperboard -Leather
Establishment of sectoral technology centres PT: A	Non- applied	Established in the following sectors: food, leather, leather tanning, jewelry, textile & clothing, furniture, marble & quarries, plastic, engineering, fashion & design.
Industrial vertical integration program PT: A		According to resolution number 418 for 2009 regarding setting up and formation of the Industrial Vertical Integration Council. The IMC has set the Industrial Vertical Integration program for a number of targeted industrial sectors which include: engineering industries, feeding industries, automotive components industry, machinery and equipment industry, electronic and electrical industries. textile and readymade garment industries

Source: author's compilation various sources. Notes: PT: Policy Type

Table 3: Export Promotion Institutions in Egypt

Institution	Mission/ Role In Export Promotion
The Egyptian export Promotion Center (EEPC)	The EEPC is a national export promotion agency that provides services for exporters ranging from marketing to funding. It also oversees the export councils and commodity councils.
Export Councils	Export Councils are in charge of achieving the Ministry's export targets. The board members identify and discuss problems in each sector and make recommendations to MTI. In 2005, MTI appointed a core group of 10 to 12 leading manufacturers per sectors and exporters.
The Industrial Modernization Center (IMC)	Jointly funded by the EU, the Government and the private sector, the IMC's export development program provides support to exporters in organizing and participating in international exhibitions. The program is non-discriminatory for manufacturing sectors. For the services sector, only ICD and industry related services (e.g transport) are covered at the moment
Egyptian Commercial Services (ECS)	Under the MTI, the ECS support exporters in obtaining business intelligence and organizing trade fairs through its offices around the world.
Federation of Egyptian Industries & Business Associations	Federation of industry oversees the operations and jointly tackles the barriers facing each industrial sector. Sixteen industrial chambers represent the most active sectors within the business community, and 10 commodity councils operate in different sectors
Foreign Trade Training Center(FTTC)	The FTTC is an independent Nonprofit training institute established under the MTI.
The Egyptian bank of exports development	The bank was established in 1983 to provide trade finance to exporters, including short and medium term loans and guarantees. It currently offers six financing programs. For instance, its Agriculture sector development program provides export loans up to EGP 5 million to agriculture companies. However, its current functions are more like other commercial banks rather EXIM banks in other countries.
The Export Credit Guarantee Company of Egypt (ECGE)	It is a joint stock company established under law No 21/1992.Its mission is to encourage and promote Egyptian exports through guaranteeing the exports of national products and services against commercial and non- commercial risks by compensating the exporters against losses incurred as a result of any of these risks.
The Egyptian Export Fund	The Export Fund was established under the Ministry of Finance to provide financial support to exporters. However its budget was reduced last May, when the government cut the deficit target
The Egyptian International Trade Point (EITP)	Established in 1998 by Ministerial Decree No. 144/1998 to act as an advanced technological center using information technology and e-commerce in world trade relations. Its mission focuses on promoting Egyptian exports, investment and service opportunities through specialized networks
The General Organization of Export and Import Control(GOIEC)	Established in 1971 by Presidential Decree No 1770/1971 Its main mission is to Protect the consumers and maintain a good image of Egypt's exports worldwide through inspecting the quality of imports and exports.
Egypt Expo and Convention Authority (EECA)	Established in1956 by presidential Decree No 323/1956. It is considered to be the sole official authority concerned with organizing the Fairs & Exhibitions inside Egypt and abroad; it also grants permissions for holding such Fairs and Exhibitions to the companies concerned
The Industrial Development Authority (IDA)	The IDA was established in 2005, to maximize the contribution of Egyptian industry and to develop manufacturing strategies. IDA's activities include studying the legislation connected with industry and drawing up industrial development studies.
Non- governmental institutions that Support the Exports	These include mainly: -Expo-link: Established in 1997 with a mission to increase the Egyptian non- traditional exports competitiveness in the international markets through a number of activities that include but not exclusive to market intelligence in targeted markets, assist in match making and export promotion. -HEIA: It is an industry-driven association supporting the Egyptian horticultural community (producers, exporters and suppliers) that was established in 1996. HEIA's plays a role in upgrading farming operations among its members from all sectors of Agribusiness, upgrading Egyptian Horticulture to EURO GAP, BRC, HACCP and TESCO's Standards as well as Improving Post Harvest and Cold Chain Logistics, in addition to advocating contract farming and introduction of new varietals .

Sources: compiled by author from various sources.

This study explores patterns of structural change and industrial policy in four Euromed economies: Egypt, Morocco, Tunisia and Turkey. The study reveals, as an overall evaluation, that the four Mediterranean countries have achieved a certain degree of structural transformation over time; in particular moving from the agricultural-based sector towards services and industrial sectors. Positioning the four countries in terms of degree of industrialization places Turkey on top of the list, followed by Tunisia, then Egypt and finally Morocco with the slowest pace of industrialization; while in terms of export diversification, both Egypt and Turkey performed better than the other two countries.

The study underlines that governments in these four countries realize that this transformation is far from satisfactory, this is why we observe that their industrial policies are moving away from sectoral targeting towards regional incentives and in particular to include more ''horizontal' mechanisms such as support to R&D, environmental protection and incentives to SMEs. The study suggests that the focus of these industrial policies should be on the promotion of the high quality activities (increasing returns), which are characterized by steep learning curves and dynamic imperfect competition, technological change, synergy and cluster effects. These policies should also help create new comparative advantages so as not to rely on the low-value existing ones. This should be coupled with investment incentives towards innovative products .

The study concludes that industrial policy is not pre-ordained to succeed or fail but the important issue lies on the way they are designed and implemented.

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