Income Inequality and Poverty
after Trade Liberalization in MENA Countries

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FEMISE project

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1. Introduction

The Middle East and North Africa (MENA) region track record of growth achievements has remained bleak for years. As a striking feature of the region's economy for the last three decades has been little or no integration with the rest of the world. Whereas trade has been growing in volumes in the highly developed countries with greater increases in the east of Asia, former communist European countries and Latin America, up until the mid 90s in the MENA region such trade expansion would not occur due to barriers and protectionist tariffs with only the exception of oil exports. In order to whip up region's trade growth policy makers in the EU pushed economic reform programmes, aimed at fostering growth and poverty reduction through free trade. However, in terms of the World Bank's definition of absolute poverty in international purchasing power standards of $1.00 or $2.00 per person a day, compared to other regions MENA stands out as the developing region with the lowest incidence of extreme poverty in the 90s (Page et al, 2002).

This report aims at highlighting notable macro economic trends following this initiative as regards region's wealth, inequality and poverty. Chapter 2 provides a review of the literature on openness, growth and poverty. Chapters 3 and 4 take a macroeconomic perspective and investigate the relationship between openness, growth and poverty for the whole MENA. Chapter 3 examine the achievements of the concerned countries in terms of openness, growth and poverty while Chapter 4 conduct an econometric analysis assessing the MENA's specific relationship between openness and poverty reduction. It founds that openness has a positive indirect impact (through its positive on growth which is found to benefit the poor) on poverty reduction but a negative direct impact. Chapter 5 and 6 look at the issue from the perspective of two country studies: Israel and Morocco. The country study pertaining to Israel details the latest development in the labour market following extensive trade liberilzation The investigation assesses the impact that foreign trade has made on the country's growth, employment, and foreign direct investment. One of the important findings suggests that on the one hand, trade liberlization contributed positively to economic indicators, on the other, Israel

has turned to be more vulnerable to dramatic changes in global trade and capital flows. The Morocco country study addresses a crucial question for the country: the role of training offered by the firm to workers in improving productivity. The reasoning is that if training improves productivity, if will help firms being more competitive on the international markets; which is necessary condition for growth and employment. The analysis shows that training has, indeed, a significant and positive impact on firms' productivity. The implication is that investing in human capital (through workers training) is potentially an important tool for firms to meet the challenge of globalization.

2. Literature review

The relation between openness, inequality and poverty has been in the spotlight of academic and political debate in the last decades which has been growing in volume and importance keeping in pace with the expansion of globalization. The precise theoretical ties linking between openness, inequality and poverty remain obscure regardless of academic effort to achieve definitive results.

2.1. The definition of poverty

There are several approaches in defining poverty, for example, at the UN's World Summit on Social Development UN uses the following *social definition* which according to the 'Copenhagen Declaration' described poverty as "…a condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information." In measuring poverty the World Bank considers a person to be poor if his or her consumption (or income) is below certain threshold or "poverty line" ($1 or $2 a day). We refer to this kind of poverty as *absolute poverty*. This definition is largely applicable to the developing or third world countries, whereas in the EU and OECD countries poverty is measured in relative terms, so that a person is poor if his or her income is below the median income (60% in the EU). For comparison, in the UK the "poverty line" for 2006-7 (latest available data) constitutes £16 per day for a single person with no dependencies. Thus, this measure of *relative poverty* or *inequality* reflects the gap between the richest quintile and the poorest.

The issues of relative poverty are important not only in terms of socio-political stability, as growing inequality can aggravate social tensions and impede reforms, but also in terms of GDP growth, as an increase in wage inequality and poverty has strong dampening effect on growth (e.g., Aghion, Caroli and Penalosa, 1999, Azaridis and Stachursky, 2005, Perry, Lopez, Maloney, Arias and Serven, 2005). Contrary to that belief, Forbes (2000) cross-country analysis suggests that poor countries may face a trade off between enhancing growth and reducing inequality,

since the researcher finds that incorporated country effects into a pooled model, the relationship between inequality and growth becomes positive and significant, namely, growth enhances relative poverty. The possible explanation is through bias of omitted variable, which may include: higher levels of corruption (which tend to be positively correlated with inequality and negatively correlated with growth); a higher share of government spending on basic health care or primary education; or better-quality public education (which all tend to be negatively correlated with inequality and positively correlated with growth).

So far the consensus among the economists has been that in the long run openness, characterized usually by the ease with which goods and services and factors of production (e.g. capital, labour and skills) move across countries as transaction costs fall contribute to the reduction of absolute poverty. On the other hand, in the medium and short run trade liberalisation, considered as one of the features of openness, may harm the least protected layers of population, since various case studies decomposing the sources of the evolution of relative poverty, within countries reveal different patterns across countries. Still the available evidence remains inconclusive, as the use of even slightly different methodologies elicit conflicting results. Most cross-country studies fail to account for the origin of the data on inequality. If trade liberalisation and poverty were both easily measured, and if trade liberalisation could be easily isolated from other economic shocks, it might be possible to establish simple empirical relation among the economic variables.

2.2. Theoretical ground

The often cited effect of openness is a widening wage gap between skilled and unskilled workers (Wood, 1999). Yet when moving to the aggregate measure of inequality – Gini index, for example, the evidence is mixed: some suggest increasing inequality, while others report no significant relation. The lack of robustness towards expectations from the standard **Heckscher-Ohlin** (HO) (1930) trade model remains unexplained.

The HO framework states in its main theorem that every country involved in the international trade will exercise its relative advantage: a capital-abundant country will export the capital

intensive good and a labour-abundant country will export the labour intensive good. The important assumptions are that all countries have the same production function, while initial factor endowments differ and there is no friction in moving factors of production from one sector to another. As an extension to the original model, Paul **Samuelson** and Wolfgang **Stolper** (1941) described a relationship between the relative prices of output goods and relative factor rewards, specifically, real wages and real returns to capital. Their main statement, based on the assumptions of constant returns to scale and perfect competition, concludes that *a rise in the relative price of a good will lead to a rise in the return to that factor which is used most intensively in the production of the good, and conversely, to a fall in the return to the other factor*. The third theorem in the framework claims that trade leads to equalisation of returns to factors across countries, meaning that with trade, wages should become equal across countries and returns to capital as well. The complementary fourth statement is **Rybczynski Theorem** (1955), which describes how an increase in the endowment of one factor (such as skilled labour) without increasing other factors leads to a more than proportionate increase in the output of the sector that uses it intensively and reduces the output of the other sector. Thus, in a country well endowed with skilled workers a 5% increase in manpower would result in more than 5% increase in production of sophisticated equipment followed by a fall of more than 5% in the production of agricultural products in a country endowed with low-skill labour.

It has been suggested that lack of support of the HO international trade model could be explained by examining alternative channels effecting overall inequality and poverty. In particular, increased openness may reduce absolute poverty via expanding economic growth, when welfare gains reach the lower strata of society. It is worth noting, that there is a considerable difference between types of poverty and inequality, as trade liberalisation may induce higher rates of relative poverty while at the same time create economic opportunities, consequently reducing absolute poverty. After all, HO theory should only be expected to inform us about the relation between *endowments* and *factor rewards* in response to a reform-induced change in relative factor demands rather than between *endowments* and *overall income inequality* which is determined by many other factors.

2.3. The interaction between trade openness and growth

An exhaustive review of the recent evidence on trade liberalisation and absolute poverty examines the impact of **openness** on poverty through **growth**. Notwithstanding the problems of measuring openness abound, as criticised in numerous other studies (Rodriguez and Rodrik, 2001), openness remains an important element in growth performance.

The original statement that inequality should rise with growth dates back to the 1950s when Simon Kuznets (1955, 1963) formulated his hypothesis, describing the inequality curve: initially inequality shoots up and then gradually scales back. Kuznets relied on the data available for US, the UK and Germany. Because of incomplete data, the hypothesis has only been recently thoroughly empirically researched. However, Barro (2000) confirms Kuznets' curve as an empirical regularity using panel regressions (estimation by seemingly unrelated (SUR) technique) of roughly 100 countries between the 1960s to the 1990s. According to his conclusions, growth tends to fall with greater inequality when per capita GDP is below around $2000 (1985 U.S.dollars) and to rise with inequality when per capita GDP is above $2000. Bruno et al. (1998) used time-series data to investigate the Kuznets hypotheses and found no instances where the prediction is confirmed.

In fact, over the last two decades in the twentieth century, overall inequality remained stable, as very few countries experienced a significant trend increase or decrease in relative poverty (Bruno, Ravallion and Squire, 1998). Acutally, it is reported in several studies, that aggregate within-country inequality (defined as the contribution of within-country inequality to total inequality) has started to rise (Milanovic, 2002, 2005) between 1988 and 1993 but in the consecutive period between 1993 and 1998 this global inequality appears to have fallen. Extended by a couple of years similar findings were confirmed by World Bank (2005).

Using the Luxemburg Income Study (LIS) indicators we calculated the rate growth in relative poverty within the 30 industrial states that participate in the project. In 60% of the states there was a rise in the relative poverty (which is defined in the project as 50% of the median income)

since the 1980's and until 2005 (the last year we had information about), and in 64% of the states the Gini coefficient had also risen in that same period.

The pattern of convergence emerges from the latest empirical evidence in studies of inequality across countries (Ravallion, 2000). Thus, in countries with high inequality, like Brazil the process of becoming more equal is underway, while low-inequality countries like India the process is reverse. However, these results do not imply that globalization is the cause of convergence. Follow-up research by Ravallion (2003) indicate that convergence is still present in a better constructed data set using an econometric method better suited to deal with measurement errors.

Economic theory suggests several important reasons why trade should induce economic growth: in the medium term, trade generates benefits through rising efficiency; in the long term, technology spillovers, access to credit, and welfare gains for consumers by the expense of growing competitiveness. Economic growth is sustained due to increases in productivity, and most of the evidence suggests that trade liberalization operates through this route. However, if in the short run productivity increases faster than output, dwindling profit margins will result in wage reduction.

Several notable papers (Dollar, 1992; Sachs and Warner, 1995; Edwards, 1992), supporting this view, have found that trade openness is associated with more rapid growth. Recently, the study by Dollar and Kraay (2005) using the GMM estimation of roughly 100 countries in the 1980s and 1990s confirmed these findings, concluding that a 100% increase in trade volumes resulted in a 25% cumulative rise in incomes during over a decade.

2.4. Trade-driven growth and poverty

The second issue in the link between openness and inequality which remains to be settled theoretically and empirically is the contribution of economic growth to the poor.

A recent study by Gallup, Radelet and Warner (1998) concludes from a cross-country regression that, on average, the incomes of the poor (the lowest 20% of the income distribution) increase proportionately with overall average incomes. It should be noted, that the researchers recognise that in some countries the poor see less than proportionate growth (the so-called

'anti-poor' growth), but argue that there are as many converse cases in which the poor have done better than average. These results are achieved with the Sachs-Warner (1995) specification of the openness as a dummy variable, which appears to have roughly the same positive effect on the growth of the incomes of the poor as on average incomes. The specification includes additional independent factors stimulating the growth of the poor's incomes: lower initial income; better health; temperate location; government savings (held to be a proxy for a sound macro stance) and political stability over the sample of 60 countries, including several developed countries of varying periods since the mid-60s, and use GDP per head as the proxy for mean incomes.

According to the recent survey Bannister and Thugge (2001) there seems to be no strong systematic relationship between openness and the income of the poorest. Furthermore, in Dollar and Kraay (2001) a panel based on 137 countries estimation shows that openness has a tiny and statistically insignificant effect on the lowest quintile (bottom 20%) on mean per capita income. Thus, while inflation appears to have an adverse effect on the poor in addition to its growth-reducing effects, countries' income distributions are not significantly affected by other variables, like government consumption, the rule of law, democracy, social expenditure, primary school enrolment and two measures of openness. The residual errors of Dollar and Kraay's equations are large being consistent with the existence of cases when growth hurts the poor. But, as with Gallup et al, such cases are, on average, offset by those in which they benefit the poor.

Other studies based on panel and cross section data, reported in Kruger et al (2003), show similar findings: no significant correlation between openness and changes in the relative well-being of the poor. Cashin et al (2001) estimate the relationship between economic policies and improvements in a HDI (human development index). HDI is highly correlated with absolute poverty. However, the study does not report any significant evidence that an openness variable (the ratio of trade to GDP for example) is associated the pro-poor or anti-poor growth.

Rather than replicating the results of previous studies, Rama (2001) expands existing structural models and estimates them with a more reliable data set on inequality and other explanatory variables. This data set is an updated version of Deininger and Squire (1996) with six inequality

indicators: five of them use the share of each of the population quintiles in total consumption (earnings), measured in logs and the sixth is the Gini index in logs. Estimating the specification, similar to Dollar and Kraay (2001), yields the expected result: the share of trade to GDP, as the openness indicator, is irrelevant. However, when the estimated equations include interaction variables, namely, openness with government expenditure and the mean years of schooling, openness appears to have a statistically significant impact on inequality. It has been argued that more open economies have larger governments, associated with distribution payments, as a way to mitigate their higher exposure to external shocks (Rodrik, 1997). The interaction term of openness and schooling is aimed at testing the hypothesis that skilled workers are more likely to adjust to new technologies and organizational structures and thus benefit more from globalization. Rama's (2001) findings suggest that globalization benefits the rich more than it benefits the poor. However, one cannot conclude that the poor are worse off, as the decline in their earnings could be offset by an increase in overall income.

2.5. The criticism

However, these papers have drawn strong criticism pointing to flaws in methodology and data. Rodriguez and Rodrik (2001) observe that the usual practice of measuring trade openness by imports plus exports relative to GDP is likely to be problematic, since the variable is endogenous. Furthermore, statistics analysis confirms the common wisdom that the policies correlated with growth (trade openness, macro stability, small government consumption, rule of law) are all highly correlated among themselves. Econometric issues of endogeneity arise when all of these policies are included in regression analyses. When correlation among the variables is high it is possible to misattribute the effects of omitted policy and institutional variables to trade.

Another difficulty is the measurement of trade barriers and tariffs. Even if there is a way to aggregate trade openness, incorporating quantitative and nontariff restrictions, it is not clear how to arrive at a meaningful overall measure, when credibility and enforcement are

considered. In developing countries the relationship between official and collected tariff rates does not necessarily exist. Moreover, additional complication arises when the country is not wholehearted about its trade policy. Overall reduction in tariff rates on paper will not be enforced by customs officers who would reassign low-tariff goods to a high-tariff category (Kruger et al, 2003).

The third important difficulty lies in the inability to discern openness from other policies, since it comes as a part in a package of reforms which stimulate foreign direct investment, human capital accumulation and conflict resolution. Importantly, the liberal trade will be conducive to growth, because of larger economic opportunities to agents. Openness originates in countries in an economically favourable environment, as open economies also tend to be risk-averse in their monetary policy, keeping inflation at bay, as reported by Romer (1993).

As an alternative solution, suggested by Rodriguez and Rodrik (2001), more conclusive evidence may be gleaned from micro-econometric analysis of plant level data sets. These data sets constitute a rich source for uncovering the ways in which trade policy influences production, employment and technological performance of firms. It is been that there at least some evidence pointing to reverse causality, when efficient producers tend to self-select into export markets. The fledgling literature (based on the experiences of countries as diverse as the United States, Taiwan, and Mexico) finds little evidence that firms derive technological or other benefits from exporting per se.

The drawback of cross-country research is that the analyses are based on a large number of countries. Macro analyses of different countries may fail to fit into a single framework. Thus, it is advisable to consider countries similar in economic and social structure. Moreover, specific country case studies allow tracking the transmission mechanisms of trade liberalization benefits to the poor.

Still each country is different and the processes it undergoes during liberalization are different. However, one generalization can be extracted from the studies. Poor consumers tend to benefit in many ways similar to the average consumer. In developing countries the effect is stronger for the poor, who are employed in the agricultural sector.

Following an exhaustive review of the evidence on trade liberalization and poverty, Ferrera et al. (2008) conclude that trade liberalization might be the easiest absolute poverty-alleviating reform to accomplish, and the most powerful direct mechanism to alleviate absolute poverty in a country. Actually, the labour-intensive growth associated with greater openness and deregulation is often cited as one of the main avenues towards inequality reduction (World Bank, 1990).

2.6. Labour market as an alternative transmission mechanism

An alternative transmission mechanism describing the link between openness and poverty is through factor markets, since globalization affects factor prices in general, wages in particular. Recalling the international trade theoretical framework, the Stolper-Samuelson theorem predicts that an increase in the price of the good in a labour-intensive industry will increase its production and finally increase the real wage. However, in real life circumstances the theorem has little explanatory power and fails to answer questions in multi-commodity, multi-factor models (Lloyd, 2000). Lloyd theoretically shows, that following a trade shock, a representative household gains from at least one price increase and loses from at least from one other. In the model with differentiated households, a change in the price of a produced good will benefit at least one household and hurt at least one other. Another point in the discussion is the validity of the theoretical assumption, that the supply of labour is inelastic and the wage is flexible. When this assumption may be somewhat justified in the developed world, the rampant unemployment makes it irrelevant in the developing countries. The wage then may be fixed exogenously by the wage in the lowest-wage sector (possibly agriculture). Then an increase in wages occurs provided moving workers from agriculture into formal sector are so large in numbers, that the remaining agricultural labour force increases its wage.

Empirical evaluations of the labour transmission mechanism surveyed in Winters et al (2002) presume segmented markets and deal predominantly with the manufacturing sector, omitting others, consequently, making it difficult to formulate statements on the overall effect on employment, wage and inequality in equilibrium.

Currie and Harrison (1997) find that in Morocco employment depended on firm characteristics, such as private versus public ownership. Firms with low profit margins, openness of manufacturing led to layoffs, whilst in most firms the profit margins dwindled with almost no change in output or employment. Revenga (1997) attributed the low employment effects in Mexico to factor-market imperfections. As such, trade liberalization may have led to total poverty alleviation, as the few laid-off workers and comparatively small wage cuts would not measure up to the overall benefits to consumers.

The already mentioned study by Rama (2001) continues where the previous research has left with a new labour database compiled with the addition of wages (Freeman, Oostendorp and Rama, 2001), labour costs (Rama and Artecona, 2000) and returns-to-education statistics. In order to assess the importance of the labour market as a transmission mechanism, Rama conducts regression analyses involving the openness measures, defined above and the labour statistics. The regression significantly proves that on the one hand, openness is associated with lower wages and lower labour costs in manufacturing. But, on the other hand, foreign direct investment (FDI) raises wages.

Wage inequality – the gap between the skilled and the unskilled labour - cannot fully qualify as a measure for income inequality, but it is greatly correlated with it, at least in the developing countries, where wage labour remains the sole origin of income. Thus, widening wage gap is attributed to falling unskilled wages and aggravation in incomes of the poor.

Latest studies in Latin America show increasing wage gap contrasted with the earlier experience in East Asia[1] (Lopez et al, 2008). Historically, the East Asian trade liberalization required low-skilled workers in labour-intensive industries, while later Latin American openness coincided

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[1] Evidence of a rising skills gap has been comprehensively established for Mexico, by Feenstra and Hanson (1996), Cragg and Epelbaum (1996), Feliciano (2001), and Hanson and Harrison (1999), among others. It has also been documented for Chile by Beyer, Rojas and Vergara (1999); for Colombia by Attanasio, Goldberg and Pavcnik (2004); and for Costa Rica by Robbins and Grindling (1999).

with the demand for highly skilled workers following technological progress in the 80s and 90s (Wood, 1997). Other explanations refer to the use of skilled workers relative to the rest workers in the host developing country, which may be seen as low-skilled workers by Western world countries. Others argue that greater openness has spurred a process of technological change that is skill-biased. Attanasio, Goldberg and Pavcnik (2004) interpret their findings that increases in demand for skilled workers were largest for sectors with the largest tariff cuts as supporting the thesis of an endogenous skill-biased change in technology that occurs in response to competitive pressures and to the availability of inputs brought about by greater openness. These conclusions put greater emphasis on wider educational access which may benefit the poor to exploit the opportunities of technological progress.

These findings should warn the policy makers that, within developing countries, it is not guaranteed that the least-skilled workers, who are the most likely poor, will be used as a factor in the production of exportable goods. For instance, illiterate workers may not benefit from openness if workers with completed primary education are preferred over illiterate. One of the reasons that agricultural liberalization figures prominently in overall liberalization policies since it is so important for poverty alleviation. Policy makers can be reasonably confident that low-skilled workers in rural areas will benefit through the production responses agricultural sector.

Rama's (2001) labour regressions confirm these findings that returns to education seem to increase with greater openness and greatly increase with FDI. In the long run, globalization will increase overall wages, but in the meantime, unskilled workers are likely to suffer wage cuts. This effect on the unskilled workers may be further exacerbated by growing unemployment.

In the presence of well functioning distributive policies (taxes, subsidies and transfers), it is easier to explain how the actual overall welfare gains are redistributed. Rama confirms that sound "social protection" policies, like minimum wages are associated with higher growth rates in the short run. In the long run, market interventions seem to peter out. However, the effectiveness of such measure is dependent on labour union membership. High bargaining power of labour unions raises labour costs and reduces benefits arising from manufacturing efficiency. Large public sector employment is also detrimental to the adoption of economic

reforms. When such social mechanisms are underdeveloped or absent, it is challenging to assess how trade liberalization's gains will affect poor households in the countries under consideration.

3. MENA region descriptive analysis

3.1. Economic Growth and important economic indicators

Since the mid-80 the region's leaders attempted to implement some macroeconomic reforms in the field of monetary stabilization, trade liberalization, reduction of public deficit and privatisation of selected state-owned enterprises. As the commitment for the reforms remained low only over the last decade the region has seen relatively higher levels of real GDP growth – from 3.5% up to 5.6%, according to the World Bank calculations, compared to previous decades. However, these figures become bleak if we consider other emerging and developing countries, notably in Latin America and East Asia. The following figure 1 suggests that the gap between the developing countries and MENA region is widening: over the last decade East Asia and Europe and Central Asia economies constantly over-performed the growth of MENA. The path of GDP growth remains similar to that of Latin American Countries since the early 2000s.

Figure 1. Annual GDP growth across regions (%).
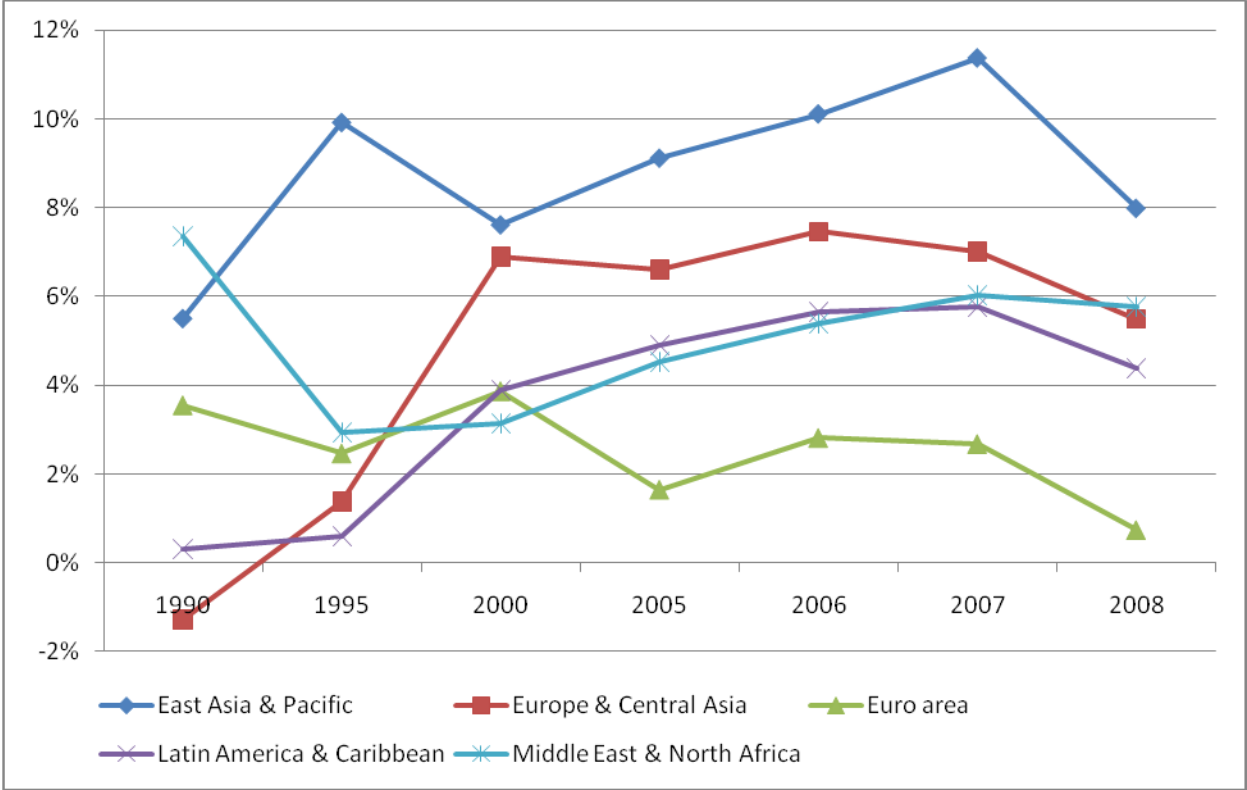
Source: WORLD BANK: WDI database

As for growth in the selected countries we refer to the data of the World Bank (see figure 2). Judging from the profile of growth, most countries (esp. Morocco and Tunisia) experienced quite unstable growth path in the 90s, while stability returned in the mid-2000s. Average growth has remained since the 90s up to the latest data available only 5%, which suggests that the developing countries' potential has not been exploited to the maximum degree.

Figure 2. Annual GDP growth the selected MENA countries (%).
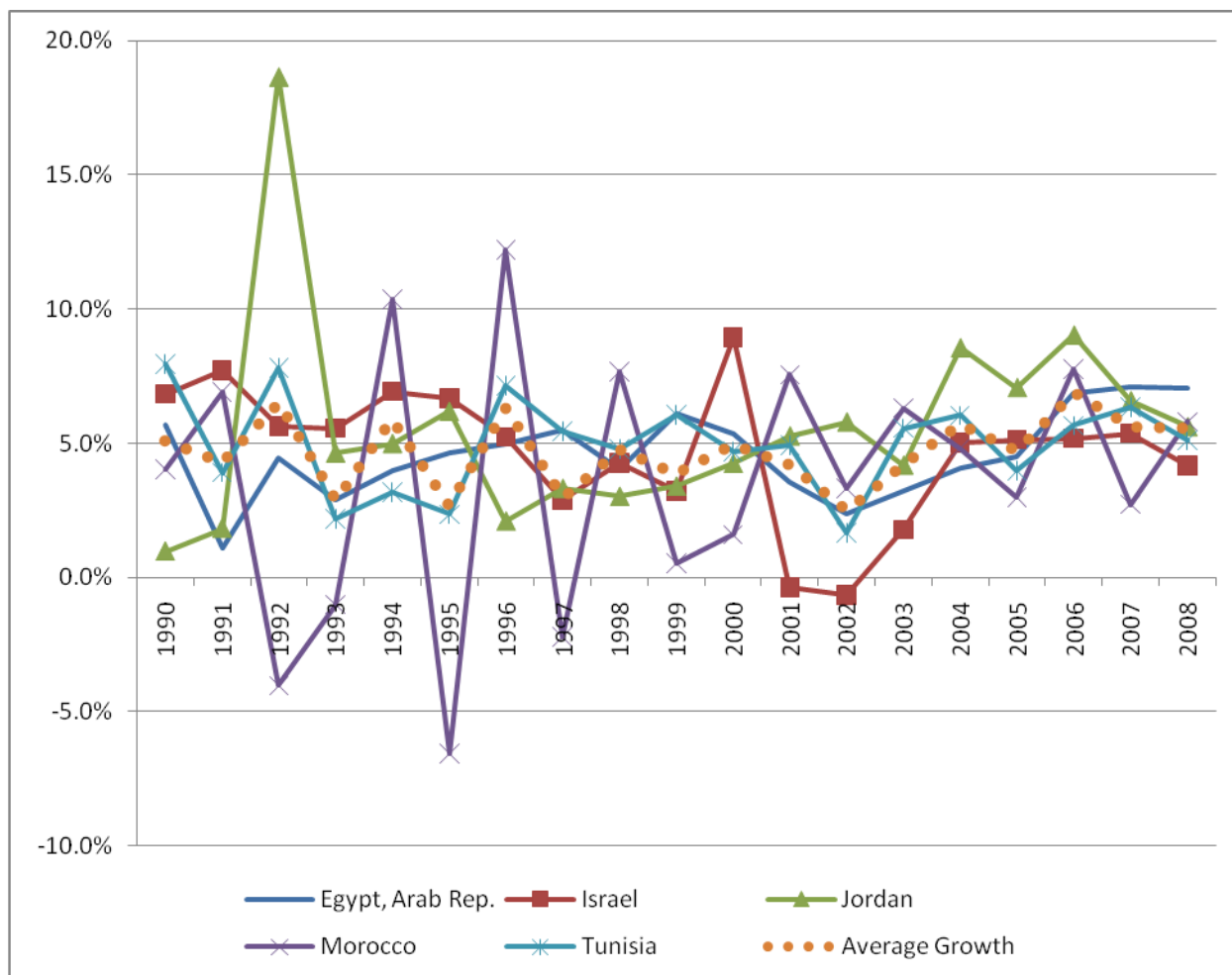
Source: WORLD BANK: WDI database

In terms of GDP per capita, the trends appear similar: the countries in the region remain on average above the poor economies of Sub-Saharan Africa, but still they are lower compared to other developing countries. Specifically, Tunisia has almost doubled its GDP per capita during the last decade, while Morocco and Egypt have only managed to maintain roughly the same level. However, growth of GDP per capita in MENA has risen from 1.5% to 4.1% in 2008. This level is higher than that of the emerging countries in Latin America; yet East Asian countries have the greatest pace of up to 9%.

1. **Table. GDP per capita, PPP (constant 2000 international $)**

Country/Region	1990	1995	2000	2005
Egypt	2,799	3,003	3,526	3,858
Morocco	3,338	3,180	3,578	4,052
Tunisia	4,633	5,098	6,276	7,447
Latin America & Caribbean	6,035	6,591	7,102	7,482
Sub-Saharan Africa	1,678	1,551	1,611	1,774
East Asia & Pacific	1,857	2,854	3,747	5,384

Source: World Development Indicators (WDI)

2. **Table. Average growth of GDP per capita, PPP (constant 2000 international $)**

Country/Region	1985-2005	1985-90	1990-95	1995-00	2000-05
Egypt	2.08%	1.84%	1.42%	3.26%	1.82%
Morocco	1.54%	2.27%	-0.97%	2.39%	2.52%
Tunisia	2.55%	0.58%	1.93%	4.25%	3.48%
Latin America & Caribbean	1.06%	-0.06%	1.78%	1.50%	1.05%
Sub-Saharan Africa	0.21%	-0.28%	-1.56%	0.76%	1.94%
East Asia & Pacific	6.95%	5.76%	8.97%	5.59%	7.52%

Source: World Development Indicators (WDI)

The encouraging economic indicator is the Industrial production average, which has changed dramatically since the late 90s: it has increased since the 1996 up to the estimated 36.3%!
One of the weakest indicators for the region is the share of foreign investment in GDP hovering around annual 1.4% in the 2000-05 (See section 3.6).

3. Table. Main economic indicators in MENA region (excluding Iraq and Israel)

Economic indicators	1996-99 (average)	2000-05 (average)	2006	2007	2008E
real GDP growth	3.5%	5.0%	4.7%	5.6%	6.1%
population	2.0%	1.9%	2.0%	1.9%	1.9%
GDP per capita	1.5%	3.0%	2.7%	3.6%	4.1%
CPI inflation	5.1%	3.7%	6.2%	7.2%	10.6%
industrial production	-0.4%	17.6%	20.5%	6.7%	36.3%
fiscal balance (% GDP)	-2.3%	3.8%	12.2%	10.8%	14.9%
current account balance (% GDP)	0.8%	8.5%	21.3%	17.6%	22.6%
FDI (% GDP)	0.7%	1.4%	2.9%	1.8%	1.4%

Source: World Bank

Figure 3. Selected countries GNI, PPP (current international $)²
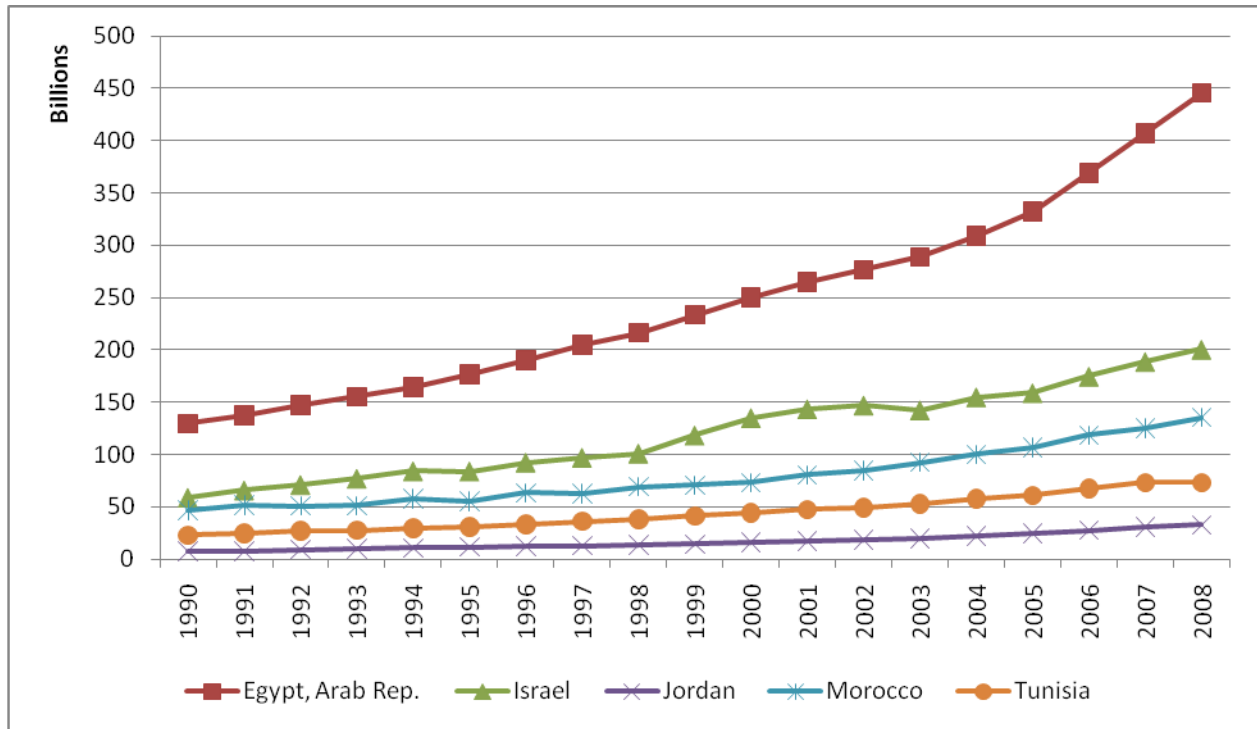
Source: World Bank, International Comparison Program database.

3.2. Overall Business Climate

As a continuation of economic reforms initiated back in the 80s, the Middle East and North Africa continues to ease the regulatory burden of doing business, according to *Doing Business 2009*[3]—the sixth in an annual series of reports published by IFC and the World Bank.

The report states, that Egypt is one of the top 10 economies that reformed their business regulations, while both Saudi Arabia and Bahrain rank among the top 25 worldwide on the ease

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[2] PPP GNI is gross national income converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GNI as a U.S. dollar has in the United States. Gross national income (GNI) is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad.

[3] *Doing Business* ranks economies based on 10 indicators of business regulation that record the time and cost to meet government requirements in starting and operating a business, trading across borders, paying taxes, and closing a business. The rankings do not reflect such areas as macroeconomic policy, quality of infrastructure, currency volatility, investor perceptions, or crime rates.

of doing business. In two-thirds of the region's economies, the report records 27 reforms between June 2007 and June 2008 that make it easier to do business.

Overall, the countries continue to implement business-friendly reforms. One of the important indicators for improving business climate is the average number of days needed to open a business, which reflects the time invested by an entrepreneur from initiation of the procedure to completion (obtaining a certificate or tax number). Out of the selected MENA countries almost all have stepped up the pace during the last five years, Jordan being one of the fastest reformers, according to this indicator (as reported in figure 4).

Figure 4. Days required to open a business in the MENA selected countries
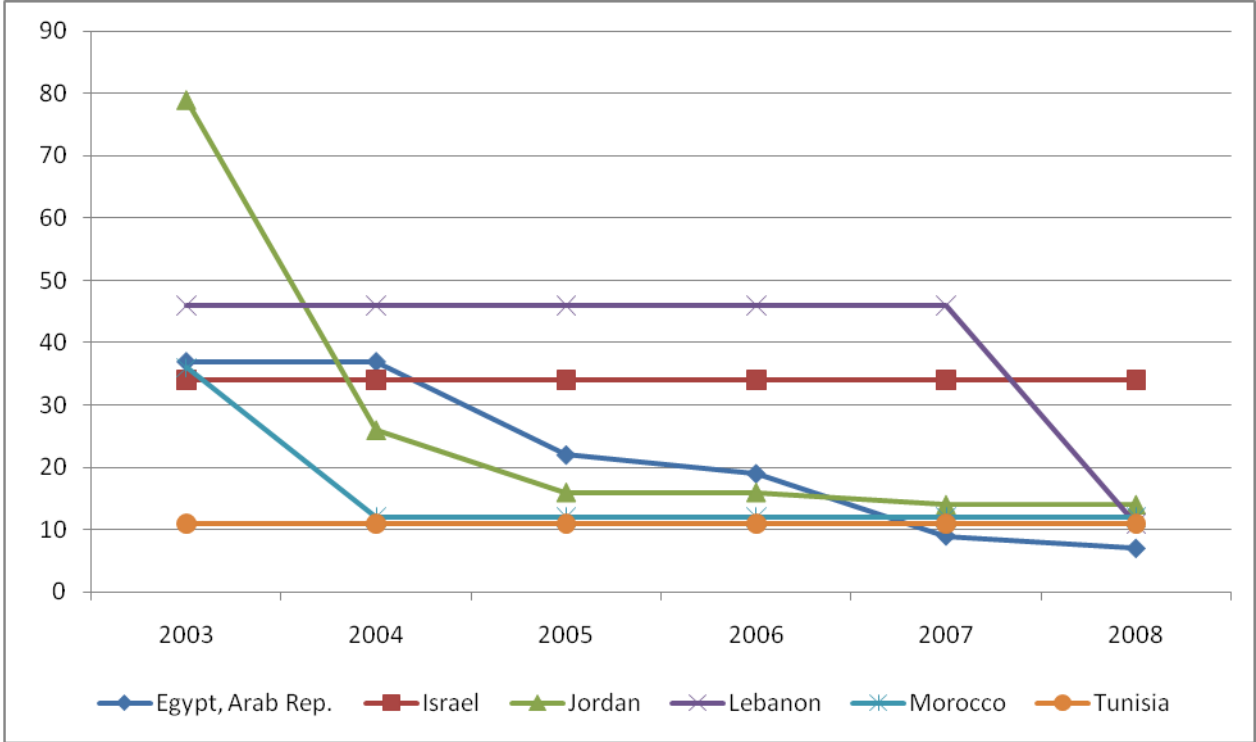
Source: WDI database

The latest report claims that Egypt advanced 11 places in the global rankings on the ease of doing business, reforming six out of 10 areas of business-related activities. For a fifth year, the region's most popular area for reform is business start-up, with nine economies making improvements. The next most popular area for reform, credit bureau enhancements that

improve access to credit, saw activity in Egypt, Morocco, Tunisia, the United Arab Emirates, and the West Bank and Gaza.

3.3. Trade related reforms

Since the mid-1990s, region's leaders began to take steps to reform the multilateral trade; however the process of liberalization and reduction of trade barriers due to high protectionist policies or rampant bureaucracy was much slower than that of East Asia, Latin America and other countries. The main obstacle proved to be the elimination of quantitative restrictions on trade: some countries (Algeria, Morocco, Tunisia, Egypt and Jordan) have reduced them significantly, but not fully (World Bank, 1997), while at the same time reverted to tariff-based protection; others still stick to non-tariff barriers as in Syria. In order to gauge the latest scale of trade barriers we use the rankings of the business sector representatives from the World Economic Forum since hard data are hardly available (see table 4: the scores contain rankings of other countries for comparison).

4. Table. Prevalence of Trade Barriers[4]

Scores are based on answers to question: "In your country, tariff and nontariff barriers significantly reduce the ability of imported goods to compete in the domestic market (1 = strongly agree, 7 = strongly disagree)"

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[4] Data yielded from the World Economic Forum's Executive Opinion Survey are presented in blue-colored bar graphs. The average score for each country—that is, the arithmetic mean of responses from each country—is reported with a precision of one decimal point, although exact figures are used to determine rankings. Standard deviations are shown next to the bars representing each country's mean score. The standard deviation indicates how closely or widely the individual responses are spread around the mean country score. In other words, it provides information on the extent of agreement on the question within the given country. The smaller the standard deviation, the greater the consensus among respondents.

Rank	Country	Score	Standard Dev
3	Singapore	6.2	1.1
9	Qatar	5.7	1.3
12	Oman	5.6	1.2
15	UAE	5.6	1.6
16	Bahrain	5.6	1.5
25	Kuwait	5.4	1.6
35	India	5.1	1.5
37	United States	5.0	1.4
44	Tunisia	4.8	1.3
45	Turkey	4.8	1.7
47	Jordan	4.8	1.6
54	Japan	4.6	1.5
75	Libya	4.2	2.3
83	Algeria	4.1	2.0
85	China	4.1	1.6
86	Brazil	4.1	1.6
93	Morocco	4.0	1.8
96	Norway	3.9	1.7
101	Russian Federation	3.9	1.7
107	Egypt	3.7	2.1
115	Syria	3.6	1.9
	Mean of 128 countries	4.5	

Source: World Economic Forum, Executive Opinion Survey 2006.

Government role in the MENA region remains large with repercussions in the trade sector as government procurement of goods and services dampens foreign competition. Strict regulation require all government purchases to be secured by bonds or bank guarantees with restrictions on the type of collateral (contracts, receivables, inventory, software and intellectual property is not allowed to use) (Page, 2003).

3.4. Trade policy reforms in Egypt, Jordan, Morocco and Tunisia

Poor export growth in Egypt is the result of half-hearted policies to eliminate anti-export bias in the incentive structure. At the end of 1999 average tariffs were 28% or 31% with additional taxes and charges (Page, 2003). Moreover, the tariff structure discriminates fully processed products with higher charges as compared to semi or unprocessed products.

Jordan's economy has clearly enjoyed from the peace process between Israel and the Palestinian territories: it has paved way to a much better investment and trade climate with several important agreements. This progress has led to a reduction of tariffs and gradual improvement in legal and institutional framework. However, this country's exports are still dominated by raw materials, like potash, phosphates and fertilizers.

Morocco's overall trade protection remains high, which significantly hurts its ability to compete on international level. High tariffs policy has led to expanding production in agriculture, which is still largely an underdeveloped sector.

Tunisia has managed to set and maintain dynamic free trade zones which export mass manufactured goods to the EU. However, trade tariff reductions over the 1990s have not reached the levels of the rest of the developing countries.

3.4.1. Trade Agreements

Starting with Tunisia in 1995, the European Union signed a partnership agreement with up to 10 MENA countries (see Table 5 for full details). These EuroMed framework represent further shift toward progressive policy reform which requires the EU to provide duty-free access to manufactured products and MENA partners to eliminate non-tariff (outright) and tariff (within 12 years) barriers. This policy initiative, as stated in the Barcelona Declaration (Nov. 1995), has the objective of "turning the Mediterranean Basin into an area of dialogue, exchange and cooperation, guaranteeing peace, stability and prosperity". Along with the gradual abolition of trade barrier the agreements were aimed at fostering better investment climate in order to attract capital.

The Arab Free Trade Area was established by the Arab League member states in the 1998. The agreement requires the participants to lower and eliminate all trade tariffs up to 2008 for all products of Arab origin among the members. Successful implementation of these policies would have resulted in benefits for increased industrial production sharing and intra-industry trade (Devlin and Page, 2001), but the lack of cooperation so far may delay the implementation.

5. Table. Existing trade agreements in the MENA region

Country	EuroMed Agreement	Arab Free Trade Agreement	US Free Trade Agreement (FTA)	US Trade and investment framework agreement	US Bilateral investment treaty	World Trade Organization	US Generalized system of preferences
Algeria	v	v		v		Negotiating acession	v
Bahrain	v	v	ratified	v	v	v	Not eligible
Egypt	v	v		v	v	v	v
Israel	v		v	v		v	Not eligible
Jordan	v	v	v	v	v	v	v
Kuwait		v		v		v	Not eligible
Lebanon	v	v				Negotiating acession	v
Libya	v	v				Negotiating acession	Not eligible
Morocco	v	v	v	v	v	v	v
Oman		v	v	v		v	v
Qatar		v		v		v	Not eligible
Saudi Arabia		v		v		v	Not eligible
Syria	v	v					Not eligible
Tunisia	v	v		v	v	v	v
UAE		v	negotiating	v		v	Not eligible
Yemen		v		v		Negotiating acession	v

Sources: Office of the US Trade Representative, European Commission: External Relations, Wikipedia.org

Most of the countries have pursued the path of joining the WTO. Jordan has not completed the negotiations, but Egypt, Israel, Morocco and Tunisia have joined the organization. Understandably, the United States sees the region as strategic for its foreign policy. The region is crucial for the supply of oil and other raw materials. Multiple bilateral trade agreements were signed by the US with countries in the MENA.

3.5. Welfare gains from trade in the MENA area

Several studies confirm the expected welfare gains from such initiatives, without addressing the issue of income distribution. Rutherford, Rustrom and Tarr (2000) find that for Morocco significant welfare gains come only from the increased market access that stems harmonization and mutual recognition of standards, rather than from changes to traditional border measures. Brown, Deardorff and Stern (1997) run several scenarios with a CGE model and conclude that the static welfare benefits for Tunisia from the Euromed agreement will be small, although they

postulate that over time, with capital mobility, the welfare gain would grow. Hoekman and Konan (2000) confirm these findings for Egypt. In their work, they find that the loss of tariff revenues will be about equal to efficiency gains. As summarized by Page and Underwood (1997), based on results from CGE modelling exercises for Tunisia and Morocco - showing a 1.5 percent of GDP welfare gain for Morocco and 1.7 percent in Tunisia - the cumulative effect over a ten year period would be to increase per capita income by about $25 per person in Morocco and $40 per person in Tunisia.

3.6. MENA trade flows and FDI

To assess the success (or failure) of these agreements we have to analyse the effective trade flows and FDI in the region, which have followed the implementation of necessary reforms. Starting from the 90s to the late 2000s the region has gained little in terms of raising trade (see figure XX and the accompanying table 6).

6. Table. Exports and Imports of Goods and Services in the MENA (1990-2007)

	Country Name	1990	1995	2000	2005	2007
Exports	Egypt, Arab Rep.	20.0%	22.5%	16.2%	30.3%	30.3%
	Israel	34.7%	28.7%	37.4%	42.9%	43.2%
	Jordan	61.9%	51.7%	41.8%	52.6%	55.4%
	Lebanon	18.0%	10.8%	13.8%	21.1%	24.9%
	Morocco	26.5%	27.4%	28.0%	32.3%	35.8%
	Tunisia	43.6%	44.9%	44.5%	49.7%	54.1%
Imports	Egypt, Arab Rep.	32.7%	27.7%	22.8%	32.6%	34.8%
	Israel	45.4%	36.8%	37.7%	43.2%	44.9%
	Jordan	92.7%	72.9%	68.5%	94.0%	95.1%
	Lebanon	99.9%	62.3%	36.8%	43.1%	49.1%
	Morocco	31.9%	34.0%	33.4%	37.9%	44.9%
	Tunisia	50.6%	48.8%	48.2%	50.1%	56.5%

Figure 5. Exports of Goods and Services in the MENA (1990-2007)
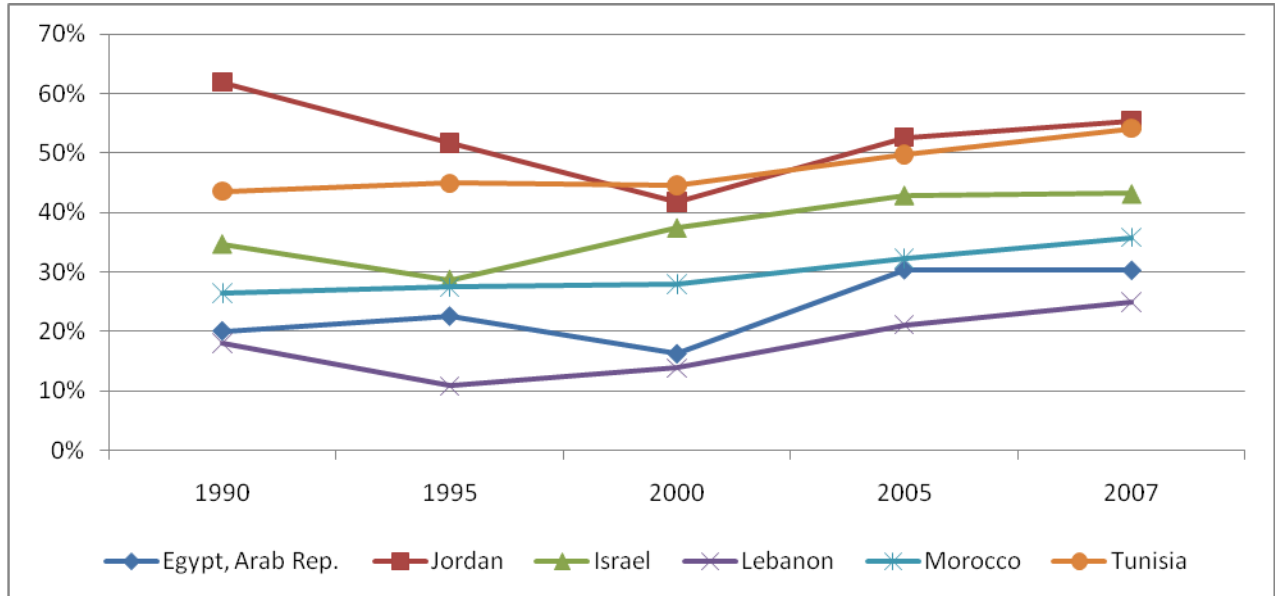
Figure 6. Imports of Goods and Services in the MENA (1990-2007)
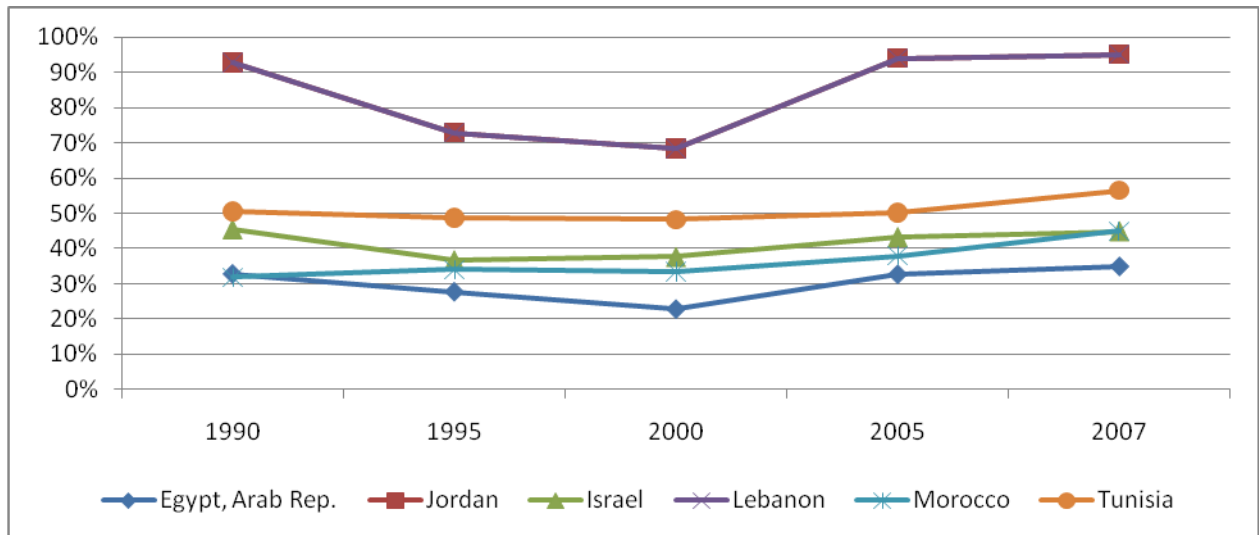
In fact, the figures suggest, that after trade liberalization the potential of growing exports and imports was not realized. It may be surprising, that Egypt and Lebanon started to export less

after 1995, but only during the last few years the trend has reversed with 30% of exports in Egypt.

Another evidence of little change of trade flows is the share of import and export destinations. The data from the IMF shows, on the one hand, that Euro area share of exports has remained virtually unchanged, rising only 7% compared to 1980 (Table 7). Imports, on the other hand, have shrunk from 55% (1980) to 50% (2003), which is negligible for the time span of two decades.

7. Table. Share of total world merchandise.

	Region	1980	1993	1996	2000	2003
Exports	Middle East & North Africa	7%	12%	10%	7%	9%
	Euro area (EU-15)	50%	59%	52%	60%	57%
	Rest of the World	43%	28%	38%	33%	33%
Imports	Middle East & North Africa	16%	7%	8%	8%	8%
	Euro area (EU-15)	55%	52%	51%	50%	50%
	Rest of the World	30%	41%	41%	43%	43%

Source: IMF, direction of trade

Notably, as for the US, good trade relations exist with United Arab Emirates, Saudi Arabia and Israel (table 8). Moreover, Israel, Egypt, Qatar, Saudi Arabia and United Arab Emirates are the major destination for US FDI capital in the region, while most Arab countries seem to be overlooked by American financiers.

8. Table. US trade in the MENA region

Country	Exports to US (US $ billion)	% change 2007	Imports from US (US $ billion)	% change 2007	US FDI 2007 (US $ billion)
Bahrain	0.539	-13.70%	0.83	40.30%	0.6
Egypt	2.4	-0.30%	6	12.80%	7.5
Israel	22.3	7.40%	14.5	11.30%	10.1
Jordan	1.1	-14.30%	0.94	9.90%	0.119
Kuwait	7.1	72.20%	2.7	9.50%	0.637
Morocco*	0.879	44.10%	1.5	13.10%	0.238
Oman	0.852	-18.20%	1.4	33.60%	-
Qatar	0.484	1.50%	3.1	11.60%	7.1
Saudi Arabia	54.8	53.80%	12.5	20%	5.3
United Arab Emirates	1.3	-3.30%	15.7	35.70%	3.8

* latest data available 2006. Source: Office of the US Trade Representative

As noted earlier, another important aspect of trade agreements is the easier access to capital investment. In terms of FDI, since the 90s the region has seen the rising share of investment, but only a few countries, like Israel, have enjoyed steady flow of capital. Lately, this trend is changing for the better in Egypt and Lebanon. Before the 2000s, there had been no or little foreign direct investment in Egypt's free trade zones due to red-tape, including administrative controls, customs procedures and quality control and poor functionality of duty drawback schemes.

Figure 7. Foreign direct investment in the selected countries of the MENA region.
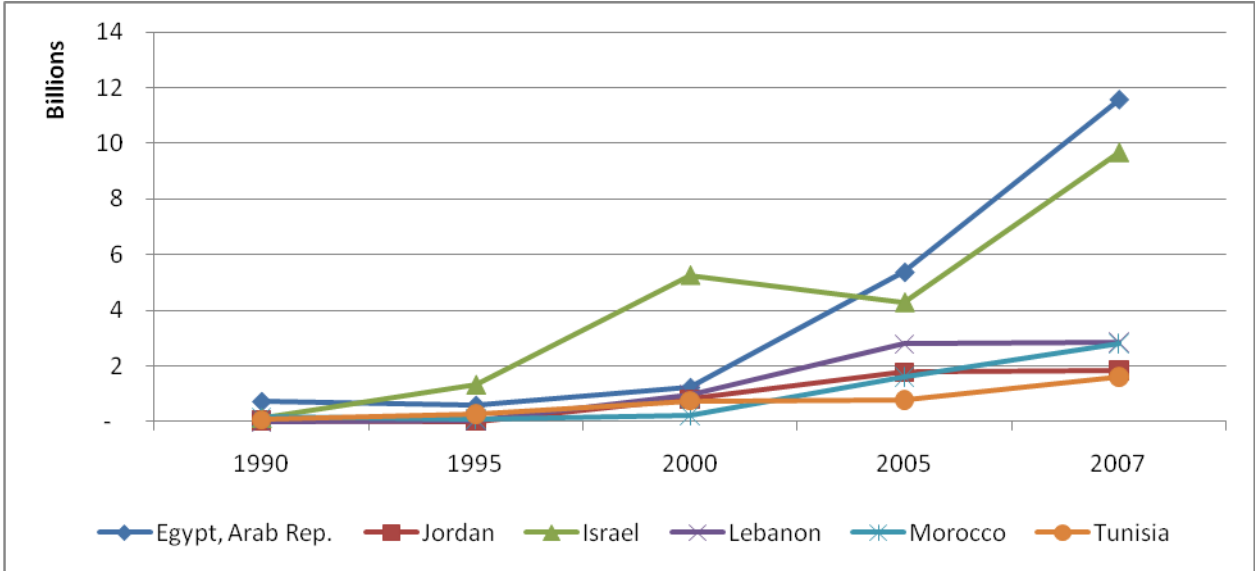
Source: WORLD BANK: MDI database

Compared to other regions, the FDI remains low, ranked after Latin America and East Asia. In a paper by Faruch et al (2004), the authors suggest, that the region's potential is to attract four or five times of today's levels of around only 3% GDP. However, such development is hampered by the ongoing complex geopolitical context of military conflict and tension.

Figure 8. Foreign direct investment across regions, net inflows (BoP, current US$)
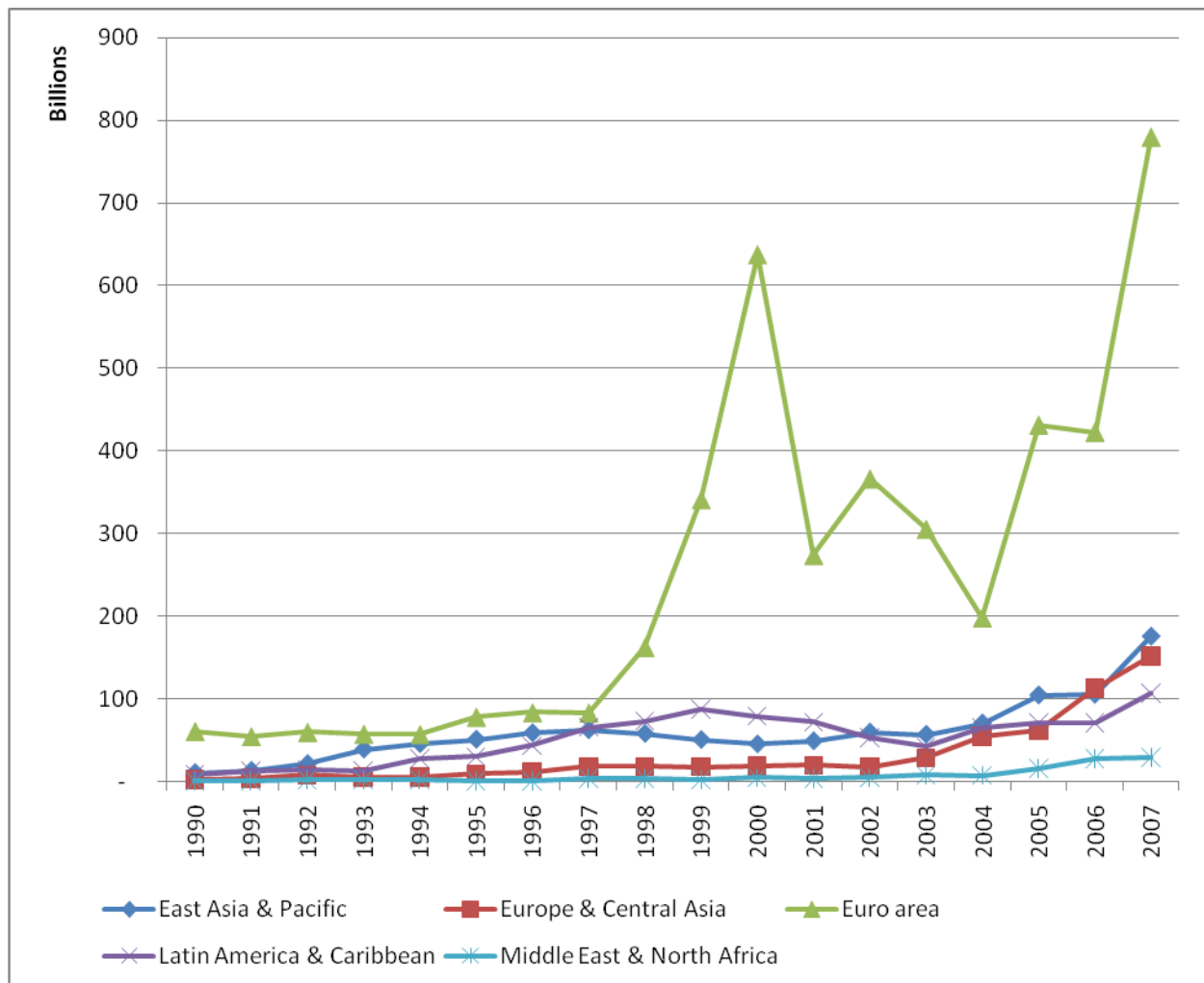
Source: WORLD BANK: MDI database

3.7. Inequality trends

One of the challenges in the region remains poverty. Considering one of the reports about the region, the World Bank suggests, that (World Bank, 1995: pp. 8), "moving from zero growth to 1% annual growth in the MENA region would reduce the number of poor in the region by 8 million over the next decade." On the other hand, the report also estimates that, "without the higher growth that the reform can bring the number of poor (those living on less than $1 a day) would rise by 15 million by 2010."

Henceforth, the definition of absolute poverty is the daily income of $1.25 (PPP). High quality data on poverty are largely unavailable, most of the data comes from the Povcal of the World Bank (table 9). Compared to other regions, MENA clearly enjoys one of the lowest instances of poverty among the developing world. The latest data suggest that only 3.6% of the people in MENA live below the PPP standard of $1.25 per person per day. Since 1985, the poverty has dropped by almost a half, which can be attributed to the growth period of the late 80s. Since then poverty growth has been stopped. Notwithstanding low growth in the forthcoming years, MENA has been able to avoid a large increase in poverty.

9. **Table. Poverty headcount ratio at $1.25 a day (PPP) (% of population)**

Country/Region	1985	1985-90	1990-95	1995-00	2000-05
Egypt	9.05%	4.46%	2.46%	1.81%	1.99%
Morocco	8.42%	2.45%	6.76%	6.25%	2.50%
Tunisia	8.65%	5.87%	6.48%	2.55%	1.01%
Jordan	-	2.78%	2.77%	1.93%	0.38%
Middle East and North Africa	6.10%	4.31%	4.07%	4.10%	3.60%
Latin America & Caribbean	15.25%	11.32%	10.94%	10.89%	8.22%
Sub-Saharan Africa	55.84%	57.58%	58.78%	58.37%	50.91%
East Asia & Pacific	65.50%	54.72%	36.00%	35.51%	16.78%

Source: World Development Indicators (WDI) and http://iresearch.worldbank.org/PovcalNet/povcalSvy.html

Since the 80s the developing countries have experience a steady rise in inequality as measured by the Gini coefficient. The same is true for MENA, yet the increase has been mild, moreover, some countries have managed to reverse the trend, slightly decreasing uneven distribution of income. In the table 10 we combined several sources due to the missing data on income distribution. It can be concluded that Israel, Morocco and Egypt have only a slightly increased Gini coefficient. Tunisia and Jordan have decreased inequality measures of 8% and 13%

respectively, which is a significant achievement in light of low economic growth during the last decade.

10. Table. Gini coefficient in selected MENA countries

Country	1980	1987	1990	1991	1992	1995	1997	1999	2000	2001	2003	2004	av 1992-07
Egypt			32.0	31.9		35.3	35.0		37.8			34.4	32.1
Israel					35.5	37.0	38.0		35.0	36.0	36.0	38.0	39.2
Jordan	44.2	36.1			43.4		36.4				38.8		39.5
Morocco	39.7		39.2	39.2		39.5		39.4	40.6				40.9
Tunisia	43.0		40.1			40.2			39.8				40.8

Source: World Development Indicators (WDI) and http://iresearch.worldbank.org/PovcalNet/povcalSvy.html

4. Econometric analysis

The purpose of this section is to assess the impact of trade reform on the real incomes of the poorest individuals in MENA countries. Openness to trade can affect the income of the poor directly or indirectly (i.e. through its impact on growth).

In a developing country (LDC), trade liberalization could benefit the poor if it reduces wage differentials by shifting production towards a country comparative advantage (in general less skilled workers). However, if before liberalization unskilled workers were protected through barriers to trade, liberalization might have a negative impact on poverty (Lee and Vivarelli, 2006).

The possible impact of openness on poverty through growth can be decomposed as follows. On the one hand, the rich literature on the relationship between openness and growth seems to have reached a consensus about the positive impact of trade on growth (e.g. Frankel and Romer, 1999 and Sachs and Warner, 1995). On the other hand, basic economic reasoning suggests that growth could influence poverty through two "mechanical channels" and a policy channel. Regarding the "mechanical channels", growth lowers poverty, as long as all incomes, including the incomes of the poor, go up as a result; even if the rich benefit more from the growth. Moreover, there may be an effect from the income distribution, which typically changes with growth due for instance to automatic progressive taxation. Regarding policy, growth can by relax public budget constraints and leave room for large social policies ranging from government employment to various sorts of subsidies.

To address the question at hand, we will focus on a 2 equations model combining the determinants of growth and those of poverty (including the specific effect of growth).

4.1. The model

4.1.1. Growth

The new developments in growth theory and the availability of rich data sets have fostered considerable empirical analysis. Most of the studies have been conducted in the framework of the single cross-country regression suggested by Barro (1991). Briefly summarized, the approach consists in estimating the following equation:

$$\ln(y_{i,t}) - \ln(y_{i,t-1}) = \beta_0 - \beta_1 \ln(y_{i,t-1}) + \beta_2 \ln(S_{Ki,t}) + \beta_3 \ln(S_{Hi,t}) - \beta_4 \ln(\delta + g^* + n_{i,t})$$
$$+ \beta_5 \ln(X_{i,t}) + \varepsilon_{i,t}$$

(1)

where y is real income per capita, S_K is the rate of savings in physical capital, S_H the rate of saving in human capital, g^* the rate of exogenous technical progress, n the population growth rate, δ is the depreciation rate of physical capital and β_1, β_2, β_3, β_4 and β_5 are parameters. Indices i and t refer to country and time respectively.

The lagged per capita income $y_{i,t-1}$ captures the possible conditional convergence of income. This was suggested by the recent empirical growth literature under the assumption of diminishing marginal returns to capital: the lower the initial level of income the greater is the growth rate. The variable S_K is measured by the investment ratio which is expected to have a positive impact on the growth rate. The proxy of S_H is the school enrolment ratio which should have a positive impact on growth. Hence, β_2, β_3, β_4 and β_5 are expected to be positive.

The equation is generally augmented with additional variables X to further explore the determinants of growth. In this work we focus on two important additional variables that have implications for both growth and poverty: inflation and openness. The relationship between inflation and GDP growth is twofold. In the short run, high inflation can be associated with high growth in high activity cycles. In the long run, however, high inflation is associated with macroeconomic policy miss-management and is expected to have a negative impact on growth (Fischer, 1993). Openness is expected to affect growth positively (Frankel and Romer, 1999).

4.1.2. Poverty

As mentioned above, openness to trade affects the income of the poor directly and indirectly through its impact on growth. Let's focus on the growth channel first. In order to examine how incomes of the poor vary with average income, we follow Dollar and Kraay (2002) in considering the following equation:

$$\ln\left(y^{P}_{i,t}\right)=\alpha_0 - \alpha_1 \ln\left(y_{i,t}\right) + \alpha_2 \ln\left(X_{i,t}\right) + v_{i,t} \quad (2)$$

where y^{p} is the per capita income of the poor, y is the average per capita income and X is a set of additional control variables. Indices i and t refer to country and time respectively.

The parameters of interest in Equation (2) are α_1 and α_2. The parameter α_1 measures the elasticity of income of the poor with respect to mean income. A value of $\alpha_1 =1$ indicates that growth in mean income is translated one-for-one into growth in income of the poor. Values of α_1 greater or less than one indicate that growth more than or less than proportionately benefits the poor. Combining the estimate of α_1 and the one of β_5 allows assessing the indirect impact of openness on poverty. The second parameter of interest is α_2 which measures the direct impact of other variables, in particular openness, on income of the poor holding constant average income. To estimate the equation Dollar and Kraay (2002) use as dependent variable the income share held by poorest 20% of the population which, they show, is the same as y^{p}.

4.2. Estimation issues

The sample available for our estimation consists of observations of 101 countries over 25 years (1980-2005). 9.4 in the Appendix gives the definition and sources of the variables. Previous estimations of the equations consisted of running a simple OLS on the time average of the variables for each country; i.e. cross-section data. This has, however, the inconvenience of not using the information contained in the time dimension of the sample. To meet this shortcoming, one would ideally use the recent development in the Panel-Cointegration methodology which allows dealing with the growth and the cycle mixture in economic series.

By controlling for the cycle component, the main determinants of the long-run components (i.e. growth) are accurately identified. While we have enough time and country dimensions in the sample to motivate the use of such a methodology, keys variables such as the indicator of human capital are impacted by the existence of missing observations through time. The Panel-Cointegration methodology can not, therefore, used here. To try grapping as much as possible of the information in the time dimension of the sample, we use the alternative strategy consisting of using the 5 years averages of each variable.[5] For each country we end up with 5 time observations; which gives 555 time-series-cross-sections observations. Estimation could, therefore, be conducted using traditional OLS, fixed or random effects methods.

However, the above methods may result in inconsistent parameter estimates chiefly because of simultaneity issues. The traditional measure of openness (i.e. exports plus imports divided by GDP) is likely to depend on GDP growth; which makes it endogenous and not suitable as explanatory variable. This is why some economists constructed alternative indicators of openness. An openness index provided by Sachs and Warner (1995) combines information on tariff and non-tariff barriers, the Black Market Premium and the control on exports. Another indicator due to Frankel and Romer (1999) is calculated as the ratio of imports plus exports to GDP from which the "Natural Trade Openness" of the economies is deduced. The "Natural Openness" is estimated using a simple gravity model taking into account the size and the distance of the markets of the countries concerned. Sometimes exports of oil and mining products are also deduced.

However, Rodriguez and Rodrik (1999) showed that all existing measures of openness are problematic either because of their computation (e.g. trade barriers), of their potential endogeneity (e.g. trade to GDP ratios) or because they capture other policy and institutional effects than openness (e.g. Sachs and Warner). Moreover, the indicators of Sachs and Warner and of Frankel and Romer are available only up to the mid-1990s. It is beyond the scope of the present work to extend them to 2005.

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[5] When an observation is missing for a given year, the average is computed over the remaining years.

We adopt tow alternative strategies to take account of openness. First, we estimate the equations on the whole panel using the GMM method with the lag of the endogenous variable as instrument. Second, we use the indicator of openness published by Economic Freedom Network (Gwartney et al., 2008) called Freedom to trade internationally. It is available annually since 2000 and each 5 years since 1970 and covers around 140 countries.

The causal relationship between income of the poor and the average incomes is possibly bi-directional. The empirical literature estimating growth regressions often use measure of initial income inequality as an explanatory variable. Although this literature has found mixed results, using different samples and different econometric methods (e.g. Barro, 2000 and Forbes, 2000), one should take account of the potential existence of such bi-directional effect. To address this problem Dollar and Kraay (2002) estimate a system, where Equation (2) is taken in level and in first difference, and impose the restriction that the coefficients in the levels and differenced equation are equal. Lags of right-hand-side variables are used as instruments and the GMM method is used. They show that the growth in mean income over the five years prior to time t is a good instrument when it turns to the equation in level. For the equation in first difference they show that the level of mean income at the beginning of the period and growth in the five years preceding t are good instrument for growth in mean income.

4.3. Results and discussion

4.3.1. Openness and growth

Table 24 presents the results of 4 variants of the growth equation. The variants differ with respect to the openness indicator and the estimation method. Period fixed effects are included in all regressions but not reported. The first variant uses the 2sls estimation method, the traditional openness indicator (i.e. (X+M)/2GDP) and the lagged openness as instrument. The quality if the fit is good, all the coefficients are significant and have the expected signs except the one for openness. The latter exhibit and unexpected sign and is significant at the 10% level. The second variant is similar to the first except that we use the GMM method for estimation. The results are also similar but openness is no more significant. The third variant uses the 2sls estimation method, the traditional openness indicator (i.e. (X+M)/2GDP) and the freedom to

trade internationally indicator as an instrument for openness. While the adjusted R^2 is much lower than in the first regression, all the coefficients are significant and have the expected signs. Finally, the 4th variant is simply an OLS equation using the freedom to trade internationally indicator as a proxy for openness. This last specification exhibits the best results in the Table 11. The quality of the fit is the best and all the coefficients are significant and have the expected signs. From both an economic and a statistical point of views, this is the regression that we will focus on in what follows; although the results of alternative specifications will also be reported.

11. Table: Per capita income growth determinants (Panel estimation)

	2sls Openness = $(X+M)/2GDP^a$	GMM Openness = $(X+M)/2GDP^a$	2sls Openness = $(X+M)/2GDP^b$	OLS Openness = Freedom to trade internationally
Explanatory Variables				
Constant	-0.186	-0.086	-0.078	-0.179
	-4.496	*-1.646*	*-1.845*	*-5.868*
GDP per capita (-1)	-0.005	-0.006	-0.006	-0.006
	-4.238	*-4.464*	*-4.610*	*-5.580*
Investment/GDP	0.034	0.034	0.019	0.028
	4.031	*3.840*	*3.063*	*5.833*
School enrolment	0.019	0.012	0.015	0.016
	4.033	*1.817*	*2.829*	*3.257*
Population	0.043	0.002	0.038	0.037
	3.986	*0.508*	*3.661*	*3.773*
Openness	-0.005	-0.004	0.028	0.026
	-1.658	*-1.211*	*3.174*	*3.751*
Inflation + 100	-0.029	-0.033	-0.022	-0.026
	-5.507	*-5.438*	*-3.803*	*-4.815*
Number of observations	549	551	450	453
Number of countries	101	101	89	90
Adjusted R^2	0.30	0.24	0.21	0.34

Notes: All variables are log, standard Errors are heteroskedastic-consistent, period fixed effects are included in all regressions but not reported, a = instrument for openness is the lagged openness, b = instrument for openness is the freedom to trade internationally index

Our objective of assessing the impact of trade reform on the real incomes of the poorest individuals in the MENA implies the "intermediate objective" of assessing the impact of trade reform on average per capita income. The impact of openness on average per capita income can be decomposed in two components. The first one concerns the level of openness in the Region. Given an estimate of the sensitivity of per capita income to openness, one can compute the impact of a higher or lower openness of the MENA on income. The second one concerns the sensitivity of income to change in openness (i.e. coefficients of the explanatory variables). With the same measured degree of openness the impact on income might be different if the coefficient of openness is different. Such sensitivity might not to be the same in the MENA as in other countries due, inter alia, to economic specialization. Hence, we should allow the coefficients for the MENA to be different form those of the rest of the sample in order to better understand the impact of openness on average per capita income. Actually, we will allow all the coefficients to be different for the MENA.

A similar strategy was followed by Makdissi et al (2006) which examined the overall growth performance of MENA countries over the period 1960-1998. That paper showed, in particular, that in comparison to other regions the catch-up process had not taken place, physical and human capital are less efficient and openness is less conductive to growth in the MENA. The authors estimated their growth equation using averages over the whole period. To allow comparison, we also re-estimated Equation (1) using averages over our sample period. Interaction terms with a MENA dummy are introduced for all variables.

Table 12 presents estimates from the resulting cross-section regression. There are 3 variants of the growth equation which, as in Table 11, differ with respect to the openness indicator and the estimation method. Period fixed effects are included in all regressions but not reported. The GMM estimation method is not justified here. For the same reasons as before, the variant (first column in the table) using the simple OLS method and the freedom to trade internationally indicator as a proxy for openness, exhibits the best results. Its quality of the fit is the best in the table and, disregarding the interaction terms, all the coefficients are significant and have the expected signs. We will focus on this regression in what follows.

Examining the **interaction terms** which give the difference in MENA income's sensitivity of to change in the explanatory variables, our results broadly confirms Makdissi et al (2006)'s except for openness. The coefficient pertaining to the lagged income is significant (at the 10%) and positive implying that catch-up process had taken place to a lower extent in the MENA as compared to other regions. The results also show that the coefficient pertaining to investment is significantly negative. This means that the impact of physical capital on growth is much lower than for the whole sample. There seems to be a problem of capital efficiency in the MENA countries. Page (1998) suggests that this low efficiency of capital is due to the dominant role of the state and the nature of capital inflows in the region destined mainly to finance public investments and low-productivity projects in the non-tradable sector such as housing. Finally, the coefficient pertaining to the openness indicator is not significant implying that a given degree of openness has the same impact in the MENA than in other regions.

The last result differs from the pervious finding. Such difference seems to be linked to the period of observation. Rerunning the regression over the same period as Makdissi et al (2006), we uncover their finding.[6] It seems that the process of trade policy reforms initiated by the mid-1980s and accelerated since the mid-1990s has made openness more conductive to growth than before; a statement corroborated by Sekkat and Varoudakis (2002).

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[6] The results are not reported but available from the authors.

12. Table. Per capita income growth determinants and MENA differences (Cross-section)

Explanatory Variables	OLS (Freedom to trade)	2sls ((X+M)/2GDP[a])	2sls ((X+M)/2GDP[b])
Constant	-0.114	-0.110	-0.010
	-3.110	*-3.009*	*-0.176*
GDP per capita (0)	-0.009	-0.006	-0.008
	-4.384	*-3.031*	*-2.706*
Investment/GDP	0.028	0.029	0.020
	4.111	*3.968*	*1.973*
School enrolment	0.016	0.020	0.017
	1.794	*2.717*	*1.865*
Population	0.000	0.000	0.000
	0.495	*1.256*	*-0.002*
Openness	0.034	-0.005	0.027
	2.697	*-0.976*	*2.079*
Inflation + 100	-0.017	-0.018	-0.009
	-4.555	*-7.592*	*-1.273*
MENA (Dummy)	0.356	0.432	0.281
	3.333	*4.519*	*2.147*
GDP per capita (0) * MENA	0.008	0.002	0.005
	1.695	*1.034*	*1.271*
(Investment/GDP) * MENA	-0.059	-0.084	-0.074
	-1.991	*-6.652*	*-4.671*
School enrolment * MENA	0.034	-0.034	-0.021
	1.457	*-2.350*	*-1.134*
Population * MENA	0.000	0.000	0.000

	-0.446	-2.132	-0.513
Openness * MENA	-0.014	0.033	-0.003
	-0.458	3.750	-0.145
(Inflation + 100) * MENA	0.019	0.179	0.140
	0.189	2.945	1.532
Number of observations	90	101	89
Number of countries	90	101	89
Adjusted R^2	0.47	0.33	0.17

Notes: Standard Errors are heteroskedastic-consistent, a = instrument for openness is the beginning of the period openness, b = instrument for openness is the freedom to trade internationally index

4.3.2. Openness and the poor

Openness to trade affects the income of the poor directly and indirectly through its impact on growth. In this section we investigate both effects in the context of the MENA.[7]

We start with the **indirect impact**. The previous section has shown that openness is conductive to the average per capita income growth. The question is whether such growth translates in an improvement of poor's income. Previous findings (e.g. Gallup et al., 1998 and Dollar and Kraay, 2002), using both cross-country and panel regressions suggest that, on average, the incomes of the poor (the lowest 20% of the income distribution) increase equi-proportionately with the average income. However, it seems that in some countries the poor see less than proportionate growth while in others the poor do better than the average.

Table 13 presents the results of 4 variants of Equation (2) estimated over the panel. Period fixed effects are included in all regressions but not reported. The first variant concerns Equation (2) as it stands using the 2SLS estimation method and the growth in mean income over the five years prior to time t as an instrument. The quality if the fit is very low. The coefficient of average income is significant and positive but significantly below 1; implying that growth benefits the poor but much lesser than other categories of the population. Such a result is in contradiction with, inert alia, Dollar and Kraay (2002)'s who found that income of the poor increases one-for-one with the average income. The second variant presents the results of Equation (2) estimated in first difference. It is also based on the 2SLS estimation method but uses 2 instruments; the level of mean income at the beginning of the period and growth in the five years preceding t. The results are much better than the previous ones from both an economic and a statistical point of views. The quality of the fit is very good (the adjusted R^2 is equal to 0.63) and the coefficient of average income is significant and positive. Its level is not significantly different form 1; which is in accordance with the literature findings that income of the poor increases one-for-one with the average income. Growth seems to benefit the poor in a

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[7] To our best knowledge there is no available evidence for the MENA as a whole. The studies for the MENA region focuses on welfare gains, without addressing the issue of income distribution.

similar way as other categories of the population. The third variant concerns estimation of a system where Equation (2) is taken in level and in first difference. The average income coefficients in the level and the first difference equations are constrained to be equal, lags of right-hand-side variables are used as instruments and GMM is the estimation method. This last variant exhibits the worst results in the Table; the adjusted R^2 is almost 0 and the coefficient of average income is not significant. The last column in the table allows examining potential MENA specificity with respect to the relationship between average income and income of the poor. To this end we introduce an interaction variable. The coefficient of the latter is not significant. In what follows, we will focus on the second variant i.e. Equation (2) estimated in first difference.

13. Table. Relationship between average income and poor's income (Panel estimation)

Variable	2sls Level[a]	2sls Change[b]	GMM level[b]	2sls Change[b]
Constant	0.340	-0.172	2.935	-0.270
	0.369	*-3.387*	*8.370*	*-0.724*
GDP per capita	0.377		0.016	
	3.019		*0.326*	
Change in GDP per capita		0.856		1.115
		6.340		*0.989*
MENA (Dummy)				0.456
				0.330
Change in GDP per capita * MENA				-4.672
				-0.189
Number of observations	218	137	137	137
Number of countries				
Adjusted R^2	0.09	0.63	0.01	0.44

Notes: All variables are log (except Change in GDP per capita), standard errors are heteroskedastic-consistent, period fixed effects are included in all regressions but not reported, a = instrument is the growth in mean income over the five years prior to time t, b = instrument are the level of mean income at the beginning of the period and growth in the five years preceding t.

We turn now to the **direct effect** of openness to trade on the income of the poor. Evidence on the direct effect of openness on poor's income is mixed. Dollar and Kraay (2002) shows that openness has a statistically insignificant effect on poor's per capita income. Kruger et al (2003), show similar findings. Rama (2001) also finds the same result. However, when the estimated equations include interaction variables, namely, openness with government expenditure and the mean years of schooling, openness appears to have a statistically significant impact on inequality.

Here, we are interested the specific direct effect of openness on the real incomes of the poorest individuals in MENA countries. To address this question we use the second variant in Table 14 as our basic specification to which we add the indicator of openness (Freedom to trade internationally) as an additional explanatory variable (first column in Table 14). The overall quality of the fit increase slightly (The adjusted R^2 equals 0.65 instead of 0.63) and the coefficient of openness is negative but non significant at the 10% level. On average over the whole sample there seems to be no direct impact of openness on poverty. In order to examine potential MENA specificity with respect to such relationship, we proceed as before by introducing an interaction variable (second column in Table 14). Again, the overall quality of the fit improves slightly (from 0.65 to 0.66). The coefficients pertaining to the MENA are statistically significant. The coefficient of the dummy is positive suggesting that, once we control for the specific effect of MENA's openness, income of the poor has improved over the period beyond the effect of the increase in average income; may be due to active social policies. The coefficient of the interaction term is negative implying that, contrary to the results for the whole sample, openness has a negative direct effect income of the poor. Taken together, these results imply that in the MENA income of the poor increase because of the increase in average income and because of the impact of other unobservable factors (captured through the dummy). It, however, decreases with openness.

However, the model we used so far is very parsimonious. Omitting some relevant control variables may impact the results. We, therefore, augmented the equation with 3 additional control variables: inflation, domestic credit and government consumption. Inflation tends to be a good summary measure of the quality of fiscal and monetary policies. Sound macroeconomic

policies are likely to benefit the poor. Easterly and Fisher (2001) find that high inflation tends to worsen inequality and increase poverty. Romer and Romer (1998), and Behrman et al. (2001) also find that high inflation and macroeconomic instability are associated negatively to the incomes of the poor. Capital markets improvements may be associated with increases in inequality if the better off are able to exploit more effectively the new opportunities. Behrman et al. (2001) estimate that the financial sector liberalization reforms that took place during the 1990s in Latin America negatively affected income distribution. The impact of the size of the government on inequality and poverty is two folds. On the one hand, a predatory government may direct rents to specific groups other than the poor. On the other hand, public spending and public employment may play a safety net role.

Each of 3 additional control variables is introduced separately (Columns 2-3 in Table 14) and, then, the 3 variables are introduced together (Last column in Table 14). The introduction of the additional control variables, either separately or together, does not change the quality of the fit and none of their coefficient is significant except domestic credit's which is significant (at 10%) and positive in the last column. More importantly, the coefficients of the other variables remain unaffected.

14. Table. Determinants of the change in poor's income and MENA differences

(Panel estimation, 2sls)[a]

Dependent variable = Change in income of the poor

Variable						
Constant	0.293	-0.052	0.027	-0.072	-0.051	0.934
	0.804	*-0.148*	*0.079*	*-0.209*	*-0.119*	*1.424*
Change in GDP per capita	0.773	0.841	0.839	0.891	0.840	0.824
	6.502	*7.040*	*7.109*	*7.014*	*6.953*	*8.659*
Freedom to trade internationally	-0.236	-0.072	-0.107	-0.202	-0.071	-0.089
	-1.217	*-0.382*	*-0.599*	*-0.896*	*-0.371*	*-0.383*
MENA (Dummy)		2.088	2.046	2.035	2.087	2.073
		2.881	*2.831*	*2.735*	*2.874*	*2.877*
Freedom to trade internationally*MENA		-1.099	-1.081	-1.097	-1.098	-1.124
		-2.749	*-2.715*	*-2.681*	*-2.750*	*-2.860*
Inflation + 100			-0.056			-0.068
			-0.698			*-0.766*
Domestic credit				0.069		0.076
				1.440		*1.692*
Government consumption					0.437	0.953
					0.005	*0.120*
Number of observations	129	129	129	127	129	127
Number of countries						
Adjusted R^2	0.65	0.66	0.66	0.66	0.66	0.66

Notes: All variables are log (except Change in GDP per capita), standard errors are heteroskedastic-consistent, period fixed effects are included in all regressions but not reported, a = = instrument are the level of mean income at the beginning of the period and growth in the five years preceding t.

5. Latest developments in Israel labour market

5.1. Introduction

During the turn of the century, Israel economy has been in a period of significant economic growth. Located in the Mediterranean Sea the country still is largely boycotted by its closest neighbours, except for the Kingdom of Jordan, Egypt (notably, imports of natural gas by EMG Company) and Turkey (water imports). With the first trade liberalization deal signed as early as 1975 with the EU the agreement did not facilitate trade because of the restrictive rules of origin. Only a full decade later another trade agreement with the US played a much greater role, with the US not only as a trade partner, but also a defence ally. This development resulted in creation and consolidation a high-tech industry which up till now continues to play a pronounced role in the economy.

The economic climate changed abruptly though in late 2000 due to the burst of the dot-com bubble and the commencement of the second Intifada (Palestinian uprising). These events generated a severe recession which had severe effects on the labour market. The unemployment rate increased to 10.7% in 2003 and government deficit climbed. Measures were taken to accelerate Israel economy, introducing major cuts in social benefits and in government spending, as well as reforming capital and pensions markets and the tax system. These economic policies had a positive impact on economic growth during 2003-2004, generating 1.4-1.5% Purchasing Power Parity ("PPP") GDP per capita growth in 2004 and in 2005. Later on, together with the improvement in the security situation and the recuperating global high tech industry, Israel economy reached record levels. This is expressed in the PPP GDP Per Capita growth of over 6% in 2006 and 2007, as well as in exports and import levels (respectively 51bn and 64.5bn USD in 2008), stability in the monetary system and robust GDP growth. The labour market has also improved, with participation rates climbing to 56.5% in 2008, and unemployment rate reaching a 20-year low (5.9% in the second quarter). However, with the global economic crisis, triggered by credit crunch in the financial system, prospects for

both GDP growth and the labour market are low. Bank of Israel experts' forecast suggests a negative GDP growth of -1.5% and an increase in unemployment rate to 7.6% in 2009.

It is important to take into account long-term sectoral changes, and the effects of the global market on Israel's economy and on its several industries. Our analysis utilizes data, reports and studies of the Central Bureau of Statistics, the Bank of Israel, current papers and articles from the academic literature (as specified in the bibliography), the Ministry of Industry, Trade & Labour, the Ministry of Finance, the National Institute for Social Welfare and the OECD. It has been our intent to incorporate throughout the study the current trends which are underway.

In our report we identify the sources of growth and employment, and perform empirical analysis to estimate the elasticity between growth and employment in agriculture, manufacturing and services. This empirical exercise is aimed at determining how growth is translated in terms of labour supply in several demographic groups using the analytical framework developed by Kapsos (2005). Our findings suggest greater responsiveness of workforce to changes in GDP in contrast with the rest of the world and European countries. Moreover, youth employment exhibits interesting characteristics which diverge from global trends.

5.2. Israel Economy and Labour Force

5.2.1. Economic Growth

Throughout the first decade of the new millennium, Israel economy has seen substantial growth, though with some less successful periods of business cycles. The expansion and downturn periods in the domestic economy match the evolution of the global economy. One of the possible explanations is the great exposure of Israel economy to the world markets, through extensive trade.

The gross domestic product (GDP) has evolved concurrently with the economic cycle, experiencing economic boom during the turn of the century, followed by a sharp decline with the burst of the dot-com bubble. The subsequent prolonged period of economic growth can be

seen beginning from 2003 with consistent economic growth. It is also evident that the structural changes put into effect in 2003 turned to be conducive to Israel's economic growth as well. The global financial and economic crisis developing in the end of 2007 has had a dampening effect on the GDP levels and GDP growth as late as 2009. This supports the growing consensus among the economists and politicians that local economy has taken a lesser hit so far than other developed countries and the global economy.

These effects are apparent in evaluation of the volume of Israel's Gross Domestic Product computed in terms of Purchasing Power Parity. The evolution of economic cycles and the effects of the two crises undergone by the global economy during the first decade of the 21st century until today are embedded in Israel GDP.

15. Table : Israel Purchasing Power Parity (PPP) GDP per capita (USD)

1995	1996	1997	1998	1999	2000	2001
17,475	18,090	18,354	18,934	20,446	22,397	22,575

2002	2003	2004	2005	2006	2007	2008
23,034	22,497	22,820	23,153	24,680	26,226	27,382

Source: Central Bureau of Statistics

Overall, GDP per capita in Israel has grown substantially over the past few years. It has increased from the level of 17,475 (USD, PPP), to 27,382 (USD, PPP) in 2008, which is close to the OECD average. These figures represent the favourable Israel GDP condition, ranking Israel at par with other developed countries.

Figure 9: Israel Purchasing Power Parity (PPP) GDP per capita (USD)
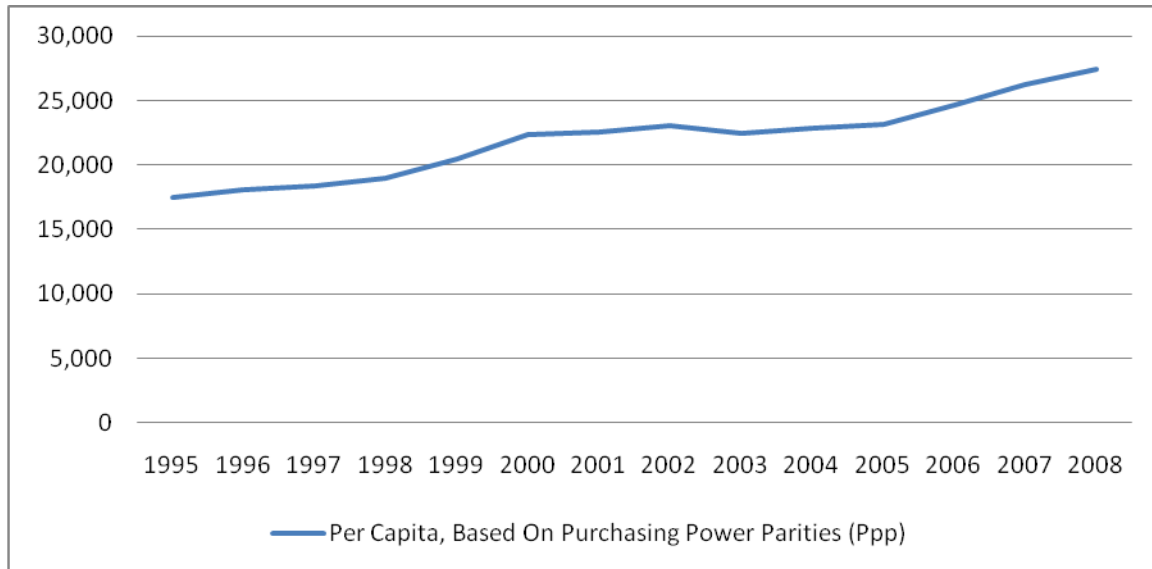
Source: Central Bureau of Statistics

Figure 10: Israel GDP, 1995 Fixed Prices (mm NIS)
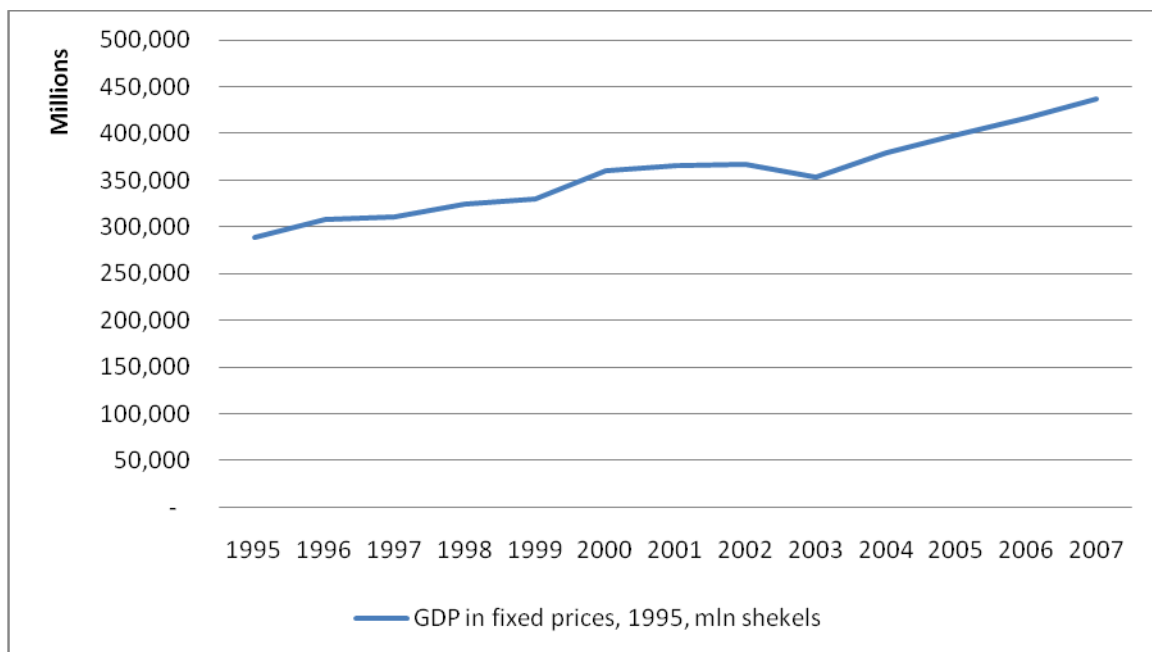
Source: Central Bureau of Statistics

In the year 2000, which was a period of rapid growth particularly in the High Technology being one of the stronger sectors of Israel's economy, the annual growth rate was 8.9%. During the economic downturn of 2001-2002 the annual average decline in GDP was less than one percent. After this period the economy stabilized to the annual growth rate of close to 5%, including 2008.

Generally, Israel's economy exhibits stronger performance during growth periods and mild decline during recession. However, as we can see, the GDP is more volatile than that of OECD, with greater gains and losses. For example, Israel's economy enjoyed a relatively high pace of development prior to the 2000-01 crisis, but also lost much more in terms of GDP growth when the high-tech bubble burst in the economic downturn. Thus, withstanding milder losses in the current crisis seems even more surprising, judging by the history of economic development.

Figure 11: Israel and OECD Annual Real GDP Growth Rate (%)
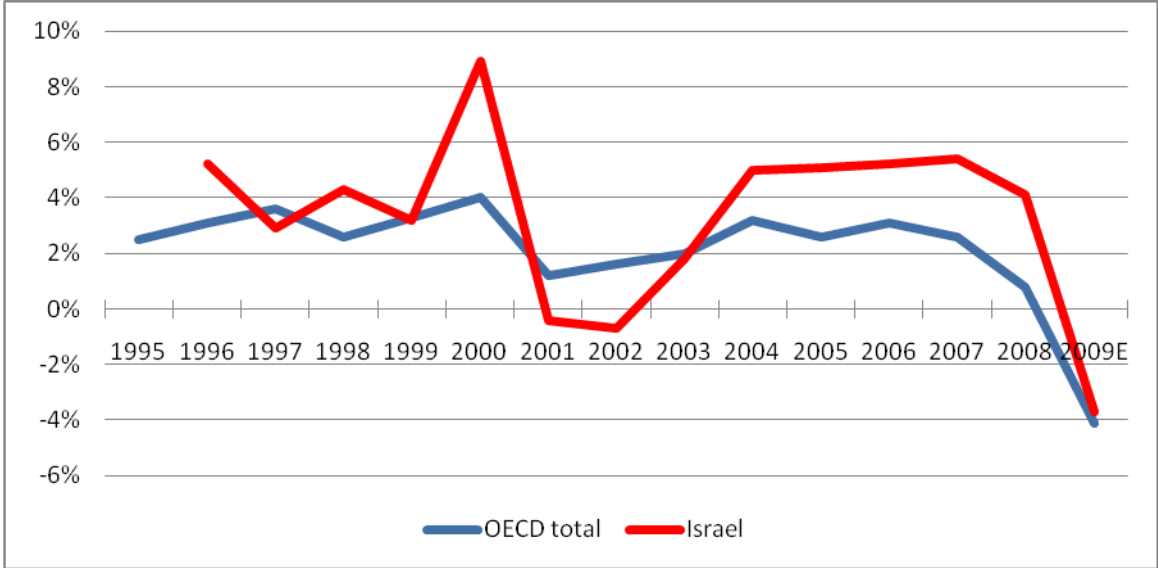
Source: Central Bureau of Statistics

5.2.2. Impact of Economic Growth on Inequality

When trying to assess the impact of economic growth on inequality, we need to look at the state of the country's development. The state of development plays a key role on the effect of

growth on poverty and decent work, as analyzed in Barro's research on inequality and growth (2000). In developing countries the effect is often negative, while in developed countries the outcome is typically positive for reducing inequality in these countries.

Israel can be seen as a developed country which has some characteristics of a developing country. Some of these elements, detailed in later sections of the current research, include a relatively low participation rate in the labour force, a large amount of the population living under the poverty line, and a large number of sectors and groups which do not take an active part in the labour market and the economy.

Analysis of the overall inequality situation should therefore be assessed using the Gini coefficient. The Gini coefficient presents us with the measure of income allocation and should not be analysed separately from the relationship among the growth rate and the state of general development. According to the data, the inequality has remained stable: although economic growth changed dramatically in the early 2000, the reported Gini coefficient remained much unaltered.

Figure 12: Israel Gini Coefficient 2000-2007(%) Before and After Transfer Payments Compared with GDP Annual Growth (%)
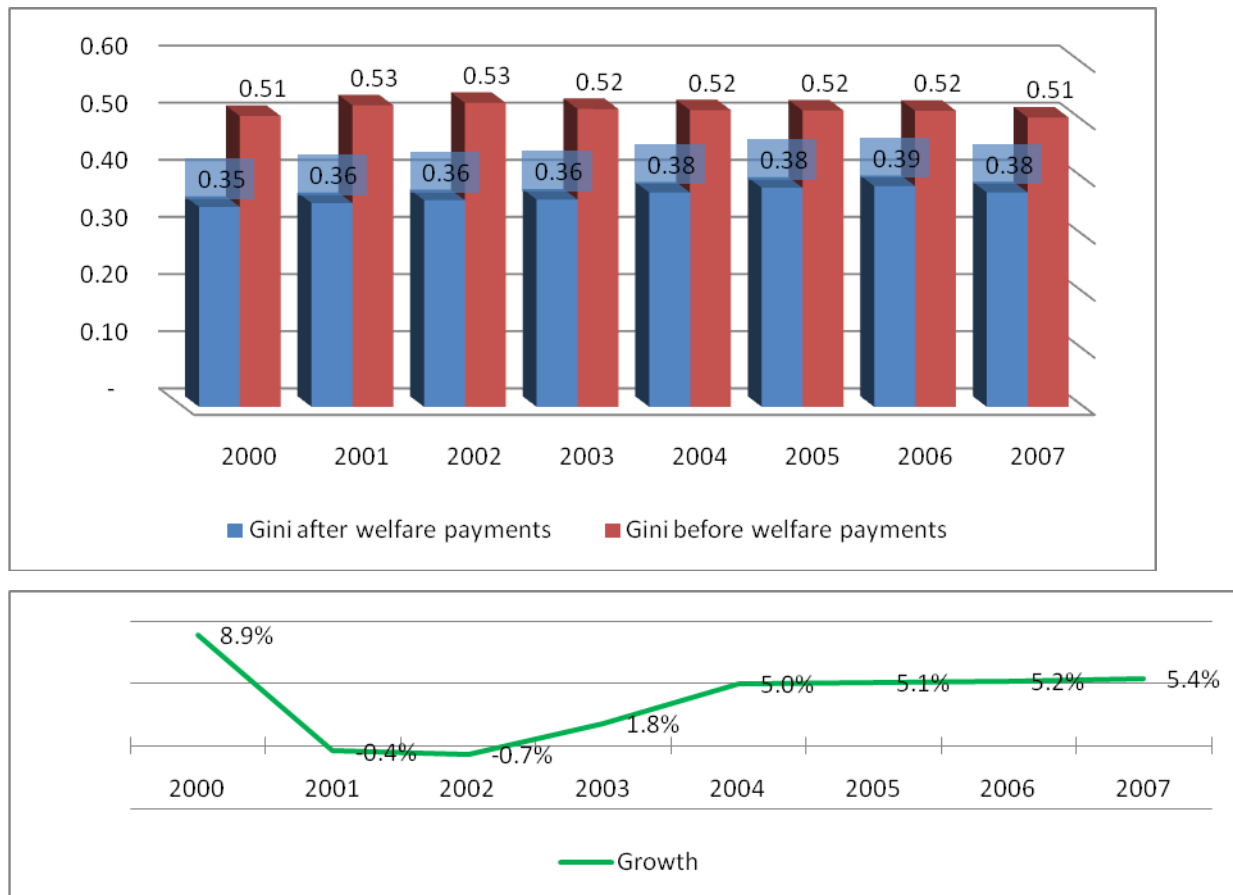
Source: National Insurance Institute and Central Bureau of Statistics

5.2.3. Sources of Growth Analysis

5.2.3.1.   Growth Determinants

From 2003 until 2008 Israel's economy has seen steady growth. The slowdown in the growth of productivity in 2007 was an indication that the cyclical component of growth, which is the result of the increase in the utilization of existing factors of production, has been exhausted. The transition to growth driven by the accumulation of factors of production, accompanied by slower growth of productivity, is part of a natural and predictable process. This transition is

evidence of the completion of the cyclical phase of growth which is the result of the reduction of the output gap originated in the early 2000s.

The reduction of the output gap was reflected in a number of phenomena. First, a sharp rise in investment in the business. Second, the increase in labour share of income, which had declined in every one of the years 2003-2007. Third, the drop in the return on gross capital which had risen continuously during the entire period of growth as a result of the increase in the utilization of capital; and the steady decline in the rate of unemployment to a record level of 6.7% in 2007, in spite of the increase in the rate of labor force participation.

Most of the short-term fluctuations in GDP are the result of changes in demand. However, an overall view of the cycle clearly shows that supply factors, such as technological improvements, the increase in the quality of the labor force and the increased efficiency of firms in the economy during recessions, have a decisive influence on Israel's GDP. Although it is difficult to identify the effect of these factors within a single year, the average rate of increase in total productivity since 1999, explains about 37% of the increase in business sector product since then. This is evidence of the importance of the increase in productivity essential for sustainable growth.

The issue of technological change is an important factor in economic analysis and policy making. One of the ways to determine the total factor productivity as it is known among economists is to use the simple multi-factor macroeconomic model for computation of Solow residual which is obtained after removing the effect of changes in factors of production (capital and labor) from the growth in GDP. Figure 13 shows the development of the measure for Israel economy since the 1960s up to 2008.

Figure 13: Solow residual for Israel economy, 1961-08
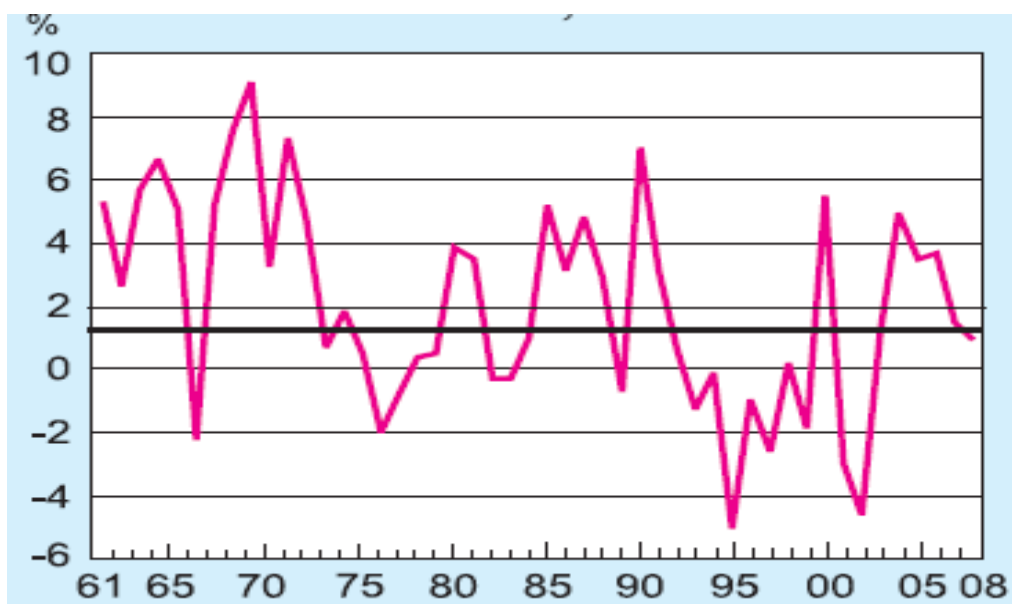
Source: Bank of Israel Annual report, 2008.

It can be seen that the periods in which it was higher than the average for the sample (i.e. 1.3 % annually) are ones in which the Israeli economy was in a boom (i.e. the 1960s apart from the short period prior to the Six Day War, the boom following the Stabilization Plan in the mid-1980s, the early years of immigration following the creation of the State, the hi-tech boom in 2000 and the exit from recession followed by a boom during the years 2004–08).

An exception is the period 1993–06, which is classified as a recession in terms of total productivity but is in fact characterized by a high rate of growth in GDP. It is possible that this is related to the supply effects of the mass wave of immigration to Israel during this period. Thus, the period was characterized by growth in the supply of labour, the stock of capital and potential GDP; however, this was not accompanied by an increase in total productivity due to the slow and lagged adjustment process in the absorption of immigrants within the Israeli labor market.

For a closer look at the technological change in the industries in Israel we provide the following Figure 14 with selected sectors, measured over the last decade in terms of labour and total

factor productivity (Solow residual). The findings suggest that one of the most technologically competent sectors turns to be agriculture which is both high in labour and total factor productivity. One the other hand, construction sector ranks the lowest among the industries. This sector is known to be highly inefficient in terms of using latest innovation technology and is characterized by low-skill intensive labour.

Figure 14: Labour and total factor productivity in principal industries, annual averages 1998-08
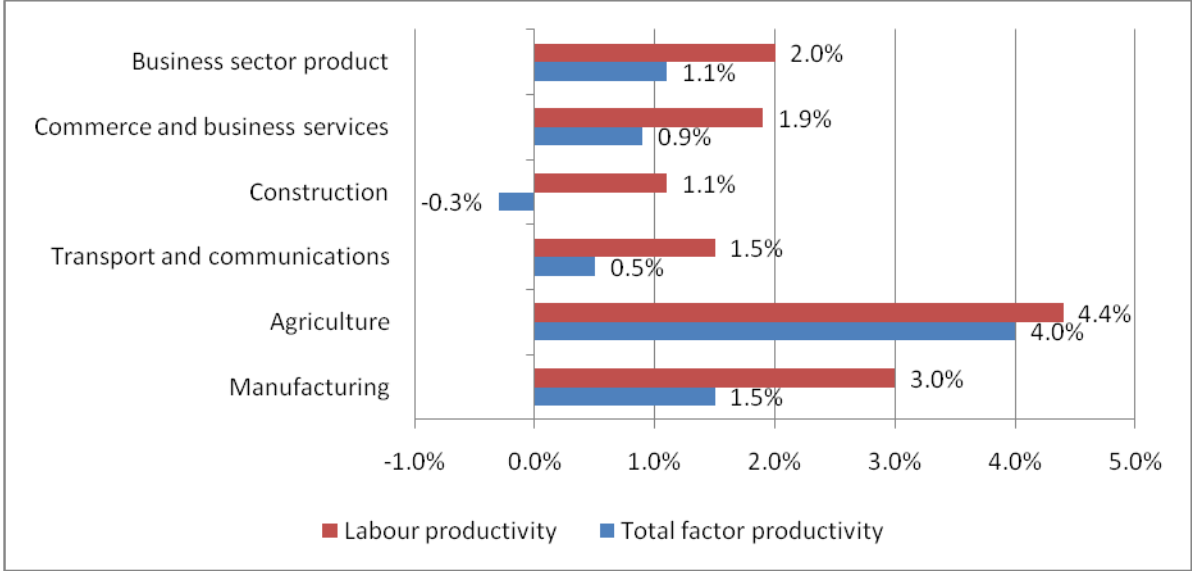
Source: Bank of Israel Annual report, 2008.

The next figure 15 presents the fluctuations in labour productivity over the last 13 years. The traditional methodology for computation of the labour productivity rate is based on (constant 1995 prices) GDP per employed ratio. This rate exhibits significant pro-cyclical property: labour productivity is lowest during recessions (2001-02).

Figure 15: Labour Productivity Rate (%), 1995-2008
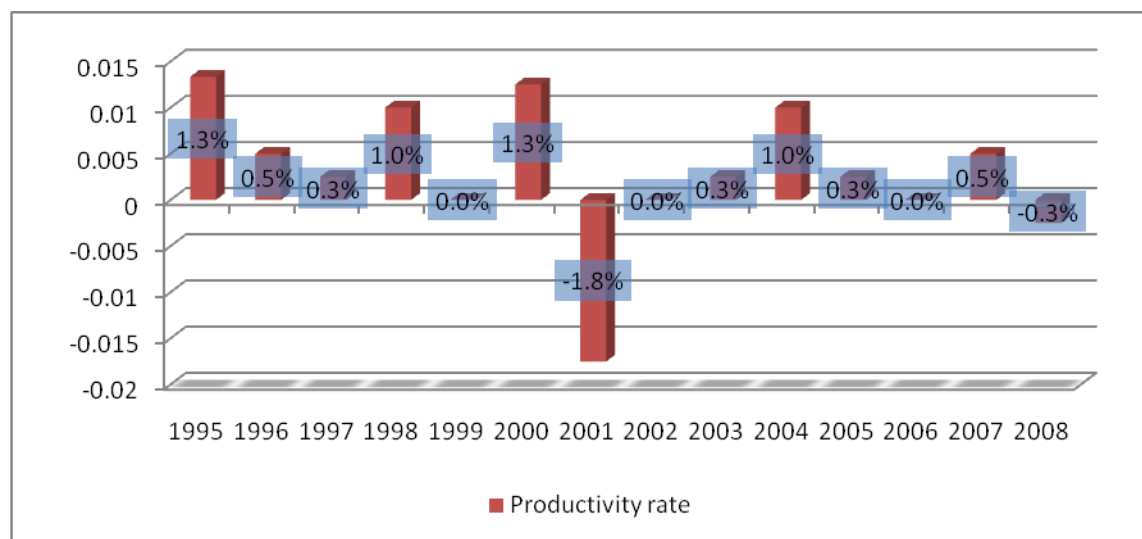
Source: Authors' computations, based on Central Bureau of Statistics data

16. Table. GDP and Sources of Growth, 1999-2008 (Volume Rates of Change, Percent %)

	1999-2000	2001-03	2004-07	2008
GDP	6.1	0.2	5.2	4
Business Sector Product	7.1	-0.7	6.4	4.4
Imports	13.7	-2.5	7.7	2.2
Exports	18.4	-1.7	9.1	3
Total Sources	8.3	-0.6	5.9	3.4
Gross Domestic Investment	4.1	-6.5	8.6	3.8
of which Fixed Capital Formation	1.5	-5.1	7.3	5.1

Source: Bank of Israel, based on Central Bureau of Statistics data

Notwithstanding setbacks in labour productivity during the recession years in the late 1990s, overall labour productivity has grown, while GDP per capita shows no significant increase (see Figure 16). This finding may highlight the looming demographic problem of slowly growing GDP compared to population (and subsequent labour participation) growth.
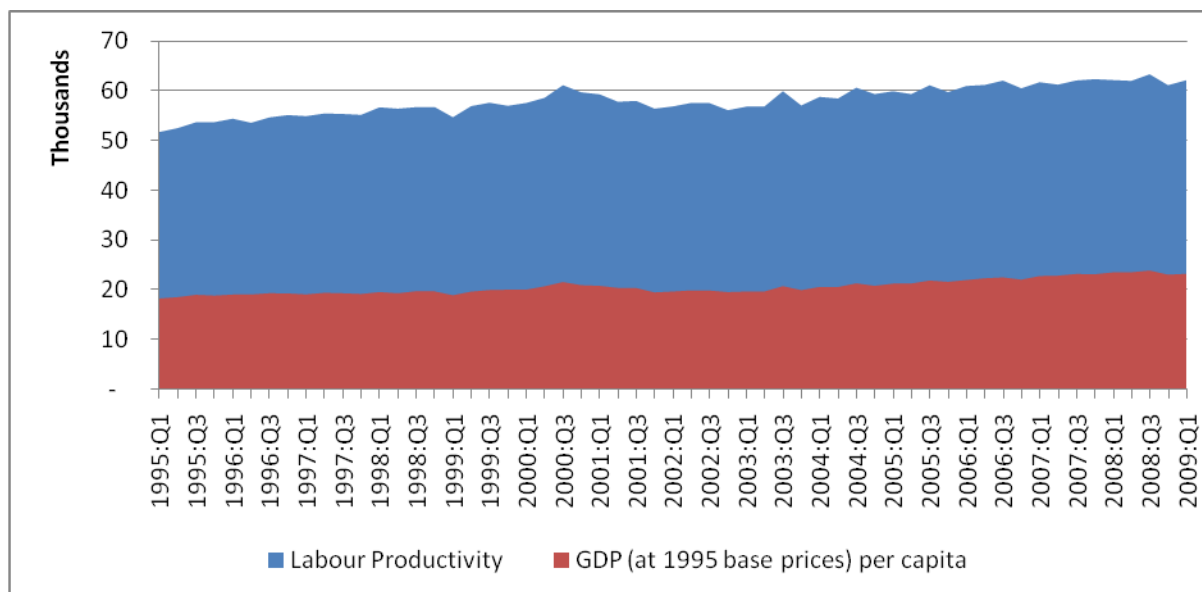
Source: Authors' computations, based on Central Bureau of Statistics data

When considering the effect of human capital on Gross Domestic Product we can also examine the Human Development Index, developed by the UN. Israel ranks 23rd, with a 2005 HDI value of 0.932, and a value of 0.946 in the Education Index. These measurements represent positive standing of Israel's human capital among the developed countries, contributing to the GDP. On the other hand, despite the quality of the human capital, the relatively low participation rate produces pressure on the labour force.

5.2.3.2.   Sectors Driving Growth

Analyzing the sources of GDP, it is easy to identify that the main sector driving the country's growth is the services sector. Banking and finance, trade and commerce, transport and communications, government-supplied and personal services, public and private education, and state of the art health care comprise by far the greater part of GDP during the recent decades. From this stand point, Israel economy has all the characteristics of a developed, post-industrial

country, which enjoys highly skilled human capital involved in knowledge intensive production as opposed to a low-skilled labour-intensive economy with industrial focus.

Figure 17: Added Value Contribution of Sectors to GDP (Billions of NIS at Fixed 1995 Prices)
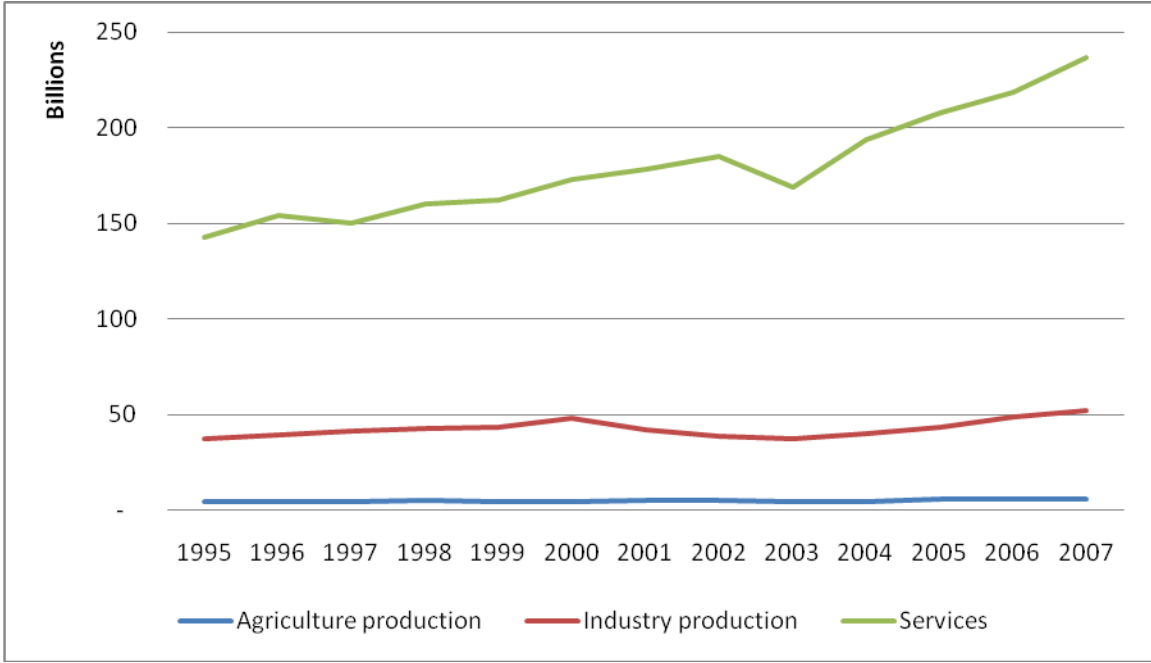
Source: Central Bureau of Statistics

Since the 90s and before the services sector has seen tremendous growth and greatly contributed to GDP. Two periods of different rate of growth can be evaluated: up to 2001 and after 2002 and to 2007. The first period development was slower than in the second judging by the steeper slope. It should be noted, that this sector is less immune to the crisis which occurred in the 2000s compared to others. At the same time industry production and agricultural produce to a greater extent remained stable with a small dip in production in the early 2000s' due to global crisis.

It is imperative to relate to Israel's Information and Communication Technology (ICT or Hi-Tech) industry, which represents one of the country's main economic growth engines. Yet this industry employs only 8% of the country's workers. Information technology boasts of the leading position in Israel economy (see the following figures).

Figure 18: Israel's Industrial Exports (Excluding Diamonds)by Year and Industry Type

	2005	2000	1995	1990
■ Low-Tech Industries	2,087	1,812	1,823	1,492
■ Mid-Low Tech Industries	4,751	3,171	2,542	1,537
■ Mid-Hi-Tech Industries	6,962	4,833	3,388	2,390
■ High-Technology Industries	11,767	11,188	4,549	2,278
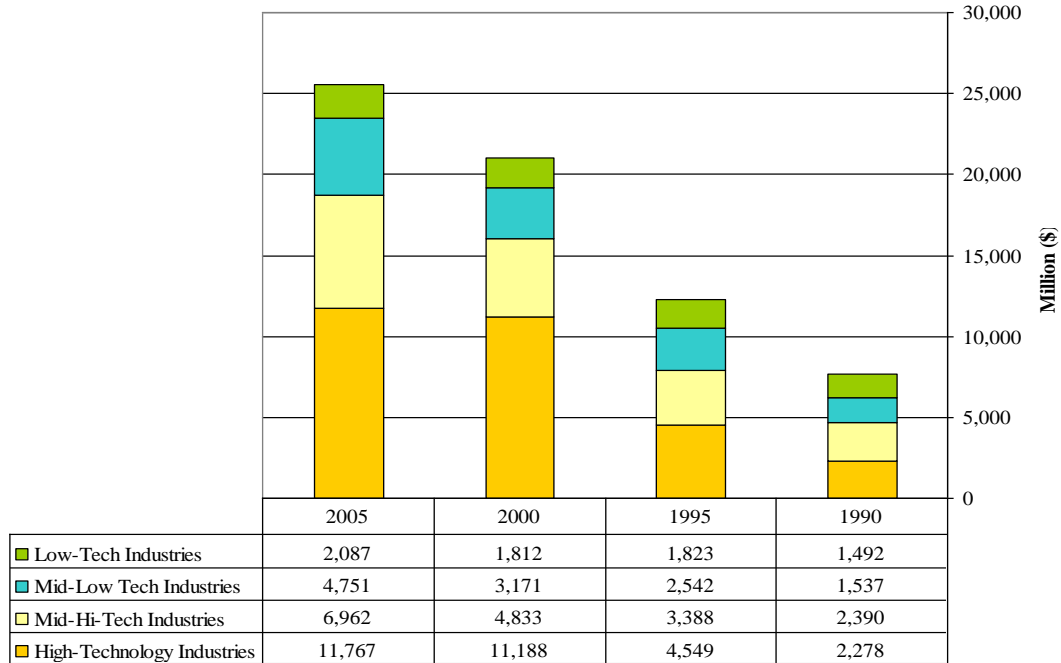
Source: Central Bureau of Statistics

Figure 19: Israel's Industrial Exports Components (USD, Millions) 1995-2009
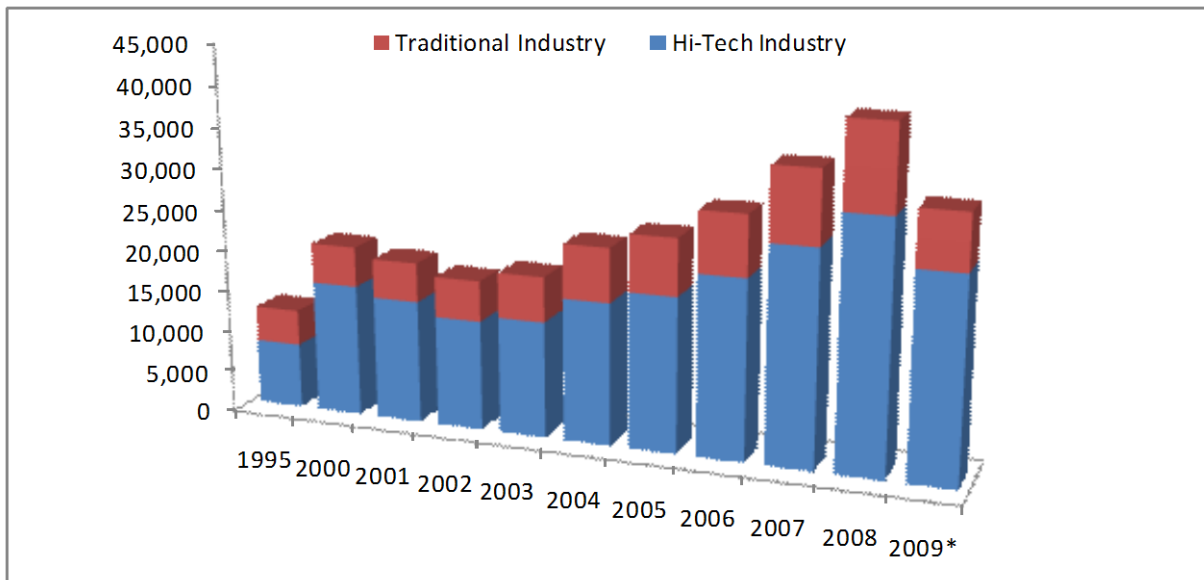
Source: Central Bureau of Statistics

*2009 January–April at an annual rate

An analysis by technological level shows that over the past decade high technologies represent approximately three quarters of the industrial exports. In 2008 the share of the High-Tech sector has been 74%. In the first four months of 2009, the share of the High-Tech sector increased, concurrent with a sharp decline in the overall industrial export as a result of the decrease in the global demand for goods and services.

5.2.3.3. Evolution of the Investment Rate

The investment rate in Israel has seen expansion during economic growth periods and contraction during economic downturn.

During 2008, gross domestic investment grew at a rate of 3.8%. Fixed capital formation grew by 5.1% in 2008, which is less than in previous years but still much higher than the average over the whole business cycle. The increase in investment led to a rapid increase in the stock of capital and a continuation of the increase in the proportion of investment in business sector product. Thus, the rate of increase in per capita investment is continuously higher than that in the developed countries and the gap created at the beginning of the decade narrowed considerably in recent years, as depicted by the figure below.

Figure 20: Per Capita Nonresidential Fixed Capital Formation Israel, US and Eurozone, 1999-2008 (index, 1999=100)
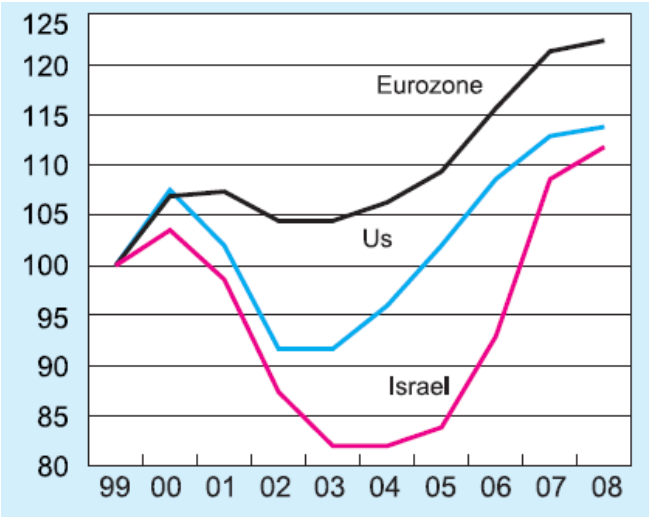
Source: Bank of Israel, Central Bureau of Statistics and OECD

Judging from figures no. 21 and 22 below, the rate of overall capital formation has dramatically increased during the last decade. In 2008, nonresidential fixed capital formation, excluding ships and planes, grew by 7.7% due to the rapid growth in investment in machinery and equipment and transportation vehicles while the investment in non-residential construction fell by 0.9%. Investment in residential construction grew by 3.8% which was a continuation of the upward trend since 2006.

The trend in investment also changed due to the economic slowdown in 2008. Thus, the investment in inventory (of raw material and finished goods) increased significantly during the fourth quarter with the decline in demand. Fixed capital formation, apart from ships and planes, has experienced a steady increase since 2003 until the second half of 2008. This was primarily due to the decreased imports of transportation vehicles.

The trends in other industries did not change significantly. The trend in investment was influenced in 2008 by a number of factors: the closing of the output gap as a result of the increase in employment and capital utilization, which meant that firms could increase supply only through the expansion of the capital stock; and the continuing downward trend in its price in all industries, apart from construction. On the other hand, the credit crisis and the increase in the risk premium and lower expected profits as a result of the global slowdown made investment less worthwhile and led to slower growth in investment. There was a connection between risk and investment seen during the economic slowdowns of 2002 as well as that of 2008. The risk premium rose steeply and as a result investment in the economy declined. At a later stage, the risk premium fell and investment again began to increase. This was true following the 2002 recession and is relevant again at the current economic crisis.

Source: Bank of Israel, Central Bureau of Statistics

The graph below depicts the evolution of the business sector investment development since 1990. It is evident from the graph that despite temporary economic slowdowns and subsequent decrease in investments, overall the investment rate has seen significant growth.

Figure 22: Gross Capital Formation in Israel (Business Sector) 1990-2008

Source: Bank of Israel, Central Bureau of Statistics

5.2.3.4.   R&D Investment

Israel currently has the world's highest rate of R&D investment as percent of GDP (4.5%; Sweden is next with 3.6%, OECD average is 1.8%). This is due to the central role the technology sector plays in the services industry.

Special emphasis should be put on the competitive environment in which Israel industry is active on the global scale. In 2007, an OECD study has examined the member states and a number of additional countries, including Israel. The research has shown that Israel business sector has supported 75.4% of the overall R&D investment, while the OECD average was 55%, and the European Union average was higher, at around 64%. Additionally, the rate of governmental R&D investment in Israel was merely 18%, a substantially lower figure than the average 28.5% in OECD countries, and 34% for EU states.
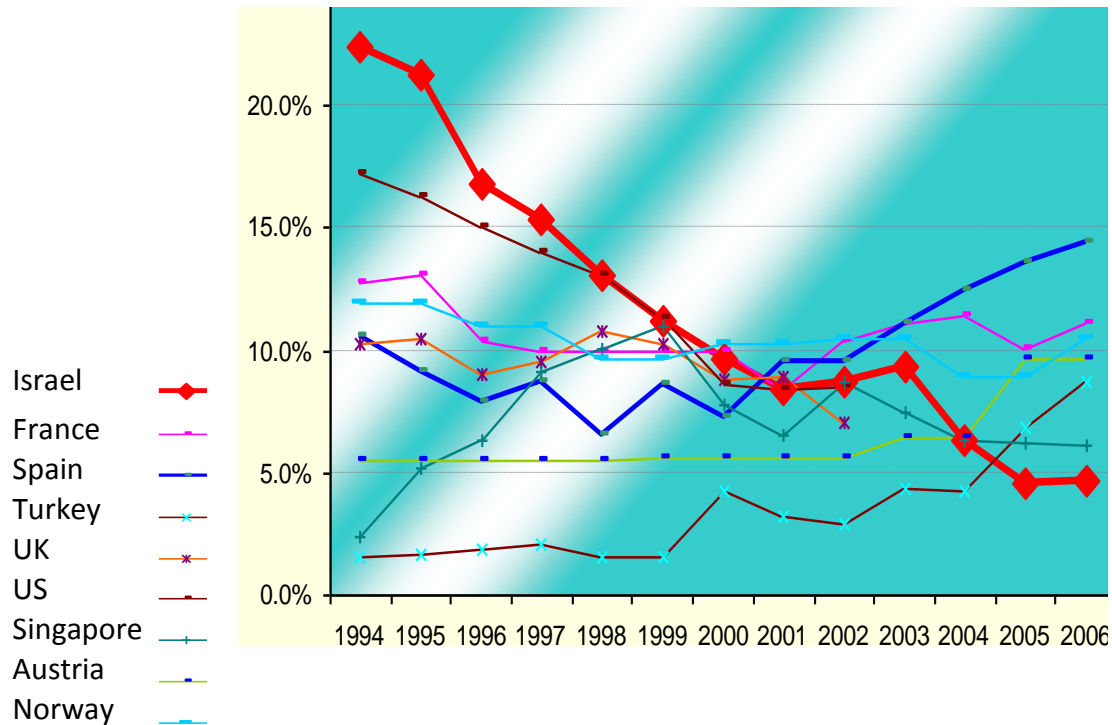
Source: OECD, Ministry of Industry, Trade and Labour

The above data present a decline in governmental R&D investment share out of the total business sector R&D in Israel contrasted with a rise in this channel of investment in other developed countries. The Ministry of Industry, Trade and Labour asserts that these data suggest a dangerous indifference of this country's politicians to the future of Israel's R&D and warns of a substantial potential hit to the economy's growth engine. The chart depicts the economic crisis in development in the High Technology sector even prior to the current deteriorating financial situation, which has accelerated these processes. Israel has no abundant natural resources, no relative advantage either in manufacturing or sales of products which are based on low-cost labour. Therefore, the differentiation strategy in the global market should be based on competitive advantage in the field on Information Technology, based on highly developed human capital, eventually leading to the economic growth.

5.2.3.5. Foreign Trade and Foreign Direct Investments

Foreign trade in Israel has moved consistently over the last decade in accordance with the state of the global economy. As the chart illustrates, it is clear that foreign trade has moved concurrently with the country's economic growth. Israel is a small economy, and as such is directly affected by shifts in global demand for products and services. These movements are immediately translated in the volume of foreign trade to be carried out in and out of Israel. The following graph charts the rate of foreign trade as a percent of Israel's GDP.

Figure 24: Foreign Trade as % of GDP, 2000-2008
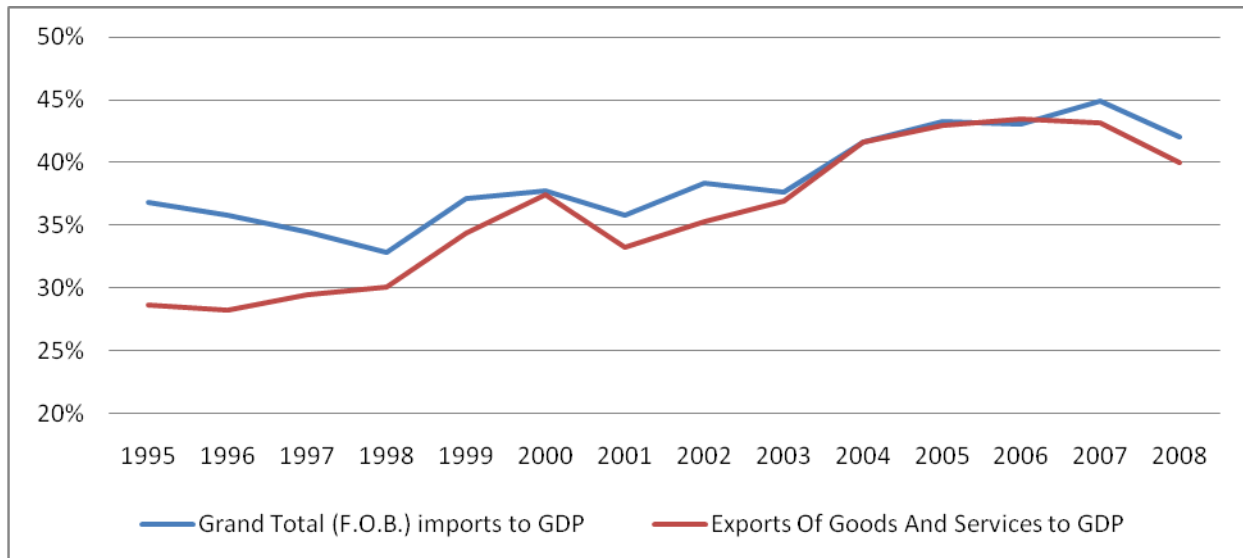
Source: Central Bureau of Statistics

In accordance with macroeconomic theory, international trade and GDP both have pro-cycle behaviour, while the FDI seems to have a life of its own: it reacts to business cycles with a certain delay. This lag may be caused by the span of time it takes investors to process changes, re-evaluate and execute their revised investment strategies.

It is clear from the charts below that though GDP per capita was already positive in 2004; it took until 2005 for Foreign Direct Investment flow to increase. It wasn't until 2006 that the substantial boost in FDI kicked in. This was the case even though the country has been

experiencing consistent growth ever since 2003 and in 2004 it has already seen an even higher growth rate of 5%.

The outstanding surge in FDI in 2006 is explained by an unusual investment event. In May 2006, Warren Buffet's US-based Berkshire Hathaway acquired 80% of the stock of Israel-based Iscar Metalworking Companies for USD 4 billion. Earlier in 2004 Isaac Tshuva, an Israel businessman who has the controlling interest in several transnational investment and holding companies, bought the Plaza Hotel on Fifth Avenue for USD 675 million. These two deals, despite their outstanding value in Israel terms, are only two examples of the increasing involvement of Israel business people and firms in the global economy to an extent that would have been deemed inconceivable just 20 years ago.

Figure 25: FDI Rate as Percent of GDP Rate, 2000-2008.
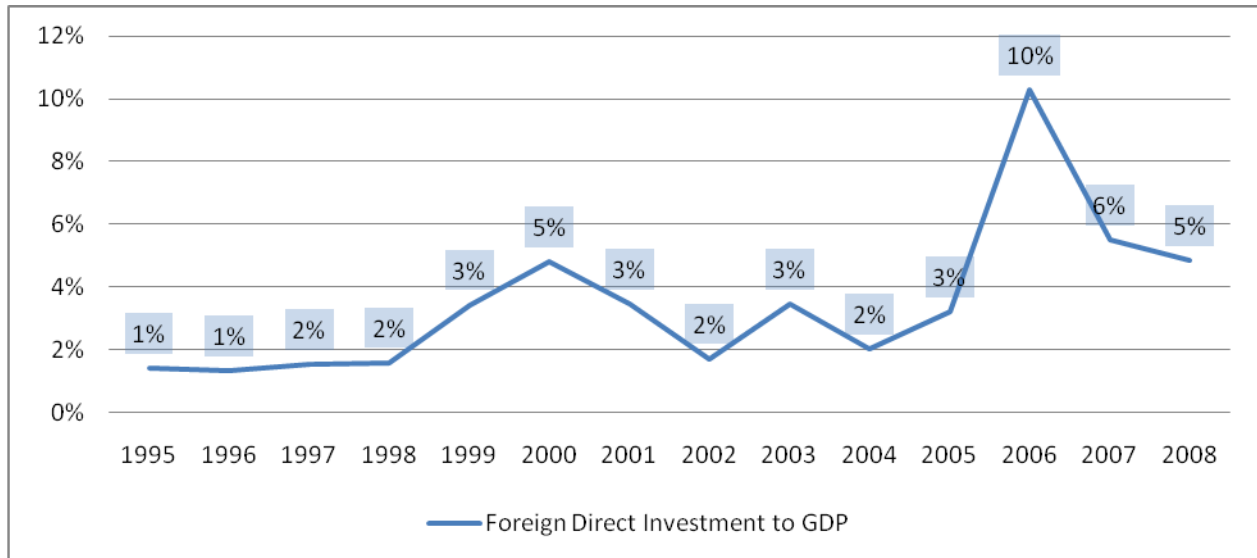
Source: Central Bureau of Statistics

Figure 26: Israel Foreign Direct Investment (FDI) Growth Rate (%), 1996-2008
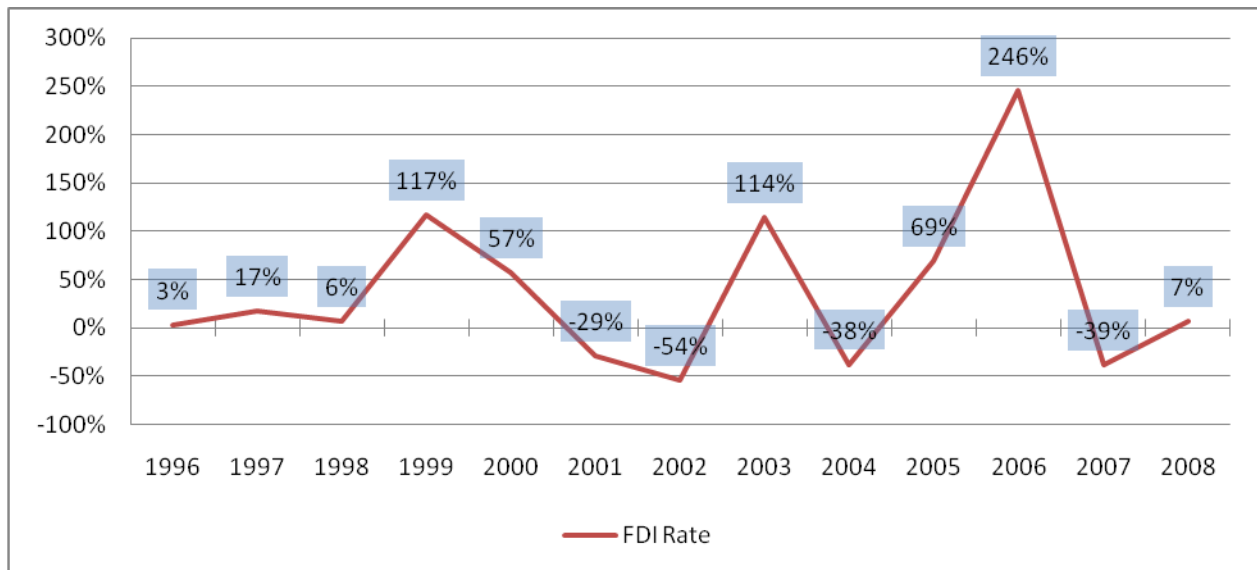
Source: Central Bureau of Statistics

Figure 27: Israel Foreign Direct Investment (FDI) 1995-2008 (USD, Current Prices)
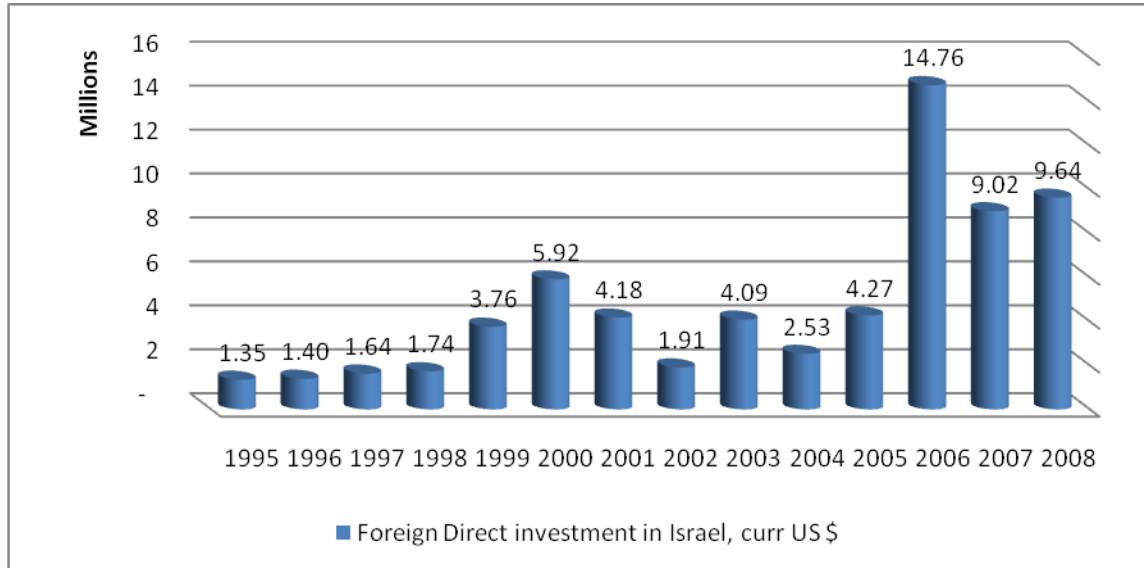
Source: Central Bureau of Statistics

Figure 28: Israel's FDI Evolution Compared with Merchandise Trade and GDP per Capita, 2001-2006
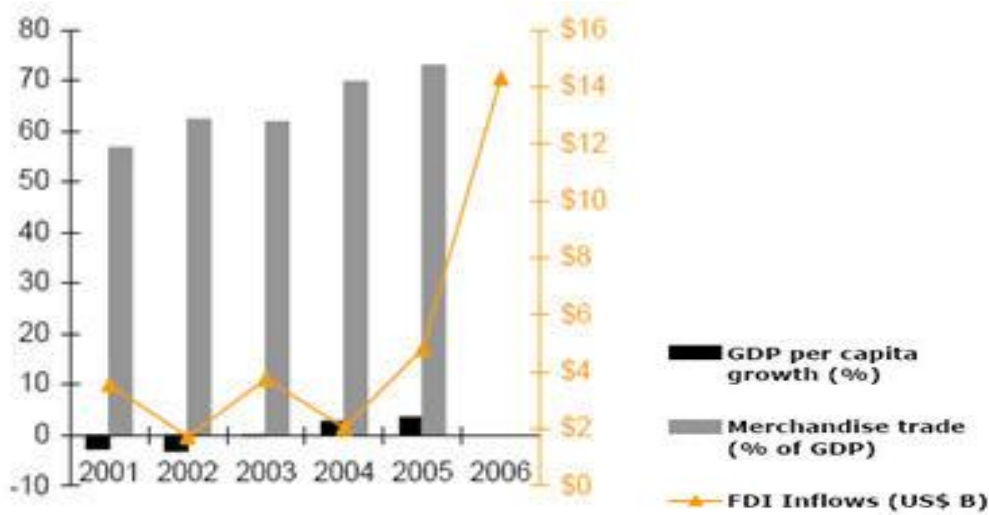
Source: World Bank Database Group and UNCTAD

5.2.4. Growth-Employment Elasticities

5.2.4.1.   Growth-Employment Evolution

The general trend of the growth rate in Israel market does not present a clear relationship between economic growth and employment rate. This is the conclusion to be reached when assessing the relationship between the unemployment rate over the past few decades and economic growth in Israel.

During spells of consistent GDP growth, unemployment kept on rising. Peaks of worst unemployment coincided with the influx of new immigrants in the early 1990s, which several years later joined the civilian labour force (see section 2.3.1, iii) and with business cycles of the 2000s. It remains to analyze the elasticities of economic growth relative to employment evolution in Israel, in order to gauge the sensitivity of the labour market to economic growth.

Figure 29: GDP Annual Growth and Unemployment Rate, 1970-2006 (%).
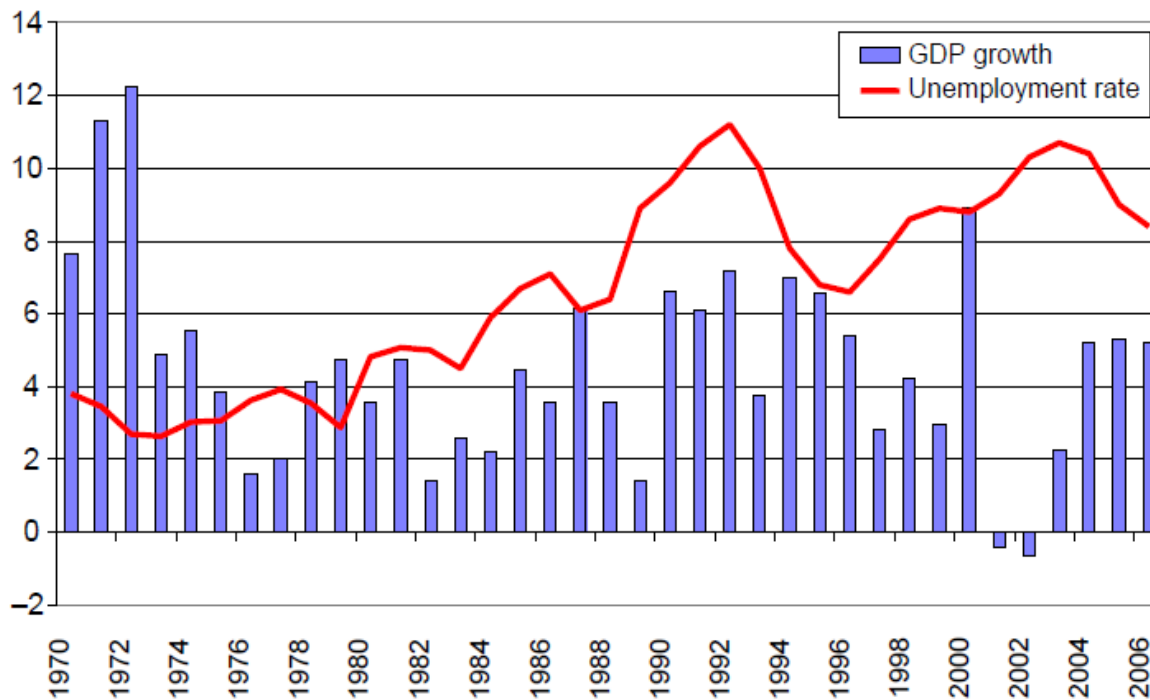
Source: Central Bureau of Statistics

5.2.4.1. Growth-Employment Elasticities

For the sake of clarity and simplicity of calculation which retains explanatory power we referred to Kapsos (2005) study. The purpose of the exercise is to gauge the correlation between output and employment, but not causality.

In order to estimate labour elasticities comparable to those computed by the ILO for other countries we used the methodology demonstrated by Kapsos (2005). We chose to estimate the regression of the following form:

$$lnE_t = \alpha + \beta lnE_{t-1} + \cdots + \gamma lnY_t + \varepsilon_t$$

Where the dependent variable is the log of employment; the independent variables include the lagged employment of one or two periods (generally 3 periods were tested, but proved to be insignificant in all specifications) in order to account for autoregression and also the log of GDP (indexed at the base prices of 1967), and finally the last term is the constant variance error with zero mean. This limited specification differs from the one proposed in Kapsos since it is based on the data for a single country, when in the original specification took into account cross-country effects. However, this specification still suffers from omitted variables which could lead to incorrect results.

In all 10 different elasticities were calculated using the general specification above, each with the relevant pair of variables. Mostly all data were since 1967, but youth employment series and service sector contribution to the GDP have limited availability – only since 1995.

The first four were calculated for total, men, women and youth employment, with the independent variable as the log of GDP in constant prices.

17. Table. Employment Elasticities - Sex, 1969-2007.

	1969-2007
Total	0.101
Female	0.213
Male	0.334

Source: Authors' calculations and Central Bureau of Statistics

18. Table. Employment Elasticities - Youth, 1995-2007.

	1995-2007
Total	0.357
Youth	0.233
GDP Growth (%)	4.08

Source: Authors' calculations and Central Bureau of Statistics

As we can see, for every 1-percentage point of additional GDP growth total employment grows by 0.357 points. Regardless the periods of negative growth during the periods covered, employment elasticities remain stable. Little difference is reported between 1995-2001 and 2002-2007, even though labour responsiveness slightly increases overall and for all sub-groups. Notably, the results suggest similar labour force volatility to GDP growth compared to global estimates of total employment elasticity 0.3-0.38 as reported by Kapsos. Assuming separability of elasticity and productivity, we can derive relatively simple relationship between these measures: when employment elasticity is between 0 and 1, positive economic growth is also paired with productivity growth and vice versa, given the same range for employment elasticity, negative growth is aggravated by falling productivity.

As for demographic characteristics of employment elasticities, younger workers' employment (aged 15-24) grows less with economic growth than the overall employment. That is, greater participation among youth is achieved with higher levels of GDP rate. However, comparison to global trends of -0.02 and 0.06 elasticities suggests pronounced vitality of Israel youth labour market: every additional percent of GDP growth produces 0.233 percent growth in youth employment.

Gender plays a diminished role regarding the elasticities: contrary to global gaps between working men and women in participation flexibility, Israel male and female labour force reacts almost similarly to growth shocks, whilst males' employment reaction is stronger.

Israel economy shows diversion among its sectors, as evidently, we can judge from different growth rates in agriculture (0.17), industry –0.104and services – 0.168%. Services which comprise commerce, transport, finance, personal, government, education and health contribute greatly to the GDP and has greater employment elasticity compared to other sectors. Employment in agriculture changes little with greater economic growth: it dwindles by minus 0.17 percentage points for every percentage of shekel, but still more than the comparable measure in the global statistics (Kapsos, 2005).

When the regression is run with respective employment variable, sector value-added elasticity shows lesser deviations. Still, services sectors is the most responsive to growth shocks with almost 0.168 percentage points change in employment for every percent of change in GDP. The pronounced importance of the services sector in the economy suggests also a structural weakness: service workers seem easier to fire and to hire in a changing economy.

19. Table. Sector employment elasticities and value added elasticities by economic sector, 1969-2007.

	Agriculture	Industry	Services
Sector GDP elasticity	-0.17	0.104	0.168
Sector value-added elasticity	-0.120	0.128	0.37*
Average annual value-added growth rate (%)	2.63%	3.00%	4.48%

*Due to data availability, services value-added elasticity data is from 1995-2007 only
Source: Authors' calculations and Central Bureau of Statistics

5.2.5. Trade and Work

5.2.5.1.   Israel Trade Policy

The Ministry of Trade and Labour oversees the trade policy and agreements. In general, Israel is situated in a central geographical location, between Europe and Asia, and has access to the Mediterranean Sea, with two major sea ports: Haifa and Ashdod. Israel's trade policy aims to

include as many trade agreements and enable free trade whenever possible. These agreements enable free import, providing a full exemption or deduction of tariff taxation.

According to the 2007 Annual Report of the State Revenue Administration, the percent of export coming from countries Israel does not have trade agreements with was 40% in 2007. These countries include China, Russia, Japan, Hong Kong and India.

Israel has Bilateral and Trade Agreements enabling free trade with the World Trade Organization as well as with the following countries or trade regions: EFTA (Iceland, Norway, Switzerland and Lichtenstein), USA, European Union, Turkey, Jordan, Mexico, Canada, Egypt, Mercosur (Argentine, Brazil, Uruguay, Paraguay and Venezuela). See Appendix IV for a more detailed list of the trade agreements.

5.2.5.1. Israel Trade Levels

Israel's trade levels have seen continuous growth over the past decade. As depicted in the figure below, it is evident that local trade levels follow GDP evolution, with trade levels rising during periods of economic growth and declining during economic slowdown.

The most frequently used indicator for measuring the importance of international business transactions in comparison with domestic transactions is the "Trade-to-GDP Ratio", which is the sum of exports and imports divided by GDP. International trade trends tend to be more important for small countries (in terms of population size, such as Israel), and with neighbouring countries with open trade regimes, rather than for large and relatively self-sufficient countries (such as the US) or those that are geographically isolated and thus penalised by high transport costs.

The "Trade-to-GDP Ratio" is often called the "Trade Openness" ratio. However, the term "openness" may be somewhat misleading: a low ratio does not necessarily imply high (tariff or non-tariff) obstacles to foreign trade, but may be due to other factors, as mentioned above. In Israel this Trade Openness ratio does provide important insight in the economy's development level. This is due to its small population (7.4 million as of May 2009) and proximity to European markets.

The indicator represents the combined weight of total trade in the economy, a measure of the dependence of domestic producers in foreign markets and of domestic demand on imports of goods and services.

Several notable papers (Dollar, 1992; Sachs and Warner, 1995; Edwards, 1992) have found that trade openness is associated with more rapid growth. Recently, the study by Dollar and Kraay (2005) using the GMM estimation of roughly 100 countries in the 1980s and 1990s confirmed these findings, concluding that a 100% increase in trade volumes resulted in a 25% cumulative rise in incomes during over a decade.

During the economic boom of 2000, the Trade-to-GDP Ratio in Israel has reached 75%, its highest level up until that point. The ratio subsequently declined sharply in 2001 to 69%, but has experienced consistent growth year after year until 2007, reaching 88%. 2008 was the first year since 2001 in which the Trade-to-GDP ratio has declined, reaching its 2004 levels of 83%. It is evident that Israel economy's trade levels move in parallel to Israel economy and product.

Figure 30: Israel Total Trade to GDP Ratio* (Trade Openness)1995-2008(%).
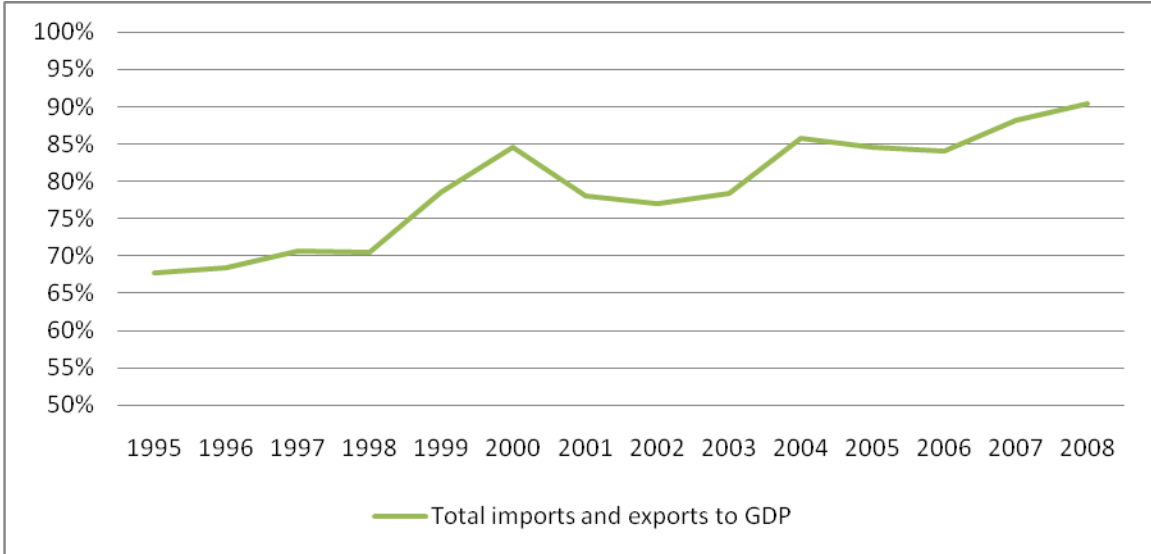
Source: Central Bureau of Statistics
*Note: Trade Openness Ratio = Trade to GDP Ratio = (Export + Import) /GDP

Figure 31: Israel Trade (Exports and Imports) and Real GDP (millions NIS) at 1995 Fixed Prices, 2000-2008
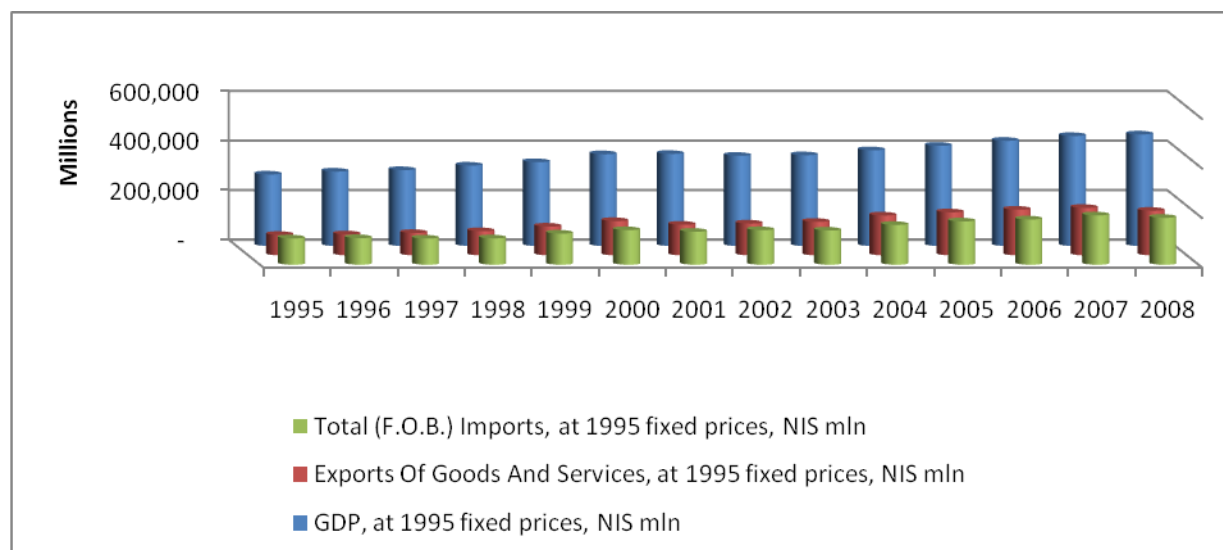
Source: Central Bureau of Statistics

Israel's trade level is correlated with the international and global trade levels. This can be clearly seen by comparing Israel's Trade Openness Ratio with that of other European countries. Additionally, it is noteworthy that Israel's trade level is characterized by a relatively high Trade-to-GDP ratio, especially since 2004. This is the result of 2003 reforms, which have given a strong boost to exports.

Israel relies heavily on trade to gain natural resources and other raw materials. Advanced tools and machinery; moreover, it has a sound export sector with almost every middle-size company developing international trade connections. Owing to its necessities and this entrepreneurial spirit Israel enjoys a relatively high Trade Openness Ratio among other developed countries, such as France and the UK. However, some countries with developed foreign trade, namely Denmark and Germany, have a similar Trade Openness Ratio to that of Israel.

Figure 32: Trade Openness Ratio* (%) Israel and Other Countries, 2000-2008
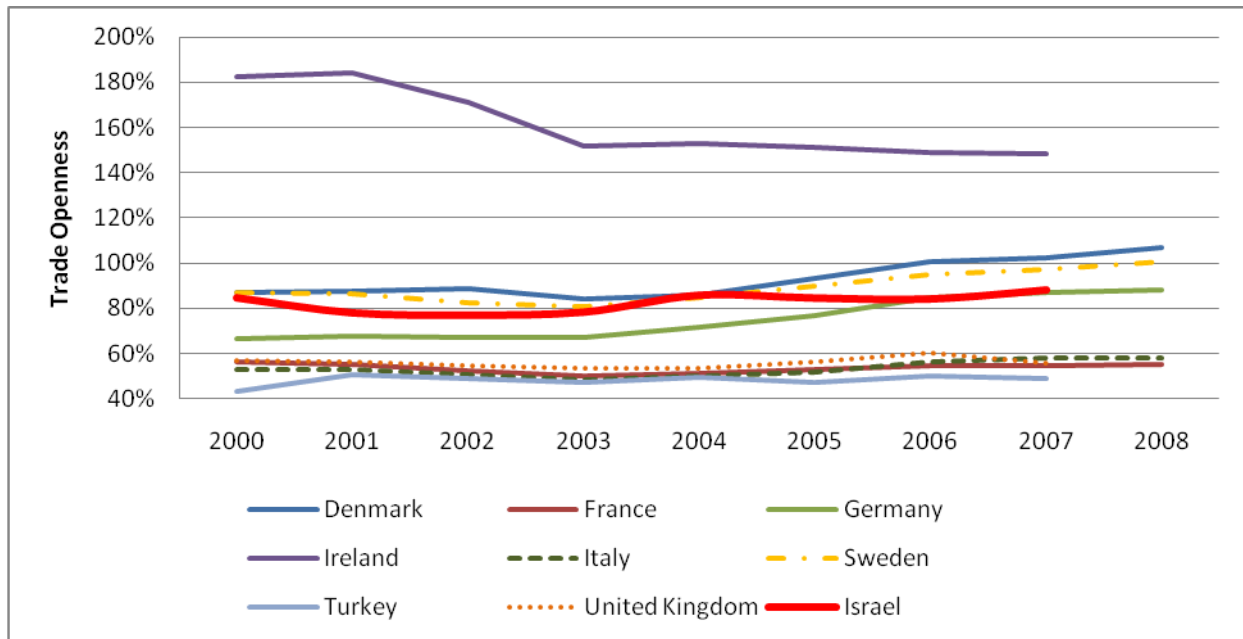
Source: Central Bureau of Statistics, OECD
*Note: Trade Openness Ratio = Trade to GDP Ratio = (Export + Import) /GDP

5.2.6. Trade and the Labour Market

Building upon the conclusions of the previous section, one would expect that the labour market with such high trade levels to be huge. In reality, the participation rate is merely 56.5% while the trade openness has risen to 90.3% in 2008. However, both measures have seen expansion and an increase over the past decade.

20. Table. Trade and Labour Market Data Overview, 2008

	2008
Population	7.4
Labour Force Size	2.8 mm
GDP Per Capita (PPP)	27,382
Participation Rate	nis
Export to GDP Ratio	56.5%
Import to GDP Ratio	40%
Trade Openness Ratio	42%
	90.3%

Source: Central Bureau of Statistics

The participation rate in the civilian labour market as can be seen in the chart below has increased by almost 7% from around 50% in 2000 to 56.5% in 2008, while Trade-to-GDP Ratio has expanded by almost 20%: from 70% to 90% respectively. This disproportionate increase would suggest that trade effects on labour are positive and strong, but somewhat limited. Further investigation of trade and employment interaction is to be carried out in consecutive sections.
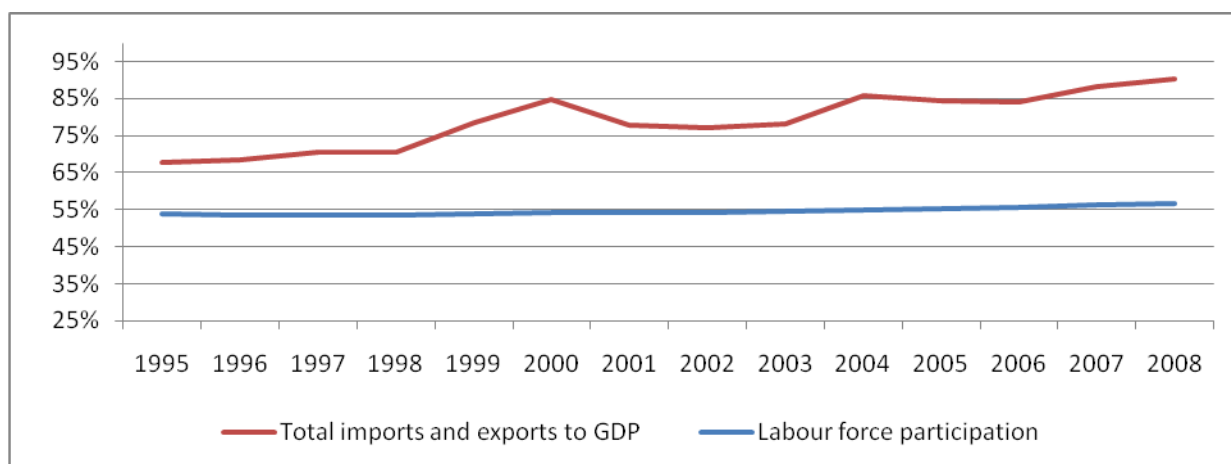
Source: Central Bureau of Statistics
*Note: Trade Openness Ratio = Trade to GDP Ratio = (Export + Import) /GDP

5.2.7. Trade and Employment

5.2.7.1.   Trade-Employment Elasticity

Our calculations show that trade has become more important for employment formation during the last years. Using the similar methodology for employment elasticities influenced by GDP growth, we formulated a regression that estimates how trade openness would change overall employment. For every percentage point increase in trade openness we expect employment to rise by 0.24 during '95-'01, that is until the high-tech bubble crisis and by 0.81 in the subsequent period until 2007. These numbers suggest that employment has become dependent on trade flows in an out of the country. Reforms aimed at fostering growing trade volumes would greatly increase employment in the labour market.

21. Table. Employment Elasticities of Trade Openness, 1995-2007

	1995-2001	2002-2007
Employment elasticity	0.247	0.814

5.2.7.1. Relationship between Trade Openness and Employment

Having checked the relationship between Israel trade levels and the participation rate of the population in the civilian labour force we move on to a correlation between unemployment and trade levels. The expectation is that the relationship turns out inverse, since greater trade volume implies more employment opportunities.

In order to determine the relationship between Israel trade volume and the number of job seekers (routinely computed as the rate of the population in the civilian labour force), we focused on the regression between trade openness, as referred in earlier sections, and unemployment rate. Again, the specification is similar to that of the previous section, when the explained variable is the unemployment rate and the independent is Trade-to-GDP ratio. We found significant inverse relationship between the variables, which suggests that raising trade reduces unemployment.

22. Table. Job-seekers and Trade Openness, 2000-2008

	2001-2008
Unemployment elasticity	-2.87

Source: Authors' calculations and Central Bureau of Statistics

This econometric finding can be justified by the means of comparison as can be deduced from the graph below.

Figure 34: Unemployment Rate in Israel's Civilian Labour Force and Trade Openness Ratio* (%) 1995-2008
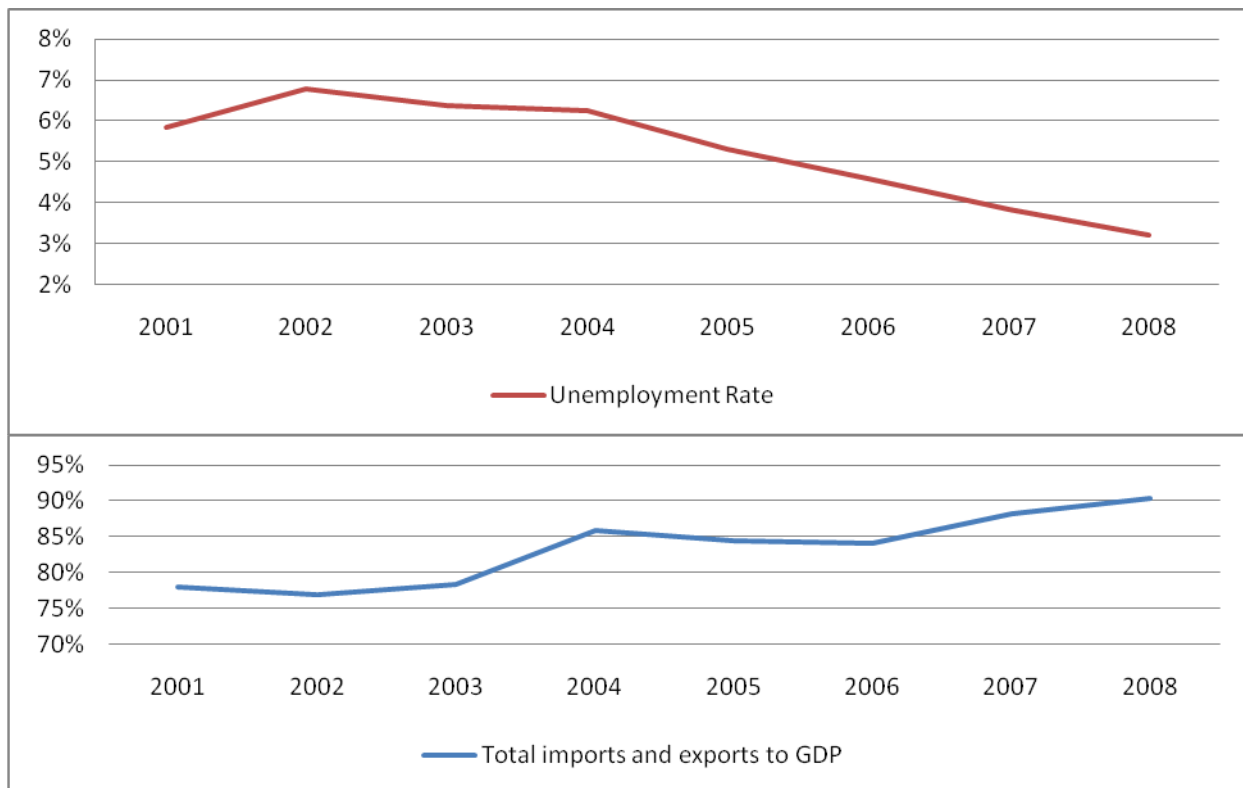
Source: Central Bureau of Statistics
*Note: Trade Openness Ratio = Trade to GDP Ratio = (Export + Import) /GDP

The substantial literature investigating the links between trade, trade policy, and labour market outcomes—both returns to labour and employment—has generated a number of stylized facts, but many open questions remain. Hoekman and Winters (2005) have surveyed the subset of the literature focusing on trade policy and integration into the world economy. Although in the longer run, trade opportunities can have a major impact in creating more productive and higher paying jobs, a great deal of the literature tends to take employment as given. A common finding is that much of the shorter run impacts of trade and reforms involve reallocation of labor or wage impacts *within* sectors. This reflects a pattern of expansion of more productive firms—especially export-oriented or suppliers to exporters—and contraction/adjustment of less productive enterprises in sectors that become subject to greater import competition. Wage responses to trade and trade reforms are generally greater than employment impacts, but trade can only explain a small fraction of the general increase in wage inequality observed in both developed and developing countries in recent decades. A feature of the literature survey is that the focus is almost exclusively on industries producing goods. Therefore the negative effect that trade openness has on employment is mainly in countries with large manufacturing sectors. Hoekman and Winters argue, that given the importance of service industries as a source of employment and determinants of competitiveness, future research should be conducted in order to examine the employment effects of services trade and investment reforms. It is important to point out, that as presented above, Israel's services industry is the largest sector and has the largest number of employed persons.

In a more recent research Dutt et el.(2009) found, using cross-country data on trade policy, unemployment, and various controls, and controlling for endogeneity and measurement-error problems, a fairly strong and robust evidence for the Ricardian prediction that unemployment and trade openness are negatively related. This positive effect, which we have empirically found of trade openness on unemployment is apparent for capital abundant countries, such as Israel, although it turns negative for labor-abundant countries.

The above research reports suggest that, being a services-oriented economy, where capital is abundant and labour force is relatively limited, the effect of trade openness on employment would, indeed, be positive, as evident by the data presented in the figures above.

Consequentially, economic policies aimed at augmenting trade volumes have positive influence on employment by creating new work places and by reducing joblessness.

5.3. The Labour Market

5.3.1. The Labour Force

5.3.1.1.   Participation Rate

The participation rate in Israel has been significantly lower relative to other developed countries during the past decade. The rate has been 56.8% in 2009 according to the CBS, as opposed to 72% in the US and 66.7% in OECD countries in 2007, according to the OECD. This is mainly due to a large part of the population in Israel which does not partake in the work force for social and cultural reasons. The participation rate is a key measure to look at when evaluating decent work, as it often represents inherent impediments in the labour market. We believe this may very well be the case in Israel labour force.

The main trend of the participation rate for the overall population has been a steady upward trend (climbing from 54.3% in 2000 to 56.8% in 2009). The 2003 reforms in Israel social security and taxation scheme have focused on cutting social benefits and direct income taxation. These structural changes were done in an attempt to increase the participation rate in the civilian labour force, and indeed have boosted participation rates to new levels.

Figure 35: Civilian Labour Force, (thousands), 1995-2008
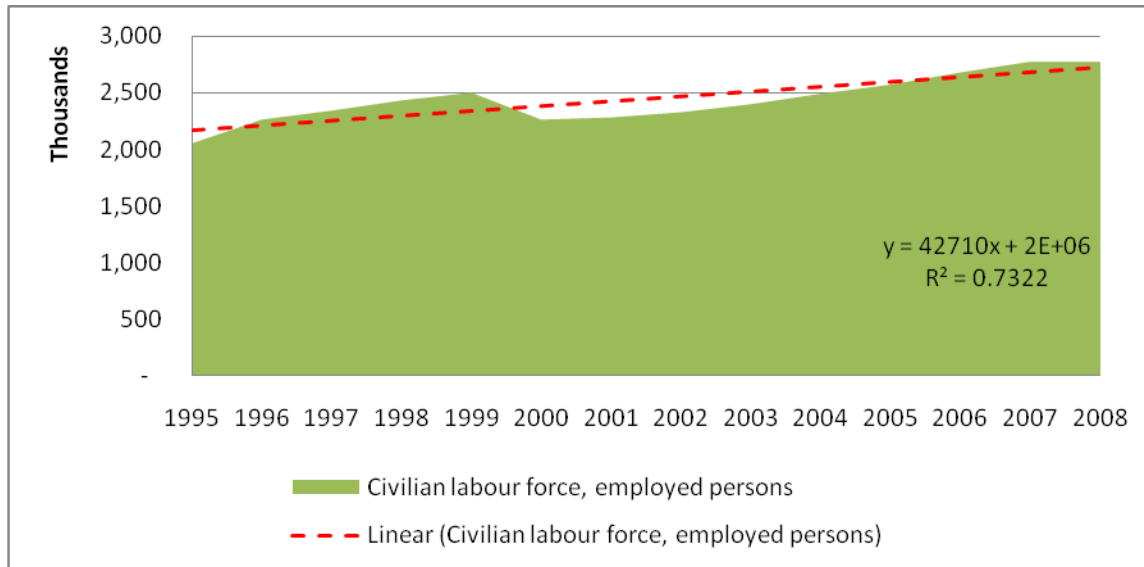
Source: Central Bureau of Statistics

Figure 36: Civilian Labour Force Participation Rate (%), 1995-2008
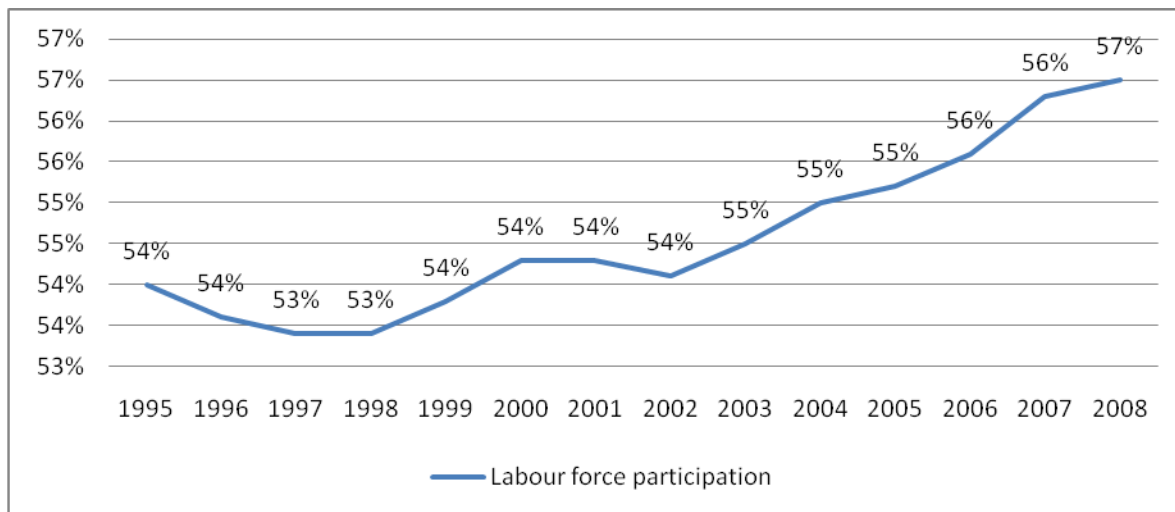
Source: Central Bureau of Statistics

5.3.1.2.   Minorities within the Labour Force

Minorities in Israel face both cultural and social barriers upon entering the labour market. The most significant minority group in Israel labour force, comprising about 20% of the population,

is Israel Arabs. These Arab Israelis have historically shown low participation rates and higher unemployment rates than the rest of the population.

Actually, the participation rate among the minorities has been low: 42.6% in 2001 and 44.6% in 2009 (CBS). This phenomenon has several causes - one major reason is the low participation rates of Arab women due to cultural patterns, with a participation rate of only 21% in 2006. Female labour is uncommon within the Arab sector, especially in the Muslim and Druze populations. The level of education attainment is also a factor in the rate of participation, as participation rises with the level of education. However, it is still less significant than the social role of men and women: even the participation rate for highly educated women (16+) is still lower than that of men with elementary education attainment levels.

Additionally, the unemployment rate in the Arab sector is also higher than in the Jewish sector. For instance, in 2007 it was 8.9% for the Arab-Israelis while the national average was 7.3%. One of the main reasons for higher unemployment rates among Arab-Israelis is education attainment. On a broader scale in terms of overall development of the labour market, the demand for graduates of academic establishments has expanded while the demand for unskilled labour has gradually declined. Thus the Arab population finds it hard to cope with slacking demand for their skills. The reason of low education attainment of this minority is mainly due to the inferior state-funded public education system: in 2006, *bagrut* (high-school diploma) attainment rates in the Arab sector were 49.4%, whereas the corresponding rate in the Jewish sector was 64.3%.

It is important to note, however, that unemployment within the Druze population (a minority group within the Arab-Israel population) is lower than that of the Jewish sector. A study conducted by Nadiv et al (2005) in the Ministry of Industry and Commerce found that in 2003 the rate of unemployment for the Druze population was 7.5%, compared to 10.5% for the Jewish population at the time. This is explained by the high rate of Druze men serving as military professionals and by the fact that Druze women who are unable to find work usually leave the labour force and choose not to participate in the labour market. Levi (2006) points out another reason for the high unemployment rates among the Arab minority, namely the discrimination in Israel labour market. Klinov and Mashmush found that the chances of a Jewish

man to participate in the labour force are 23% higher than those of a minority man and this increases to 24% among women (without the effect of education).

Figure 37. Arab Males' Civilian Labour Force Participation aged 15+ (100%= 437.1 K), 2007
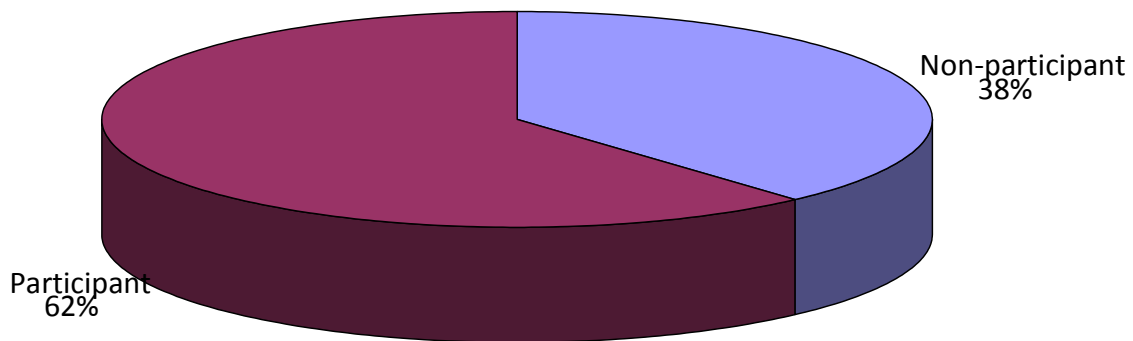
Figure 38. Arab Females' Labour Force Participation aged 15+ (100%=425.9 K), 2007
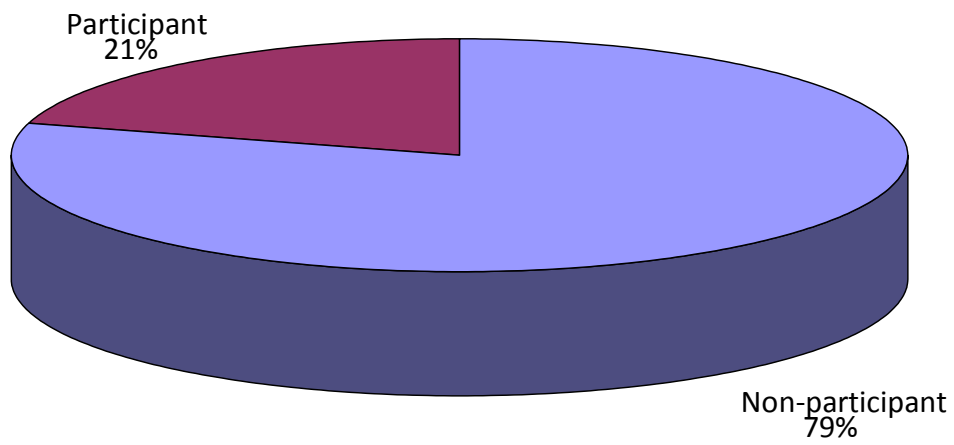
Figure 39. Arab participation rates by years of education (% of Arab population aged 15 and over in educational segments), 2007

Source: Analysis based on CBS *Statistical Abstract of Israel*, 2009

5.3.2. Skilled Labour

5.3.2.1. Education System

The Israeli law designates an important role to the education system. The law regarding schooling provides free mandatory school for all citizens, aimed at receiving education through the end of high school. Public school is available and obligatory to the entire population of youngsters where basic education and skills are provided to all.

In the last few years of high school matriculation exams ("Bagrut") are given to the students. This "Bagrut", along with another exam consist of the requirements for admittance to universities. State universities receive funding and subsidies from the Government, offering relatively affordable student tuition, identical for all majors. Colleges are also available in Israel as a means for receiving higher education. These are private institutions, where the admission

requirements are not as high as the universities, but without Governmental support, they typically have substantially higher tuition rates.

The percent of students which were entitled to a "Bagrut" diploma in 2006 was 53.4%, and 45.9% of all 12th graders met university entrance requirements. These figures in 1996 were 50.5% and 39.9%, respectively, which points to an apparent improvement in the high school education system.

The following figure depicts the employed persons in the Israeli labour force by highest diploma attained.

Figure 40: Employment by Education Level, 2007 (Employees % in Civilian Labour Force, by Years of Schooling)
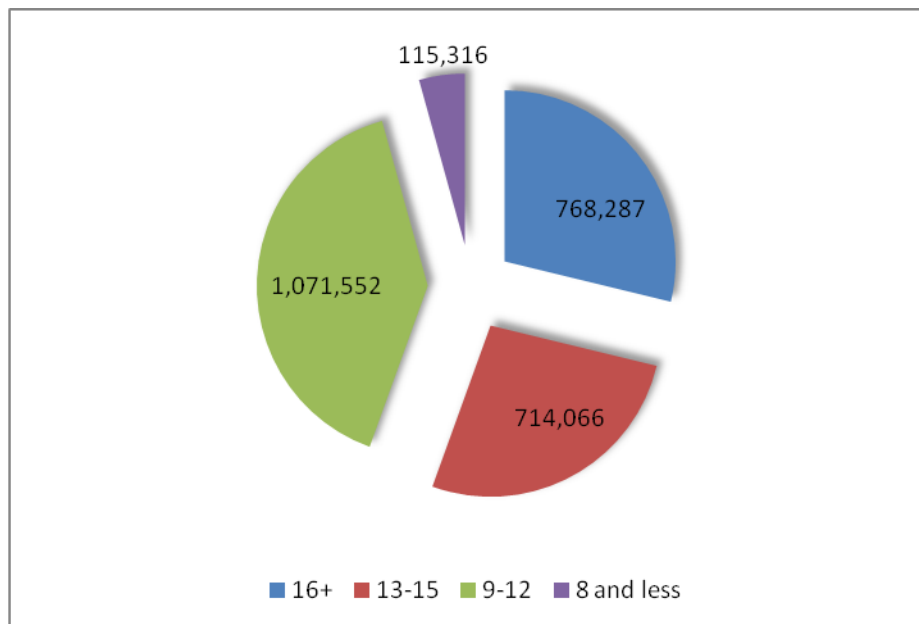
Source: Central Bureau of Statistics

5.3.2.2. Labour Skills

The evolution of the skill composition in the Israeli labour force is depicted in the following figure. It is evident from the graph that there is a wide distribution between the various skill levels. The evolution of the skill composition of the Israeli labour market over the past decade shows that there hasn't been a significant change in the skill distribution.

Figure 41: Employment by Occupation, 2003-2007 (Number of Employees for each Occupation in the Civilian Labour Force)
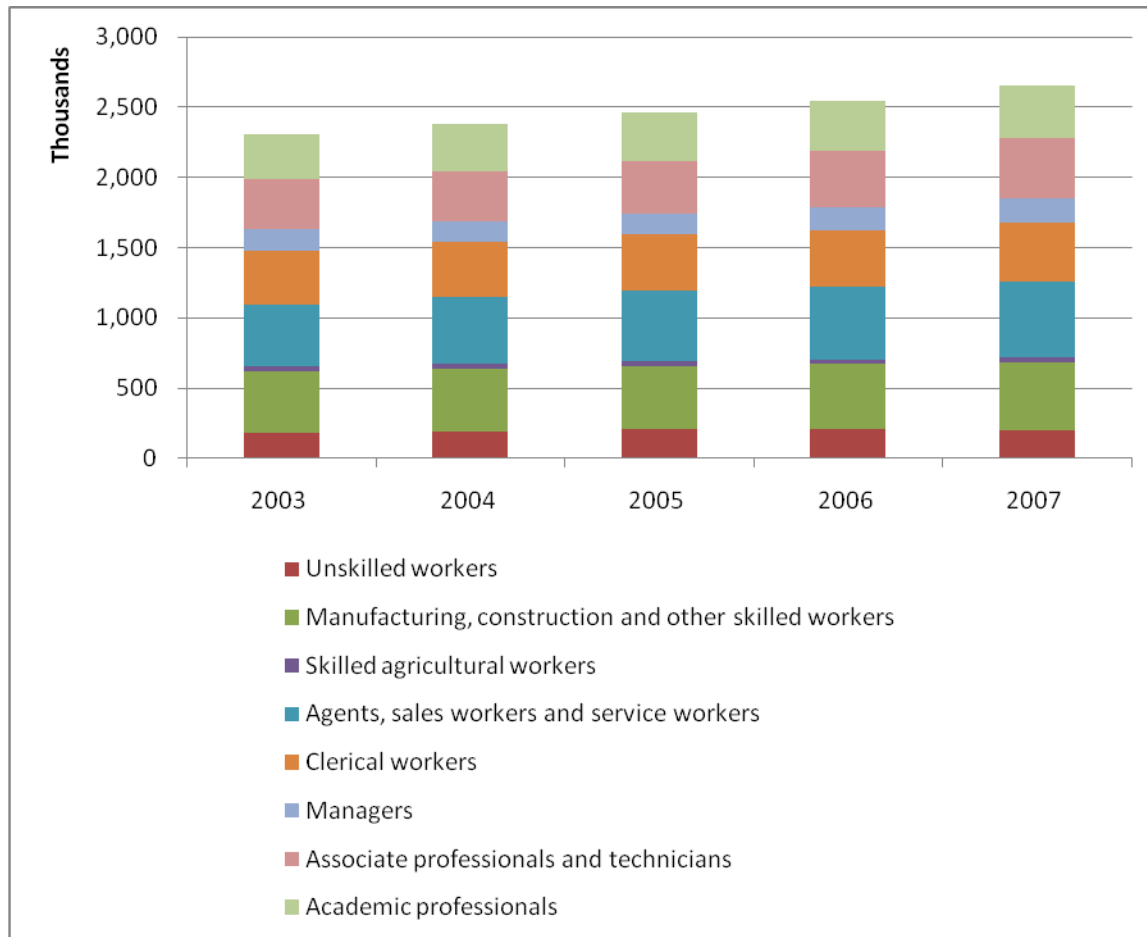
Source: Central Bureau of Statistics

Figure 42: Employment by Education Level, 2003-2007 (Number of Employees for each Occupation by Years of Schooling)
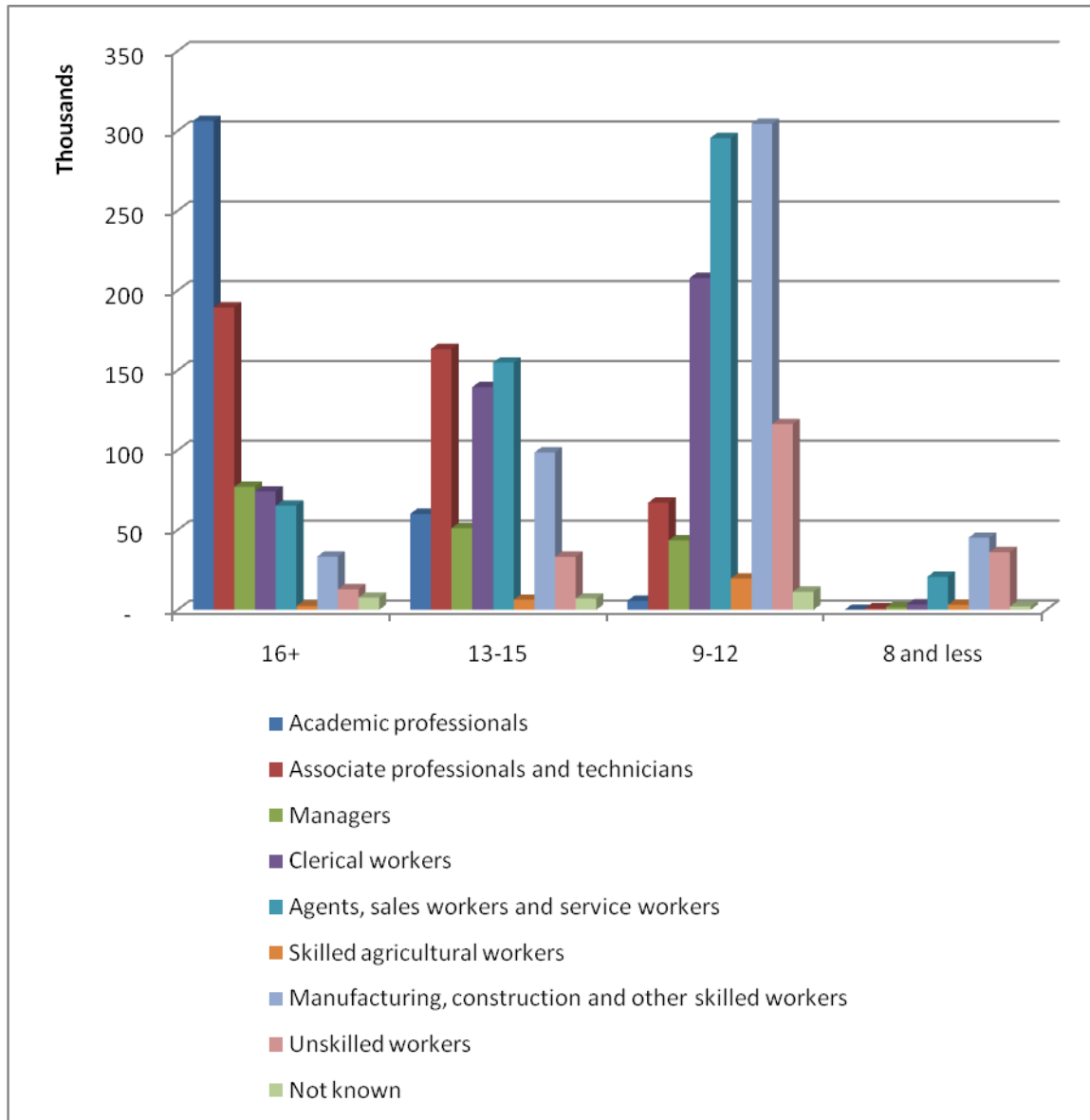
Source: Central Bureau of Statistics

5.3.2.3.   Skilled and Non-Skilled Workers

Barro (2000) determined that there is a strong role for secondary schooling, rather than primary schooling, in enhancing economic growth. Empirical evidence has shown that this is the case in Israel as well, whereby the rate of participation in the work force rises with the level of

education. Technological progress along with globalization and the ability to outsource low cost labour were a major cause for the increased demand for skilled labour. This caused a surge in wages of skilled workers compared to the stagnant wages experienced by the non-skilled workers.

These effects have further reduced the position of non-academics in the labour market, leaving many unemployed or unemployable. According to the Ministry of Industry, Trade and Labour, the number of jobs in low-tech industries in Israel declined by 19.5% in the period 1995-2005. Moalem and Frish (1999) found that in Israel, 'highly skilled' personnel (academics and executives) earned an average 180% of the average wage in 1997, an increase from 155% in the 1970s. Alternatively, semi-skilled workers with little or no training or education earned an average of 55% of the average wage, falling from 70% in the 1970s. This widespread phenomenon has been documented by Juhn, Murphy, Pierce (1993) as well as Bound and Johnson (1992).

The data reveal that a dual labour market has existed in Israel for over two decades. This phenomenon is especially visible in the unemployment rate, labour force participation rates and the average wage, with clear disparities between academics and non-academics.

Figure 43: Unemployment Rate - Academics and Non-academics (1999-2005)
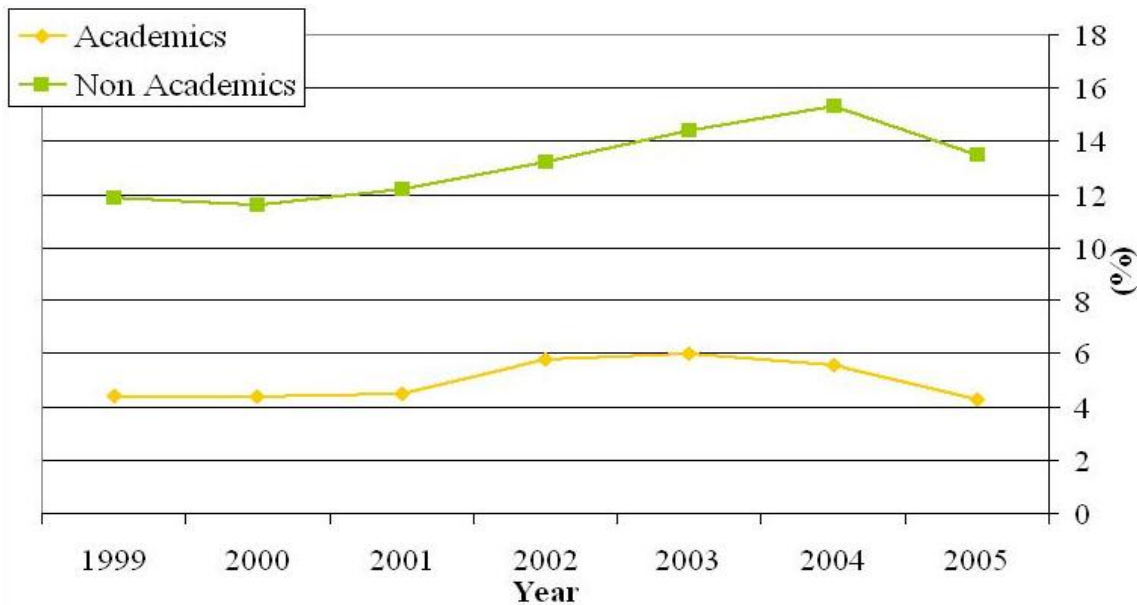
5.3.2.4. Demand for Labour

Before the economic crises in 2008, labour shortages were evident in Israel labour market - especially for High Tech wage earners and Low Tech industry wage earners. Technical training is very much in demand - according to estimates made for the TOB program in the Ministry of Education (a program for training high school graduates and non graduates in technical fields), there is a shortage of 5,000 employees each year in technical fields. This is in addition to many unskilled workers who are in demand in construction and agriculture, and are replaced by foreign wage earners (due to lack of willingness of domestic workers to take part in these fields of work). In pre-recession years, the main shortages of workers were recorded in the industry sector. This is visible in the graph below, as the most significant demand for skilled employees came from industry and construction employers (44% of all open positions).

Figure 44. Demand for Skilled Employees (unfilled positions at the Public Employment Service), Total = 10,989, May 2007
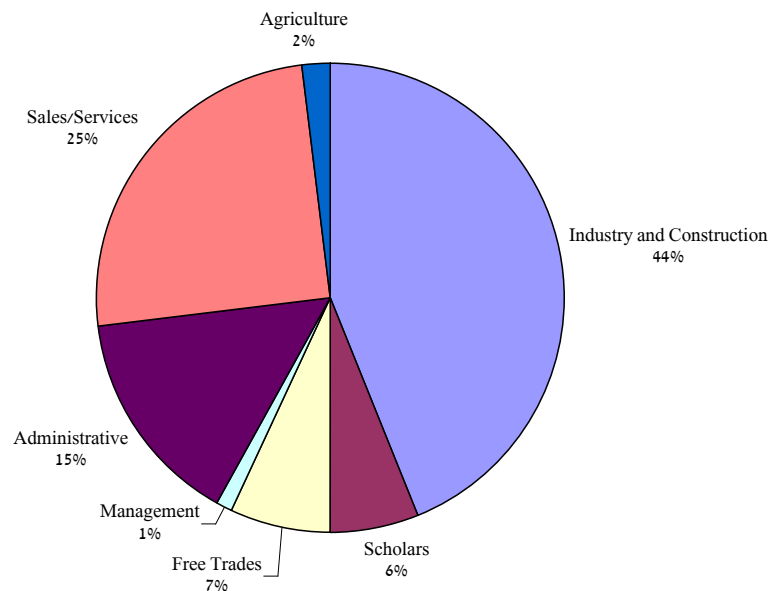
Most of the workers in the industry sector are domestic (with almost no foreign wage earners), whereas in the construction sector most employees are foreign wage earners. This situation is due to the lack of appropriate training for local workers and the lower wage levels offered in this sector. The second major category in demand is salespersons and service providers. The liberalization of the economy in the past decades has affected mostly tradable goods industries, while non-tradable goods sectors were less affected; therefore the services sector did not decline significantly, and it has become a large domestic sector in constant need of workers. The low rate of academic positions in demand is due to the fact that most academic positions are not offered by the Public Employment Service but rather through other human resources systems such as job-finding companies and websites.

Considering the impact of public vocational training on labour shortages, in 2007 vocational training courses were given to only 4,336 persons, and most of these did not study the professions which are most in demand. In other words, public vocational training does not cater to the issue of labour shortages, as the allocation of courses does not meet the demands of the market. In addition, low-tech industry segments are not considered profitable career prospects by Israel youth, and so the demand for vocational training in these professions, as compared to high tech and services training, is relatively low.

5.4. Employment

5.4.1. Employment Rate

5.4.1.1.   Unemployment Evolution

At the first glance at the raw labour market data, the development of the labour force in Israel economy seems to have been growing relatively steady. This growth has been by almost a million workers over the last decade. However, the pace has been greater in the late 90s prior to the economic slowdown in 2001, picking up again several years later, along with the extensive economic growth that the country has been experiencing.

The unemployment rate is an important part of the decent working considerations. The reduction of unemployment improves the situation of the worker and her household, and provides her with job security. The duration periods of unemployment and of employment are important factors as well. Limited duration of unemployment and extensive period of work result in the desired job stability and security.

Unemployment levels in Israel have been relatively high in comparison with other developed countries. But in recent years, most likely in relation to the effect of the economic reforms instated in 2003, the unemployment rate has decreased significantly. During the current economic crisis the unemployment rates have been steady and did not increase as much as unemployment rates in other countries. Subsequently, the current unemployment rates in Israel are much in line with unemployment rates in other developed countries. In the first quarter of 2009 the unemployment rate in Israel was 7.6%, compared with 8.1% in the USA. European Union unemployment rate for 2008 was 7.3%.

Figure 45: Unemployment Rate as a Percent of the Civilian Labour Force, 1985-2007 (%)
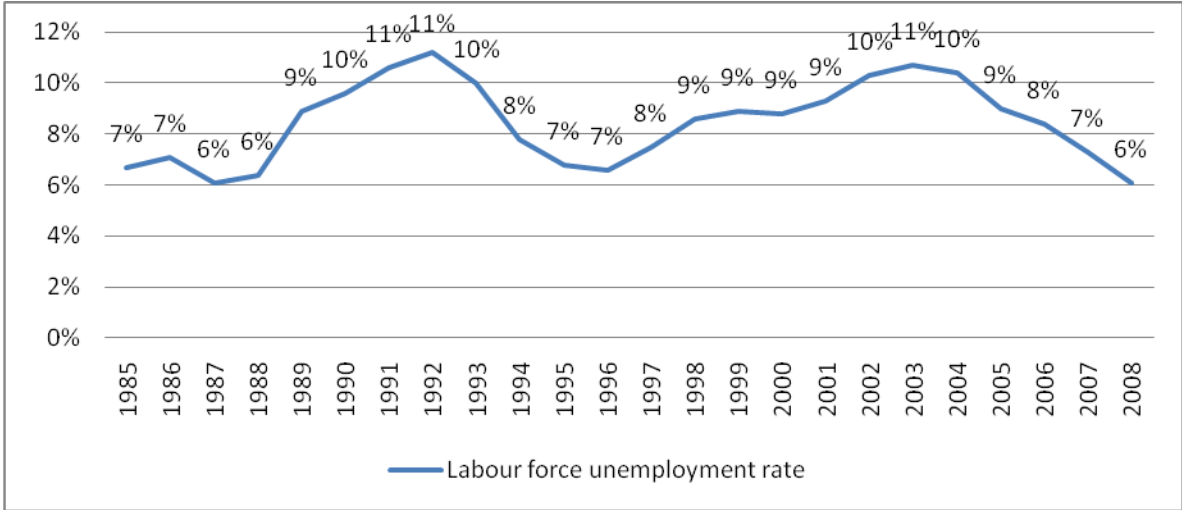
Source: Bank of Israel Data Series Database, 2009

5.4.1.1. Unemployment and Growth

Being a small open economy, the level of unemployment in Israel depends strongly on the business cycle of the global economy. A significant increase in unemployment rates occurred after the burst of the dot-com bubble (1998-2000) which coincided with the Second Intifada (2000). As mentioned, these events generated the recession of 2001-2003. Unemployment subsequently declined following Government measures starting in 2003 and the more favourable economic conditions. However, even at the height of the current economic crisis, the unemployment rate did not return to levels it reached in the previous crisis in the early 2000s.

The comparison of unemployment rates with GDP growth rates show that unemployment rates climb after a decrease in GDP growth rates throughout the entire period, with an expected close relation between high growth rates and low unemployment rates. This comparison also suggests that the minimal expected levels of unemployment are higher than the minimal levels seen in other industrialized countries, implying a lack of adjustment between labour demand and supply (i.e., high structural unemployment).

Figure 46. GDP Per Capita Growth Rate (%) and Unemployment Rates, 1985-2008 (%)
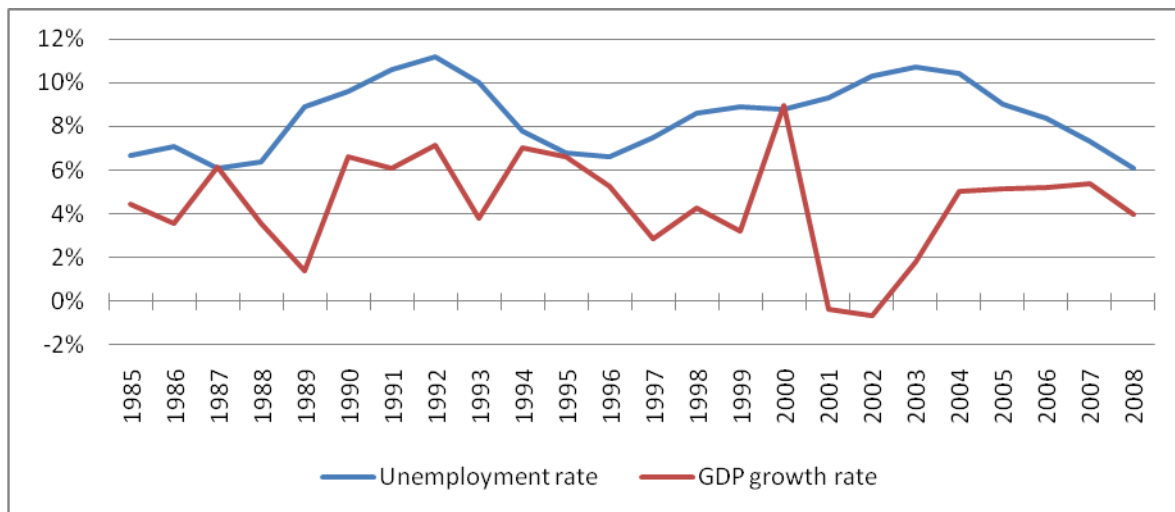
Source: Bank of Israel Data Series Database, 2009

Figure 47. Labour Market: Total Jobs and Employment 1995-2007 (thousands)
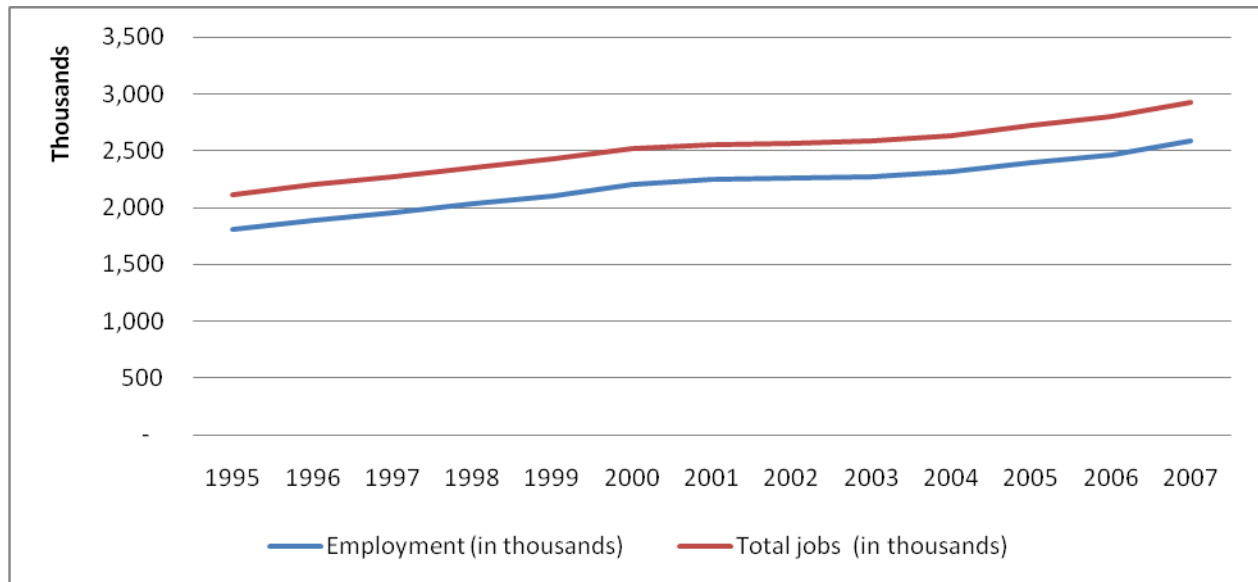
Source: Central Bureau of Statistics, 2009

5.5. Real Wage Development and Labour Productivity

Wage levels are based on various parameters. They affect the worker and her household's available income directly. It can be seen from the graph in the figure below that as a general rule wage development in Israel moves in conjunction with the growth in labour productivity levels.
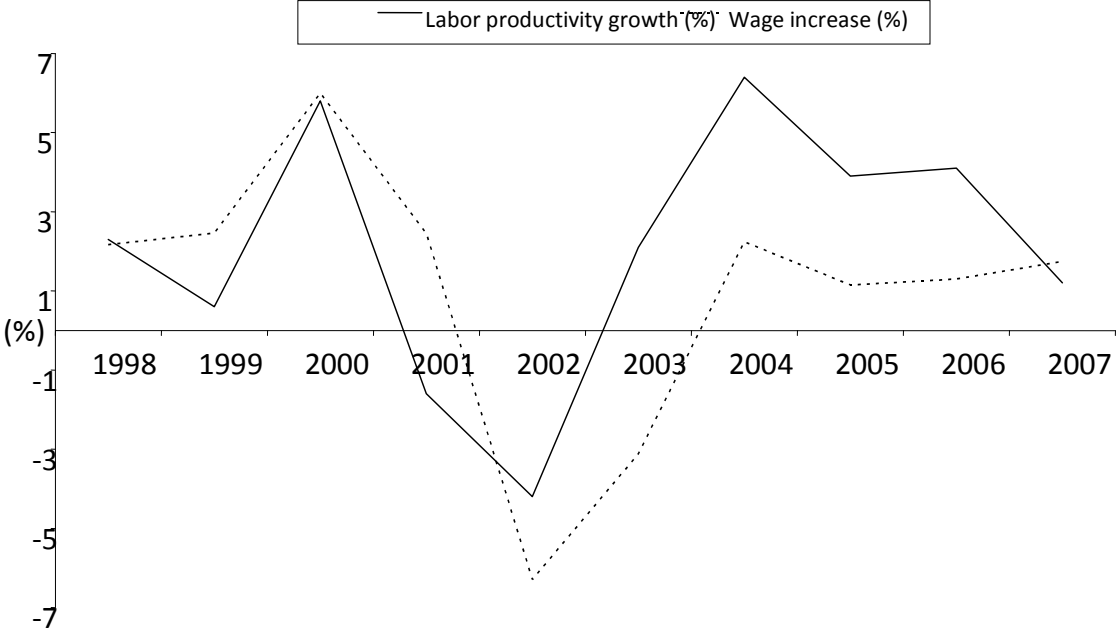
Source: CBS. Statistical Abstracts of Israel, 1999-2007

5.5.1. Wage Distribution

The average wage in Israel has constantly increased during the last 20 years: from NIS 5,272 in 1985 (in 2000) (2004 prices) to NIS 7,450 in 2007 - a 41% increase on average, also due to an increase in productivity of 22% between 1998 and 2007. Though the general trend of labour productivity has been coinciding with that of wage levels, in recent years there has been a gap in growth rates between wages and labour productivity. While labour productivity increased by 22% during 1998-2007, wages (2004 prices) rose only by 7.6%.

Figure 49. Average Gross Wage (NIS, in 2004 Prices), 1985-2008
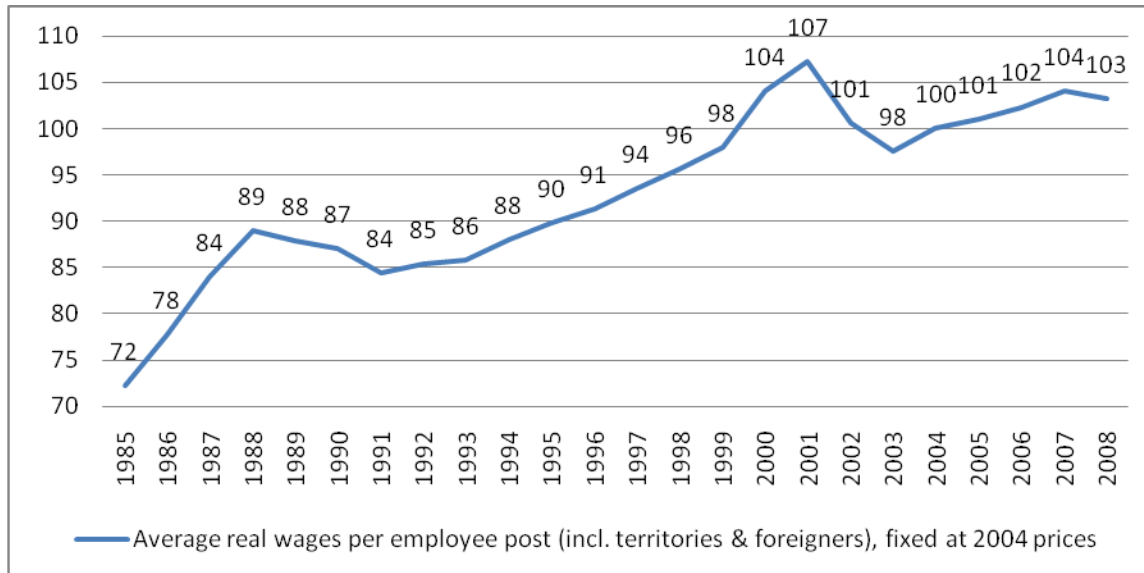
Source: Bank of Israel Data Series Database, 2009

The following graph predicts the evolution of the average wage per work hour for a 40 year old non-immigrant, Jewish employee. The analysis has been presented in a research by Friedman and Zussman (2008), who analyzed wage distribution and gaps in Israel labour market. The chart depicts the differences in wage development according to four education levels. The results of the analysis make it clear that differences in years of education are a prominent determinant for the employee's hourly wage.

Figure 50. Predicted Wage for a 40 Year old Jewish Employee 1985-2005 (NIS per hour, 2005 prices)

By Years of Schooling:

- → +16
- → 15-13
- → 12-11
- → 10-0
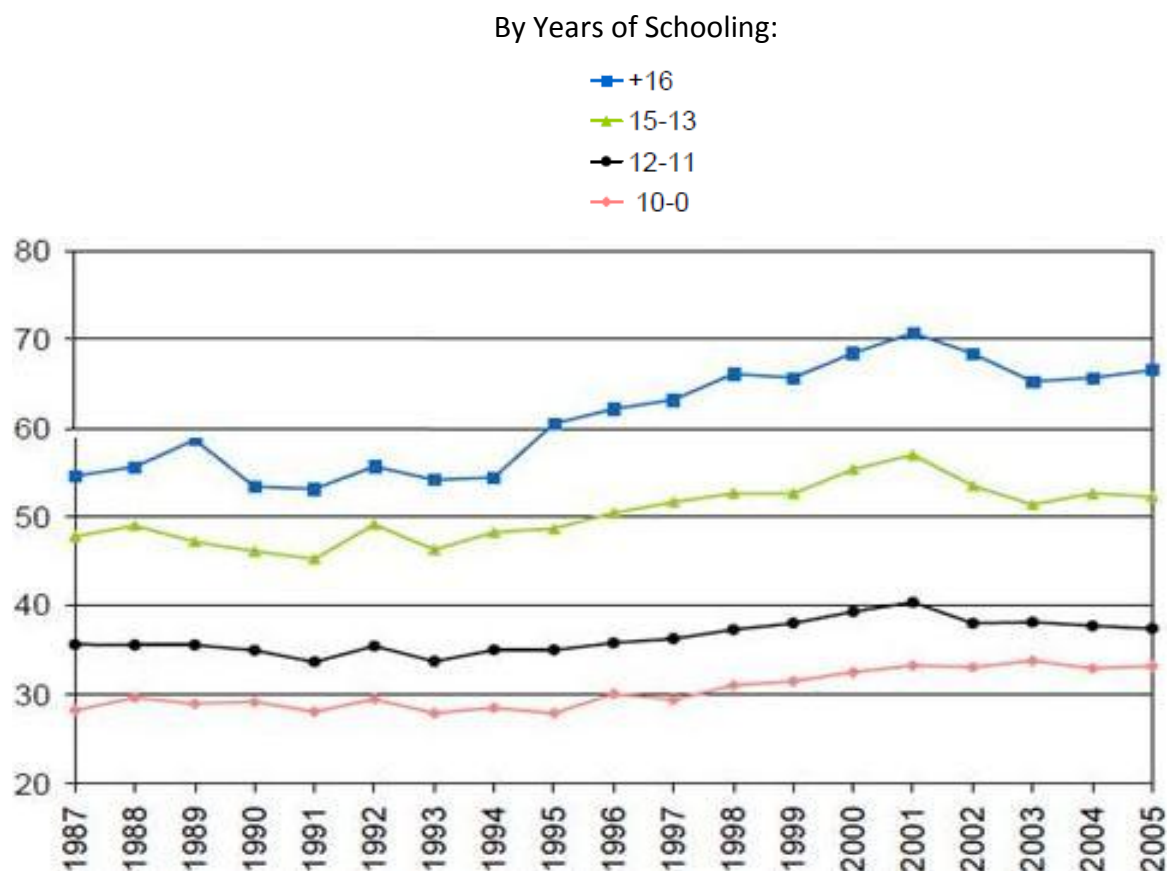
Source: Analysis by Friedman and Zussman (2008), combined with CBS Data

5.6. Poverty

5.6.1. State of Poverty

Looking at the charts below, it is clear that the reforms in welfare and taxation system have influenced the poverty rate of households. The structural changes have indeed increased the participation rate in the work force and reduced unemployment. Nevertheless, it is evident that though the poverty rate before transfer payments declined after 2003, the poverty rate after transfer payments increased. This was directly inflicted by the new policy changes enacted by the Finance Ministry.
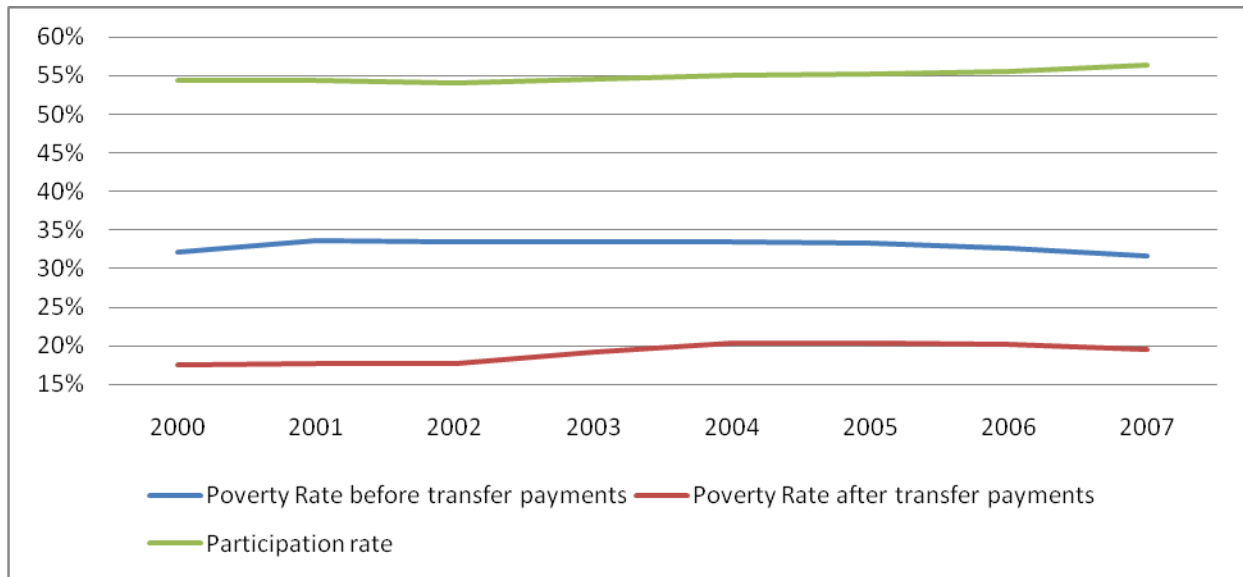
Source: CBS and The Extent of Poverty Report: National Insurance Institute, January 2009
*A household is defined as poor if the available income per capita is less than 50% of the median available income per capita in the overall population.

Figure 52. Poverty and Unemployment Rate, 2000-2009
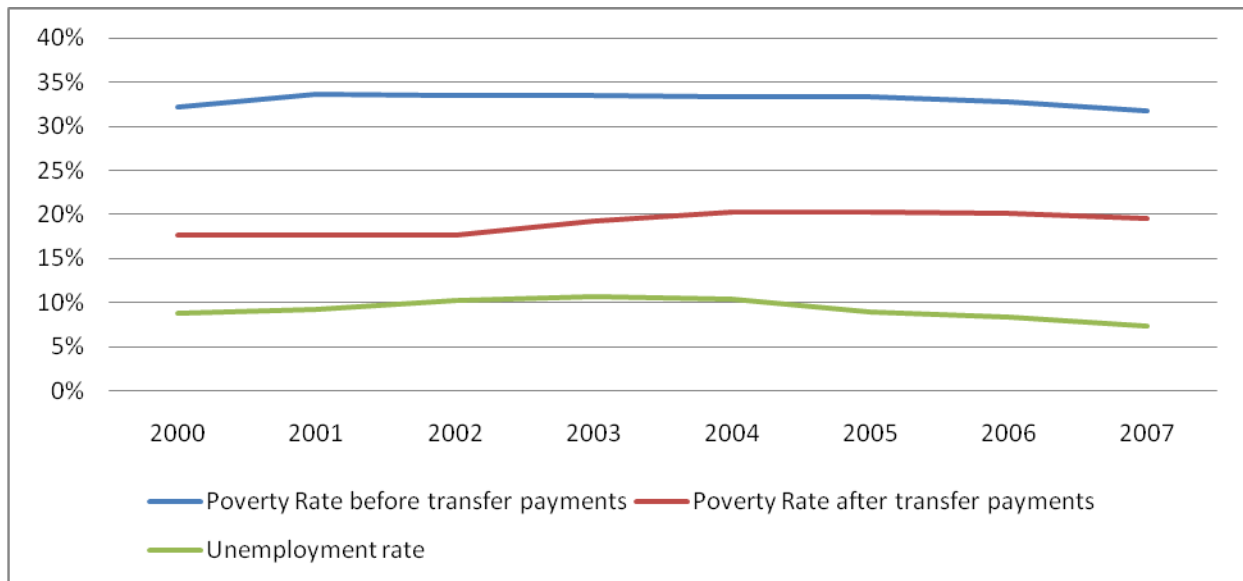
Source: CBS and The Extent of Poverty Report: National Insurance Institute, January 2009

5.6.2. Poverty Determinants

The effect of the low participation rate is one of the main determinants affecting poverty. Poverty is determined directly by the age and education level of the head of the household, the

size of the family and the number of workers in the household. According to Gottlieb et al (2008), the chances of households to suffer from poverty increase greatly when less than two workers are in the household.

Breakdown by age group has shown that together with the increase in the age of the head of the household comes an increase in the quality of life. Breakdown by education level shows that there is a strong negative correlation between the education level and poverty situation, especially for persons with less than 8 years of education. This effect coincides with the global and local trend by way of a diminishing demand for uneducated workers. The severity of poverty among uneducated workers has deepened over the years. Usually, social scientists refer to poverty as a "vicious circle" meaning that the chances of children from low income households to remain poor are high as well. It must be noted, however, that these data regarding education level hold true among all sectors, excluding ultra-orthodox Jews, whereby high-education levels do not translate into low poverty rates.

Family size is negatively correlated with poverty; the larger the family, the bigger are its chances to be poor. This is even more apparent following the 2003 cuts in the social security benefits which were previously distributed according to the number of children.

5.6.3. Poverty among Certain Groups

Israel has a multi-cultural society, including Jews, Arabs and other minorities. Each group has sub-groups with similar cultural elements. These include ultra-orthodox and non-ultra orthodox among the Jews, Muslims, Christians, Druze, and more, within the Muslim population the Bedouins have unique cultural elements. Additionally Israel has immigration from various locations. This multi-cultural society has an effect on fertility rate, education and labour force performance. It is therefore important to distinguish between these groups in order to differentiate and analyze the poverty levels in each of them.

Poverty levels especially high among ultra-orthodox Jews. The main causes, as portrayed by Gottlieb et al (2008), are high fertility rate, deficiency in male elementary school education material essential for future earning capabilities, low participation rate in labour force due to the relationship between the status-quo in which they are not drafted to the army but receive

financial support for extensive learning of Judaic studies. Since 2003 there has been an increase in their poverty levels due to the policy changes by way of reducing social security benefits to families with a large number of children. The severity of poverty among ultra-orthodox Jews is more than double the rate of poverty within the rest of the Jewish population.

The Arab population's poverty level is greater than the poverty level among the Jewish population. It is mainly caused due to vocational reasons, including a high unemployment rate, limited percent of Arab women's participation rate in the work force for cultural reasons, and low wages to Arab employees. The population typically has low levels of education. The fertility rate is high, and a large percent of the population is distributed in villages far away from the urban centres of the country, where a great deal of the jobs are offered.

The rest of the population is characterized by a relative high percent of poverty amongst youngsters, especially in comparison with families with an older head of household. However, younger poverty is likely a temporary condition, since with age and professional experience they succeed in overcoming the burden of poverty.

As a conclusion, there is a notable adverse correlation between the severity of the poverty and the level of education. As far as family size is concerned, as a general rule, poverty increases together with the size of the family.

5.6.4. The Working Poor

5.6.4.1.   In-Work Poverty Determinants

In recent years, the poverty rate for households has remained steady (20% after transfer payments and taxes in 2006, compared with 20.6% in 2005). However, the share of working families - families with at least one employed provider - within the segment of poor families increased from 38% in 2003 to 43.2% in 2006 (National Insurance Institute of Israel, 2007).

This trend indicates that the decrease in unemployment and the rise in labour force participation rates have not been translated into a decrease in poverty for the families whose providers became employed. It is essential to examine the effect of employment on poverty in order to ensure poverty reduction and not merely employment.

The rate of poverty among households with only one supporter in 2007 was 23.5% compared with 2.8% for households with two supporters (National Insurance Institute data). Tzameret-Kercher et al (2007) asserts that one of the causes for this situation is the large gap between educated and non-educated workers. The low-income earners' wages remain constant, while the high income earners' wages have increased in the last decade by approximately 37%. This phenomenon is characteristic of labour markets in developed countries. Another reason suggested for the decline in real wage of unskilled workers may be the reduction in the rate of workers which participate in unions and collective bargaining.

5.6.4.1. Poverty Employment Mapping

Poverty among the working population is relatively limited. According to the Extent of Poverty Report, published by the National Insurance Institute, in 2007 the extent of poverty among households which are part of the working population before transfer payments is 18.2% and 12.2% after transfer payments have being taken into account. The same figures among the population in the working age which are not working are 91.2% (!) and 69.8%, respectively. The extent of poverty among households with one supporter is 35.2% and 23.5% after transfer payments. Among families with two supporters, these figures are 4.1% (!) and 2.8%, respectively. This data above led the Government actions which focus their efforts on increasing employment and participation rates.

The rate of the poor households increased during the years 2002-2005 from 18.1% to 20.6%. In 2006 there has been a decline to 20.0%. This decline stemmed in part due to a decrease in the rate of poor households of which the head of the household was an elderly, due to an increase in the social security benefits for the elderly. Among these households the poverty rate declined from 25.1% in 2004 to 21.5% in 2006. The poverty rate in 2007 remained constant at a level of 19.9%. In 2007 the main improvement in the state of poverty roots from the labour force. The poverty rate among working families remained stable at 12.2%, while the poverty rate among families where there are no working supporters continued to elevate from 66.6% in 2006 to 69.8% in 2007.

The figure below depicts the extent of poverty in Israel in relation to the education level of the head of the household. The data points to a clear correlation between the level of education and poverty level. The higher the education levels, the less is the family likely to reach the poverty level.

Figure 53. Extent of Poverty by Years of Schooling (Head of Household), 2007 Households, Before and After Transfer Payments
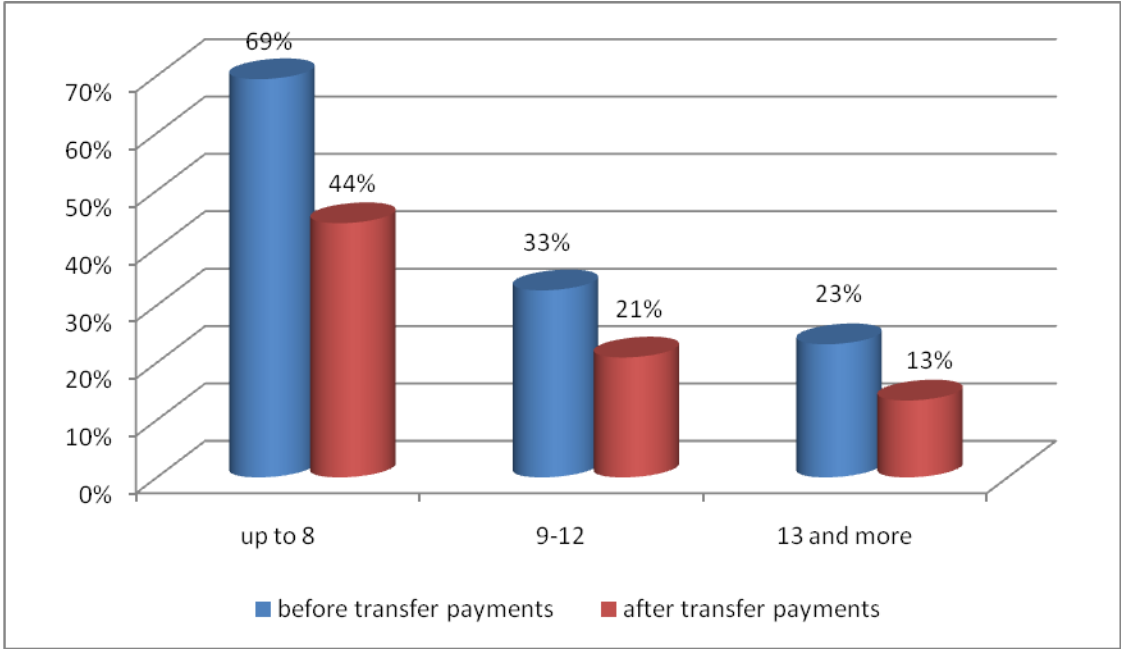
Source: The Extent of Poverty Report: National Insurance Institute, January 2009, and CBS

In order to gauge the poverty incidence among workers in different economic sectors the following data were examined (see table 23): the average wage compared to the poverty line, defined as half of a household's disposable median income. As evident from the table and graph below, lowest wages are reported in agriculture and restaurant services. This also has an effect on poverty, as close to half of the persons employed in these industries are under the poverty line. Nevertheless, these sectors have a relatively limited number of employees, accounting together for 7.3% of the general employed population.

23. Table. Average Wage per employee by Industry and Poverty Line, 2005-07

Average wage per employee	2005	2006	2007	Employed, thousands in 2007
Poverty Line	1,804	1,990	2,093	
Total	7,324	7,576	7,749	2,720
Accommodation services & restaurants	3,488	3,575	3,658	147
Agriculture	4,801	4,927	4,992	51
Banking, insurance & finance	13,597	14,966	14,906	85
Business activities	7,344	7,696	8,015	498
Community, social & personal services	5,072	5,076	5,230	150
Construction (building & civil engineering projects)	6,287	6,473	6,659	134
Education	5,746	5,868	6,004	361
Electricity & water supply	16,816	18,346	18,281	17
Manufacturing	9,915	10,377	10,694	353
Public administration	11,366	11,840	12,078	109
Transport, storage & communications	8,676	8,891	8,931	154
Health, welfare & social work services	6,231	6,329	6,492	281
Wholesale & retail trade, & repairs	6,470	6,617	6,794	380

Source: The Extent of Poverty Report: National Insurance Institute, 2006-2009, and CBS
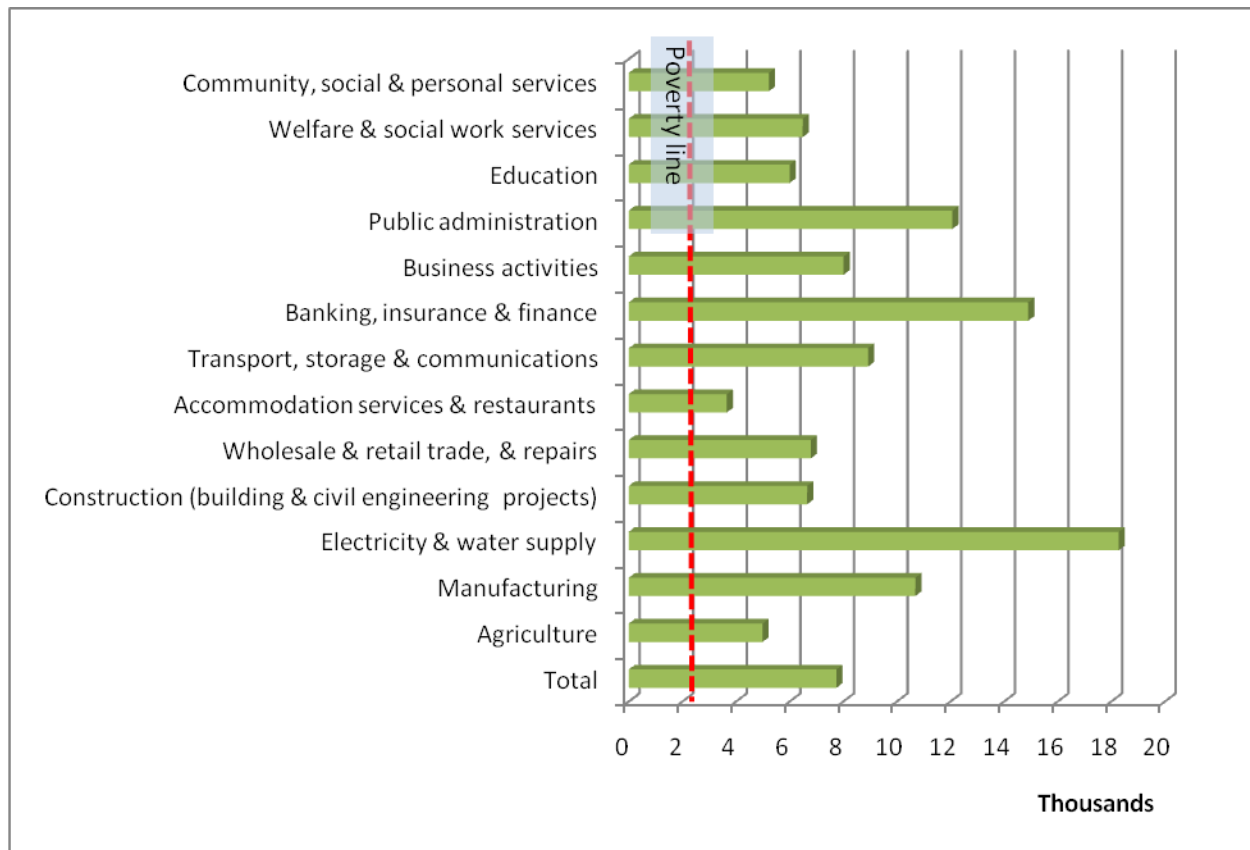
Source: The Extent of Poverty Report: National Insurance Institute, 2009, and CBS

5.7. Financial and Economic Crisis

5.7.1. Effects on Economy

The global crisis began in the second half of 2007 and intensified during 2008 and 2009. The crisis is still developing and the extent of its long-term impact on the real developments in the global and Israel economy is yet to be fully evaluated. The ramifications of the crisis on Israel are relatively moderate due to the unique conditions typical of Israel economy as compared to other countries.

These differences, as summarized by the Ministry of Finance, include a different macroeconomic situation as well as a housing market which did not suffer from an artificial bubble. Additionally, the ratio of finance to the value of properties provided in mortgages is low in Israel; Israel capital market has not reached the level of complexity of its American counterpart and that of other countries. Finally, the level of leverage in Israel economy is relatively low.

Moreover, Israel has reached the global crisis well-prepared and is in a sound condition after five years of rapid growth, low unemployment and a responsible fiscal policy. In addition, the stability of the economy has strengthened considerably, and this assists in softening the impact of external shocks. The increased stability of the economy derived from the government's consistent fiscal policy, which led to a reduction in the budget deficit and as a result, to a decrease in the ratio of the public debt to GDP in recent years.

Nevertheless, a small and open economy such as Israel is no doubt affected directly by global developments. The global crisis has an impact on Israel economy through a number of channels: a reduced rate of growth in consumption (the wealth effect, due to a contraction in the public's asset portfolio), a slower increase in investment, a lower rate of export growth, and rising costs of capital as corporations encounter difficulties in raising credit.

5.7.2. Effect on Growth Rate, Businesses and Trade

5.7.2.1. Credit Markets

One of the main effects of the economic crisis has been the access to credit. The credit shortage had a direct impact on businesses of all sizes and all industries. Thereby forcing corporations to either substantially cut costs or raise funds at extremely unfavourable prices, in order to remain operational.

These changes have reduced trade levels, and consequently growth rate. The deterioration in the economy has in turn caused the turnover of these companies to decline.

Therefore it is clear that the credit deficit has been affecting individual businesses greatly, and consequently trade levels and growth rate.

5.7.2.2. Financial Markets

Due to the turmoil in the financial markets, the savings and investments of the population have been at risk. The average investor has exposure to various financial instruments and securities, owing to the fact that his savings, retirement plans, and other financial investments are spread among different funds, securities and other instruments in the financial markets. The value of the markets declined substantially due to the effect of the economic crisis. This has caused deterioration in the financial situation of a large portion of the population which is invested in the markets. And so, the pension funds, mutual funds and provident funds of a great deal of the population have been put in risk.

The global financial and economic crisis has also had an impact on several commercial banks all over the world, causing them to collapse. Fortunately, in Israel there was no fear of a disaster in the banking system, partially due to tight regulation. Consequently the crisis did not undermine the trust in the banking system.

5.7.2.3. Labour Market

The credit deficit had a direct impact on businesses, thereby forcing them to substantially cut costs in order to remain operational. One of the methods for cutting costs has been by laying off part of their employees. The deterioration in the economy has in turn caused the financial turnover of these companies to decline. This further decrease in returns, has forced them to reduce costs time and again, often by firing more workers.

The credit deficit has been affecting individual businesses greatly, but the work force has taken a great deal of the hit, evident by the rising unemployment level. According to Ministry of Industry, Trade and Labour Policy Paper of May 09, during the preceding 6 months approximately 100,000 workers were laid off.

5.7.3. Policy Response to the Crisis

5.7.3.1. Acceleration Program

The acceleration program was offered by the Ministry of Finance in order to assist the economy in coping with the economic crisis. The program is intended to provide economic stimulus to the economy.

As a part of the acceleration program the Finance Ministry attempted to identify specific sectors in the economy that are considered to be growth generators, but have been suffering because of the global economic crisis. The Ministry has provided these sectors with focused aid and solutions to support their activity during the crisis. Two exemplary sections include strengthening the High Tech sector and the Real Estate sector.

High Tech: The Government has offered a program intended to help the high tech and biotechnology industries. Until February 2009 a total of 350mm NIS has been allocated to the Chief Scientist in order to invest in Israel R&D. The funds are intended to be used towards R&D investments, and are meant to give an immediate relief to the funding difficulties encountered by companies that are doing quality R&D.

An additional package of 250mm NIS will be allocated by the government towards setting up a fund specializing in biotechnology investments. Further capital for the fund will be raised by the private sector. The program was formed with the Ministry of Trade and Labour, the Chief Scientist and experts in high-tech investments. (Ministry of Finance)

Additionally, the Government offered hundreds of millions of NIS in aid to the residential construction sector, with the purpose of leading the initiation of 6,000 new construction projects. This was done with an aim to aid the residential real-estate sector, to ensure sufficient supply of residential housing, and protect jobs of thousands of workers in the real estate industry.

The aid given to the real estate sector includes providing credit, cancelling permit fees, alleviate real estate taxation, postpone and spread payments, as well as supply guarantees. The plan was

formulated by the Finance Ministry in collaboration with the Housing Ministry, the Tax Authority, and Israel Land Authority.

6. Firm training, productivity and employment in Morocco

At the macroeconomic level, the importance of investment in human capital for growth is, in general, uncontroversial (see Temple, 2001; for a survey). At the microeconomic (i.e. firm) level such investment is still debated (Zwick, 2006). For a firm to invest in human capital formation, it should be able to reap enough return from such a formation through, for instance, higher productivity. This statement, going back to Becker (1964)'s influential study on human capital (1964), has generated an intense debate. One major issue concerns the distinction between general and specific human capital.[8] Training that increases general human capital enable employees to leave the firm and value their knowledge elsewhere in the economy. Employers are, therefore, not always able to reap the benefit from their investment. In contrast, firm-specific training cannot be valued with others than the current employer. Therefore, firms can get return to their investment through higher productivity. Based on this reasoning, economists considered for a long time that general training could not be the task of the firm. However, recent development in the literature, incorporating labor market imperfections, shows that firms may nonetheless find it profitable to sponsor general training. In particular, a reduced mobility on the labor market (Acemoglu, 1997) can "turn general skills into de facto specific skills" (Acemoglu and Pischke, 1998). Hence, firms may reap enough return from such training.

One important empirical question concerns, therefore, the impact of firms' sponsored training on productivity. The literature dealt mainly with developed countries and led to contrasting results. Dearden et al. (2006) and Conti (2005) used data at the sector level and found that training significantly boosts productivity. Using firm level data, Bartel (1994) did not find an impact of the existence formal training programs on labor productivity. Black and Lynch (2001) considering firm level data and a larger set of workplace practices, failed to support a positive effect of training on labor productivity but found that the way work practices are actually implemented within the establishment is crucial.

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[8] Another important issue concerns the ability of workers to extract the benefit though higher wages which may reduce firm's benefit from training.

While the issue is at least equally crucial for developing countries (LDCs), we are aware of only one published paper examining the effect of training in LDCs. This paper (Rosholm et al., 2007) focused on the impact of training in Kenyan and Zambian manufacturing firms and provided weak support to the positive impact of training. At the same LDCs are facing important challenges that makes training a potential important factor of their development. On the one hand, many of these countries suffer from a lack of skilled workers (Rosholm et al., 2007). Training may be a key to provision of skills. On the other hand, the recent wave of globalization raised serious concerns about its impact on wealth distribution across nations and among individuals. Empirical analyses (Lee and Vivarelli, 2005) suggest that the impact of trade liberalization on LDCs depends, among other things, on their ability to upgrade their technological capabilities. Rodrik (1994) showed that the availability of adequate human capital and co-ordination by the government of substantial capital investment/capital imports have been key factors behind the impressive performances of Korea and Taiwan.

This paper is concerned with the role of training offered by the firm to workers in improving productivity. Our reasoning is that if traning improves productivity, if will help firms being more competitive on the international markets; which is necessary condition for growth and employment. We combine information from two databases pertaining to Morocco. The first one comes from the Firm Analysis and Competitiveness Survey (FACS) carried out in 2000 by the Ministry of Trade and Industry and the World Bank. This survey covers a representative sample of 859 firms in the seven most important manufacturing industries in Morocco. It is based on a detailed questionnaire about firms' decision in 1999 concerning training and other variables. The second database comes from the yearly survey conducted by the Ministry of Trade and Industry. This survey covers all manufacturing firms with at least 10 employees or with an annual turnover that exceeds MAD 100 0009 (Between US$ 9000 and 12,000). It collects firm level data on a limited set of variables such as sales, output, exports, investment, gross labor cost, and the number of employees. Our objective is to investigate the relationship between a firm's training decision in 1999 and its productivity in subsequent years.

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[9] MAD is the Moroccan Dirham

The analytical framework is a combination of the model by Greenaway et al. (1999) and the two steps estimation procedure by Black and Lynch (2001). We assume a Cobb-Douglas production function for firms. The output is determined by the use of materials, capital and labor. It is also affected by the state of the technology. The latter is not exogenous but depends on training which is assumed to be time-invariant and specific to the firm. Furthermore, output depends on other unobserved-time-invariant firm's characteristics. To get ride of the influence to these unobserved factors, the two steps procedure is used. The first step consists in estimating the productivity equation in first difference and using the estimated coefficients to compute the firm specific time-invariant residual. In the second step, this residual is regressed on training and other control variables. The estimation takes account of the endogeneity of production factors using both 2SLS and GMM methods. It also includes dummies (year, industry and firm) to control for the remaining unobservable effects.

The rest of this part is organized as follows. Section 4.1 describes the Moroccan context and the data to be used. Section 4.2 discusses the econometric approach. Section 4.3 analyses the results.

6.1. Descriptive analysis

6.1.1. The Moroccan context

Morocco started liberalizing foreign trade in 1983. Over the nineties, it has strengthened the process. As explicitly asserted in the "Foreign Trade law" (1992), trade liberalization intended to promote exports; integrate the Moroccan economy into the world economy; and contribute to consolidate the multilateral trading system. By implementing the foreign trade law, Morocco committed itself to liberalize imports and exports of goods and services, abolish any quantitative restrictions, and use exclusively tariffs in protecting domestic production.

Morocco joined the GATT in 1987. It has also signed a Free Trade Agreement (FTA) with the European Union (EU) in 1995, which started being effectively implemented since 2000. This agreement aims at establishing by the end of a 12-year transition period, a free trade area for most products and seeks to promote and enhance economic growth. In addition to the FTA

with EU, Morocco has other bilateral and regional trade agreements such as the free-trade agreement with EFTA (1997), the Arab FTA (1998). More recently, Morocco signed an FTA with the United States (2004) and Turkey (2004).

Currie and Harrison (1997) were the first to examine the impact of trade liberalization on employment and wages in Morocco. Using firm level data from the manufacturing sector during the period 1984-90 (this corresponds to the first wave of trade liberalization) and econometric techniques, they found that trade reforms had almost no effect on aggregate employment in the Moroccan manufacturing sector. They also found that despite the existence of formal barriers to worker dismissals and minimum wages laws, labor market regulations cannot explain the sluggish of labor market response to trade reforms in Morocco. According to the authors, the lack of an employment response can be, to a large extent, explained in the context of imperfect competition. In Morocco, such as in many other developing countries, some sectors are characterized by few players and high barriers to entry. Adjustment to trade reform in such a context occurs through a reduction of profit margins and productivity improvement. In order to abstract from short-term adjustments and allows the impact of other companion policies to materialize, Achy and Sekkat (2006) conducted a similar analysis over the period 1990-2000 using sector's data. The investigation concerned one the one hand the relationships between trade and employment and on the other hand the relationship between foreign investment and employment. The estimates revealed an adverse effect of import penetration on employment. Conversely, export orientation tends to exert a positive impact on employment. The magnitude of the exports and imports coefficients is similar implying that foreign trade has almost no effect on employment. However, the authors found that an increase in foreign participation in a firm's capital (i.e. FDI) exerts a positive effect on employment.

Using Computable General Equilibrium, Rutherford et al. (1997) examined the impact Morocco's FTA with the European Union. They found that the welfare benefits for Morocco are about 1.5 percent of GDP, and may reach 2.5 percent of GDP if Morocco further liberalized its trade with the rest of the world.

6.1.2. The data

To perform our analysis we combine data from the Moroccan Census of Manufacturing with a unique data set from the Firm Analysis and Competitiveness Survey (FACS, 2000) conducted by the World Bank and the Moroccan government on selected firms in 2000.

The Moroccan Census of Manufacturing annually surveys all manufacturing firms with at least 10 employees or with sales revenue exceeding MAD 100,000 (Between US $ 9000 and 12,000). The firm's activity is described by the four-digit Moroccan nomenclature of economic activities (Nomenclature Marocaine des Activités Economiques or NMAE). The survey gives information about firm's sales revenue, output, exports, investment, labor cost and number of employees (without skill decomposition). A code is allocated to each firm and kept the same over the time which allows combination of the survey's results with other data sets.

The FACS provides data for 859 firms (of which 78% are SMEs) for the following seven industries: Electronics, Textiles, Garments, Processed Food Products, Chemicals, Leather and Shoes products, Plastic products. The 7 industries, drawn from a classification that include 26, represent together around 80% of the whole manufacturing sector employment and exports and more than 50% of its value added. Three of them (Food, Textiles and Clothing) represent together more than 50% of the whole manufacturing sector employment and exports and around 1/3 of its value added. Table 24 presents the main characteristics of the FACS.

24. Table. Characteristics of the FACS

Industry	Number of firms	Share of firms	Employment structure	Output structure	Export structure
Food industry	83	9.7	5.0	18.8	11.7
Textiles	200	23.3	25.3	25.3	24.8
Garment industry	316	36.8	52.4	26.6	50.5
Leather industry	68	7.9	5.5	3.7	6.6
Chemical industry	77	9.0	4.8	14.5	4.2
Plastic industry	77	9.0	4.1	5.1	1.0
Electronics	38	4.4	2.9	6.1	1.2
Total	859	100	100	100	100

Note: Author's computation

Like the Census, FACS concerns manufacturing firms with at least 10 employees. Its instrument was a written questionnaire filled by direct interviews with management and staff of the selected firms. The questions concern the situation in 1999. The questionnaire is structured in 3 parts, each divided in sections and sub-sections, reflecting different characteristics of the firms. It contains questions about the origin and shareholding status of the firm (foreign invested versus domestic), the background of the owner or manager, the technology, the labor market, contractual relations, financial markets, international trade, business environment and regulation and corporate finance. More importantly, the FACS gives also the value of the physical capital stock for each firm in 1999 and the responses to the following questions:

- During the year 1999, did you offer training programs?

- If yes, what was the number of participants and the average duration (number of days)?

Actually the questionnaire distinguishes between internal and external training. The difference between them concerns the trainer (a member of the same firm or from outside the firm). However, firms providing only internal training represent only 3.5% of the sample. Due to this, estimation focusing on internal training gives no consistent results. In contrast, firms providing external training represent 13.7% of the sample which offers enough differences to expect getting consistent results. We focus on external training this in the rest of the paper and refer to it simply as training. The answers to the above questions allow us constructing 2 explanatory

variables. One is just a dummy reflecting whether a firm has been offering training in 1999. The other reflects the intensity of training: the average number of days of training per worker.

Note that the survey asked a third related question which concerned only the number of workers having benefited from training. Black and Lynch (1996 and 2001) and Zwick (2006) have used responses to a similar question to compute the intensity of training as the ratio of trained employees to the total of employees. We find this is a less precise measure of the intensity of training than the one we will use.

6.2. Econometric analysis

6.2.1. The model

To address the research question we follow the literature (e.g. Milner and Wright, 1998, Greenaway et al.,1999 and Black and Lynch, 2001) in assuming that the technology of firm i is described by an augmented Cobb-Douglas production function with constant return to scale:

$$Q_i = A_i \, K_i^{\delta} \, L_i^{\alpha} \, M_i^{\beta} \tag{1}$$

Where Q is output, A is an index of technological progress, L is labor, K is capital stock and M is material. Taking logs and expressing Equation (1) in term of production per worker gives:

$\log(Q_i / L_i) = \log(A_i) + \delta * \log(K_i / L_i) + \beta * \log(M_i / L_i)$

or

$q_i = a_i + \delta * k_i + \beta * m_i \tag{2}$

Traditionally, Ai is supposed to be exogenous and is often given the form Ai = eγ*t. Here, in contrast, we assume that Ai is endogenous and depends on firm's practices Zi concerning training, which gives:

$$Ai = e\gamma^* \, t + \eta^* \, Zi. \qquad\qquad (3)$$

Taking Equations (2) and (3) together and incorporating a firm's idiosyncratic error term, ηit, implies that firm i production per employee at time t equals:

$$qit = \gamma^* \, t + \eta^* \, Zi + \delta * kit + \beta * mit + \eta it \qquad\qquad (4)$$

Equation (4) served as a basis for most of the empirical analysis in the field. However, there are marked differences in the results across studies. While differences between studies covering different countries are easily understandable (due labor market institutions for instance) difference concerning the same country and the same period are striking. A close look at this aspect suggests that such difference might be related to the indicators of training (dummy vs. intensity), the firm size (large vs. small) the sectors composition of the sample (manufacturing vs. non manufacturing) and the measure of the dependent variable (level vs. growth of productivity). However, even studies using very similar samples (e.g. Black and Lynch, 1996 and 2001) exhibit contrasting results. Following Zwick (2006), one major reason is the differences between the underlying estimation techniques.

6.2.2. Estimation issues

Bartel (1994) estimated a simple cross-section production function including a dummy for formal training programs and found no effect of training on productivity. This may be due to unobserved heterogeneity between firms which leads to a correlation between the formal training measure and the error term (Griliches and Mairesse, 1998). In order to avoid this bias

Barrett and O'Connell (2001) regressed the change in productivity (instead of its level) on the level of training intensity. The effect of training on changes in productivity was positive and significant. However, taking the productivity equation in first difference may be problematic. If training is (like the unobserved heterogeneity) time-invariant, its effect should vanish with differentiation and one can not assess the impact of training on productivity. Black and Lynch (2001) used a more sophisticated two steps method to deal with unobserved heterogeneity. In the first step, they calculated the average firm specific, time-invariant residual in a fixed effects Cobb–Douglas production function without training (which is time-invariant in their sample). In the second step, they regress the average establishment residual on training and the other quasi-fixed factors. However, training intensity still shows no impact on productivity. Black and Lynch (2001) admitted that their estimation techniques only correct for endogeneity in the first step, while the second step estimates (including training intensity) are prone to endogeneity (i.e. selectivity bias). Investment in training may well be an endogenous decision of the firm depending on the productivity effects, on the investment costs of training, and on other factors. Ballot et al. (2006) used a System Generalized Method of Moments, GMM, (with productivity in level and in first differences) that takes account of possible endogeneity of labor, capital and training. They found that training has a positive and significant impact on value added. However, their specification is very parsimonious and might suffer from omitted variable bias. The sample is also too small and specific. Taking advantages of the existence of a long-panel data set that gives information for several successive years, Dearden et al. (2006) addressed both unobserved heterogeneity and selectivity of training simultaneously by using a system GMM estimation including levels, first differences and lags of capital, labor and training intensity. They found that the net benefit of training is positive for the producer Finally, Zwick (2006) adopted the Black and Lynch (2001)'s two steps method to address unobserved heterogeneity. To address the endogeneity of training issue, this author used the personnel department's responses about skill shortages to construct an instrument for the decision of training. The results show that increasing the training intensity has a positive and significant effect on establishment productivity in Germany.

The sample we are using in the present study allows us addressing a number of these aspects. The existence of training and its intensity can be distinguished, a fairly balanced distribution of firm size is available and the time dimension of data can be exploited to examine the impact on productivity growth. The latter allows us to deal with unobserved heterogeneity issue. However, information on training being available only for one year we are not able to address the endogeneity of training issue. Actually, Zwick (2006) calculated the impact and the sign of the bias incurred when training is taken as exogenous and found that the effect of training is under-estimated.

Given our data limitations, we will adopt the Black and Lynch (2001)'s two steps method without correcting for training endogeneity. Having Zwick (2006)'s results in mind, we can be confident if an effect of training emerges and should be cautious if it does not. Our estimates of the effect of training on productivity should be seen as a lower bound of the actual effect. Applied to our sample, the two steps method is the following.

First step: a within estimator of Equation (4) in first difference:

$$\Delta qit = \gamma + \delta * \Delta kit + \beta * \Delta\ mit + \Delta\eta it \qquad\qquad (5),$$

take the estimates of δ and β to generate the predicted values:

$$qit + \delta * kit - \beta * mit = \gamma* t + \eta* Zi + \Delta\eta it \qquad\qquad (6)$$

and average these values over the period 2000-2004 for each firm to get an estimate of the firm-specific time-invariant component of the residual.

Second step: regress the averages on the various indicators of firm's practices.

Another estimation issue should be considered. Production and inputs are, in general, chosen simultaneously. In this case the within estimator of Equation (5) will be inconsistent. To address

this problem, we will use both 2SLS and GMM estimators for Equation (5). In the 2SLS procedure, capital is replaced in Equation (5) by its fitted values from its regression on lagged investment and production and various dummies. In the GMM procedure lagged values of the variables are used as instruments.

6.2.3. Measurement issues

There are four measurement issues to consider. First, intermediate consumption is not available. Assuming that firm's intermediate consumption per employee is equal to industry's average m_t plus an error term (i.e. $m_{it} = m_t + \varepsilon_{it}$) which is uncorrelated with m_t and with k_{it}, we introduce year-industry dummies to control for intermediate consumption in Equation (5). Second, we have information about firm's practices only for one year (i.e. 1999). Assuming that firm's practices are reasonably constant over time and constraining our estimation to years close to 2000, we consider Z_i as time invariant. A similar approach is adopted in Black and Lynch (2001). Third, we do not have a measure of the capital stock for every year. We use the standard perpetual inventory method to construct an estimate of the value of the capital stock. We combine information from FACS, the Moroccan Census of Manufacturing and an estimate of the portion of the capital stock that depreciates each year. Note K_{1999} the capital stock provide by FACS for 1999, I_t investment at period t (provided by the Census for 2000-2004) and θ the economic rate of depreciation of capital, $K_{1999+t} = K_{1999} * (1- \theta)t + $ (sum of weighted investment between 1999 and 1999+t).[10] Fourth, the raw data being in current prices, we use the output and the investment deflators, available only for the whole manufacturing sector, to get production and investment in constant prices.

6.3. The results

After dropping missing values and combining the two data sets, we end up with around 600 firms for which we will investigate the impact of training on productivity. Table 25 summarizes the main characteristics of the resulting sample. Looking at firms across various dimensions

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[10] We considered three different values for ϑ, the economic rate of depreciation of capital, (5%, 7%, 10%). The main results are not sensitive to change in ϑ. We report those with $\vartheta = 7\%$.

shows that the sector representation is similar to the one of the whole manufacturing sector, the share of firms aged between 11 and 20 years is the highest and firms of a size between 20 and 49 workers (i.e. SMEs) are the most frequent. Large firms (i.e. with a number of workers higher or equal to 200) represent, however, a non negligible share of the total. Turning to the figures pertaining to our purpose, the table shows that around 14% of firms provide training. Firms that offer training devote an average of around 2 days per year and per person. The standard deviation, around 3, suggests that there are non negligible differences across firms. These figures are comparable to those reported by Barrett and O'Connell (2001) for Ireland.

25. Table. Firms' characteristics

Firms per activity in 1999 (% of number of firms)

Food	9.54
Textile	21.62
Clothing	36.41
Leather and Footwear	11.29
Chemicals	7.00
Plastic products	10.97
Electrical machinery	3.18

Firms per age (number of years) in 1999 (% of number of firms)

0-5	14.29
6-10	20.36
11-20	35.47
21-30	16.58
31-40	7.39
Above 40	5.91

Firms per size (number of employees) in 1999 (% of number of firms)

0-9	2.44
10-19	13.59
20-49	27.63
50-99	19.69
100-199	18.63
Above or equal to 200	18.02

Share of firms offering training (% of number of firms)	13.72

Number of days of training per employee in firms offering training

Average	1.72
Standard deviation	2.92

To save on space, the estimation results of Equation (5) are not reported. The estimation results using Equation (6), the second step, are presented in Tables 26. We added to the regression industry dummies (their coefficients are not reported) and the productivity level in 1999. The results concern 2 specifications: with a dummy for training and with the intensity of training. For both specifications, the overall quality of fit is very good: the adjusted R2 (0.72) is slightly higher than in recent studies using the same methodology (e.g. Zwick, 2006). The coefficients of the lagged productivity are highly significant. The coefficients of training are significant and positive irrespective of the measure (dummy or intensity). Following the results by Zwick (2006), the fact that we take training as exogenous entails a downward bias of its effect. So, our coefficient being positive and significant, we can conclude that training does affect productivity positively.

The coefficient of the intensity of training is equal to 2% which is higher than in Barrett and O'Connell (2001) for Ireland (1.4%). This means that a firm offering one more day of training for all workers should have a productivity 2% higher than a firm which does not. Similarly, 2 firms with one standard deviation difference in training efforts will have 6% difference in productivity.

In spite of measurement differences, our results may be compared to Ballot et al. (2006). Since average training intensity (see Table 25) is around 2 days, the 2% higher productivity corresponds to a training effort 50% higher on average (i.e. one day). Ballot et al. (2006) using the expenditure (1000 of national currencies) per employee as a measure of the intensity of training, found a coefficient of 23% in France and 1.1% in Sweden. In our opinion, the estimate for France is too high. Focusing on Sweden, the average expenditure per employee is 2.0. Hence an effort of training 50% higher on average gives an average productivity 1.1% (i.e. 1 x 1.1%) higher. Assuming proportionality between the number of training days per employee and

the expenditure (1000 of national currencies) per employee, our estimates seem of reasonable

magnitude and suggest a fairly important positive impact of training on productivity.[11]

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[11] For France, the average expenditure per employee is 2.8. Hence an effort of training 50% higher on average gives an average productivity 32.2% (i.e. 1.4 x 23%) higher.

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26. Table: Impact of training on productivity: Basic specifications

Explanatory Variables		Estimates	Estimates
Constant		1.08	1.12
		5.85	**6.04**
Productivity in 1999		0.74	0.75
		22.14	**22.37**
Dummy for training	0.19		
		3.68	
Average number of training days			0.02
			2.44
Adjusted R2		0.72	0.72

Note: t-statistics are in bold. Standard Errors are heteroskedastic-consistent.

As discussed above, identifying the impact of training on productivity may necessitate the introduction of other variables into the regression to deal with potential omitted variable bias. First, we introduce the age of the firm. Young businesses may have low levels of productivity because of the necessity to learn about technology and management. Bartel and Lichtenberg (1987) provide further discussion on the relationship between an industry's labor productivity and the age of its plant. Second, export orientation of the firm is included. Bernard et al. (2003) observed higher productivity among exporters and pointed to the role of early foray in making exporting plants having high productivity and bigger size. This is in the same vein as the learning from exporting explanation by Tybout et al. (1998). Third, the share of firm's machinery less than 10 years old is added to the regression. New machinery may increase productivity because of their own function but also because they may be necessary to put new inventions into practice or their introduction may lead to better organization, management and more efficient combination of inputs (DeLong and Summers, 1991). Empirical support to this idea is provided by Coe et al. (1997). The variable corresponding to this aspect is based on responses to the question: "During the year 1999 what was the share of equipments and machinery aged less than 10 years in your company?". Finally, our estimated impact of training may depends on the initial human capital of workers. Following Rosholm et al. (2007), those receiving training are, in general, the better educated workers. Hence, training measured by the number of days of training per person may be correlated with the share of skilled worker in total employees. As skilled workers are likely to have higher productivity than unskilled, our estimates of the impact of training may only reflect the importance of skilled workers in total employees. To see whether training has an impact on its own, we introduce an additional control variable: the share of skilled workers (white collar workers and skilled blue collar) in total employment in 1999. As we examine the impact of training on productivity between 2000 and 2004 this variable can be considered as predetermined.

Table 27 presents the results of the robustness check. We focus on the intensity of training. There are six sets of results. Four sets where the specification from Table 26 is augmented with

each of the control variables separately. One sees that none of the control variables is significant, the adjusted R2 is unchanged and both the significance and the level of the intensity of external training coefficients are unaffected. The fifth set gives the results when all the additional control variables are introduced at the same time. A similar observation holds. While these observations suggest that our estimated impact of training does not suffer from an omitted variables bias, the fact that none of the additional control variables is significant strikes. The last set of results concerns a similar specification to the fifth except that productivity in 1999 is removed as an explanatory variable. The adjusted R2 drops dramatically (from 0.72 to 0.32) but some of the control variables become significant with the expected sign. This suggests that the variable productivity in 1999 was capturing their effects. More interestingly, the coefficient of training remains significant and positive which further support the robustness of its effect.

27. Table: Impact of training on productivity: Robustness Check

Explanatory Variables	Estimates	Estimates	Estimates	Estimates	Estimates	Estimates
Constant	1.12	1.12	1.11	1.11	1.07	4.06
	5.89	**5.98**	**5.76**	**5.80**	**5.19**	**17.90**
Productivity in 1999	0.75	0.75	0.75	0.75	0.75	
	22.10	**22.25**	**22.34**	**22.33**	**22.07**	
Average number of training days	0.02	0.02	0.02	0.02	0.02	0.05
	2.51	**2.47**	**2.49**	**2.43**	**2.48**	**3.56**
Age of the firm	0.00				0.00	0.01
	-0.54				**0.11**	**2.76**
Share of exports in sales		0.02			0.02	0.00
		0.45			**0.33**	**-0.04**
Share of new machinery (less than 10 years)			0.04		0.04	0.19
			0.71		**0.73**	**2.11**
Share of skilled workers in 1999				0.02	0.03	0.06
				0.36	**0.48**	**0.59**
Adjusted R^2	0.72	0.72	0.72	0.72	0.72	0.32

Note: t-statistics are in bold. Standard Errors are heteroskedastic-consistent

7. Conclusion

In the present study we closely examined whether the economic climate, following trade liberilization in the late 90s in the MENA region, brought real benefits. Judging from the descriptive analysis of the MENA, the region's economies (Egypt, Jordan, Tunisia, Morocco and Israel) have moved from the period of chaotic growth to a more stable phaze with growth of average 5%. However, region's trade growth was modest notwithstanding numerous trade partnerships and agreements. Anyway, the trends in business regulations, trade barriers policy show encouraging signs, especially during the last five years of development. An important characteristic of the region remains its relatively low levels of inequality.

On a more detailed level the Israeli economy has benefited from opening to trade. It became more sensitive to foreign business cycles. Yet the economy specializes on positively enhancing its orientation for more high tech manufacturing and services.

The growth was fuelled by investments in high tech manufacturing and services. This orientation resulted from the opportunities carried by the immigrants' flows, especially due to the influx of immigrants coming from the Soviet Union in the late 80s and early 90s.

The main measures of the recent economic policy were tax cuts and social benefits reduction. These changes have begun in the early 2000s and some are still coming into effect today as part of the long term government reform. The resulting growth and underemployment decrease did not reduce the poverty rate, after transfer payments.

The labour markets policies were in a vicious trap because the weak labour laws enforcement and the loss of eligibility to social benefits for workers even in vulnerable situation. Two programs were launched by the Israeli Government in the aim to reduce the work discouragement of the potential low paid employees, the negative income tax program (earned income tax credit) and the "Israel Wisconsin Plan" (for more details see appendix 9.2).

Over the long term, these programs, as well as additional periphery and low classes enhancement programs are expected to have a positive effect on the economy. The aim of these programs is to increase participation in the labour force, reduce unemployment, and

subsequently reduce poverty, which is widespread among the population not participating in the labour force.

Facing the global financial and economic crisis, the Israeli Government afforded incentives and credit facility to high tech industries as well as to various other industries, including corporations and factories in need. This orientation would facilitate preventing deterioration in low-skill workers unemployment caused by the crisis. However, one may expect from this response to crisis no impact on poverty and inequality reduction. The "package deal" was an attempt to provide incentives for employers and workers, allowing the Government to pursue reforms in agreement with the workers, unions and economic organizations, together with improving the conditions of the labour force, corporations and the overall economy.

Improving its productivity is a good way for a firm to increase its competitiveness on national and international markets. Such improvement may be achieved by different means among which workers training has attracted much attention in recent years. Training is especially important for developing countries which face the double challenges of opening up to international competition and the inadequacy between supplied and demanded skills. This paper investigates the extent to which the provision of training to workers by firms helps them improving their productivity.

The analysis combines a unique data set from Morocco, which gives detailed information about firms' decision concerning training, corporate governance, institutional environment and so forth in 1999, and the yearly survey of manufacturing (giving a limited set of information) to investigate the relationship between a firm's training decision in 1999 and its productivity in subsequent years. The analytical framework assumes a Cobb-Douglas production function for firms where technical progress is not exogenous but depends on training. It also allows for output to depend on unobserved-time-invariant firm characteristics.

Controlling for unobserved heterogeneity among firms and endogeneity of production factors, the estimation shows that training has a significant and positive impact on firms' productivity. Two firms with one standard deviation difference in training efforts will have 6% difference in productivity. The magnitude of this effect is slightly higher than in comparable studies but

remains reasonable. Moreover, the finding is robust to the introduction of various control variables. The implication is that investing in human capital (through workers training) is potentially an important tool for firms to meet the challenge of globalization. The results also have a policy implication for developing countries. Since investment in human capital may be subject to market failures, governments support may be needed to further spread training among firms.

In a world of interconnectedness countries face new challenges alongside with opportunities. According to the econometric analysis, conducted by the authors, indirect trade impact has pronounced benefits. These are opportunities for growth and industrial development available for the MENA countries. This report has found that the full potential of trade reforms is yet to be completely understood and thus far from being fully realized. Egypt and Jordan seem to be on the right track implementing business-friendly reforms and fostering better investment climate.

However, the governments must be focused on immediate and long-term challenges too. Econometric parameters stress the direct negative influence on the incomes of the poor. So far the rise in inequality and poverty in the region, according to available statistics has been mild or slowing in some countries, compared to other developing regions. Yet these trends are easily reversed if the policy focus shifts elsewhere.

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9. Appendices

9.1. Appendix I: Growth–Employment Elasticities

1969-2007 Elasticities:

Dependent Variable: LNTOT
Method: Least Squares
Date: 08/31/09   Time: 04:49
Sample (adjusted): 1969 2008
Included   observations: 40   after
adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTOT(-1)	1.190397	0.149518	7.961587	0.0000
LNTOT(-2)	-0.333483	0.141997	-2.348515	0.0245
LNGDP	0.101127	0.038444	2.630459	0.0125
C	0.490813	0.191110	2.568220	0.0145

R-squared	0.998953	Mean dependent var	7.429468	
Adjusted R-squared	0.998866	S.D. dependent var	0.342346	
S.E. of regression	0.011527	Akaike info criterion	-5.993535	
Sum squared resid	0.004784	Schwarz criterion	-5.824647	
Log likelihood	123.8707	F-statistic	11453.90	
Durbin-Watson stat	2.000932	Prob(F-statistic)	0.000000	

Female employment and total GDP at constant prices: (1969-2007)

Dependent Variable: LNFEMALE
Method: Least Squares
Date: 08/31/09   Time: 04:51
Sample (adjusted): 1970 2008
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFEMALE(-1)	0.778992	0.081146	9.599831	0.0000
LNGDP	0.212987	0.080921	2.632027	0.0124
C	0.230059	0.063857	3.602731	0.0009

R-squared	0.998887	Mean dependent var		6.514666
Adjusted R-squared	0.998825	S.D. dependent var		0.470734
S.E. of regression	0.016134	Akaike info criterion		-5.341943
Sum squared resid	0.009371	Schwarz criterion		-5.213977
Log likelihood	107.1679	F-statistic		16155.65
Durbin-Watson stat	1.315763	Prob(F-statistic)		0.000000

Male employment and total GDP at constant prices: (1969-2007)

Dependent Variable: LNMALE
Method: Least Squares
Date: 08/31/09   Time: 04:52
Sample (adjusted): 1970 2008
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMALE(-1)	0.348665	0.155321	2.244800	0.0310
LNGDP	0.333666	0.079414	4.201590	0.0002
C	2.581278	0.623925	4.137161	0.0002

R-squared	0.973888	Mean dependent var		6.935765
Adjusted R-squared	0.972438	S.D. dependent var		0.245797
S.E. of regression	0.040807	Akaike info criterion		-3.486125
Sum squared resid	0.059947	Schwarz criterion		-3.358159
Log likelihood	70.97945	F-statistic		671.3497
Durbin-Watson stat	2.189528	Prob(F-statistic)		0.000000

1995-2007 Elasticities:

Dependent Variable: LNEMPL
Method: Least Squares
Date: 07/20/09   Time: 00:22
Sample (adjusted): 1 13
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP	0.838601	0.042935	19.53178	0.0000
C	-3.027138	0.548660	-5.517333	0.0002

R-squared	0.971974	Mean dependent var	7.688695
Adjusted R-squared	0.969426	S.D. dependent var	0.105401
S.E. of regression	0.018430	Akaike info criterion	-5.009049
Sum squared resid	0.003736	Schwarz criterion	-4.922133
Log likelihood	34.55882	F-statistic	381.4904
Durbin-Watson stat	1.446632	Prob(F-statistic)	0.000000

Youth employment and total GDP at constant prices: (1995-2007)

Dependent Variable: LNEMP_Y
Method: Least Squares
Date: 07/20/09   Time: 00:26
Sample (adjusted): 1 13
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP	0.750653	0.154818	4.848627	0.0005
C	-3.766050	1.978381	-1.903602	0.0834

R-squared	0.681244	Mean dependent var	5.825967
Adjusted R-squared	0.652266	S.D. dependent var	0.112695
S.E. of regression	0.066455	Akaike info criterion	-2.443936
Sum squared resid	0.048579	Schwarz criterion	-2.357021
Log likelihood	17.88559	F-statistic	23.50918
Durbin-Watson stat	0.908739	Prob(F-statistic)	0.000512

1969-2007 Elasticities: Employment in agriculture and total GDP at constant prices: (1969-2007)

Dependent Variable: LNEMP_AGRI
Method: Least Squares
Date: 08/31/09   Time: 04:54
Sample (adjusted): 1968 2008
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP_AGRI(-1)	0.538656	0.126938	4.243452	0.0001
LNGDP	-0.173504	0.051067	-3.397546	0.0016
C	2.898077	0.811424	3.571594	0.0010

R-squared	0.940429	Mean dependent var		4.126860
Adjusted R-squared	0.937293	S.D. dependent var		0.204300
S.E. of regression	0.051159	Akaike info criterion		-3.037385
Sum squared resid	0.099457	Schwarz criterion		-2.912001
Log likelihood	65.26639	F-statistic		299.9447
Durbin-Watson stat	1.592464	Prob(F-statistic)		0.000000

Employment in manufacturing and total GDP at constant prices: (1969-2007)

Dependent Variable: LNEMP_MAN
Method: Least Squares
Date: 08/31/09   Time: 04:55
Sample (adjusted): 1969 2008
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP_MAN(-1)	1.055635	0.152984	6.900315	0.0000
LNEMP_MAN(-2)	-0.353519	0.131297	-2.692510	0.0107
LNGDP	0.104211	0.034767	2.997408	0.0049
C	1.125937	0.340462	3.307089	0.0021

R-squared	0.983600	Mean dependent var		5.791176
Adjusted R-squared	0.982233	S.D. dependent var		0.178699
S.E. of regression	0.023819	Akaike info criterion		-4.542011
Sum squared resid	0.020425	Schwarz criterion		-4.373123
Log likelihood	94.84023	F-statistic		719.7014
Durbin-Watson stat	1.802321	Prob(F-statistic)		0.000000

Employment in services and total GDP at constant prices: (1969-2007)

Dependent Variable: LNEMP_SERV
Method: Least Squares
Date: 08/31/09   Time: 04:55
Sample (adjusted): 1969 2008

Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP_SERV(-1)	1.173439	0.124570	9.419904	0.0000
LNEMP_SERV(-2)	-0.395430	0.120873	-3.271449	0.0024
LNGDP	0.168087	0.052972	3.173107	0.0031
C	0.606328	0.194620	3.115440	0.0036

R-squared	0.998498	Mean dependent var	7.071939
Adjusted R-squared	0.998373	S.D. dependent var	0.367924
S.E. of regression	0.014840	Akaike info criterion	-5.488310
Sum squared resid	0.007928	Schwarz criterion	-5.319422
Log likelihood	113.7662	F-statistic	7978.592
Durbin-Watson stat	1.908841	Prob(F-statistic)	0.000000

Employment in agriculture and the sector's net added value at constant prices: (1969-2007)

Dependent Variable: LNEMP_AGRI
Method: Least Squares
Date: 08/31/09   Time: 04:56
Sample (adjusted): 1968 2008
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP_AGRI(-1)	0.621364	0.123603	5.027074	0.0000
LNGDP_AGRI	-0.120227	0.042841	-2.806374	0.0079
C	2.238562	0.746792	2.997572	0.0048

R-squared	0.935666	Mean dependent var	4.126860
Adjusted R-squared	0.932280	S.D. dependent var	0.204300
S.E. of regression	0.053165	Akaike info criterion	-2.960474
Sum squared resid	0.107408	Schwarz criterion	-2.835090
Log likelihood	63.68971	F-statistic	276.3339
Durbin-Watson stat	1.618080	Prob(F-statistic)	0.000000

Employment in manufacturing and the sector's net added value at constant prices: (1969-2007)

Dependent Variable: LNEMP_MAN
Method: Least Squares

Date: 08/31/09   Time: 04:57
Sample (adjusted): 1969 2008
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP_MAN(-1)	0.977360	0.148914	6.563238	0.0000
LNEMP_MAN(-2)	-0.344356	0.123083	-2.797757	0.0082
LNGDP_MAN	0.127502	0.033425	3.814597	0.0005
C	1.368775	0.333974	4.098449	0.0002

R-squared	0.985406	Mean dependent var	5.791176
Adjusted R-squared	0.984190	S.D. dependent var	0.178699
S.E. of regression	0.022469	Akaike info criterion	-4.658680
Sum squared resid	0.018176	Schwarz criterion	-4.489792
Log likelihood	97.17360	F-statistic	810.2473
Durbin-Watson stat	1.750634	Prob(F-statistic)	0.000000

Employment in services and the sector net added value at constant prices: (1995-2007)

Dependent Variable: LNEMP_SER
Method: Least Squares
Date: 07/20/09   Time: 00:58
Sample (adjusted): 1 13
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNSER	0.884104	0.097682	9.050802	0.0000
C	-3.531599	1.180655	-2.991219	0.0123

R-squared	0.881615	Mean dependent var	7.153498
Adjusted R-squared	0.870852	S.D. dependent var	0.143264
S.E. of regression	0.051485	Akaike info criterion	-2.954414
Sum squared resid	0.029158	Schwarz criterion	-2.867499
Log likelihood	21.20369	F-statistic	81.91701
Durbin-Watson stat	0.943844	Prob(F-statistic)	0.000002

Dependent Variable: LNEMPL
Method: Least Squares

Date: 09/02/09   Time: 04:19
Sample (adjusted): 2 13
Included observations: 12 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMPL(-1)	0.555111	0.085095	6.523429	0.0001
LNGDP	0.357200	0.073152	4.883008	0.0009
C	-1.126428	0.367412	-3.065848	0.0134

R-squared	0.993824	Mean dependent var		7.704339
Adjusted R-squared	0.992452	S.D. dependent var		0.092997
S.E. of regression	0.008080	Akaike info criterion		-6.586597
Sum squared resid	0.000588	Schwarz criterion		-6.465371
Log likelihood	42.51958	F-statistic		724.1246
Durbin-Watson stat	1.563574	Prob(F-statistic)		0.000000

Dependent Variable: LNEMP_Y
Method: Least Squares
Date: 09/02/09   Time: 04:17
Sample (adjusted): 2 13
Included observations: 12 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP_Y(-1)	0.536744	0.273837	1.960083	0.0816
LNGDP	0.233275	0.277332	0.841141	0.4221
C	-0.264991	2.427121	-0.109179	0.9155

R-squared	0.707837	Mean dependent var		5.842590
Adjusted R-squared	0.642912	S.D. dependent var		0.099679
S.E. of regression	0.059565	Akaike info criterion		-2.591183
Sum squared resid	0.031932	Schwarz criterion		-2.469956
Log likelihood	18.54710	F-statistic		10.90238
Durbin-Watson stat	1.806611	Prob(F-statistic)		0.003938

Dependent Variable: LNEMP_SER
Method: Least Squares
Date: 09/02/09   Time: 04:26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP_SER(-1)	0.657797	0.084914	7.746581	0.0000
LNGDP	0.370748	0.101542	3.651173	0.0053
C	-2.264229	0.750949	-3.015157	0.0146

R-squared	0.992754	Mean dependent var	7.173635
Adjusted R-squared	0.991144	S.D. dependent var	0.128993
S.E. of regression	0.012139	Akaike info criterion	-5.772449
Sum squared resid	0.001326	Schwarz criterion	-5.651222
Log likelihood	37.63469	F-statistic	616.5461
Durbin-Watson stat	1.545741	Prob(F-statistic)	0.000000

28. Table . Interpreting employment elasticities[12]

Employment elasticity	GDP growth	
	Positive GDP growth	Negative GDP growth
$\varepsilon < 0$	(-) employment growth (+) productivity growth	(+) employment growth (-) productivity growth
$0 \leq \varepsilon \leq 1$	(+) employment growth (+) productivity growth	(-) employment growth (-) productivity growth
$\varepsilon > 1$	(+) employment growth (-) productivity growth	(-) employment growth (+) productivity growth

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[12] The table corresponds to interpretations that can be made when output exactly corresponds with employment (for example, total output and total employmentm or argriculture value added and employment in agricultre)/ The relationship between productivity, employment and output may not hold in cases in which employment correstponds to a population subgroup (such as youth or women) and where total output is used instead of output for the population subgroup (Kapsos, 2005).

9.2. Economic Policies

9.2.1. Labour Legislation

Major aspects of labour legislation include: wage and benefits documentation, length of work week - 43 hours and work day - 8 hours, travel fares, overtime, vacation days, sick days, termination compensation, maternity (or paternity) leave, pension insurance, discrimination, gender equal pay, youth labour. See Appendix III for a more comprehensive list of labour law legislation.

9.2.2. Labour Enforcement

The Ministry of Industry, Trade and Labour is responsible for enforcement of labour laws. The chart below presents the enforcement data for 2007 and 2008. It is evident that an enforcement activity of the labour laws is being expanded, yet it is still very limited.

29. Table. Labour Law Enforcement Data, 2007-2008

	2007	2008
Complaints	1,349	1,785
New Employers Inspected	1,858	2,393
Actions Inspected	2,618	4,313
Fines - Number	459	1,436
Fines - Total Amount	3.9m NIS	13.9m NIS
Indictments	81	165

Source: Ministry of Industry, Trade and Labour Annual Summary of Activities, 2008

9.2.3. Foreign Workers Reform

As mentioned above, over the past decade, extreme measures have been put into place to deport illegal foreign workers, in order to encourage employment of Israel unskilled workers. However, the social benefits and conditions foreign workers who participate in the work force legally have deteriorated, partially due to the large supply of these workers.

One of the tough conditions foreign workers face when joining Israel labour market is high barriers to entry and large debts to the agencies transporting them to Israel. Apparently these manpower agencies require a one-time payment of around 10,000 USD, thereby indebting the foreign worker to the agency for a long period.

Recent policy reform in conjunction with the UN is expected to reduce these barriers for entry, bypassing these agencies and enabling legal transport of foreign workers without such high disbursement from the workers.

9.2.4. Manpower Workers Policy

In 2008, section 12A of the Manpower Employees Act, 1996, came into force, after being repeatedly postponed since its enactment in 2000. This section stipulates that an employee who has been employed by the same manpower company for a period of over 9 months will be considered an employee of his actual workplace (and not of the manpower company).

The potential impact of the implementation of the aforementioned ruling is twofold. On the one hand, the obligation to employ the TWA's workers as regular employees, which means to match their employment terms to the standard employees, could lead to massive dismissal. On the other hand, if the employee is valuable to the firm, the law forces it to become her de-facto employer, which can increase employment rates. In its annual report for 2008, the Bank of Israel indicates that public services employment has expanded by 3.1% (24,500 employees). The possible reason for that expansion, the report argues, is the implementation of this section.

9.2.5. Labour Income

9.2.5.1.   Taxation of labour income

Israel has in place a progressive income tax schedule calculated by annual income, in which individuals pay tax on their income in accordance with the respective level of their salary, as a percent of their wage. This way, individuals pay income tax in accordance with their tax bracket, which is derived from their earnings. Whereby the higher their wage, the more tax they pay on every marginal addition to their salary. In 2003 a reform has been set in place by the Ministry of Finance to reduce the taxation gradually until 2010.

Some additional tax relief measures are set in place through tax reductions and credits. These include various parameters such as gender, family status, number of children, location, disability and other social standards. The tax system thereby provides additional aid to population from lower Social-Economic classes, such as in the periphery. For instance, in July 2009 additional tax credits were granted to working mothers in an attempt to encourage mothers to participate in the work force.

Recent years have seen a scheme of tax reductions on medium-high incomes in an effort to drive economic growth and ease the burden on middle income families.

Zussman and Romanov (2001) show that the current taxation scheme has a negative effect on the incentive to work among the low tax bracket employees and the population receiving guaranteed minimal income. The recipients of these benefits are typically persons with limited resources who are trying to fit into the work force. However, the current taxation scheme in fact has the effective tax at more than 100%. This is due to the taxation scheme as well as additional welfare benefits persons receiving guaranteed minimal income are eligible for. Therefore once they begin working, they lose eligibility to a large number of social benefits, which overall are higher than the expected wage. This is the reason for the growing number of the working poor who fall into a "poverty trap".

One possible solution for this problem is a negative income tax schedule, providing incentives to work for persons who are receiving social benefits, thereby replacing the benefits received with negative taxation payments. Israel does not currently implement a negative income tax program nationwide, aside for several pilot programmes which have proven successful. The programme is expected to cover additional areas with low participation rate and high poverty population density. However, among the mid to high tax brackets the incentive to work is more favourable, especially following the reduction in marginal tax rates in 2003.

9.2.5.2.   Negative Income Tax Program (EITC)

The Negative Income Tax Program or EITC (Earned Income Tax Credit) was set in place as an experimental measure dealing with in-work poverty. We believe this programme may play an important factor in dealing with decent work and poverty reduction in Israel. The programme

was set in order to ensure basic social standards among the working poor, as well as to deal with distorted incentives in the labour market. These incentives often cause persons receiving social benefits in form of guaranteed minimal income to fall into a "poverty trap" whereby they lose all benefits if they choose to enter the work force, therefore effectively paying 100% income tax.

The Negative Income Tax Law, 2007 is meant to reduce the dependency of poverty stricken families with children on social benefits, and to provide benefit receivers with work incentives. The law offers payment for workers by number of children, the age of the recipient and income levels. The law is now being implemented in a pilot experiment in several communities across Israel. An estimate made by Glybchenko and Tzameret-Kertcher (2008) found that full implementation of the law will reduce poverty by more than 20% among poor families and by more than 8% among single parent families. The researchers also estimated that the law will bring an increase of over 2.3 hours per month in the average work period of married men and an increase of over 8.2 hours per month in the work period of married women. Although the results of the pilot experiment performed in specific communities are not yet available, it is plausible to predict that the law will change the poverty rate of workers and boost the number of workers.

9.2.5.3. "Orot Letaasuka"/ "Mehalev" Program (Israel Wisconsin Plan)

According to the current policy in Israel, households receiving guaranteed minimal income as social security have an incentive to remain unemployed. Since if they begin working they will lose their right for these benefits, and in effect will be paying 100% income tax.

The Mehalev (Wisconsin) plan was introduced in Israel in 2004 (after it was successfully implemented in Wisconsin, US) with the following objectives:

- Reducing the dependency on social benefits of certain segments of the population
- Encouraging entrepreneurship and employment
- Out-sourcing of certain governmental social services
- Regional and communal development
- Increasing labour mobility
- Lowering government expenditure on direct social benefits

The program has been operative since 2005 in four pilot areas. The program was conducted by private operators. The operative principles of the program are:

- Transfer of financial resources from social benefits to employment services
- Mandatory participation in a customized program in order to acquire skills
- A focus on the individual
- Flexible and diverse employment solutions
- One stop shop for all employment and welfare needs

Results of the program:

In the first year of operation, over 10,000 placements (in which social benefits receivers were successfully integrated in the labour market) were made, and social benefit payments were reduced by 51% among the target population

Many deficiencies were found, including the lack of special treatment of minority populations, disregard of religious needs and the lack of proper social support systems (kindergartens, public transportation, and the like).

Improper treatment of handicapped populations and misplacement of workers who were fit to work.

Due to public pressure, the Ministry of Industry, Trade and Labour nominated a special committee to assess the program and later recalled the program and changed several elements to better fit the target population. Among the alterations made:

Removal of workers of ages 45+ from the program

Forming special treatment routines for handicapped people, recent immigrants and academics

Prohibiting the denial of benefits due to absence, sick days, etc.

Incentives for employers

The new programme, named Orot Letaasuka, has been functioning better than the first one, showing a decline in the number of complaints, from 70 complaints on average per month for the Mehalev program to an average of 5 complaints in August and September 2007 and a similar number later. The reason for this decline, as explained by the programme's officials, is the removal of participants over 45 from the programme. By October 2007, 5,622 former participants over 45 were required to undergo one hour of training a week, and later

transferred to the supervision of the employment service (also in the Ministry of Industry, Trade and Labour). 493 participants over 45 chose to stay in the programme.

9.2.6. Sectoral Development Policy

9.2.6.1.   Capital Investment Stimulus Law

This legislation is intended to induce businesses, including international corporations, to invest in Israel and to support local companies, factories and branches. The law provides various grants, subsidies, tax reductions, loans, capital depreciation and other enticement plans for businesses. These are given especially in periphery and rural areas, in order to enhance economic activity.

This law has specific rulings for Government benefits in various sectors, including but not limited to manufacturing, agriculture, tourism, low and high technology. These benefits are designed to support financing of businesses in the various sectors. The financing and benefits include funding of manufacturing and agricultural machines, industrial factories, hotels, factories and other industrial buildings.

The activities of the Chief Scientist are also included under this ruling, whereby technology companies are being supported. These include new ventures as well as established ones, biotechnology, and other research and development activities.

It is evident from the figure below that over the past few years there has been a rapid growth in the industrial manufacturing. This growth has continued through 2008. From mid-2008 the industrial manufacturing has experienced a sharp decline, which continued through the first quarter of 2009.

Figure 55 : Industrial Manufacturing Index
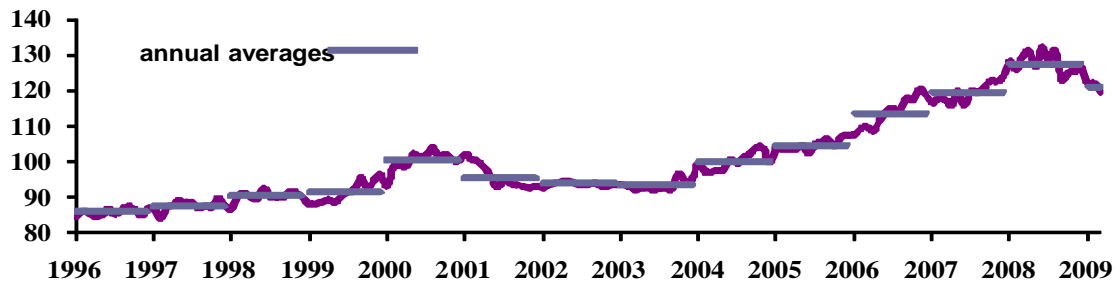
Source: Central Bureau of Statistics, 2009

9.2.7. Growth Policy

9.2.7.1.   Taxation Policy

In 2002-2003 the Ministry of Finance enacted extensive economic reforms in the taxation and social security system. It has lowered the tax rates on income from work, and cut social benefits concurrently. The tax reforms have also included taxation on financial income as well, introduced in Israel for the first time.

Aiming to focus the discussion on decent work conditions, we will refer to some of the adverse social aspects of these government acts. The reforms introduced significant cuts in welfare budgets, cutting benefits for almost anyone receiving welfare, from single mothers to families with a large number of children. The reforms included moving up the mandatory retirement age for both women and men to 67, and the willing retirement age to 67 for men and to 64 for women. Some of the changes enacted in social benefits during 2002-2003 include a longer work period required for unemployment insurance eligibility, as well as setting maximum periods for receiving unemployment, in addition to the reduction in these and other benefits. This move alone has denied benefits for 30% of previously eligible unemployed persons in 2003.

Numerous social security benefits were cut including guaranteed minimal income, unemployment insurance, as well as benefits to the elderly and the disabled.

Corresponding to the social security cuts, a reduction schedule in income tax has been set into place in several stages for the subsequent years. The reform reduced the marginal income tax for each tax bracket, thereby alleviating the tax burden from the working population. The tax reduction has benefited directly mainly mid to upper income wage earners.

These measures were taken in order to stimulate economic growth and encourage people to join the labour force.

9.2.8. Long-Term Growth Plans

The taxation and social security reforms described above were set into place as a multi-year fiscal reform designed to enhance the performance of the Israel economy in the long term. Other long term governmental plans designed by the Ministry of Finance exist for enhancing the energy sector, water and infrastructure, as well as for tax reform and other growth sources. The negative income tax program (EITC) described above in section 3.1.3 is one of them.

Additional long term policy plans include a scheme to enhance the economic activity in the areas outside of the technologically developed centre. These long term measures to develop the "periphery" are intended to increase the population in the north and south of the country until 2020 by 370 and 336 thousand individuals, respectively. It also aims to increase the number of employed persons in the north and south of the country until 2020 by 220 and 136 thousand employees, respectively.

These goals will be met by providing support to the peripheral areas. These measures include supporting the education system, including budgetary preference, financial backing for municipalities in these areas. In addition the Government aims to provide enhancement and development of industries, develop infrastructure and mass transportation. Army bases will be transferred from the center of the country to the periphery. Various budgets and funds are being channelled towards the north and south of the country. Managers of local municipalities will receive additional training, and vocational training for youngsters will be extended. Tourism

infrastructure will be supported and developed. These measures and more are planned as part of the long term plan for growth in the periphery.

9.2.9. Monetary Policy

During the main part of the 2000s the Bank of Israel has performed a monetary policy focused on maintaining low inflation levels. The monetary policy in Israel typically deals with interest rate changes and their effect on inflation and the economy. The current interest rate in Israel is at an all time low, at a level of 0.5%.

The historical "crawling band" used to maintain a certain level for the USD/NIS currency market has been expanded in the 90s, and subsequently removed entirely. This was part of the Bank of Israel's ("BOI") policy of no intervention in the exchange rate. However, this has recently changed due to the recent economic crisis and the strengthening of Israel Shekel, which has had a negative effect on export. The Governor of the BOI has instated a policy by which the BOI supports the level of the Shekel, by purchasing large amounts of Dollars in the market, thereby providing consistent demand for Dollars in the Dollar-Shekel market. The BOI is currently purchasing 100mm USD in the market every day, and is yet to find an exit strategy from this scheme. This policy has indeed assisted the exporters, by preventing the Dollar from declining against the Shekel, thereby enabling an exchange rate which maintains export profitability.

Figure 56: Monthly Interest Rates in Israel and in the US and EU (%)
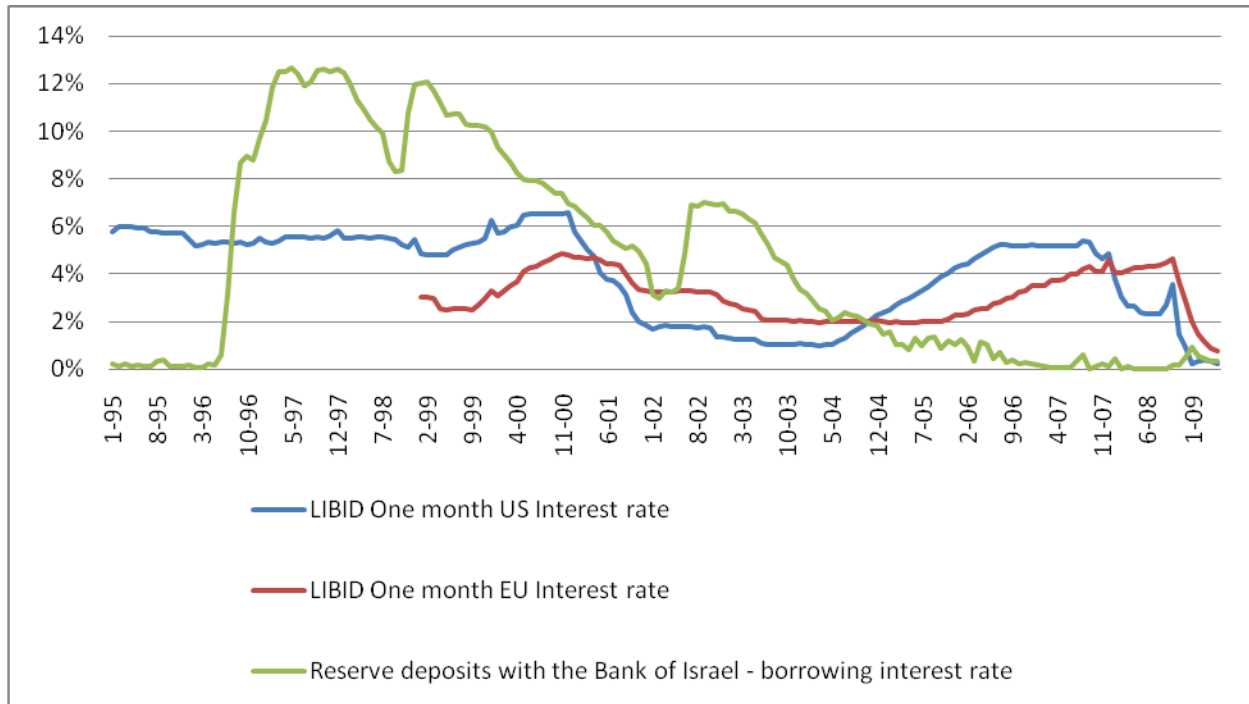
Source: Bank of Israel, Federal Reserve

Figure 57. USD/NIS, EU/NIS Monthly Exchange Rates, 1995-2009
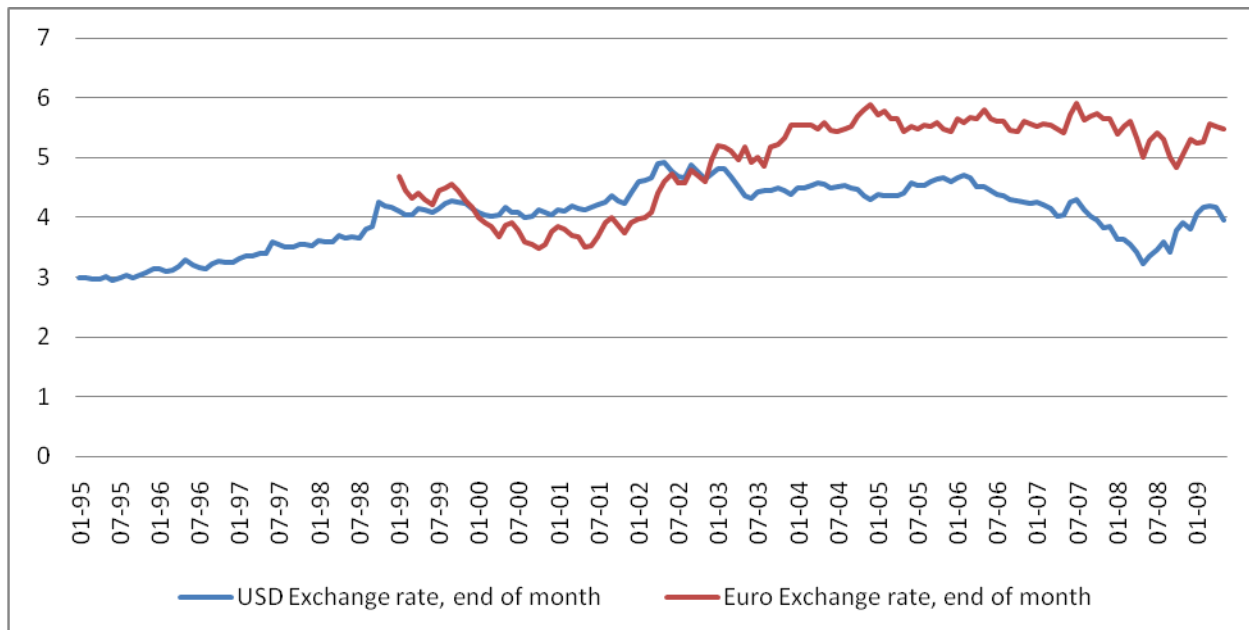
Source: Bank of Israel

9.3. Appendix IV: Trade Agreements

30. Table. Israel's International Trade and Economic Agreements (As of August 2007)

Free Trade Area Agreements	Protection of Investments	Avoidance of Double Taxation	Agreements on R&D	MFN Trade Agreements with non WTO Members
Canada	Albania	Austria	Funds	Kazakhstan
Mexico	Argentina	Belarus	Canada(3)	Russian Fed.
U.S.A	Armenia	Belgium	India	Ukraine
E.U.	Belarus	Brazil	Singapore	Uzbekistan
E.F.T.A.	Bulgaria	Bulgaria	South Korea	Standardization & Product Certification
MERCOSUR (1)	China(3)	Canada	United Kingdom	Moldova
Qualified Industrial Zones (QIZ) Agreements	Croatia	China	U.S.A.	Ukraine (5)
Egypt	Cyprus	Czech Rep	Victoria/Au	Kazakhstan(2)
Jordan	Czech Republic	Denmark	Maryland, USA(3)	Russian Fed. (5)
	El Salvador	Ethiopia		Belarus(2)
	Estonia	Finland	Parallel Funding	Statement of Intent – MOITAL and US Consumer Product Safety Commission (CPSC)
	Ethiopia	France	Belgium	
	Georgia	Germany	China	
	Germany	Greece	Finland	
	Guatemala **(3)**	Hungary	France	
	Hungary	India	Germany	
	India	Ireland	Greece(3)	

Free Trade Area Agreements	Protection of Investments	Avoidance of Double Taxation	Agreements on R&D	MFN Trade Agreements with non WTO Members
	Kazakhstan	Italy	Hong Kong	
	Latvia	Jamaica	India	
	Lithuania	Japan	Ireland	
	Moldova	Latvia	Italy	
	Mongolia	Luxemburg	Netherlands	
	Poland	Mexico	Ontario/CA	
	Peru(2)	Netherlands	Portugal	
	Romania	Norway	Spain(4)	
	Serbia-Montenegro	Philippines	Sweden	
	Slovakia	Poland	Turkey	
	Slovenia	Romania		
	South Korea	Russian Fed.		
	South Africa(3)	Singapore	Sixth Framework Program	
	Thailand	Slovak Republic	-Eureka	
	Turkey	S.Africa	Seventh Framework Program	
	Turkmenistan	S.Korea		
	Ukraine	Spain		
	Uruguay	Sweden	U.S.	
	Uzbekistan	Thailand	U.S. Science and Technology Commission	
	Azerbaijan (3)	Turkey	BIRD Foundation	

Free Trade Area Agreements	Protection of Investments	Avoidance of Double Taxation	Agreements on R&D	MFN Trade Agreements with non WTO Members
		U.K.		
		U.S.A		
		Ukraine		
		Uzbekistan		
		Switzerland		
		Lithuania		
		Croatia		
		Slovenia (3)		
		Portugal (3)		
		Moldova		
		Estonia (2)		

(1) Under Negotiations
(2) Initiated
(3) To be ratified
(4) Awaiting re-establishment
(5) Re-initiated
Source: Ministry of Industry & Trade, Foreign Trade Department, International Division.

9.4. Appendix: Definitions and sources of the variables

Variables	Definition and Source
GDP per capita	Real GDP per capita (constant LCU), WDI (2007)
Investment	Gross fixed capital formation (% of GDP), WDI (2007)
School enrolment	Primary enrollment, secondary (% net), WDI (2007)
Population	Population, total, WDI (2007)
Exports	Exports of goods and services (current US$), WDI (2007)
Imports	Imports of goods and services (current US$), WDI (2007)
GDP	GDP (current US$), WDI (2007)
Inflation	Inflation, consumer prices (annual %), WDI (2007)
Income of the poor	Income share held by lowest 20%, WDI (2007)
Freedom to trade internationally	Openness indicator, Gwartney et al. (2008)
Government consumption	General government final consumption expenditure (% of GDP), WDI (2007)
Domestic credit	Domestic credit provided by banking sector (% of GDP), WDI (2007)