On Trade, Employment and Gender: Evidence from Egypt

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Abstract

This paper focuses on the nexus between trade, gender and employment in Egypt. First, I present a descriptive analysis of the main characteristics of the Egyptian economy with an overview of recent trends in trade and employment from a gender perspective. Second, to empirically evaluate the impact of trade on employment, I have applied two models. The first one, using a time series data, I quantify the macroeconomic impact of exports on employment over the period 1960 up to 2009. Secondly, I utilize a human capital model assessing the impact of trade on wages and a Probit model measuring the impact of trade on the probability of changing the employment status (from being inactive or unemployed to being employment). My main findings show that, at the macroeconomic level, exports have a significant and positive effect on employment over the period 1960 to 2009. In the mean time, at the individual level, while exports affect males' wages, they increase females' probability of working. Finally, this study presents different policies that have to be implemented in order to promote trade liberalization and increase women's labor participation.

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1. Introduction

The last two decades have witnessed a significant growth in global trade. Many developing countries have undergone an economic liberalization process through tariff reduction and removal of non-tariff barriers. This is why exports have become an engine of growth for these economies. In the mean time, if we reason in a general equilibrium framework, more exports means more production, and thus more employment. A particular attention has been attributed to the gender impact of trade and whether trade has been favorable to women or not. Therefore, this report tries to find the nexus between trade, employment and gender in Egypt.

The literature can be divided in two groups. The first one includes *ex-post* analysis (using econometric regressions) that uses historical data to conduct an analysis of the effects of a past trade policy on employment and/or wages. Evidence of impact of globalization and increased trade on women's employment shows that higher manufactured exports from the south are associated with the feminization of the industrial labor force. This has been observed in several developing countries after the implementation of the structural adjustment programs in early 1980s. For instance, study of formal sector employment in manufacturing during 1980-85 shows evidence of association between increased exports and increased female employment in manufacturing; the largest increases appeared to be in Mauritius, Tunisia, Sri Lanka, Malaysia, and the four East Asian Tigers (Wood, 2000). The second group involves *ex-ante* simulations of a change in trade policy, which involves projecting the future effects on exports, production, employment, wages, etc. Using micro-simulation analysis, several studies have tried to determine the impact of trade liberalization on females employment and wages, Cockburn et al (2010) examined the effect trade liberalization in Senegal and found that while the unskilled gender wage gap increases, the skilled gender wage gap falls. In addition, male workers continue to gain owing to the presence of male labor-intensive export industries. By contrast, Fofana et al (2003) conducted a microsimulation analysis for Nepal where they proved that trade reform based upon import substitution strategy, i.e. a complete elimination of tariffs on imported goods, benefits women more than men in term of income distribution.

In Egypt, while there are some studies providing evidence of impact of trade on wage inequality in Egypt (Said and El Azzawi, 2009), there is a lack of empirical evidence on impact of trade on employment across various export sectors at both the macro and the micro levels. For instance, in their work, Said and El Azzawi (2009) combined the effect of trade on both wages and job quality. They found that tariffs do not seem to have had a significant impact on neither wages nor job quality. Yet, increased export orientation may have had a positive impact on wages, but has had a significant negative impact on all job quality indices. This demonstrates that there is a sort of a trade-off between wage increases and improvments in job quality. In an another piece of research, Hendy and Zaki (2010) used a microsimulation for Egypt and found that the effect of trade liberalization policies depends on the characteristics of the individual and the working sector. Thanks to the expansion of textiles, garments, chemical and services, employment increases (especially for women in textiles and garments). In addition, inequality decreases for urban and rural skilled men as well as skilled and unskilled women working in urban areas. By contrast, inequality increases among unskilled men and skilled women in

rural areas. All these studies did not test for the presence of a robust *ex-post* relationship (and not in an *ex-ante* way such as the microsimulation analysis or CGE ones) between trade and employment in Egypt.

This paper contributes to the empirical literature on trade and employment in two ways. First, it empirically evaluates the impact of trade on employment by applying two models. The first one, using a time series data, quantifies the macroeconomic impact of exports on employment over the period 1960 up to 2009. Secondly, a human capital model assessing the impact of trade on wages and a Probit model measuring the impact of trade on the probability of changing the employment status (from being inactive or unemployed to being employment). The idea behind using both models is to relate macro findings with micro ones and check the consistency between them. The second contribution is related to the fact that it distinguishes between the effect on men vs. women in order to capture the gender effect of trade policies.

My main findings show that, at the macroeconomic level, exports have a significant and positive effect on employment over the period 1960 to 2009. The elasticity of employment with respect to export is 4.3% during 1960-2009. Following the reforms that were launched in the 1990's and resumed in 2004, the effect of exports on employment increased by 30% to reach 5.6% over the period 1990-2009. In the mean time, at the individual level, exports affect men's wages and women's probability of working. In other words, the adjustment on females labor market is done through quantities and the one on males labor market is done through prices. This is in line with the fact that some sectors that use women intensively experienced an increase in females employment in recent years (such as employment of women in textile and garments).

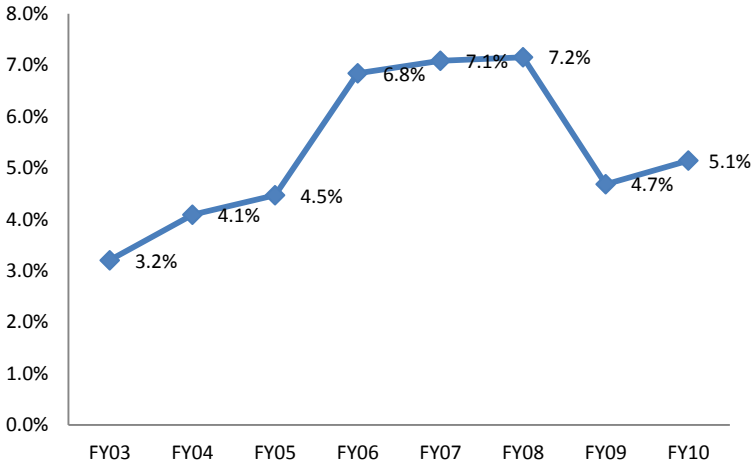
The report is organized as follows. Section 2 is devoted to a descriptive analysis of the main characteristics of the Egyptian economy. In addition, it provides an overview of recent trends in trade and employment. Section 3 provides a theoretical framework of the trade impact on employment. Section 4 shows a detailed sectoral analysis of the relationship between trade, employment and gender. Section 5 presents an empirical evidence assessing the effect of trade on employment in Egypt using both macroeconomic and microeconomic data. Section 6 concludes.

2. Overview of Trade and Employment Trends

2.1. Macroeconomic overview of the Egyptian Economy:

The Egyptian economy was subject to several reforms that shaped its actual structure. The first wave of reforms date back in early 1990s when Egypt adopted the Economic Reform and Structural Adjustment Program (ERSAP) that aimed at rectifying the macro imbalances in the economy. Those economic policies are parts of the agreements that the Egyptian government has signed with the International Monetary Fund (IMF) and the World Bank. Thus, Egypt has opened its economy, increased its trade and privatized many state-owned companies moving toward a market economy. GDP grew at an average rate of almost 4% during this period (Herrera et al., 2011). Yet, reforms were interuped between mid-1990's until 2004. Starting 2004, the Government of Egypt launched a second wave of reforms on different fronts. These 2003-2004 reforms tackled several aspects of the economy such as promoting investment by improving the business environment and enhancing trade performance through trade liberalization and reducing red tape costs. This is why between 2005 and 2008, as it is shown in Figure 1, Egypt's economy experienced high levels of growth rate (until reaching 7.2% in FY08[1]).

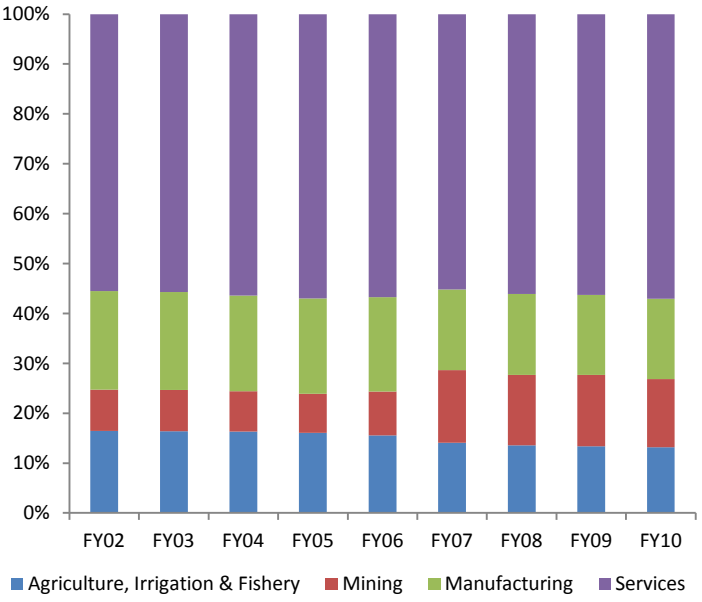
Figure 1: GDP growth



Source: Central Bank of Egypt (2011)

On the supply side, Figure 2 shows that services represent on average 56% of the GDP followed by manufacturing (18%), agriculture (15%) and mining (11%). The contribution of services to growth is also around 50%. This highlights the importance of services in the Egyptian economy thanks to traditional sectors such as tourism and Suez Canal and new emerging sectors such as telecommunication where investments reached LE 14.7 billion in FY08, compared to LE 9.6 billion in FY07 (AmCham, 2009). Despite low share to GDP, the manufacturing sector expands and

Figure 2: GDP decomposition by sector

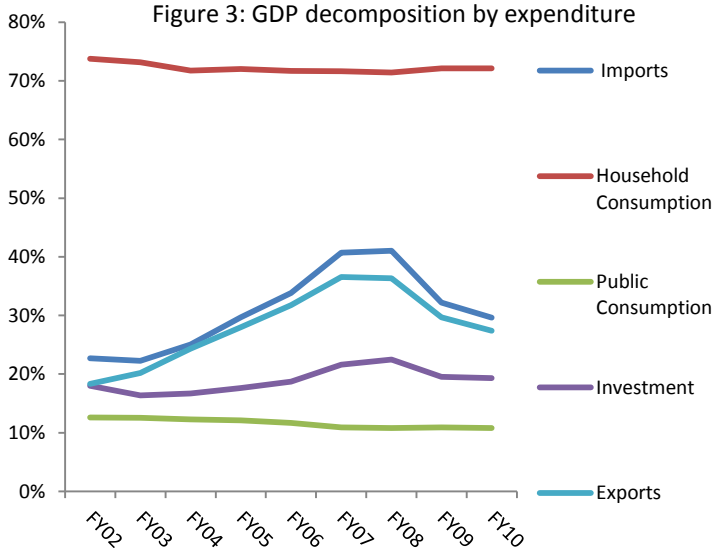


Source: Central Bank of Egypt (2011)

[1] Fiscal Year (FY) in Egypt starts in July and ends in June.

contributes more to the GDP growth. This is largely due to the high contributions of iron and steel industry, textiles and garments, dairy products and the food services group.

Figure 3: GDP decomposition by expenditure



Source: Central Bank of Egypt (2011)

Moving to the GDP decomposition by expenditure, it is worth to mention that private consumption has the highest share to GDP (70%), followed by investment and exports (Figure 3). While in the 1990s, growth was driven by consumption, starting 2005 growth was driven mostly by investment and exports (Herrera et al, 2011). The boom in investment is mainly explained by three factors. First, starting 2004, Egypt undertook numerous reforms to improve the climate investment. That is why, in 2008, it has been the top reformer in the region and worldwide as it greatly improved its position in the global rankings on the ease of doing business. Second, a surge in foreign direct investment (FDI) characterized the 2005-2008 period thanks also to these reforms. FDI reached US$17.8 billion in FY08 or 8% of GDP, up from US$ 407 million or 0.5% of GDP in FY04. Finally, the significant contribution of the private sector to GDP (more than 60% in FY08 up from 34% in FY91) boosted investment due to the privatization of many state-owned enterprises. Combining all these factors, the share of investment in GDP increased from 17% in FY04 to 22% in FY08. As per exports, I will present the trade policy in details in the following section.

Finally, concerning the GDP decomposition by factors of production, the social accounting matrices of Egypt show that the share of capital in the total value added increased from 57% in FY76 to reach 73% in FY07 (see Table 1). This is in line with what Kheir-El-Din and Moursi (2007) found since they argued that, between 1960 and 1998, capital accumulation was the main driving force behind economic growth mainly because of the substantial quantities of unqualified labor and the prevailing employment laws which fostered the adoption of capital-intensive production techniques and increased unemployment. The latter has been primarily due to the inability of economic policies in general and investment policies in particular to achieve high and labor-intensive growth rates. These policies led to modest investment levels, which weakened the economy's ability to create jobs, and resulted in investment patterns biased against labor-intensive growth.

Table 1: Capital and Labor Share in Total Value-Added

	Capital Share	Labor Share
1975/1976	57.2%	42.8%
1995/1996	68.1%	31.9%
1998/1999	67.9%	32.1%
2000/2001	68.6%	31.4%
2006/2007	72.7%	27.3%

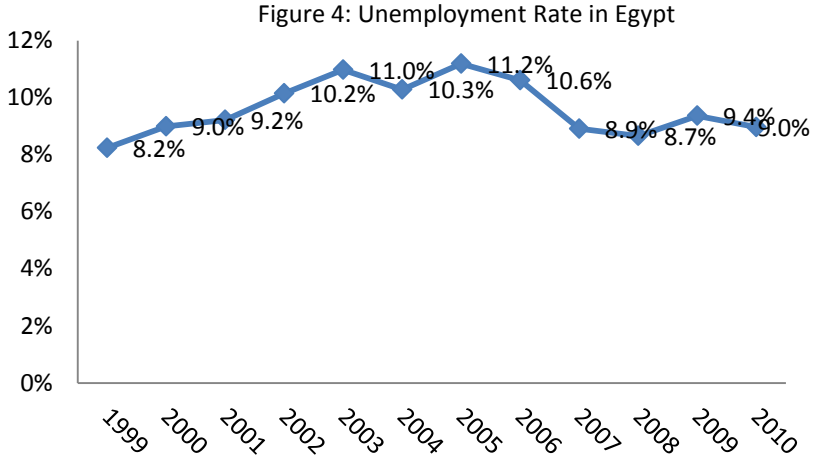
Source: Constructed by the author using different SAM.

To summarize, the Egyptian economy is characterized by an important services sector, significant contributions of export and investment to growth and high share of capital in total value added. This is quite important since all these aspects should have a important implications on employment in the Egyptian labor market.

2.2. Main Characteristics of the Egyptian Labor Market:

This section undertakes a detailed analysis of main characteristics of aggregate employment by gender, by sector and by economic activity. Before starting an in-depth analysis of the Egyptian labor market, it is important to give a brief overview of its main characteristics. Being a developing economy, Egypt is characterized by a high unemployment rate, an important informal sector and a low females' participation rate.

Figure 4: Unemployment Rate in Egypt



Source: CAPMAS

According to the Central Agency of Public Mobilization And Statistics (CAPMAS), unemployment rate has been increasing between 1999 and 2005 until reaching 11.2% then started to decline thanks to the period of reforms when it amounted 8.7% before the financial crisis. Later, it has increased to attain 9% in 2010 (Figure 4). The Egyptian Labor Market Panel Survey (ELMPS) shows that these figures are even higher especially among youth and females whose unemployment rate are 25% and 19% respectively (Assaad, 2009).

Second, the labor market in Egypt is characterized by a high informality. According to Wahba (2009), looking at informality defined as lack of job contract and lack of social security suggests that it has increased between 1998 and 2006 as a share of total employment (58% in 2006 up from 52% in 1998) and as a share of non-agriculture employment (44% in 2006 up from 41% in 1998). Yet, to have a

more precise picture of informality, only private and non-agriculture employment have to be taken into account. Public sector employees tend to be protected because they hold job contracts and have social security coverage in addition to other benefits. The agricultural sector is excluded from the informal sector since it has its own features such as subsistence, family work, etc. This is why informality, although decreasing between 1998 and 2006, remain very high (76% of private non-agricultural waged-workers).

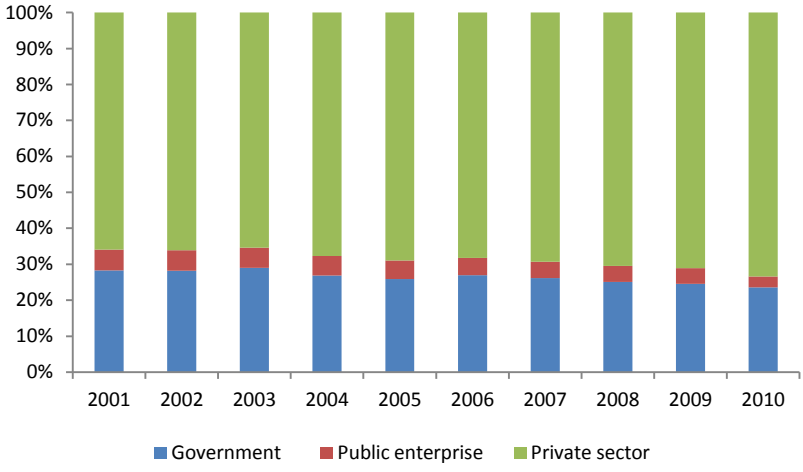
Third, according to the Egyptian Labor Market Panel Survey (ELMPS), labor participation in Egypt has increased from 32% in 1998 to 39% in 2006 (Figure 5). Yet, females participation rate remains quite modest since less than 20% of women at working age participate in the labor market. Figure 5 shows the evolution of employment in Egypt between 1998 and 2006. This participation rate of women, despite a slight increase in 2006 to reach 18% up from 14% in 1998, remains very low comparing to men (59% in 2006 up from 50% in 1998). Yet, it is important to notice that although participation for both males and females increased with the same magnitudes, the relative increase for females is larger (33% between 1998 and 2006 against 19% for males). Despite this, the increase is less than expected given the increasing education attainment among Egyptian women of working age since participation among educated women has been declining over time (Assaad and El Hamidi, 2009). This decline is explained by the decrease in hiring in the public sector as it will be shown later.

Figure 5: Labor Market by Gender

Source: Constructed by the author from ELMPS, 2006

Traditionally, the public sector was the most important hirer in the economy, especially during Nasser's era. Yet, after the abolishment of the guaranteed employment scheme in the 1990s for every secondary and postsecondary graduate and after the privatization wave that started in early 1990s and resumed in 2004, the private sector enjoys the highest share in total employment

Figure 6: Employment by sector

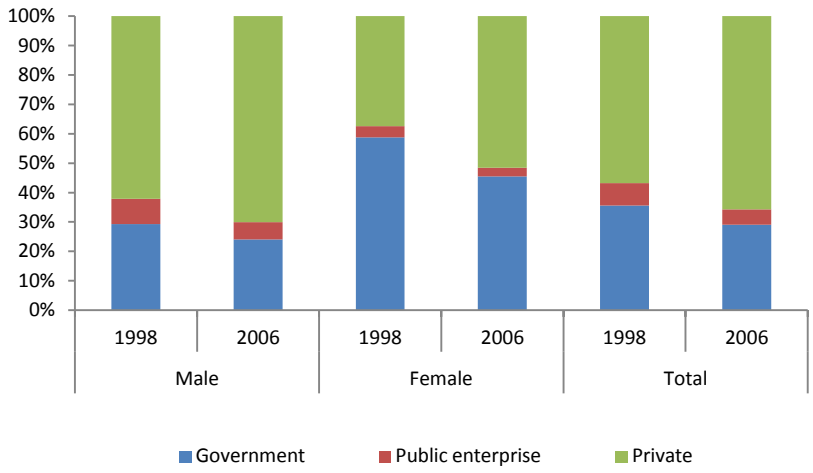


Source: the Central Bank of Egypt (2011)

(almost 70% since 2000 as it shown in Figure 6). The remaining 30% are distributed among the government and public enterprises. Clearly, the latter are intensively demanded by young graduates thanks to the advantages offered by these sectors at several fronts: high levels of protection in relation to the termination of contracts, social insurance, and comfortable working conditions (ILO, 2010). This change in the shares of public vs. private sectors is reflected also on their growth rates: private employment has risen by 33% from around 12 million employees in 2001 to 16 million in 2007 while public sector employment has risen by 5% only throughout the same 6 year period from 5.9 million to 6.2 million employees (El Haddad, 2009).

By having a look on the gender distribution by sector in Figure 7, three remarks are worth to be mentioned. First, since women participation is largely affected by their marital status, they are mainly concentrated in the government sector, whereas the private sector is not hospitable to them. The latter guarantees stability, suitable revenues, flexible maternity leave, and not requiring much time which is appropriate for a married woman. In addition, as it was mentioned by Said (2007), the female relative rewards witnessed larger real wage improvements in comparison to their male counterparts between 1998 and 2006 (the gap in favor of females is only 3% in government sectors and the one in favor of males is 21% in the private sector). In the government sector, real wages increased by 40% as opposed to only 17% in the private sector. Second, males are mostly working in the private sector whose share increased from 62% in 1998 to 70%. In 2006, last but not least, while the private sector employment increased for both males and females, the government and the public enterprises ones shrank between 1998 and 2006 for the reasons mentioned before.

Figure 7: Employment by Sector and Gender



Source: Constructed by the author from ELMPS, 2006

Finally, the distribution of labor among different economic activities shows that services are the first employer in the Egyptian economy followed b y agriculture then industry. If the gender dimension is taken into account, the services sector (that includes traditional sectors such as tourism

Table 2: Share of Employment by Economic Activity and Gender

		1990	1995	2000	2005	2006
Male	Agriculture	34.9	32	27.4	27.1	28.3
	Industry	23.9	24.9	24.6	25.4	25.8
	Services	40.9	43.1	48	47.2	45.6
Female	Agriculture	52	42.5	39.4	46.5	43.3
	Industry	10.2	9.2	6.9	5	6
	Services	37.5	48.3	53.7	48.4	50.6
Total	Agriculture	39	34	29.6	30.9	31.2
	Industry	20.7	21.9	21.3	21.5	22
	Services	40.1	44.1	49.1	47.5	46.6

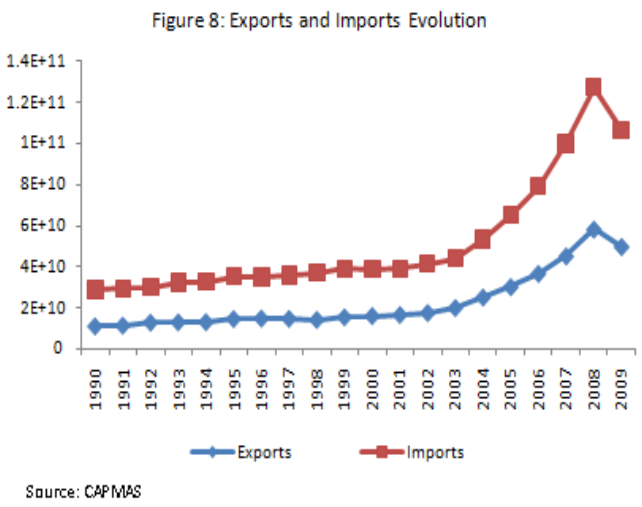
Source: World Development Indicators, 2011.

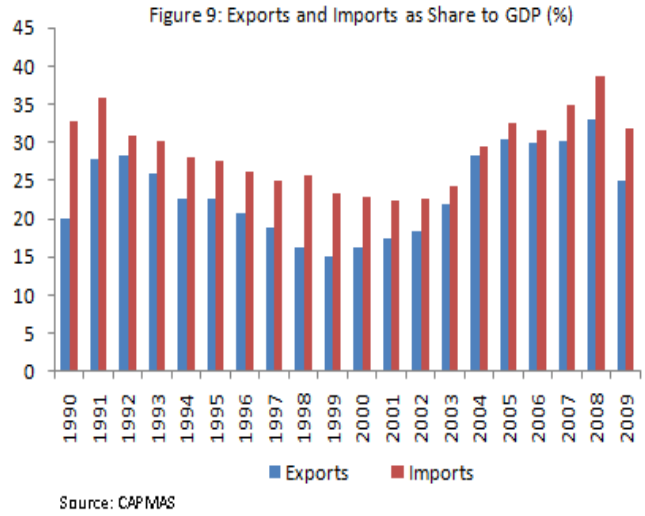
and growing ones like financial and business services, transport and communication) remains the first most important employer for both males and females while agriculture for females and industry for males are ranked second. As it is shown in Table 2, these ranks remained stable over time with an important increase for females in agriculture to the detriment of industry and a slight increase for males in industry to the detriment of agriculture. Combining these trends, Table 2 shows that agriculture employment increased where the bulk of this growth was among unpaid family workers on family farms rather than among hired agricultural workers (Assaad, 2009).

2.3. Recent Trends in Egypt's Trade:

The effect of trade on employment has been studied extensively both at the theoretical and empirical levels. Simple economics intuition shows that more exports means higher production, higher labor demand and/or higher wages depending on the labor market flexibility. This is why before finding the nexus between trade and employment, it is important to document the trends in trade, especially exports, since the 1990s when Egypt adopted the ERSAP, with particular attention paid to the period 2000-2010.

Both exports and imports in Egypt experienced significant increases since early 1990s and in a more pronounced way after 2004. Figure 8 plots the evolution of exports and imports from 1990 to 2010. On one hand, Figure 8 shows that both exports and imports increase after 2004 are much higher than those before 2004. On average, exports increased annually by 5% before 2004 vs. 24% after this date, while imports by 2% and 24% respectively. These facts are confirmed by Figure 9 that depicts the share of exports and imports to GDP over the same period. It has a U-shaped curve showing the increases in the share of exports and imports following the ERSAP until 1992 then the slope is downward until early 2000 after which it becomes upward again after the 2004 reform. The same analysis applies for imports. On the other hand, Egypt trade balance has been continuously in deficit throughout the period of the study. Imports exceed exports as a result of the upsurge in the volume of imports that are mainly concentrated in raw materials, investment goods or semi-finished products that are used in the production process.





Despite the widened deficit in the trade balance, the surplus on the current account (before the financial crisis) was an outcome of the rise in the services surplus and net unrequited transfers. In addition, the net inflow realized by the capital and financial account was due to the fact that foreign direct investment (FDI) increased in recent years (especially in petroleum, manufacturing and financial services).

Table 3: Balance of Payments in Egypt as Share to GDP (%), FY00-FY10

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Current Account	-1	0	1	2	4	3	2	2	1	-2	-2
Balance of Goods and Serv.	-6	-4	-4	-2	-1	-3	-4	-4	-5	-7	-7
Trade Balance	-12	-10	-9	-8	-10	-12	-11	-12	-14	-13	-11
Net Services	6	6	5	6	9	9	8	9	9	7	5
Transfers	5	4	5	4	5	6	5	5	6	4	5
Capital and Financial Account	-1	-1	-1	-3	-6	4	3	1	5	1	4
Capital account	0	0	0	0	0	0	0	0	0	0	0
Financial account	0	0	0	0	0	0	3	1	5	1	4
Net Direct Investment	2	1	0	1	0	4	6	8	7	4	3
Net Portfolio Investment	0	0	1	-1	0	2	2	-1	-1	-5	3
Other Investments (Net)	-3	-1	-3	-4	-7	-2	-4	-6	-1	2	-2
Overall Balance	-3	-1	-1	1	0	5	3	4	3	-2	2

Source: Constructed by the author from the Central Bank of Egypt datasets.

In order to explain the burst in exports and imports, it is important to present how tariffs and other trade barriers have evolved over time. Over two decades, Egypt has significantly liberalized its external trade. The maximum tariff rate has decreased from 110% at the end of the 1980s to reach 40% in the end of 1990's. In 2004, the government of Egypt launched the second wave of liberalization. Its objectives were twofold: first, to reduce tariffs and rationalize the tariff structure; and second, to reduce the number of products subject to non-tariff barriers. The number of tariff bands was narrowed from 27

tariff brackets to 6, tariff dispersion measured by standard deviation declined from 16.1 in 2000 to 12.7 in 2004 and tariff lines were reduced from 8,000 to 6,000. Both nominal and effective protections have declined in the manufacturing sector from 21.3% to 12.1% and from 23.3% to 14% respectively after the 2004 reform. All those measures should in turn simplify procedures, minimize tariff evasion, and remove possibilities of discretion and corruption (Zaki, 2011).

Nearly 99% of Egypt's tariff lines are bound at the WTO. MFN tariffs on non-agricultural products are generally lower, with an average of 12.8%. Tariffs on agricultural goods remain high, with an average of 66.4%. The higher average on agricultural goods is strongly determined by average tariffs of over 1,000% on beverages and spirits. Table 4 presents both applied and most favored nation (MFN) tariff rates[2]. It is noteworthy that the simple (weighted) average[3] of applied tariffs have declined significantly, in particular between 2002 and 2004 reaching 20.3% (13.1%) down from 47.9% (23.7%). Despite a significant liberalization of the manufacturing sector, the primary sector remains relatively protected given the fact that in 2009, its simple average of MFN tariffs is 41% while the manufacturing's one is 9%. Finally, the difference between applied and weighted tariff rates is much larger for the primary sector (37.5% and 6% respectively) than for manufacturing (9.3% and 9.12% respectively). This is due to the fact that some products in the primary sector are subject to high tariffs (such as tobacco and alcohol) whereas their weights in international trade are significantly low.

Table 4: Tariff Rate by Sector, 1995-2009

		1995	1998	2002	2004	2009
Total	Applied simple	24.3	19.65	47.92	20.29	12.56
	Applied weighted	16.65	14.17	23.69	13.1	7.98
	MFN simple	34.65	25.23	61.76	19.94	17.21
	MFN weighted	16.65	14.17	23.69	13.1	8.67
Primary	Applied simple	25.88	23.3	19.06	88.27	37.53
	Applied weighted	7.65	8.86	9.33	18.07	6.18
	MFN simple	52.88	34.79	18.56	41.61	41.05
	MFN weighted	7.65	8.86	9.33	18.07	7.22
Manufacturing	Applied simple	24.02	19.15	50.58	12.96	9.3
	Applied weighted	22.2	17.53	30.71	11.41	9.12
	MFN simple	28.92	22.1	72.79	13.53	9.95
	MFN weighted	22.2	17.53	30.71	11.41	9.63

Source: World Development Indicators, 2011.

[2] MFN tariffs are what countries promise to impose on imports from other members of the WTO, unless the country is part of a preferential trade agreement (such as a free trade area or customs union), applied . This means that, in practice, MFN rates are the highest (most restrictive) that WTO members charge one another. Applied tariff rates is the average of effectively applied rates for all products subject to tariffs calculated for all traded goods.

[3] Weighted mean tariff is the average of tariff rates weighted by the product import shares corresponding to each partner country. Simple mean tariff is the unweighted average of tariff rates for all products subject to tariffs calculated for all traded goods.

Along with these unilateral trade liberalization efforts that took place since the 1990s, Egypt has signed many bilateral and multilateral free trade agreements (FTA). On the bilateral front, Egypt has concluded free-trade agreements with the European Union (2004), the members of EFTA (the Republic of Iceland, the Principality of Liechtenstein, the Kingdom of Norway, the Swiss Confederation, 2004), Turkey, and other Arab countries. At the regional level, Egypt has concluded to the Greater Arab Free Trade Area (GAFTA), the Common Market of Eastern and Southern Africa (COMESA) and the Agadir Free Trade Agreement (with Tunisia, Jordan and Morocco). It has also some framework agreements that should turn into free trade ones such as the agreement with the MERCOSUR countries and the one with the UEMOA (Union Economique et Monetaire Ouest Africaine). Finally, Egypt has also signed the Qualified Industrial Zones (QIZ) Protocol[4] in December 2005 with the United States and Israel. All these agreements have contributed to the boom of exports and imports in Egypt starting 2004.

Despite these liberalization efforts, other impediments to trade still exist, especially administrative barriers. That is why the WTO launched the process of trade facilitation in order to reduce such barriers. In Egypt, red tape procedures for exports and imports remain high and costly (Tables 5 and 6). In 2010, the former request 12 days costing U.S.$ 613 and the latter 12 days adding some U.S.$ 698 to the value of imported goods. Consequently, Egypt still has a long way to reach better rankings in the ease of doing business or best practice countries in trade facilitation aspects. In addition, according to the Enabling Trade Index issued by the World Economic Forum (2008), Egypt has been ranked a low 87th amongst 118 countries for the ease of getting goods across the border. Despite importing goods is not costly, importers raise concerns about the efficiency of customs and other border agencies pointing out to the fact that bureaucracy and transaction length are significant impediments to trade. Its score was 3.51 (the first country is Hong Kong with a score of 6.04 and the last is Chad with some 2.6). Egypt is not well positioned neither for efficiency of customs administration (ranked 84th) nor for transparency of border administration (71st). Efficiency of exports and imports is located in a middle position (49th). All these facts raise some worries about the efficiency of trade procedures in Egypt. For this reason, policymakers should focus on such barriers to boost foreign trade.

Table 5: Export and Import Procedures in Egypt, 2010

	Import Procedures		Export Procedures	
	Duration (days)	Cost $	Duration (days)	Cost $
Documents preparation	8	158	7	81
Customs clearance and technical control	1	90	1	182
Ports and terminal handling	1	220	2	170
Inland transportation and handling	2	230	2	180
Total	12	698	12	613

Source: “Doing Business”, the World Bank, 2010.

[4] Qualifying Industrial Zones (QIZ) are designated geographic areas, within Egypt, that enjoy a duty free status with the United States. Companies located within such zones are granted duty free access to the US markets, provided that they satisfy the agreed upon Israeli component of 10.5%, as per the pre-defined rules of origin.

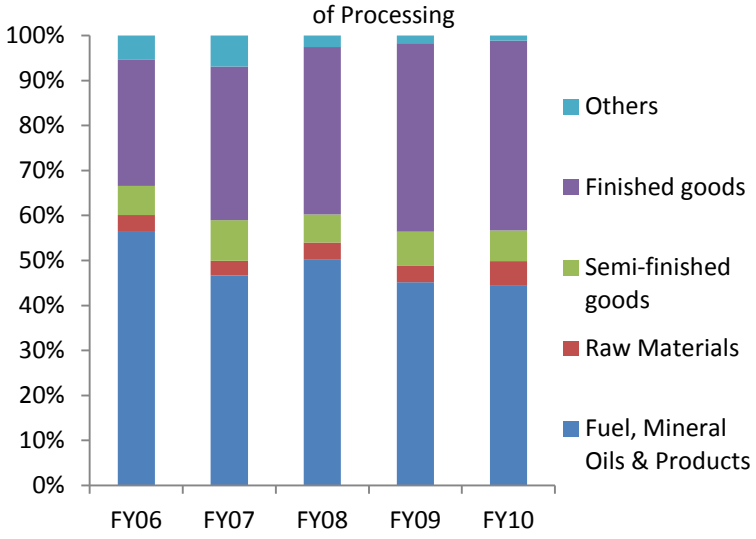
Table 6: Types of requested documents for exports and imports in Egypt, 2010

Import documents	Export documents
Bill of lading	Bill of lading
Certificate of origin	Certificate of origin
Commercial invoice	Commercial invoice
Customs import declaration form	Customs export declaration form
Packing list	Packing list
Inspection report	Technical standard/health certificate

Source: Doing Business, the World Bank, 2010.

Egypt's exports are moderately diversified. Figure 10 shows that almost half of the Egyptian exports are concentrated in fuel, mineral and oil products. Yet, despite a large share in Egyptian exports, proceeds of fuel, mineral oils and products rose by 2% between FY06 and FY10. In the mean time, Egypt managed to diversify its non-oil exports that scaled up due to the increase in exports of raw materials (up by 90.4% over the same period), finished (up by 94.7%) and semi-finished products (up by 36.7%). Clearly, the increase in non-oil exports contributed to the development of the industrial sector that expanded and increased its labor demand for blue-collar workers that are more abundant in Egypt.

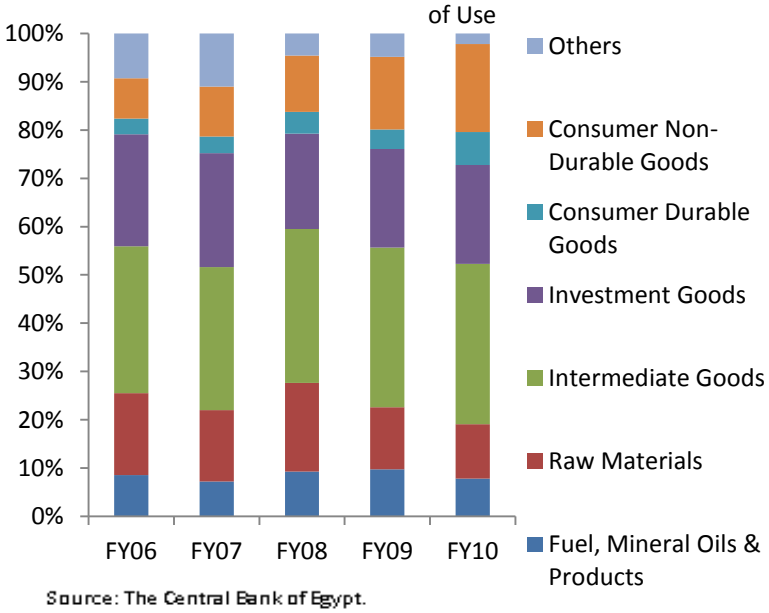
Figure 10: Proceeds of Merchandise Exports by Degree of Processing



Source: The Central Bank of Egypt.

The imports structure is a little bit different since fuel and oil products do not represent more than 10% of Egyptian imports. The bulk of imports is concentrated in the categories of raw materials, investment and intermediate goods representing altogether two thirds of imports. Yet, the evolution of imports points out another important fact. As it is shown in Figure 11, both consumer non-durable and durable goods have

Figure 11: Payments for Merchandise Imports by Degree of Use

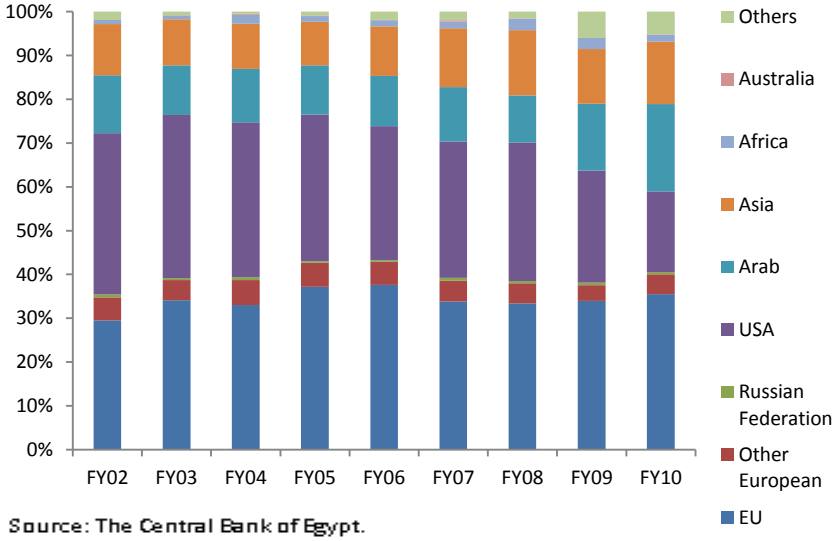


Source: The Central Bank of Egypt.

tripled between FY06 and FY10, especially those coming from China.

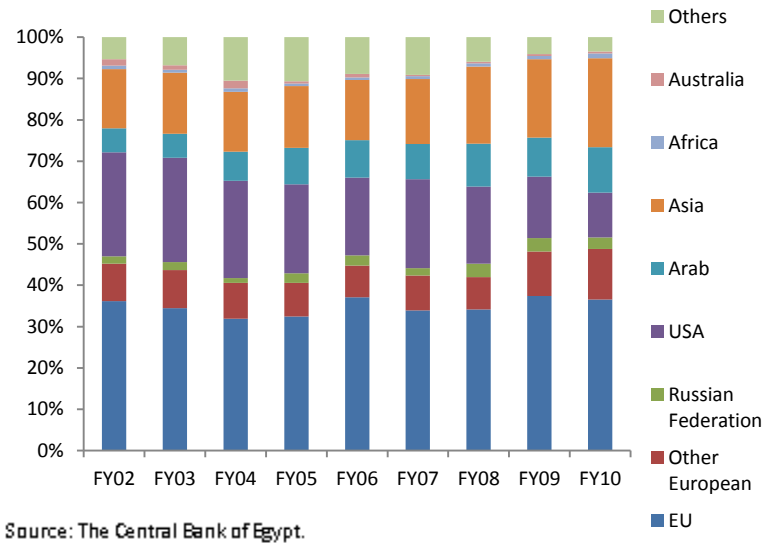
The geographical distribution of both exports and imports is relatively the same. The European Union is the major trade partner with Egypt, accounting for, on average, 35% of the total trade. The key exports to the EU were crude oil and products, cast iron, cotton textiles, cement, iron and steel products, pharmaceuticals, and aluminum products. The main imports from the EU were crude oil and products, iron and steel products, organic and inorganic chemicals, pharmaceuticals, and electric appliances for telephones and telegraphs. Before the financial crisis, the USA was occupying the second rank for both exports and imports with an average share equivalent to 33% and 22% respectively. The USA chiefly imports from Egypt crude oil and products, cement, and iron and steel products. Imports from the USA were mainly crude oil and products, iron and steel products, wheat, and maize. Note that starting FY09, the share of imports from Asia outweighed USA's one and came to the second rank after the EU with a 20% share of total imports while the share of American imports declined to reach 11% in FY10 (Figures 12 and 13). Moreover, it is important to note that while Egypt's trade with Asia has been multiplied by 5 between FY02 and FY10, the one with USA has been multiplied by just 1.7 over the same period. The main imports from Asian countries are parts and accessories of cars, animal and vegetable fats, cars, ready-made clothes, and iron and steel products. Finally, the Arab share in Egypt's trade is quite modest since it does not exceed 10% of total trade with crude oil and products, iron and steel products, cast iron, cement, and rice as the main Egyptian exports and crude oil and products, organic and inorganic chemicals, and cars as the main Egyptian imports.

Figure 12: Geographical Distribution of Exports



Source: The Central Bank of Egypt.

Figure 13: Geographical Distribution of Imports



Source: The Central Bank of Egypt.

3. Trade and Employment in Theory

To determine the effect of trade on employment, four main theoretical frameworks could be evoked. The *Ricardian model* was one the first attempts to determine the effect of trade on employment. According to this model, each country exports the good in which it has comparative advantage, as defined by having a lower relative autarky price than the other country (or higher productivity). Consequently, trade causes each country to expand its production of the good it exports, with labor being reallocated to it from the import-competing industry. This means that factors of production should reshuffle to the sectors that have a comparative advantage leading to job creation in these sectors and job destruction in other sectors. The net effect may be positive or negative in the short run depending on the characteristics of the labor market. Yet, in the long run, the efficiency gains caused by trade liberalization are expected to lead to positive employment effects given that the country produces more efficiently (Krugman et al, 2011).

Second, *the Heckscher-Ohlin-Samuelson* (1933 and 1941) argues that, under free trade, countries tend to export the good that uses intensively their relatively-abundant factor of production. According to the *Stolper-Samuelson effect*, an increase in the relative price of a good (where the country has a comparative advantage) will lead to a more than proportional increase in the real returns of the factor which is intensively used in the production of that good, and conversely, to a fall in the real returns of the other factor. Such effects are valid when factors are assumed to be mobile between different sectors. Yet, inter-sectoral mobility of the factors of production is relatively low in the short run. This is why the third framework is the *sector specific model* that can be perceived as the short term version of the HOS model.

The sector specific model (Viner, 1931) assumes that one factor of production is specific to a particular industry. A movement towards free trade increases the price of the exportable goods and reduces that of importable ones. Hence, the return of the factors used in the exporting sectors will increase while factors used in the importing sectors will witness a decline of their revenues. In other words, when a factor of production, like capital, is immobile between industries, a movement to free trade will cause a redistribution of income. Some individuals, such as the owners of capital in the export industry, will benefit from free trade. Other individuals, owners of capital in the import-competing industries, will lose from free trade. In addition, according to this model, workers, who are freely mobile between industries may gain or may lose since the real wage in terms of exports rises while the real wage in terms of imports falls. Therefore, the clear winners and losers in this model are distinguishable by industry. As in the immobile factor model, the factor specific to the export industry benefits while the factor specific to the import-competing industry loses. The net effect on labor depends on the magnitude of gains from exports or losses from imports.

The final strand of international trade theory argues that instead of having a reallocation of the factors of production between sectors, this reallocation will take place within each sector. Unproductive firms will exit the market, productive firms will serve the domestic market and most productive ones will be able to face the competition and export to foreign markets (Krugman, 2011). As a result, , these

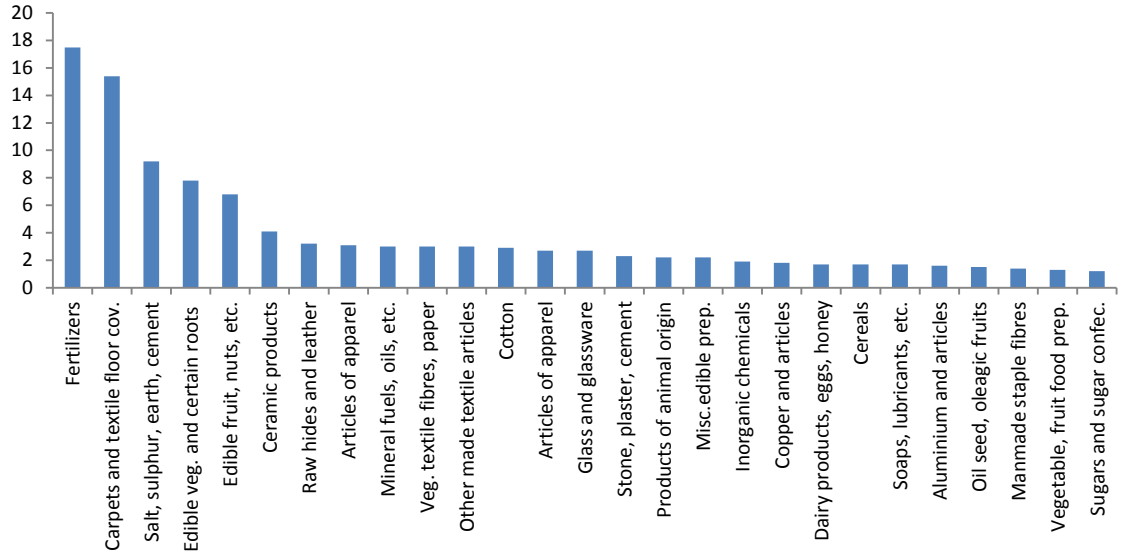
models predict that in all sectors jobs are created by producers who are able to compete at the international level and destroyed by those who are unable to compete.

From a gender perspective, and according to the HOS model, women are likely to take advantage from trade if countries start to export goods or services using intensively female labor. Furthermore, Becker (1971) argues that women should be expected to gain from trade independently of the resulting export structure, since trade leads to more competition and therefore urges firms to reduce their cost of discrimination by hiring more women.

4. Sectoral analysis of trade and employment

In order to apply these theoretical findings on the Egyptian case, it is important to identify the sectors where Egypt has a comparative advantage as well as those sectors that have been most vulnerable to import competition. Figure 14 displays the revealed comparative advantage index for Egypt in 2009. Fertilizers, carpets and textile floor products are ranked first followed by other textile, garments and apparel products.

Figure 14: Revealed Comparative Advantage Index, 2009



Source: International Trade Center, 2011.

In general, Table 7 shows that almost all the manufacturing sectors (except garments) are more intensive in males than females. Females represent only some 13% of the labor force in the manufacturing sector in Egypt. In addition, by observing the most important sectors intensive in female labor, textiles and garments, retail and trade; and education and health rank first. In particular, textiles and garments are witnessing a significant openness at both national and international levels. At the national level, import prohibitions were lifted on most textile and clothing products in 2004, through the ministerial decree 161/2004. Meanwhile, the imports of some products are subject to specific

administrative formalities, inducing additional red tape costs. Even though quotas seem to have no effect on Egyptian trade, the trade facilitation issues still hinder some imports as well as exports. At the international level, the dismantlement of the Multi-Fiber Agreement (MFA) in January 2005 has put an end to all quota barriers impeding the textiles and garments trade. Consequently, Egypt should face a fierce competition coming from other countries, especially in Asia, whose exports are much more competitive. This, in turn, could have a negative effect on Egyptian exports, employment and wages. As it is shown in Table 7, males are distributed in different manufacturing sectors while females are mainly working in textile, garments, and food. Therefore, garments liberalization means more trade, higher expansion, and more employment opportunities for females. Table A.1. in Appendix 1 shows that females employment has increased in all textile and garment-related occupation more than males. Given the fact that this sector uses females intensively, the impact of the recent financial crisis on females employment was most pronouced in the textile and clothing sector. The production and the exports of this sector decreased by 25% and 22% respectively leading to some 70,000 job losses mainly in the textile sector. Note that this decline was mainly beared by women and blue-collar workers, both being the intesensively used factors of productuion in these two sectors. In addition to these sectors, the ICT sector is one of the promising sectors for women employment. For further details, see box 1.

Table 7: Distribution of Labor in Manufacturing: by Gender, 2006

	Males	Females	Total		Males	Females	Total
Food and Beverage	19%	18%	19%	Food and Beverage	88%	12%	100%
Tobacco	1%	1%	1%	Tobacco	88%	13%	100%
Textiles	10%	14%	10%	Textiles	83%	17%	100%
Garment	7%	39%	11%	Garment	53%	47%	100%
Leather Goods	2%	4%	2%	Leather Goods	78%	22%	100%
Wood Product (except furniture)	3%	1%	3%	Wood Product (expt Furniture)	97%	3%	100%
Paper	2%	1%	2%	Paper	90%	10%	100%
Publishing and Printing	3%	2%	3%	Publishing and Printing	92%	8%	100%
Coke and Petroleum Products	5%	4%	5%	Coke and Petro. Products	89%	11%	100%
Chemical Product	7%	9%	8%	Chemical Product	85%	15%	100%
Rubber Product	1%	0%	1%	Rubber Product	100%	0%	100%
Non-metallic Mineral	10%	1%	9%	Non-metallic Mineral	98%	2%	100%
Basic Metal	3%	1%	2%	Basic Metal	96%	4%	100%
Metallic Product	8%	0%	7%	Metallic Product	100%	0%	100%
Machinery and Equipment	5%	1%	5%	Machinery and Equipment	96%	4%	100%
Electrical Equipment	1%	1%	1%	Electrical Equipment	71%	29%	100%
Radio, TV, and Com. Equip.	1%	1%	1%	Radio, TV, and Com. Equip.	90%	10%	100%
Medical Equipment	0%	1%	0%	Medical Equipment	60%	40%	100%
Other Transport Equipment	1%	1%	1%	Other Transport Equipment	86%	14%	100%
Furniture	14%	0%	12%	Furniture	100%	0%	100%
Total	100%	100%	100%	Total	87%	13%	100%

Source: Constructed by the author from ELMPS, 2006.

Box 1: ICT and Women employment

In addition to the textile and garments sector, the information and communications technologies (ICT) sector is one of the sectors that embeds many positive opportunities as well as considerable challenges for women. According to Mandour (2009), among the positive trends in this field is that women constitute a promising percentage among university staff members in scientific faculties and research institutes, technical and professional staff at the country level, and as recipients of training on the use of high technology. For this reason, they may have the capacity of working is such sectors. Yet, analyzing national data reveals that ICT related sectors are highly dominated by men, with a 10% average employment share for women in 2006 declining from 17% in 2000. During 2000-2006, women and men have experienced similar pattern of distribution across various ICT-related sectors being more concentrated in low technology sectors. Compared to men, women witnessed a higher degree of concentration in core ICT sectors namely computer and related activities. Nevertheless, women faced a number of challenges regarding employment in ICT sector. First, women working in computer and related activities were more employed in low skill demanding sub-sectors, namely in database activities and data processing, whereas men were relatively more concentrated in hardware consultancy, repair of computing machinery and other computer related activities. The major exception is women's higher concentration in software consultancy which is classified as a high skill demanding field. Second, women faced declining employment shares in all ICT related sectors during 2000-2006 which reveals that the problem lies in attracting and retaining female employment in such sectors. Third, female to male productivity on average in ICT related sectors was lower than its equivalent on the country level during 1996-2006. Fourth, women tend to deviate from ICT related sectors in which they enjoy relatively low employment gaps as observed in the case of core ICT sectors.

To test for the relationship between gender and ICT in Egypt, Mandour (2009) uses econometric techniques. Regression results indicated a significant positive relationship between gender equality in employment and the level of ICT infrastructure in Egypt. A positive significant relationship was also found between the development of ICT sector and gender equality in employment indicating that economic growth of the ICT sector in Egypt could result in improving female to male employment ratios in the sector. Moreover, the results showed that encouraging female enrollment in scientific faculties would lead to significant improvements in their employment ratios compared to men in ICT sectors. Most importantly, the empirical findings have also illustrated that there is no significant difference between gender bias in employment in ICT sectors and non ICT sectors. This indicates that ICT sector is not one of the most highly gendered sectors in Egypt which gives a high potential for women to thrive from participating in this sector.

From a policymaking standpoint, the study proposed a number of policy implications including the need to adopt strategies that aim at addressing the supply side by generating female demand on ICT related education and training as well as devoting more efforts to encourage the engagement of women in novel areas as Tele-work, IT clubs and call centers which can significantly help in improving women intellectual and economic status provided that a proper institutional framework exists.

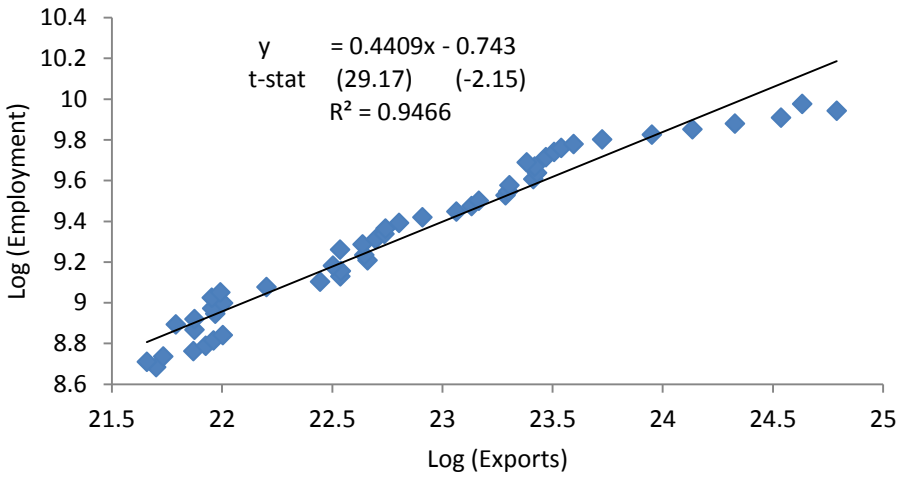
Source: Mandour (2009)

5. Empirical analysis: Has trade led to job creation, especially for women?

4.1 Correlation Analysis:

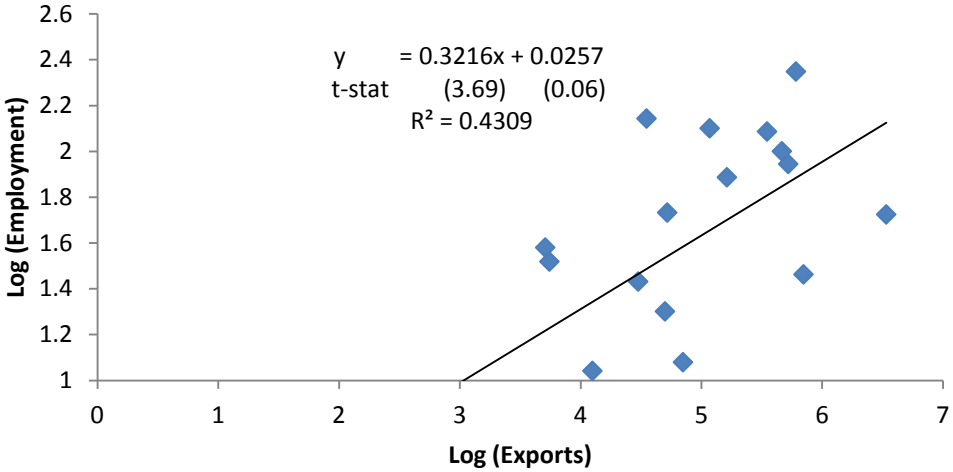
Before starting to present both macroeconomic and microeconomic empirical results of the effect of trade on employment, it is important to examine the relationship between exports and employment. At the aggregate level, Figure 15 plots the correlation between the logarithm of employment and that of exports between 1960 and 2009. It is clear that there is a strong positive relationship between them pointing out the fact that increasing trade boosted employment in Egypt.

Figure 15 : Correlation between Exports and Employment



At the sectoral level, Figure 16 displays the correlation between the share of exports and that of employment for the manufacturing sector in Egypt in 2005. Again, a positive, despite moderate, relationship exists between sectoral exports and number of employees, especially sectors where Egypt has a comparative advantage such as textiles, garments and basic metals.

Figure 16:Correlation between Sectoral Exports and Employment



After observing simple correlations between exports and employment, to determine whether this relationship is significant and robust or not, I will undertake an empirical investigation at both the macroeconomic and the microeconomic levels as it will be shown in the next section.

As it was mentioned before, Egypt is trading more with its regional partners, i.e. European, Arab and African countries. This is chiefly explained by the numerous regional agreements that have signed between the two parts (such as EU, COMESA, GAFTA and Agadir agreement). To determine the impact of further integration with these blocs, computable general equilibrium models are the most appropriate tool that can be used. Yet, observing simple correlations between employment and regional trade expansion (Figure 17 to 19) with these blocs shows a positive and significant relationship between them and especially with Arab and African countries as it is presented in Figures 17 and 19 respectively. In addition, some empirical studies showed that Egypt's regional integration with African countries tends to increase employment in non-agriculture sectors and decrease employment in agriculture (UNDP, 2011). The reduction in export costs makes African exports of non-agriculture goods in particular more competitive in African markets, which results in increases in output and employment.

Figure 17: African Trade and Employment

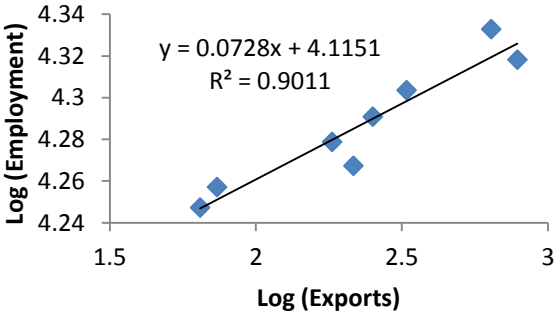


Figure 18: European Trade and Employment

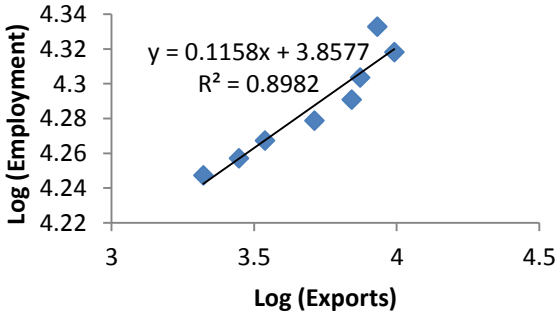
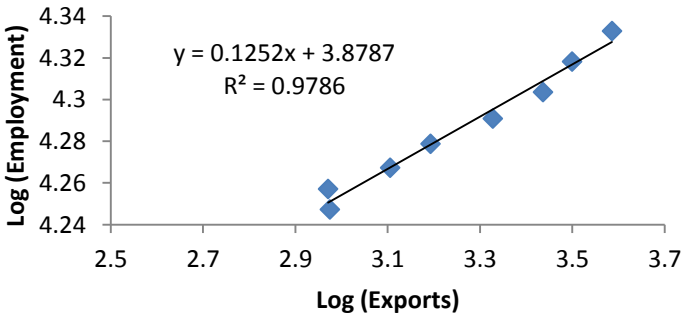


Figure 19: Arab Trade and Employment



4.2 Macroeconomic Evidence:

Model

In order to test for the effect of export on employment, I regressed employment on export. In addition, some other variables are taken into account such as the GDP. Note that in order to make sure that any contemporaneous correlation is minimized and endogeneity eliminated, lagged GDP by one year has been used. Third, both investment and wages are introduced as they are likely to have an impact on employment. The following econometric model has been estimated using time series data:

$$\Delta l_t = \alpha + \beta_1 \Delta y_{t-1} + \beta_2 \Delta w_t + \beta_3 INV_t + \beta_4 \Delta x_t + \varepsilon_t \qquad (1)$$

where *l* is log of employment; *y* is log of real GDP; *w* is log of real wages; *INV* is the ratio of gross fixed capital formation (GFCF or investment) to GDP; *x* stands for the log of real exports; and ε is the discrepancy term.

Note that the lower-case letters denote logs, and a change in the log of a variable amounts to the percentage change in the level of that variable. This model is estimated using annual data (1960-2009) as it is will be shown in the following section.

Data

Data come from two main sources. First, employment come from the Ministry of Planning in Egypt (previously the Ministry of Economic Development). This variable gives the number of employees in both public and private sector for all economic activities.

The remainder of the variables come from the World Development Indicators available on the World Bank website. First, exports of goods and services are exports provided to the rest of the world in constant 2000 U.S. dollars. Therefore, Δx in equation (1) is the rate of growth of real exports. Second, GDP is also in constant 2000 U.S. dollars. Dollar figures for GDP are converted from Egyptian pound using 2000 official exchange rates. Δy is the growth rate of GDP lagged by one year (to eliminate any endogeneity problems). Third, given the fact that it is difficult to have real wages, Δw can be proxied by the inflation rate as measured by the change in consumer price index that reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services. Finally, the share of investment to GDP. Coming from the World Development Indicator as well, investment is measured by the Gross fixed capital formation in constant 2000 U.S. dollars.

This equation has been regressed in a first-difference form to control for non-stationarity in the data[5].

Results

Table 8 presents the macroeconomic results of my regressions. Three groups of regressions have been done. The first one includes the whole time series, namely from 1960 to 2009. The second one restrains the year coverage to 1980 until 2009 and the last one focuses on the reforms period that started in early 1990s until 2009. Three main messages come out from the results.

First, exports have a significant and positive effect on employment over the period 1960 to 2009. This effect is persistent when exports are regressed alone on employment and when they are regressed with other variables. Column 7 in Table 8 shows that the elasticity of employment with respect to export is 4.3% during 1960-2009. Following the reforms that were launched in the 1990s and resumed in 2004, the effect of exports on employment increased by then it increases by 30% to reach 5.6% over the period 1990-2009. This is particularly interesting since, after these reforms, exports were one of the forces leading growth and employment during the last decade.

Second, it is quite clear that investment does not have an effect on employment over the whole period. This holds when investment is regressed alone on employment and when it is regressed with other variables. This is in line with what Fawzy (2002) found since that the increase in the level of unemployment since early 1990s has been primarily due to the inability of economic policies in general and investment policies in particular to achieve high and labor-intensive growth rates. These policies led to modest investment levels, which weakened the economy's ability to create jobs, and resulted in investment patterns biased against labor-intensive growth.

Finally, inflation does not seem to exert a significant effect on employment in Egypt except over the period 1990-2009 when it becomes slightly significant but with very small magnitude. This is may be explained by the fact that double-digit inflation appeared three times since the announcement of the float of the Egyptian pound in FY03 (Selim, 2009). Since then, inflation has become a serious issue in Egypt and affected growth and employment negatively during the last decade.

After showing the effect of trade on employment at the macroeconomic level, it is worth to examine the effect of trade at the microeconomic level using individual dataset.

[5] Three tests have been used to test for non-stationarity. First, the Augmented Dickey-Fuller test has been used. Its null hypothesis is that the variable contains a unit root, and the alternative is that the variable was generated by a stationary process. Second, I have used as well the Philips-Perron uses Newey-West standard errors to account for serial correlation, whereas the augmented Dickey-Fuller test uses additional lags of the first difference variable. Finally, a modified version of the Augmented Dickey-Fuller test has been utilized. It performs a Dickey-Fuller t test for a unit root in which the series has been transformed by a generalized least-squares regression. The three test showed that all variables include a unit root. This is why, a first difference form has been used in the regressions for all the variables.

Table 8: Macroeconomic Results

1960-2009			
	(1)	(2)	(3)
Log(Exports)	0.039*	0.038*	0.043*
	(0.020)	(0.021)	(0.023)
Log(GDP-1)	0.353***	0.358***	0.354***
	(0.043)	(0.048)	(0.050)
Inv/GDP		0.006	0.000
		(0.069)	(0.075)
Inflation			-0.000
			(0.000)
Observations	47	43	43
R-squared	0.789	0.774	0.777

1980-2009			
	(1)	(2)	(3)
Log(Exports)	0.050**	0.049**	0.054**
	(0.019)	(0.019)	(0.023)
Log(GDP-1)	0.403***	0.404***	0.397***
	(0.048)	(0.049)	(0.056)
Inv/GDP		-0.058	-0.074
		(0.077)	(0.089)
Inflation			-0.000
			(0.000)
Observations	28	28	28
R-squared	0.883	0.885	0.890

1990-2009			
	(1)	(2)	(3)
Log(Exports)	0.037*	0.040*	0.056***
	(0.019)	(0.020)	(0.018)
Log(GDP-1)	0.475***	0.475***	0.449***
	(0.047)	(0.051)	(0.046)
Inv/GDP		-0.082	-0.080
		(0.097)	(0.081)
Inflation			-0.001*
			(0.000)
Observations	19	19	19
R-squared	0.920	0.922	0.941

Notes: i. Robust standard errors in parentheses
ii. *** p<0.01, ** p<0.05, * p<0.1
iii. First differences have been used to control for unit-roots.

4.3. Microeconomic Evidence

Model

First, to determine the impact of trade on employment, a Probit model is used where the binary dependent variable is the probability of being employed (taking the value of 1 if the individual is employed and 0 if he is unemployed or inactive[6]). The independent variables are exports shares (X_s), import penetration (M_s) of the sector where the individual is working. In addition, some individual characteristics (Z_{ig}) are taken into account such as education attainment measured by the number of years of schooling, years of experience and years of experience squared, membership in a trade union (a binary variable taking the value of 1 if the individual is a member of a trade union and 0 otherwise) and regional dummies (taking the value of 1 if the individual is leaving outside Cairo and 0 otherwise).

$$Prob.Empl = \alpha_1 + \alpha_2 X_s + \alpha_3 M_s + \alpha_4 Z_{ig} + \epsilon_{igs} \qquad (2)$$

with ϵ_{igs} is the discrepancy term.

Second, to directly assess the effect of trade policy on wage, I use the human capital model (Mincer, 1974) to which different trade variables are added. The natural logarithm of real hourly wage $Log\ (Wage)_{igs}$of individual i living in region g and working in sector s is regressed on individual characteristics (education attainment and experience, membership in a trade union and regional location as defined above) and trade variables (exports shares (X_s), import penetration (M_s) of the sector where the individual is working). Following Said and El Azawy (2009), real hourly wages are calculated as the sum of wages earned in the reference month from primary jobs, adjusted for average number of work days per month and average hours per day.

$$Log\ (Wage)_{igs} = \beta_1 + \beta_2 X_s + \beta_3 M_s + \beta_4 Z_{ig} + \varepsilon_{igs} \qquad (3)$$

with ε_{igs} is the discrepancy term.

Data

To capture the effect of trade on employment at the microeconomic level, the ELMPS has been used along with some macroeconomic variables. The ELMPS has been merged at the two-digit industry level with trade variables that capture export and import shares. This is why data come from two different sources.

[6] Note that some individuals are either unemployed or do not desire to work according to the standard definition of labor force. Yet, they may be considered as employed according to the extended definition that takes into account subsistence work (especially those who work in the processed food sector).

The first source is the Egyptian Labor Market Panel Survey of 2006 (ELMPS). The ELMPS is a national-representative household survey covering 5,000 households. These households were selected from a CAPMAS (Central Agency for Public Mobilizations and Statistics) master sample prepared in 1995. The questionnaire is composed of three major sections: (1) a household questionnaire administered to the head of household or the head's spouse that contains information on basic demographic characteristics of household members, movement of household members in and out of the household since 1998, ownership of durable goods and assets, and housing conditions, (2) an individual questionnaire administered to the individual him or herself containing information on parental background, detailed education histories, activity status, job search and unemployment, detailed employment characteristics, a module on women's work, migration histories, job histories, time use, earnings and fertility. (3) a household enterprise and income module that elicits information on all agricultural and non-agricultural enterprises operated by the household as well as all income sources, including remittances and transfers. My sample is restricted to individuals who are in the working age, between 15 and 64 years old. Only those who are working in the manufacturing sector are taken into account. All the variables used in the two models come from the ELMPS except exports and imports.

Macroeconomic data come from the Ministry of Industry and External Trade. Exports, imports and production have been used to compute the export share and import penetration by industry.

Results

Results of the Probit model are presented in Table9. First, the fact of being a female reduces the probability of working given the fact that private sector employers do not prefer to hire females who may take maternity leaves, who have the double burden of work vs. family, etc. Second, concerning the trade impact on employment, imports do not affect the probability of working. Yet, whereas exports have a positive and significant impact on the probability of being employed for females, they do not affect the one of males. This may interpreted by the fact that during 1988-1998, a de-feminization has been observed in non-governmental and salary employment in Egypt. This trend was attributed to the falling share of trade in Egyptian economy and more specifically the decreasing share of labor-intensive manufacturing exports such as textiles and garments. Yet, after the reforms that took place in 2000 until 2004 and the agreements that Egypt signed over this period, manufacturing exports increased and in particular textile and garments. For this reason, a feminization trend has been observed between 1998 and 2006 in the textile and garments sector with the female share doubling from 15% in 1998 to 30% in 2006 (Assaad and El Hamidi, 2009). In addition, Assaad and El Hamidi (2009) argue that most of the female workers who joined textile and garments are young unmarried secondary school graduates still living with their parents in order to pet ready for marriage and to help financially their families.

Table 10 shows the results of the human capital model (Mincer, 1974). The latter performs quite well since the findings are consistent with the classical results of the Mincerian equation. Experience has a positive effect and experience squared has a negative effect on wages. The more an individual is educated (captured by the number of years of schooling), the higher he earns. Living outside Greater Cairo (rural and urban regions in upper and lower Egypt) reduces income significantly. This in turn shows to what extent geographical disparities are a crucial issue in Egypt. Being a member of a trade union is

likely to increase the real hourly wage since firms may be willing to pay higher wages if there is a viable threat of collective action. Being a female reduces wages. This is similar to El Haddad (2009) who found that pay is significantly lower for women than men with the gap widening between 1998 and 2006. She used an Oaxaca decomposition and proved that a significant part of the differences in average real monthly wages between men and women are due to discrimination and not to their different characteristics. In 2006 women have received 37% lower wages on account of an unjustified difference owing to discrimination. Moving to trade variables, whereas imports are not significant, exports have a positive impact on the real hourly wage of males and do not affect the one of females. This result matches my previous one since trade reforms that took place in Egypt affected more females employment than their wages. In other words, thanks to these reforms, more females are working without significant increases in their wages. By contrast, men's wages have been more affected by the trade openness. Consequently, the wage gap between males and females workers is likely to increase with trade openness. This is in line with what Said (2007) found: between 1998 and 2006, the gap in favor of males is 21% in the private sector.

To summarize, since exports affect men's wages and women's probability of working, the adjustment on females labor market is done through quantities and the one on males labor market is done through prices. This is in line with the fact that some sectors that use women intensively experienced an increase in females employment in recent years (such as employment of females in textile and garments). In other words, exports increase the intensive margin of males employment and the extensive margin of females one.

Table 9: Effect of Exports and Imports on the Probability of Working

	Prob of Working All	Prob of Working Men	Prob of Working Women
Export share	0.019*	0.011	0.088*
	(0.011)	(0.010)	(0.053)
Import penetration	0.002	0.003	0.010
	(0.005)	(0.004)	(0.009)
Female	-0.931**	-	-
	(0.370)	-	-
Experience	0.000	-0.007	0.057***
	(0.010)	(0.023)	(0.011)
Experience2	-0.000**	-0.000	-0.002***
	(0.000)	(0.000)	(0.000)
Year Schooling	0.005	0.057**	-0.047**
	(0.023)	(0.027)	(0.021)
Trade Union	0.582	0.225	-
	(0.443)	(0.403)	-
Not Cairo	-0.401*	-	-0.275
	(0.215)	-	(0.220)
Constant	2.658***	2.061***	0.498
	(0.208)	(0.281)	(0.929)
Observations	1591	1061	201

Table 10: Effect of Exports and Imports on Wages

	Ln(Real Hr. Wage) All	Ln(Real Hr. Wage) Men	Ln(Real Hr. Wage) Women
Export share	0.007**	0.007**	0.018
	(0.003)	(0.003)	(0.017)
Import penetration	0.001	0.001	0.003
	(0.001)	(0.001)	(0.005)
Experience	0.049***	0.049***	0.046**
	(0.005)	(0.006)	(0.016)
Experience2	-0.001***	-0.001***	-0.000
	(0.000)	(0.000)	(0.001)
Female	-0.152*	-	-
	(0.081)	-	-
Year Schooling	0.037***	0.041***	0.010
	(0.006)	(0.005)	(0.012)
Trade Union	0.426***	0.405***	0.545***
	(0.073)	(0.075)	(0.121)
Not Cairo	-0.108*	-0.111*	-0.101
	(0.053)	(0.056)	(0.156)
Constant	-0.285**	-0.313**	-0.466
	(0.127)	(0.119)	(0.394)
Observations	1219	1067	152
R-squared	0.306	0.315	0.212

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. **Conclusion and Policy Implications**

This paper focused on the nexus between trade, gender and employment. I presented a descriptive analysis of the main characteristics of the Egyptian economy with an overview of recent trends in trade and employment from a gender perspective. Several remarks are worth to be mentioned. First, concerning labor market, while its share has substantially increased, the private sector has been less hospitable for women. For this reason, they are mainly concentrated in the government sector. Second, trade reforms had a significant effect on employment in Egypt, especially after the ERSAP and the reforms that took place in 2003-2004 along with the conclusion of several trade agreements. Third, thanks to these trade reforms, females employment has increased in particular in the textile and garments sectors. Finally, the informal sector is an important employer in Egypt.

To empirically evaluate the impact of trade on employment, I have applied two models. The first one, using a time series data, quantifies the macroeconomic impact of exports on employment over the

period 1960 up to 2009. Secondly, a human capital model assessing the impact of trade on wages and a Probit model measuring the impact of trade on the probability of changing the employment status (from being inactive or unemployed to being employment). My main findings show that, at the macroeconomic level, exports have a significant and positive effect on employment over the period 1960 to 2009. The elasticity of employment with respect to exports is 4.3% during 1960-2009. Following the reforms that were launched in the 1990s and resumed in 2004, the effect of exports on employment increased by then it increases by 30% to reach 5.6% over the period 1990-2009. In the mean time, at the individual level, exports affect men's wages and female's probability of working. In other words, the adjustment on females labor market is done through quantities and the one on males labor market is done through prices. This is in line with the fact some sectors that use women intensively experienced an increase in females employment in recent years (such as employment of females in textile and garments).

From a policy implications standpoint, this paper points out several issues that have to be taken into account, especially in the current period of reforms after the January 25th Revolution. First, given the fact the females participation is low in Egypt, some gender policies need to be promoted aiming at reducing the double burden of family vs. work that women bear and at encouraging them to work in the private sector. Thus, the private sector in Egypt needs to be more hospitable to married women. This could be made by promoting the formalization of private employment, providing publicly-financed childcare services, improving woman-friendly transportation and encouraging employers to offer part-time jobs for female workers.

Moreover, given the fact that exports had a sizeable impact on employment, Egypt should pursue its liberalization efforts as well the conclusion of new trade agreements. Yet, since tariffs level has significantly decreased, more attention has to be attributed to non-tariff barriers as well administrative barriers to trade that still hinder exports and therefore production and employment. The trade literature showed that removing red tape costs should increase exports diversification, especially in developing countries (Zaki, 2011).

Third, as Egypt has a comparative advantage in textile and garments that are highly intensive in female workers, the government must put in place a policy aiming at liberalizing and developing these sectors in order to generate new employment opportunities and reducing unemployment among them. Providing technical training for these workers is crucial to increase their productivity in order to better face the fierce competition once the economy is more exposed to the rest of the world.

Finally, as the informal sector is an important employer in the Egyptian labor market, new mechanisms have to be implemented to attract the informal sector into the mainstream business community. Two positive outcomes are likely to result: first the such formalization should strengthen the competition in the Egyptian market since the informal sector represents a wasted opportunity. Second, women's participation is expected to increase since this sector is a major contributor to females jobs. Among the mechanisms that may be adopted to formalize the informal sector, the following can be proposed: simplifying the rigid regulations that pushing employers and workers into the informal sector,

and promoting public education campaigns through the media to boost the spirit of entrepreneurship. Clearly, the informal sector can benefit from the trade openness effects when it is formalized.

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Table A.1 Number of Workers in the Textile Industry

	2003		2004		2005		2006		2007	
Occupation	F	M	F	M	F	M	F	M	F	M
Observers and supervisors on the textile and clothing industry	240	633	392	1686	482	1584	471	1033	522	1935
Observers and supervisors on leather processing and shoe	9	94	40	142	4	90	1	170	47	94
Observers and supervisors on spinning and weaving machines	404	3751	311	3848	178	2610	209	2721	384	2198
Textile workers and hand-knitted	1879	3428	2190	2889	5987	3328	2407	3547	2001	5206
Tailors and garments makers	4035	943	5021	1375	5630	1276	2299	474	3486	434
Textile cutting workers	472	397	982	557	341	360	620	352	279	385
Hand-sewing and embroidery workers	1567	370	1609	519	2326	1177	668	112	125	97
Clothing and textile workers	133	1606	168	1323	2530	2669	104	475	1123	1372
Leather tanning workers	94	422	15	619	25	520	6	295	4	362
Shoe-makers and repairers	165	1055	109	750	166	758	227	885	84	723
Workers in shoes processing and sewing	110	434	91	442	83	395	91	588	97	438
Cotton ginning workers	57	673	83	842	14	641	19	763	73	417
Workers running spinning machines	2758	28169	2221	33975	2196	29582	2093	25021	1719	26347
Workers running weaving machines	7688	39835	5928	25085	12610	25308	13821	34156	10780	22184
Workers running embroidery machines	25817	8387	18714	8047	19958	8641	22012	9653	25997	13965
Workers running textile dyeing machines	881	9041	734	8060	936	6667	327	4629	500	5258
Workers running leather processing machines	30	237	0	111	14	284	8	369	159	447
Workers running shoes processing machines	347	827	465	770	542	1441	238	1146	366	1336
Other workers running spinning and weaving machines	55	54	1359	4166	2018	12969	227	2122	1208	7094
Total	46741	100356	40432	95206	56040	100300	45848	88511	48954	90292
Grand Total of Employment	209195	1182531	202789	1167924	262626	1345075	232490	1289304	255733	1349276