

## Evaluating the impact of tobacco control policies on employment in Egypt

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### Executive summary

This study examines certain economic questions that Egyptian policy-makers should address when considering tobacco control measures. It aims in particular to study the impact on employment in the tobacco industry of policies that reduce the demand for tobacco.

This is a rather important issue because it is the main reason why many countries resist taking serious action to adopt tobacco control measures. There is a fear that reduced tobacco consumption may lead to a loss of employment. However, several studies have argued that this is an incomplete picture because the loss of jobs in the tobacco industry can be compensated for by an increase in employment in another industry when money not spent on tobacco is used for other goods and services. This could create additional jobs to offset the job losses in tobacco-related sectors (World Bank, 1999).

This study begins with an overview of tobacco consumption in Egypt, which shows that the country has the highest rate of tobacco consumption in the Arab world. While the main factors underlying the changes in consumption trends are economic, other factors contributing to the high rate include an improvement in the quality of tobacco as well as an increase in the consumption of foreign cigarettes.

This study also examines the status of the tobacco economy in Egypt. The public sector continues to maintain a monopoly on cigarette production through the Eastern Tobacco Company (ETC), the largest cigarette manufacturer in the Eastern Mediterranean Region. The ETC has a monopoly on domestic production, controlling about 92% of the Egyptian market. Domestic cigarette brands comprise over 95% of ETC's production. The remaining 5% consists of foreign brands (mainly Philip Morris and Japan Tobacco International (JTI)) manufactured by ETC under agreements with the parent companies. In 1999, the company utilized 200 metric tonnes of U.S. flue-cured from its old stock in producing its local cigarette brands.

The economic significance of tobacco in Egypt can be illustrated in several ways. Treasury revenues from the tobacco and cigarette industry have increased from EGP 2 382.7 million in 1993–1994 to EGP 3 445.6 million in 1998–1999, excluding 1996–1997 and 1997–1998. Moreover, the only State enterprise ETC achieved a significant gain in profits. ETC'S net profit was EGP 243.2 million in 1998–1999, with an increase of EGP 81.7 million over the 1997–1998 period, representing a 51.5% increase. ETC is one of the ten largest stocks on the Egyptian Stock Exchange.

With the rise in consumption, a significant increase in cigarettes sales occurred, in particular in the late 1990s. Despite the fact that Egypt does not grow its own tobacco, in recent years it has increased its cigarette exports to neighbouring countries. Cigarette exports jumped 530% between 1985 and 1994, from 200 million to 1.26 thousand million sticks. Imports play much less of a role in Egyptian cigarette market than they did during the early 1980s. There is a significant increase in tobacco leaf imports, which rose by 293% during the period 1970–1998 by 293%.

Currently, Egypt is improving the implementation of its national tobacco control campaign. Although much tobacco control legislation has been passed in Egypt, it is never enforced. That being said, health education has assumed increasing importance. In February 1999 a national campaign to prohibit the sale of tobacco to young adults and children was launched. Community participation was encouraged through several workshops and seminars.

The study's second part places tobacco industry employment within the context of the general national employment framework. Egypt's current employment outlook is characterized by inadequate labour absorption of graduate students and under-utilization of unskilled human resources. Additional issues are overstaffing in the Government sector, coupled with skill shortages, and low productivity (IMF, 1995).

Employment in the tobacco industry increased from 13 100 workers in 1970 to 15 800 in 1980, to 17 500 in 1990 and reached 17 261 in 1995. In 2000 it was estimated at 17 900 or 1% of the country's total employment. These workers are employed on a full-time basis by the industry (including production, industrial services and distribution).

Part three of the study examines tobacco control policies and industry employment through input–output analysis, taking into account the indirect effects on all the other sectors. The study estimated the direct requirement from other sectors to the tobacco industry. The forward direct coefficient of the tobacco industry equals 0.077, but its backward direct coefficient equals 0.104. This means that this sector depends more on other sectors when its minor role in providing materials to other sectors is examined. This can be explained by the tobacco industry's type of production, which makes a final product for the consumer. So, the single-service sector receiving this product is the restaurant and hotel sector. However, the coefficient of tobacco industry to restaurants and hotels is small (0.009).

Concerning the backward relationship between the tobacco industry and other sectors, the data show that all the values of backward coefficients are small, ranging between 0.0001 for rubber and plastic products and 0.009 for food industries, except for the wholesale and retail sector, where the coefficient equals 0.01. This can be explained by the high dependence of the tobacco industry on imports to obtain inputs for production. The percentage of imported inputs to total inputs totalled 67.7% in 1991–1992.

Next, the total requirements of the other sectors with respect to the tobacco industry were estimated. Concerning the outward dependency of the tobacco industry, its direct and indirect requirements from all the sectors are very limited. This is reflected in the values of total requirement from all the sectors as shown in the Leontief Inverse Matrix. The data show that the value of backward and forward coefficients in the Leontief Inverse Matrix is very limited. Their value ranges between 0.029 and 0.028 respectively. Thus it can be concluded that tobacco control policies will have very little effect on the overall economy.

Concerning the impact of the tobacco industry on national employment, two measures were considered—the wage effect and the employment multiplier.

The total value of wages in the tobacco industry increased from EGP 97.428 thousand in 1991–1992 to EGP 151.934 thousand in 1997–1998. The increase in wages in that industry can be explained by the increase in sales, which reflects a sufficient demand for the final product. The demand affects production levels and employment levels inside the industry by increasing both. Also, an increase in productivity in this industry promotes an increase in wages.

According to the coefficient values the direct effect of satisfying one unit of final demand is 0.027 and this coefficient is less than the total effect, which includes the direct and indirect effect 0.035. Although there is a difference in the values of wage effects, their value is very low. This means that tobacco control policies will have a very minor effect on the economy through their effects on tobacco industry and the final demand.

The direct employment multiplier signifies the number of workers used to produce one unit with regard to all the backward and forward relations among all the sectors in the economy. In terms of the tobacco industry, the value of the direct employment multiplier equals 0.06. This means that the production of 100 units requires six workers. In addition, the value of that multiplier for the tobacco industry is less than or similar to all the sectors (i.e. production in the tobacco industry does not demand a large number of workers) along with mining and petroleum (0.003), wood and wood products (0.04), oil products (0.04), transport and communication (0.03), electricity (0.02), housing (0.03) and hotels (0.04).

Estimating the direct and indirect employment multiplier, the number of workers needed to produce one unit increases. But the increase in the number of the workers will be different among all the sectors, depending on production techniques. With respect to the tobacco industry, the increase in the number of workers is less than that for similar industries in the economy except for oil products and miscellaneous products. Meanwhile, there is a slight difference between the direct employment multiplier (0.06) and the direct and indirect employment multiplier in the tobacco industry (0.07). Hence, the study predicts that the effect of tobacco control policies on employment will not reflect a large difference between the direct effect on the tobacco industry and the indirect effect concerning the relation with all other economic sectors.

The study also assesses the expected consequences of tobacco control for economics: production and employment. It demonstrates that the economic fears that have deterred policy-makers from taking action are largely unfounded. Policies that reduce the demand for tobacco, such as a decision to increase tobacco taxes, would not cause long-term job losses. Such policies could bring health benefits without harming economics. Tobacco control policies can be divided between measures that reduce the demand for tobacco and those that reduce the supply of tobacco. This study did not depend on the measures to reduce supply since tobacco is entirely imported from abroad. Rather, the study depends on demand measures to control the demand for tobacco.

These measures include price measures and non-price measures. The former depend on raising taxes to increase cigarette prices while the latter involve comprehensive bans on advertising and information measures. Information measures comprise mass media counter-advertising, prominent health warning labels, publishing and disseminating research findings on the health consequences of smoking as well as restrictions on smoking at work and in

public places. Concerning the demand side, the study assessed the impact of demand measures on national employment in the Egyptian economy by using two simulations: increasing the price of cigarettes by 10% and enforcing non-price measures.

Assessing the impact of increasing cigarette prices on national employment depends on two assumptions. The first assumption is that the increase in the price of cigarettes will reduce their consumption though smokers will *not* increase their spending on other goods and services as a result of this reduction. The second is that smokers *will* increase their spending on other goods and services according to the reduction in their cigarette consumption. The results are reflected in the values of backward and forward coefficients in the Leontief Inverse Matrix.

The impacts of price and non-price measures on national employment are positive, but the non-price measures are more effective than the price measure because the rise in national employment will be higher and the reduction in domestic production will be lower.

## **General overview**

### **Introduction**

In addition to its damage to health, tobacco use causes considerable economic loss through rising health costs and loss of productivity. This is why there is an increasing need to analyse the causes, consequences and costs of tobacco use. This in turn will assist in developing taxation and regulatory measures to eliminate tobacco use (World Bank, Press Release No.98/1439).

Several measures may be undertaken whether on the demand or on the supply side. On the demand side there are several options. Increasing the price of cigarettes through taxation is one of the best-known, cost-effective ways to reduce demand. It has been shown that adolescents are more responsive to price rises than adults because of their relatively limited budget, their relatively higher environmental awareness and young age. Other interventions such as comprehensive advertising and promotion and sponsorship bans, smoke-free policies, treatment for tobacco dependence and strong package and labelling regulations have proven to be effective.<sup>1</sup>

On the supply side several measures may be adopted. Effective supply-side measures must include action against smuggling, prominent tax stamps and warnings against cigarettes' use. Due to the market competition among suppliers, measures to reduce the supply are less promising. Moreover, as long as the incentives to farmers to grow tobacco are currently much greater than for most other crops, this measure will not reduce consumption.

Policy-makers raise several concerns about tobacco control, such as permanent job losses, reduction in government revenues and massive increases in tobacco smuggling.

The concern in this paper is that tobacco controls will cause permanent job losses in the economy. A reduction in tobacco use can lead to a smaller tobacco industry, which in turn can affect, in both desirable and undesirable ways, the total number and distribution of the employed in a nation or a region. For this reason the employment aspect of tobacco control measures should be examined, when considering an effort to reduce tobacco use.

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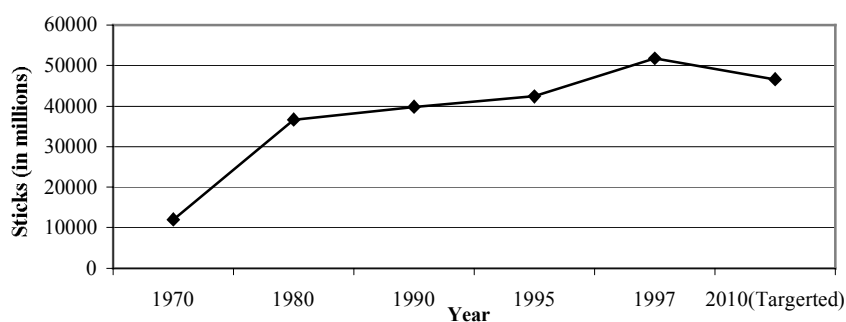
<sup>1</sup> (<http://www.worldbank.org/tobacco/book/html/chapter4.htm>)

Governments in developing countries fear that tobacco control measures will create unemployment, an undesirable factor in poverty-alleviation strategies. This might not happen if the money spent on cigarettes were instead spent on other goods and services, generating other jobs to replace any loss from the tobacco industry. However, for economies depending on tobacco farming a fall worldwide in demand would result in job losses because labour intensity is much higher in tobacco farming than in tobacco manufacturing (World Bank, 1999).

### Smoking prevalence in Egypt

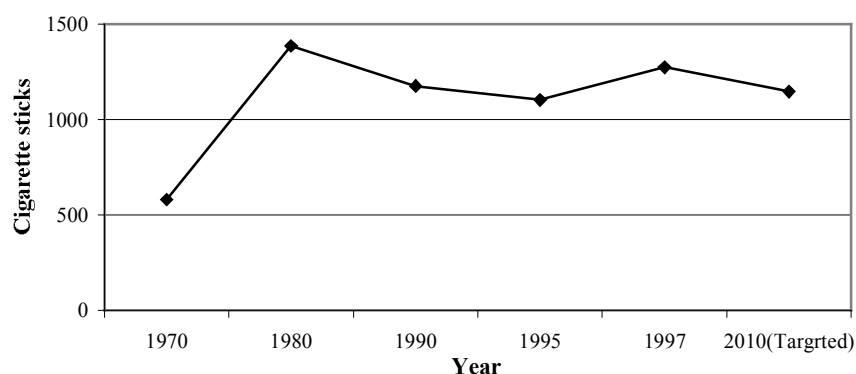
Total cigarette consumption in Egypt increased from 12 027 million sticks in 1970 to 51 814 million sticks in 1997 as indicated in Figure 1-1. The number of smokers has increased over twice as fast as the population over the last 30 years. In the meantime, Figure I-2 shows a decline in per capita consumption over the last half of the 1980s and the first half of the 1990s. It was reported that the price increase was the main factor behind this drop (Ministry of Health and Population, National Smoking Programme, 2001-1).

**Figure I-1. Annual cigarette total consumption (Sticks in millions)**



Source: Table (I-1) Appendix

**Figure. I-2. Annual cigarette per capita consumption**



Source: Table (I-2) Appendix

These changes can be explained by a number of factors. There were major, steady increases in cigarette prices with which consumers could not keep pace. A price hike in June 1989 and April 1990 both helped dent confidence in the market, while three increases in 1991 helped bring about a 7.7% drop in sales at a time when the economy itself was in decline.

Growth since 1992 can be explained by an improvement in quality, the cigarette price freeze and more attractive packaging for domestically manufactured cigarettes. More important has been the concept of price fixing that was brought into force in October 1991 when the Egyptian Government announced that cigarettes were a significant revenue-generating commodity. Apart from two unplanned price increases since that date, cigarettes have been maintained at prices that, in real terms, have been falling.

With the GDP increasing from 1.7% in 1993 to 4.6% in 1995 and inflation falling by 8.3% that same year, volume sales have steadily improved. They increased by 9.3% in 1995 and by a further 9.0% in 1996, bringing the cigarette market to 45.250 million sticks. A more dramatic increase of 10.5% followed in 1997 on the heels of a rise in average incomes of 15%, bringing sales volumes to 50 thousand million sticks.

Another important factor influencing the increase in tobacco consumption in Egypt is the greater consumption of foreign cigarettes fuelled by the open-door policy and liberalization of trade and production. The percentage of foreign cigarettes to national cigarette consumption increased from 4.8% in 1990 to 16.3% in 1999. The increase in consumption was remarkable for Philip Morris cigarettes in particular.

### **Tobacco economy**

Economic analysis of tobacco product markets has brought considerable insight to debates about the industry's importance and appropriate public policy. The most significant concern is the impact of tobacco control policies on employment. This section addresses this issue by exploring the following related issues.

#### ***(A) Development of the Eastern Tobacco Company (ETC)***

Egypt's tobacco industry is dominated by the Eastern Tobacco Company (ETC), a joint stock company established in 1920 and nationalized by the Government in 1956. The largest cigarette manufacturer in the Eastern Mediterranean Region, the ETC has a monopoly on domestic production, controlling about 92% of the Egyptian market (Omar, 1988). The company operates seven cigarette factories, selling 45 thousand million cigarettes domestically and exporting 1 thousand million in 1996. Domestic cigarette brands comprise over 90% of ETC's production, with the company's Cleopatra brand accounting for an estimated 80% of total production. Other domestic brands include Boston and Corona. The ETC also produces international brands, such as Marlboro, Merit, Silk Cut, Camel, Kansas, Winston and Kent, under licensing agreements with Philip Morris, British American Tobacco (BAT), JT International and Gallaher. Under these agreements, the companies provide the ETC with the raw materials and are charged a fee of US\$ 5.00 per 1 000 cigarettes. A total of 21 international brands are made in the ETC's factories, bringing in some US\$ 21 million a year in fees. The ETC has been the only manufacturer of cigarettes since it merged with the El-Nasr Tobacco Company in 1984. Both the public and private sectors, however, import and manufacture tobacco. About two-thirds of total tobacco consumption in Egypt is used to manufacture cigarettes. The remaining one-third is used for "moassil," or water-pipe tobacco production. Private sector processors produce all the water-pipe tobacco in Egypt.

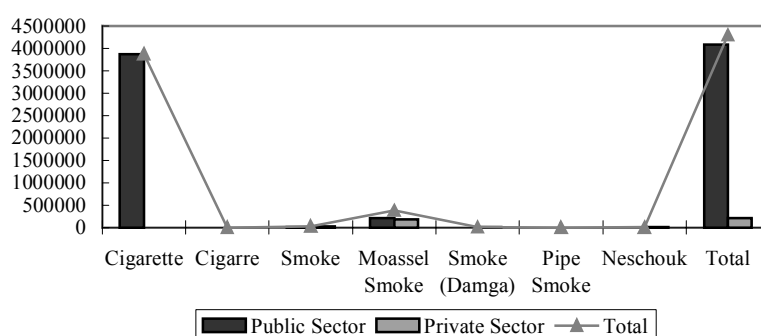
In general, there are 29 tobacco companies in Egypt. The production of most domestic brand cigarettes is based on blends consisting of about 50% flue-cured tobacco, 25% burley tobacco, and 25% oriental tobacco. Flue-cured tobacco is the major type of tobacco utilized by the ETC. The company is a highly price-conscious buyer and hence will, to the extent possible, substitute lower-cost burley and flue-cured tobaccos from other sources for U.S. tobacco. This State-run cigarette company has long dominated the market, but is beginning to lose ground to Philip Morris. During the mid-1990s, the Government began privatizing the ETC, although the president has emphasized that the company will not be fully privatized, since Egyptian law currently forbids majority ownership of certain firms by the private sector. The private sector also produces small amounts of moulassed and fine-cut tobacco. Factories produce local brands and also manufacture foreign brands.

The Government has recently invested in new packaging equipment and is purchasing higher-quality leaf. The ETC has introduced a number of new brands, including a 10-cigarette package priced at about \$US 0.25, which is reportedly very popular. ETC profits for the fiscal year 1999 rose to over \$US 66 million, primarily as a result of these innovations. Currently, only about one-third of ETC's manufacturing capacity is needed to meet domestic needs.

Domestic cigarette brands comprise over 95% of the ETC's production. The remaining 5% consists of foreign brands (mainly Philip Morris and JT International) manufactured by the ETC under agreements with the parent companies. In 1999, the company utilized 200 metric tonnes of U.S. flue-cured from its old stock for the production of its local cigarette brands.

The majority of water-pipe tobacco is a blend of dark fire or air cured tobaccos (about 20%) with other tobacco, mainly burley, and molasses. The production of fragrant water-pipe tobacco (apple, mint and citrus flavours) has been rising in the last few years<sup>2</sup>.

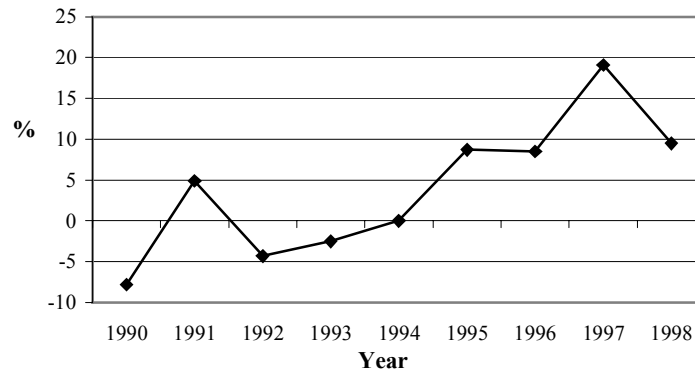
**Figure I-3. Production of tobacco by type 1997/1998**



The percent of annual change of cigarette production shows an increase in production in recent years as indicated in Figures number I-4.

<sup>2</sup> <http://www.easternegypt.comsharkya.nsfmarketing>

**Figure I-4. Annual change in cigarettes production-1990–1998 (%)**



With the increase in consumption a significant rise in cigarettes sales occurred especially in the late 1990s, for Cleopatra cigarettes, in particular. This growth trend in the ETC sales can be explained by the improved quality of products brought about by upgrading factories with new and renovated machines, in addition to supporting quality control and opening new distribution outlets (ETC, 2001).

**(B) The economic importance of the tobacco industry**

Tobacco’s key role in Egypt’s economy is illustrated by the following:

- Treasury revenues from the tobacco and the cigarette industry have increased from EGP 2382.7 million in 1993—1994 to EGP 3445.6 million in 1998–1999, excluding 1996–1997 and 1997–1998.
- The profits of the ETC, the only State enterprise, took a significant leap. The ETC's net profits were EGP 243.2 million in 1998–1999 with an increase of EGP 81.7 million over the 1997–1998 period or a 51.5% increase. These profits affected the volume of traded ETC shares and market capitalization in the following way:
  - Market capitalization of traded ETC shares increased from EGP 230 million in 1997–1998 to EGP 519 million in 1998–1999.
  - ETC was selected among 66 Egyptian companies by the IMF international finance organization of the international bank for securities index to be included in its index of investment.
  - ETC stock has become one of the ten largest stocks on the Egyptian Stock Exchange.

ETC's net profits over the last seven years (from 1992–1993 to 1998–1999) increased steadily through implementing cost-effective measures and continuously developing the product mix. ETC’s net profit in 1998–1999 was EGP 243.2 million, with an increase of EGP 83.2 million over the budget, and EGP 81.7 million increase over 1997–1998 profits or a 51.5% increase. The average revenues contributed by the company to the State treasury as taxes and levies are over EGP 9.5 million per day (Ministry of Economy, 2001).

### **(C) Tobacco trade**

Despite the fact that Egypt does not grow its own tobacco, in recent years it has increased its cigarette exports to neighbouring countries.

- Egypt exports cigarettes to other Arab countries (Gulf countries, Saudi Arabia and Yemen) mainly for consumption by Egyptian expatriate workers.
- Cigarette exports jumped 530% between 1985 and 1994, from 200 million to 1.26 thousand million sticks. According to United States Embassy sources, most go to Gulf countries, Saudi Arabia and Yemen. In addition, ETC exports comprised about 1 300 metric tonnes of water-pipe tobacco to these countries.

#### **Smaller role for imports in the Egyptian cigarette market**

Imports play a much smaller role than they did during the early 1980s. Before they were banned to preserve foreign exchange and protect the country's State-manufacturer ETC, imports stood in 1986 at 1 905 million sticks. When the ban was lifted at the beginning of this decade, allowing imports once again into the domestic market, it appeared that it did not result in a similar level of penetration, with high levels of import duty and established licensed production acting as a barrier.

Volumes stood at 90 million sticks in 1990 and have risen steadily since that year. In 1994, 243 million cigarettes were imported. In 1993, import costs of tobacco products amounted to US\$ 143.8 million (0.9% of total imports), up from US\$ 102 million in 1990.

Tobacco imports increased by 162% between 1996 and 1998, to reach over 55 000 metric tonnes. Egypt imports a large amount of inexpensive tobacco from China and India. Brazil, Italy, the Syrian Arab Republic and the United States have also been important sources of leaf (Ministry of Economy, 2002).

#### **Tobacco control in Egypt**

Tobacco control measures in Egypt started with the 1981 legislation requirements to print health warnings on packets, establish maximum tar and nicotine yields and partially restrict advertising and sponsorship. A complete ban on radio and TV advertising has been in effect since 1977. With advertising, a statutory warning must be displayed and currently advertising is prohibited. However, advertising was permitted on billboards, in the press and at the point of purchase. Cigarette companies, especially Philip Morris, have launched very aggressive marketing and distribution campaigns to build brand recognition and increase market share. Because companies cannot control cigarette prices because they are Government controlled, marketing is their main tool for attracting new smokers.

#### **Ample tobacco control legislation but no enforcement**

To protect non-smokers, in 1981 legislation was passed banning smoking in enclosed public places and on public transport such as trams and buses. Smoking is also not permitted on domestic air flights and in cinemas and theatres. Non-smoking compartments have been provided on trains. Recently, the Government extended the ban to all public transportation, but it is not well enforced (Ministry of Health and Population, 2000). Smoking is also restricted in healthcare institutions.

The laws and regulations issued for tobacco control in Egypt are:

- Law No.52/1981, aiming to prevent smoking and to reduce tar percentage to 20 milligrams per cigarette. It also forbids smoking in public places and on public transportation.
- Law No.137/1981 imposing penalties on smokers in work places.
- Law No.41/1994 preventing smoking in enclosed public places and imposing penalties (10 EGP) on those who smoke on public transportation.
- A Smoking Control Department was established on 4 August 1997 to coordinate among all ministries, agencies and Ministry of Health and Population (MOHP) departments in all activities related to smoking control.
- A Ministerial decree No.344/1997 was issued to assemble a Steering Committee for the National Programme for Smoking Control. The committee included representatives from the Ministers of Health, Information, Education, Social Labour, Awqaf, Tourism, Interior Affairs, and Environmental Affairs, in addition to the High Assembly of Youth and Sports, and nongovernmental organizations (NGOs) working in the same field.

Ministerial decree No.289/1997 was issued to:

- limit the quantity of tar to a maximum of 15 milligrams per cigarette;
- sample cigarettes periodically to ensure that they conform to standard Egyptian specifications.
- establish three laboratories in Cairo, Alexandria and Port Said for analysing different kinds of tobacco to conform to standard Egyptian specifications.

Other important tobacco control initiatives included the following:

- In February 1998, the United States State Department issued a cable prohibiting United States embassies from promoting sales or exports of tobacco products and called on embassies to support local anti-smoking laws, etc.
- In June 1998, the Health Committee of the People's Assembly proposed a ban on all tobacco advertising, prohibiting the sale of cigarettes to those under 18 years of age, and increased the price cigarettes.
- In November 1998, His Excellency, Dr Ismail Sallam chaired a meeting of the Arab Health Ministries Council, which discussed a working paper on inter-Arab cooperation on combating smoking in the Arab world.
- In December 1998, the First Inter-regional Focal Point Meeting for the Tobacco Free Initiative was held in Alexandria, Egypt.
- Tobacco control and prevention is also identified as a priority area in Healthy Egyptians 2010 Initiative. Healthy Egyptians is an initiative at the national and governorate level (Ministry of Health, 2000).

### **Health education has become a significant tool**

Health education programmes have started in schools, universities and among women's organizations. The Government also sponsors an anti-smoking educational campaign, including radio broadcasts, which have played at schools warning students of the dangers of smoking. Recently, the First Lady of Egypt has started a major campaign to stop smoking at the national level particularly orientated toward youth.

The national campaign to prohibit sale of tobacco to young adults and children was carried out during February 1999 and was aimed at mobilizing the community to reject sale of smoking to children and convince tobacco merchants not to sell the product to these groups. The activities of this campaign varied from seminars, TV messages and programmes to radio announcements, meetings and discussions as well as posters, booklets and brochures. This plan, to be implemented in collaboration with several ministries and agencies, includes:

- prohibiting cigarette advertising;
- introducing into the curriculum of preparatory schools warnings on the health hazards of smoking to increase the awareness of students;
- producing and broadcasting three TV spots about smoking as a risk factor for many diseases; and
- producing thousands of posters, stickers, booklets and pamphlets to increase public awareness on the hazards of smoking.

Community participation was encouraged through several workshops and seminars. Smoking control had been conducted in Egypt through Medical Syndicates. Two NGOs conducted several activities to help smokers quit.

Moreover, there is an initiative for achieving healthy Egyptians by 2010 and reducing the diseases and mortality from smoking which entails:

- reduce smoking-attributable mortality so that it does not exceed 86 715 deaths per 100 000 men and 658.8 for 100 000 women (35 years and above) (Ministry of Health, 2000);
- reduce smoking prevalence to a maximum of 10% of the population from the current 21% in 1998 (MOMP survey, 1998); and
- reduce Shi-sha "waterpipe" smoking prevalence, which is still unrecorded, however, there is an alarming rise in the number of such cafes, which specifically attract young people (Ministry of Education, 2001).

## **Tobacco industry vs. national employment**

### **Overview of the Egyptian economy**

The Egyptian Government undertook major economic structural adjustment policies (ERSAP) to reduce the budget and the balance of payment deficit and to enhance economic growth. These measures were strengthened in 1990. The experience under the economic stabilization programme indicates a reduction of the budget deficit, from 5.5% of GDP in 1991–1992 to 3.1% in 1999–2000. The inflation rate declined from 9.1% in 1993–1994 to 2.8% in 1999–2000. Budgetary expenditures were reduced to 3.8%. Much of the weight of expenditure reduction fell on Government investment, which dropped from 11.3% to 5.6% of GDP. The private sector was encouraged to invest in areas such as infrastructure from which it had been excluded. The overall investment was 19.8% in 1999–2000. It also corrected important distortions in the economy (such as negative real interest rates) and built up a sizeable cushion of foreign exchange (Nassar, 2000).

Egypt's economic growth performance at the end of the 1990s and the beginning of 2000 was unstable. The stabilization efforts of the early 1990s resulted in lower growth, averaging 3.8% from 1990–1995, however it increased to 5.5% from 1996–2000. Macroeconomic policy provided a stable environment for private-sector activity.

Investment, both public and private, explains to a large extent the GDP growth performance in the post-stabilization period. Gross Domestic Investment (GDI) increased to 19.8% of GDP by 2000, up from 16.6% in 1999–2000.

However since the beginning of 2000 concerns have emerged about the sustainability of Egypt's economic performance, in particular regarding the competitiveness of the Egyptian economy and its domestic productivity and growth.

- The accelerated rate of growth of GDP per capita masks an unemployment rate that is kept at 7.4% in official estimates but other surveys in 1998 place at 11.8%; a shortage in productive employment opportunities; a trade balance deficit amounting to -11.7% of GDP and in the balance of payment (-3.9% in 1999–2000) as well as a budget deficit amounting at 3.1% of GDP in 1999–2000 (Table I-1) (Nassar, 2001).
- Manufacturing growth (10% over the period 1998–2000) is concentrated in satisfying local demand in relatively low technology sectors such as textiles. The fastest growing sectors have been primarily non-tradable for the domestic demand. The main growth sectors, services and construction, while creating new employment, are also not contributing to improving productivity and the economy's competitiveness.
- The services sector has been the largest contributor to GDP growth. Tourism explains a significant part of the sector's expansion. Much of this growth was linked to domestic demand rather than foreign demand, which showed several fluctuations.

Despite the important role of foreign direct investment (FDI), with its spillover effects on productivity, technology transfer and market entry, FDI plays a more modest role in Egypt. Egypt is also not a major recipient of foreign direct investment (FDI). From 1996–2000, it averaged some US\$ 1 thousand million annually (roughly 1% and 5% of GDP and GDI, respectively). More than half of the FDI flows into Egypt during the past decade have been in three sub-sectors: chemicals, food and beverage, and engineering. With tourism they represent 70% of the total. FDI in Egypt was estimated at US\$ 598 million in 1996, 3.5 times that of 1991, but about half the level attained in 1994. FDI as a percentage of GDP in Egypt remains well below the level in the rapid growing economies of Asia and Latin America.

### **The employment situation in Egypt**

Currently, Egypt's economy has not adequately absorbed graduate students and has under-utilized unskilled human resources. Additional problems comprise overstaffing in the public sector, coupled with shortages in skills, and low employee productivity (IMF, 1995).

Unemployment is estimated at 8% in official statistics and 12% in special labour market surveys (Nassar, 1999; Assad, 1999). Almost 60% of the unemployed in Egypt are new entrants to the labour force. Unemployed males without previous work experience are almost entirely under age 30. The profile of those currently unemployed differs significantly from that of the workers who are likely to be displaced by economic reforms and will be public employees. As part of a structural adjustment programme, the Egyptian Government has established very ambitious targets for privatization. It is widely believed that privatization offers the opportunity to increase the efficiency of previously State-owned enterprises. However, privatization raises the problem of excess labour in public enterprises. Workers in these establishments may be at the greatest risk of job displacement, as labour redundancy within State-owned enterprises is viewed as one of the most serious challenges facing the privatization programme.

Privatization often involves the offer of early retirement schemes, which will lead to an increase in the number of unemployed. However opportunities do exist for retraining, redeployment, or for becoming self-employed, which might lead to increasing numbers of job seekers in the labour market. These workers will be older than the new entrants to the work force and have more financial responsibilities towards their dependants. In addition underemployment in Government entities has been considered as an important feature of public institutions requiring a major administrative reform programme.

### **Tobacco industry employment**

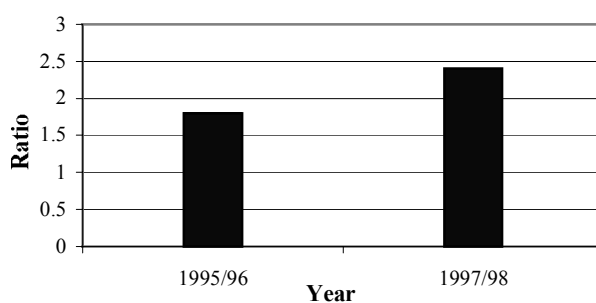
Direct tobacco employment is defined as a job directly related to the production, distribution and retailing of tobacco products. Based on the physical flow of the tobacco product, direct tobacco employment falls into four groups:

- tobacco farming;
- leaf marketing and processing;
- cigarette manufacturing; and
- cigarette wholesaling and retailing.

Coincidentally, this classification is consistent with the organization of the tobacco industry in most countries. In Egypt, tobacco farming and leaf marketing and processing are not yet distinct economic activities, thus no one is employed in these activities. So the study counts employment related to cigarette manufacturing and its wholesaling and retailing.

The Egyptian tobacco industry is a public enterprise. Table (II-1 Appendix and Figure II-1) shows that the percentage of workers in this company related to labour force employed by the industrial public sector increased from 1.8% in 1995–1996 to 2.4% in 1997–1998. This is mostly due to a decline in total employment in the industrial public sector, and only to a very small extent because of the increase in employment in the tobacco industry.

**Figure II-1. Ratio of employment in tobacco industry to employment in industrial public sector**

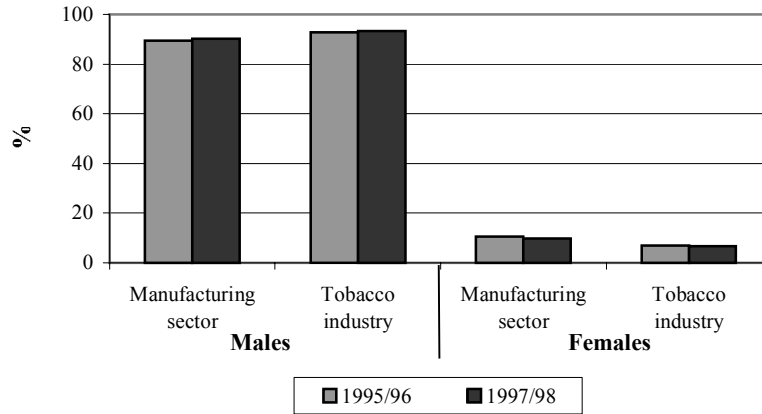


Source: Table (II-1) Appendix

Table (II-2 in Appendix and Figure II.2) indicates the gender pattern of employment in manufacturing sector and tobacco industry. The percentage of female employment to total employment in manufacturing sector and tobacco industry decreased from 10.4%, and 6.9% in 1995–1996 to 9.7% and 6.6% in 1997–1998 respectively.

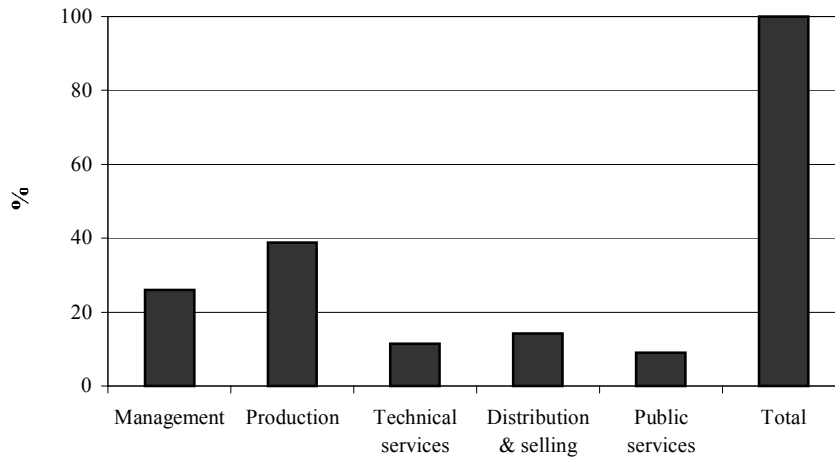
Table (II-3 in Appendix and Figure II-3) shows the distribution of labour force engaged in the tobacco industry in 1997–1998 according to function: production (38.9%), management (26.1%) distribution and selling (14.3%), technical services (11.4%) and public services (9.1%).

**Figure II-2. Gender employment in manufacturing sector and tobacco industry**



Source: Table (II-2) Appendix

**Figure II-3. Distribution of employment in tobacco industry per function (%)**



Source: Table (II-3) Appendix

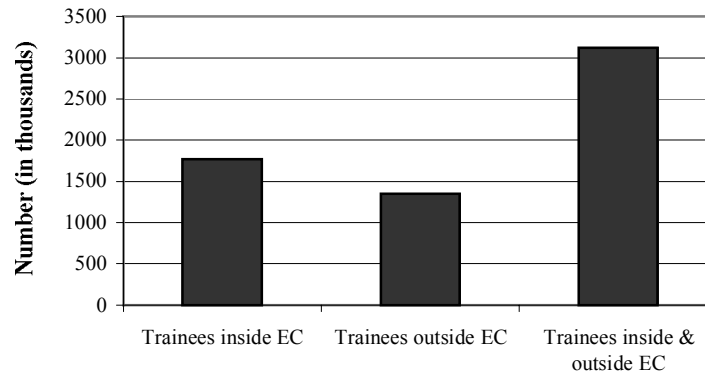
Development of ETC's strategy to promote labour productivity:

Labour productivity is positively affected by two factors: capital investment and developing labour skills. Capital investment increases when the ETC improves its product quality by supplying factories with new and renovated machines, in addition to supporting quality control.

Developing labour skills is the central pillar in ETC's strategy for the millennium with all the threats and competition of the new world economic order. The ETC developed human resources skills in the following ways:

- (1) ETC lays great emphasis on developing its human resources skills through administrative and technical training. The training plan for the year 98/99 was successfully implemented as shown in Table (II-4 Appendix) and Fig.II-4.

**Figure II-4. Number of trainees in training plan in Eastern Company (EC) (in thousands)**



Source: Table (II-4) Appendix

- (2) social services and facilities offered to ETC staff.

The value of the employee welfare services amounted to EGP 32.028 million in 1998–1999, in comparison to EGP 28.359 million in 1997–1998, with an increase of EGP 3.669 million representing a 13% increase as follows:

- labour meal costs was EGP 7.131 million, compared to EGP 5.862 million in 1997–1998, with EGP 1.26 million increase, representing a 22% increase.
- labour medical care costs totalled EGP 13.917 million, compared to EGP 12,654 million in 1997–1998, representing a 10% increase.
- labour social activities costs reached EGP 7.225 million, compared to EGP 5.984 million in 1997–1998, representing a 21% increase.

- (3) dissemination of information to all workers.

ETC issues a seasonal magazine called Cleopatra that publishes ETC labour views and keeps them apprised of the company's future strategies in terms of production, marketing, social services, productive expansions of factories and export policy. Furthermore, the

magazine represents an incentive to all labour to participate in the company success story by being fully aware of all related concerns either domestically or internationally.

The above measures contributed to labour productivity<sup>3</sup> increasing from EGP 109 on 30 June 1995 to EGP 163 in 30 June 1999 and to EGP 172 in 30 June 2000.

## **Tobacco control policies and industry employment**

Input-Output (I-O) analysis provides an estimation of sectors economic impact by taking into account the indirect effects on all the other sectors. The I-O analysis has some distinct advantages. First the I-O analysis captures the forward and backward inter-relationships of any productive sector with the other sectors of the economy. Second, it provides a consistent and systematic approach for understanding the economic impact of changes in any productive sector on the other sectors of the economy. Third, it allows analysis of the impact of growth in one or several sectors on the requirements of inputs, including labour and capital (Pohit, 2000).

The I-O accounts, with some very strong assumptions, form the basis of an economy-wide general equilibrium model that focuses on production. The essential assumptions are that: (a) each sector "activity" produce only one output; and (b) inputs are required in fixed proportions to output in each sector, meaning that technical coefficients are fixed. (c) there are constant returns to scale in production. (d) it is assumed that there are no constraints on resources. Supply is infinite and perfectly elastic. All local resources are efficiently employed (Dervis et al., 1982; Fatemi, 2000).

### **Input-Output model**

A simple I-O model considers that the output demanded in the economy consists of two parts: the endogenous or intermediate demand and the exogenous or final demanded. These inter-industry linkages of the I-O flow table enable an analyst to estimate how various types of exogenous disturbances originating in specific sectors will be transmitted throughout the economy (Pohit, 2000; van der Limden, 1998; Dervis et al., 1982).

Following the typical mathematical representation, the I-O transactions table can be denoted as<sup>4</sup>:

$$X_i = \sum_{j=1}^m X_{ij} + \sum_{k=1}^p Y_{ik}$$

$$i = 1, \dots, m$$

$X_i$  = the total output of sector (i)  
(endogenous)

$X_{ij}$  = the amount of output produced by sector i and purchased by sector j for production purposes (endogenous)

$Y_{ik}$  = the amount of output produced by sector (i) for final demand of type k (exogenous).

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<sup>3</sup> Productivity is defined as the value added / number of workers.

<sup>4</sup> It is important to place the mathematical representation of I-O Table in context to enable the read to understand the meaning of Technical Coefficients.

$m$  = the number of sectors

$P$  = the number of final demand sectors (which include household consumption, Government expenditure, etc).

It is assumed that the relationship between inputs and outputs can be specified by fixed I-O coefficients.

$$a_{ij} = X_{ij} / X_j$$

$$X_{ij} = a_{ij} x_j \quad (i, j = 1 \dots m)$$

$A_{ij}$  signifies the amount of input of commodity  $i$  that is required to produce one unit of commodity  $j$ .

Substituting  $a_{ij}$  in the original equations gives the new set of  $m$  equations as follows:

$$\sum a_{ij} X_j + \sum_{k=1}^P Y_{ik} = X_i \quad (i=1 \dots m)$$

In matrix notation, this is represented as:

$$AX + Y = X$$

Where  $A$  is a  $(m \times m)$  matrix of  $(a_{ij})$  coefficients,  $x$  is a  $(m \times 1)$  vector of level of final demand for each of the  $m$  sector. The matrix  $A$  is commonly known as I-O Technical Coefficients Matrix by definition,  $a_{ij}$  entry in this matrix signifies the amount of input of commodity  $i$  that is required to produce one unit of commodity  $j$ .

The solution to this system is obtained of follows:

$$X - AX = Y$$

$$(I - A) X = Y \quad \text{where } I \text{ is the } (m \times m) \text{ Identity matrix}$$

$$X = (I - A)^{-1} Y = RY$$

Where  $R = (r_{ij})$  is a  $(m \times m)$  matrix

The matrix  $R$  is known as the Leontief Inverse. Each coefficient  $r_{ij}$  represents the amount of output of sector  $j$  required to meet the requirement of one unit of final demand for sector  $j$ . It includes direct and indirect effects in the sense that to produce one unit of sector  $i$ 's output we need  $a_{ij}$  units of output of sector  $i$ 's output. Thus  $r_{ij}$  capture the direct and indirect effects (Pohit, 2000).

A convenient way of looking at the response of the economy to changes in final demand of the various sectors is to introduce multiplier. The Leontief Inverse itself does not take into account the primary factor requirements of the production process. But it is easy to extend the I-O model to include an analysis of primary factor requirements. Assume that  $L$  units of labour are required per unit of domestic production vector  $x$  has been derived from an exogenous projection of final demand. The total employment requirement can be computed as follow:

$$LX = L ( I - A )^{-1} Y$$

Where L is the row vector of labour coefficients gives that total demand for labour derived from final demand (Dervis et al., 1982; Razenov, 1998).

### **Direct requirement from other sectors to tobacco industry**

Table ((III-1) Appendix ) shows a 24-sector input–output table<sup>5</sup> that provides a summary of the circular flow of production in the Egyptian economy. This table can be defined as the inter-industry transaction matrix or I-O Tables. The columns of the transaction matrix show the composition of input required by a particular industry to produce its output. The rows of the transaction matrix display the distribution of a particular industry's output throughout the economy.

The direct requirement indicates the need from each industry for a particular industry to produce one unit of production. This coefficient can be defined a technical coefficient, which is used to show the backward and forward relation between the studied sector and other sectors,

In the Egyptian economy, there are two sources of I-O Tables. The first is CAPMAS and the second is the Ministry of Planning. In fact, the study must depend on CAPMAS tables, because it reflects the real relation among all the sectors in all the economy. The Ministry of Planning's table, however, is built on the estimated relation among the sectors according to the economic plans. The last I-O table issued by CAPMAS was in 1991–1992 but the Ministry of Planning's issued table was from in 1996–1997. Hence, the study will try to apply the two tables to determine the difference in their results, applying various scenarios.

Concerning the tobacco industry, Table (III-2 Appendix) indicates that its forward direct coefficient equals 0.077, but its backward direct coefficient equals 0.104. This means that this sector depends more on the other sectors and plays a relatively small role in providing materials to these other sectors. This has to do with the type of production involved in the tobacco industry in that it produces a product ready for final consumption. The single sector that receives its product is the restaurants/hotel sector. However the coefficient of tobacco industry to restaurants and hotels is small (0.007).

Concerning the backward relation between the tobacco industry and other sectors, Table (III-3) shows that all the values of backward coefficients are small. They range between 0.0001 for rubber and plastic products and 0.008 for food industries, except for the finance, trade and insurance sectors, for which the coefficient equals 0.01. This can be explained by the high dependence of the tobacco industry on imports to get the inputs for the production. The percentage of imported inputs to total inputs was 67.7% in 1991–1992.

Moreover the study examined the role of tobacco industry and its relationship with the other sectors in the economy using the I-O Tables 1996–1997. Table (III-4) indicates the value of direct backward and forward coefficient of tobacco industry. The comparison of Tables (III-2) & (III-4) indicates a difference between the values for direct forward

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<sup>5</sup> The difference between the number of workers in the tobacco industry and the number used in the I-O Table is not an error. This can be explained by the difference in the sources of data when obtaining all the sectors in the Egyptian economy, but still the ratio of employment in the tobacco industry to employment in the manufacturing sector is the same despite the difference in the data source.

coefficient. This can be explained by the expansion in foreign markets compared to the local market. Exports peaked at 1.300 million sticks in 1997, compared with 750 million in 1990.<sup>6</sup>

In spite of the difference between the values of direct backward and forward coefficient of the tobacco industry in I-O Table 1991–1992 and I-O Table 1996–1997, the small value of coefficients give the same result. It means that the tobacco industry has a minor effect on the Egyptian economy.

### **Total requirement from the other sectors to tobacco industry**

To supply the tobacco industry with the required inputs, the other related sectors increase their output and this cycle will continue to affect the economy's output. The total requirement matrix for the entire economy is called Leontief Inverse, which contains both the direct and indirect requirements.

Concerning the outward dependency of the tobacco industry, its direct and indirect requirement from all the sectors is very small. This is reflected in the values of total requirement from all the sectors as shown in Leontief Inverse Matrix (Table III-5 Appendix). Table (III-6) indicates two results: firstly, the value of backward and forward coefficients in Leontief Inverse Matrix are very small, their values are 0.04 and 0.05 respectively. Second, the tobacco control policies concerning the supply or demand side will have little effect on the overall economy.

### **The impact of the tobacco industry on national employment**

This impact can be measured by using two methods: a wage effect and employment multiplier.

The previous methods reflect the effect of the tobacco industry on employment in terms of the cost of labour (wage effect) or how this industry affects the total number of workers inside the economy (employment multiplier).

#### **A. Wage effect**

The total value of wages in the tobacco industry increased from EGP 97 428 000 in 1991–1992 to EGP 151 934 000 in 1997–1998. So the nominal rate of increase reaches 55%. In addition, the real value of wages in the tobacco industry increased from EGP 41 388 000 in 1991–1992 to EGP 135 413 000 in 1997–1998 (the deflator equal to 112.2). The real rate of increase reaches 21.8%. In addition, the wage share of the tobacco industry in the value of wages in the manufacturing sector increased from 2.7% in 1991–1992 to 2.9 % in 1997–1998 as indicated in Table (III-7).

The increase in wages in this industry can be explained by the rise in sales, which reflects a sufficient demand for the final product. The demand affects the level of production and the size of employment inside the industry by increasing their levels. Also, the increase in productivity in this industry promotes the rise in wages.

Concerning wage effect, Table (III-8) indicates direct and total effect (direct and indirect) of the tobacco production to satisfy one unit of final demand.

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<sup>6</sup> Appendix (1) includes all the factors explain the increase in cigarettes exports.

According to the values of the coefficients in Table (III-8), the direct effect of satisfying one unit of final demand is 0.027 and this coefficient is less than the total effect, which includes direct and indirect effect 0.035. Although there is a difference in the values of the wage effects, their value is very small. Hence, the policies that can affect production in the tobacco industry, as well as the final demand and its effect on the overall economy will only have a very minor impact.

### **B. Employment multiplier**

It is possible to estimate the relationship between the value of the output of a sector and employment of that sector. This is defined as a direct employment multiplier, which means the number of workers used to produce one unit. By using the Leontief Inverse Matrix, the direct and indirect employment multiplier can be measured. It determines the number of workers used to produce one unit with regards to all the backward and forward relations among all the economic sectors.

Table (III-9) indicates the direct employment multiplier for all the sectors in the Egyptian economy. Concerning the tobacco industry, the value of the direct employment multiplier equals 0.06. This means that the production of 100 units requires 6 workers. In addition, the value of that multiplier for the tobacco industry is less than any other multiplier for all the sectors, except for mining and petroleum (0.003), wood and wood products (0.04), oil products (0.04), transport and communication (0.03), electricity (0.02), housing (0.03) and hotels (0.03).

When the direct and indirect employment multiplier is estimated, as indicated from Table (III-10), the number of workers needed to produce one unit increases. But the increase in the number of the workers will be different among all the sectors and this depends on production techniques.

It was found that the tobacco industry required fewer workers to produce one unit. This result is similar for oil products and miscellaneous products. Such industries are described as capital-intensive, which means that they need fewer workers to produce one unit.

In addition, there is a slight difference between the direct employment multiplier (0.06) and the direct and indirect employment multiplier in the tobacco industry (0.07). Hence, the study predicts that the effect of tobacco control policies on employment will not reflect a large difference between the direct effect on the tobacco industry and the indirect effect concerning the relation with all the economic sectors.

By applying the Employment Multiplier in I-O Table 1996–1997 for the tobacco industry, the result will be different. The value of the multiplier is 0.01 (as indicated in Table (III-11)). This means that the number of workers needed to produce one unit and satisfy one unit of final demand will be less than its similar number by using I-O Table 1991–1992. This can be explained by the increase in labour productivity from 109 in 30 June 1995 to 174 on 30 June 2000.

### **Implications of tobacco control policies on national employment**

This study assessed the expected consequences of tobacco control on the economy, production and employment. It demonstrated that the economic fears that have deterred policy-makers from taking action are largely unfounded. Policies that reduce the demand for

tobacco, such as a decision to increase tobacco taxes, would not cause long-term job losses. Such policies could bring health benefits without harming the economy.

Tobacco control policies can be divided into:

- measures to reduce the demand for tobacco and
- measures to reduce the supply of tobacco.

It is important to begin by saying that while interventions to reduce demand for tobacco are likely to succeed, measures to reduce its supply are less promising.

This is because, if one supplier is shut down, an alternative supplier gains an incentive to enter the market. Similarly, the international evidence to date suggests that trade restrictions are such that import bans will have little impact on cigarette consumption worldwide. In addition, every country uses agricultural policies to affect the supply of tobacco, which is needed for the production of cigarettes. Hence, the study will not depend on the measures to reduce supply since tobacco is entirely imported from abroad.

#### ***A. Measures to reduce the demand for tobacco***

These measures include price measures and non-price measures. The former depend on raising taxes to increase cigarette prices but the latter include comprehensive bans on advertising, information measures, such as mass media counter-advertising, prominent health warning labels, the publication and dissemination of research findings on the health consequences of smoking as well as restrictions on smoking at work and in public places. Concerning the demand side, we will assess the impact of the demand measures on national employment in the Egyptian economy by using two simulations. The first involves increasing the price of cigarettes by 10% and the second enforcing the non-price measures.

##### ***(1) Increasing the price of cigarettes***

Evidence from countries of all income levels shows that price increases on cigarettes are highly effective in reducing demand. Higher taxes induce some smokers to quit and prevent other individuals from starting to smoke. Children and adolescents are more responsive to price rises than older adults, so this intervention would have a significant impact on them. This simulation will depend on two assumptions. The first is that the increase in the price of cigarettes will reduce their consumption though the smokers will *not* increase their spending on other goods and services as a result of this reduction. Instead, an increase in savings will be experienced. The second is that the smokers *will* increase their spending on other goods and services as a result of their reduced consumption of cigarettes. In terms of the Egyptian economy, we will assess the impact of increasing prices of cigarettes on national employment by using these two assumptions.

##### ***(a) Implications of the first assumption***

The results of the Nassar study (2001) show that the increase in the price of cigarettes would lead to reduced cigarette consumption, its elasticity being - 0.397. Hence, households would decrease their consumption by 0.397. To determine its impact on national employment the analysis will rely on the I-O Tables. Table (III-12) indicates that an increase in the price of cigarettes would decrease their consumption. Based on the first assumption, the final demand in the Egyptian economy would decrease, so the production of cigarettes

would decrease by EGP 1552.27 according to the reduction of its demand. In addition, the domestic production will decrease by EGP 6169.3 as the final demand decreases. By studying the effect on national employment, Table (III-13) indicates that employment in the cigarette industry would decrease by 14.2607 thousand workers.

The most interesting result is the increase by 5961.875 thousand workers in the national employment. This is the result of increased savings. The resources for investment would increase and spur new investment, which would increase the need for new workers. This can be explained by using the values of the change in domestic production by economic activity as indicated in Table (III-10).

The sectors that achieve high value from the reduction in their product are the capital-intensive activities, such as oil products, basic metals and mining and petroleum. But the increase in employment was achieved in the service sector, which is described as labour-intensive. Hence, the increase in employment in the service sector fuels an increase in national employment.

#### ***(b) Implications of the second assumption***

On the basis of the second assumption smokers would increase their expenditure on the other goods and services according to their reduced expenditure on cigarettes. Table (III-14) indicates that the domestic production would decrease by EGP 3985.98 million. This can be explained by the equalization between the value of the reduction in cigarette consumption and the value of the increase in the expenditure on other goods and services, so the total final demand held constant. Production in the cigarette industry would decrease by EGP 1518.3 million. By comparing Tables (III-13) and (III-15) one observes that the decrease in domestic production would be less marked if smokers increase their expenditure on other goods and services.

Table (III-15) indicates that employment in the cigarette industry would decrease by 13.76 thousand workers, while national employment increased by 6108.51 thousand workers. In comparing Tables (III-13) and (III-15), one obtains an important result—that increasing the expenditure of smokers on other goods and services will lead to an increase in national employment higher than the increase based on *not* spending on other goods and services.

#### ***(2) The second simulation: enforcement of the non-price measures***

While Egypt started applying non-price measures in 1977, all its tobacco control laws and regulations have never been enforced. So the effect of enforcing non-price measures on the cigarette industry and national employment was examined. Using educational level as a proxy to non-price measures<sup>7</sup> and the result of the Nassar study (2001) indicates that there is a negative correlation between the educational level and expenditure on cigarettes. The value of the elasticity is -0.0359. Hence, if the non-price measures are enforced, expenditure on cigarettes will decrease.

This simulation will be applied using the same two assumptions previously employed. Table (III-16) indicates that if the educational level “as a proxy of the enforcement of non-price measures” increases, under the first assumption, the production of cigarettes decreases

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<sup>7</sup> The non-price measures cannot be measured except for the educational level and its impact on the individual in changing habits and attitudes. Hence the education level is used as a proxy for non-price measures.

by EGP 140.628 thousand and domestic production decreases by EGP 4620.27 million. But the decrease in cigarette production and domestic production will be less if the second assumption is applied as indicated in Table (III-17).

Concerning the effect on employment, Tables (III-18) and (III-19) indicate that cigarette industry employment and national employment increase when the non-price measures are enforced. However, the increase in each will be higher using the second assumption.

In summary, the impacts of price and non-price measures on national employment are positive, but the non-price measures are more effective than the price measure because the increase in national employment will be higher and the reduction in domestic production will be less.

## **Conclusion**

Egypt has the highest rate of tobacco consumption in the Arab world. The main factors underlying the changes in consumption trends are economic in addition to others such as an improvement in the quality of tobacco and an increase in the consumption of foreign cigarettes. Egyptian policy-makers addressed this issue because many countries resist taking serious action to adopt tobacco control measures. The fear is that reduced tobacco consumption may lead to lower employment. This study examined the impact of policies that reduce the demand for tobacco on employment in the tobacco industry and in the national economy.

The study begins with an overview of tobacco consumption and examines the status of the tobacco economy in Egypt. The public sector continues to maintain a monopoly on cigarettes through the ETC, the largest cigarette manufacturer in the Eastern Mediterranean Region. Despite the fact that Egypt does not grow its own tobacco, in recent years it has increased its cigarette exports to neighbouring countries. While Egypt has passed much tobacco control legislation it has never been enforced. Currently, however, the country is improving on the implementation of its national campaign for tobacco control. Health education has become an important tool for tobacco control. There is also a national campaign prohibiting the sale of tobacco to young adults and children that was first launched in February 1999 encouraging community participation through workshops and seminars.

The second part of the study shows the employment in the tobacco industry within the context of the general national employment. Part three examines tobacco control policies and industry employment through the input-output analysis, taking into account the indirect effects on all the other sectors. The study estimated the direct requirement from other sectors to the tobacco industry. The forward direct coefficient of the tobacco industry indicates that this sector depends more on other sectors and plays a small role in providing materials to those other sectors. This can be explained by the tobacco industry's type of production, one that makes a final product for consumers. In terms of the backward relationship between the tobacco industry and other sectors, the data show that all the values of backward coefficients are small. This can be explained by the high dependence of the tobacco industry on imports to obtain the input for production.

In terms of the impact of the tobacco industry on national employment, two measures were taken into consideration, the first being the wage effect and the second being the employment multiplier. The results indicate that their values are very small. This study also

assesses the expected consequences of tobacco control on the economy, production and employment. It demonstrates that the economic fears that have deterred policy-makers from taking action are largely unfounded. Policies that reduce the demand for tobacco, such as a decision to increase tobacco taxes, would not cause long-term job losses. Such policies could bring health benefits without harming the economy. Tobacco control policies can be divided into measures to reduce the demand for tobacco and to reduce the supply of tobacco. The study did not depend on measures to reduce supply since tobacco is entirely imported from abroad. The study relies on demand measures to control the demand for tobacco.

Such measures include price measures and non-price measures. The former depend on raising taxes to increase cigarette prices while the latter include comprehensive bans on advertising, information measures such as mass media counter-advertising, prominent health warning labels, the publication and dissemination of research findings on the health consequences of smoking as well as restrictions on smoking in work and public places. In terms of the demand side, the study assessed the impact of the demand measures on Egypt's national employment by using two simulations: the first being to increase the price of cigarettes by 10% and the second being enforcing the non-price measures.

Assessing the impact of increasing cigarette prices on national employment depends on two assumptions. The first is that the increase in the price of cigarettes will reduce their consumption though the smokers will not increase their spending on other goods and services as a result of this reduction. The second is that smokers will increase their spending on other goods and services according to their reduced consumption of cigarettes. The results are reflected in the values of backward and forward coefficients in the Leontief Inverse Matrix.

The impacts of price and non-price measures on national employment are positive, but the non-price measures are more effective than the price measure because the increase in national employment would be higher and the reduction in domestic production would be lower.

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## Appendix (1)

**The increase in cigarette exports during the period 1990–1997 can be explained by the following:**

(1) The quantity of exports to conventional country markets increased by 36% for cigarettes and 11.2% for molassed tobacco for the following reasons:

- Field visits to some Arab countries showed that Egypt's exports encountered fierce competition from multinational companies.
- An agreement was reached on participating in promotional costs in those markets such as Kuwait, Lebanon and Saudi Arabia.
- The conventional markets were provided with updated promotional materials in Jordan, Kuwait, Saudi Arabia, and the Sharja markets.

(2) The New Markets: Exports to such markets total EGP 5,568,000 as a result of:

- Intensive participation in certain international fairs and exhibitions.
- Provision of samples of Egypt's export products to the Exhibitions and Fairs Authority.
- Provision of samples to commercial representation abroad, in addition to many companies worldwide.

The above efforts resulted in opening new markets in such countries as:

- Argentina and Kazakhstan for Cleopatra cigarettes.
- The Czech Republic, Estonia, the Libyan Arab Jamahiriya and the United States of America for different brands of molassed tobacco.
- Hong Kong Special Administrative Region of China (Hong Kong SAR) for new Verona cigars.
- Indonesia and Jabal Ali in Dubai for cut rag products.

(3) The policy of diversification of exports through the first-time promotion of other product exports or launching of the products in new markets such as:

- Stems to Northern Ireland in the amount of EGP 2,718,000
- Cut rag and filter to Jabal Ali in Dubai in the amount of EGP 4,900,000
- Cut rag to Indonesia, in addition to cut rag to conventional markets such as Bulgaria, Greece and The Russian Federation in the amount of EGP 4,700,000
- 390,000,000 of Cleopatra Regular cigarettes 75mm were exported to Cyprus in the amount of EGP 5,550,000
- Executing a part of the annual filter contract in the amount of EGP 3,600,000 during the financial year 1998–1999 and the rest of the contract was executed during the financial year 1999–2000.

(4) The opening of the ETC African Export Market after participating in the Egyptian Products Fair in Nairobi

(5) ETC exporting different Egyptian goods to Zimbabwe

The objective behind Egypt's officially joining the 12 African states of the Common Market of East and Southern Africa States (COMESA) on 15 March 1999 is to activate commercial exchange and create a balance between Egyptian imports and exports to and from these states, thus supporting the Egyptian balance of payments.

Since ETC depends largely on importing a large part of raw tobacco from COMESA states and out of its national duty through its contribution to the State budget (about EGP 3 thousand million annually) the ETC administration made necessary contacts with the African side to activate the role of exporting Egyptian goods to African states as per the needs of these markets. To achieve this goal, ETC made a preliminary agreement in Cairo with Tobacco Leaf International (Tobacco Leaf Company in Zimbabwe in June 1999, then TLI made a preliminary survey of the Zimbabwe market to identify its needs with regard to Egyptian goods.

Hence, ETC started to contact some Egyptian companies to obtain offers and catalogues to send to Zimbabwe so as to identify the true demand in this promising market.

## Appendix (2)

### Part I. General overview

**Table I-1. Annual cigarette consumption**

<i>Year</i>	<i>Per capita consumption (Cigarette sticks)</i>	<i>Total consumption (Sticks in millions)</i>
1970	581	12027
1980	1387	36704
1990	1177	39854
1995	1104	42436
1997 Preliminary Data	1275	51814
2010 (Targeted)	1148	46632.6

*Source:* Ministry of Health and Population, National Health Plan 2000

**Table I- 2. Per capita consumption, sticks per year and sticks per week 1990–1998**

<b>Years</b>	<b>Sticks year</b>	<b>Sticks week</b>	<b>Sticks day</b>
1990	744	14.3	2.0
1991	758	14.6	2.1
1992	676	13.0	1.9
1993	670	12.9	1.8
1994	656	12.6	1.8
1995	701	13.5	1.9
1996	747	14.4	2.0
1997	808	15.5	2.2
1998	910	17.5	2.5

*Source:* ERC based Eastern Tobacco Company and USDA data, United Nations  
Note: Based on total population.

### Part II. Tobacco industry employment

**Table II-1. Employment in tobacco industry (000)**

<b>Item</b>	<b>Employment industrial public sector (1)</b>	<b>Employment in tobacco industry (2)</b>	<b>Ratio (2/1) %</b>
1995/96	723007	13303	1.8
1997/98	569507	13662	2.4

*Source:* Columns (1) , (2) : CAMPA, Annual Industrial Production Statistics, Public Sector

**Table II-2. Gender employment in manufacturing sector and tobacco industry (000)**

Item	Males				Females			
	Manufacturing sector		Tobacco industry		Manufacturing sector		Tobacco industry	
	Numbers	%*	Numbers	%*	Numbers	%**	Numbers	%*
1995/96	647575	89.6	12385	93.0	75431	10.4	918	6.9
1997/98	513961	90.2	12754	93.4	55546	9.7	908	6.6

\* : the percentage of male employment to total employment in this sector.

\*\* : the percentage of females employment to total employment in this sector.

Source: CAMPAS, op, cit.

**Table II-3. Distribution of employment in tobacco industry per function**

Item	No. of workers (000)	The percentage of each item to total numbers %
Management	3571	26.1
Production	5323	38.9
Technical services	1563	11.4
Distribution & selling	1958	14.3
Public services	1247	9.1
Total	13662	100

Source: CAMPAS, op, cit.

**Table II-4. Number of trainees in training plan in Eastern Tobacco Company (000)**

Level	Trainees inside EC	Trainees outside EC	Trainees inside & outside EC	Training percentage%	
				Inside	outside
Total	1771	1351	3122	57	43

Source : [http://www.easternegypt.com/sharkya.nsf/social services](http://www.easternegypt.com/sharkya.nsf/social%20services)

### **Part III. Tobacco control policies and industry employment**

#### **Label definitions**

##### **Sector**

<b>1</b>	<b>Agriculture</b>
<b>2</b>	<b>Mining&amp; petroleum</b>
<b>3</b>	<b>Food industries</b>
<b>4</b>	<b>Leverage</b>
<b>5</b>	<b>Tobacco</b>
<b>6</b>	<b>Textile</b>
<b>7</b>	<b>Leather&amp;leather products</b>
<b>8</b>	<b>Wood &amp;wood products</b>
<b>9</b>	<b>Paper products &amp;printing</b>
<b>10</b>	<b>Chemical products</b>
<b>11</b>	<b>Oil products</b>
<b>12</b>	<b>Rubber</b>
<b>13</b>	<b>Metal&amp;non metal products</b>
<b>14</b>	<b>Basic metal products</b>
<b>15</b>	<b>Machinery</b>
<b>16</b>	<b>Transport devices</b>
<b>17</b>	<b>Miscellaneous</b>
<b>18</b>	<b>Electricity</b>
<b>19</b>	<b>Construction &amp;maintenance</b>
<b>20</b>	<b>Finance &amp;trade&amp; insurance</b>
<b>21</b>	<b>Hotels</b>
<b>22</b>	<b>Wholesale &amp;retailing &amp;communication</b>
<b>23</b>	<b>Housing</b>
<b>24</b>	<b>Services</b>

Table III-1. A 24 sector input-output table (1991–1992)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0.17	0.00	0.11	0.02	-	0.21	0.02	0.00	0.00	0.04	-	0.01	0.01	-	0.00	0.01	-	-	-	0.00	0.11	0.00	-	0.00
2	0.00	0.00	0.00	0.00	-	0.00	-	0.00	0.00	0.03	0.04	0.01	0.23	0.05	0.00	0.00	-	0.05	0.03	-	0.00	-	-	0.00
3	0.01	-	0.06	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	0.18	-	-	0.00
4	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	0.00	0.00	0.00
5	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-
6	0.00	0.00	0.00	-	-	0.12	0.02	0.00	0.00	0.00	-	0.01	0.00	0.00	0.00	-	0.00	-	-	0.00	0.00	0.00	0.00	0.00
7	-	-	-	-	-	0.00	0.27	0.00	-	-	-	0.00	-	-	0.00	0.00	0.03	-	-	-	-	-	-	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
10	0.01	0.00	0.00	0.04	-	0.01	0.04	0.03	0.01	0.02	0.00	0.27	0.00	0.01	0.00	0.00	0.01	0.00	0.04	0.00	0.01	0.00	0.01	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.00	0.00	0.00	0.16	0.01	0.00	0.01	0.06	0.00	0.00
12	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
13	-	-	0.00	-	-	-	-	0.00	0.00	0.00	-	-	0.08	0.00	0.00	-	-	-	0.06	-	-	-	-	0.00
14	-	-	-	-	-	-	-	0.00	-	0.00	-	0.01	0.00	0.23	0.06	0.02	0.01	-	0.05	-	-	-	-	0.00
15	0.00	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.01
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.00	0.00	0.01	0.01	0.00	0.03	0.01	0.01
17	0.00	-	0.00	-	-	0.00	0.00	-	-	0.00	-	0.00	0.00	-	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00
19	0.01	0.01	0.05	0.03	0.00	0.04	0.01	0.01	0.00	0.01	0.01	0.04	0.05	0.04	0.00	0.01	0.00	0.07	0.04	0.02	0.04	0.03	0.00	0.01
20	0.03	0.01	0.04	0.03	0.02	0.08	0.08	0.03	0.02	0.04	0.00	0.09	0.04	0.02	0.05	0.02	0.09	0.05	0.06	0.05	0.05	0.07	0.01	0.01
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	0.01	-	0.00
22	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.04	0.04	0.00
23	0.00	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.04	0.00	0.02	0.00	0.01	0.05	0.00	0.01	0.02	0.01	0.01	0.04	0.01
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.03	0.01

Source: CAMPAS

**Table III-2. Direct forward and backward coefficient of tobacco industry (1991–1992)**

<b>Forward</b>	<b>0.077</b>
<b>Backward</b>	<b>0.104</b>

*Source:* Calculated from I-O Tables (1991-1992)

**Table III-3. Direct backward coefficient of tobacco industry**

<b>Sector</b>	<b>Coefficient</b>
Food industries	0.008
Paper product & printing	0.006
Rubber & plastic	0.0001
Metal products	0.001
Transportation devices	0.0004
Electricity	0.0001
Construction & maintenance	0.0008
Wholesale & retailing and communication	0.006
Machinery	0.001
Services	0.0001
Finance, trade and insurance	0.01
Housing	0.001

*Source:* Calculated from I-O Table 1991–1992

**Table III-4. Direct forward and backward coefficient of tobacco industry (1996–1997)**

<b>Forward</b>	<b>0</b>
<b>Backward</b>	<b>0.07</b>

*Source:* Calculated from I-O Tables (1996-1997)

**Table III-5. The coefficient value of Leontief Inverse Matrix (1991–1992)**

	Forward	Backward
1	0.08	0.06
2	0.07	0.04
3	0.06	0.06
4	0.04	0.06
5	0.05	0.05
6	0.05	0.07
7	0.06	0.7
8	0.05	0.05
9	0.05	0.05
10	0.07	0.05
11	0.06	0.05
12	0.05	0.07
13	0.05	0.07
14	0.07	0.07
15	0.05	0.05
16	0.05	0.05
17	0.04	0.06
18	0.05	0.06
19	0.07	0.06
20	0.10	0.05
21	0.04	0.07
22	0.06	0.06
23	0.06	0.05
24	0.05	0.05

**Table III-6. The coefficient value of Leontief inverse matrix in tobacco industry in 1991–1992**

<b>Forward</b>	<b>0.05</b>
<b>Backward</b>	<b>0.04</b>

*Source:* calculated from I-O Table 1991/92

**Table III-7. The wages in tobacco industry and its ratio to manufacturing sector (000)**

	Wages in tobacco industry	Wages in manufacturing industry	(1)/(2)%
1991/1992	97.428	3530.858	2.7
1997/1998	151.934	5228.273	2.9

*Source:* the Annual Industrial Production Statistics 1991–1992, 1997–1998

**Table III-8. Wage effect by using direct and indirect effect in 1991-1992**

Item	Coefficient
Direct effect	0.027
Indirect effect	0.035

*Source:* Calculated from I –O Tables 1991–1992

**Table III-9. Direct employment multiplier for all the sectors in the Egyptian economy in 1991–1992**

Sector	Direct employment multiplier coefficient
Agriculture	0.12
Mining and petroleum	0.003
Food products	0.12
Beverage	0.25
Tobacco	0.06
Textile	0.28
Leather & leather products	0.16
Wood & wood products	0.04
Paper product & printing	0.17
Chemicals products	0.21
Oil products	0.04
Rubber product & plastic	0.19
Metal & non metal products	0.21
Basic metals & electric product	0.20
Machinery & equipment	0.30
Transportation devices	0.19
Miscellaneous products	0.09
Electricity	0.02
Construction & maintenance	0.07
Finance & trade and insurance	0.07
Hotels	0.03
Transportation & communication	0.03
Housing	0.03
Services	0.23

*Source:* calculated from I-O Table 1991–1992

**Table III-10. Direct and indirect employment multiplier for all the sectors in the Egyptian economy in 1991–1992**

Sector	Direct employment multiplier coefficient
Agriculture	0.16
Mining and petroleum	0.008
Food products	0.17
Beverage	0.31
Tobacco	0.07
Textile	0.39
Leather & leather products	0.27
Wood & wood products	0.06
Paper product & printing	0.16
Chemicals products	0.23
Oil products	0.05

Rubber product & plastic	0.29
Metal & non metal products	0.25
Basic metals & electric product	0.30
Machinery & equipment	0.32
Transportation devices	0.21
Miscellaneous products	0.13
Electricity	0.05
Construction & maintenance	0.13
Finance & trade and insurance	0.09
Hotels	0.12
Transportation & communication	0.07
Housing	0.06
Services	0.26

Source: calculated from I-O Table 1991–1992

**Table III-11. Direct and indirect employment multiplier for all the sectors in the Egyptian economy in 1996–1997**

Sector	Direct employment multiplier coefficient
Agriculture	0.09
Mining and petroleum	0.007
Food products	0.06
Beverage	0.01
Tobacco	0.01
Textile	0.07
Leather & leather products	0.03
Wood & wood products	0.01
Paper product & printing	0.02
Chemicals products	0.04
Oil products	0.01
Rubber product & plastic	0.02
Metal & non metal products	0.01
Basic metals & electric product	0.02
Machinery & equipment	0.04
Transportation devices	0.02
Miscellaneous products	0.03
Electricity	0.02
Construction & maintenance	0.04
Finance & trade and insurance	0.03
Hotels	0.03
Transportation & communication	0.02
Housing	0.02
Services	0.20

Source: Calculated from I-O Tables 1996–1999

Table III-12. The impact of increasing prices of cigarettes on domestic production (first assumption) EGP millions

The change in domestic production	The expected value of domestic production	The current value of domestic production (96/97)	Sectors
-3.64837	60655.23	60658.88	Agriculture
-176.783	15581.59	15758.38	Mining & Petroleum
-2.43375	30654.23	30656.67	Food Industries
-0.35961	1919.708	1920.068	Leverage
-1552.27	2357.73	3910	Tobacco
-5.59216	15964.86	15970.45	Textile
-20.0599	17889.73	17909.79	Leather & Leather products
-1.15378	3597.578	3598.732	Wood & Wood products
-36.019	4449.375	4485.394	Paper products & Printing
-11.8999	9063.448	9075.348	Chemical Products
-215.944	11538.93	11754.88	Oil Products
-5.06998	561.886	566.956	Rubber
-71.8523	10741.66	10813.51	Metal & non-metal Products
-3548.66	7480.733	11029.4	Basic Metal Products
-20.671	3619.044	3639.715	Machinery
-16.4968	5044.405	5060.902	Transport Devices
-2.22758	2273.272	2275.5	Miscellaneous
-213.981	6524.019	6738	Electricity
-53.105	28936.9	28990	Construction & Maintenance
-158.207	67692.79	67851	Finance & Trade & Insurance
-0.00442	7295.079	7295.083	Hotels
-25.96	30427.53	30453.49	Wholesale & Retailing & Communication
-2.64579	5582.354	5585	Housing
-24.212	25432.21	25456.42	Services
-6169.3	375284.3	381453.6	Total

Source : Calculated from I-O Tables 1996-1997

**Table III-13. The impact of increasing prices of cigarettes on national employment (000) (first assumption)**

The change in employment	The expected level of employment	The current level of employment (1996-1997)	Sector
1316.532	6063.532	4747	Agriculture
73.20812	116.2081	43	Mining & Petroleum
1581.223	1869.393	288.17	Food Industries
22.01355	25.07055	3.057	Leverage
-14.2607	34.4475	48.7082	Tobacco
621.7633	1244.163	622.4	Textile
556.257	571.134	14.877	Leather & Leather products
21.79027	41.96027	20.17	Wood & Wood products
87.3129	114.4129	27.1	Paper products & Printing
96.10558	418.1096	322.004	Chemical Products
53.04123	141.4812	88.44	Oil Products
5.699008	11.81301	6.114	Rubber
54.47635	202.2264	147.75	Metal & non metal Products
40.91909	156.0661	115.147	Basic Metal Products
31.11415	154.2041	123.09	Machinery
29.50327	115.9133	86.41	Transport Devices
30.49204	88.60204	58.11	Miscellaneous
38.09766	158.0977	120	Electricity
240.0509	1380.051	1140	Construction & Maintenance
441.7933	2120.793	1679	Finance & Trade & Insurance
128.0868	273.0868	145	Hotels
175.2431	879.2431	704	Wholesale & Retailing & Communication
11.86451	230.8645	219	Housing
319.5487	5309.549	4990	Services
5961.875	21720.42	15758.55	Total

Source: Calculated from I-O Tables 1996-1997

**Table III-14. The impact of increasing prices of cigarettes on domestic production (second assumption)EGP millions**

The change in domestic production	The expected value of domestic production	Sector
473.8448	61132.72	Agriculture
-144.585	15613.79	Mining& petroleum
236.8667	30893.53	Food industries
12.86967	1932.938	Leverage
-1518.3	2391.704	Tobacco
99.37694	16069.83	Textile
113.5027	18023.29	Leather & leather products
21.65323	3620.385	Wood & wood products
-8.84607	4476.548	Paper products & printing
38.45104	9113.799	Chemical products
-174.363	11580.51	Oil Products
-1.66824	565.2878	Rubber
-36.7092	10776.8	Metal & non-metal products
-3528.78	7500.614	Basic metal products
3.23126	3642.946	Machinery
13.12593	5074.028	Transport devices
6.032241	2281.532	Miscellaneous
-175.175	6562.825	Electricity
-45.2612	28944.74	Construction & maintenance
286.9809	68137.98	Finance &trade & insurance
10.57043	7305.653	Hotels
105.9229	30559.41	Wholesale & retailing & communication
45.80888	5630.809	Housing
179.4676	25635.89	Services
-3985.98	377467.6	Total

Source: Calculated from I-O Tables 1996-1997

**Table III-15. The impact of increasing prices of cigarette on employment(000) (second assumption)**

The change in employment	The expected level of employment	Sector
1364.266	6111.266	Agriculture
73.44826	116.4483	Mining & petroleum
1595.816	1883.986	Food industries
22.18632	25.24332	Leverage
-13.7643	34.94387	Tobacco
629.9437	1252.344	Textile
560.521	575.398	Leather & leather products
22.05628	42.22628	Wood & wood products
88.01164	115.1116	Paper products & printing
98.42834	420.4323	Chemical products
53.55107	141.9911	Oil products
5.770525	11.88453	Rubber
55.13797	202.888	Metal & non metal products
41.33385	156.4809	Basic metal products
32.1326	155.2226	Machinery
30.18396	116.594	Transport devices
30.81397	88.92397	Miscellaneous
39.03806	159.0381	Electricity
240.425	1380.425	Construction & maintenance
455.7409	2134.741	Finance & trade & insurance
128.4826	273.4826	Hotels
179.054	883.054	Wholesale & retailing & Communication
13.86841	232.8684	Housing
362.0714	5352.071	Services
6108.517	21867.06	Total

Source: Calculated from I-O Tables 1996–1997

**Table III-16. The impact of non-price measures on domestic production (first assumption) EGP millions**

<b>The change in domestic production</b>	<b>The expected value of domestic production</b>	<b>Sector</b>
-2.71012	60656.17	Agriculture
-173.829	15584.55	Mining& petroleum
-1.54291	30655.12	Food industries
-0.25586	1919.812	Leverage
-140.628	3769.372	Tobacco
-5.03892	15965.41	Textile
-19.5925	17890.19	Leather & leather products
-1.01344	3597.719	Wood & wood products
-16.6366	4468.757	Paper products & printing
-8.91887	9066.429	Chemical products
-212.523	11542.35	Oil products
-2.57235	564.3836	Rubber
-53.8603	10759.65	Metal & non-metal products
-3534.9	7494.491	Basic metal products
-11.7865	3627.928	Machinery
-13.8042	5047.098	Transport devices
-2.09023	2273.41	Miscellaneous
-208.434	6529.566	Electricity
-47.7697	28942.23	Construction & maintenance
-121.395	67729.61	Finance &trade& insurance
-0.00331	7295.08	Hotels
-16.9491	30436.54	Wholesale & retailing & communication
-2.1767	5582.823	Housing
-21.8375	25434.58	Services
-4620.27	376833.3	Total

Source: Calculated from I-O Tables 1996–1997

**Table III-17. The impact of non-price measures on domestic production  
(second assumption) EGP Millions**

<b>Sector</b>	<b>The expected value of domestic production</b>	<b>The change in domestic production</b>
Agriculture	60699.43	40.54806
Mining& petroleum	15587.46	-170.912
Food industries	30676.8	20.13634
Leverage	1921.011	0.94263
Tobacco	3772.378	-137.622
Textile	15974.92	4.470675
Leather & leather products	17902.29	-7.49253
Wood &wood products	3599.785	1.052745
Paper products & printing	4471.218	-14.1759
Chemical products	9070.99	-4.35751
Oil products	11546.12	-208.756
Rubber	564.6917	-2.2643
Metal & non-metal products	10762.84	-50.6775
Basic metal products	7496.292	-3533.1
Machinery	3630.093	-9.62157
Transport devices	5049.781	-11.1206
Miscellaneous	2274.158	-1.34194
Electricity	6533.081	-204.919
Construction & maintenance	28942.94	-47.0594
Finance &trade& insurance	67769.94	-81.0649
Hotels	7296.038	0.954708
Wholesale &retailing &communication	30448.49	-5.00172
Housing	5587.213	2.213
Services	25453.04	-3.38542
Total	377031	-4422.56

Source: Calculated from I-O Tables 1996–1997

**Table III-18. The impact of non-price measures on national employment  
(000)(First assumption)**

<b>The change in employment</b>	<b>The expected level of employment</b>	<b>Sector</b>
1316.626	6063.626	Agriculture
73.23015	116.2302	Mining& petroleum
1581.277	1869.447	Food industries
22.0149	25.0719	Leverage
6.364024	55.07222	Tobacco
621.8065	1244.206	Textile
556.2719	571.1489	<i>Leather &amp; leather products</i>
21.79191	41.96191	Wood & wood products
87.81131	114.9113	Paper products & printing
96.2431	418.2471	Chemical products
53.08318	141.5232	Oil products
5.751517	11.86552	Rubber
54.81508	202.5651	<i>Metal &amp; non metal products</i>
41.20612	156.3531	Basic metal products
31.49271	154.5827	Machinery
29.56515	115.9751	Transport devices
30.49739	88.60739	Miscellaneous
38.23208	158.2321	Electricity
240.3053	1380.305	Construction & maintenance
442.9466	2121.947	Finance & trade & insurance
128.0868	273.0868	Hotels
175.5035	879.5035	Wholesale & retailing & communication
11.88391	230.8839	Housing
320.0444	5310.044	Services
5986.85	21745.4	Total

Source: Calculated from I-O Tables 1996-1997

**Table III-19. The impact of non-price measures on national employment (000)  
(Second assumption)**

<b>Sector</b>	<b>The expected value of employment</b>	<b>The change in employment</b>
Agriculture	6067.95	1320.95
Mining& petroleum	116.2519	73.25191
Food industries	1870.769	1582.599
Leverage	25.08755	22.03055
Tobacco	55.11614	6.407943
Textile	1244.948	622.5476
Leather & leather products	571.5352	556.6582
Wood & wood products	41.98601	21.81601
Paper products & printing	114.9746	87.87459
Chemical products	418.4575	96.45352
Oil products	141.5694	53.12936
Rubber	11.87199	5.757994
Metal & non metal products	202.625	54.875
Basic metal products	156.3907	41.24368
Machinery	154.675	31.58495
Transport devices	116.0368	29.62681
Miscellaneous	88.63656	30.52656
Electricity	158.3173	38.31727
Construction & maintenance	1380.339	240.3392
Finance & trade& insurance	2123.21	444.2102
Hotels	273.1227	128.1227
Wholesale & retailing & communication	879.8487	175.8487
Housing	231.0655	12.06546
Services	5313.897	323.8967
Total	21758.68	6000.134

*Source:* Calculated from I-O Tables 1996–1997