

# Does Income Inequality Effect the composition of Growth? The Case of Egypt.

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## Abstract

The debate over the relationship between growth and income distribution have produced mixed results with more consensus on thee positive feed back from the former to the later than vice verse. Nonetheless, this paper presents a conceptually different question: What is the effect of income inequality on the composition of growth? In essence, this study is set out to investigate the changes in demand for manufactured goods in response to the rise in real per capita income in the period from 1980 to 2000, during which income inequality in Egypt rose significantly. Empirical evidence in Egypt suggest that worsenig income distribution equity contributed to the decline of the manufacturing sector and the premature rise of the services' sector through a shift in the composition of aggregate demand and consumption expenditure that favors services over manufactures.

## 1 Introduction and Literature Review

The debate over the relationship between growth and income inequality,yet old, is still alive. As one of the most controversial issues, perhaps the only consensus is on its relevance. On one front, the Kuznet inverted U-curve, once were uncontested, has been receiving an increasing criticism, in light of which new term "Pro-poor Growth" appeared in recent development literature.

Nonetheless, the Kuznet hypothesis, supported by a large body of empirical evidence and theoretical disposition over the last five decades, is still considered the backdrop of most of most claims that growth will eventually and inevitably reduce

income inequality. However, the most dangerous and misguided process was transforming Kuznets's hypothesis that may be supported by empirical evidence in many OECD economies into a "black box" assuming that it is a natural outcome of growth and/or a market-made phenomenon (Moran 2005). Such theoretical and empirical expositions ignore the political and social struggle and the heavy government interventions that followed in the first half of the last century and brought about the Kuznets's inverted U-curve, all of which Kuznets's himself acknowledged (Moran 2005, p 213).

On the other front, investigating the effect of income distribution inequality on growth, while focussing on the rate of growth, has produced mixed and contradictory results generating to a great extent a consensus on rejecting the existence of such effect. As for typical neoclassical growth models, inequality, if not harmful, is at best irrelevant to growth. According to the Harrod-Domar model, income equality may reduce capital accumulation as savings will decline due to the redistribution of income from the rich, who on average save more, to the poor who save less (Fields 1989)<sup>1</sup>.

Meanwhile, "utilizing the Keynesian concept of income determination by effective demand" provide basis to theoretically link income distribution to growth, particularly in a system where "investment is independent of saving and consumption (Pasinetti 1962, p 267)." Pasinetti's (1962) "Post-Keynesian reformulation" may be interpreted as a step in that direction, despite the fact that he was so keen on retaining several crucial elements of neoclassical growth theory in his formulation.

However, empirical examinations failed to confirm with a great confidence the existence of a causal link from inequality to the rate of growth without being subject to technical or theoretical scrutiny. Using a new and improved data set, Deininger and Squire (1996) report a positive relationship between growth and poverty, yet fail to find any systematic link between growth and inequality (Deininger and Squire 1996). In a latter paper, Deininger and Squire (1998) use the same date set to show a negative correlation between initial inequality of asset distribution , as approximated by land distribution, and growth. They also conclude that inequality reduces income growth for the poor but not for the rich (Deininger and Squire 1998).

Persson and Tabellini (1994) put forward a theoretical frame suggesting a negative effect of inequality on growth through promoting politically-influenced economic policies that often attempt to improve the worsening inequality at the expense of investment and "growth-promoting activities" (Persson and Tabellini 1994). Interestingly,

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<sup>1</sup>Also cited in Clarke (1992)

they find evidence strongly supporting their argument only in democratic countries leaving most of the developing world, mostly with undemocratic regimes, relieved from worrying about the negative impact of inequality on growth. Meanwhile, Clarke (1992) report robust negative correlation between inequality and growth in both democratic and non-democratic countries. Despite its statistical significance, the relationship is relatively small and the direction of causality is undetermined. Furthermore, the impact of different policies that improve income distribution have been tested (Clarke 1992).

Clearly, the largest bulk of literature focus on the impact of inequality on the rate of growth; rather the primary focus in this research is impact of inequality on the nature and the composition of growth. Empirical evidence from Egypt reveal that inequality significantly influences the composition of growth by changing the composition of aggregate demand. In essence, this study is set out to investigate the changes in demand for manufactured goods in response to the rise in real per capita income in the period from 1980 to 2000, during which income inequality in Egypt rose significantly.

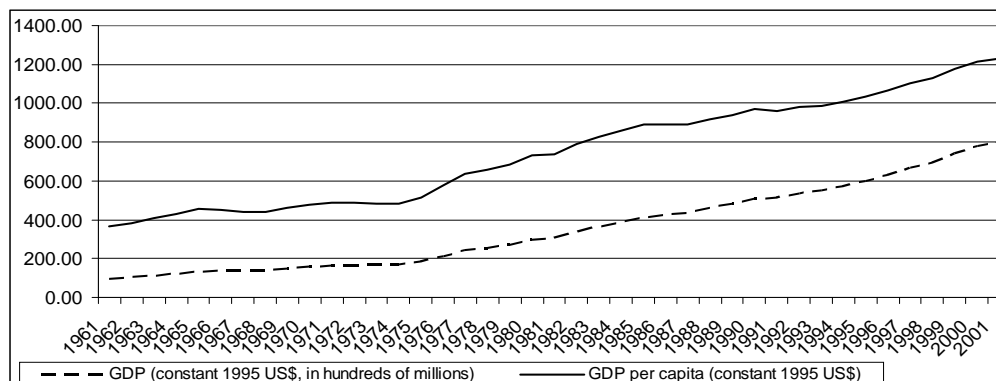
Kongsamut et al (2001) and Rowthorn and Ramaswamy (1997 and 1999), despite ignoring income distribution in general, stress the crucial role played by differences among income elasticities of demand for agricultures, manufactures and services in driving structural changes in both developed and developing countries. Felvey and Gemmel (1996), using cross-section data from advanced economies, estimate the income elasticity of demand for services and manufactures to be around unity for the former and slightly below unity for the later. Meanwhile, Bergstrand (1991) reports estimates of slightly above unity for services and below one for manufactures.

## **2 Patterns of growth and income distribution in Egypt**

The Egyptian economy has been growing steadily over the last four decades. In the 1970s, the economy grew by an average of 8.5% annually in real terms, a rate matched only by Asian export-led economies, 6% during the 1980s and the 1990s. Per capita income more than doubled, and investment increasing at unprecedented rates, reaching 25% higher than the period of the 1960s. Such impressive growth starting the year 1975 and onward was mainly fueled by current income transfers that included oil revenue,

Suez Canal revenue, workers' remittances, foreign aid and other geopolitical rents.

Figure 2.1: GDP and GDP Per capita in Egypt during the period 1961- 2001 (constant 1995 US dollars).



Source: World Bank, World Development Indicators 2003 CD-ROM.

## 2.1 Patterns of growth

During the period from 1959-65, the Egyptian economy moved towards industrialization led by a soviet style state-planned program. Investment in industry and electricity was 37% of total investment compared to 21% in agriculture. Industrial output grew at a rate of 8.5% annually and employment in industry grew by 6.5% compared with 3.3% for agriculture. The share of manufacturing output in GDP increased by 6% from 17% in 1959 to 23% in 1965. The greatest achievement, however, was in the area of income distribution. Official statistics show a jump in share of wages in agricultural and industrial income (25% to 33% and 27% to 32% respectively) and in real agricultural and industrial wages (36% and 15% respectively) between 1960 and 1966 in addition to an improvement in the distribution of income as measured by Gini coefficient (Amin 1994).

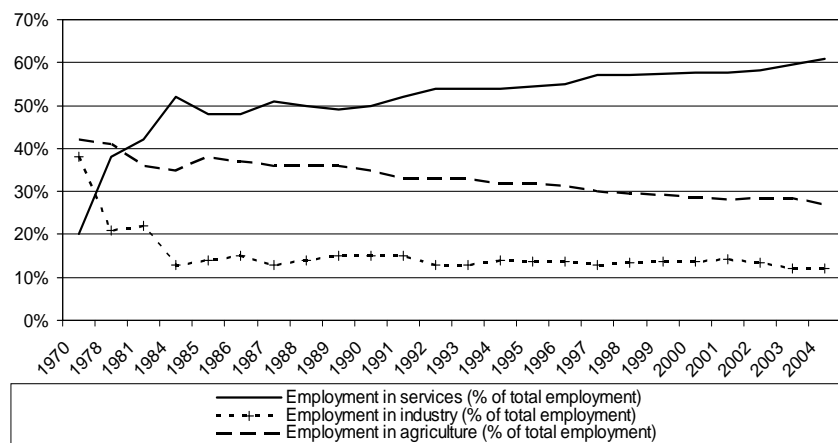
Starting the mid 1970s, the course of structural change in Egypt was altered as growth was accelerated by the influx of massive inflows. The share of agriculture's value added to GDP fell from 31% in 1972 to 18% in 1980 and went down to 16% of GDP by the year 2001. The share of manufacture's value added to GDP fell from 17% in 1974 to 12% in 1980 and 1981, and, despite several attempts to stimulate the manufacturing sector, it only rose to about 19% by 2001, a period through which its performance was highly erratic. The share of manufacturing value added in total value added dropped significantly, indicating a serious decline in the contribution of

the manufacturing sector in economic value creation.

Moreover, the share of manufacturing capital formation in gross capital formation, which rose significantly during the 1960s and early 1970s, declined to reach a record low of 10% in 1996. Meanwhile, the share of the service sector value added to GDP rose from 42% in 1972 to 44% in 1980. By the end of the 1980s, the share of service sector's value added were a little over 52% of GDP and continued to maintain such share throughout the 1990s. Moreover, the share of manufacturing capital formation in gross capital formation, which rose significantly during the 1960s and early 1970s, declined to reach a record low of 10% in 1996.

The rapid structural changes that highlighted the Egyptian economic growth over the last four decades were manifested in the rise of the services sector's share in total civilian employment, reaching half of civilian employment in 1991 up from only one third of total civilian employment in 1980, which was up from only 20% of total employment in 1970. By the year 2004, the service sector employed 60% of total civilian labor force, while the agriculture sector's share went down to about 28% of total civilian employment. Meanwhile, the industrial sector (including extractive industries) went down from 38% in 1970 to only 12% of total employment in 2004, a level which has been maintained for most of the period from 1985 to 2004 (Figure 2.2).

Figure 2.2: - Employment shares by major sector in Egypt, years 1970, 1978, 1981, and 1984-2004 (shares of total civilian employment).



Source: Author's calculations based on data from World Bank, World Development Indicators 2005 CD-ROM, and CAPMAS-Egypt, handbooks of statistics.

Furthermore, it is common in Egypt that public sector and government employees

have second jobs at the informal sector, which dominated by services activities. Public sector and government employees cannot report accepting employment in the informal sector since they are prohibited by law to have second jobs and that is precisely the reason they prefer the informal sector for a second source of income. Accordingly, the services sector in reality absorbs a much larger share of employment than reflected by official data, while most studies report rough estimates of the size of the informal sector around an average of 60% to 70% of total civilian employment.

## **2.2 Income distribution**

While the equality of income distribution in Egypt has improved during the late 1950s and 1960s, compelling evidence and the large body of literature on Egypt point out the worsening of income distribution in the country despite overall growth and rise in per capita income in the subsequent decades (Amin 1994). Household final expenditure rose steadily from 1976 and onward. Meanwhile, the share of wages and salaries in total expenditure remained on average around the same level throughout the period from 1976 to 2001.

Richards and Waterbury (1990) point out that the share of the highest income groups in total income has increased significantly during the 1970s and the 1980s. The income share of the top 10% in total income has increased from 32.1% in 1974/75 to 37.2% in 1981/82, in urban areas of Egypt; while in rural areas of Egypt, the income share of the top 10%, rose from 31.4% in 1974/75 to 33.6% in 1981/82. Furthermore, the share of wages in total income dropped from 50% in 1970, which was up from 45% in late 1950s, to 44% in 1975, 40% in 1978 and 36% in 1979 as the relative importance of wage-earner groups declined. Meanwhile, the income share of the bottom 50% in urban areas dropped from 24% to 23.1% of total income, while the income share of the bottom 50% in rural areas rose from 23.6% to 24%, during the same period (Richards and Waterbury 1990).

Income distribution inequality continued rising. A World Bank case study (2002) on poverty in Egypt demonstrates that the percentage of income/consumption held by the poorest 20% of the Egyptian population has dropped from 9.8% of total income/consumption in 1995 to 7.7% in 2000. Furthermore, the same study also points out that non-poor generally benefitted more than poor from economic growth as poverty (as a percentage of population) has been on an upward trend in compari-

son with the results of the household budget surveys conducted in the following years: 1980/81, 1990/91, 1995/96 and 1999/00. Meanwhile, the share of wages and salaries, property income and transfers in total income of higher income stratus have increased in both urban and rural areas. Therefore, distribution of expenditure in 1999/2000 has been, as expected, skewed in favor of upper income classes, where the richest fifth of the Egyptian population spend nearly half of total consumption expenditure (World Bank and The Ministry of Planning in Egypt 2002).

Table 2.1: Distribution of expenditure by income class in Egypt in 2000

Population deciles (poorest to richest)	1	2	3	4	5	6	7	8	9	10	Total
Percentage of total expenditure	3.20	4.35	5.20	6.03	6.92	8.01	9.32	11.23	14.67	31.11	100

Source: World Bank, 2002.

Given the government control over the oil sector, Suez Canal and distribution and disbursement of foreign aid, as well as its major involvement in the tourism sector, the largest part of current transfers is mostly channeled to households through wages and salaries, social assistance programs and subsidies. The shares of wages and salaries, transfers and property income in the total income of the highest income quintile in northern Egypt (the richer region) have increased between the years 1995 and 2000 (World Bank and The Ministry of Planning in Egypt 2004).

Harik (1992) points out that while subsidies and social programs in Egypt, which amounted to LE 10 billions in 1988 according to the Egyptian government, did initially maintain a social safety net for the poor and helped in elevating poverty, universal application, maladministration and wasteful distribution systems during the subsequent two decades rendered the same subsidies and social programs to benefit non-poor more than it benefits the poor. He concludes that the Egyptian model failed in two areas: First, "it did not increase productivity and it did not reduce exploitation or waste; Second, it did not promote equality in income distribution, rather it confirmed existing divisions" (Harik 1992, p. 495). Several World bank studies (2002, 2004) also concluded that social assistance programs and subsidies were actually more accessible by the non-poor rather than the poor. The World Bank (2004) detailed study of the different social assistance and subsidy programs demonstrate their failure to target the poor.

Table 2.2: Distribution of Transfers in Egypt in the year 2003 (shares of total income)

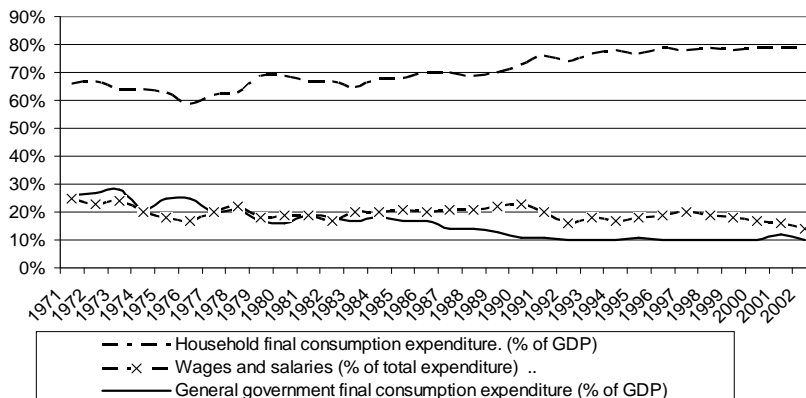
	Transfers from public sources	Transfers from private sources	Total
<b>Non-poor</b>	8.34	6.74	15.08
<b>Poor</b>	5.12	4.87	9.99

Source: World Bank, 2004.

### 3 Patterns of consumption

Conventional wisdom suggests that income elasticities of demand for different sectorial products varies according to income and class status. Furthermore, income elasticity of demand is likely to change for the same households as their income and class status are upgraded. Upper-middle and upper income classes have typically higher income elasticity of demand for services than middle and lower income classes, who have higher income elasticity of demand for agricultural, food and manufactured products. Thus, trends of income distribution equity are expected to play an important role in influencing patterns of consumption expenditure and the composition of domestic demand.

Figure 3.1: Paterns of consumption expenditure and wages in Egypt from 1960 to 2001.



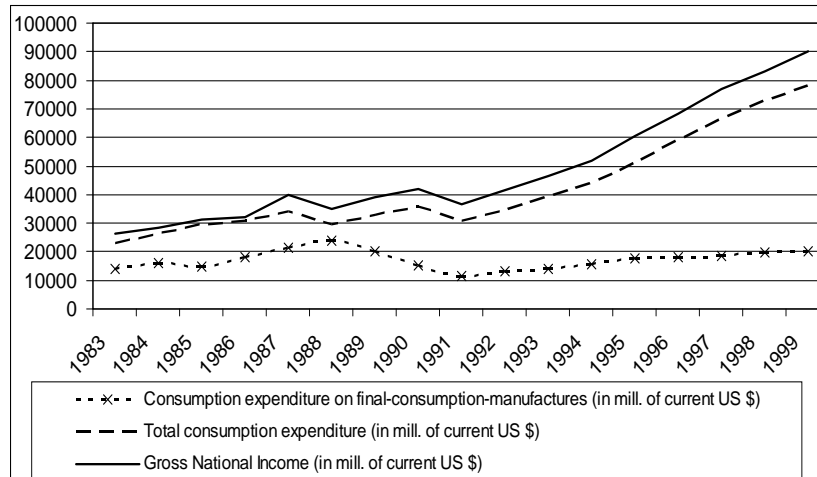
Source: World Development Indicators 2005 CD-ROM, World Bank and CAPMAS-EGY, handbooks of statistics.

While gross national income (GNI) and final consumption expenditure rose steadily, at a rate averaging around 10% and 9% annually, respectively, during the period from 1990 to 2000, estimated expenditure on final-consumption manufacturing goods, in-

cluding imported final-consumption manufactures, grew at a much slower rate, averaging around 1% annually during the same period.

Per capita income and household final consumption expenditure grew significantly in Egypt during the period from 1976 to 2002, during which final consumption expenditure shifted from government to households. Meanwhile, the growth of both agricultural and manufactures shares of GDP were much slower. Yet, there was no significant compensating increase in the share of final-consumption manufactured goods imports in total imports, which averaged around 9% of total imports throughout the period from 1987 to 2002. Such trends strongly suggest a shift in patterns of private consumption behavior in favor of services, whose share of GDP rose significantly during the period from 1976 to 2002.

Figure 3.2: Trends of GNI and final consumption expenditure in Egypt during the period from 1983 to 1999 (current US dollars, mill.)



Source: Author's calculations based on data from UNIDO IDSBS 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM) and World Development Indicators 2005 CD-ROM, World Bank.

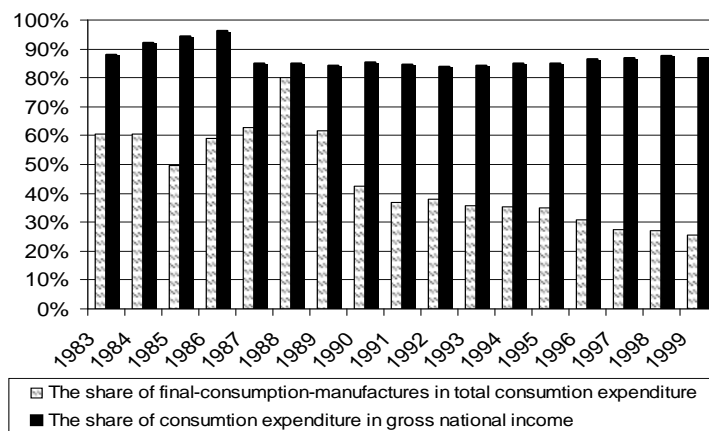
Figure 3.2 shows that during the period from 1983 to 1988 total final consumption expenditure, GNI and consumption expenditure on manufactures rose in parallel, which indicate that the income elasticity of demand for manufacture is only slightly below one<sup>2</sup>. However, starting in 1989 the gap between GNI and final consumption ex-

<sup>2</sup>Domestic consumption expenditure on manufactured goods is estimated as total output plus imports minus exports of manufactured goods. However, since the manufacturing sector produce a wide variety of final-consumption goods, intermediate inputs and capital goods, then it would be more

penditure, on one hand, and consumption expenditure on manufactures, on the other, widened significantly as the latter declined at a faster rate and then stagnated indicating a drop in income elasticity of demand. The three indicators aforementioned dropped twice: First, in 1989 after the first major exchange rate devaluation in decades and adopting a crawling peg rather than fixed exchange rate regime; The second was after the Iraqi invasion of Kuwait and the sudden substantial drop in the flow of workers' remittances, tourism and other geopolitical rents.

The close correlation between GNI, total consumption expenditure and consumption expenditure on final-consumption manufactures during the period from 1983 to 1988, shown in figure 3.2, faded as manufactures consumption expenditure declined while both total final consumption expenditure and GNI continued rising. Consequently, the share of manufactured final-consumption goods declined to 26% of total final consumption expenditure in 1999, down from an average of 55% during the early 1980s and despite the rise in total final consumption expenditure, whose share in GNI reached nearly 90% of gross national income by the year 1999 (Figure 3.3).

Figure 3.3: The share of total final-consumption expenditure in GNI and the share of manufactures in total final consumption expenditure from 1983 to 1999 in Egypt



Source: Author's calculations based on data from UNIDO IDSBS 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM) and World Development Indicators 2005 CD-ROM, World Bank.

During the period from 1983 to 1988, final consumption expenditure rose, primarily, appropriate to use disaggregated 3-level ISIC data, which includes 50 industries that primarily produce final-consumption manufactured goods. Accordingly, domestic final-consumption manufacturing expenditure can be calculated as total output of such industries minus their exports plus imports of similar goods (see Appendix A).

due to the rise in household final consumption expenditure (Figure 3.1). During the same period, the share of final-consumption manufactures in total final consumption averaged around 62%. In 1991, and after signing a deal with the IMF, the Egyptian government launched structural adjustment and privatization programs leading to a reduction in the public sector employment, most of which were manufacturing firms. Workers' remittances did not revive after its decline due to the 1991 Gulf War.

Accordingly, household final consumption declined and, as the government tightened its fiscal policy, in an attempt to reduce government budget deficit, total final consumption expenditure declined as well as GNI. However, the policy package adopted by the government impacted the middle and lower income classes leading to the reduction of their share in final consumption expenditure. Meanwhile, upper income classes were the least effected. Accordingly, the worsening income distribution led to redistributing income from groups with high income elasticity of demand for manufactures to groups with high income elasticity of demand for services.

The point income elasticity of demand for manufacturing output is approximately 0.98, when computed using the simple point-elasticity formula and two points 1983 and 1999<sup>3</sup>, respectively, which is close to the income elasticity of demand for manufactured reported for several countries. Meanwhile, calculating the income elasticity of demand for 1985-89, 1990-95 and 1995-99, using the same formula and the same data, produce declining elasticity as shown in Table 3.1.

Table 3.1: Average estimated income elasticity of demand for final-consumption manufactures and changes in income distribution

	1985-89	1990-95	1995-99
Income point-elasticity of demand	0.96	0.65	0.28
Income share of lower 40% of pop.	23.0	21.9	18.7

Source: Author's calculations based on data from UNIDO IDSBS 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2 and World Development Indicators 2003 and 2005 CD-ROM, World Bank,.

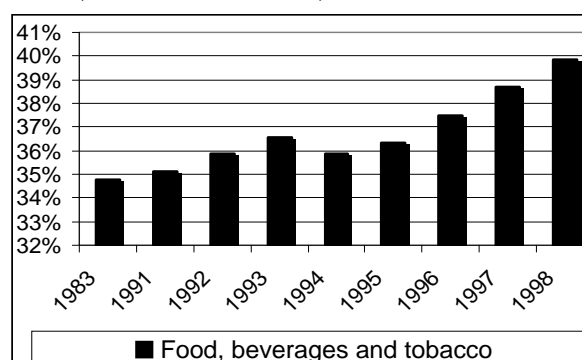
Table 3.1 shows the drop in the income elasticity of demand for manufactures as income distribution worsened during the 1990s. Figure 3.3 shows the decline in the share of final-consumption manufactures to average only 32% of total final consumption expenditure during the period from 1993 to 1999. The break in the parallel correla-

<sup>3</sup>The simple income elasticity of demand for manufacturing can be estimated using the following formula:  $E_{YM} = \frac{dM}{dY} \frac{Y}{M}$ . Where  $Y$  is net national income, and  $M$  is manufacturing final-consumption output.

tion of GNI, total final consumption expenditure and final-consumption manufactures starting in 1992 (as shown in Figure 3.2) is consistent with a drop in income elasticity of demand for manufactures, while the continuing rise in total final consumption expenditure suggests the rise of the share of services since the share agricultural products in total consumption remained roughly constant (World Bank and The Ministry of Planning in Egypt 2004).

However, as the income of lower and middle income classes drops, the share of necessities, such as food products, in their final consumption expenditure rises, while consumption expenditure devoted to less necessary goods, such as household appliances and other consumer durables, is slashed. Accordingly, Figure 3.4 shows the gradual rise in the share of food, beverages and tobacco products in total final-consumption manufactures. In general, the worsening of income distribution, the drop of the share of the lower 50% of population in total income, representing middle and lower income classes, as well as total final consumption expenditure over the last four decades, had a negative impact on the demand for manufactures and gave way to a faster rise of services.

Figure 3.4: The share of food, beverages, and tobacco products in manufacturing final consumption expenditure (Period:1983-1999).



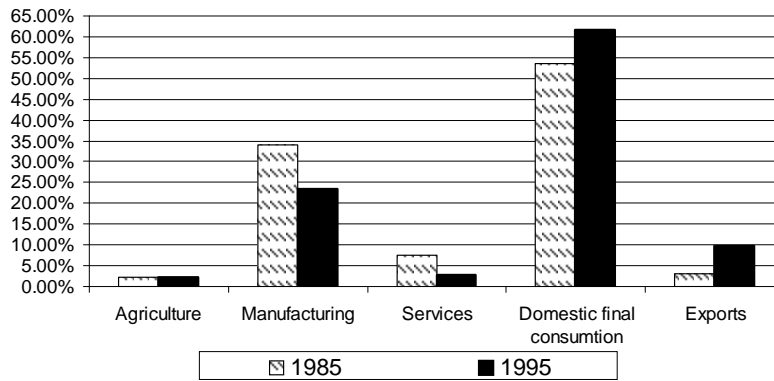
Source: Author's calculations based on data from UNIDO IDSB 2004 rev. 2, Industrial Statistics 2004 level 3, rev. 2.

## 4 Manufacturing demand decomposition

There are two main broad groups of sectors in a given economy. The first is the group contains sectors that are primarily responsible for developing and maintaining factors of production, such as education, R&D, urban planning and development and

the financial sector. The second group contains the main productive sectors, namely, agriculture, industry and services. In the absence of a network of linkages between as well as within such groups, the progress in one sector may not create positive spillover effects in other sectors. Rather, often the progress of one sectors comes at the expense of one or more of the other sectors, creating negative externalities. In Egypt, as well as many developing countries, there is compelling evidence of such weak inter- and intra-sectorial linkages. Accordingly, the flourishing services sector in Egypt failed to generate any positive externalities spillover to the manufacturing sector, and its demand for manufacturing goods declined rather than increased.

Figure 4.1: The decomposition of manufacturing output by sector demand in 1985 and 1995 (shares in total manufacturing output).



Source: Author's calculations based on data from CAPMAS-Egypt, annual handbooks of statistics; Ministry of Planning in Egypt (MP), yearly statistical books; UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM) and Industrial Statistics 2004 (level 3, rev. 2 CD-ROM).

The decomposition of demand for manufacturing sector's output<sup>4</sup> shown in Figure 4.1 reveals that the greatest achievement by the manufacturing sector was increasing

<sup>4</sup>Using data obtained from CAPMAS and the Ministry of Planning in Egypt, as well as disaggregated UNIDO industrial statistics (2005) data, a simple input-output table can be constructed to outline the major sources of demand for the manufacturing sector's output. Accordingly, demand for the manufacturing output can be decomposed into five major sources of demand, namely agriculture sector, services sector, manufacturing sector's own demand for capital and intermediate goods, exports, and public and private demand for final consumption. After isolating all exports of manufactured goods, manufacturing sector output can be disaggregated based on the nature of industry, which determines the use of its output. It is fairly easy then to distinguish final consumption goods from capital and intermediate goods, which can also be characterized into two broad categories, namely intermediate and capital goods used by the agriculture sector (such as fertilizers and agricultural machinery) and intermediates and capital goods used by the manufacturing sector. The services sector demand is calculated as a residual, yet manufactured goods that cater to services and construction are identified and included. Some of the industries, such as computers, office and accounting equip-

the share of exports in total output by 200%, from 3% in 1985 to 10% of total manufacturing output in 1995. However, inter- and intra-sectorial demand for manufactured goods is clearly declining. The agricultural sector remained at its low share of 2% of manufacturing output in both 1985 and 1995. Meanwhile, the share of the manufacturing sector in its own output declined by 31%, from 34% to 24% of total manufacturing output (demand) respectively during the same period.

Meanwhile, the decline in the demand generated by the booming services sector was even more drastic, as it declined by 62% during the same period, clearly indicating the absence of any positive externalities spillover among sectors. It is also clear that the manufacturing sector primarily cater to domestic public and private final consumption. However, given the larger share of private consumption in total consumption expenditure, it is safe to conclude that the manufacturing sector relies mainly on household demand for final consumption. Accordingly, the composition and the growth of demand generated by private consumption are crucial to the overall growth of the manufacturing sector.

## 5 The income offer curve for manufactures

The income elasticity of demand for manufactures may also be estimated through estimating the income offer curve for manufactures using a standard OLS econometric technique. Tracing the shifts of the demand curve for manufacturing as income rises produces an income offer curve that indicates the income elasticity of demand for manufactures.

Table B.1 (Appendix B) shows the regression results for the period from 1983 to 1999 in Egypt, where  $\beta_2 = -0.163917$ , indicating a small negative price effect confirming that income effect dominates over substitution effect. Meanwhile,  $\beta_1 = 0.962790$ , indicating that the income offer curve has a slope in-line with an income elasticity of demand that is slightly below unity. While using linear regression produced a very poor fit, the log regression formula produced a reasonable fit for the data set used with a significant  $R^2 = 0.458798$ , and statistically insignificant standard errors, which indicates

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ment provide for all sectors including final consumption by government and households. Nonetheless, such industries comprise no more than 2% of total manufacturing output on average in both 1985 and 1995. Therefore, including them into one sector's consumption expenditure or distributing their output evenly over all sectors may not change the overall trends, which are the main concern of this exercise (Table A.3).

a nonlinear relationship between income and manufacturing consumption/demand.

Note that domestic demand for manufactures includes imported manufactures. Excluding imports did not result in any significant change as it turned out that imports held a relatively small stable share of the overall market demand for manufactured final-consumption products. Therefore, there is no biasness towards imports as substitution of imports for domestically produced manufactures has been ruled out.

However, such an observation may be interpreted as a decreasing income elasticity of demand for manufactures over the period under analysis. Hence, investigating the change in income elasticity of demand for manufactures as represented by its income offer curve may be better traced by breaking the period from 1983 to 1999 into two periods: 1983-91 and 1991-99. Tables B.2 and B.4 show a reasonably good fit for both log form regression equation with  $R^2 = 0.306080$ ,  $0.921938$ , for 1983-91 and 1991-99 respectively, where the coefficient for income " $\beta_1$ " declines from 0.959 in 1983-91 to 0.927 in 1991-99. Hence, we can conclude that the slope of the income offer curve for manufactures has increased as income rose during the 1990s indicating a decline in income elasticity of demand for manufactures during the 1990s.

Nonetheless, the size of the sample is a serious drawback that may suggest that statistical indicators are not significant enough when breaking it into two separate samples, as each will have no more than 8 observations. Chow's breakpoint tests may be also used to test the stability of coefficient over the entire period. Table B.3 (Appendix B) provides the results of both Chow's breakpoint test and forecast test. Clearly, both tests provide significant evidence to reject the null hypothesis of no structural change in the income offer curve. This empirical evidence strongly suggests a significant change income elasticity of demand for manufactures.

The results of the previous regressions are highly distorted by the wide fluctuation of prices during the period from 1983 to 1999. Several external shocks as well as drastic changes in public policies had a great impact on price levels during this period. Given this, it is perhaps more appropriate to use 1983, which is the first year of the period, constant prices and omit the variable representing the price level from the regression equation<sup>5</sup>.

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<sup>5</sup>The regression equation will represent the slope of the income offer curve, which represents real income elasticity of demand for manufactured goods as follows:  $\log M = \beta \log Y$ ; Where  $E_{YM} = d\frac{\beta}{dt} = d\frac{\log M}{dt} / d\frac{\log Y}{dt}$ ,  $M$  is manufactured consumption in 1983 constant prices and  $Y$  is net national income in 1983 constant prices.

The resulting equation produces a much better fit, with an  $R^2 = 0.6996$ . More importantly, as shown in Table C.1 (Appendix C), the income coefficient drops down to 0.908. Meanwhile, repeating the same previous exercise of breaking the period results into a more drastic drop in income coefficient from 0.941 during the period 1983-90 to 0.874 during the period 1991-99, as shown in tables C.2 and C.3 (Appendix C). Accordingly, differentiating the log-form regression equation indicates a drop in real income elasticity of demand for manufactured goods by approximately 7% from the period 1983-90 to 1991-99.

Furthermore, Chow's breakpoint test in Table C.4 (Appendix C) confirms the significant change in income coefficient in the regression equation, producing more statistically significant indicators than those acquired in the previous regression. More importantly, results in Table C.4 suggest a drastic shift in 1991 as income declined due to the 1990/91 Gulf War with gradual change thereafter. Accordingly, income has a time-varying coefficient, whose path is not captured nor traced through conventional OLS-regression analysis.

It is possible to allow for a time-dependant coefficient by rewriting the regression equation as follows:

$$\log M(t) = \alpha_0 + (\bar{\rho} + s(t)) \log Y(t) \quad (5.1)$$

Accordingly, the whole argument  $(\bar{\rho} + s(t))$  replaces the constant coefficient of  $\log Y$  in the standard regression equation, where  $\bar{\rho}$  reflects the mean of the coefficient of "log Y" over the entire period (1983-1999), while  $s(t)$  is the standard deviation from the standard mean<sup>6</sup>. The equation primarily traces any deviation in coefficient from its standard mean and, accordingly, tests for coefficient time-dependancy (i.e., changes over time) by estimating the time path for the coefficient, which is represented by a constant plus the appropriate smoothing effect. Estimation of time-varying coefficient are made possible and fairly easy using R software package<sup>7</sup>.

The software automatically selects an appropriate smoothing term for  $s(t)$  that produces the best fit for the regression and thereby  $s(t)$  is centered around zero mean, even if it actually has a non-zero mean, so that the effects of the covariates can be identifiable. Table and figure 5.1 show statistically significant deviation in income level

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<sup>6</sup>For illustrations of use, methodology and use of statistical packages see (Greiner and Semmler 2005) and (Flaschel and Semmler 2005).

<sup>7</sup>R software package is available as a downloadable freeware from [www.r-project.org](http://www.r-project.org).

coefficient, where the coefficient significantly drops below its standard mean over time, this confirms the decline of income elasticity of demand for manufactured goods over the period during which income distribution worsened. Although there is not enough data on actual income distribution and inequality indicators such as Gini coefficient and income shares of different classes to use in an econometric estimation, it is clear that the well documented rise in inequality in Egypt was associated with shifts in aggregate expenditure that favored services.

Table 5.1: Time-Varying Coefficient Estimation 1983-99 (1983 constant prices)

<u>Parametric coefficients:</u>				
	<u>Estimate</u>	<u>Std. Error</u>	<u>t. value</u>	<u>Pr. (&gt; t )</u>
(Intercept)	11.4341	0.0015	3.442	0.00833
log(Y)	0.2971	0.0094	8.508	0.00109
Signif. Codes: 0; 0.001; 0.01; 0.05; 0.1; 1				
<u>Approximate significance of smooth terms:</u>				
	<u>Edf.</u>	<u>Est. rank</u>	<u>F-stats.</u>	<u>p-value</u>
s(Year):log(Y)	6.712	9.000	12.81	0.000617
Signif. Codes: 0; 0.001; 0.01; 0.05; 0.1; 1				
R-sq. (adj.) = 0.986		Deviance explained = 99.3%		
GCV score = 0.012725		Scale est. = 0.0062037 n = 17		

Source: Author's calculations based on data from UNIDO IDSBS 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Bank, World Development Indicators 2005 CD-ROM.

## 6 Socioeconomic factors

Unlike most OECD countries where communication and internet related services lead the services' sector boom, traditional services still dominate the service sector while communication, internet related and media services remain minimal. For instance, according to the World Bank Development Indicators in 2003, by the year 2000 internet users in Egypt did not exceed 0.009% of total population, while telephone land lines were only a little over 100 per 1000 people and mobile phone lines did not exceed 43 per 1000 people. Meanwhile, UNDP Human Development Report of 2001 reports that

by 2000, the number of PC users in Egypt did not exceed 1.4% of total population<sup>8</sup>.

Furthermore, compelling evidence suggest that the rise in traditional services including services that were mostly produced within the household, such as child care and housekeeping, may not be attributed to lowering transactional costs or the increasing female participation in the formal labor market. Despite the moderate increase in female participation in the labor force over the past three decades, total female employment remained at 15.4% of total civilian labor force (over 15 years of age) during the period from 1996 to 2001 and did not exceed 16% of total employment by the year 2004, a period during which consumption of household domestic services rose significantly (UNDP, HDR 1996 and 2001). Traditional cultural views, as well as average price tags of services in general, render such family of consumer goods to be considered luxury items by the average Egyptian household. Such consideration applies most to household services but also extends to other services, such as travel for leisure.

On one hand, the largest bulk of consumption expenditure feeding the new market for services traditionally produced within the household is provided by upper income strata. Such income groups in Egypt do not rely on conventional wage income and have the lowest rates of female employment participation in the formal market, as most of households in those income groups rely on single head of household income in addition to non-wage income, such as investment profits, returns on assets and transfers.

On the other hand, most of the two-income households that mainly provide most of the female participants in the labor force fall in the middle and lower income stratus, where consumption expenditure in general and consumption of market-produced household domestic services in particular remain low. Despite the fact that most households in middle and lower income stratus in Egypt rely on both spouses' incomes, households in those income groups still produce domestic services within the household, where quality of services are much higher and cost remains lower than average market prices of such services.

El-Laithy (2003) stresses that women in female-headed households, which constitute on average 16% to 22% of total Egyptian households in Egypt, are still primarily responsible for the production of household services, such as child care, care of the elderly, house keeping, cooking and other household work. She also points out that the poor household on average have "more working heads than the typical household in

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<sup>8</sup>The percentage is computed under the assumption that one user per each PC sold/owned during 2000 and previous years.

Egypt" (El-Laithy 2003, p. 17, 18). As for the majority of Egyptian households near subsistence level of income, the supplementary income of a second or more participants in the labor force becomes essential for the survival of the family as a whole. Working females in such households are still responsible for all housework (Elhamidi 2004). El Hamidi (2004) also stresses that at higher levels of income (wealth), substitution effects dominate over income effects resulting in positively sloped labor supply schedule, as females reduce working hours at higher levels of income. Moreover, at higher levels of income, mostly for upper and upper-middle income classes, most or all of house work is contracted out, while female members of household may or may not re-enter the labor market.

The rapid global spread of consumerism culture and the rise of private and multinational media corporations in Egypt, as well as most of the developing world, promoted western-style patterns of consumption, among which was the contracting of household-produced services. Such patterns of consumption are considered in Egypt to be a sign of social status, wealth and "modern/progressive" behavior. Egyptian upper-income households are keen on extravagantly maintaining such patterns of consumption that reiterate their social status and demonstrate association with the western dominant culture of rich countries. Cost-benefit analysis of transaction and/or opportunity costs hardly plays any role in the Egyptian context, as services offered on the market are mostly of lower quality and on average cost much more than household production.

Amin (1981) warns of the gradual, yet extreme, national cultural degradation and the "westernization" of the Egyptian society giving way to the introduction and promotion of western-style patterns of consumption behavior. He also points out that such promotion of western culture is a marketing device to create a loyal client base for goods and services that advanced economies are keen on selling in the developing countries regardless of the actual economic needs and/or demands of these countries (Amin 1981).

## **7 Does Egypt suffer from Dutch Disease?**

While Egypt has been often cited in the "Dutch Disease" literature as typical case of Dutch Disease in light of the massive influx of income transfers received annually by the Egyptian economy and the associated fast growth and deindustrialization empirical evidence reveal otherwise. First, the Egyptian economy does not depict an open small

economy due to the high tariffs, import quotas, non-tariff trade restrictions as well as the huge import substitution industrial sector (ISI). Second, there very little evidence on long run real exchange appreciation or non-traded goods price overshooting as average prices of manufactured, agricultural and services goods moved on average in very tight correlation (figure D.3 in appendix D). Third, the decline in manufacturing share in aggregate consumption expenditure includes imported manufactures that retained on average a stable share in manufacturing consumption expenditure (did not exceed 25% throughout the period from 1985 to 2002), while the overall import share in aggregate consumption expenditure declined (figures D.2 and D.1 in appendix D). Fourth, the significant positive regression coefficient of 1.164 ( $R^2 - Adjusted = -1.759$ ) in table D.1 (Appendix D) contradicts the Dutch Disease assumption that imported manufactures are substituted for domestically produced manufactures.

## 8 Concluding Remarks

While exports of manufactured goods in Egypt rose during the past two decades, the Egyptian manufacturing sector catered primarily to domestic market. The weakness of inter and intra-sectorial linkages in Egypt leaves the manufacturing sector with one major source of demand: domestic final consumption demand. Thus, the size, nature and growth of domestic demand, more or less, determines the growth of manufacturing. Needless to say, such a domestic market is made up of different income groups with different elasticity of demand for manufactured goods. Conventional wisdom suggests that higher income groups have relatively higher income elasticity of demand for services and lower income elasticity of demand for manufactures, while the opposite applies for middle and lower income groups. Thus, income distribution plays a crucial role in determining the size and growth of domestic demand for manufactures.

Empirical evidence confirm an income elasticity of demand for final-consumption manufactured goods that is below unity. Furthermore, such elasticity declines over time in a strong correlation with the decline in equality of income distribution in Egypt. A rise in income fueled by current inflows was associated with worsening income distribution and a rise in demand for services mainly driven by upper income classes, whose share of income and consumption expenditure increased significantly. Meanwhile, the decline in the share of middle and lower income groups in both income and consumption expenditure had an adverse effect on domestic demand for manufacturing

sector's output, which primarily cater to domestic final consumption, given the decline in demand for manufactures by other sectors including the manufacturing sector's own demand for its output.

Such patterns of income distribution and their reinforcement by the unequal distribution of transfers induced inflationary patterns of consumption as the rich minority bed up the prices of goods and services. As a result, a higher demand for services and luxury consumer goods was generated by the unequal distribution of consumption expenditure, where the richest minority control over half of total consumption expenditure. On the other hand, the small incremental income increases received by the poor majority only feed into higher demand for food products and low quality clothes, but fall short of creating any significant demand for most manufacturing products that carry an average price tag nearly equal to one year salary.

Accordingly, income distribution may significantly influence the composition of growth by influencing the composition of aggregate demand and consumption expenditure. However, one should treat such results with great caution as income distribution equality and growth composition are interlinked. In other words, and particularly in the case of Egypt, worsening income distribution led to a decline in the demand for manufactures. As a result, the share of the shrinking manufacturing sector in both total employment and wages dropped significantly, feeding into farther worsening income distribution since most of non-executive jobs in the manufacturing sector are held by members of the middle and lower income classes.

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A

## A Appendix A

Table A.1: Domestic demand for imported and domestic final-consumption manufactured goods.

Year	Final-consumption Manufactures (in current US\$, mill.)	
	<u>Imports</u>	<u>Domestic</u>
1981	3921478	NA
1982	3834902	NA
1983	4347865	9631.255
1984	4846538	11056.11
1985	2160693	12568.16
1986	3416493	14813.95
1987	2903158	18383.47
1988	3170548	20585.81
1989	2693009	17675.79
1990	3264226	11997.37
1991	2520400	8893.674
1992	2685819	10520.75
1993	2753438	11355.94
1994	3158602	12340.02
1995	4017924	13844.98
1996	4111510	14052.87
1997	4545380	13920.49
1998	5181979	14474.28
1999	5151497	14817.47
2001	4132593	NA
2002	3792507	NA

Source: Author's calculations based on data from UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM) and World Development Indicators 2005 CD-ROM, World Bank.

Table A.2: - Manufacturing final-consumption expenditure

<b>Year</b>	<b>Estimated Consumption</b>
1983	13979.12
1984	15902.6505
1985	14728.853
1986	18230.439
1987	21286.631
1988	23756.3615
1989	20368.795
1990	15261.5935
1991	11414.074
1992	13206.568
1993	14109.381
1994	15498.618
1995	17862.902
1996	18164.3845
1997	18465.867
1998	19656.262
1999	19968.962

Source: Author's calculations based on data from UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM), and CAPMAS-Egypt, handbooks of statistics.

Table A.3: - Manufacturing demand decomposition

	1985	1995	% Change
Agriculture	2.159%	2.158%	-0.0004
Manufacturing	34.017%	23.544%	-0.3079
Services	7.398%	2.785%	-0.6235
Domestic final consumption	53.485%	61.730%	0.1541
Exports	2.940%	9.783%	2.3270
Total	100.000%	100.000%	

Source: Author's calculations based on data from UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM), and CAPMAS-Egypt, handbooks of statistics.

Table A.4: National income, manufactured consumption and price indices in Egypt during the period 1983-1999.

Year	M	NI	CPI of M	CPI	M in 1983 constant \$	NI in 1983 constant \$
1983	13979.12	26259.14	1	1.00	13,979.12	26,259.14
1984	15902.6505	28579.88	1.053486299	1.19	15,095.26	24,067.26
1985	14728.853	31405.61	1.110436442	1.31	13,264.02	23,928.08
1986	18230.439	32067.54	1.162623817	1.63	15,680.43	19,733.87
1987	21286.631	39986.08	1.999250888	1.94	10,647.30	20,637.98
1988	23756.3615	34836.22	2.376729198	2.31	9,995.40	15,064.31
1989	20368.795	39138.81	2.831280474	2.81	7,194.20	13,916.02
1990	15261.5935	42025.30	3.255189811	3.25	4,688.39	12,930.86
1991	11414.074	36607.85	3.408101542	3.94	3,349.10	9,297.23
1992	13206.568	41530.82	4.048870023	4.44	3,261.79	9,359.06
1993	14109.381	46624.78	4.421887566	5.00	3,190.81	9,324.96
1994	15498.618	51775.98	4.871853477	5.38	3,181.26	9,632.74
1995	17862.902	60300.17	5.379233781	6.25	3,320.71	9,648.03
1996	18164.3845	68190.32	5.695140274	6.69	3,189.45	10,196.68
1997	18465.867	76838.65	6.009721097	7.00	3,072.67	10,976.95
1998	19656.262	83299.63	6.268099343	7.31	3,135.92	11,391.40
1999	19968.962	90094.64	6.468563862	7.50	3,087.08	12,012.62

Source: Author's calculations based on data from UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM), and CAPMAS-Egypt, handbooks of statistics.

## B Appendix B

The following regression equation represents the income offer curve for manufacturing domestic consumption and the individual demand curves for manufacturing, as manufacturing consumption expenditure regressed over net national income and own-price levels (consumer price index for manufactured goods). Manufacturing domestic consumption expenditure includes imports of manufactured final-consumption goods and excludes exports of manufactured goods, which represent the foreign demand for

manufacturing output.

$$\log M = \beta_1 \log Y + \beta_2 P_M \quad (\text{B.1})$$

Where  $M$  is total manufacturing consumption expenditure,  $Y$  is net national income and  $P_M$  is the price level (consumer price index for manufactured goods).

Table B.1: Regression results table for the period 1983-99

Dependent Variable: EGYLNMANFCONS				
Method: Least Squares				
Date: 04/25/06 Time: 13:33				
Sample: 1983 1999				
Included observations: 17				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNNI	0.962790	0.007621	126.3273	0.0000
EGYMANFCPI	-0.163917	0.020049	-8.175755	0.0000
R-squared	0.458798	Mean dependent var		9.733406
Adjusted R-squared	0.422718	S.D. dependent var		0.193727
S.E. of regression	0.147192	Akaike info criterion		-0.884030
Sum squared resid	0.324981	Schwarz criterion		-0.786005
Log likelihood	9.514253	F-statistic		12.71609
Durbin-Watson stat	1.041915	Prob(F-statistic)		0.002816

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Development Indicators 2005 CD-ROM, World Bank.

Table B.2: Regression results table for the period 1983-91

Dependent Variable: EGYLNMANFCONS				
Method: Least Squares				
Date: 04/25/06 Time: 13:39				
Sample: 1983 1991				
Included observations: 9				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNNI	0.959316	0.016248	59.04135	0.0000
EGYMANFCPI	-0.140539	0.076228	-1.843667	0.1078
R-squared	0.306080	Mean dependent var.		9.729652
Adjusted R-squared	0.206949	S.D. dependent var.		0.232538
S.E. of regression	0.207083	Akaike info criterion		-0.118265
Sum squared resid	0.300183	Schwarz criterion		-0.074437
Log likelihood	2.532193	F-statistic		3.087619
Durbin-Watson stat	1.023191	Prob. (F-statistic)		0.122308

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Bank, World Development Indicators 2005 CD-ROM.

Table B.3: Chow's breakpoint and forecast tests results

Chow Breakpoint Test: 1990				
F-statistic	15.76890	Probability	0.000334	
Log likelihood ratio	20.93361	Probability	0.000028	
Chow Forecast Test: Forecast from 1990 to 1999				
F-statistic	1.906894	Probability	0.246754	
Log likelihood ratio	26.71523	Probability	0.002888	
Test Equation:				
Dependent Variable: EGYLNMNANFCONS				
Method: Least Squares				
Date: 04/25/06 Time: 13:42				
Sample: 1983 1989				
Included observations: 7				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNNI	0.932489	0.011213	83.16494	0.0000
EGYMANFCPI	0.061376	0.065253	0.940583	0.3901
R-squared	0.718764	Mean dependent var.	9.798739	
Adjusted R-squared	0.662516	S.D. dependent var.	0.200020	
S.E. of regression	0.116199	Akaike info criterion	-1.232076	
Sum squared resid.	0.067511	Schwarz criterion	-1.247531	
Log likelihood	6.312267	F-statistic	12.77864	
Durbin-Watson stat	3.078072	Prob. (F-statistic)	0.015964	

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Development Indicators 2005 CD-ROM, World Bank.

Table B.4: Regression results table for the period 1991-99

Dependent Variable: EGYLNMNANFCONS				
Method: Least Squares				
Date: 04/22/06 Time: 15:50				
Sample: 1991 1999				
Included observations: 9				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNNI	0.926679	0.010928	84.79890	0.0000
EGYMANFCPI	-0.094062	0.022791	-4.127194	0.0044
R-squared	0.921938	Mean dependent var.	9.693738	
Adjusted R-squared	0.910787	S.D. dependent var.	0.195681	
S.E. of regression	0.058447	Akaike info criterion	-2.648256	
Sum squared resid	0.023913	Schwarz criterion	-2.604428	
Log likelihood	13.91715	F-statistic	82.67255	
Durbin-Watson stat	0.928126	Prob. (F-statistic)	0.000040	

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Development Indicators 2005 CD-ROM, World Bank.

## C Appendix C

Table C.1: - Regression results table for the period 1983-99 (1983 constant prices)

Dependent Variable: EGYLNCONMANCONS				
Method: Least Squares				
Date: 04/25/06 Time: 15:27				
Sample: 1983 1999				
Included observations: 17				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNCONNI	0.908051	0.009425	96.34580	0.0000
R-squared	0.699615	Mean dependent var		8.633429
Adjusted R-squared	0.699615	S.D. dependent var		0.675475
S.E. of regression	0.370210	Akaike info criterion		0.907531
Sum squared resid	2.192890	Schwarz criterion		0.956544
Log likelihood	-6.714015	Durbin-Watson stat		0.280468

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Development Indicators 2005 CD-ROM, World Bank.

Table C.2: Regression results table for the period 1983-90 (1983 constant prices)

Dependent Variable: EGYLNCONMANCONS				
Method: Least Squares				
Date: 04/25/06 Time: 15:30				
Sample: 1983 1990				
Included observations: 8				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNCONNI	0.941078	0.008473	111.0722	0.0000
R-squared	0.681201	Mean dependent var.		9.267157
Adjusted R-squared	0.681201	S.D. dependent var.		0.418206
S.E. of regression	0.236129	Akaike info criterion		0.067592
Sum squared resid.	0.390299	Schwarz criterion		0.077522
Log likelihood	0.729631	Durbin-Watson stat		1.522808

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Bank, World Development Indicators 2005 CD-ROM.

Table C.3: Regression results table for the period 1991-99 (1983 constant prices)

Dependent Variable: EGYLNCONMANCONS				
Method: Least Squares				
Date: 04/25/06 Time: 15:35				
Sample: 1991 1999				
Included observations: 9				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNCONNI	0.874572	0.003969	220.3445	0.0000
R-squared	-12.398220	Mean dependent var	8.070116	
Adjusted R-squared	-12.398220	S.D. dependent var	0.030015	
S.E. of regression	0.109867	Akaike info criterion	-1.474660	
Sum squared resid	0.096565	Schwarz criterion	-1.452747	
Log likelihood	7.635972	Durbin-Watson stat	0.272719	

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Development Indicators 2005 CD-ROM, World Bank.

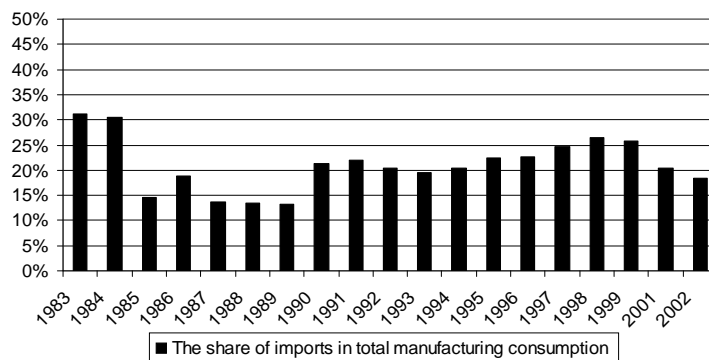
Table C.4: Chow's breakpoint test results

Chow Breakpoint Test: 1991			
F-statistic	52.56170	Probability	0.000003
Log likelihood ratio	25.58485	Probability	0.000000
Chow Breakpoint Test: 1993			
F-statistic	22.97163	Probability	0.000237
Log likelihood ratio	15.78942	Probability	0.000071
Chow Breakpoint Test: 1995			
F-statistic	12.24970	Probability	0.003224
Log likelihood ratio	10.14887	Probability	0.001444

Source: Author's calculations based on data from UNIDO IDSB 2004 level 3, rev. 2, Industrial Statistics 2004 rev. 2, CAPMAS-Egypt, handbooks of statistics and World Development Indicators 2005 CD-ROM, World Bank.

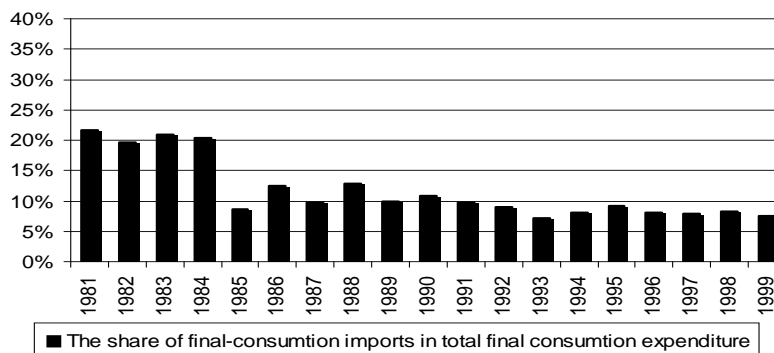
## D Appendix D

Figure D.1: The share of final-consumption imported manufactures in total manufacturing consumption (period: 1983-2002).



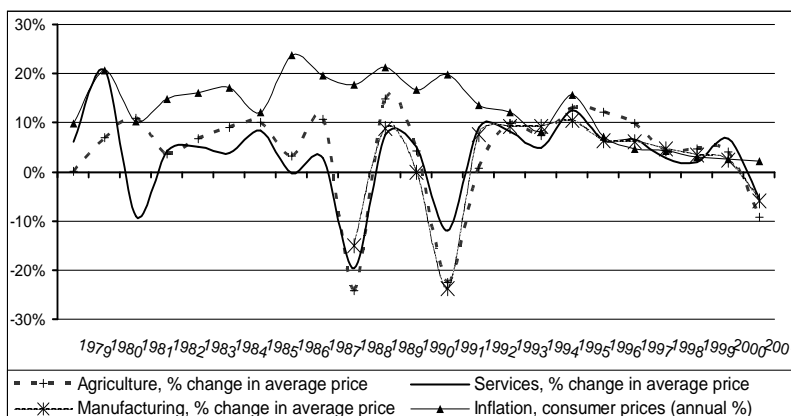
Source: Author's calculations based on data from UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM) and World Development Indicators 2005 CD-ROM, World Bank.

Figure D.2: The share of imports in total manufactured final-consumption goods expenditure (period: 1981-1999).



Source: Author's calculations based on data from UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM) and World Development Indicators 2005 CD-ROM, World Bank.

Figure D.3: Growth rates of average market prices (consumer price indexes) by sector in Egypt from 1979 to 2001 (annual percentage change).



Source: Author's calculations based on data from World Development Indicators 2005 CD-ROM, World Bank.

Table D.1: Demand for domestic and imported final consumption manufactures (regression results table)

Dependent Variable: EGYLNMANFCONDOM				
Method: Least Squares				
Date: 04/27/06 Time: 19:39				
Sample(adjusted): 1983 1999				
Included observations: 17 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGYLNMANFIMP	1.163578	0.011137	104.4748	0.0000
R-squared	-1.758895	Mean dependent var.		9.492534
Adjusted R-squared	-1.758895	S.D. dependent var.		0.225437
S.E. of regression	0.374449	Akaike info criterion		0.930299
Sum squared resid.	2.243389	Schwarz criterion		0.979311
Log likelihood	-6.907538	Durbin-Watson stat		0.842769

Source: Author's calculations based on data from UNIDO IDSB 2004 (level 3, rev. 2 CD-ROM), Industrial Statistics 2004 (level 3, rev. 2 CD-ROM) and World Development Indicators 2005 CD-ROM, World Bank.