Furniture Industry Assessment: Trade Policy and Market Opportunities

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Furniture Industry Assessment
Trade Policy and Market Opportunities

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Table of Contents

Tables

Figures

Acronyms

CAD	Computer aided design
CAM	Computer aided manufacture
CAPMAS	Central Agency for Public Mobilization and Statistics
CES	Constant-elasticity-of-substitution (function)
DEPRA	Development Economic Policy Reform Analysis Project
DW	Durbin-Watson (test)
ECM	Error-correction mechanism
ERP	Effective rate of protection
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
GOI	General Organization for Industrialization
HS	Harmonized System
ISIC	International Standard Industrial Classification (system)
MFN	Most favored nation
NRP	Nominal rate of protection
NTM	Non-tariff measure
REER	Real effective exchange rate
RER	Real exchange rate
SAM	Social accounting matrix
SIC	Standard Industrial Classification (system)
SITC	Standard International Trade Classification (system)
UNICC	United Nations International Computing Center
UNIDO	United Nations Industrial Development Organization

Executive Summary

The Furniture Industry in Egypt

Egypt has a long tradition of furniture making and woodworking that, in conjunction with its competitive wages, could give the furniture industry a comparative advantage in the global furniture market. At present, however, the wood furniture industry accounts for only a small fraction of the country's total industrial output, and even that share is less that half of what it was a decade ago. In contrast, other industries have flourished, most notably food products, refined petroleum, non-metallic mineral products, non-electrical machinery and apparel.

Despite this situation, the furniture industry remains a vital part of the economy. It supports a number of other economic activities through its linkages to other industries, especially wood and wood products, chemical products and metal parts, as well as research and development activities and the development of craftsmanship in the industry. Moreover, the industry's performance has improved measurably in both its capital and labor utilization during the 1990s. The ratio of capital to output has fallen, indicating that the amount of capital needed to produce each LE of output has decreased. At the same time that capital efficiency has increased (by 28 percent in the 1990s), the industry has become more capital intensive as the ratio of capital to labor has increased.

To remain competitive, furniture manufacturers need ready access to both inexpensive skilled and unskilled labor and material inputs. Producers are highly dependent on imported wood for raw materials, as well as a number of intermediate products that include paints and varnishes, glues, metal fittings, woodworking electrical and non-electrical equipment, upholstery material and plastics. As the principal input, wood needs to be available in large and varied quantities and the quality needs to be high. Upholstered furniture requires a broad spectrum of materials such as cotton, polyesters, and acrylics, as well as plastic materials. Similarly, ready supplies of glues, paints and varnishes are also needed. Finally, the industry relies heavily on woodworking machinery, which is essential for the technological progress of new and existing industry segments. In all these areas, Egypt relies on foreign supplies for its material inputs to furniture production.

In contrast, exports currently represent only a relatively small proportion of total domestic production. Household furniture, especially for the bedroom, is the major type of furniture exported, while office and kitchen furniture represents a relatively small proportion of the total. Exports of all types of wood furniture are distributed among the three global regional markets of the Middle East, the European Union (EU), and North America. Together these three regional markets absorb 75 percent of Egypt's total wood furniture exports. The two regional markets of North America and Europe are the world's largest markets, accounting for over 90 percent of total world imports. The other important market for Egypt is Russia, although this market has contracted sharply during the 1990s. The fastest growing market has been the Middle East, followed by North America and, in particular, the United States. Exports to the EU market have

also expanded, but at about two-thirds the rate of export growth to the North American market, and less than one-half of that to the Middle East.

The Policy Environment and Its Consequences

Import substitution policies have attempted to reverse the decline of furniture manufacturing activities. Furniture manufacturing remains one of the most highly protected industries in Egypt. Although the nominal rate of protection (NRP) for that industry was lowered from 50 percent in 1997 to 40 percent under Presidential Decree No./1998, its rate remains the fourth highest of all manufacturing categories. Only so-called luxury items such as automobiles, liquor and tobacco have higher rates. The mean average tariff for all manufacturing activities is just over 25 percent.

The effective rate of protection (ERP) for the wood furniture industry is also very high, averaging 216 percent for the industry as a whole. Moreover, the ERP for the private sector, which dominates the industry, is more than twice as high as that of the public sector. For the private sector the ERP is 219 percent, while that for the public sector is 106 percent. Tradables inputs represent the bulk of the costs of intermediate goods and services and consequently dominate the industry's capacity to generate value added. For material inputs, the production-weighted average tariff is 25 percent for the private sector, while that on finished goods is 40 percent. As a result, the value added of the private sector at domestic equivalent prices is much higher than the value added at border equivalent prices.

Impact Assessment of Tariff Policies

The effect of high import tariffs on furniture products has been to lower overall imports considerably below what they would otherwise have been with growing consumer demand in Egypt. Calculations using partial equilibrium analysis show that the 40 percent tariff on furniture imports reduces the value of imports by $US3.9 million below what it would otherwise have been without protection afforded to the industry. The loss of consumer welfare is US$0.8 million. Overall, the 40 percent tariff has led to a 49 percent decline in the volume of imports, which together with the rise in prices, has reduced the value of imports by 29 percent.

The partial equilibrium approach excludes consideration of feedback effects between the external and domestic sectors, and therefore fails to take into account the sectoral adjustments that would accompany trade liberalization. Tariff cuts in the furniture industry would probably influence the industries that provide both materials and other inputs to the industry through changes in relative prices of factors of production and the final products themselves. These linkages would, in turn, affect the allocation of domestic resources and influence the competitive position of Egypt's furniture products in the domestic and foreign markets.

A rough approximation of the effect on exports of the tariff on both furniture and their inputs is the so-called 'anti-export bias' estimate. The results of these calculations indicate that the anti-export bias on wood furniture in mid-1999 equals 12 percent compared with an average calculated by an earlier DEPRA study of 20 percent for all activities in Egypt in 1997. This rate

is also substantially lower that the 46 percent anti-export bias for the furniture industry in 1997. The large reduction in the anti-export bias in 1999 is the result of a cut in the tariff on furniture imports from 50 percent in 1997 to 40 percent in 1999, and an export subsidy rate of 2.5 percent calculated by the earlier DEPRA study for 1997 compared with a 25 percent export subsidy rate calculated in the present study for 1999.

Although the calculations show that the bias against exports of furniture has recently decreased, the export bias measure is defined in such a way that it assumes that the duty drawback system is operating efficiently and that exporters are using it. If the duty drawback system were efficient and invoked by producers, then they would derive substantially greater benefits under the present tariff schedule than in the past. However, this does not appear to be the case. Informal discussions with producers reveal that the system is too cumbersome to use since it involves extensive administrative and bureaucratic requirements needed to obtain refunds. Under these conditions, the anti-export bias without the drawback system being invoked would simply equal the nominal rate of protection on furniture, that is, 40 percent. If this is the case, then customs regulations, tariffs and duty drawback system have increased the cost of production and thereby lowered the ability and willingness of furniture manufacturers to compete in the global marketplace.

Factors Affecting the Demand for Furniture

Foreign demand for Egypt's furniture exports depends on two decision levels of the consumer. The first is the total amount of furniture that will be demanded by consumers based on income, price and demographic factors. The second is the amount that will be purchased from different domestic and foreign suppliers based on their relative prices. In the foreign markets, there is a strong income-related response in the demand for wood furniture in the global market. On average, the income elasticity is greater than unity, and the average income elasticity is 1.7. As expected, the Middle East has the highest income elasticity of the three global regional markets, reflecting the strong emerging demand for durable goods in that region. Within Europe there are also individual markets with strong demand prospects, particularly in Belgium and Austria. The US market has an income elasticity of 1.2, reflecting a relatively robust market. In Egypt import demand has a short-term price elasticity of –0.89 and a long-term price elasticity of –2.0. This relatively strong price responsiveness has important implications for tariff-related policies.

The demand for Egypt's exports of furniture has been affected by the country's declining international competitiveness based on the real exchange rate of the LE. The decline since 1991 has been more significant in the EU market than in those of the United States and the Middle East. As a result, Egyptian furniture producers face a relatively more favorable position in the US and Middle East markets than they do in the EU market. The effect of Egypt's real effective exchange rate on its international competitiveness and the export demand for furniture are statistically significant in the global market and a number of regional markets. It is especially important in the US market in the long run. In contrast, Egypt's international competitiveness has only a short-term effect in both the EU and Middle East markets. The long-term effect may, nevertheless be significant in individual markets within those regions. Specifically, the long-run competitive price elasticity of demand for exports is equal to 1.5 in the global market, and in the

US market it equals 1.3. In the short run, the competitive price elasticity ranges from 0.2 to 1.5. The results of the estimated export demand relationships also confirm expectations about the relatively high income elasticities of export demand for Egypt's furniture exports. These results suggest that Egypt could significantly affect the demand for its furniture exports in the global market, as well as particular export markets such as the United States, by improving its international competitiveness based on the real exchange rate of the LE

Recommendations

These findings point to a number of policy recommendations for the furniture industry in Egypt. The recommended policy initiatives are designed to strengthen exports of the furniture industry by improving the trade environment, lowering costs and improving efficiency. To be effective, these initiatives need to be viewed as an integral part of the country's overall economic policies and structural reforms. The specific recommendations presented in Box 7.1 aim to support the opening up of Egypt's furniture industry through initiatives in the areas of legislative and regulatory measures, trade liberalization, information support, exchange rate policies, and enhancement of foreign direct investment (FDI) inflows.

As part of these initiatives, it is important to note that industry-level analysis requires fairly detailed information that is not currently available. The primary source of industry-level statistics is CAPMAS. However, the information available from this agency often needs to be supplemented by industry data from UNIDO and the United Nations. Production data for industry sub-sector or segments are available from CAPMAS, but data on their material inputs are unavailable. Moreover, data reliability for industry segments, as well as that at the industry level, remains questionable, and there are large discrepancies between the information provided by different sources of data, notwithstanding the use of the same nomenclatures. Improved access to data and greater data reliability therefore remain an important priority for the country.

Box 7.1 **Recommend Policy Initiatives to Stimulate Export Growth of Furniture Industry**		
Existing Challenge	**Recommended Actions**	**Expected Impact / Benefits**
Tariffs on Final Products 1. 40% tariff rate on furniture imports is fourth highest of all manufacturing categories 2. FDI and technology transfer potential is limited due to high import tariffs	**Low tariffs to allow for FDI inflows and technology transfers.**	• Will help to develop furniture industry by stimulating competition • Will increase productivity of industry through technological improvements associated with FDI inflows • Will raise consumer welfare
Duty Drawback System 1. System is too cumbersome to use effectively 2. Tariffs and duty drawback system have increased the cost of production	**Improve the drawback system, including the information flow between public and private sectors**	• Will encourage production and expand exports • Will improve understanding between private and public sectors
Exchange Rate Policies 1. Egypt's international competitiveness has declined since 1991 based on the real exchange rate of the LE 2. Demand for Egypt's exports of furniture have been affected in the global furniture market	**Examine effect of real exchange rate appreciation on specific industries, especially as they affect international competitiveness, and consider exchange rate compensatory mechanisms to improve international competitiveness of exports**	• Will expand demand for exports of furniture • Will increase the market shares of Egyptian furniture exporters in the global market
Tariffs on Inputs 1. Tradables inputs represent the bulk of the costs of intermediate goods and services. 2. The overall tariff on furniture inputs is high	**Lower or eliminate tariffs on inputs to reduce cost of production in furniture industry**	• Will reduce production costs of industry and increase efficiency • Will attract FDI and stimulate industry's international competitive.
Information System 1. Data on furniture market are lacking 2. Existing data are often unreliable 3. Access to existing data is limited	**Improve data collection, reliability and dissemination of information on furniture industry and industry segments**	• Will improve market information and producers will have a better under-standing of the domestic and foreign market • Will stimulate FDI inflows as information on industry becomes more accessible

I. Introduction

The present study on trade policies and markets for Egypt's wood furniture examines the mechanisms for enhancing exports through policy changes and the development of market leads. The analysis focuses on wood furniture and excludes that made primarily of metal. Where data permit, the study examines the major market segments of the industry with a view to identify efficient production activities and internationally competitive export products within the industry.

The present study relies heavily on earlier works by the Development Economic Policy Reform Analysis Project (DEPRA) on the performance of Egypt's exports and their response to macroeconomic and trade policy reforms. Two recent studies are particularly important. The first one is entitled *Enhancing Egypt's Exports* (DEPRA, 1999) and examines the steps that the Government of Egypt could take to lock in high and sustainable economic growth rates. It addresses various tariff and non-tariff barriers to trade and regulatory impediments that impact on the real costs of producing and marketing export-oriented products. It also examines several industries, including wooden furniture, in terms of their 'revealed' comparative advantage and efficiency indicators. Where data permit, these measures at the industry level are applied to the furniture industry's major market segments in this report.

The second DEPRA study is entitled *Effective Rates of Protection in Egypt* (1998) (ERPs) and derives measures of how trade barriers on final products and their tradable inputs jointly affect value-added in particular activities. Because published data from the CAPMAS survey of manufacturing are insufficient for computing ERPs, the study shows how computations can instead be derived using expert knowledge on an industry, in this case the leather shoe industry. Since the same data limitations confront the analysis of the furniture industry as that of the leather shoe industry, this procedure is adopted for the present study.

The present study is part of a broad analysis of the furniture industry conducted in Egypt between July and August 1999 by a team from Nathan Associates, Inc. It was prepared by Dr. Montague Lord, Nathan Associates Inc. consultant, under the direction of Dr. Rollo Ehrich, DEPRA/Ministry of Trade and Supply Advisor, and Dr. Hafiz Shaltout, USAID/COTR. Dr. Omar Salman provided local support in data gathering and computation. The study benefited greatly from the extensive data and information provided by Dr. Suzanne Messiha and the Comp Team of DEPRA. Dr. Stuart Callison also provided oversight of the work and his work on the real effective exchange rate on Egypt was used in the present study. Dr. Maurice Thorne's work on the effective rate of protection in the shoe industry was applied to the furniture industry. Dr. John Suomela's work on tariff impact assessments was used in the evaluation of tariff policy effects on the furniture industry, and Dr. James Walker provided valuable insights into the impact of the real effective exchange rate on Egypt's exports.

The study is organized as follows:

- Chapter 1: Introduction

  The chapter describes the scope and objective of the study, earlier works related to the present investigation, and the scheme of the study.

- Chapter 2: The Furniture Industry in Egypt

  This chapter describes the importance of the furniture industry to Egypt, examines the production characteristics of the industry, considers the major inputs to the industry, analyzes the major foreign markets, and discusses data.

- Chapter 3: Market Determinants

  This chapter assesses the productivity of the wood furniture industry in Egypt and producer responsiveness to price incentives, and it analyzes the factors affecting the demand for furniture in terms of foreign and domestic import demand and the demand for Egypt's furniture exports.

- Chapter 4: The Policy Environment and Its Consequences

  The chapter analyzes the level of nominal and effective protection in the wood furniture industry and it evaluates the impact of tariff policies on imports, consumer welfare and exports of the industry.

- Chapter 5: Summary and Recommendations

  The chapter draws on the major findings of the study to set out a number of policy recommendations to expand Egypt's furniture exports.

- The Technical Appendix presents the details of the quantitative methodologies used in the study.

- The Statistical Appendix contains basic statistics.

- The References presented at the end of the report list the documents and studies used in the preparation of this report.

II. The Furniture Industry in Egypt

A. Importance to Egypt's Output and Employment

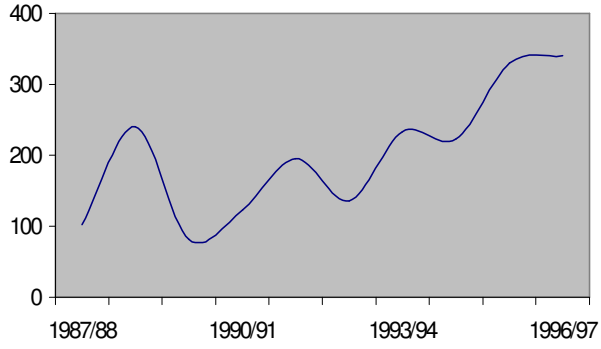
The furniture industry in Egypt is primarily oriented towards the production of wood-based furniture, which is also the most developed sector of the industry. Wood furniture is often classified into three broad categories: (1) wood furniture for office, (2) wood furniture for home, and (3) other types of wood furniture. Within the category of home furniture, there is a further breakdown into (a) wood furniture for kitchen use, and (b) wood furniture for use in the bedroom.

Although the wood furniture industry plays a relatively small role in Egypt's overall industrial activity, the long tradition of furniture making and woodworking combined with competitive wages of the sector could provide the industry with a comparative advantage in the world market. At present, the wood furniture industry accounts for about 0.3 percent of the country's total industrial output. Its contribution to overall output has fallen from 0.65 percent a decade ago as a number of other industries have flourished, most notably food products, refined petroleum, non-metallic mineral products, non-electrical machinery, and apparel. Nevertheless, the furniture industry supports a number of other activities through its linkages to other industries, especially wood and wood products, chemical products, and metal parts, as well as research and development activities and the development of craftsmanship in the industry.

The industry is composed of many establishments that reflect the large number of small and medium-size enterprises operating in Egypt. Only about 10 percent of the firms are large in size but these few account for near three-fourths of total output from the industry. Small and medium-size firms, which represent nearly 90 percent of the total number of establishments in the industry, produce the remaining 25 percent of output. About 40 percent of the furniture is made in the Nile Delta town of Damietta, and most of the remaining output originates in factories and workshops located in Cairo and Alexandria.

Despite its relative decline in importance, the furniture industry continues to employ about the same proportion of total available workers as it did a decade ago. The industry employed over 11,000 workers in 1995/96, according to data from the Central Agency for Public Mobilization and

Figure 2.1
Egypt's Furniture Production
(millions of LE)



Statistics (CAPMAS). As a result, employment expanded by 3.7 percent a year between 1985 and 1995, notwithstanding a contraction in the constant dollar value added of the industry by 0.9 percent a year during that period.

B. Production Characteristics

1. Supply and Distribution

The Egyptian furniture industry has expanded in the last decade, albeit it in a rather uneven manner and in only the domestic market. Between fiscal 1987/88 and 1995/96 overall production rose from LE 102.7 million to LE 329.4 million, which represents an average annual growth rate of over 30 percent for the period. However, year-to-year variations during this time have been large, ranging from –66 to 133 percent (see Table 2.1 and Figure 2.1).

Table 2.1
Furniture Production and Trade in Egypt, 1987/88-1995/96
(thousands of LE)

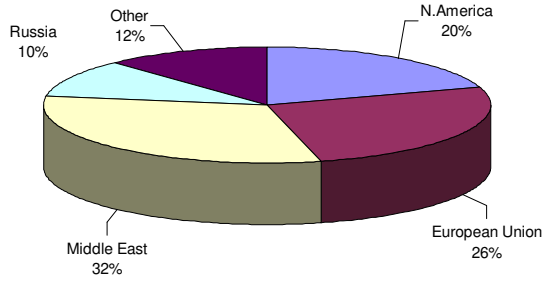
	Production	Imports	Exports
1987/88	102,722	2,306	2,856
1988/89	239,667	1,849	8,495
1989/90	81,867	1,518	16,708
1990/91	123,338	4,492	87,090
1991/92	195,784	8,475	101,985
1992/93	135,458	11,286	57,731
1993/94	233,350	10,772	48,059
1994/95	222,747	26,169	37,407
1995/96	329,351	26,703	33,002
1996/97	339,869	36,170	34,066

Note: Fiscal year is July 1 to June 30.
Source: Derived from CAPMAS, various publications, and UNIDO (1998).

Production is mainly oriented towards the domestic market. Foreign imports remain significant, representing about eight percent of total domestic consumption. Moreover, Egypt's dependence on foreign supplies has grown over time. A decade ago, only about one percent of apparent domestic consumption originated in foreign markets. Since then, the demand for imports of furniture has grown considerably faster than that of domestic production.

The rapid growth of the population and increased per capital incomes have led to a substantial expansion in demand for furniture. As a result of the concurrent lag in production growth, furniture imports reached US$ 2.9 million in 1997. The magnitude of these imports was 50 percent higher than only three years earlier, pointing to the rapidly expanding demand for these types of products. The majority of imports originated in the European Union countries, which represent over 70 percent of the total. Within this region, Germany and Italy are the leading suppliers of furniture to Egypt.

Figure 2.2
Egypt's Major Furniture Markets



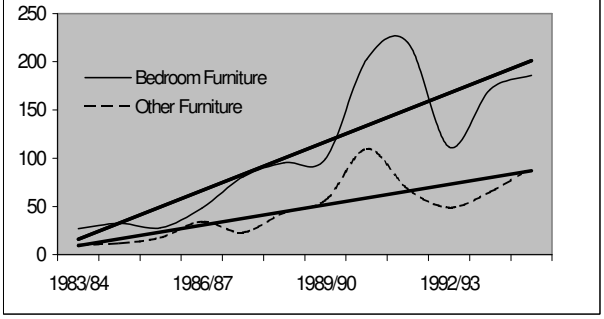
Exports currently represent a relatively small proportion of total domestic production. In 1997 exports of wooden furniture amounted to US$ 15.3 million. The leading markets are the European Union and the United States, each of which accounts for about 20 percent of total exports. Russia is also an important market, although its role has been declining over the years (see Figure 2.2).

2. Major Industry Segments

Production and international trade data rely on different classification systems. Output and other industry-level data rely on the International Standard Industrial Classification (ISIC) system, of which Revision 2 is the most widely used. Internationally comparable data are available at the 4-digit level, although further disaggregation may be available at the national level. In Egypt disaggregated production data are available for the following categories in the furniture industry: (1) furniture and fixtures for bedroom, (2) chairs from wood and bamboo, (3) other furniture and fixtures, and (4) other bamboo furniture. These data were available for the period 1983/84 to 1995/96 at the time that the present study was conducted, and the information was separated into the private and public sector.

Table 2.2 and Figure 2.3 show the production value of the furniture sub-sectors. About one-half of production is bedroom furniture, and the rest is mainly in the form of other types of furniture. Chairs from wood and bamboo and other bamboo furniture represent a small fraction of overall production by the industry. The growth of bedroom furniture has been especially dynamic throughout the period, as has other furniture and fixtures, though to a lesser extent. These other types of wood furniture include various types of furniture for the domestic household, garden furniture and furniture finishing, restoration and repairs.

Figure 2.3
Production of Major Furniture Categories
(millions of LE)



Information on international trade in furniture by Egypt and its major trading partners is classified into somewhat different categories: (1) office furniture, (2) kitchen furniture, (3) bedroom furniture and (4) other furniture. This classification is based on the Standard International Trade Classification (SITC), Revision 3. In the more recent international trade classification of the Harmonized System (HS), there is a clear distinction between office and home furniture. Egypt has adopted the HS system but information in earlier years relies on the SITC system.

Table 2.2
Production of Wood Furniture in Egypt, by Category
(Thousands of US$)

	Furniture Total	Furniture for Bedroom	Chairs from Wood and Bamboo	Other Furniture and Fixtures	Other Bamboo Furniture
1983/84	260.3	64.4	93.5	102.4	6.9
1984/85	326.0	132.0	71.3	116.9	5.7
1985/86	277.3	37.1	57.5	177.2	5.5
1986/87	480.7	95.9	31.3	342.2	11.3
1987/88	806.6	539.5	35.2	231.9	-
1988/89	952.9	451.8	52.9	434.5	13.7
1989/90	-	361.2	45.1	563.5	22.2
1990/91	2,022.8	846.5	66.3	1,097.3	12.6
1991/92	2,202.6	1,147.5	343.7	680.7	30.7
1992/93	1,114.6	532.9	81.8	488.6	11.3
1993/94	1,714.1	945.5	88.2	649.7	30.7
1994/95	1,858.6	869.4	72.0	900.9	16.4
1995/96	2,141.9	1,020.6	115.4	984.0	21.8

Source: CAPMAS, Annual Industrial Production Statistics (various issues).

Table 2.3 shows Egypt's exports of wood furniture by sub-sectors. Bedroom furniture is also the major type of furniture exported among those specified, although 'other furniture' is a larger category. Egypt exports a relatively small amount of office and kitchen furniture compared with other types of wood furniture.

Table 2.3
Egypt's Exports of Wood Furniture, 1994-97
(Thousands of US$)

	Office furniture	Kitchen Furniture	Bedroom furniture	Other Furniture	Total
1994	176	141	4,244	9,516	14,077
1995	191	32	4,768	7,067	12,058
1996	76	68	5,753	7,226	13,123
1997	57	191	6,414	8,674	15,336

Source: UNCTAD, COMTRADE data reported in PC-TAS.

C. Major Inputs to the Industry

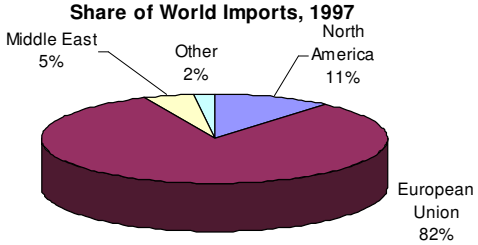
The furniture industry is highly dependent on imported wood for raw materials. Indigenous timber is limited to tamarisk, acacia and carob, and therefore the supplies of domestic wood sources are insufficient. Imports of wood amounted to over US$500 million in 1997. Of this amount, more than US$400 million was in the form of sawn conifer wood. Other inputs include paints and varnishes, glues, metal fittings, woodworking electrical and non-electrical equipment, upholstery material and plastics. As the principal input, wood needs to be available in large and varied quantitities and the quality needs to be high. Quality refers to the uniformity of grade and color, treatment, standardization of dimensions and classification. Lack of quality wood is the principal constraint on Egypt's inputs for this industry. Upholstered funiture requires a broad spectrum of materials such as cotton, polyesters, and acrylics, as well as plastic materials. Similarly, ready supplies of glues, paints and varnishes are also needed. Finally, the industry relies heavily on woodworking machinery, which is essential for the technological progress of new and existing industry segments.

D. The Foreign Markets

Egypt's exports of wood furniture are distributed among the three global regional markets of the Middle East, the European Union (EU), and North America. Together these three regional markets absorb 75 percent of Egypt's total wood furniture exports. The other important market is Russia, which currently absorbs about 10 percent of Egypt's wood furniture exports. This market, however, contracted sharply during the 1990s compared with its importance during the second half of the 1980s, when it absorbed nearly 75 percent of Egypt's furniture exports. During the 1990s the fastest growing market has been the Middle East, followed by North America and, in particular, the United States. Exports to the EU market have also expanded, but at about two-thirds the rate of export growth to the North American market, and less than one-half of that to the Middle East.

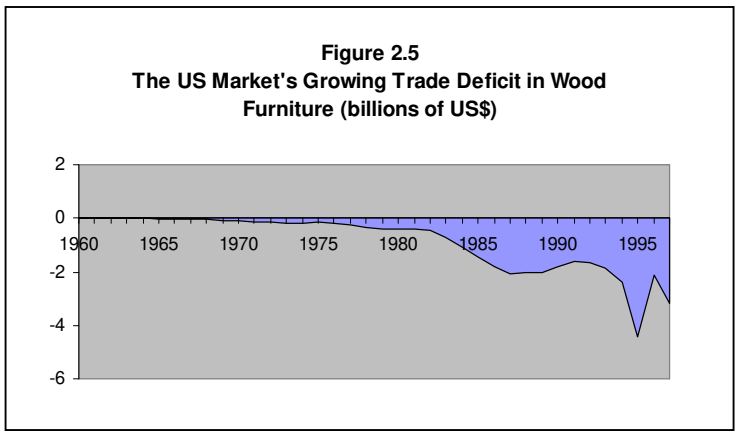
The global market for North America and Europe, which together account for 93 percent of total world imports, dominate wood furniture (Figure 2.4). The top importers are the United States and Germany. Other important importers are Japan and France.

Figure 2.4
Share of World Imports, 1997



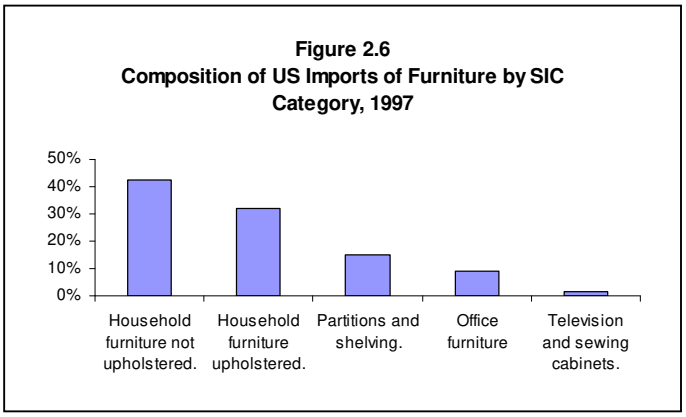
1. The North American Market

The United States has a large and growing trade deficit in furniture trade (see Figure 2.5). In 1997 the value of imports, classified according to the Standard Industrial Classification (SIC) nomenclature reached US$4.5 billion. The classification used in this system is broader than that of the SITC, under which US imports of wood furniture only registered US$566 million. The SIC nomenclature covers wood household furniture (both upholstered and non-upholstered), wood television, radio, phonograph and sewing machine cabinets, wood office furniture, and wood partitions, shelving, and office and store fixtures. In contrast, the SITC coverage is limited to household (kitchen and bedroom), office and other furniture of wood. Using the broader SIC system, data on US imports of wood furniture point to a rapid long-term growth.

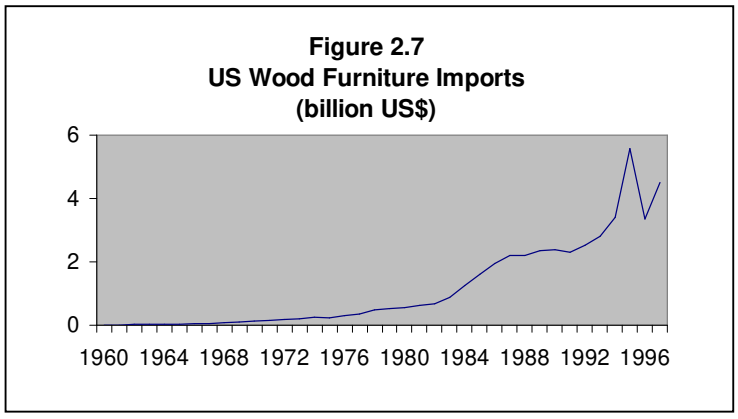


The US trade balance for wood furniture has grown to US$3.2 billion in the SIC system of trade classification. This trade balance has been the result of a long-term stagnation of US exports and a growing foreign demand for wood furniture. Between 1960 and 1997 the value of imports grew 1.25 times faster than that of exports.

The largest sector of US wood furniture imports is non-upholstered household furniture, followed by upholstered household furniture (see Figure 2.6). Together these two industry segments represent 75 percent of total wood furniture imports. Office furniture accounts for another 9 percent. Notwithstanding the large differences in the importance of these industry segments, all import sub-categories have experienced a strong long-term growth.



Since 1960 the value of US wood furniture imports has grown by nearly 20 percent a year (see Figure 2.7). More recently imports suffered a downturn in 1993-96, following cutbacks in purchases of durable goods, but they have since recovered sharply. Between 1960 and 1997 imports of household wood furniture imports grew at an average annual rate of 19 percent. These rates apply to both upholstered and non-upholstered furniture. Imports of wood furniture for office use also grew rapidly, averaging 24 percent a year. The other two sub-categories of partitions and shelving and cabinets for television, radios, phonographs and sewing machines experienced avarage annual growth rates of 17 and 19 percent respectively.

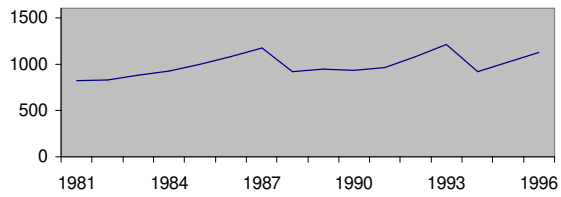


In contrast to the United States, Canada has been a net exporter of wood furniture. But like in the United States, production declined in the early 1990s as a result of a sluggish economy and a consumption cutback in 1992-93. Since then, the sector has been restructured and productivity has increased with the result that production and exports have recovered rapidly. Exports in 1996 reached US$2 billion, while imports were worth US$1 million.

2. The European Market

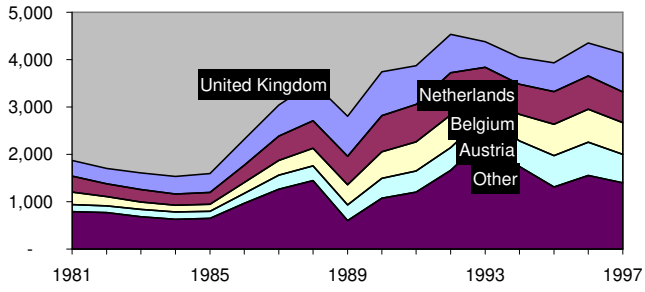
Furniture consumption in the EU market in 1998 amounted to about ECU 9 billion in the kitchen furniture segment and ECU 7 billion in the office furniture segment (CSIL, 1999) (see Figure 2.8). In that market furniture consumption is dominated by Germany, which accounts for 32 percent of total EU consumption, followed by Italy (14 percent), France (12 percent) and the United Kingdom (12 percent).

Figure 2.8
EU Import Value (million US$)



Trade has expanded considerably under the EU market, although import growth was fairly stagnant in the 1994-95 period, following a period of rapid growth in 1985-93. The moderate growth of the furniture market in Europe is due to lack of consumer confidence in the economic situation of the region. Following the 1992-95 slowdown in the European Union and the accompanying cutbacks in demand for durable goods such as furniture, consumers have been slow to respond to improved prospects in the economy and have often postponed decisions to buy furniture. This slowdown in consumption has been mirrored in the import growth pattern of the region. Nevertheless, imports have begun to recover since 1996, and there are expectations that a recovery in demand will occur in 1999-2000.

Figure 2.9
Major EU Imports (million US$)



So far, the major foreign suppliers to the EU market have been the Eastern European countries of Poland, Romania, the Czech Republic, Estonia and Hungary, followed by the Asia countries of Indonesia, Taiwan, China and Thailand. Extra-regional suppliers seeking market outlets are increasingly penetrating this market, particularly in Spain since it is receptive to foreign suppliers and has one of the highest per capita consumption levels in Europe. At present, the major importer is the

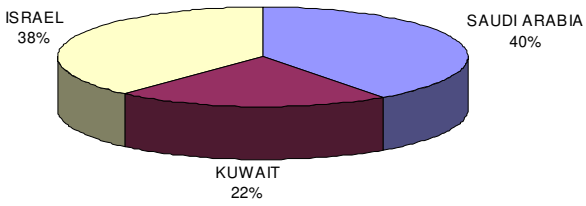
United Kingdom, which accounts for 20 percent of total EU imports, followed by the Netherlands and Belgium (both with 16 percent of the EU market) and Austria (14 percent) (see Figure 2.9). Other countries open to foreign suppliers are Italy, Sweden and Switzerland. In Italy, the distribution of supplies is patterned under the German model, whereby buying associations dominate the market. The other widely used system is that of franchising chains, which is largely used in France (CSIL, 1999).

Kitchen furniture has been a leading market segment in the European Union in terms of overall consumption and foreign purchases. Germany is the largest consumer of kitchen furniture and the long-term growth of demand in that market has averaged 5 percent a year since 1988. As the second largest consumer of kitchen furniture, Italy has experienced a growth more in line with the long-term average for the EU market, while Spain has experienced an above-average growth rate. The Netherlands has the highest per capita consumption of kitchen furniture in the EU market, followed by Switzerland. Both countries are major importers of this furniture segment. Other important importers are Ireland, Portugal, the United Kingdom, Greece, Norway, and Belgium.

3. The Middle East Market

The market for furniture in the Middle East has been strong, though year-to-year growth has been highly variable. On average, the value of wood furniture imports expanded by 26 percent a year between 1987 and 1997, with annual rates varying from –77 percent in 1988 to over 300 percent in 1990. The largest markets have been Saudi Arabia, Kuwait and Israel (see Figure 2.10). Israel is becoming an important market for Egypt, largely in response to the rapid economic growth in that country and the large influx of immigrants during the 1990s. Reduced barriers to trade have also helped to increase imports. The major foreign suppliers remain EU producers, which account for 82 percent of total furniture imports. North America supplies 11 percent of those imports, while the Far East provides another 4 percent. Egypt supplies only 0.2 percent of Israel's imports and therefore has a considerable scope for further penetrating that market. The distribution channels for furniture are mainly through wholesalers and importers, which are normally large purchasing and distribution companies and act as the principal reference point for introducing foreign goods (CSIL, 1997a). Wholesale importers of kitchen furniture mainly concentrate on the large construction companies that supply new homes with fitted with wall and base units. Other buyers supply a growing number of hotel chains.

Figure 2.10
Share of Major Middle Eastern Importers



E. Data Considerations

The primary source of industry –level statistics used in the present study is CAPMAS, the national statistical office of the Egyptian government. Fairly disaggregated industry data are available for manufactures of furniture and fixtures, except primarily those of metal, at the 4-digit ISIC, Revision 2 level. Time-series data were available for the period 1987/88 to 1995/96 at the time that the study was conducted in July and August1999. This information was supplemented by industry data for the 1981-96 period. These data were compiled by United Nations Industrial Development Organization (UNIDO) (UNIDO, 1998 and UNIDO, 1999). Production data for sub-sector of the industry were obtained from the CAPMAS publication, *Annual Industrial Production Statistics*. For these sub-sectors, data on material inputs were unavailable and were instead obtained from informal discussions with firms. Data reliability for these series, as well as the more disaggregated time series data for the industry as a whole, is questionable. In general, there were large discrepancies between sources of data, despite the same SITC, Revision 2, classifications.

International trade data of Egypt and its major export markets of wood furniture were obtained from the United Nations International Computing Center (UNICC). This information is available from 1981 onwards for Egypt. In order to ensure consistency of the series over time that would permit the estimation of economic relationships in the industry, relatively aggregated industry data were used under the SITC, Revision 2.

The following are the classifications for wood funiture used in the present study:

(1) ISIC sub-heading for wood furniture and fixtures: 3321.

(2) HS sub-headings and those of the earlier SITC, Revision 3 are as follows:

HS	Description
9403304	Bent-wood furniture of a kind used in offices
9403308	Wooden furniture used in offices, nes
9403404	Bent-wood furniture of a kind used in the kitchen
9403406	Wooden furniture, kitchen use, for motor vehicles
9403504	Bent-wood furniture of a kind used in the bedroom
9403506	Wooden furniture, bedroom use, for motor vehicles
9403604	Bent-wood furniture, nes
9403907	Furniture parts of wood

(3) SITC Rev. 3 sections for wood furniture are as follows:

SITC3	Description
82151	Office furniture of wood
82153	Kitchen furniture, wood
82155	Bedroom furniture, wood
82159	Other wooden furniture

(4) The US-based SIC 1972 classifications for furniture are as follows:

SIC	Description
2511	Wood household furniture, except upholstered.
2512	Wood household furniture, upholstered.
2517	Wood television, radio, phonograph and sewing machine cabinets.
2521	Wood office furniture
2541	Wood partitions, shelving, and office and store fixtures.

III. Market Determinants

A. Productivity Measures

In Egypt the production process for furniture is dominated by small and medium-size enterprises. Of the 135 enterprises recorded in 1997 by the General Organization for Industrialization (GOI), 105 were small-scale enterprises, 13 were medium-size enterprises, and the remaining 17 were large-scale enterprises. Small-scale enterprises averaged 13 workers, the medium-size enterprises had an average of 75 workers, and the large-scale ones averaged 250 workers. The distribution of these enterprises on the basis of size has remained almost unchanged during the 1990s.

Table 3.1
Productivity Measures of Egypt's Wood Furniture Industry

	1992	1993	1994	1995	1996	1997
Capital/Output	1.04	1.05	1.05	0.92	0.74	0.75
Labor/Output	0.14	0.14	0.14	0.12	0.09	0.09
Capital/Labor	7.53	7.64	7.63	7.60	8.15	8.50
Output/No. Wks	7.23	7.27	7.28	8.23	10.97	11.36

Source: General Organization for Industrialization as reported in DEPRA (1999).

The industry's performance improved measurably in both its capital and labor utilization during the 1990s (see Tables 3.1-3.3). The ratio of capital to output fell from 1.04 at the beginning of the decade to 0.75 in 1997, indicating that the amount of capital needed to produce each LE of output went down from 1.04 to 0.75. This change represents an increase of 28 percent in capital efficiency. Labor productivity rose by 36 percent as the ratio of labor to output fell from 0.14 to 0.09 during the period. The improvement was reflected in the value of output of each worker, which rose by nearly 60 percent between 1990 and 1997. In addition, the industry has become more capital intensive as the ratio of capital to labor increased during the 1990s.

Table 3.2
Productivity of Capital in Egypt's Wood Furniture Industry, by Enterprise Size

	1992	1993	1994	1995	1996	1997
Large-Size Enterprises	1.06	1.06	1.06	0.90	0.90	0.90
Medium-Size Enterprises	1.31	1.31	1.31	1.31	0.49	0.50
Small-Size Enterprises	0.75	0.84	0.84	0.81	0.77	0.76

Source: General Organization for Industrialization as reported in DEPRA (1999).

Medium-size enterprises have led the industry in productivity improvements. Between 1990 and 1997 the productivity of capital for this size of firm improved by 36 percent, while that of labor rose by over 60 percent. Large-size enterprises also experienced large

productivity improvements of 28 percent and 15 percent respectively for capital and labor utilization. Small-scale enterprises improved their labor productivity by 11 percent, but did not experience any significant change in the capital efficiency usage.

Table 3.3
Productivity of Labor in Egypt's Wood Furniture Industry, by Enterprise Size

	1992	1993	1994	1995	1996	1997
Large-Size Enterprises	0.14	0.14	0.14	0.12	0.12	0.12
Medium-Size Enterprises	0.16	0.16	0.16	0.16	0.04	0.03
Small-Size Enterprises	0.12	0.12	0.11	0.11	0.11	0.10

Source: General Organization for Industrialization as reported in DEPRA (1999).

These productivity improvements will make Egypt more competitive in the world market as producers increasingly penetrate the traditional US and EU markets and the emerging Middle East and African ones. Egypt faces stiff competition from producers from both developed and developing furniture-exporting countries. Developed furniture exporting countries such as Germany, Italy and France have fairly sophisticated export strategies that have been in existence for a considerably longer period of time than Egypt's current trade strategy. Producers in these countries have access to well-regarded organizations for furniture exporters, as well as ready access to trade shows and fairs that are highly publicized and well attended. There is also value added from furniture with the labels carried by products. 'Made in Germany', for example, imparts to the consumer an assurance of high quality and advanced technology, while 'made in Italy' is associated with a sophisticated design. Egypt's entry into this market will require aggressive initiatives on the part of producers and the government in its role as a facilitator for the private sector.

Competitors from the developing and emerging furniture export countries are mainly located in Eastern Europe and Southeast Asia. These countries, like Egypt, are attempting to penetrate the large traditional markets of Western Europe and North America. The main characteristics of these new exporters are their readiness to adopt their production techniques to the rapidly changing tastes and preferences of the global market for furniture. Increasing use is being made of PC-based technologies to facilitate design changes. Especially useful are computer aided design (CAD) and computer aided manufacture (CAM) applications for automated manufacturing processes of sophisticated furniture design and small-scale production, which are used by medium-size companies of 50 workers or more.

Parallel to these production adjustments are marketing initiatives required by consumers that provide quality assurances, including those associated with ISO 9000 standards, and guarantees in the form of both product warranties and compliance with environmental standards. While these factors add to the cost of producing and distributing furniture to foreign markets, they also provide value added to the product in areas required by customers in developed markets.

Concurrent with Egypt's efforts to penetrate the US and EU markets are its efforts to diversify markets and access those in the Middle East and Africa. Production controls for these markets currently requires fewer quality and environmental guarantees than those for developed markets where competition is much greater. Nevertheless, the Middle East market is becoming increasingly sophisticated as access increases to producers in Eastern Europe and Southeast Asia.

In Europe production and distribution activities are often distinct activities. While some furniture producers have their own distribution centers, especially for office furniture, most sales are through wholesalers or buyer groups that deal in final sales to consumers. The separation of these activities is the result of the complex geo-political system in Europe and the existence of over 100,000 sales locations in the EU market, which are distinguished from one another at the national level (Pérez, 1998). In Germany, France and the United Kingdom large-scale businesses have helped to streamline the distribution system. For example, in Germany, about 30 buyer groups control two-thirds of furniture supplies and, of these, ten principal groups control 45 percent of the market. In France, franchises account for 30 percent of sales, and in the United Kingdom 10 principal distributors control 27 percent of the market (Pérez, 1998). In contrast, countries like Spain, Portugal and Italy have distribution systems that are much more fragmented than in other countries. For example, in Italy small and medium size companies account for three-fourths of the market, and many of these firms are family run. In Spain independent establishments sell about 60 percent of furniture.

B. Producer Response to Price Incentives

The ability and willingness of producers to expand production to meet domestic consumption and export requirements depend in large part on their responsiveness to price incentives. These incentives can be derived from product price movements in the domestic or international markets that reflect global market forces or price-related policy initiatives. Although competition within the Egyptian furniture industry may be vigorous, it is nonetheless imperfect since entry and exit costs exist both within the domestic industry and foreign markets. As a result, protection of the domestic market is likely to affect domestic prices and the performance of the domestic industry, which in turn can affect the ability of these firms to compete outside of Egypt.[1] Although there is some evidence that protection can stimulate technologically backward producers to invest in catching up with more advanced foreign producers, it is more likely that tariffs or quotas will delay technological adaptation by domestic producers (see Miyagiwa and Ohno, 1995, and Rodrik, 1992).

We can measure the price responsiveness of the major furniture segments in Egypt using a general unrestricted equation that relates production to a sequence of current and lagged prices price of furniture, measured in constant LE, and to a capacity measure based on the real gross domestic product (GDP) of Egypt. To ensure consistency of the data, the

[1] For the theory underlying the current analysis of protection under imperfect competition, see Helpman and Krugman (1985) and Grossman (1992).

Table 3.4
Regression Results of Furniture Production Supply

$\Delta q_t = \alpha_o + \alpha_1 q_{t-1} + \alpha_2 p_{t-n} + \alpha_3 y_{t-n} + v_t$

					Summary Statistics		
	$\ln(Q)_{t-1}$	$\ln(P)_{t-n}$	$Ln(Y)_{t-n}$	Const	R^2	dw	SEE
Total Furniture		0.20(n=0)	1.16(n=1)	1.31	0.72	1.9	0.19
		(1.6)	(2.5)				
Bedroom Furniture		0.37(n=1)	5.52(n=1)	-18.6	0.57	2.2	0.69
		(0.8)	(2.4)				
Other Furniture	0.54	0.14(n=0)	1.99(n=1)	-3.76	0.94	2.0	0.16
	(3.2)	(1.8)	(2.6)				

Notes:
1/ The variables are defined as follows: Q is the volume of furniture production, P is the constant LE price of furniture, Y is real GDP (a proxy for capacity utilization).
2/ Period over which the equation was estimated equaled 1984-96.
3/ Binary variables were included in the equations for 1989 (1 in 1989; 0 otherwise).
4/ Figures in parentheses below the coefficients refer to t-statistics.
5/ Figures next to the estimated price and capacity variables refer to the length of the lag.

variables for real GDP and the general price level, measured by the consumer price index, have been converted to fiscal year data that matches the reported periodicity of the furniture production and price data. The production schedule is assumed to follow a generalized constant-elasticity-of-substitution (CES) function. The fist-order profit condition for profit maximization yields a supply schedule in which production is related to price and production capacity. The exponential values of the coefficients of the equation measure the elasticities. We can then introduce dynamics into the log-linear supply function by introducing appropriate lags of the price and capacity variables. In the present case, a distributed lag function has been used to represent the underlying nature of the response of production to price and capacity changes.

The results of the estimates presented in Table 3.4 indicate that furniture production is generally responsive to movements in the constant LE price of furniture. The response has the expected sign, and the estimated coefficients are statistically significant except in the case of the bedroom furniture segment of the industry. The results suggest that producers do respond to price incentives, and that the response is important to their production decision.

C. Factors Affecting the Demand for Furniture

Wood furniture is a durable good that is highly responsive to income expectations. Its purchase often represents a major investment by consumers of household and office furniture and there is therefore a tendency to postpone the purchase when income expectations decline. Consumption is also affected by demographic factors such as birth rates, marriage rates, life expectancy and household size. It is also responsive to the degree of social and geographic mobility of the population.

Foreign demand for Egypt's furniture exports depends on two decision levels of the consumer. The first is the total amount of furniture that will be demanded by consumers based on income, price and demographic factors. The second is the amount that will be purchased from different domestic and foreign suppliers based on their relative prices. Since Egypt is a price-taker in the global furniture market, its international competitiveness will depend on its real effective exchange rate. That rate will determine the country's competitiveness relative to other suppliers to foreign markets, and the ability of Egypt's producers to affect their price markups over costs. In the case of a real exchange rate appreciation, for example, imports would tend to increase their penetration while exports would decline. In the tradable goods industries, the exchange rate appreciation would reduce the margin between output prices and input prices and thereby limit the ability of domestic producers to compete in the domestic and foreign markets. If, however, the higher import penetration reflected the removal of trade barriers, then the spread between output prices and input prices would widen in favor of exportables and against importables. These determinants of the international market demand for furniture and the demand for Egypt's exports will be empirically examined in the remainder of this chapter.

D. Foreign and Egyptian Import Demand

The import demand relationships for wood furniture imports in the major global markets are presented in Table 3.5. The estimates are based on a distributed lag model in logarithmic form, whose properties are described in the Technical Appendix to this report. All markets have price inelastic demand schedules, and the average price elasticity of demand is -0.6. In all markets the income elasticity is greater than unity, and the average income elasticity is 1.7. This elasticity reflects the strong income-related response in the demand for wood furniture in the global market. As expected, the Middle East has the highest income elasticity of the three global regional markets, reflecting the strong emerging demand for durable goods in that region. Nevertheless, within Europe there are also individual markets with strong demand prospects, particularly in Belgium and Austria. The US market has a income elasticity of 1.2, reflecting a strong market albeit one that is reaching its saturation level.

The estimates are based on limited time-series estimates using annual data for the period 1981-97. Parameter constancy tests for the period before and after 1990 showed that the responsiveness of imports to price and income changes was stable. The present estimates therefore provide fairly accurate information on the responsiveness of the selected import markets to income and price changes that are likely to challenge Egypt's furniture exporters in the global regional markets.

Table 3.5
Import Demand Functions of Global Regional Markets for Wood Furniture

$m_t = \forall_0 + \forall_1 m_{t-1} + \beta_2 y_{t-n} + \gamma_1 p_{t-n} + u_t$

SITC2 Code	Market	Price Elasticity	Income Elasticity	Summary Statistics R2	D.W.
82192	United States	-0.56 (n=1) (11.5)	1.22 (n=0) (9.2)	0.96	2.6
82192	European Union	-0.16 (n=0) (2.2)	1.09 (n=0) (5.2)	0.80	1.7
82192	United Kingdom	-0.76 (n=1) (2.0)	1.08 (n=0) (5.0)	0.77	1.7
82192	Netherlands	n.s.	1.14 (n=0) (3.2)	0.54	1.6
82192	Belgium	n.s	3.17 (n=1) (11.8)	0.93	1.5
82192	Austria	-0.13 (1.3)	2.23 (n=0) (6.4)	0.94	1.5
82192	Middle East	-1.55 (n=0) (10.1)	2.09 (n=1) (3.6)	0.90	2.1

Notes:
1/ The variables are defined as follows: M is the volume of furniture imports, P is the constant US dollar price of furniture imports, Y is real GDP.
2/ Period over which the equations were estimated equaled 1981-97.
3/ n.s. denotes not statistically significant.
4/ Figures in parentheses below the coefficients refer to t-statistics.
5/ Figures next to the estimated price and income variables refer to the length of the lag.

In Egypt the demand for furniture imports is more responsive to price and income changes than in its foreign markets. Using the same specification for the import demand function as that for the major regional markets, the estimated equation for Egypt is as follows:

$$m_t = -2.2 + 5.32y_{t-1} - 0.89p_t - 1.13p_{t-1} \qquad (3.1)$$
$$\qquad\quad (0.7) \quad (1.6) \quad (1.8)$$

$R^2 = 0.92 \qquad DW = 1.7 \qquad SEE = 0.60$

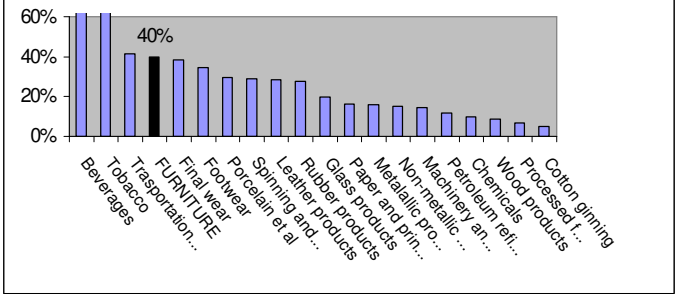
where the variables are specified in their log forms and the numbers below the coefficients refer to the t-statistics. The sample period is 1985-97 and a binary variable was included for 1994. The impact price elasticity is –0.89 and the one-period lagged price elasticity is –1.13. For the income variable, the elasticity is 5.32. While the coefficients for the price variables are significant, that of the income variable is not statistically significant. For policy impact analysis, however, the more important variable is that of prices. We will examine the implications of these estimates in the following chapter.

IV. The Policy Environment and Its Consequences

A. Nominal and Effective Protection of the Industry

Egypt's tariff regime has undergone many changes in recent years. The current structure was established by Law 187 of 1986 and is based on HS codes adopted in 1994. Since then the general maximum tariff has been progressively reduced during the last several years, but in furniture protection remains high. Although the nominal rate of protection (NRP) for that industry was lowed from 50 percent in 1997 to 40 percent under Presidential Decree No./1998, its rate remains the fourth highest of all manufacturing categories. Those with higher rates are the so-called luxury items of automobiles, liquor and tobacco. The mean average tariff is just over 25 percent for all manufacturing activities.

Figure 4.1
Customs Tariffs by Category in mid-1999



Despite the gap between the tariff rates on furniture and those of its major inputs, the tariffs on wood and other inputs may reduce the furniture industry's competitiveness in the domestic and foreign markets. While the tariff on wood furniture imports protects domestic producers, tariffs on inputs used in the production of furniture raise costs and consequently reduce the competitiveness of the domestic industry. The effective rate of protection (ERP) measures these effects by considering tariffs applied to imports of raw materials and intermediate goods that affect the price of the final good. (See the Technical Appendix for the derivation of the ERP.) In particular, the ERP measures how tariffs on a product and its tradable inputs jointly affect the value-added of a particular activity. When only the nominal rate of protection is calculated, the tariff on furniture imports suggests that domestic production will be encouraged to increase their output. However, whether they increase their output depends not only on the tariff on furniture imports, but on the tariffs applied to inputs used in their manufacture. While domestic producers are given an implicit subsidy on their furniture production when there are tariffs on furniture imports, they also face a tax on their imported inputs, which can neutralize the effect of the implicit subsidy. The ERP therefore measures the net protection on the furniture production process, rather than simply the gross protection on the industry's output.

By including inputs, the ERP becomes a more useful measure, and at the same time, it becomes more difficult to calculate. Previous work by DEPRA has shown how the effective rate of protection can be measured in Egypt in light of data limitations on the

inputs used to produce goods (DEPRA, 1998). The formula used in that study and applied to the furniture industry is as follows:

$$ERP = (1 - \Sigma_i a_i)/[1/(1+t)] - \Sigma_i [a_i/(1+t_i)] - 1 \quad (4.1)$$

where ERP = effective rate of protection
t = nominal tariff rate on imported furniture equivalent to the domestic output.
t_i = nominal tariff rate on tradable input *i* in the production of furniture.
a_i = value of input *i* per unit of furniture output.

Like the nominal rate of protection, a positive ERP indicates that the returns earned from furniture production are greater than those earned without intervention. Likewise, a negative ERP indicates that the reverse is true. In the case where the ERP is zero, the effect is the same as without intervention.

Production and aggregate input data for the calculations of the ERP for Egypt's furniture industry were obtained from CAPMAS. For individual tradable material inputs the technical coefficients of production were derived from input-output tables and industry analysts, and those coefficients were applied to the total value of the tradable material inputs reported by CAPMAS. The input-output tables of Egypt were not sufficiently disaggregated, and those of the United States and the European Union were used in conjunction with the input-output tables of Egypt. Those input-output tables are the social accounting matrix (SAM) for Egypt; the US tables are the benchmark input-output tables for the US economy in 1987 (US Department of Commerce, 1997); and the EU tables are the input-output tables for 1995 (EUSTAT, 1995).

Table 4.1 shows the shows the production and input data for wood furniture in 1995/96, and it presents the nominal and effective rates of protection for the industry. Statistical Appendix Tables 14-17 present the input coefficients for the following segments: wood furniture for households, wood furniture for offices, wood partitions, and wood cabinets. Following the production data from CAPMAS also shown in the Statistical Appendix, household furniture and partitions represent about two-thirds of total wood furniture production, and cabinets and office furniture account for the remaining one-third of total production. These production weights for each of these segments were used to calculate the average input coefficients for the industry as a whole.

Table 4.1 also contains the customs tariffs for wood furniture and its inputs. These tariffs are based on the tariff Harmonized schedule modified up to November 1998 under Presidential Decree No. 1/1998. They show that, in addition to the 40 percent tariff on wood imports, there are also tariffs on imports of material inputs that range from under 10 percent to 80 percent.

Table 4.1
Wood Furniture Industry:
Annual Production and Customs Tariff Rates, 1995/96
(Thousand LE and percentages)

	Tariff Rate	Private	Public	Total
Products, subsidies, taxes	**40%**	**324,516**	**4,838**	**329,354**
Finished products		318,726	4,615	323,341
Unfinished products		4,800	129	4,929
Subsidies		-	-	-
Taxes and duties		990	94	1,084
Tradable material inputs		**170,553**	**2,001**	**172,554**
Reconstituted wood products	25%	19,983	234	20,217
Sawn wood	15%	14,553	171	14,723
Veneer and plywood	20%	11,980	141	12,121
Hardware, n.e.c	30%	7,563	89	7,652
Builders' joinery and carpentry of wood	25%	6,269	74	6,342
Paints and allied products	30%	39,606	465	40,071
Screw machine products, bolts, etc	30%	35,008	411	35,419
Petroleum oils and residues	13%	16,523	194	16,717
Miscellaneous plastics products, n.e.c.	22%	3,545	42	3,586
Paperboard containers and boxes	25%	2,701	32	2,732
Industrial chemicals	11%	2,158	25	2,183
Metal polishing pads	15%	1,662	20	1,682
Fabricated metal products, n.e.c	30%	1,629	19	1,648
Abrasive products	18%	1,377	16	1,394
Glass and glass products	25%	1,359	16	1,375
Adhesives and sealants	25%	1,221	14	1,236
Hand and edge tools	10%	886	10	897
Aluminum plates	20%	626	7	633
Coated fabrics, not rubberized	25%	397	5	401
Industrial and commercial machinery	12%	324	4	328
Woven fabrics	35%	291	3	295
Saw blades and handsaws	10%	232	3	235
Woodworking machinery	80%	172	2	174
Leather tanning and finishing	18%	150	2	152
Miscellaneous fabricated wire products	25%	134	2	136
Textile goods, n.e.c.	23%	106	1	108
Plastics materials and resins	8%	98	1	99
Other tradable inputs		**35,236**	**500**	**35,736**
Packaging materials	5%	876	1	877
Spare parts, prod. Components	5%	6,051	177	6,228
Equipment depreciation	5%	28,309	322	28,631
Non-tradable inputs		**34,531**	**456**	**34,987**
Fuel		1,651	97	1,748
Electricity		3,312	147	3,459
Industrial services purchased		3,963	7	3,970
Maintenance		1,986	29	2,015
Other services		23,619	176	23,795

According to CAPMAS data, intermediate goods and services to the industry accounted for an average of 70 percent between 1987/88 and 1995/96, although that share has fallen in recent years. These data appear to be consistent with industry data for other countries. In Europe, for example, intermediate goods and services account for 64 percent of the value of furniture production (Pérez, 1998). In the United States intermediate inputs represent 55 percent of the value of furniture production (US Department of Commerce, 1997). Labor cost in Egypt's furniture industry represents another 12 percent, and is also in line with industry figures in other countries. European producers have an expected higher labor cost, which accounts for 17 percent of the value of their furniture production (Pérez, 1998). In the United States the labor costs are 30 percent of the total value of production (US Department of Commerce, 1997). Lower labor cost makes the Egyptian furniture industry relatively profitable compared with producers in other countries. The percentage of gross surplus in the 1990s averaged 17 percent. Comparable figures for the European furniture industry average 7.8 percent, which are below the 12 percent average for all industries in the European Union, and below the 15 percent for the furniture industry in the United States.

Calculations of the ERP for the wood furniture industry are shown in Table 4.3. The results show that the effective rate of protection is far higher that the nominal rate of protection in both the private and public sectors. Moreover, that for the private sector, which dominates the industry, is more than twice as high as that of the public sector. For the private sector, which accounts for 99 percent of all wood furniture output in Egypt, the ERP is 219 percent, while that for the public sector is 106 percent.

Table 4.2
Value Added and Cost Composition of Wood Furniture Industry in Egypt (Thousand LE and percentages)

	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
Gross Production	102,722	239,667	81,867	123,338	195,784	135,458	233,350	222,747	329,351
Minus: Use of Intermediates	73,875	113,375	65,260	96,506	162,461	93,808	160,884	147,838	212,011
of which: Goods	56,680	84,510	50,433	72,149	109,179	61,377	140,305	128,981	182,443
Services	17,195	28,865	14,827	24,357	53,282	32,431	20,579	18,857	29,568
= Value Added	28,847	126,292	16,607	26,832	33,323	41,650	72,466	74,909	117,340
Minus: Wages	16,630	21,104	12,935	1,845	24,221	20,977	27,011	34,800	40,554
= Gross Surplus	12,217	105,188	3,672	24,987	9,102	20,673	45,455	40,109	76,786
Intermediates /Production	72%	47%	80%	78%	83%	69%	69%	66%	64%
Wages/Prod	16%	9%	16%	1%	12%	15%	12%	16%	12%
Surplus/Prod.	12%	44%	4%	20%	5%	15%	19%	18%	23%

Source: Derived from data provided by CAPMAS.

Table 4.3
Wood Furniture Industry Annual Production and Customs Tariff Rates, 1995/96
(Thousand LE and percentages)

		Domestic Price Equivalents			Border Price Equivalents		
	Tariff	Private	Public	Total	Private	Public	Total
Products, subsidies, taxes	**40%**	**324,516**	**4,838**	**329,354**	**231,797**	**3,456**	**235,253**
Finished products		318,726	4,615	323,341			
Unfinished products		4,800	129	4,929			
Subsidies		-	-	-			
Taxes and duties		990	94	1,084			
Tradable material inputs		**170,553**	**2,001**	**172,554**	**137,342**	**1,611**	**138,953**
Woodworking machinery	**80%**	172	2	174	95	1	96
Woven fabrics	**35%**	291	3	295	216	3	218
Paints and hardware	**30%**	83,806	983	84,789	64,466	756	65,223
Wood and carpentry wood	**25%**	32,063	376	32,439	25,651	301	25,952
Textile goods	**23%**	106	1	108	86	1	87
Plastics products	**22%**	3,545	42	3,586	2,905	34	2,940
Veneer and plywood	**20%**	12,606	148	12,754	10,505	123	10,628
Leather, abrasive products	**18%**	1,527	18	1,545	1,291	15	1,306
Sawn wood, polishing pads	**15%**	16,215	190	16,405	14,100	165	14,265
Petroleum oils and residues	**13%**	16,523	194	16,717	14,687	172	14,859
Industrial machinery	**12%**	324	4	328	289	3	293
Industrial chemicals	**11%**	2,158	25	2,183	1,942	23	1,965
Tools and saw blades	**10%**	1,119	13	1,132	1,017	12	1,029
Plastics materials	**8%**	98	1	99	91	1	92
Other tradable inputs							
Packaging, parts, depreciation	**5%**	**35,236**	**500**	**35,736**	33,558	476	34,034
Non-tradable inputs	**0**	**34,531**	**456**	**34,987**	34,531	456	34,987
Total non-factor costs		**240,320**	**2,957**	**243,277**	**205,431**	**2,544**	**207,974**
Effective Rate of Protection (%)		**219%**	**106%**	**216%**			

Table 4.3 also shows the industry's value added at both domestic and border equivalent prices and demonstrates the increase in value added in the furniture industry under protection relative to the value-added under free trade. The value-added at domestic prices is the domestic price of output less the sum of the tradable and non-tradable inputs valued at their domestic price. Value-added at border-equivalent prices is the border equivalent price of the output, calculated from the nominal rate of protection, less the sum of the same inputs valued at border-equivalent prices. Tradables inputs represent the bulk of the costs of intermediate goods and services and consequently dominate the industry's ability to generate value added. For material inputs, the production-weighted average tariff is only 25 percent for the private sector, while that on finished goods is 40. With the addition of other tradable inputs (packaging, parts and depreciation), the production-weighted average tariff on tradable inputs is 21 percent. As a result, the value added of the private sector at domestic equivalent prices is much higher than the value added at the border equivalent prices.

B. Impact Assessment of Tariff Policies

For industry and product-specific studies, it is appropriate to use partial equilibrium analysis and econometric models to estimate the parameters of the market components. This approach permits the calculation of the direct effects of trade liberalization based on detailed tariff line information. Nevertheless, it is also useful to examine the effects of tariff policies that can be deduced from general equilibrium models, since they can provide economy-wide estimates based on fully integrated models of industries within the context of the overall economy.

The *direct effects* captured by partial equilibrium analysis can be separated in the following components:

- *Total Effect* refers to the change in the level of domestic demand for imported inputs resulting from tariff-associated price changes.

- *Government Revenue Effect* is the change in customs fees resulting from tariff changes, which combine changes in revenue per unit of imports and changes in import volumes resulting from the *total trade* effect.

- *Consumer Welfare Effect* refers to the changes that consumers obtain from price changes on imported goods when tariffs are changed.

The *indirect effects* that can be measured within the general equilibrium framework depend on the level of disaggregation of the model, but as a minimum provide information about the following components:

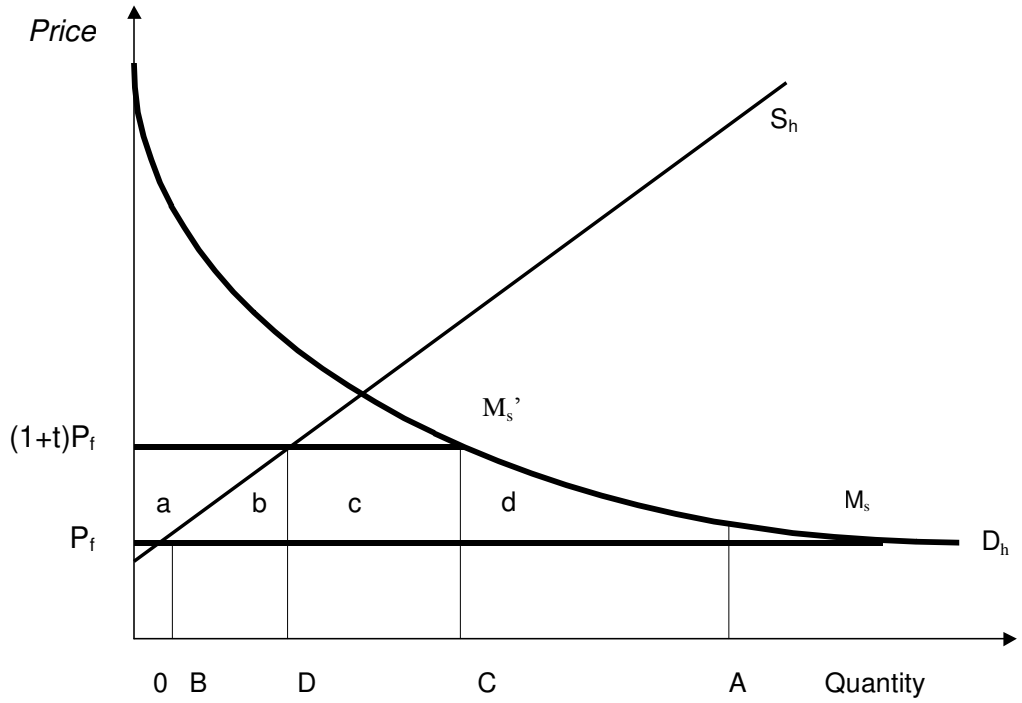
- *Sector Production Effect* refers to changes in domestic output levels associated with the changes in the allocation of resources brought about by the movements of factors of production.

- *International Competitiveness Effect* arises from the changes in the access to factors of production for export-oriented goods, and the resulting changes in the export prices relative to competing suppliers to foreign markets.

- *Terms of Trade Effect* is brought about from the changes in prices of tradables that arise from exchange rate effects and other changes in the foreign and domestic economies.

The direct effects of Egypt's tariffs on the furniture industry are shown in Figures 4.2 and 4.3. Roussland and Suomela (1993) offer a description of those effects for a small open economy in a partial equilibrium framework. Figure 4.2 shows the domestic demand schedule, D_h, and the domestic and foreign supply schedules, S_h and M_s respectively of

Figure 4.2
Tariff Effects on Production and Consumption

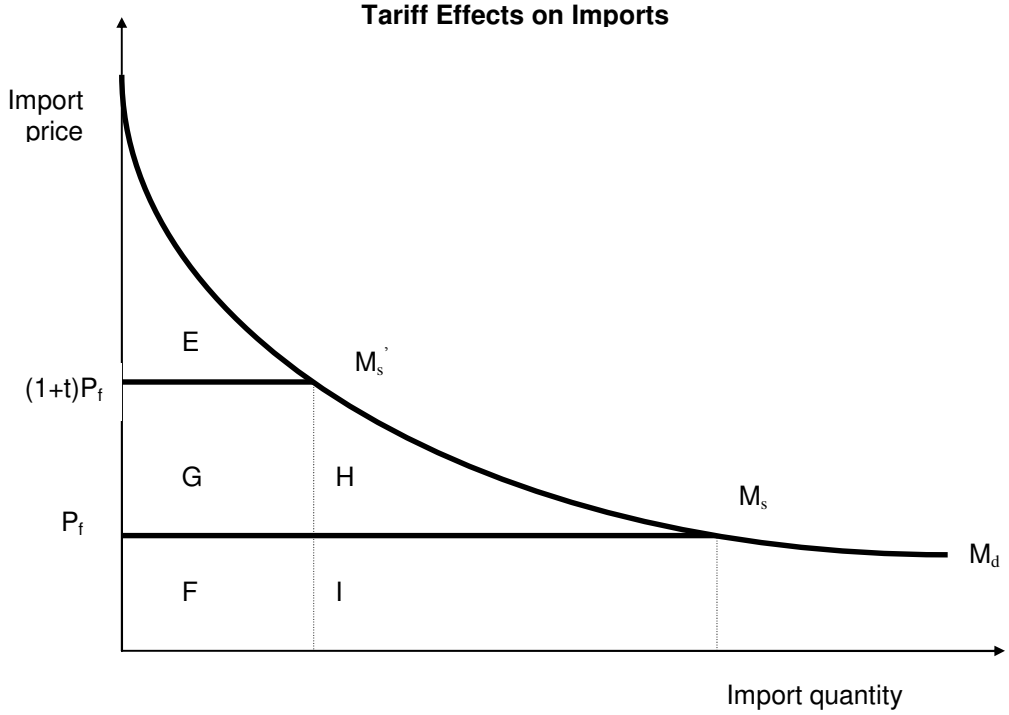


wood furniture. At the border-equivalent price P_f the amount *0A* is consumed and *0B* is produced. The amount *0B* is produced in Egypt and the difference *BA* is imported.

With an ad valorem tariff of *t*, the foreign supply schedule (import supply schedule) shifts from M_s to M_s'. The domestic-equivalent price is $P_d = P_f + tP_f = P_f(1+t)$. At that price the quantity demanded decreases to *0C* and the domestic supplied increases to *0D*. The tariff produces the following effects:

(1) Consumer surplus declines by $a + b + c + d$.
(2) Producer surplus increases by a.
(3) Government revenue increases by c.
(4) The 'deadweight' loss for consumers is d.
(5) The 'deadweight' production or efficiency loss is b.
(6) Total welfare loss is $d + b$.

Figure 4.3
Tariff Effects on Imports



With MFN Tariff:

- Consumer surplus: E
- Foreign producer revenue: F
- Government revenue: G
- Deadweight loss: H

With Multilateral Free Trade:

- Consumer surplus: E + G + H
- Foreign producer revenue: F + I
- Government revenue: None
- Deadweight loss: None

The same conditions are represented for the industry in Figure 4.3 in terms of the amount imported at the domestic and border-equivalent prices. The industry's import demand function is M^d and, as in Figure 4.2, the import supply function is again shown to be perfectly elastic with respect to prices. As a result, the import supply schedules are shown by the horizontal lines at $(1+t)P_f$ and P_f.

The Technical Appendix contains the mathematical specification of the effects of the tariff. The calculations of the direct effects of Egypt's protectionist policies in the furniture industry are based on the import demand relationship estimated for wood furniture. The estimate takes into account changes in the levels of import demand arising from the imposition of tariffs, and time-related adjustments arising from the lagged response of imports to possible changes in those tariffs. By its very nature, the econometric-based modeling approach provides internally consistent empirical results at a detailed level.

Table 4.4
Effects of Protection on 1997 Value of Furniture Imports in Egypt (US$)

Actual Imports	Effects of Protection	Consumer Welfare Effect
9,478,000	-3,909,107	-803,191

The results of the partial equilibrium analysis show that the 40 percent tariff on furniture imports reduces the value of imports by $US3.9 million below what it would otherwise have been without protection on the industry. The loss of consumer welfare is US$0.8 million (Table 4.4). The effect of protectionist measures take two years to occur. Following the introduction of the 40 percent tariff on furniture, the volume of imports decreases by 26 percent in the first year and another 23 percent in the second year. As a result, there is a minimal effect on the value of imports in the first year, but a large effect by the time the adjustment has been completed in the second year.

Table 4.5
Overall Effects of Protectionism (percent change)

	First-Year Effect	Total Effect
Volume	-26.0%	-49.4%
Price	40.0%	40.0%
Value	3.7%	-29.2%

The present partial equilibrium approach excludes the consideration of feedback effects between the external and domestic sectors, and therefore fails to take into account the sectoral adjustments that would accompany trade liberalization. Tariff cuts in the furniture industry would probably influence the industries that provide both material and other inputs to the industry through changes in relative prices of factors of production and the final products themselves. These linkages would, in turn, affect the allocation of domestic resources and influence the competitive position of Egypt's furniture products in the domestic and foreign markets.[1]

A rough approximation of the effect on exports of the tariff on both furniture imports and those of their inputs is the so-called 'anti-export bias' estimate. The extent of tariff-induced bias against furniture exports (denoted B_x) is calculated from the estimated use of

[1] The approach used to estimate the foreign demand for selected products in Egypt is adopted from Lord (1988, 1989a, 1989b, 1990, 1991, 1992), and has been applied elsewhere to measuring the effects of protectionism on trade of other countries (Boye and Lord, 1994, 1995, 1996a, 1996b).

the duty drawback system, which provides tariff refunds on imported inputs used in the production of exported furniture. The formula widely used to calculate the anti-export bias is $Bx_j = [(1 + t_j)/(1 + s_j) - 1] * 100$, where t_j is import tariff rate on furniture, and s_j is the export subsidy rate, or duty drawback per LE of export, calculated as $(NRP_i * m_{ij})$ where NRP_i is the nominal tariff rate on input i, m_{ij} is the technical coefficient of imported commodity i per LE worth of product j. The technical coefficients are those used to calculate the ERP and are presented in the Technical Appendix.

The results of these calculations indicate that the anti-export bias on wood furniture equals 12.4 percent. This rate compares with an average for all activities in Egypt of 19.7 percent in 1997, according to calculations in a recent study by DEPRA (1999), and is substantially lower that the 46.2 percent for the furniture industry in that year. The large reduction in the anti-export bias is the result of a reduction in the import tariff on furniture from 50 to 40 percent in 1998, and a calculated export subsidy rate of 2.5 percent calculated by the earlier DEPRA study for 1997, compared with 24.6 percent calculated in the present study for 1998. These changes reflect a combination of (a) a lower tariff rate on furniture imports, and (b) a large increase in the tariff rate on inputs for the furniture industry.

Although the calculations show that bias against exports of furniture has recently decreased, the export bias measure is defined in such a way that it assumes that the duty drawback system is operating efficiently and that exporters are using it. If duty drawback system were efficient and invoked by producers, then they would derive substantially greater benefits under the present tariff schedule than in the past. However, this does not appear to be the case. Informal discussions with producers reveal that the system is too cumbersome to use since it involves extensive administrative and bureaucratic requirements needed to obtain refunds. If this is the case, then production and exports costs have escalated. Our calculations show that tariffs on imported inputs for the furniture industry have risen from 2.5 percent (according to an earlier DEPRA study) to 25 percent. As a result, customs regulations, tariffs and duty drawback system have increased the cost of production and thereby lowered the ability of furniture manufacturers to compete in the global marketplace.

C. The Real Effective Exchange Rate and the Demand for Egypt's Exports

The international competitiveness of Egypt's furniture exports is generally reflected in the country's real exchange rate, which takes into account both general price movements in Egypt relative to that of each of its trading partners, and the cross exchange rate between Egypt and each of its trading partners.[2] Table 4.6 and Figure 4.4 both show the

[2] The real exchange rate is defined as $e^r_t = e^n_t P^f_t / P_t$, where e^n is the nominal exchange rate, P^f is the foreign currency price of goods purchased abroad, and P is the domestic price level. A rise in e^r represents a real *devaluation* in a fixed exchange rate system that can be brought about by either a rise in the nominal exchange rate e^n, or a rise in the relative price of foreign goods (equivalent to a relative fall in the price of domestic goods). Conversely, a fall in e^r represents a real *revaluation* under a fixed exchange rate system.

real effective exchange rate of Egypt and its international competitiveness, measured in terms of the currencies of its major export markets in North America, the European Union, and the Middle East. In recent years, there has been an increasing convergence of the real cross-rates for the United States and the Middle East. The real cross-rate for the European Union, however, has increasingly diverged from the other two regions.

Table 4.6
Egypt's Real Effective Exchange Rate (REER) and International Competitiveness (1990 = 100), 1980-98

	Nominal Exch. Rate (LE/US$)	REER Index	Index of International Competitiveness			
			All Major Markets	North America	European Union	Middle East
1980	0.700	89.4	111.9	109.4	109.7	109.9
1981	0.700	104.0	94.2	107.8	89.8	109.8
1982	0.700	121.7	82.2	99.3	74.9	99.5
1983	0.700	140.1	71.4	90.2	62.4	90.3
1984	0.700	174.2	57.1	80.4	50.1	80.5
1985	0.700	204.6	48.9	73.6	44.0	74.3
1986	0.700	196.3	51.0	60.6	48.2	61.2
1987	0.700	210.7	47.5	50.2	46.8	50.6
1988	0.700	226.3	44.2	46.1	43.2	46.2
1989	1.100	174.6	56.9	63.2	54.1	63.2
1990	2.000	100.0	100.0	100.0	100.0	100.0
1991	3.330	69.5	144.0	144.3	142.7	144.2
1992	3.330	79.5	124.7	123.4	127.0	123.5
1993	3.370	92.0	108.7	114.6	104.3	114.8
1994	3.387	96.8	103.4	109.0	99.8	109.5
1995	3.390	96.9	103.2	102.7	101.2	103.0
1996	3.388	100.5	99.5	98.8	97.1	99.0
1997	3.388	111.6	89.6	94.2	84.0	94.4
1998	3.388	116.1	86.2	92.5	81.7	93.4

Note: The index of international competitiveness is the inverse of the REER.

Egypt's international competitiveness based on the real exchange rate of the LE has been declining since 1991 in all its major markets. Nevertheless, the decline has been more significant in the EU market than in the United States and the Middle East. As a result, Egyptian furniture producers face a relatively more favorable position in the US and Middle East markets than they do in the EU market (see Figure 4.5). As a result, the demand for exports of Egypt would be more favorable in the US market than it those of the European Union and Middle East if the price responsiveness of importers in those markets are the same.

The fall is associated with either a drop in the nominal exchange rate e^n or a fall in relative prices of foreign goods (equivalent to a rise in relative prices of domestic goods).

Figure 4.4
International Competitiveness of Egyptian Pound

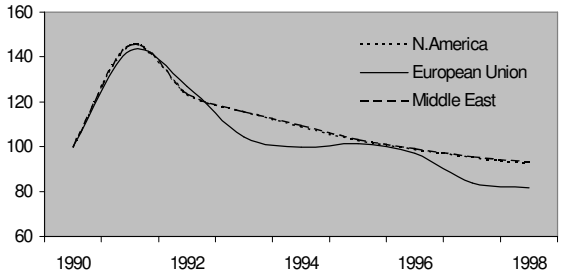
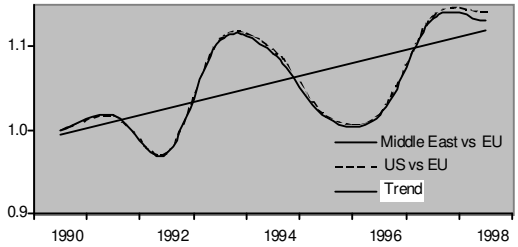


Figure 4.2
Egypt's Competitiveness in US and Middle East Markets Relative to EU Market



We have measured the impact of Egypt's international competitiveness of its furniture exports in each of the major regional markets, as well as for the global furniture market as a whole. The results of the estimates of the demand for Egypt's exports of wood furniture are shown in Table 4.7 and details of the specification of the export demand relationship are discussed in the Technical Appendix.

The effect of Egypt's real effective exchange rate on its international competitiveness and the export demand for furniture are statistically significant in the global market and a number of regional markets. The magnitude of the price competitiveness and income elasticities of demand for Egypt's furniture exports are shown in Table 4.8. The long-run competitive price elasticity of demand for exports is equal to 1.5

Table 4.7
Regression Results of Egypt's Export Demand for Wood Furniture

$\Delta x_t = \alpha_o + \alpha_1(x - y)_{t-1} + \alpha_2\Delta y_t + \alpha_3 y_{t-1} + \alpha_4\Delta r_t + \alpha_5 r_{t-1}$

							Summary Statistics		
	$\ln(X/Y)_{t-1}$	$\ln(Y_t/Y_{t-1})$	$\ln(Y)_{t-1}$	$\ln(R_t/R_{t-1})$	$\ln(R)_{t-1}$	Const	R^2	dw	SEE
World	-0.99	10.84	3.38	0.18	1.47	-18.5	0.97	2.7	0.103
	(2.5)	(1.5)	(2.0)	(0.6)	(4.7)				
United States	-0.64		4.49		0.82	-23.0	0.94	1.4	0.143
	(4.8)		(2.4)		(4.9)				
European Union	-0.77		7.4	1.47		-33.5	0.94	2.0	-0.235
	(2.8)		(4,1)	(4.1)					
Middle East	-0.91	2.62	7.92	1.39		-34.6			
	(2.3)	(0.5)	(1.7)	(1.2)					

Notes:
1/ The variables are defined as follows: X is the volume of furniture exports; Y is real GDP (a proxy for capacity utilization); R equals 1/REER, the real effective exchange rate, and it measures Egypt's international competitiveness in either the global marketplace or specific export markets.
2/ Period over which the equations were estimated equaled 1984-96.
3/ Binary variables were included in the equation for the US in 1990 (1 in 1990; 0 otherwise); in the EU for 1988; and in the Middle East for 1992.
4/ Figures in parentheses below the coefficients refer to t-statistics.

Table 4.8
Income and Competitive Price Elasticities of Demand for Egypt's Exports of Wood Furniture

		Elasticity with respect to:	
		Price	**Income**
World	Short-run	0.18	10.84
	Long-run	1.47	4.39
United States	Short-run	-	-
	Long-run	1.29	8.00
European Union	Short-run	1.47	-
	Long-run	-	10.67
Middle East	Short-run	1.39	2.65
	Long-run	-	9.74

in the global market, and in the US market it equals 1.3. In the short run, the competitive price elasticity ranges from 0.2 to 1.4.

Table 4.8 also confirms expectations about the relatively high income elasticities of export demand for Egypt's furniture exports. It is especially important in the US market in the long run. Given the relatively favorable competitive position of exports to that market (in comparison to that of the Middle East and the European Union), this situation would favor furniture exports to that market over that to other regions. Although Egypt's international competitive-ness in the EU and Middle East markets is significant only in the short run, the long-term effect may nevertheless be significant in individual markets within those regions.

V. Summary and Recommendations

Egypt has a long tradition of furniture making and woodworking that, in conjunction with its competitive wages, could give the furniture industry a comparative advantage in the global furniture market. At present, however, the wood furniture industry accounts for only a small fraction of the country's total industrial output, and even that share is less that half of what it was a decade ago. In contrast, other industries have flourished, most notably food products, refined petroleum, non-metallic mineral products, non-electrical machinery and apparel.

Despite this situation, the furniture industry remains a vital part of the economy. It supports a number of other economic activities through its linkages to other industries, especially wood and wood products, chemical products and metal parts, as well as research and development activities and the development of craftsmanship in the industry. Moreover, the industry's performance has improved measurably in both its capital and labor utilization during the 1990s. The ratio of capital to output has fallen, indicating that the amount of capital needed to produce each LE of output has decreased. At the same time that capital efficiency has increased (by 28 percent in the 1990s), the industry has become more capital intensive as the ratio of capital to labor has increased.

To remain competitive, furniture manufacturers need ready access to both inexpensive skilled and unskilled labor and material inputs. Producers are highly dependent on imported wood for raw materials, as well as a number of intermediate products that include paints and varnishes, glues, metal fittings, woodworking electrical and non-electrical equipment, upholstery material and plastics. As the principal input, wood needs to be available in large and varied quantities and the quality needs to be high. Upholstered furniture requires a broad spectrum of materials such as cotton, polyesters, and acrylics, as well as plastic materials. Similarly, ready supplies of glues, paints and varnishes are also needed. Finally, the industry relies heavily on woodworking machinery, which is essential for the technological progress of new and existing industry segments. In all these areas, Egypt relies on foreign supplies for its material inputs to furniture production.

In contrast, exports currently represent only a relatively small proportion of total domestic production. Household furniture, especially for the bedroom, is the major type of furniture exported, while office and kitchen furniture represents a relatively small proportion of the total. Exports of all types of wood furniture are distributed among the three global regional markets of the Middle East, the European Union (EU), and North America. Together these three regional markets absorb 75 percent of Egypt's total wood furniture exports. The two regional markets of North America and Europe are the world's largest markets, accounting for over 90 percent of total world imports. The other important market for Egypt is Russia, although this market has contracted sharply during the 1990s. The fastest growing market has been the Middle East, followed by North

America and, in particular, the United States. Exports to the EU market have also expanded, but at about two-thirds the rate of export growth to the North American market, and less than one-half of that to the Middle East.

Import substitution policies have attempted to reverse the decline of furniture manufacturing activities. Furniture manufacturing remains one of the most highly protected industries in Egypt. Although the nominal rate of protection (NRP) for that industry was lowered from 50 percent in 1997 to 40 percent under Presidential Decree No./1998, its rate remains the fourth highest of all manufacturing categories. Only so-called luxury items such as automobiles, liquor and tobacco have higher rates. The mean average tariff for all manufacturing activities is just over 25 percent.

The effective rate of protection (ERP) for the wood furniture industry is also very high, averaging 216 percent for the industry as a whole. Moreover, the ERP for the private sector, which dominates the industry, is more than twice as high as that of the public sector. For the private sector the ERP is 219 percent, while that for the public sector is 106 percent. Tradables inputs represent the bulk of the costs of intermediate goods and services and consequently dominate the industry's capacity to generate value added. For material inputs, the production-weighted average tariff is 25 percent for the private sector, while that on finished goods is 40 percent. As a result, the value added of the private sector at domestic equivalent prices is much higher than the value added at border equivalent prices.

The effect of high import tariffs on furniture products has been to lower overall imports considerably below what they would otherwise have been with growing consumer demand in Egypt. Calculations using partial equilibrium analysis show that the 40 percent tariff on furniture imports reduces the value of imports by $US3.9 million below what it would otherwise have been without protection afforded to the industry. The loss of consumer welfare is US$0.8 million. Overall, the 40 percent tariff has led to a 49 percent decline in the volume of imports, which together with the rise in prices, has reduced the value of imports by 29 percent.

The partial equilibrium approach excludes consideration of feedback effects between the external and domestic sectors, and therefore fails to take into account the sectoral adjustments that would accompany trade liberalization. Tariff cuts in the furniture industry would probably influence the industries that provide both materials and other inputs to the industry through changes in relative prices of factors of production and the final products themselves. These linkages would, in turn, affect the allocation of domestic resources and influence the competitive position of Egypt's furniture products in the domestic and foreign markets.

A rough approximation of the effect on exports of the tariff on both furniture and their inputs is the so-called 'anti-export bias' estimate. The results of these calculations indicate that the anti-export bias on wood furniture in mid-1999 equals 12 percent compared with an average calculated by an earlier DEPRA study of 20 percent for all activities in Egypt in 1997. This rate is also substantially lower that the 46 percent anti-

export bias for the furniture industry in 1997. The large reduction in the anti-export bias in 1999 is the result of a cut in the tariff on furniture imports from 50 percent in 1997 to 40 percent in 1999, and an export subsidy rate of 2.5 percent calculated by the earlier DEPRA study for 1997 compared with a 25 percent export subsidy rate calculated in the present study for 1999.

Although the calculations show that the bias against exports of furniture has recently decreased, the export bias measure is defined in such a way that it assumes that the duty drawback system is operating efficiently and that exporters are using it. If the duty drawback system were efficient and invoked by producers, then they would derive substantially greater benefits under the present tariff schedule than in the past. However, this does not appear to be the case. Informal discussions with producers reveal that the system is too cumbersome to use since it involves extensive administrative and bureaucratic requirements needed to obtain refunds. Under these conditions, the anti-export bias without the drawback system being invoked would simply equal the nominal rate of protection on furniture, that is, 40 percent. If this is the case, then customs regulations, tariffs and duty drawback system have increased the cost of production and thereby lowered the ability and willingness of furniture manufacturers to compete in the global marketplace.

Foreign demand for Egypt's furniture exports depends on two decision levels of the consumer. The first is the total amount of furniture that will be demanded by consumers based on income, price and demographic factors. The second is the amount that will be purchased from different domestic and foreign suppliers based on their relative prices. In the foreign markets, there is a strong income-related response in the demand for wood furniture in the global market. On average, the income elasticity is greater than unity, and the average income elasticity is 1.7. As expected, the Middle East has the highest income elasticity of the three global regional markets, reflecting the strong emerging demand for durable goods in that region. Within Europe there are also individual markets with strong demand prospects, particularly in Belgium and Austria. The US market has an income elasticity of 1.2, reflecting a relatively robust market. In Egypt import demand has a short-term price elasticity of –0.89 and a long-term price elasticity of –2.0. This relatively strong price responsiveness has important implications for tariff-related policies.

The demand for Egypt's exports of furniture has been affected by the country's declining international competitiveness based on the real exchange rate of the LE. The decline since 1991 has been more significant in the EU market than in those of the United States and the Middle East. As a result, Egyptian furniture producers face a relatively more favorable position in the US and Middle East markets than they do in the EU market. The effect of Egypt's real effective exchange rate on its international competitiveness and the export demand for furniture are statistically significant in the global market and a number of regional markets. It is especially important in the US market in the long run. In contrast, Egypt's international competitiveness has only a short-term effect in both the EU and Middle East markets. The long-term effect may, nevertheless be significant in individual markets within those regions. Specifically, the long-run competitive price elasticity of demand for exports is equal to 1.5 in the global market, and in the US market

it equals 1.3. In the short run, the competitive price elasticity ranges from 0.2 to 1.5. The results of the estimated export demand relationships also confirm expectations about the relatively high income elasticities of export demand for Egypt's furniture exports. These results suggest that Egypt could significantly affect the demand for its furniture exports in the global market, as well as particular export markets such as the United States, by improving its international competitiveness based on the real exchange rate of the LE

These findings point to a number of policy recommendations for the furniture industry in Egypt. The recommended policy initiatives are designed to strengthen exports of the furniture industry by improving the trade environment, lowering costs and improving efficiency. To be effective, these initiatives need to be viewed as an integral part of the country's overall economic policies and structural reforms. The specific recommendations presented in Box 7.1 aim to support the opening up of Egypt's furniture industry through initiatives in the areas of legislative and regulatory measures, trade liberalization, information support, exchange rate policies, and enhancement of foreign direct investment (FDI) inflows.

As part of these initiatives, it is important to note that industry-level analysis requires fairly detailed information that is not currently available. The primary source of industry-level statistics is CAPMAS. However, the information available from this agency often needs to be supplemented by industry data from UNIDO and the United Nations. Production data for industry sub-sector or segments are available from CAPMAS, but data on their material inputs are unavailable. Moreover, data reliability for industry segments, as well as that at the industry level, remains questionable, and there are large discrepancies between the information provided by different sources of data, notwithstanding the use of the same nomenclatures. Improved access to data and greater data reliability therefore remain an important priority for the country.

Box 5.1 **Recommend Policy Initiatives to Stimulate Export Growth of Furniture Industry**		
Existing Challenge	**Recommended Actions**	**Expected Impact / Benefits**
Tariffs on Final Products 1. 40% tariff rate on furniture imports is fourth highest of all manufacturing categories 2. FDI and technology transfer potential is limited due to high import tariffs	**Low tariffs to allow for FDI inflows and technology transfers.**	• Will help to develop furniture industry by stimulating competition • Will increase productivity of industry through technological improvements associated with FDI inflows • Will raise consumer welfare
Duty Drawback System 1. System is too cumbersome to use effectively 2. Tariffs and duty drawback system have increased the cost of production	**Improve the drawback system, including the information flow between public and private sectors**	• Will encourage production and expand exports • Will improve understanding between private and public sectors
Exchange Rate Policies 1. Egypt's international competitiveness has declined since 1991 based on the real exchange rate of the LE 2. Demand for Egypt's exports of furniture have been affected in the global furniture market	**Examine effect of real exchange rate appreciation on specific industries, especially as they affect international competitiveness, and consider exchange rate compensatory mechanisms to improve international competitiveness of exports**	• Will expand demand for exports of furniture • Will increase the market shares of Egyptian furniture exporters in the global market
Tariffs on Inputs 1. Tradables inputs represent the bulk of the costs of intermediate goods and services. 2. The overall tariff on furniture inputs is high	**Lower or eliminate tariffs on inputs to reduce cost of production in furniture industry**	• Will reduce production costs of industry and increase efficiency • Will attract FDI and stimulate industry's international competitive.
Information System 1. Data on furniture market are lacking 2. Existing data are often unreliable 3. Access to existing data is limited	**Improve data collection, reliability and dissemination of information on furniture industry and industry segments**	• Will improve market information and producers will have a better under-standing of the domestic and foreign market • Will stimulate FDI inflows as information on industry becomes more accessible

Technical Appendix

A. Estimating the Demand for Wood Furniture

The estimates of the relationships for domestic consumption, foreign import demand and Egypt's export demand in the furniture industry follow a sequence of steps to (a) identify the characteristics of each series, (b) specify the parsimonious model used to characterize the data-generating process, and (c) estimate the model. This Technical Appendix describes the steps needed to identify the characteristics of each series and, where appropriate, to model their relationship to one another.

Step 1: Unit Root Tests

An economic relationship generally refers to a state where there is no inherent tendency to change. Such a relationship is, for example, described by the export demand relationship of the log linear form $x_i = \beta y_j$, where export changes in country i are related to changes in the economic activity of a foreign market j. In practice, however, an equilibrium relationship is seldom observed, so that measures of the observed relationship between x_i and y_j include both the equilibrium state and the discrepancy between the outcome and the postulated equilibrium. The discrepancy, denoted d, cannot have a tendency to grow systematically over time, nor is there any systematic tendency for the discrepancy to diminish in a real economic system since short-term disturbances are a continuous occurrence. The discrepancy is therefore said to be stationary insofar as over a finite period of time it has a mean of zero.

Individual time series that are themselves stationary are statistically related to each other, regardless of whether there exists a true equilibrium relationship. Thus, before estimating the export demand for Egypt's furniture, it is useful to determine whether the data generating process of each of the series is itself stationary. Since economic activity variables have a tendency to grow (positively or negatively) over time, the variables themselves cannot be stationary, but changes in those series might be stationary. Series that are integrated of the same order, however, are said to be cointegrated and to have a long-run equilibrium relationship.[1] For trending variables that are themselves non-stationary, but can be made stationary by being differenced exactly k times, then the linear combination of any two of those series will itself be stationary. It is therefore important to test the order of integration of the key series in the model.

[1]A series is said to be integrated of order k, denoted I(k), if the series needs to be difference k times to form a stationary series. Thus, for example, a trending series that is I(1) needs to be differenced one time to achieve stationarity.

Tests for stationarity are derived from the regression of the changes in a variable against the lagged level of that variable. Consider the following simple levels regression:

$$y_t = a + by_{t-1} + d \qquad (A.1)$$

where *a* and *b* are constants and *d* is an error term. y is a stationary series if -1< *b* <1. If =1, y is a non-stationary series and is instead a random walk with drift; if the absolute value of *b* is greater than one, the series is explosive.

By subtracting y_{t-1} from both sides, we obtain

$$\Delta y_t = a + (b-1)y_{t-1} + d \qquad (A.2)$$

The disturbance term *d* now has a constant distribution and the t-statistic on y_{t-1} provides a means for testing non-stationarity. If the coefficient on y_{t-1} is zero, then *b* must be equal to 1, and *y* is therefore stationary. The Augmented Dickey-Fuller test is a test on the t-statistic of the coefficient on y_{t-1}. The hypothesis $H_0 = b-1 = 0$ is called the unit-root hypothesis and it implies that y_t is non-stationary.

The second test for non-stationarity is the Durbin-Watson (DW) test on the levels regression specified above. Since the DW statistically is given by

$$DW = 2(1-r) \qquad (A.3)$$

where *r* is the correlation coefficient between y_t and y_{t-1}, then *y* is white noise when *r* is zero. The DW is therefore 2 when *y* is stationary.

Step 2: Modeling Supply and Demand Relationships of the Furniture Industry

Economic series that are related to the long-run adjustment processes of other variables have been designated to be cointegrated series by Granger and Weiss (1983) and Engle and Granger (1987). The theory of cointegration states that if two series, *x* and *y*, grow over time in such a way that the linear combination of these two variables, given by $d_t = x_t - \alpha y_t$, is stationary, and if α is unique, then *x* and *y* are said to be cointegrated. The series d_t measures the disequilibrium at period *t* when the long-run relationship between the two variables is $x_t = \alpha y_t$. The theory of cointegration states that movements in variables are related in a predicable way to the discrepancy between observed and equilibrium states. The sequence of this discrepancy tends to decay to its mean of zero.

Engle and Granger (1987) have demonstrated that a data-generating process of the form known as the "error-correction mechanism" (ECM) adjusts for any disequilibrium between variables that are cointegrated. The ECM specification thus provides the means by which the short-run observed behavior of variables is associated with their long-run equilibrium growth paths. Davidson *et al.* (1978) established a closely-related specification know as the "equilibrium-correcting mechanism" (also having the acronym

ECM) that models both the short and long-run relationships between variables. Rearranging the terms of a first-order stochastic difference equation yields the following ECM:

$$\Delta x_t = \alpha_o + \alpha_1(x - y)_{t-1} + \alpha_2 \Delta y_t + \alpha_3 y_{t-1} + v_t \qquad (A.4)$$

where $-1 < \alpha_1 < 0$, $\alpha_2 > 0$ and $\alpha_3 > -1$, and where all variables are measured in logarithmic terms.

The second term, $\alpha_1(x - y)_{t-1}$, is the mechanism for adjusting any disequilibrium in the previous period. When the rate of growth of the dependent variable x_t falls below its steady-state path, the value of the ratio of variables in the second term decreases in the subsequent period. That decrease, combined with the negative coefficient of the term, has a positive influence on the growth rate of the dependent variable. Conversely, when the growth rate of the dependent variable increases above its steady-state path, the adjustment mechanism embodied in the second term generates downward pressure on the growth rate of the dependent variable until it reaches that of its steady-state path. The speed with which the system approaches its steady-state path depends on the proximity of the coefficient to minus one. If the coefficient is close to minus one, the system converges to its stead-state path quickly; if it is near to zero, the approach of the system to the steady-state path is slow. Since the variables are measure in logarithms, Δx and Δy can be interpreted as the rate of change of the variables. Thus the third term, $\alpha_2 \Delta y_t$, expresses the steady-state growth in *X* associated with *Y*. Finally, the fourth term, $\alpha_3 y_{t-1}$, shows that the steady-state response of the dependent variable *X* to the variable *Y* is non-proportional when the coefficient has non-zero significance.

The equilibrium solution of equation (A.4) is a constant value if there is convergence. Since the solution is unrelated to time, the rate of change over time of the dependent variable *X* (given by Δx_t) and the explanatory variable *Y* (given by Δy_t) are equal to zero. However, in dynamic equilibrium, equation (A.4) generates a steady-state response in which growth occurs at a constant rate, say *g*. For the dynamic specification of the relationship in (A.4), if g_1 is defined as the steady-state growth rate of the dependent variable *X,* and g_2 corresponds to the steady-state growth rate of the explanatory variable *Y,* then, since lower-case letters denote the logarithms of variables, $g_1 = \Delta x$ and $g_2 = \Delta y$ in dynamic equilibrium. In equilibrium the systematic dynamics of equation (A.4) are expressed as:

$$g_1 = \alpha_o + \alpha_1(x - y) + \alpha_2 g_2 + \alpha_3 y \qquad (A.5)$$

or, in terms of the original (anti-logarithmic) values of the variables:

$$X = k_0 Y^{\beta} \qquad (A.6)$$

where $k_0 = \exp\{(-\alpha_o/\alpha_1) + [(\alpha_1 - \alpha_2\alpha_1 - \alpha_3)/ \alpha_1^2]g_2$, and where $\beta = 1 - \alpha_3/\alpha_1$.

The dynamic solution of equation (A.6) therefore shows *X* to be influenced by changes in the rate of growth of *Y*, as well as the long-run elasticity of *X* with respect to *Y*. For example, where the rate of growth of the explanatory variable accelerate, say from g_2 to g'_2, the value of the variable *X* would increase. However, it is important to reiterate that the response to each explanatory variable can be either transient or steady-state. When theoretical considerations suggest that an explanatory variable generates a transient, rather than steady-state, response, it is appropriate to constrain its long-run effect to zero.

Step 3: Modeling Exchange Rate Effects in the Furniture Industry

The effects of changes in the international competitiveness of Egypt on the furniture industry can be measured by extending the first-order stochastic difference equation to include that variable. Transformation of an autoregressive distributed lag into an ECM with a 'differences' formulation of the relative price or exchange rate term nested in the levels form of the equation yields the equation:

$$\Delta x_t = \alpha_o + \alpha_1(x - y)_{t-1} + \alpha_2\Delta y_t + \alpha_3 y_{t-1} + \alpha_4\Delta r_t + \alpha_5 r_{t-1} + v_t \qquad (A.7)$$

where $-1 < \alpha_1 < 0$, $\alpha_2 > 0$, $\alpha_3 > -1$, $\alpha_4 > 0$ and $\alpha_5 > 0$, and where all variables are measured in logarithmic terms.

We measure the competitiveness, *r*, of Egypt as the inverse of the real effective exchange rate, *e*. The real exchange rate (RER) is the bilateral rate which takes into account changes in relative price levels between Egypt and a foreign country. It measures changes in the purchasing power between the domestic and the foreign economy, and it provides an indicator of changes in the international competitiveness of the domestic economy in its ability to purchase more (or less) goods and services per unit of foreign currency. As an extension, the real effective exchange rate (REER) measures the average relative strength of the local currency, and it is calculated as the weighted average of RERs, where the weights are the value of imports from and exports to a given partner country *i* divided by total imports and total exports of Egypt.

Formally the real effective exchange rate is defined as $e^r_t = \Sigma_i w_i [e^n_t(P^f_t/P_t)]$ where e^n is the nominal exchange rate, P^f is the foreign currency price of goods purchased abroad, and *P* is the domestic price level. A rise in e^r represents a real *devaluation* in a fixed exchange rate system, and a *depreciation* in a flexible exchange rate system, which can be brought about by either a rise in the nominal exchange rate e^n, or a rise in the relative price of foreign goods (equivalent to a relative fall in the price of domestic goods). Conversely, a fall in e^r represents a real *revaluation* under a fixed exchange rate system, and an *appreciation* under a flexible exchange rate system. The fall is associated with either a drop in the nominal exchange rate e^n or a fall in relative prices of foreign goods (equivalent to a rise in relative prices of domestic goods).

Step 4: Modeling Price and Income Effects of Foreign and Domestic Imports

An important characteristic of the import demand for any one product is that its long-term response to the growth of domestic income is not necessarily proportional. This suggests that the dynamic specification of the import demand equation should not introduce any restrictions that would impose long-run unitary elasticity with respect to income. In contrast, the model should encompass long-term proportionality responses when they exist.

A second feature of the present modeling approach is that the dynamics for import demand relationships can be restricted to one period since the adjustment of imports to price and income changes tends to decline exponentially over time. The third and final important characteristic is that prices of traded goods are measured in US dollar terms. If prices of imports were measured in local currency units, then the demand for imports by Egypt would also be directly affected by the real exchange rate, which would take into account changes in both the relative prices of domestic and foreign goods and the nominal exchange rate, as well as the foreign market price of the product.

The dynamic specification for imports, M, in terms of income, Y, and the price of the product, P, relative to the general price index, D, can be expressed as:

$$m_t = \alpha_0 + \alpha_1 m_{t-1} + \beta_1 y_t + \beta_2 y_{t-1} + \gamma_1 (p-d)_t + \gamma_2 (p-d)_{t-1} + u_t \qquad ...(A.8)$$

where lower case letters denote logarithms of corresponding capital letters, e.g., (p-d) = ln(P/D), and the expected signs of the coefficients are $0 < \alpha_1 < 1$; β_1 and $\beta_2 > 0$; γ_1 and $\gamma_2 < 0$. Income is treated as (weakly) exogenous for the parameters of interest.

The use of the logarithmic specification in equation (A.8) provides a means by which the elasticity can be calculated directly from the estimated equation; the results are consistent when the elasticities remain constant over time. Tests of parameter constancy provide a means of validating that hypothesis.

On a steady-state growth path, the long-run dynamic equilibrium relationship implicit in equation (A.8) is:

$$M = kY^{\varepsilon_y} P/D^{\varepsilon_p} \qquad ...(A.9)$$

where $\varepsilon_y = (\beta_1 + \beta_2)/(1-\alpha_1)$ and $\varepsilon_p = (\gamma_1 + \gamma_2)/(1-\alpha_1)$.

The results of the estimates provide quantitative measures of the impact that Egypt's market access concessions could have on its trade. Since data limitations restrict the application of the model, it is useful to review some of the widely used empirical models which equation (A.8) encompasses. These embedded models have been described by Hendry, Pagan and Sargan (1984) as follows:

(a) Static Model ($\alpha_1 = \beta_2 = \gamma_2 = 0$): $m_t = \alpha_0 + \beta_1 y_t + \gamma_1 (p\text{-}d)_t$

(b) Distributed Lag Model ($\alpha_1 = 0$): $m_t = \alpha_0 + \beta_1 y_t + \beta_2 y_{t-1} + \gamma_1 (p\text{-}d)_t + \gamma_2 (p\text{-}d)_{t-1}$

(c) Partial Adjustment Model ($\beta_2 = \gamma_2 = 0$): $m_t = \alpha_0 + \alpha_1 m_{t-1} + \beta_1 y_t + \gamma_1 (p\text{-}d)_t$

(d) First-Difference Model ($\alpha_1 = 1, \gamma_1 = -\gamma_2$): $\Delta m_t = \alpha_0 + \beta_1 \Delta y_t + \xi_1 \Delta p_t$

B. Analytical Tools for Trade Policy Assessments

1. Tariff Effect Measures

The effective rate of protection (ERP) can be defined for a product *j* as the percentage excess of domestic value added, *V* over the international market value added, *W*, i.e., that which would have been realized in the absence of the existing tariff structure:

$$ERP_j = (V_j - W_j) / W_j \qquad \ldots(A.10)$$

The main determinant of the ERP level is the relationship between the nominal rates of protection of outputs and inputs, although the share of tradeable inputs in any selected activity, or the technical coefficient, also influences the level of the ERP. Practically, the ERP could be calculated either through detailed information concerning the activities at the firm level, or through the data supplied by input-output tables. If input-output tables are available, the ERP can be calculated in the following manner:

$$\text{Let} \quad W_j = P_j(1 - \Sigma_i a_{ij})$$
$$V_j = P_j[(1+t_j) - \Sigma_i a_{ij}(1+t_i)]$$

where:
a_{ij} is the technical coefficient of input in activity *j*, i.e., the value of input *i* per unit value of output in activity *j*;

t_j = the nominal rate of protection of production of *j*;
t_i = the nominal rate of protection of input *i*.

Then from equation (A.10) we can express the level of effective protection as follows:

$$ERP_j = \{P_j[(1+t_j) - \Sigma_i a_{ij}(1+t_i)] / P_j(1 - \Sigma_i a_{ij})\} - 1 \qquad \ldots(A.11)$$

Rearranging terms yields the formula used to estimate the level of effective protection:

$$ERP_j = (t_j - \Sigma_i a_{ij} t_i) / (1 - \Sigma_i a_{ij})$$

$$= (1 - \Sigma_i a_i)/\{[1/(1+t)] - \Sigma_i [a_i/(1+t_i)]\} - 1 \qquad \ldots(A.12)$$

which is the formula applied to the furniture industry in this study, and that applied in DEPRA (1998) to the footwear industry.

2. Measuring the Effects of Import Tariffs

Since the foreign market export supply to small markets like that of Egypt is likely to be perfectly price elastic, *in the short run* the percentage change in import demand associated with a change in tariff is equal to: [2]

$$\Delta M/M = \varepsilon^{p}_{s} [\Delta t_i/(1+t_i)] \quad \ldots(A.13)$$

where ε^{p}_{s} is the price elasticity of import demand in the short run, *M* is the volume of import demand, and *t* is the ad valorem tariff rate applied to wood furniture.

Similarly, in the *long run* the percentage change in imports of furniture corresponding to a change in the associated ad valorem tariff is equal to:

$$\Delta M/M = \varepsilon^{p} [\Delta t/(1+t)] \quad \ldots(A.14)$$

where ε^{p} is the price elasticity of import demand in the long run.

The change in import demand is obtained when equation (A.14) is multiplied on both sides of the equation by *M*:[3]

$$\Delta M = \varepsilon^{p} [\Delta t/(1+t)] M \quad \ldots(A.15)$$

The magnitude of the change in trade is therefore shown to depend on (a) the price elasticity of demand for imports, (b) the share of imports from all sources, and (c) the percentage change in the reduction of the MFN rate.

The *total trade effect* is the US dollar value of the change in imports calculated by multiplying both sides of the equation by the price of each product:

$$\Delta V = \varepsilon^{p} [\Delta t/(1+t)] M + \Delta P/P \quad \ldots(A.16)$$

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[2] The 'small market' assumption is important for the calculations that follow. In calculating each of the different effects of tariff reductions, the assumption means that the Egypt market represents a fairly small proportion of its trading partners' total exports and, hence, that the import supply schedule is infinite with respect to prices. Prices of each of Egypt's imported furniture products are therefore changed by the full amount of any tariff reduction on the products. Were the import supply schedule to be less than perfectly elastic with respect to prices, a change in tariffs would lead to less than proportional changes in prices and smaller increases in the volume of imports than would otherwise occur under a perfectly price elastic import supply schedule.

[3] Similar calculations have been used by the UNCTAD Trade Policy Simulation Model (Laird and Yeats, 1986) and International Monetary Fund (1984).

The magnitude of changes in the government customs fees will depend on the offsetting movements arising from (a) lower MFN tariffs and (b) higher levels of trade with trading partners subject to MFN tariffs. The *customs revenue effect* is calculated from the *total trade effect*:

$$\Delta T/T = \Delta t/t + \Delta M/M \quad \ldots (A.17)$$

where T denotes the customs revenue.

Consumers gain from lower prices of imported goods when tariffs are reduced. For the pre-tariff-cut level of imports Cline *et al.* (1978) has noted that the import prices resulting from tariff reductions simply represent a transfer to consumers of revenue formerly collected by the Government in the form of customs duties and indirect taxes. There is, however, a welfare gain from the total trade effect. This effect is normally calculated as the average increase in the quantity of imports, ΔM, valued at the average between the tariff incidence before and after liberalization. Hence the *consumer welfare effect*, W, is given by:[4]

$$W = -\Delta t \, \Delta M/2 \quad \ldots (A.18)$$

The resulting calculation is the value of imports of individual products that can be summed to measure the total consumer welfare effect from the new tariff schedule. The US dollar value of the consumer welfare effect is calculated by multiplying both sides of the equation by the price of each product.

With material inputs also protected, we can also calculate the effect of protection on the changes in the amount sold to the consumers of furniture. Assuming that the inputs are used in fixed proportions and that the prices of inputs are fixed, the effect of protection on the unit cost of output, denoted *C,* of producing furniture is equal to:

$$\Delta M = \varepsilon^p \, \Delta C \, M/P \quad \ldots (A.19)$$

where, as before, ε^p is the price elasticity of import demand for furniture, ΔC is the difference between the unit cost of output resulting from the protection on inputs, and M and P refer to the quantity and unit price of imported furniture.

[4] Note that the earlier assumption of a perfectly price elastic supply schedule implies that tariff cuts are fully passed on to import prices. Otherwise, Laird and Yeats point out that the domestic price of imports would not decline by the full extent of the tariff change and there would also be a producer welfare effect implicit in equation (A.18).

3. Non-Tariff Effect Measures

Non-tariff measures (NTMs) encompass a wide range of policies and instruments that are unrelated to tariffs and that affect the quantities and prices of both imports and exports. UNCTAD uses a coding system to classify over 100 NTMs, and omits measures applied to production or exports. Laird and Guzman (in Lord, 1998) classify NTMs into five broad categories according to the intended motives of the measures. These categories are useful for the classification of NTMs currently in effect in Egypt: (1) Import volume controls, (2) Import price controls, (3) Monitoring measures, (4) Production and export measures, and (5) Technical barriers. Lack of data prevented the assessment of the impact of the removal of the various types of NTMs on the furniture industry in Egypt. Nonetheless, an overview of tools is presented below, following the classification set out by Deardorff and Stern (1997) and Laird (1996).

Frequency-Type Measures - - The trade coverage ratio and frequency index are two type of measures that indicate the frequency or occurrence of NTMs. The *trade coverage ratio* measures the percentage of trade subject to NTMs for an industry *j* at a desired level of product aggregation:

$$C_{ij} = [\Sigma (D_{it}V_{iT})/(\Sigma V_{iT})] * 100 \quad \ldots(A.20)$$

where, if an NTM is applied to the tariff line item *i*, the dummy variable D_i takes the value of one and zero otherwise; V_i is the value of imports in item *i*; *t* is the year of measurement of the NTM; and *T* is the year of the import weights.

The *frequency index* shows the percentage of import transactions covered by a selected group of NTMs for an indsutry , and is calculated as:

$$Fjt = [\Sigma (D_{it}M_{it})/(\Sigma M_{it})] * 100 \quad \ldots(A.21)$$

where D_i reflects the presence of an NTM on the tariff line item, M_i indicates whether there are imports in industry *j* of good *i* and *t* is the year of measurement of the NTM.

The results of calculations of these types of measures over a period of time will likely show trends in whether or not the use of NTMs has increased or decreased, or whether their incidence is more concentrated in certain products or groups of products in an industry. According to Deardorff and Stern (1997), the drawbacks associated with the trade coverage and frequency ratios are that: (a) shortcomings could arise from how NTMs are defined due their inconsistency in reporting and the level of aggregation used; (b) effects the might deter price and quantity decisions of importers are not taken into account; (c) NTMs are mainly border measures and therefore ignore the effects of internal governmental measures such as administrative procedures and monitoring measures; and (d) the ratios do not take into account the possible economic impact of NTMs on prices, production, consumption and international trade.

Statistical Appendix

Appendix Table 1
Production of Wood Furniture in Egypt, 1983-94
(Egyptian Pounds and Units)

	No. of Establishments	No. of Employees	Wages and Salaries (LE)	Output (LE)	Value Added (LE)
1983	79	6654	10,170,000	59,591,000	16,594,000
1984	78	6018	13,011,000	68,154,000	25,701,000
1985	68	5038	12,483,000	69,644,000	24,951,000
1986	76	5425	13,799,000	79,879,000	17,777,000
1987	114	8659	23,256,000	117,000,000	26,000,000
1988	109	8690	26,811,000	254,000,000	126,000,000
1989	117	6000	15,800,000	85,700,000	17,100,000
1990	97	5800	19,200,000	127,900,000	25,900,000
1991	128	8200	28,900,000	200,600,000	58,900,000
1992	113	6700	25,300,000	140,100,000	44,200,000
1993	116	8000	30,700,000	242,200,000	58,800,000
1994	138	8510	39,930,000	286,900,000	61,810,000

Source: UNIDO Statistical Database 1999 4-Digit ISIC (CD-ROM).

Appendix Table 2
Egypt's Supply and Demand for Manufacture of Furniture and Fixtures, Except Those Primarily of Metal (ISIC 3320), 1982-96
(1000 US dollars)

Year	Output	Imports	Exports	Trade Balance	Consumption
1981	na	14,812	1,949	(12,863)	na
1982	na	13,523	1,943	(11,580)	na
1983	85,130	12,266	1,615	(10,651)	95,781
1984	97,363	9,475	3,698	(5,777)	103,140
1985	99,491	5,263	333	(4,930)	104,421
1986	114,113	7,221	3,432	(3,789)	117,902
1987	167,143	3,294	4,080	786	166,357
1988	na	2,642	12,136	9,494	(9,494)
1989	77,909	1,380	15,189	13,809	64,100
1990	63,950	2,246	43,545	41,299	22,651
1991	60,200	2,545	30,626	28,081	32,119
1992	41,724	3,389	17,335	13,946	27,778
1993	71,831	3,196	14,259	11,063	60,768
1994	na	7,727	11,045	3,318	na
1995	na	7,877	9,735	1,858	na
1996	na	10,676	10,055	(621)	na

Source: UNIDO, Industrial Demand and Supply Statistics 1998. CD-ROM format.

Appendix Table 3
Total Production of Wood Furniture by Category in Egypt, 1983/84-95/96
(Egyptian Pounds)

	Furniture Total	Furniture and Fixtures for Bedroom	Chairs from Wood and Bamboo	Other Furniture and Fixtures	Other Bamboo Furniture
1983/84	26,726,981	6,435,488	9,354,498	10,244,922	692,073
1984/85	32,596,980	13,198,134	7,133,994	11,690,456	574,396
1985/86	27,730,373	3,710,538	5,751,143	17,719,865	548,827
1986/87	48,071,742	9,585,884	3,132,636	34,218,882	1,134,340
1987/88	80,662,467	53,954,840	3,518,920	23,188,707	-
1988/89	95,291,259	45,177,202	5,294,457	43,448,729	1,370,871
1989/90	99,204,183	36,121,877	4,510,382	56,350,356	2,221,568
1990/91	202,282,697	84,654,903	6,633,866	109,730,244	1,263,684
1991/92	220,259,200	114,748,810	34,370,945	68,067,906	3,071,539
1992/93	111,464,049	53,288,350	8,182,704	48,859,886	1,133,109
1993/94	171,408,225	94,550,218	8,818,197	64,965,147	3,074,663
1994/95	185,860,612	86,939,772	7,195,252	90,090,276	1,635,312
1995/96	214,187,650	102,056,446	11,543,557	98,402,900	2,184,747

Source: CAPMAS, *Commodity Industrial Production* (various issues)

Appendix Table 4
Private Sector Production of Wood Furniture by Category in Egypt, 1983/84-95/96 (Egyptian Pounds)

	Furniture Total	Furniture and Fixtures for Bedroom	Chairs from Wood and Bamboo	Other Furniture and Fixtures	Other Bamboo Furniture
1983/84	20,589,194	6,125,889	8,342,785	6,120,520	692,073
1984/85	25,065,578	12,669,856	5,747,994	6,073,332	574,396
1985/86	18,996,298	3,012,137	4,483,763	10,951,571	548,827
1986/87	33,166,662	8,278,457	1,668,778	23,051,011	168,416
1987/88	57,173,748	50,237,219	2,564,920	4,371,609	-
1988/89	78,102,573	44,245,315	5,263,632	27,222,155	1,370,871
1989/90	90,104,740	35,319,876	4,236,107	48,327,189	2,221,568
1990/91	191,319,131	84,654,903	6,463,701	98,936,843	1,263,684
1991/92	202,252,112	109,038,030	23,651,425	66,491,118	3,071,539
1992/93	105,871,878	53,280,916	7,913,846	43,544,007	1,133,109
1993/94	169,042,743	93,655,360	8,465,830	63,846,890	3,074,663
1994/95	181,984,654	85,776,669	5,645,499	88,927,174	1,635,312
1995/96	208,878,041	101,064,619	10,736,774	94,891,901	2,184,747

Source: CAPMAS, *Commodity Industrial Production* (various issues).

Appendix Table 5
Public Sector Production of Wood Furniture by Category in Egypt, 1983/84-95/96 (Egyptian Pounds)

	Furniture Total	Furniture and Fixtures for Bedroom	Chairs from Wood and Bamboo	Other Furniture and Fixtures	Other Bamboo Furniture
1983/84	5,445,714	309,599	1,011,713	4,124,402	-
1984/85	7,531,402	528,278	1,386,000	5,617,124	-
1985/86	8,734,075	698,401	1,267,380	6,768,294	-
1986/87	14,905,080	1,307,427	1,463,858	11,167,871	965,924
1987/88	23,488,719	3,717,621	954,000	18,817,098	-
1988/89	7,189,286	931,887	30,825	6,226,574	-
1989/90	8,905,564	802,001	80,405	8,023,158	-
1990/91	10,963,566	-	170,165	10,793,401	-
1991/92	8,017,080	5,720,780	719,520	1,576,788	-
1992/93	5,592,171	7,434	268,858	5,315,879	-
1993/94	2,365,482	894,858	352,367	1,118,257	-
1994/95	3,875,958	1,163,103	1,549,753	1,163,102	-
1995/96	5,309,609	991,827	806,783	3,510,999	-

Source: CAPMAS, *Commodity Industrial Production* (various issues)

Appendix Table 6
Total Production of Wood Furniture by Category in Egypt, 1983/84-95/96
(Units)

	Index of Total (1995/96=100)	Furniture and Fixtures for Bedroom	Chairs from Wood and Bamboo	Other Furniture and Fixtures	Other Bamboo Furniture
1983/84	34	1,708	631,111	na	na
1984/85	89	11,084	480,200	na	na
1985/86	102	3,110	339,269	140,176	25,608
1986/87	na	3,016	337,187	88,361	252,116
1987/88	92	33,166	186,512	38,305	na
1988/89	na	7,357	301,298	53,899	215,103
1989/90	92	14,201	148,189	95,420	na
1990/91	137	34,093	138,152	105,754	na
1991/92	na	14,820	131,632	103,140	na
1992/93	89	10,773	190,030	100,483	na
1993/94	137	39,999	195,403	87,754	na
1994/95	135	17,968	209,101	149,883	na
1995/96	100	14,248	200,997	106,930	13,064

Source: CAPMAS, *Commodity Industrial Production* (various issues)

Appendix Table 7
Private Sector Production of Wood Furniture by Category in Egypt, 1983/84-95/96 (Units)

	Index of Total (1995/96=100)	Furniture and Fixtures for Bedroom	Chairs from Wood and Bamboo	Other Furniture and Fixtures	Other Bamboo Furniture
1983/84	40	1,626	530,788	na	na
1984/85	91	10,951	383,200	na	na
1985/86	22	2,710	249,056	138,271	25,608
1986/87	na	2,605	243,025	76,536	49,720
1987/88	117	32,290	113,512	36,828	na
1988/89	na	6,989	299,513	46,260	215,103
1989/90	76	14,049	144,375	59,900	na
1990/91	170	34,093	130,916	104,405	na
1991/92	na	14,692	131,170	99,951	na
1992/93	64	10,766	178,382	98,134	na
1993/94	174	39,902	185,973	82,283	na
1994/95	110	17,834	174,934	149,749	na
1995/96	100	14,143	174,620	106,185	13,064

Source: CAPMAS, *Commodity Industrial Production* (various issues)

Appendix Table 8
Public Sector Production of Wood Furniture by Category in Egypt, 1983/84-95/96
(Units)

	Index of Total (1995/96=100)	Furniture and Fixtures for Bedroom	Chairs from Wood and Bamboo	Other Furniture and Fixtures	Other Bamboo Furniture
1983/84	214	82	100,323	na	-
1984/85	235	133	97,000	na	-
1985/86	363	400	90,213	1,905	-
1986/87		411	94,162.0	11,825	202,396
1987/88	329	876	73,000	1,477	-
1988/89		368	1,785	5,639	-
1989/90	86	152	3,814	35,520	-
1990/91	124	-	7,236	1,349	-
1991/92		128	462	3,189	-
1992/93	216	7	11,648	2,349	-
1993/94	67	97	9,430	5,471	-
1994/95	128	134	34,167	134	-
1995/96	100	105	26,377	745	-

Source: CAPMAS, *Commodity Industrial Production* (various issues)

Appendix Table 9

Total Private Sector: Manufacture of Furniture and Fixtures, 1987/88 - 1996/97
(Thousands of Egyptian pounds)

	Total Production							Intermediates													
	Value of Production							Total	Intermediate Goods									Intermediate Services			
Year	Final Product	Semi-Final Product	Industrial Services to Others	Other Revenues	Total	Output at Factor Cost	Net Value Added	Goods and Services	Local	Foreign	Other	Total	Packaging	Fuel	Electricity	Spare Parts	Total I	Other	Maintenane	Others	Total
1987/88	104,201	-2,202	209	514	102,722	102,732	24,448	72,309				55,114	337	226	245	758	56,680	878		16,317	17,195
1988/89	240,671	-2,163	232	927	239,667	239,406	122,361	110,181				81,316	740	552	622	1,280	84,510	1,714		27,151	28,865
1989/90	78,832	827	2,042	166	81,867	82,180	16,315	62,676	44,566	699	2,584	47,849	479	169	837	1,099	98,282	1,817	646	12,364	14,827
1990/91	125,395	-3,647	781	809	123,338	122,097	123,130		67,643	154	2,176	69,973	562	327	630	657	142,122	1,995	876	21,486	24,357
1991/92	188,339	-182	392	7,235	195,784	193,710	56,792	121,185	87,079	4,986	8,557	100,622	2,003	641	1,520	4,393	209,801	16,986	20,563	15,733	53,282
1992/93	130,426	1,504	806	2,722	135,458	134,709	42,828	222,051	58,806	4,105	4,233	67,144	442	462	1,700	1,629	138,521	16,386	154,907	5,426	176,719
1993/94	230,368	1,782	826	374	233,350	232,991	53,553	155,876	127,167	3,122	5,008	135,297	411	321	2,222	2,054	275,602	2,004	1,573	17,002	20,579
1994/95	228,820	-22,222	8,804	7,345	222,747	221,710	45,682	140,375	110,790	3,265	7,463	121,518	627	903	2,694	3,239	250,499	1,734	2,465	14,658	18,857
1995/96	318,726	4,800	3,807	2,018	329,351	328,361	88,041		166,666	3,887	0	170,553	876	1,651	3,312	6,051	352,996	3,963	1,986	23,619	29,568

Notes: Defined by ISIC 3321 for the manufacture of furniture and fixtures, excluding that made made primarily of metal.
Source: CAPMAS, various publications.

Appendix Table 10
Egypt's Exports of Wood Furniture, 1990-97
(US$ thousands)

	1990	1991	1992	1993	1994	1995	1996	1997
North America	**670**	**887**	**1,860**	**1,956**	**2,091**	**2,888**	**2,974**	**3,035**
CANADA	99	64	133	185	149	165	278	230
UNITED STATES	571	824	1,727	1,772	1,943	2,724	2,695	2,805
European Union	**1,306**	**2,349**	**2,443**	**2,768**	**2,453**	**3,259**	**3,847**	**3,636**
AUSTRIA	5	44	-	17	10	4	39	60
BELGIUM	221	472	405	299	168	373	215	196
DENMARK	30	27	27	9	34	29	96	54
FINLAND	18	43	8	146	0	-	9	8
FRANCE	416	593	815	1,265	986	901	539	536
GERMANY	96	9	40	70	41	61	135	272
GREECE	176	783	403	405	534	555	1,067	646
IRELAND	-	-	3	30	3	136	2	7
ITALY	65	79	243	270	295	552	970	550
LUXEMBOURG	-	-	-	-	-	-	-	-
NETHERLANDS	6	3	82	82	104	123	120	256
PORTUGAL	-	-	-	10	50	1	2	1
SPAIN	75	80	252	51	40	126	77	224
SWEDEN	2	13	6	-	-	7	41	56
UNITED KINGDOM	194	202	159	114	189	392	534	770
Middle East	**1,313**	**3,552**	**7,972**	**6,237**	**5,861**	**3,273**	**2,878**	**5,206**
SAUDI ARABIA	601	1,326	2,750	3,821	3,293	1,627	1,400	2,906
UNTD ARAB EM	-	149	561	605	725	347	470	685
KUWAIT	646	1,702	3,327	948	773	207	312	425
LEBANON	-	280	534	387	334	625	280	406
ISRAEL	21	12	28	60	502	399	326	400
QATAR	45	84	772	415	234	68	91	385
RUSSIA	2,537	9,594	8,168	4,424	2,027	867	1,283	1,514
OTHERS	2,271	3,689	2,099	2,527	1,595	1,762	2,140	1,921
WORLD	8,096	20,072	22,543	17,913	14,028	12,050	13,121	20,072

Source: COMTRADE database.

Appendix Table 11
Imports of Wood Furniture by Egypt, 1994-97
(US$ thousands)

Country of Origin	1993	1994	1995	1996	1997
ITALY	1063	2838	3704	3548	3728
USA	581	915	1404	1275	2335
FRANCE	3360	1248	1201	1707	1748
GERMANY	54	424	370	451	420
BELGIUM-LUX	242	3	203	196	337
KUWAIT	557	657	682	271	303
UNTD KINGDOM	158	420	701	106	259
CANADA	0	36	78	72	66
NETHERLANDS	0	30	9	0	64
TURKEY	0	1	24	294	63
INDONESIA	0	7	15	20	54
CHINA	10	46	108	4	45
DENMARK	26	14	58	9	45
CZECH REP	0	0	0	89	5
SWITZ.LIECHT	157	11	4	40	3
FINLAND	0	60	2	0	2
PHILIPPINES	0	0	9	100	1
SPAIN	252	240	1410	1379	0
MALAYSIA	41	0	98	206	0
KOREA REP.	10	17	156	90	0
AUSTRALIA	162	0	14	12	0
AUSTRIA	60	29	6	3	0
JAPAN	78	0	0	9	0
TOTAL	**6811**	**6996**	**10256**	**9881**	**9478**

Source: PC-TAS 1999 CD-ROM.

Appendix Table 12
Value of Wood Furniture Total Imports of US, EU and Middle Eastern Countries (US$ thousands)

	1990	1991	1992	1993	1994	1995	1996	1997
North America	**634,940**	**546,238**	**637,473**	**967,421**	**429,180**	**702,811**	**42,100**	**565,914**
CANADA	-	-	-	-	-	-	-	-
UNITED STATES	634,940	546,238	637,473	967,421	429,180	702,811	42,100	565,914
European Union	**3,741,185**	**3,868,081**	**4,533,099**	**4,380,317**	**4,046,342**	**3,931,807**	**4,346,612**	**4,141,063**
AUSTRIA	422,360	452,594	488,816	472,965	536,567	665,226	700,973	598,380
BELGIUM	560,748	614,041	684,959	482,368	557,194	665,303	699,684	671,700
DENMARK	62,429	57,402	59,174	63,714	74,846	92,022	119,057	161,261
FINLAND	73,544	52,512	40,254	22,073	28,955	42,463	58,316	61,655
FRANCE	236,018	185,655	164,086	835,283	917,302	94,151	130,622	128,658
GERMANY	-	117,105	509,885	848,439	85,886	387,647	475,453	208,975
GREECE	39,878	49,565	58,405	49,513	59,450	82,235	98,399	108,786
IRELAND	69,658	73,207	74,290	36,762	40,544	44,192	65,498	87,080
ITALY	184,465	214,823	250,648	155,647	156,700	162,592	178,369	169,477
LUXEMBOURG	-	-	-	-	-	-	-	-
NETHERLANDS	764,257	792,902	891,115	540,046	636,939	686,524	703,622	651,807
PORTUGAL	34,501	50,243	67,770	49,846	50,662	60,991	66,379	82,938
SPAIN	110,479	116,786	155,390	87,985	86,260	101,527	138,362	159,648
SWEDEN	258,283	279,890	276,857	192,032	245,898	237,114	219,198	228,504
UNITED KINGDOM	924,566	811,357	811,450	543,645	569,138	609,820	692,680	822,196
Middle East	**237,565**	**381,641**	**486,295**	**379,003**	**354,028**	**362,060**	**359,672**	**229,739**
SAUDI ARABIA	186,090	216,886	270,108	209,860	162,727	158,456	144,074	-
UNTD ARAB EM	-	-	-	-	-	-	-	-
KUWAIT	21,213	111,992	147,387	92,521	74,218	81,741	78,092	86,872
LEBANON	-	-	-	-	-	-	-	-
ISRAEL	30,262	39,295	45,906	59,187	100,638	121,863	137,506	142,867
QATAR	-	13,469	22,895	17,435	16,444	-	-	-
Other	34,197	31,085	44,047	47,668	80,633	86,157	113,454	104,431
WORLD	5,623,188	5,703,679	6,681,606	6,807,843	5,824,303	5,945,220	5,837,583	6,087,331

Source: COMTRADE database.

Appendix Table 13
Input Coefficients for Wood Furniture and Corresponding Tariffs in Egypt

Input	IO Code	SIC Code	Coefficient	Tariff
Reconstituted wood products	20.0904	2493	0.1172	25%
Sawn wood	20.0200	2421	0.0853	15%
Veneer and plywood	20.0600	2435-6	0.0702	20%
Hardware, n.e.c	42.0300	3429	0.0443	30%
Builders' joinery and carpentry of wood	20.0300	2426	0.0368	25%
Paints and allied products	30.0000	285	0.2322	30%
Screw machine products, bolts, etc	41.0100	3451-2	0.2053	30%
Petroleum oils and residues	31.0101	291	0.0969	13%
Miscellaneous plastics products, n.e.c.	32.0400	308	0.0208	22%
Paperboard containers and boxes	25.0000	265	0.0158	25%
Industrial chemicals	27.0100	281	0.0127	11%
Metal polishing pads	41.0203	3469	0.0097	15%
Fabricated metal products, n.e.c	42.1100	3499	0.0096	30%
Abrasive products	36.1600	3291	0.0081	18%
Glass and glass products, except containers	35.0100	321, 3229, 323	0.0080	25%
Adhesives and sealants	27.0402	2891	0.0072	25%
Hand and edge tools, except machine tools	42.0201	3423	0.0052	10%
Aluminum plates	38.0800	3353-5	0.0037	20%
Coated fabrics, not rubberized	17.0600	2295	0.0023	25%
Industrial and commercial machinery	50.0400	3599	0.0019	12%
Woven fabrics	16.0100	221-3, 2261-2	0.0017	35%
Saw blades and handsaws	42.0202	3425	0.0014	10%
Woodworking machinery	48.0300	3553	0.0010	80%
Leather tanning and finishing	33.0001	311	0.0009	18%
Miscellaneous fabricated wire products	42.0500	3495-6	0.0008	25%
Textile goods, n.e.c.	17.1100	2299	0.0006	23%
Plastics materials and resins	28.0100	2821	0.0006	8%

Source: Production weighted average of Appendix Tables 15-17.

Appendix Table 14
Input Coefficients for Wood Household Furniture and Corresponding Tariffs

Input	IO Code	SIC Code	Coefficient	Tariff
Sawn wood	20.0200	2421	0.2168	15.0%
Builders' joinery and carpentry of wood	20.0300	2426	0.1575	25.0%
Reconstituted wood products	20.0904	2493	0.1518	25.0%
Veneer and plywood	20.0600	2435-6	0.0885	20.0%
Paperboard containers and boxes	25.0000	265	0.0855	25.0%
Hardware, n.e.c	42.0300	3429	0.0837	30.0%
Paints and allied products	30.0000	285	0.0660	30.0%
Glass and glass products, except containers	35.0100	321, 3229, 323	0.0420	25.0%
Screw machine products, bolts, etc	41.0100	3451-2	0.0240	30.0%
Miscellaneous plastics products, n.e.c.	32.0400	308	0.0192	22.0%
Abrasive products	36.1600	3291	0.0168	18.0%
Adhesives and sealants	27.0402	2891	0.0126	25.0%
Hand and edge tools, except machine tools	42.0201	3423	0.0099	10.0%
Woven fabrics	16.0100	221-3, 2261-2	0.0090	35.0%
Fabricated metal products, n.e.c	42.1100	3499	0.0064	30.0%
Woodworking machinery	48.0300	3553	0.0053	80.0%
Industrial and commercial machinery	50.0400	3599	0.0049	12.0%

Source: Derived from input-output tables of the 1990 social accounting matrix (SAM) for Egypt; the US tables are the benchmark input-output tables for the US economy in 1987 (US Department of Commerce, 1997); and the EU tables are the input-output tables for 1995 (EUSTAT, 1995).

Appendix Table 15
Input Coefficients for Wood Partitions and Corresponding Tariffs in Egypt

Input	IO Code	SIC Code	Coefficient	Tariff
Reconstituted wood products	20.0904	2493	0.2606	25.0%
Sawn Wood	20.0200	2421	0.1115	15.0%
Veneer and plywood	20.0600	2435-6	0.0934	20.0%
Industrial chemicals	27.0100	281	0.0668	11.1%
Blast furnaces and steel mills	37.0101	3312	0.0611	8.8%
Hardware, n.e.c	42.0300	3429	0.0608	30.0%
Wood partitions and fixtures	23.0400	2541	0.0520	40.0%
Metal polishing pads	41.0203	3469	0.0514	15.0%
Paperboard containers and boxes	25.0000	265	0.0389	25.0%
Fabricated metal products, n.e.c	42.1100	3499	0.0368	30.0%
Paints and allied products	30.0000	285	0.0358	30.0%
Builders' joinery and carpentry of wood	20.0300	2426	0.0229	25.0%
Adhesives and sealants	27.0402	2891	0.0181	25.0%
Abrasive products	36.1600	3291	0.0171	18.0%
Aluminum plates	38.0800	3353-5	0.0152	20.0%
Hand and edge tools, except machine tools	42.0201	3423	0.0145	10.0%
Coated fabrics, not rubberized	17.0600	2295	0.0123	25.0%
Screw machine products, bolts, etc	41.0100	3451-2	0.0114	30.0%
Petroleum oils and residues	31.0101	291	0.0077	12.5%
Paper or paperboard, coated or otherwise	24.0701	2671-2	0.0064	25.8%
Industrial and commercial machinery	50.0400	3599	0.0051	12.0%

Source: Derived from input-output tables of the 1990 social accounting matrix (SAM) for Egypt; the US tables are the benchmark input-output tables for the US economy in 1987 (US Department of Commerce, 1997); and the EU tables are the input-output tables for 1995 (EUSTAT, 1995).

Appendix Table 16
Input Coefficients for Wood Cabinets and Corresponding Tariffs in Egypt

Input	IO Code	SIC Code	Coefficient	Tariff
Reconstituted wood products	20.0904	2493	0.2799	25%
Veneer and plywood	20.0600	2435-6	0.1717	20%
Miscellaneous plastics products, n.e.c.	32.0400	308	0.1180	22%
Paperboard containers and boxes	25.0000	265	0.1044	25%
Hardware, n.e.c	42.0300	3429	0.0809	30%
Sawn Wood	20.0200	2421	0.0779	15%
Paints and allied products	30.0000	285	0.0651	30%
Builders' joinery and carpentry of wood	20.0300	2426	0.0272	25%
Saw blades and handsaws	42.0202	3425	0.0144	10%
Fabricated metal products, n.e.c	42.1100	3499	0.0144	30%
Abrasive products	36.1600	3291	0.0083	18%
Miscellaneous fabricated wire products	42.0500	3495-6	0.0083	25%
Adhesives and sealants	27.0402	2891	0.0068	25%
Plastics materials and resins	28.0100	2821	0.0061	8%
Petroleum oils and residues	31.0101	291	0.0061	13%
Hand and edge tools, except machine tools	42.0201	3423	0.0061	10%
Wooden panels	20.0400	2429	0.0045	35%

Source: Derived from input-output tables of the 1990 social accounting matrix (SAM) for Egypt; the US tables are the benchmark input-output tables for the US economy in 1987 (US Department of Commerce, 1997); and the EU tables are the input-output tables for 1995 (EUSTAT, 1995).

Appendix Table 17
Input Coefficients for Wood Furniture and Corresponding Tariffs in Egypt

Input	IO Code	SIC Code	Coefficient	Tariff
Veneer and plywood	20.0600	2435-6	0.2061	20.0%
Sawn Wood	20.0200	2421	0.1662	15.0%
Reconstituted wood products	20.0904	2493	0.1322	25.0%
Hardware, n.e.c	42.0300	3429	0.0981	30.0%
Coated fabrics, not rubberized	17.0600	2295	0.0772	25.0%
Miscellaneous plastics products	32.0400	308	0.0631	22.0%
Paperboard containers and boxes	25.0000	265	0.0561	25.0%
Paints and allied products	30.0000	285	0.0397	30.0%
Leather tanning and finishing	33.0001	311	0.0093	18.3%
Abrasive products	36.1600	3291	0.0091	18.0%
Aluminum plates	38.0800	3353-5	0.0083	20.0%
Adhesives and sealants	27.0402	2891	0.0074	25.0%
Petroleum oils and residues	31.0101	291	0.0072	12.5%
Textile goods, n.e.c.	17.1100	2299	0.0066	23.0%
Fabricated rubber products, n.e.c.	32.0300	306	0.0064	23.1%

Source: Derived from input-output tables of the 1990 social accounting matrix (SAM) for Egypt; the US tables are the benchmark input-output tables for the US economy in 1987 (US Department of Commerce, 1997); and the EU tables are the input-output tables for 1995 (EUSTAT, 1995).

Appendix Table 18
Real Effective Exchange Rates of Egypt, 1980-1998
(1990=100)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
WORLD	**89.4**	**105.0**	**121.7**	**140.1**	**175.2**	**204.6**	**196.3**	**210.7**	**226.3**	**175.6**	**100.0**	**69.5**	**79.5**	**92.0**	**96.8**	**96.9**	**100.5**	**111.6**	**116.1**
North America	**91.4**	**92.8**	**100.7**	**110.8**	**124.4**	**135.9**	**165.1**	**199.3**	**216.9**	**158.2**	**100.0**	**68.8**	**81.0**	**86.5**	**91.7**	**97.4**	**101.2**	**105.1**	**108.1**
CANADA	102.2	102.9	109.9	120.2	141.8	161.2	195.2	223.4	227.6	159.5	100.0	66.8	84.0	96.8	110.9	119.2	124.8	132.7	146.1
UNITED STATES	91.0	91.1	100.5	110.8	124.2	134.5	163.5	197.5	216.7	158.1	100.0	68.9	80.9	86.4	91.3	97.1	101.0	104.8	107.1
European Union	**91.2**	**111.3**	**133.6**	**160.3**	**199.7**	**222.2**	**207.6**	**213.5**	**231.5**	**181.5**	**100.0**	**70.1**	**78.7**	**95.9**	**100.2**	**98.8**	**103.0**	**119.1**	**122.4**
AUSTRIA	90.6	115.3	134.6	159.1	196.3	220.5	198.1	202.6	221.7	180.3	100.0	71.3	78.2	87.7	90.7	85.6	94.5	114.2	118.8
BELGIUM-LUXEM	78.3	102.0	132.6	159.8	198.8	218.4	200.9	207.0	230.2	183.0	100.0	71.1	79.1	91.0	93.3	88.5	97.5	117.8	122.5
DENMARK	92.7	115.8	141.3	168.2	209.8	229.7	209.7	213.5	229.4	181.8	100.0	72.5	81.1	94.5	98.6	93.0	100.9	119.5	123.7
FINLAND	107.0	122.1	143.3	177.1	209.1	228.4	225.0	234.7	242.6	178.6	100.0	72.9	95.0	130.3	127.9	115.7	129.5	153.6	161.3
FRANCE	82.0	102.7	127.4	156.6	195.2	212.6	198.0	208.3	229.6	181.7	100.0	72.1	80.0	92.1	96.3	93.0	100.0	119.7	124.4
GERMANY	83.4	107.7	126.2	149.1	190.0	215.8	197.5	204.2	225.0	179.3	100.0	71.3	77.3	86.1	89.2	84.5	93.6	112.6	117.2
GREECE	54.8	73.2	93.2	132.3	186.4	214.6	219.1	228.0	240.3	185.1	100.0	69.1	75.5	87.2	90.3	86.5	88.9	101.6	108.8
IRELAND	96.9	113.3	126.2	151.0	186.9	202.6	192.1	210.2	229.2	181.2	100.0	71.4	79.5	100.0	103.8	103.4	109.2	120.5	129.7
ITALY	104.2	127.9	150.0	170.4	208.2	232.6	212.5	220.8	241.0	182.9	100.0	69.9	79.9	107.2	114.5	120.1	117.2	135.0	140.0
NETHERLANDS	79.5	103.1	119.7	144.2	183.5	208.2	190.3	199.0	220.6	179.1	100.0	71.5	78.9	89.2	92.4	87.3	96.1	115.6	119.3
PORTUGAL	96.9	109.7	132.6	171.4	205.1	224.1	218.4	235.2	250.6	187.9	100.0	65.3	67.9	83.4	88.8	84.8	89.9	106.2	110.0
SPAIN	98.3	121.9	145.7	196.6	231.8	252.7	237.0	248.6	255.4	185.9	100.0	69.1	77.8	101.6	110.8	107.7	113.1	136.2	141.2
SWEDEN	85.2	100.4	131.8	171.3	200.2	217.5	214.0	228.9	238.7	180.5	100.0	67.1	76.5	107.3	112.9	111.3	111.5	134.1	145.1
UNITED KINGDOM	79.9	90.2	110.6	140.8	179.1	196.8	207.9	223.9	224.9	176.6	100.0	67.8	78.6	98.6	102.4	105.6	111.0	109.4	109.4
Middle East	**79.1**	**96.0**	**103.9**	**114.8**	**146.3**	**171.0**	**180.1**	**209.8**	**215.6**	**163.2**	**100.0**	**68.1**	**80.5**	**88.2**	**90.4**	**89.3**	**93.5**	**98.0**	**105.1**
SAUDI ARABIA	50.1	54.8	63.1	73.6	89.3	106.2	138.9	178.7	202.2	153.1	100.0	68.7	83.4	90.9	98.0	102.0	108.2	115.4	120.0
UNTD ARAB EM	87.4	88.5	95.0	108.7	124.2	134.5	158.0	187.5	203.9	151.0	100.0	68.1	77.1	80.7	84.2	88.2	91.1	92.7	93.4
KUWAIT	75.4	80.0	87.8	101.5	117.3	129.7	159.1	197.8	222.6	164.8	100.0	65.8	80.1	87.4	93.1	98.6	102.3	109.6	112.0
LEBANON	81.5	94.7	100.9	104.2	149.1	248.9	368.8	460.3	375.6	202.5	100.0	63.9	71.4	64.0	62.0	59.1	56.3	54.1	51.6
ISRAEL	95.5	108.4	120.0	131.2	169.1	188.4	198.8	222.5	219.1	167.1	100.0	68.2	79.6	90.8	93.3	92.7	94.5	99.5	112.6
QATAR	82.4	83.5	90.7	102.5	118.6	131.5	159.9	191.5	208.7	154.5	100.0	68.8	80.8	89.5	95.9	101.7	106.2	110.0	111.3

Source: Calculated from nominal exchange rates and the consumer price indices for individual countries in IMF, *International Financial Statistics*, and weighted by Egypt's exports to each country based on 1980-97 data from IMF, *Direction of Trade.*

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