

Sectoral Analysis: Lebanese Industry

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1	Introduction.....	3
2	Assessing the Impact of the Association Agreement Error! Bookmark not defined.	
	2.1.1 Static Analysis	Error! Bookmark not defined.
3	Overview of Lebanese Industry.....	5
	3.1 The Changing Structure of Lebanese Industry	5
	3.2 Lebanon's Import and Export Markets.....	6
	3.3 Trade Patterns 1996-1999.....	6
	3.4 The 1998 Industrial Census and Trade	6
	3.4.1 Domestic Production and Trade.....	7
	3.4.2 Tariffs.....	7
	3.4.3 Specialisation	8
	3.4.4 Profitability, productivity and investment	8
	3.4.5 Investment and Profitability.....	9
	3.4.6 Gross and Net Investment at the 2-digit Level for 1998.....	10
	3.4.7 A Production Function.....	11
	3.4.8 Exports and Tariffs	12
	3.5 New Firms.....	14
4	The main industrial sectors.....	14
	4.1.1 Food Products and Beverages.....	14
	4.1.2 Chemical Products and Man-made Fibres	16
	4.1.3 Printed Matter and Recorded Media	16
	4.1.4 Textiles and Clothes and Fur Dyeing.....	16
	4.1.5 Non-Metallic Mineral Products	18
5	References.....	18

1 Overview

The objective of this report is to provide an analysis of Lebanese industry. It is inevitably partial because the information that we have provides only a number of snapshots based largely on the censuses of 1994 and 1998 augmented with data on trade and information on the registration on new enterprises. Although the analysis tries to be conjunctural, we are hampered by the lack of more timely data on industrial activity. However, it is unlikely that the features that we have been able to identify will have been reversed since 1998; if anything there is likely to have been a further deterioration.

We have established the following features of Lebanese industry.

- Total industry value added in 1998 was at the same level as in 1994 so that the contribution to national income declined from 18.7 percent to 10.6 percent.
- Within this total, value added in textiles and clothing declined by almost 40 percent. Food products and beverages rose slightly by 2.5 percent, while pulp and paper, printed matter and recorded media, chemicals and metal products increased significantly.
- In 1998, net investment (gross investment minus depreciation) was negative in all major sectors except food products and beverages.

There is a temptation to draw the conclusion that Lebanese industry is in too parlous a state to withstand the effects of more competition from the European Union if tariffs on imports were abolished. However, the difficulties that industry faces are an inevitable consequence of the post-war re-construction programme that has raised real interest rates and crowded out private sector activity. In the pre-war years industry was an important source of export-led growth.

As the re-construction phase comes to an end, and the macroeconomic stabilisation programme pursued by the government brings fiscal policy and the public finances under control, there should be an opportunity for a fall in interest rates and a decline in the exchange rate that will help industry to grow into overseas markets.

Nevertheless, there are features of Lebanese industry that may be an obstacle to growth in the future. The very small size of the vast majority of enterprises is both a blessing and may act as a break on future economic development. The large number of family owned businesses is evidence of the entrepreneurial culture in Lebanon. One solution is to follow the model of Italy where a strong network of family businesses has developed which retain the advantages of family ownership while allowing access to modern technologies. However, given the lack of investment in the last decade it may be too late to pursue this path. Another possibility is to encourage foreign investment in Lebanese industry both from the EU and the Arab world to allow the re-equipping of industry.

However, the uncertain political climate still hampers foreign investment. But if this uncertainty were to diminish, the Association Agreement with the EU covers more than just tariff barriers to trade. It also provides the basis for scientific, technical and technological cooperation, greater integration of Lebanese enterprises into European networks that would be a spur to marketing and faster adaptation to rapidly changing

market conditions; and measures to encourage investment by European enterprises in Lebanon.

The changes that need to come about to allow Lebanese industry to recover its former vigour, are more likely to happen with the Association Agreement than without it.

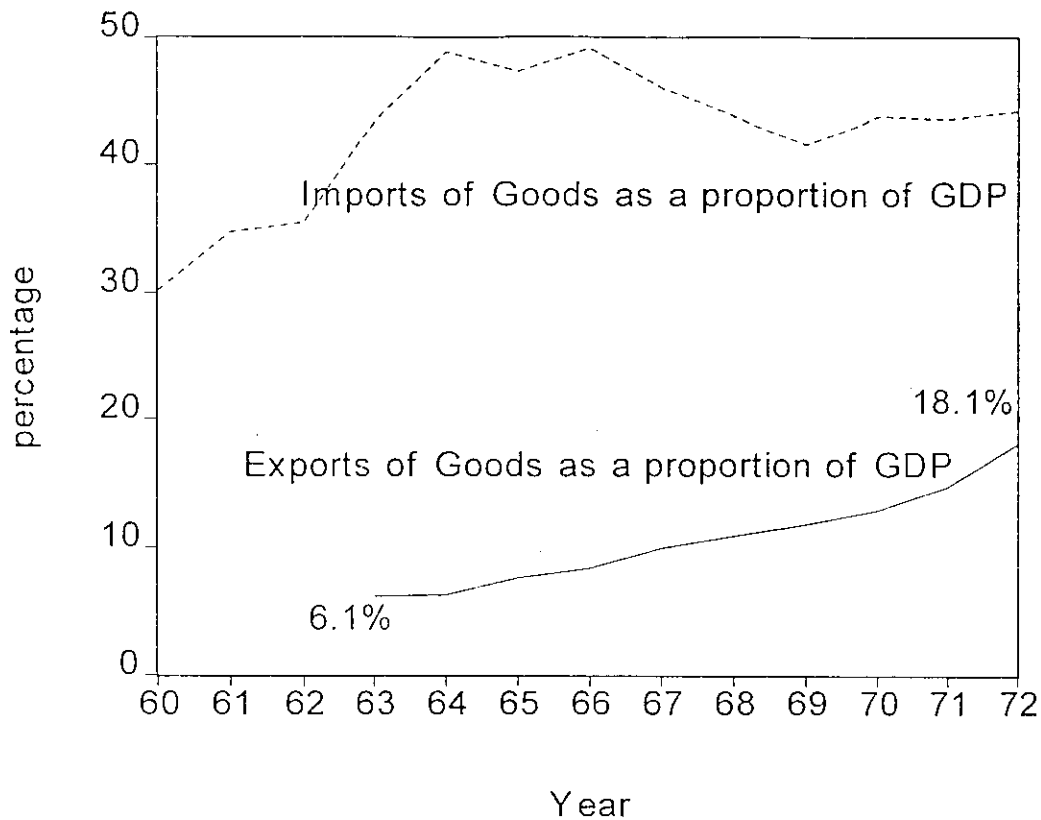
2 Introduction

On the face of it Lebanese industry is in no position to withstand the abolition of tariffs on imports from the European Union. Between 1994 and 1998 its contribution to total value added in the economy declined from 18.7 to 10.6 percent. Net investment (gross investment after subtracting provision for depreciation) was negative in 1998 with a particularly large fall in the textile sector as it experienced a major fall in sales and employment. In Chart 2 we have plotted net investment for each of the 23 sectors (the ISIC code is shown above each bar). Among important sectors, only the agri-food business has shown a net increase in its capital stock.

However, it is important to establish why Lebanese industry has not performed better. It is often pointed out that because of Lebanese history and its role as an entrepot and service provider, as well as tourist destination, industry plays less of a role compared to many other economies at a similar stage of development. However, if we look at the period before the Civil War there is evidence of strong export driven growth in Lebanese industry.

Between 1962 and 1972 (Chart 1) exports of goods rose from 6.1 percent of national income to 18.1 percent. At the same time the share of imports fluctuated around 40 percent. As a result the trade deficit as a proportion of national income improved from minus 37 percent to minus 26 percent.

Chart 1: Lebanese Trade Performance 1960-72



Some reasons for the loss of vigour in Lebanese industry may be the damage to the physical capital stock sustained during the war and the loss of human capital through emigration. But there has also been a particularly unfavourable macroeconomic environment.

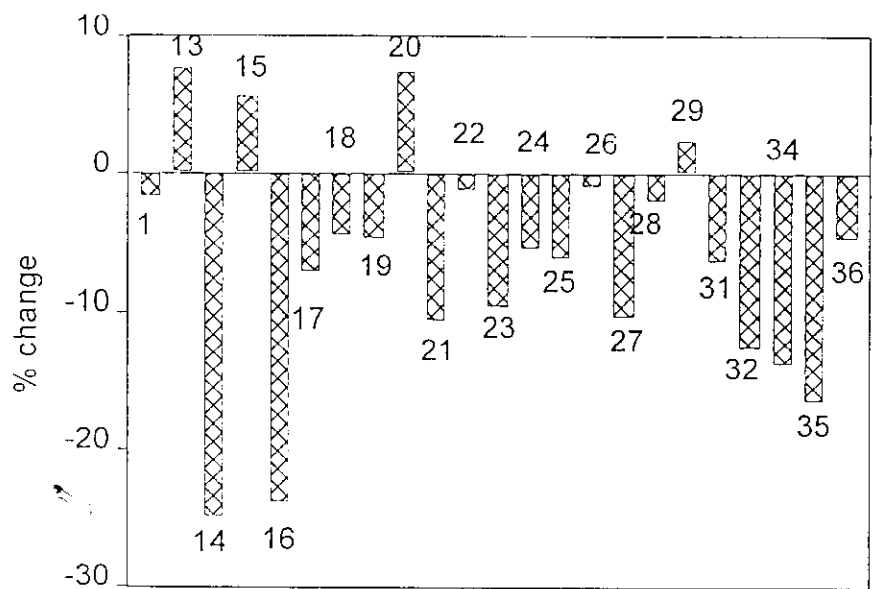
The post-war reconstruction programme spearheaded by the government has involved the major rebuilding and upgrading of public infrastructure. The demands of this programme were well in excess of domestic resources and much of the financing has been achieved by borrowing from abroad from both sovereign bodies and Lebanese expatriates. Inevitably this has had a major impact on the traded goods sector and private activity has been crowded out by a high exchange rate and high real interest rates.

Ideally, as the reconstruction phase winds down, a decline in the exchange rate would help the process of switching resources towards exporting. However, the large increase in public indebtedness that has resulted from the reconstruction programme has placed the government in a delicate position. The peg of the Lebanese pound to the US dollar, that has done so much to maintain the confidence of foreign investors, is a key element in the overall stabilisation strategy. since a downward float in the exchange rate is not feasible at the moment, the process of adjustment is inevitably thrown back onto the domestic economy. A fall in non-traded goods prices relative to traded goods prices can be achieved, but with consequences for output and employment, at least in the short run. Nevertheless, if the fiscal stabilisation programme is successful, it should allow interest rates to fall. This in turn will make private investment in industry more profitable.

Even if the Association Agreement is not signed by the Lebanon, there are still painful adjustments that will have to be made in order for the economy to be re-orientated towards exporting. It will take a number of years of primary surpluses on the current account of the balance of payments in order to reduce the level of external indebtedness and lower the vulnerability of the exchange rate to speculative flight.

Signing the Agreement will bring a number of benefits that could assist this process of adjustment. In the Appendix we have summarised Articles 55, 57 and 58 of the draft agreement that deal with scientific, technical and technological cooperation, industrial cooperation and the promotion and protection of investment. One way forward for Lebanese industry is there to be a major programme of foreign investment by European firms that can benefit from the quality of human capital and Lebanon's unique geographical position.

Chart 2: Net Investment in 1998 as % of Capital Stock



2-digit Industry

3 Overview of Lebanese Industry

We draw upon four main sources of data for the analysis:

- The 1994 Industrial Census
- The 1998 Industrial Census
- Customs and Excise data on exports and imports. 1996-1999.
- Ministry of Industry Register of new enterprises, 1994-1999.

3.1 The Changing Structure of Lebanese Industry

Table 1 provides a comparison between the 1994 and 1998 censuses, for value added and the size of the workforce. The most significant declines in value added have taken place in textiles, clothing and dyeing, tobacco, mining and quarrying and base metals. On the other hand, value added has increased significantly in pulp, paper, printed matter and recorded media and chemicals. The majority of sectors experienced a fall

in the workforce between 1994 and 1998, with particularly large falls in textiles and clothing, base metals and furniture.

3.2 Lebanon's Import and Export Markets

In Table 2 we provide information on the pattern of Lebanese trade in 1999. The pattern of imports by source is similar to previous years with almost 44% coming from the 15 members of the European Union. For Western Europe (including Switzerland, and Norway) the percentage of Lebanese imports rises to 53.6%.

The most striking change has been in exporting. There has been a marked shift away from traditional Arab markets to Western Europe. Now a third of all Lebanese exports go to Western Europe and 26.5% to the EU. This represents a shift in the destination of exports towards Western Europe within a declining total of exports that fell from \$733mn in 1996 to \$677mn in 1999. Previous analyses of the impact of the Association Agreement on Lebanon have assumed a much lower share of exports for Europe¹.

3.3 Trade Patterns 1996-1999.

We have observed that the destination of Lebanese exports has changed over the 1990s. In Tables 3 and 4 we report the way in which exports and imports of different commodities have changed between 1996 and 1999². Most categories of imports have declined over this period with the exception of chemicals and jewellery. Exports show a much more varied pattern. There have been significant declines in exports of textiles and clothing and significant rises in exports of chemical products and ceramics and furniture. Although total exports have been rising slowly since 1997, over the period as a whole exports are down.

3.4 The 1998 Industrial Census and Trade

In Table 5 we provide some preliminary analysis of the cross sectional distribution of profitability, productivity and value added on the 4-digit level. There is considerable variation in profitability and productivity with significant negative skewness in profitability and significant positive skewness in productivity. However, value added as a proportion of output is normally distributed about a mean of almost 44 percent, and ranges from a maximum of 82 percent to a minimum of less than 10 percent.

	% Rate of Profit ^a	Productivity ^b \$000	Productivity ^c \$000	%Value added on output
Mean	28.81085	18.61162	27.48280	43.92366
Median	29.12887	12.16239	20.56566	41.82489
Maximum	74.96052	97.39423	113.6154	82.21967

¹ Martin (1996), "Assessing the Implications for Lebanon of Free Trade with the EU", Work Bank Mimeo, used data from the early 1990s which suggested only 17% of Lebanon exports went to the EU.

² These tables are organised on the basis of the customs (Harmonised System) classification of goods.

Minimum	-63.66667	0.909091	1.764706	9.906213
Std. Dev.	21.42755	17.39789	23.68765	14.00788
Skewness	-1.377201	1.833264	1.683659	0.237609
Kurtosis	6.723149	6.672354	5.782362	2.562369
Test of Normality				
Jarque-Bera	126.0104	158.2115	106.5320	2.451948
Probability	0.000000	0.000000	0.000000	0.293472
Observations	141	1431	134	141
Key: a: (value added – wages and salaries)/output b: value added/total workforce c: value added/employees				

3.4.1 Domestic Production and Trade.

In Table 6 we bring together the 2-digit data from the census with trade data from the customs³. Some idea of the size of the Lebanese market for different industrial products can be obtained by combining information on production from the 1998 census with trade data from Lebanese customs.

The share of the domestic market taken by imports averages more than 64%. In a few cases (Radio, television & communication equipment, Motor vehicles, trailers & semi-trailers and Other transport equipment) it actually appears to exceed 100%. What this indicates is that an imported good going immediately to final consumption or for re-export, may pass through the wholesale and retail sectors rather than be recorded as a transaction of the industrial sector. Since we only have comparable data on gross production and gross imports and exports, there will be distortions arising from goods going immediately to final consumption or export and by the intermediate use of goods in the industrial sector. The smallest share going to imports is in furniture and other manufacturing, not included elsewhere. In fact this 2-digit sector subsumes a 4-digit sector that is actually of some significance for Lebanese exports – the manufacture of jewellery and related articles.

3.4.2 Tariffs

Table 6 also reports the average tariff rate for each sector. To maintain consistency with the census these refer to the average tariff rate for 1998. In practice tariffs can

³ Using a concordance between the Harmonised System (HS) method of classifying traded goods and the International Standard Industrial Classification (ISIC) it was a straightforward, though time-consuming, process to match the 4500 6-digit customs items to 4-digit ISIC codes. However, it only proved possible to achieve a complete reconciliation at the 2-digit ISIC level. At the 4-digit level there were many instances of inconsistencies in the way in which the census and the customs classified goods.

vary from year to year, because the composition of imports for a particular sector will vary, or because rates are varied to prevent dumping. For example in January 2000, weight restrictions were placed on particular imports of textiles and clothing. The average tariff was calculated from customs data by dividing the revenues in Lebanese pounds on each imported good by the value of imports. In general tariffs rise as the degree of fabrication increases. The highest, since they include excise taxes as well, are on tobacco and petroleum products. Apart from these the most 'protected' sectors are clothing and non-metallic mineral products (mainly glass, ceramics and marble products).

3.4.3 Specialisation

For completeness we provide information on all sectors at the 2-digit SIC level. However, in practice a considerable amount of economic activity in the Lebanese industrial sector is accounted for by a relatively small number of 2-digit sectors. In Table 7 we report the contribution that each sector makes to total economic activity measured by the size of the workforce, gross output, value added, imports and exports. The figures give the cumulative contribution. So food products and beverages accounts for 23.1 percent of the total workforce, while food plus metal products accounts for 35.8 percent. In terms of its contribution to employment, output and value added the agri-food business is clearly the most important sector. However, when we turn to the trade side, we find that agri-food only accounts for 11.4 percent of exports and 9.9 percent of imports. Chemical products and man-made fibres with basic metals accounted for 30.6 percent of total exports. More than half of total exports of goods are accounted for by just four 2 digit sectors.

One approach would be to focus exclusively on the dominant sectors and to formulate policies that catered for their needs. However, the danger with this approach is that each sector is comprised of a large number of different establishments with differing characteristics and performance in terms of profitability, value added and productivity. Even at the 4-digit level there are major differences. For example Table 8 shows that there are significant differences in sectoral performance within the agri-food business with large variations in profitability and productivity. although we do not have access to the data at the level of each establishment, it is likely that there is even a greater degree of variation at the lower level of disaggregation.

3.4.4 Profitability, productivity and investment

The data that is provided by the 1998 census allows some statistical analysis of possible empirical regularities in the cross sectional data. In this section we examine the relationship between profitability at the 4-digit level and productivity. In Table 9 we report a regression of profitability (value added after subtracting wages and salaries, divided by output) on productivity. We measure productivity in two ways:

Table 9: The Rate of Profit and Productivity

Dependent Variable:	Rate of Profit
Constant	-15.880 (3.70)

%Value added	0.7945
	(7.98)
Employee productivity	0.3301
	(5.59)
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Adjusted R-squared	0.524
S.E. of regression	14.969
Durbin-Watson	2.21
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Notes:

- 4-digit level (141 sectors)
- profit rate = (value added – wages and salaries)/output
- % value added = (value added/output)
- Employee productivity = output/number of employees

firstly as the percentage of output that is converted into value added, and secondly as employee productivity. Using these two measures we can explain more than 50 percent of the variation in profitability. Clearly the better inputs can be converted into outputs (dependent on fixed capital and managerial expertise) the more profitable the activity. Equally the more productive the human capital inputs, the greater the profitability.

Those firms that are more efficient at transforming inputs into outputs through the production process make more profit. An important source of this productivity will be the type of machinery that is in place. A more efficient piece of equipment will use less energy per unit of output and generate less wastage in the use of raw materials and intermediate products. Profitability also depends upon the productivity of the employed labour force. A better-trained, more skilful labour force will use a given piece of equipment more effectively. One of the important features of many companies in the Lebanese industrial sector is ownership by families so the workforce includes both paid employees and owners and members of their family that do not appear on the payroll. An important question is whether there are differences in the profitability of firms that have a larger proportion of owners working in the business. We have to be careful in how we test for this since we have defined profitability as the difference between value added and the remuneration paid to employees. So the difference is what is dispersed to owners. We included as a separate regressor the proportion of the total workforce that were owners and their families. Although this had a negative effect on profitability it was not significant⁴.

3.4.5 Investment and Profitability

An important source of improved productivity, profitability and competitiveness is likely to be investment in fixed assets (ignoring human capital). In Table 10 we report

⁴

The coefficient was -3.9488 with a t-statistic of 0.6186.

some statistical correlations between profits (value added minus wages and salaries) and investment across 141 sectors.

Out of the 143 sectors for which we have data on gross investment, 55 reported zero investment in 1998. We use, therefore, a censored regression model (in this case Tobit, since only left censoring is taking place). The estimation results reported in Table 10 suggest a significant correlation between profits and gross investment, but there is a considerable amount of variation in investment that is not explained. Modern theories of investment emphasise that the investment process involves more than an evaluation of the present discounted value of a project. There can also be advantages to postponing investment especially when investment is irreversible. Treating investment as an option has the effect of making many forms of investment very lumpy so observing no investment in 1998 is not inconsistent with the possibility that investment may have taken place after 1998, or before. Moreover, in many sectors the nature of the equipment that is used for manufacturing at different stages of fabrication involves the purchase of equipment that is very costly relative to one year's production but which will then last for a number of years.

Table 10: Investment and Profitability

Dependent Variable: Gross Investment

Method: ML – Censored Normal (TOBIT)

Left censoring (value) at zero

Dependent variable	Gross Investment t
Constant	-716.969 (0.60)
Profits	0.3346 (8.90)
%owners	-68.9549 (2.28)
Adjusted R-squared	0.333
S.E. of regression	5710.576
Log likelihood	-920.5421

There is a strong correlation, though almost half of the variation in investment is unexplained, probably pointing to a limited role for retained earnings. However, we do find that the greater the proportion of the workforce that is made up of owners and family, the less investment tends to be, conditional on profits.

3.4.6 Gross and Net Investment at the 2-digit Level for 1998.

From the 1998 census we have data on the capital stock and its depreciation at the 2-digit level so we are also able to determine both gross and net investment. We have reported comparatively low rates of value added in the previous section and a wide range of rates of profitability across sectors as well as some evidence that there is a correlation between profits and gross investment. Here we turn to the question

whether the amount of gross investment reported in 1998 has added significantly to the capital stock. Future profitability and productivity depends in part on the extent to which new investment adds to the stock of capital. In Chart 2 we have plotted net investment in 1998 for each of the 2-digit sectors. The ISIC code is shown by each bar. The chart suggests that considerable dis-investment was taking place in 1998. The capital stock after provision for depreciation, declined in most 2-digit sectors. Among significant sectors, only in the agri-food sector is there an increase in the capital stock.

This finding of a declining capital stock in Lebanese industry needs to be qualified. It may be that some of the depreciation⁵ reported in the 1998 Census of Industry is at historical cost and of old, obsolete capital equipment that has very low economic value⁶. It may be that new investment is replacing very old vintages so that in economic terms the capital stock is being augmented. Unfortunately we do not have any information about the types of capital equipment that is being written off, or its age.

3.4.7 A Production Function

Investment can also be linked to value added and output via a production function. In Table 11 we report estimates of a cross section production function for Lebanese industry at the 2-digit level. Column 1 show a simple production function for value

Table 11 : Production Functions for Value Added, Gross Output and Exports

Dependent Variable	Ln(Value Added)	Ln(Value-Added)	Ln(Gross Output)	Ln(Gross Output)	Ln(Exports)
Constant	0.254 (0.30)	-0.0469 (0.090)			
Ln(Labour)	0.565 (2.61)	1.240 (4.95)	1.58E-05 (0.00)	0.570 (2.21)	0.93 (0.89)
Ln(Capital)	0.526 (2.63)	0.371 (2.69)	0.1096 (1.66)	0.561 (3.46)	0.745 (1.13)
Ln(Owners)		-0.457 (3.52)			
Ln(Total inputs)			0.935 (13.22)		
Ln(Raw Materials)				0.458 (3.50)	1.270 (2.39)
Ln(Fuel)				-0.326 (2.62)	-1.243 (2.46)
Ln(Electricity)				-0.259	-0.662

⁵ The average depreciation rate was 13%, across 23 sectors, with a maximum of 27% (Tobacco Products) and a minimum of 6.6 % (Metal Products).

⁶ The capital stock is reported by firms in the census at book value.

				(2.08)	(1.31)
Adjusted R-squared	0.934	0.976	0.994	0.930	0.415
S.E. of regression	0.589	0.341	0.175	0.257	1.044
Durbin-Watson	1.85	2.56	1.40	1.79	2.57
Number of sectors	23	21	23	15	15

Notes: Absolute t-statistic in brackets.

added with inputs of labour (number of employees) and fixed capital. What is striking is the large coefficient on the capital input. A stylised feature of production functions estimated for developed economies is that the coefficient on capital tends to be around about a third. What this larger coefficient may be picking up is the role that the owners of capital and their families play in the production process. In column 2 we include as a separate regressor⁷ the number of workers who are owners or members of the owner's family. Although the coefficient on capital is much closer to a third, the coefficients on employees and owners seem much less plausible. Given the small degrees of freedom it may be premature to draw too many conclusions from these results. A more disaggregated empirical study would be helpful⁸.

In columns 3 and 4 we report estimates of a gross output function including inputs. When total inputs are included the estimates tends to be dominated by the strong correlation between gross output and input usage. Disaggregating inputs into the three most important components – raw materials, electricity and oil – produces coefficients on the labour and capital inputs similar to those in column 1, but the negative coefficients on electricity and oil are difficult to interpret. One interpretation may be that larger users of energy are more vulnerable to interruptions to supply and have to provide their own generators as backup. This reduces total factor productivity in these sectors.

Finally, in the last column an estimate of a production function for gross exports produces nothing of value.

3.4.8 Exports and Tariffs

We have been unable to detect any underlying production function for exports. However, it is possible to find one form of regularity between the ratio of exports to imports at the 2-digit level, average tariff rates at the 2-digit level and profitability. Standard international trade theory suggests that tariffs tend to discourage exporting. The cross sectional results tend to support this but the negative correlation between profitability and exporting is more difficult to explain. Sectors in which profitability is

⁷ The number of observations falls because sectors such as tobacco (publicly owned) have no owner workers.

⁸ At the time this report was prepared information on the capital stock was only available at the 2-digit level, the Census itself has collected capital stock data at the level of establishments. In principle the analysis we have carried out could be done at the lowest level of disaggregation.

high relative to the average tend to export less relative to imports⁹. What this may be picking up is the effect of a high real exchange rate on the profitability of exporting.

Conditioning on imports may be a problem if we want to evaluate what the effects of reducing or abolishing tariffs would be for the volume of exports. If instead we condition on domestic output in each 2-digit sector as in column 2 of Table 12 we have a much less well determined point estimate for the effect of tariffs on exports. Nevertheless, if we simulate the effect of setting tariffs to zero in all sectors we find – again conditioning on fixed output, that the volume of exports rises from \$507mn to \$1500mn. The sectoral effects are plotted in Chart 3. By far the largest impact appears to be on exports of food products, but clothing, chemicals, mineral products, metal products, furniture and jewellery also benefit.

Given the imprecision of the estimates, these results should only be thought of as illustrative. A more disaggregated study at the 4-digit level would give us many more degrees of freedom. Moreover, we are ignoring all the other effects on relative prices, the exchange rate, imports and output that a more complete analysis would provide us with.

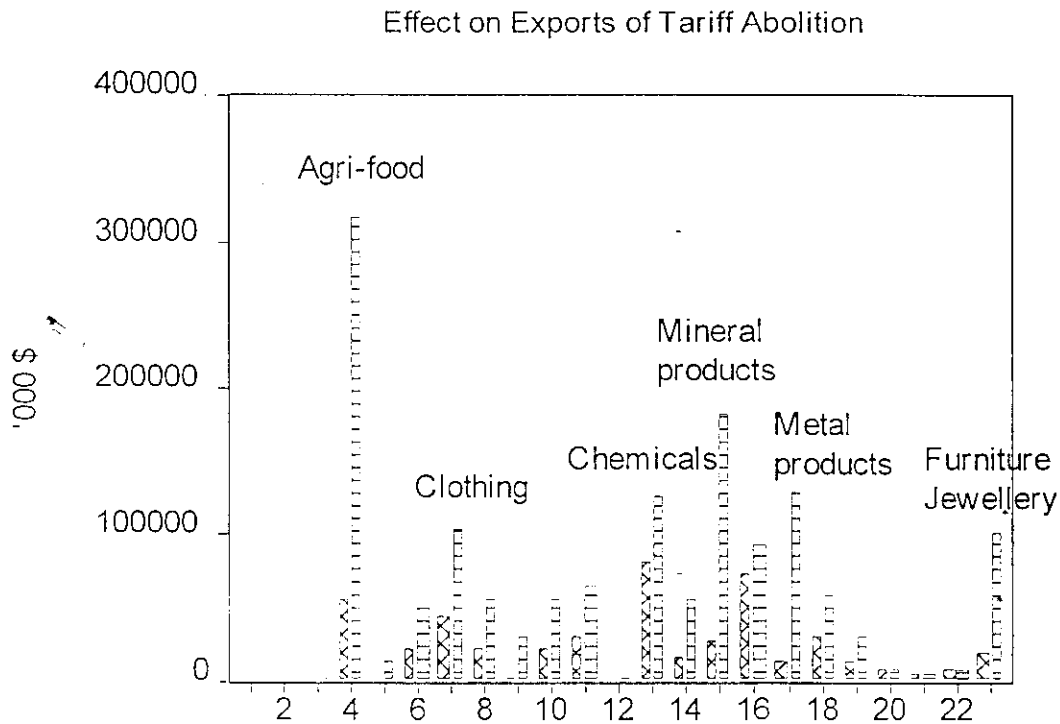


Table 12: Exports and Tariffs

Dependent Variable:	Ln(Exports/Imports)	Ln(Exports/Output)
Constant	-0.1645	5.9137

⁹ We have relatively few degrees of freedom, but the relationship is robust to excluding the first 5 observations and then the last five observations.

	(0.12)	(5.51)
Ln(Tariff Rate)	-1.0508	-0.472286
	(2.17)	(1.25)
Ln(Profits/Output)	-425.562	-296.270
	(3.29)	(2.94)
Adjusted R-squared	0.371	0.284
S.E. of regression	1.453	1.127
Durbin-Watson	2.22	2.15

3.5 New Firms

Another source of information on the activities of Lebanese firms is provided by the register of firms compiled by the Ministry of Industry. Table 13 shows the number of enterprises registering and their size by number of employees and capitalisation. The number of employees is probably the best indicator of size¹⁰. There appears to be a reasonable amount of new firm creation, with a total of more than 22,000 employees involved out of a total of 78641 employees according to the 1998 census. The amount of new enterprise creation has varied across sectors. Those sectors in which the most employment creation has taken place, such as the agri-food, ceramics and furniture are also those that are significant parts of industry. The average size of new enterprises also seems to be larger than the average size of existing firms revealed by the 1998 Census.

4 The main industrial sectors

4.1.1 Food Products and Beverages

This is one of the most important sectors of the Lebanese economy. It is a major employer, producer and exporter. Table 14 provides a breakdown to the 4-digit level for the agri-food business. There is considerable variation in percentage value added among the major sub-sectors, from 68 percent in meats to 27 percent in cocoa, chocolate and sugar confectioneries and fruits and vegetables. This last sub-sector also has the highest degree of protection with an average tariff rate of 29 percent. It is also one of the two largest exporters in the agri-food business.

The success of this sector is closely connected with the agricultural sector which is the most important source of raw materials. The four growing seasons in Lebanon should provide the agri-food business with scope to seek high value added in relatively large units, with specialised products. The intimate connection between agricultural production and food processing needs to be built on. The needs of food processing are different to those of the fresh produce and packaged markets. Particular types of fruit, for example, are needed of a particular quality and uniformity.

- The government system of subsidies distorts the production side. Sugar beet is grown, but the local refining factory does not provide

¹⁰ The number registering does not necessarily correspond to the number of new enterprises, some will be enterprises registering in order to obtain investment subsidies or certificates of origin for exports.

sugar of sufficient purity to be used in food processing in the Bekka area.

- Increased mechanisation in agricultural production is essential.
- There is a need for improved irrigation in the Bekka valley. Traditional methods of irrigation by flooding are not suitable for mechanised picking of crops since mechanical harvesters need established rows.
- If the industry is to build on its success in export markets, there is a continued need to focus on standards and technical specifications.
- There is a greater need for specialised banks, or at least specialised branches within existing banks that have the expertise to properly assess sector specific risks and opportunities.
- The internet provides an opportunity to target particular market niches all over the world. Specialised Lebanese products can be sold to Lebanese expatriates as well as to other Arab communities. But this requires storage of products locally to ensure quick and economical delivery.

A recent report from ESCWA (December 1999) has drawn attention to the technical barriers that Lebanon (and other Western Asian countries) faces in exporting to the EU.

- language requirements
- information on labels.
- size of labels and characters
- nutrition facts
- definition of shelf life.
- packaging
- testing and certification.

Many of these are also barriers to trade between the member states of the EU. The steady implementation of the Single Market is helping to iron out inconsistencies in the application of standards for food products which should mean in the future that Lebanese industry will find it easier to export to the EU as a whole. Nevertheless, the need to achieve and maintain levels of quality that satisfy international standards can be an important catalyst for the agri-food business. For example, the production of wines contributes very little to exports. Nevertheless, high quality Lebanese wines still maintain a strong reputation among connoisseurs. The application of scientific principles to wine making, pioneered by Californian wine producers in the last 40 years, has revolutionised wine production world-wide. Now vineyards from Australia, New Zealand, South Africa and America can compete with the best French wines. To achieve high and consistent standards requires vertical integration from the re-planting and growing of grapes to labelling and marketing.

4.1.2 Chemical Products and Man-made Fibres

This sector has been making an increasing contribution to exports since 1996 Average productivity is well above the average for Lebanese industry (Table 15). However, for an industry that is usually highly capital intensive, there are still sub-sectors (paints and printing ink) where productivity is not much higher than the industry average. This is a sub-sector with a large number of establishments, with an average workforce of 7, compared with the sub-sectors for the manufacture of fertilizers and nitrogen compounds and medicinal products, where the average workforce is more than three times as large. Nevertheless, there is not an automatic relationship between the average size of the sector and productivity and profitability. The manufacture of cleaning and polishing products has the lowest size by average workforce, but the second highest productivity.

4.1.3 Printed Matter and Recorded Media

This is an increasingly important sector, with value added in the top decile of value added for Lebanese industry (Table 15). The census is likely to include activities that involve service type activities such as editing, commissioning etc. This sector plays to a traditional strength of the Lebanese economy in providing expertise in publishing and other media for the Arab world. The information that we have from the 1998 industrial census and trade figures gives us an incomplete picture of this sector. In Table ? the volume of exports appears to exceed domestic output. Clearly many transactions in this sector are not being picked up by the industrial census. But what is striking is that this is one of the few sectors in Lebanon in which the volume of exports is close to the volume of imports.

4.1.4 Textiles and Clothes and Fur Dyeing

Although these are two separate SIC sectors in practice they share many common features and problems and so we discuss them together. Nevertheless, it is important not to lose sight of some important differences between them and the effect that this will have on their future development.

Between 1994 and 1998 the workforce in these two sectors declined from 22,438 to 14,233 (Table 17). The entire decline was reflected in a fall in employees. It appears that some former employees, especially in textiles, responded by setting up their own firms, so the number of establishments increased by 33 percent. Between 1994 and 1998 value added declined by almost 40 percent in the two sectors combined. Profitability declined by 10 percentage points, but because the employees fell so much, average productivity rose by 15 percent.

Table 17: Textiles and Clothing 1994 and 1998

	number of establishments	workforce	employees	owners	value-added	Profitability	Productivity
1994							
Textiles	604	4618	3576	1042	55745.51	38.61%	24.20
Clothes and fur dyeing	3004	17820	14758	3062	161931.5	36.81%	17.71
Total	3608	22438	18334	4104	217677	37.28%	19.04
1998							
Textiles	804	3671	2207	1464	41078	28.75%	27.48

Clothes and fur dyeing	2262	10562	6654	3908	91497	26.16%	20.07
Total	3066	14233	8861	5372	132575	27.00%	21.98
%change 1994-98							
Textiles	33.11%	-20.51%	-38.28%	40.50%	-26.31%		13.53%
Clothes and fur dyeing	-24.70%	-40.73%	-54.91%	27.63%	-43.50%		13.37%
Total	-15.02%	-36.57%	-51.67%	30.90%	-39.10%		15.44%

The decline in production was also reflected in a significant fall in exports between 1996 and 1999 (Table 4).

The decline in the textile and clothing industries in the Lebanon has had a major impact on employment. The fall in the number of employees of 9473 between 1994 and 1998 accounts for 36 percent of the total fall in employment in the industrial sector.

The problems that the textile and clothing sectors face are mirrored in other countries. Trade in textiles and clothing has been a contentious issue for developed and developing countries for a very long time. Attempts over the last 50 years by developed countries to ameliorate the consequences for their own industries of competition from low cost producers in the developing world have produced many convoluted barriers, both formal and informal, to free trade. Nevertheless, trade in textiles and clothing accounts for a significant proportion of world trade and is one industry where entry barriers are low and developing countries can start to compete in world markets using cheap labour. There have been a number of recent attempts to undo some of the restrictions on international trade that have built up over time. The Multifibre Agreement is being unravelled under the auspices of the Uruguay Round of trade negotiations through the Agreement on Textiles and Clothing (ATC)¹¹ but there is still a long way to go.

Lebanon is in the position of being simultaneously undercut by products from the Far East, and still facing many obstacles to its exports to European markets. Although we are discussing textiles and clothing together, it is as well to note that there are some significant differences on the production side (ESCWA, 1998). In general the production of textiles is more capital intensive than is clothing, and there is greater scope for economies of scale. Traditionally clothing has been much more labour intensive. Yet figures for 1998 provided by the census suggest that the textiles sector in Lebanon is not much more capital intensive than clothing. The ratio of the capital stock to value added is 2.1 in textiles while it is 1.5 in clothing. This reflects in part, the way in which the clothing sector has sought to make use of the more advanced technologies associated with computer aided cutting, allied to advanced design ideas.

The reduction in the average size of textile establishments that occurred between 1994 and 1998 may be a retrograde step. If the textile sector is to be competitive internationally, a much greater amount of investment will be required to allow Lebanon to compete with the Far East and with European producers. The range of tariffs on textiles and clothing are shown in Tables 19 and 20. There is frequent

¹¹ Unless a country is a member of the World Trade Organisation it cannot take advantage of the provisions of the ATC relating to trade liberalisation. Lebanon is currently negotiating to join the WTO.

pressure to increase these barriers to foreign competition and more recently in response to what has been perceived as dumping by Asian producers, tariffs by weight have been introduced.

4.1.5 Non-Metallic Mineral Products

Table 20 provides a 4-digit breakdown for this sector which is mainly made up of the manufacture of glass and glass products, cement and concrete and marble and marble products. Non-refractory clay and ceramic products – although one of the most highly protected (ISIC code 2693 has a tariff rate of 42 percent) – is a very small activity employing only 98 people. The sector as a whole had a workforce of 13,376 people in 1998, only slightly less than in 1994, with most of this concentrated in the manufacture of cement, concrete, stone products and in particular marble. However, the number of establishments has risen from 1686 in 1994 to 2530 in 1998. Total value added rose from \$202 mn in 1994 to \$262 mn in 1998. But most of this is associated with the manufacture of cement and concrete and so the sector is closely connected with the construction sector. As post-war construction eases back, this sector is likely to experience a decline in activity.

5 References

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Appendix

Article 55:

Scientific, technical and technological cooperation

The aim of cooperation shall be to:

- (a) encourage the establishment of permanent links between the Parties' scientific communities, notably by means of:
 - providing Lebanon with access to Community research and technological development programmes in accordance with Community rules governing non-Community countries' involvement in such programmes;
 - Lebanese participation in networks of decentralized cooperation;
 - promoting synergy in training and research;
- (b) improve Lebanon's research capabilities;
- (c) stimulate technological innovation and the transfer of new technology and know-how;
- (d) encourage all activities aimed at establishing synergy at regional level.

Article 57

Industrial cooperation

- (a) encourage cooperation between the Parties' economic operators, including cooperation in the context of access for Lebanon to Community business networks and decentralized cooperation networks;
- (b) back the effort to modernize and restructure Lebanon's public and private sector industry (including the agri-food industry);
- (c) foster an environment which favours private initiative, with the aim of stimulating and diversifying output for the domestic and export markets;
- (d) make the most of Lebanon's human resources and industrial potential through better use of policy in the fields of innovation and research and technological development;
- (e) facilitate access to credit to finance investment.
- (f) encourage the development of SMEs, particularly by:
 - promoting contacts between enterprises, partly by using Community networks and instruments for the promotion of industrial cooperation and partnership;
 - facilitating credit access for financing investment;
 - making information and support services available;
 - making the most of human resources to encourage innovation, and setting up projects and economic activities.

Article 58

Promotion and protection of investment

The aim of cooperation shall be to create a favourable climate for flows of investment, and to use the following in particular:

(a) the establishment of harmonized and simplified procedures, machinery to encourage joint investment of the co-investment type (especially to link small and medium-sized enterprises) and methods of identifying and providing information on investment opportunities; (b) the establishment, where appropriate, of a legal framework to promote investment, chiefly through the conclusion by Lebanon and the Member States of investment protection agreements and agreements preventing double taxation.

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