

SOURCES OF GROWTH OF THE CYPRUS MANUFACTURING SECTOR

by Dr. EURIPIDES I. DEMETRIADES

Department of Statistics and Research Ministry of Finance, Cyprus

I. Introduction

One of the basic objectives of industrial planning in Cyprus since independence in 1960 has been to increase significantly the share of manufacturing to Gross Domestic Product (G.D.P.). This was considered necessary if the efforts to restructure the economy were to be successful¹. The heavy dependence of the economy on primary sectors made it extremely vulnerable to external and unpredictable factors influencing both production and foreign trade, and a main concern of planning was the diversification of production.

Current assessments of the performance of the manufacturing sector emphasize that during the planning period 1962 - 1971, it expanded fairly rapidly, that its structure changed and that import substitution was the main force of industrial development. But growth of output may be accompanied either by import substitution, or by larger amounts of domestic absorption and export, or by some combination of the two.

In this paper an attempt is made to quantify the sources of growth of the manufacturing sector and thus provide a better insight into its changing structure, and evaluate the role played by import-substitution policies in promoting the growth of different industries. For this analysis manufacturing is classified into consumer, intermediate and investment goods industries and the investigation extends over the First and Second Plan periods, 1962-1966 and 1967-1971, and the pre-independence period 1954-1962. Actually the calculations are made for the periods 1954-1962, 1962-1967 and 1967-1971 because for 1954, 1962 and 1967 industrial censuses were held which provide the basic data for such an analysis.

1. Planning Bureau «The Second Five-Year Plan» (II, p. 149).

II. Rate of Growth of Manufacturing

Manufacturing output showed an upward trend during much of the period 1954 - 1971 and its contribution to G.D.P. in real terms more than tripled by 1971. During the pre-planning period 1954 - 1962 it grew at an average annual rate of about 4.1% as compared to 8.5% during the First and Second Five-Year Plan period, 1962-1971. As the next table indicates there has been a significant diversity in growth rates of the various industries during the period 1962 - 1971 for which comparable data are available¹.

Investment goods industries showed the highest overall growth rates followed by intermediate and consumer goods industries.

Investment goods industries include metal furniture, light engineering (such as assembling of industrial refrigerators, air-conditioning equipment, water pumps) and bus cabinets, and started from an extremely small base in 1962.

Intermediate goods consist chiefly of construction materials and their relatively high rates of growth are related to the expanding construction activity.

Consumer goods industries showed an accelerated rate of growth during the Second Five-Year Plan. As it will be seen later this was associated with the growth in final demand and the import substitution process. The industries with growth rates well above the overall rate are canning of fruit and vegetables, footwear, clothing, paper products, chemical products, batteries and plastic articles.

The relatively high growth rates for capital and intermediate goods as compared to consumer goods are quite consistent with international findings - namely that increases in per capita income bring a shift from production of consumer goods to production of intermediate and capital goods².

The markedly undalanced pattern of growth observed during the planning period 1962 - 1971 is not surprising, especially when it is noted that the leading industries are plastic articles, paper products, chemicals and electrical articles. As S. Kuznets argues in his study on trends in industrial structure, usually individual industries have their highest rate of growth when they are just established as new industries because they are likely to use an up-to-date production process (including skill-mix of labour and capital intensity) and/or introduce a new product. Since older industries share in this process of innovation with much more difficulty, the most likely result will be a divergence in their growth performance and this will be greater the more rapid is the application of new technology and hence of overall economic growth³. Chemicals, metallic and

1. The non-availability of data on output in real terms by industrial group confined us to this period only. Indices of production were first compiled for 1962.

2. See for instance H. B. Chenery (1) and S. Kuznets (6).

3. See S. Kuznets (6, pp. 154-155).

T A B L E 1
RATE OF GROWTH OF THE MANUFACTURING SECTOR BY INDUSTRIAL GROUP DURING THE FIRST AND SECOND FIVE - YEAR PLANS

| Industry Code (ISIC) | Industry | % Annual Compound Rate of Growth | | Indices of Growth 1962 = 100) |
|----------------------|--------------------------------------|----------------------------------|-------------|-------------------------------|
| | | 1962 - 1967 | 1967 - 1971 | |
| 20 | Food | 7.6 | 8.5 | 144 |
| 21 | Beverages | 5.1 | 7.0 | 128 |
| 22 | Tobacco | 1.6 | 3.1 | 108 |
| 23 | Textiles | 13.9 | 12.5 | 192 |
| 24 | Footwear and clothing | 9.9 | 8.4 | 160 |
| 25 | Wood and cork | 4.2 | 15.4 | 123 |
| 26 | Furniture and fixtures | 9.0 | 6.1 | 153 |
| 27 | Paper and paperboard products | 20.0 | 27.6 | 249 |
| 28 | Printing and publishing | 10.8 | 6.2 | 167 |
| 29 | Leather and leather products | 9.4 | 13.0 | 157 |
| 30 | Rubber products | 2.8 | 10.9 | 115 |
| 31 | Chemicals and chemical products | 12.1 | 14.5 | 177 |
| 33 | Non - metallic mineral products | 10.4 | 10.1 | 164 |
| 35 | Metal products | 8.6 | 12.1 | 151 |
| 36 | Machinery | 12.6 | 8.4 | 181 |
| 37 | Electrical machinery | 11.3 | 18.3 | 171 |
| 38 | Transport equipment | 4.4 | 7.2 | 124 |
| 39 | Miscellaneous industries n.e.s. | 25.3 | 20.0 | 308 |
| | ALL INDUSTRIES | 8.0 | 9.2 | 147 |
| A. | CONSUMER GOODS | | | |
| | (a) Durable | 7.9 | 9.1 | 146 |
| | (b) Non - durable | 6.2 | 8.7 | 135 |
| | (i) Food, beverages and cigarettes | 8.0 | 9.2 | 147 |
| | (ii) Other | 6.0 | 8.3 | 134 |
| | INTERMEDIATE GOODS | 11.4 | 10.9 | 171 |
| | (a) Construction | 8.3 | 8.1 | 149 |
| | (i) Earthy materials | 9.8 | 11.9 | 160 |
| | (ii) Other | 9.7 | 10.3 | 159 |
| | INVESTMENT GOODS | 10.6 | 13.7 | 165 |
| | (a) Construction | 4.1 | 3.9 | 122 |
| | (b) Other | 16.0 | 7.5 | 210 |
| C. | IMPORT - COMPETING INDUSTRIES | | | |
| | NON - IMPORT COMPETING INDUSTRIES | 10.4 | 10.1 | 164 |
| | EXPORT INDUSTRIES | 5.1 | 6.7 | 128 |
| | | 5.9 | 7.2 | 133 |

(Source: Compiled from Department of Statistics and Research «Index Numbers of Industrial Production, 1962 - 1971» (9)).

plastic industries comprise a variety of new products and they have absorbed most of new technologies. The Cyprus experience so far, however, suggests a negative correlation between unbalance and aggregate growth as hinted by Table 1. For the First Five-Year Plan unbalance is calculated to be 0.63 and for the Second Five-Year Plan 0.43. Unbalance here is measured in terms of relative average deviation between the growth rates of each group and the overall growth rate of the manufacturing sector¹.

This suggests that in Cyprus as in most other developing countries, the dynamics of industrial growth have not been as dependent on technical innovations as they were on the possibility of spreading industrialization to more and more sub-sectors. During the initial stages most industrial activity was restricted to a few traditional industries such as food, beverages, footwear and clothing. The fact that certain new as well as existing industries were experiencing technical progress was not likely to have weighted very much in aggregate industrial growth as these were mostly import-substituting, and given the small size of the domestic market it would have been unlikely for fast growth in a particular sub-sector to have counted very much at the aggregate level. Over the period 1962-1971 the industries which showed the highest growth rates were those which had the largest share of imports in the total supply of manufactured goods in 1962².

III. Sources of Growth of Manufacturing

The significance of differences in the growth rates of the various sub-sectors of manufacturing can be assessed better if changes in output are examined in the light of the type of demand absorption and supply source. The structure of aggregate demand and supply is influenced by the structure of final demand, as it can be visualized in an input-output framework. There are two steps by which changes in final demand work their way into domestic production. First, final demand influences aggregate demand by inducing intermediate demand which works through inter-industry relations; second, aggregate demand induces domestic production, and a part of total demand not fulfilled by domestic production is met by imports. Within this framework, following Chenery (1), Lewis and Soligo (7) and Desai (3), the growth in output of the manufacturing sector between any two periods, could be ascribed to three sources: (i) substitution of domestic production for imports; (ii) growth in final use of industrial

1. This is taken to be the sum of the absolute values of the differences between sub-sectoral growth rates and the overall rate, divided by the number of sub-sectors and the overall growth rate.

2. See Department of Statistics and Research «Index Numbers of Industrial Production 1962-1971» (9, pp. 4-6).

products; and (iii) growth in intermediate demand stemming from (i) and (ii).

This division of the growth in domestic production of each industry can be formalized by utilizing the basic identity :

$$S \equiv Q + M \equiv D + R + E \quad (1)$$

i.e. total supply equals total demand in each industry

where S = Total supply of goods of the industry

Q = Domestic output of the industry

M = Imports of the same products of the industry

D = Final domestic demand (including inventory accumulation) for the output of the industry

R = Intermediate domestic demand met by the industry

E = Export demand for the products of the industry.

Then an incremental change in total supply ΔS is given by a similar identity,

$$\Delta S \equiv \Delta Q + \Delta M \equiv \Delta D + \Delta R + \Delta E \quad (2)$$

Let $U_1 = Q_1 / S_1$ i.e. the ratio of domestic production to total supply in the first period.

Now given the incremental change in total demand $\Delta Q + \Delta M \equiv \Delta S$, if U_1 remains fixed, i.e. if there had been no import substitution, then the change in domestic output ΔQ which would have taken place is given by

$$U_1 \Delta S \equiv U_1 (\Delta D + \Delta R + \Delta E) \quad (3)$$

That is to say, if a country continued to import in the second period the same proportion of its total supply as in the first period (base period), the change in domestic output which would have been required to satisfy the given change in total demand is given by expression (3).

Suppose now U_1 changes to $U_2 = Q_2 / S_2$ in the second period, then the change in domestic output between the two periods ΔQ is given by

$$\Delta Q = U_1 \Delta D + U_1 \Delta R + U_1 \Delta E + (U_2 - U_1) S_2 \quad (4)$$

Thus the change in domestic output has been broken down into four parts : expansion of (i) domestic final demand on the assumption that the ratio of imports to total supply is held constant as at its base period level ; (ii) intermediate domestic demand, again on the same assumption of fixed U_1 ; (iii) export

demand, again with fixed U_1 ; and (iv) import substitution, $(U_2 - U_1) S_2$, which is the change in domestic output implied by the actual change in the ratio of domestic output to total supply¹.

In order to facilitate inter-industry comparison of the relative contribution of each factor to the change in output both sides of equation (4) can be divided by ΔQ and express the contribution of each factor as a percentage of the total change in output.

The interpretative significance of equation (4) is that the first three terms provide a measure of the additional domestic output which would have been allocated to final, intermediate and export use if the ratio of domestic output to total supply had remained unaltered. The last term gives a measure of the additional domestic output which would result exclusively from a change in the ratio of domestic output to total supply.

IV. Derivation of total supply and demand of manufactured goods

In dealing with the statistical data required for the estimation of the basic identity $Q + M = D + R + E$ giving total gross² supply (i.e. domestic production plus imports) equals total gross demand (final demand $D +$ Intermediate demand $R +$ Export demand E) in each industry, two rather difficult problems had to be resolved. First to ensure that the classifications of each category of data such as imports and production were comparable over time; and second, to ensure that the classifications of the various categories at any period were comparable. The procedure followed was first to build up a comparable series of production figures for the four benchmark years, 1954, 1962, 1967 and 1971, and then to compile corresponding data for imports (c.i.f.), import duties, excise taxes and exports (f.o.b.) for the same industrial classification as used in the production series³.

All the data utilized are at current and not at constant prices. As a result, some of the changes in supply and demand may be due to changes in prices or import duties. These influences could not be eliminated in the absence of the required price deflators at the individual industry level of output and imports. However, an examination of a few available price indices of manufactured goods, both domestically produced and imported, does not reveal a distinct

1. This is Chenery's measure of import substitution.
See Chenery's (1). For a detailed discussion of alternative measures of import substitution, See P. Desai (3).

2. Transactions are valued gross, i.e. inclusive of the cost of all materials and services used in their production.

3. For details of the derivation of each series see E. I. Demetriades (2).

departure of any commodity group from the generally rising trend of prices over the period 1954-1971. Thus, our analysis of relative change in terms of current prices may not be materially affected by a conversion of current value-figures into constant terms.

V. Decomposition of output growth by source

Using equation (4), the sources of growth in gross output of the manufacturing sector computed by economic category of industries are presented in table II¹.

During the period 1954-1962 the growth in gross output may be totally attributed to the growth in domestic demand (final and intermediate). Import substitution was negative in respect of consumer, intermediate and investment goods. Of the consumer goods, food manufacturing showed the highest negative-import substitution. This was mainly due to poor agricultural production² which necessitated an increase in imports of food to meet the requirements of an increasing population with rising incomes. Despite the negative overall import substitution in intermediate goods, important gains (55.4 %) of an import substitution nature were recorded in construction materials (chiefly cement, nails, iron-wire and aluminium products). This reflects to a certain extent, the result of the Government policy of encouraging the production of some intermediate-goods locally. In 1958 a revised customs tariff was introduced reducing duties on raw materials and increasing the duty on certain imported manufactured goods to afford protection to local industries.

The negative import substitution during the period 1954-1962 may be accounted for partly by the fact that Cyprus under British rule was in customs union with the United Kingdom and as such, the Island was expected to sell primary products (agricultural produce and minerals) in exchange for industrial goods. Thus import substitution did not develop to its «normal» level. But while changes in the composition of final demand prompt the non-proportional growth of sectoral outputs, it is the relative cost structure in the developing country as compared with the cost structure abroad that mainly determines the source of supply, and the most fundamental reasons for the slow development of import substitution in Cyprus are the unusually small size of the market and the heavy dependence of manufacturing on foreign raw materials, resulting in most cases in a cost structure unfavourable to domestic production. In addition to these factors, the period 1955-1959 experienced the tragedy of

1. For data on the sources of growth by major industrial group at the 2-digit and 3-digit level classification, see E. I. Demetriades (2).

2. See Department of Statistics and Research «Economic Review» for 1959 and 1962 (10).

TABLE II
GROWTH IN GROSS OUTPUT OF THE MANUFACTURING SECTOR BY SOURCE AND ECONOMIC CATEGORY AT
VARIOUS PERIODS 1954 - 1971
(In Percentages)

| Sources of Growth | Consumer Goods | | | | | | | | | | Intermediate Goods | | | | Invest- ment Goods |
|-------------------------|----------------|--------------|---------------------|---------------|---------|---------------------------------|-------|--------|-------|--------------|--------------------|--------------------------|-------|-------|--------------------------|
| | TOTAL | Total | | | Durable | Non - durable | | | Total | Construction | Other | Invest- ment Goods | | | |
| | | Final Demand | Intermediate Demand | Export Demand | | Food, Beverages & Tobacco | Other | | | | | | | | |
| 1954 - 1962 | | | | | | | | | | | | | | | |
| ALL INDUSTRIES | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| Final Demand | 97.2 | 95.5 | 108.5 | 93.7 | 70.5 | 70.5 | 39.1 | 327.8 | 157.1 | 2.9 | | | | | |
| Intermediate Demand | 12.6 | 5.3 | 5.0 | 4.6 | 5.2 | 5.2 | 5.6 | 491.1 | 2.9 | | | | | | |
| Export Demand | -0.2 | -0.1 | -0.4 | 0.2 | -0.3 | -0.3 | -0.1 | -6.5 | | | | | | | |
| Import substitution | -9.6 | -0.7 | -13.1 | 1.5 | 24.6 | 24.6 | 55.4 | -712.4 | -60.0 | | | | | | |
| 1962 - 1967 | | | | | | | | | | | | | | | |
| ALL INDUSTRIES | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| Final Demand | 48.1 | 62.0 | 27.5 | 70.1 | 77.2 | 77.2 | 31.3 | 20.5 | 19.0 | | | | | | |
| Intermediate Demand | 14.1 | 9.0 | 27.2 | 2.3 | 5.6 | 5.6 | 13.0 | 43.1 | 5.7 | | | | | | |
| Export Demand | 5.5 | 8.8 | | 15.3 | 5.3 | 5.3 | 1.9 | 3.3 | 0.6 | | | | | | |
| Import substitution | 32.3 | 20.2 | 45.3 | 12.3 | 11.9 | 11.9 | 42.2 | 33.1 | 74.7 | | | | | | |
| 1967 - 1971 | | | | | | | | | | | | | | | |
| ALL INDUSTRIES | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| Final Demand | 108.0 | 84.9 | 116.8 | 78.1 | 67.7 | 67.7 | 110.7 | 69.5 | 215.6 | | | | | | |
| Intermediate Demand | 13.3 | -2.6 | -19.1 | 2.7 | 0.3 | 0.3 | 59.7 | 214.6 | -8.5 | | | | | | |
| Export Demand | 9.5 | 14.5 | 0.2 | 23.6 | 11.8 | 11.8 | 3.3 | 6.7 | -0.2 | | | | | | |
| Import substitution | -30.8 | 3.2 | 2.1 | -4.4 | 20.2 | 20.2 | -73.7 | -190.8 | 106.9 | | | | | | |
| 1954 - 1971 | | | | | | | | | | | | | | | |
| ALL INDUSTRIES | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| Final Demand | 80.6 | 76.6 | 78.9 | 76.6 | 61.8 | 61.8 | 79.9 | 56.9 | 91.9 | | | | | | |
| Intermediate Demand | 13.1 | 3.2 | 4.3 | 2.9 | 2.4 | 2.4 | 42.5 | 134.7 | 1.0 | | | | | | |
| Export Demand | 5.6 | 8.7 | | 14.3 | 6.3 | 6.3 | 2.0 | 4.9 | 0.3 | | | | | | |
| Import substitution | 0.7 | 11.5 | 16.8 | 6.2 | 29.5 | 29.5 | -24.4 | -96.5 | 6.8 | | | | | | |
| 1962 - 1971 | | | | | | | | | | | | | | | |
| ALL INDUSTRIES | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| Final Demand | 72.8 | 70.7 | 64.0 | 71.9 | 68.6 | 68.6 | 62.5 | 33.6 | 66.7 | | | | | | |
| Intermediate Demand | 12.6 | 2.6 | 3.7 | 2.5 | 2.0 | 2.0 | 37.5 | 90.1 | 0.6 | | | | | | |
| Export Demand | 7.0 | 11.3 | 0.1 | 18.6 | 9.3 | 9.3 | 2.3 | 4.1 | 0.2 | | | | | | |
| Import substitution | 7.6 | 15.4 | 32.2 | 7.0 | 20.1 | 20.1 | -2.3 | -27.8 | 32.56 | | | | | | |

(Source: From Table B3 in E. I. Demetriades (2)).

intercommunal strife and struggle for independence. All this had its adverse effect on the economic life of the Island; many occupations were brought to a standstill, and trade and industry were handicapped by the irregularity of supplies of both materials and labour¹.

In the period 1962-1967, which overlaps with the First Plan (1962-1966) and the beginning of the Second Plan (1967-1971), import substitution accounted for 32.3% of the growth in gross output, export expansion for 5.5% while domestic final demand and intermediate demand accounted for only 48.1% and 14.1% respectively. Nearly all industries showed some import substitution and increase in the share of total supply of manufactured goods produced domestically. By 1967 Cyprus had grown nearly self-sufficient in beverages, cigarettes, footwear, furniture and cement. The relatively high import substitution attained in the First Plan underlines the Government policy of promoting industrial expansion through import substitution.

The major share of growth attributable to import substitution during 1962-1967 came from industries producing capital and intermediate goods. The biggest gains in capital goods were recorded in the making of bus cabinets, agricultural machinery and implements (such as threshing machines, turbine pumps and simple tools). In intermediate goods, cement, blacksmithing, shoe lasts, crown corks, oxygen and acetylene registered the highest rates of import substitution.

Of all consumer goods, durables registered the highest growth attributable to import substitution. Large gains were recorded in the production of mattresses, furniture and jewellery. The relatively high rate of growth (8.8%) attributed to exports in 1962-1967 as compared to -0.1% in 1954-1962, is mainly due to an increase in exports of alcoholic beverages, footwear and clothing.

In the Second Plan the growth of the manufacturing sector may be attributed to the growth in final demand and some export expansion. Import substitution was negative to the extent of 30.8% of additional output. Investment and intermediate goods industries showed the highest rate of negative import substitution. Such an outcome is not surprising. Cyprus is in its initial stages of development and requires relatively large amounts of capital and intermediate goods which cannot be produced domestically. Besides the lack of technical know-how and natural resources, the minimum economic size of many intermediate and capital goods industries is such that in small markets a variety of user industries need to be established before their combined demand justifies a substitution of imported intermediate and capital goods by domestic production. It may be reiterated that the import substitution approach followed was largely a

1. See for instance Department of Statistics and Research «Economic Review, 1958» (10, p. 3).

product approach. New industrial enterprises were built around a few products intended for the local market. This course of development was natural in view of obvious opportunities that existed for import substitution on a product basis rather than on a process-oriented production basis.

The negative import substitution during the Second Plan signals the slowdown of its importance in the industrial growth of the country and the difficulties which would be encountered at a higher stage of substitution. In Cyprus although the market for many consumer goods has proved economically adequate for import substitution, the size of the domestic market for intermediate and capital goods is too small to sustain local production. By 1971 Cyprus was nearly self-sufficient in a number of commodities such as furniture, jewellery, beverages, cigarettes, knitwear, footwear, cement, blacksmithing, oxygen and acetylene, wooden shoe lasts and wooden flooring. This reflects the small domestic market which is easier to reach in a relatively short period. Self-sufficiency was attained in commodities in which the optimum scale of production is large relative to the domestic market or in which industries require smaller capital and simpler techniques for their establishment and operation. The industries which capitalized on import substitution have proved to be the most dynamic during the 1960's but cannot be expected to match past performance in the 1970's, given the present degree of inward orientation of the economy.

It has already been recognized that the policy of industrialization through import substitution is no longer a satisfactory one and that the manufacturing sector should be reorientated towards exports¹. It is encouraging that export demand accounted for 9.5% of the growth in manufacturing in 1967-1971 as compared to 5.5% in 1962-1966 and -0.2% in 1954-1962. Exports of manufactured goods in 1971 amounted to £ 10.6mn as against £ 5.3 mn in 1967 and £ 2.3 mn in 1962.

Cyprus experience of import substitution seems to resemble the experience of a number of developing countries namely: success in the first stage of implementation of such a strategy, and the difficulty of meeting the challenges that lie beyond the first stage i.e., extending production backward to intermediate goods, capital goods and raw materials and breaking into the world market with exports of manufactures. Yet these are vital to ultimate success and without one or both the pace of industrial growth would falter and the emergence of a self-sustained growth mechanism would be frustrated.

1. See for instance A. Patsalides «Budget Address, 1973» (8, pp. 61-62).

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