

Structural Change, Foreign Trade and Income Multipliers in the Italian Economy *

Introduction

Between 1960 and 1985 the international integration of the Italian economic system increased substantially. The share of exports in total expenditure rose from 8% to more than 21%, while the import share in total sources (and in GDP) more than doubled. In the last decade, moreover, the pattern of Italian trade changed significantly.

TABLE 1

COMPOSITION OF EXPENDITURE, IMPORTS AND GDP: 1960-1985
(percentage shares at constant 1970 prices)

Years	SOURCES			USES			
	GDP	Imports	Total	Private consumption	Public consumption	Investment and Stockbuilding	Exports
1960	90.90	9.10	100	54.05	15.35	22.48	8.07
1965	89.42	10.58	100	55.59	14.21	18.64	11.56
1970	85.77	14.23	100	54.35	12.25	19.79	13.61
1975	85.38	14.62	100	54.70	13.11	15.18	17.01
1980	82.12	17.88	100	52.17	11.63	17.42	18.77
1985	80.77	19.23	100	51.24	12.44	14.11	22.21

Source: ISTAT, *Conti Economici Nazionali*.

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Part of the literature analysed these trends in relation to the process of structural change which occurred in the productive system, and gave rise to a debate on the macroeconomic implications of the changes taking place.

In this paper we present a macroeconomic framework which may be useful for a discussion of some of the consequences of the structural changes analysed in the recent debate. The paper is divided into three parts. Part one focuses on the links between imports and final demand in the Italian economy and shows that the different macro-components of expenditure have a different import content. Part two embodies these structural features of the system in a macroeconomic model, through an appropriate specification of the import function. In part three, the model is used as a conceptual framework to analyse some macroeconomic implications of the structural changes discussed in the literature.

I - The main links between imports and final expenditure depend on certain structural characteristics of the economic system, which can be analysed by means of input-output tables.

A simple examination of the table for a given year makes it possible to observe the destination of imports in the system and to separate intermediate from final imports. Intermediate imports are used as current inputs in domestic production; final imports meet directly final consumption and investment, without any transformation in the domestic system. By some simple manipulations, moreover, the inverse matrix allows us to consider the links between intermediate imports and final demand for domestically produced goods and services. These links can be analysed in detail using the concept of vertical integration, which makes it possible to single out the amount of intermediate imports required in the whole system to meet the relevant final demand.

At the level of individual commodities, an analysis of the system disaggregated in "vertically integrated sectors" enables us to isolate the complete supply counterpart of each final commodity domestically produced and to calculate the amount of intermediate imports which are directly and indirectly embodied in it. By the same methodology, it is possible to calculate the total amount of intermediate imports which are required in the whole system by any macro-component of final expenditure: consumption (private and public), investment, stockbuild-

ing and exports.¹ These imports can be singled out by isolating the portions of the productive system which are directly and indirectly activated by the different components of final demand: following some French literature on structural change (*e.g.* Rocherieux, 1983) we shall refer to these parts of the system as "macroeconomic sections".

The intermediate import content of each "macroeconomic section" depends on the technology matrix, on the import-output matrix, and on the commodity composition of each macro-component of expenditure. For this reason (and also given the fact that Italian imports are mainly competitive) the import coefficients of each section, calculated from a matrix for a given year, can hardly be considered as fixed technical coefficients; however, even if they may fluctuate over the cycle, depending on several factors, these coefficients are reasonably stable over time. Their orders of magnitude, indeed, are a distinctive structural characteristic of the productive system and vary substantially across countries, depending on the level of industrial development, the degree of openness of the economy, the kind of specialisation, the availability of natural resources and similar factors (for a recent discussion see Michaely, 1984; Deardorff and Stern, 1985; Herrick and Kindleberger, 1984).

An empirical examination of the available input-output tables allows us to study the actual links between imports and final demand in the Italian economy. The last available table, relating to 1981, shows firstly that the greatest part of total imports (77.1%) is accounted for by intermediate imports.² If we consider the fact that fixed investment and stockbuilding (9.8% of total imports in 1981) are equally required by the firms' sector of the economy, we see that only 13.1% of total imports depend directly on domestic consumers' decisions.

¹ The different concepts of vertical integration are discussed in a recent paper by PASINETTI (1985); their empirical application is shown in SINISCALCO (1982). Following this methodology, the amount of intermediate imports which is required by any K macro-component of expenditure ($K=C, G, I, X$) can be calculated as the sum of the elements of vector $m_k = M(I-A)^{-1}f_k$, where M is the import-output matrix (direct requirements of intermediate imports per unit of domestic output), $(I-A)^{-1}$ is the inverse matrix (direct and indirect requirements of domestic output per unit of final demand for domestic products) and f_k is the vector of the k th component of final demand for domestically produced goods and services. The amount of final imports which satisfies any K component of final expenditure can be observed directly in the vectors of final demand.

² Empirical evidence reported in MICHAELY (1984, T.3.3 and 3.4) and in CAVES and JONES (1984, chart 8.1) seems to show a relationship between countries' level of industrialisation and the share of intermediate imports in total imports. This share is very similar in Italy, France and Germany (nearly 75%); the highest level is recorded in Japan (more than 85%), while in less developed countries the ratio of intermediate imports to total imports is significantly smaller (around 40%).

The detailed analysis of the links between intermediate imports and final demand, at the level of the main groups of final commodities, indicates substantial differences in the intermediate import content of the various goods and services domestically produced. The coefficients, shown in the first column of Table 2, range from .614 for energy products (which are largely based on imported oil and gas) to .059 for non-market services. The variability, which also exists at a more disaggregated level, is due in part to the international specialisation of the country, but mainly depends on the technological and structural characteristics of the different vertically integrated sectors: to give an example, the share of tradable inputs in final demand, which constitutes the upper limit of the coefficient for each vertically integrated sector, is much lower in market services (27%) than in the products of industrial transformation (86%).

TABLE 2

INTERMEDIATE IMPORT CONTENT OF FINAL DEMAND
FOR DOMESTIC PRODUCTS: 1981

Groups of goods and services		Macro-components of expenditure	
Agriculture,	0.137	Private consumption	0.187
Energy products	0.614	Public consumption	0.059
Manufactured products	0.263	Investment*	0.152
Building and construction	0.113	Exports	0.279
Market services	0.102		
Non-market services	0.059		
<i>Total</i>	0.178	<i>Total</i>	0.178

* Includes stockbuilding. (The coefficient of investment without stockbuilding is 0.148.)

Source: Input-output tables for 1981 as calculated by A. Santeusano, following the methodology in SANTEUSANIO (1982). More disaggregated calculations available on request.

If we consider now the intermediate import content of the macro-components of expenditure (Table 2, col. 2), we observe again wide differences in the coefficients: exports are more import intensive than the average, while public consumption is the least import intensive component of demand. This variability, already emphasised in the literature (from Berner and D'Adda, 1972, to Conti and Silvani, 1984) can be understood if we consider that each macro-component of

expenditure has a specific commodity composition and therefore activates a specific section of a non-homogeneous productive system: Italian exports are mainly of manufactured products; public consumption is necessarily confined to non-market services; private consumption (in the period under review) is divided with reasonable stability between goods and services, and a similar specificity is found in fixed investment.

The variability in the import content of the different macro-components of demand decreases only slightly if we consider intermediate and final imports together and relate them to the components of total final expenditure (and not only to final demand for domestically produced goods, as we had done until now).

TABLE 3

INTERMEDIATE AND FINAL IMPORT CONTENT IN THE MACRO-COMPONENTS
OF TOTAL FINAL EXPENDITURE: * 1981

	Private consumption	Public consumption	Investment**	Exports
Intermediate imports	0.176	0.059	0.132	0.279
Final imports	0.055	0	0.131	0

* Final demand for domestic and imported products.

** Includes stockbuilding (The coefficient of intermediate and final import content in investment without stockbuilding are respectively 0.130 and 0.122).

Source: Our calculations on input-output tables for 1981.

These coefficients relate the import flows to the different components of expenditure as they are recorded in the SNA, and therefore lend themselves to econometric estimation.³ Their variability, shown in Table 3, becomes important in a period of structural and cyclical changes in the composition of expenditure, and points to the potential interest of combining macroeconomic analysis with a consideration of the structural features of the productive system.

The specific import content of the different macro-components of expenditure, in fact, implies that, in general, different compositions of expenditure correspond to different aggregate propensities to import. A greater export share, in particular, implies by itself a higher import penetration.

³ The econometric calculations allow us to estimate these coefficients independently from input-output tables, thus avoiding a number of problems connected with their use: notably, the fixed coefficient hypothesis and the fact that the input-output coefficients are point estimations on a single year. Preliminary results of an econometric exercise we are carrying out on Italian quarterly data are largely consistent with the input-output coefficients presented in Table 3.

II - If we want to analyse how a given non-homogeneous productive structure may affect income determination in a macroeconomic model of an open economy, we cannot express imports as an aggregate function of domestic activity as in the standard textbook models. Rather, starting from the elements we set forth in section I, and following a suggestion by few authors (*e.g.* Harcourt, Karmel and Wallace, 1967; and more recently Kennedy and Thirlwall, 1979a, 1979b), we have to express imports as a disaggregated function of the different macro-components of expenditure, each characterised by its own import content.

The different destination of intermediate and final imports in the economic system, moreover, suggests a further disaggregation. Final imports (M^{FIN}) can be directly linked to total final consumption and investment: they are directly consumed or invested without any transformation in the domestic productive system and change when final expenditure changes, even if output does not. Intermediate imports (M^{INT}), by contrast, depend on the domestic output which is directly and indirectly required in the different sections of the system; they change only when output changes in response to final demand for domestically produced goods.

The disaggregation between final and intermediate imports makes it possible to distinguish two different circuits in the process of income determination: an income-expenditure circuit, where final imports are a direct leakage of the components of total final expenditure, and an expenditure-output circuit where intermediate imports are a leakage related to domestic production responding to changes in final demand for domestically produced goods and services.

The two circuits can be observed in the context of a complete model of income determination. Since the analysis, at the present stage, has mainly illustrative purposes, we introduce the proposed import function in a simple textbook model, where all the equations are linear. We therefore write the import function as:

$$(1') \quad M = M^{FIN} + M^{INT} = m_c C + m_i I + \lambda_c (1 - m_c) C + \lambda_i (1 - m_i) I + \lambda_g G + \lambda_x X.$$

The parameters in equation (1') are marginal import-expenditure ratios, and we shall refer to them as "propensities".⁴ More precisely, m_c

⁴ From an analytical point of view, given the linearity of the function, the division between final and intermediate imports does not have any consequence on the solution of the model. This distinction, however, will prove useful in discussing the effects of structural change on income multipliers.

and m_i are marginal propensities to import final consumption and investment goods with respect to total final consumption (C) and investment (I) respectively. Parameters λ_c , λ_i , λ_g and λ_x , on the other hand, are marginal propensities to import intermediate goods with respect to consumption of domestic products $C(1 - m_c)$, domestically produced investment goods $I(1 - m_i)$, public consumption (G) and exports (X).

For simplicity, given the linearity of (1') and recalling that m_g and m_x are both equal to zero, in the following we indicate:

$$\lambda_c (1 - m_c) = \mu_c, \quad \lambda_i (1 - m_i) = \mu_i, \quad \lambda_g = \mu_g, \quad \lambda_x = \mu_x$$

and rewrite (1') as

$$(1) \quad M = m_c C + m_i I + \mu_c C + \mu_i I + \mu_g G + \mu_x X.$$

In equation (1), the coefficients μ 's (defined as linear combinations of the corresponding λ 's and m 's, and therefore parameters themselves) are marginal propensities to import intermediate products with respect to private consumption (C), investment (I), public consumption (G), and exports (X), as they are recorded in the SNA.

Now that equation (1) is specified, we can recall the well-known relationships of the textbook model we are going to use:

$$(2) \quad C = c (Y - T)$$

$$(3) \quad T = tY$$

$$(4) \quad I = \bar{I}$$

$$(5) \quad G = \bar{G}$$

$$(6) \quad X = \bar{X}$$

$$(7) \quad Y + M = C + I + G + X.$$

The model (1-7) combines some features of a model by Kennedy and Thirlwall (1979a) and some other features of a model by Miyazawa (1976): the former treats total imports as a function of the different components of expenditure, the latter distinguishes between intermediate and final imports, but expresses both as a function of aggregate income.⁵

⁵ An attempt to combine the models by KENNEDY and THIRLWALL (1979a) and MIYAZAWA (1976) can be found in a recent paper by MILANA (1984). Milana's model, however, is different from our model because final imports depend on aggregate income and intermediate imports depend on the macro-components of final demand for domestic products. A convincing criticism to this formulation can be found in a forthcoming paper by CONTI and SILVANI (1986) which developed independently a specification similar to ours.

Given the exogenous variables (investment: I , public consumption: G , and exports: X),⁶ the model can be solved for the endogenous variables: income (Y), imports (M), consumption (C) and taxes (T). Equations (8) and (9) below show the solutions for income and imports, which are the relevant variables for the discussion in what follows:

$$(8) \quad Y = \frac{(1-m_i-\mu_i)\bar{I} + (1-\mu_g)\bar{G} + (1-\mu_x)\bar{X}}{1-c(1-t)(1-m_c-\mu_c)}$$

$$(9) \quad M = \frac{1}{\gamma} \left\{ [m_i+\mu_i+c(1-t)(m_c+\mu_c-m_i-\mu_i)]\bar{I} + [\mu_g+c(1-t)(m_c+\mu_c-\mu_g)]\bar{G} + [\mu_x+c(1-t)(m_c+\mu_c-\mu_x)]\bar{X} \right\},$$

where $\gamma = 1 - c(1-t)(1-m_c-\mu_c)$.

From equations (8) and (9) it is easy to derive the change (in absolute terms) in the equilibrium value of income and imports respectively stemming from a change (in absolute terms) in an autonomous component of expenditure, and therefore to obtain the multipliers. For example, the foreign trade multiplier will be:

$$(8') \quad \frac{\delta Y}{\delta X} = \frac{1-\mu_x}{1-c(1-t)(1-m_c-\mu_c)}$$

In a similar way, still using comparative static derivatives, we can calculate how the endogeneous variables respond to changes in any parameter.

In addition, it is possible to calculate the proportionate change in income and imports which is determined by a proportionate change in

⁶ Alternatively, exports can be expressed as a linear function of world demand (WD):

$$(6') \quad X = x\bar{WD}.$$

If this is the case, we can easily derive the income elasticity to world demand, which, given the linearity of equation (6'), will be equal to the income elasticity to exports, *i.e.*:

$$(10') \quad \frac{\delta Y}{Y} / \frac{\delta X}{X} = \frac{\delta Y}{Y} / \frac{\delta \bar{WD}}{\bar{WD}} = \frac{1-\mu_x}{\gamma} \frac{X}{Y}.$$

any injection; for example, as far as income is concerned:

$$(10) \quad \frac{\delta Y}{Y} = \frac{1}{\gamma} \left\{ (1-m_i-\mu_i) \frac{\delta I}{I} \frac{I}{Y} + (1-\mu_g) \frac{\delta G}{G} \frac{G}{Y} + (1-\mu_x) \frac{\delta X}{X} \frac{X}{Y} \right\},$$

where the share of the relevant variable on income plays a significant role.

Finally, if we account explicitly for the external constraint (which is not usually done in this type of model), we can derive the so-called "Hicks' super-multiplier" (cf. McCombie, 1985 for an example in the context of a standard model). Contrary to the income multipliers in equations (8) and (10) above, this multiplier accounts for the fact that an increase in income due to greater exports creates room for a potential increase in domestic expenditure, if a given trade balance is to remain unchanged. If, for the sake of simplicity, we assume that exogeneous domestic demand entirely corresponds to investment, the super-multiplier will be:

$$(11) \quad \delta Y = \frac{1}{\gamma} [(1-\mu_x)\delta X + \delta I],$$

where the potential increase in investment which leaves the trade balance unchanged is

$$(12) \quad \delta I = \frac{[1-c(1-t)](1-\mu_x)}{[1-c(1-t)](m_i+\mu_i)c_i + c(1-t)(m_c+\mu_c)} \delta X.$$

A closer look at eqs. (8), (9) and (10) sheds light on some characteristics of the proposed multipliers, which differ from the usual textbook multiplier.⁷ First of all, the denominator of our multipliers is different from the denominator of the textbook multiplier, because at every round of the multiplicative process it accounts for the specific

⁷ The textbook income multiplier derived from equations (2-7) and from a standard import function: $M=mY$ is equal to $1/[1-c(1-t)+m]$, where m is the marginal propensity to import with respect to income.

import content of the induced components of expenditure. Secondly, the numerator takes into account the fact that only a portion of any injection leads to an increase in income, due to the different import leakages directly related to the first round outlay.

The latter characteristic has several implications:

i) in the model (1-7) there is not a single income multiplier, but the multipliers are specific for the different injections.

ii) The response of imports to changes in autonomous expenditure is specific for each injection.

iii) Following from (i) and (ii), the relationship between changes in income and changes in imports cannot be treated as a parameter, but depends on the composition of the injections and varies with it.⁸

Given these characteristics of the model, and the actual features of the economy discussed in part one, we can argue that the textbook model (like any model in which imports depend on aggregate income or expenditure) is likely to suffer from an aggregation bias, which can be important, because the composition of the injections may change substantially from cycle to cycle.⁹

The proposed model, even if it is very simple, solves this specific aggregation problem, and indicates a way to arrive at a more accurate determination of the macroeconomic flows in an open economy with given structural characteristics.

⁸ Income and imports can be expressed as two parametric equations $Y=f(\pi)$ and $M=g(\pi)$, where the set of "parameters" $\{\pi\}$ includes all exogenous variables in addition to the parameters of the model (propensities). The equilibrium value of imports is compatible with different combinations of elements of $\{\pi\}$ and, therefore, given f , with different values of Y . Hence, it is impossible to derive a one to one correspondence between income and imports. In other words, unless *ad hoc* restrictions are imposed on function g , it is impossible to find a unique function h which links Y and M and their changes due to changes in parameters belonging to $\{\pi\}$.

⁹ The order of magnitude of the aggregation bias can be observed by comparing the actual multipliers computed from our model and from the textbook model respectively. To this end, as a first approximation, we used the coefficients obtained in the input-output calculations for 1981. (The coefficients we used to compute our multipliers are reported in Table 3; the aggregate import propensity m is equal to .281; parameter $c(1-t)$ is equal to .69.) The resulting aggregation bias can be observed in the following table:

	TEXTBOOK MODEL $\delta G = \delta I = \delta X$	δG	MODEL 1-7 δI	δX
δY	1.69	2.02	1.59	1.53
δM	.47	.37	.50	.52

The aim of our analysis, however, is not to provide an alternative model of income determination in the short run, but rather to use the model as a conceptual framework to discuss some macroeconomic consequences of actual structural changes which recently took place in the Italian economy.

III - As we anticipated in the Introduction, the Italian economy, in the last two decades, has been characterised by an accelerating process of structural change which affected at the same time the composition of final demand and output, the productive techniques, the pattern and volume of international trade.¹⁰

As far as the domestic productive system is concerned, the most important change is an accelerating process of division of labour between firms and branches, mainly due to technical and organisational changes which took place in the firms' sector. This process, which concerned the greatest part of industrial productions, gave rise to a general increase of the intermediate inputs' requirement per unit of output, with a more than proportional reduction in the primary inputs' requirement (for a discussion see CER, 1983, 1984; CER-IRS, 1986; Contini, 1986).

The changes in the domestic productive system have been recently analysed in relation to the increasing international integration of the country.¹¹ The greater import penetration, in particular, seems to be due in a substantial part to the growing requirement of intermediate imported inputs, which went hand in hand with the process of division of labour, and to the growing demand for imported investment goods, required in the process of technical and organizational change which gained momentum from the late 'seventies.

These trends, together with the change in the commodity composition of final demand, resulted in a significant rise in the intermediate and final import content of the different macro-components of expenditure.

¹⁰ The recent literature on structural change in Italy is rather extensive and cannot be surveyed in the context of this paper. The most important contributions, with special reference to the links between structural change and trade flows, are recalled in CONTI (1984), VALCAMONICI (1985) and in the Italian version of this paper.

¹¹ Cf. CONTI (1984); CIPOLLETTA and CALABRESI (1984); DI BIASE, MILANA, SEGNANA (1984); VALCAMONICI (1985).

TABLE 4

INTERMEDIATE AND FINAL IMPORT CONTENT IN THE MACRO-COMPONENTS OF TOTAL FINAL EXPENDITURE *: 1965-1981

	1965	1970	1975	1981
Intermediate imports per unit of:				
Private consumption	0.105	0.122	0.150	0.176
Public consumption	0.035	0.039	0.057	0.059
Investment**	0.101	0.124	0.118	0.132
Exports	0.195	0.215	0.234	0.279
Final imports per unit of:				
Private consumption	0.033	0.041	0.045	0.055
Investment**	0.067	0.099	0.101	0.131

* Final demand for domestic and imported products.

** Includes stockbuilding.

Source: Our calculations on input-output tables at current prices for 1965, 1970, 1975, 1981.

According to the literature, the process of structural change is one of the factors which contributed to a satisfactory performance of Italian products on the domestic and the international markets. Against this background the increased use of imported intermediate inputs has often been considered as one of the factors that made it possible to maintain, and sometimes increase, the comparative advantage of Italian goods, allowing the acquisition of certain inputs at a lower cost and promoting a faster diffusion of some technologies in the system (cf. Conti, 1984; CER, 1984; Momigliano and Siniscalco, 1984; Di Biase, Milana and Segnana, 1984; Valcamonici, 1985).

At the moment, in the debate, there is not total agreement on the characteristics and consequences of this process of structural change: many authors, however, seem to believe that the interrelated changes in technologies, organisation, and final demand led to a greater *microeconomic* efficiency of the industrial system: increased specialisation, greater flexibility and capacity to adapt to a fast changing demand and environment, lower unit costs and increased profit margins (for a discussion see CER, 1983; CER-IRS, 1986).

An overall positive judgement, however, did not prevent concerns at the macroeconomic level. An influential view, in fact, argued that the decrease in the multiplier, due to the growing import requirement in the

productive system "is a precise constraint on the growth potential of the system" (Conti and Silvani, 1984). The main question set forth in this context, therefore, is whether the actual and expected export development can still act as an engine of growth and compensate for the greater amount of imports which are required in the whole system as a consequence of structural change.

With reference to these matters, the model presented above, though very simple, can be used as a conceptual framework to assess some macroeconomic effects of the structural changes which were discussed in the literature. The model, in fact, makes it possible to combine macroeconomic analysis with the traditional input-output analyses of structural change, giving weights to different parameter changes in the process of income propagation.

In addition to this, the model can be used to answer a general question related to the current debate: given an increase (actual or expected) of the parameters linking imports to final expenditure, what is the growth in the export share which can offset the decline in the income multipliers and ensure the flow of proceeds to pay for the increased imports? To answer this question, the import function embodied in our model is essential because, contrary to the standard case, it allows us to treat separately changes in the propensities to import and changes in the composition of expenditure, such as the growth in the export share.

Given these aims, the model can be used in many different exercises. In the first place, it allows us to derive how income and imports change when, for any reason, a parameter changes; to this end, it is sufficient to calculate the comparative static derivatives of eqs. (8) and (9) with respect to the changing parameter. With the same sort of approach, numerical exercises can be used to derive the impact on the value of the multipliers of some actual changes in import propensities. In the second place, from equations (10) and (10') it is possible to find the conditions under which the income elasticity with respect to world demand does not vary when parameters change. In the third place, it is possible to calculate the trade balance for any specific composition of autonomous expenditure, and the potential room created by an export led growth (equations 11 and 12).

Finally, again with numerical exercises (*à la* McCombie, 1985), it is possible to assess the impact on the multipliers of the actual changes which took place in the period under review. To analyse this problem we can calculate the actual multipliers for the Italian economy in

different periods. To this end, we would need appropriate estimates of the relevant parameters: as a first approximation, however, we used the values obtained from input-output Tables (Table 4) even if, for their nature, these data are point estimations on just one year, and their change over time is affected by exchange rates, relative prices, and activity levels.

The resulting multipliers (Table 5) give us purely illustrative values; on their basis, however, it is possible to reach some provisional conclusions:

i) the general increase in the import propensities which occurred between 1965 and 1981 induced a lower responsiveness of income with respect to an equal absolute change of the exogenous variables (Table 5, eq. 8);

ii) when percentage changes are considered, however, the increased share of exports in GDP (related to the satisfactory performance of exports on the world market) seems to have offset the negative impact of the greater import leakages: the impulse of a percentage growth of export, in fact, does not seem to have decreased over time (Table 5, eq. 10);

iii) *vis à vis* this change, however, the external constraint became increasingly binding: the room created for domestic demand by an export-led growth, in fact, monotonically decreases over time (Table 5, eq. 12).

TABLE 5

MULTIPLIERS: 1965-1981

Years	Income multipliers: (eq. 8)			Income multipliers: (eq. 10)			Room for a further increase in auto- nomous expenditure created by an increase in exports if the trade balance is to remain unchanged: (eq. 12)	
	$\frac{\delta Y}{\delta G}$	$\frac{\delta Y}{\delta I}$	$\frac{\delta Y}{\delta X}$	$\frac{\delta Y}{Y} / \frac{\delta G}{G}$	$\frac{\delta Y}{Y} / \frac{\delta I}{I}$	$\frac{\delta Y}{Y} / \frac{\delta X}{X}$	δG	δI
1965	2.41	2.08	2.01	0.375	0.416	0.279	2.37	1.69
1970	2.27	1.85	1.86	0.325	0.426	0.295	1.99	1.35
1975	2.15	1.76	1.74	0.342	0.358	0.365	1.56	1.17
1981	2.02	1.59	1.53	0.372	0.337	0.373	1.27	0.93

Source: parameters m and μ , Table 4; $c(1-v)=0.69$ for all years.

If we accept these provisional results we can argue that the structural changes which occurred did not weaken the responsiveness of the Italian economy to an external stimulus. The percentage response of GDP with respect to the percentage growth of exports, in fact, does not decrease despite the increasing import content of the different components of expenditure. In order to maintain an equilibrium trade balance in the medium run, however, the composition of expenditure must move progressively towards exports. For this reason, while there exist some obvious areas for selective import substitution policies (*e.g.* energy, agricultural and food products, and so on) the development of the Italian system seems to depend crucially on export growth. This fact, therefore, justifies the growing attention on export specialization and the emphasis on selective industrial policy aimed to improve the export performance of some products (for a recent discussion see Modiano, 1984).

Conclusions

The model presented in this paper allows us to address two related questions:

- how some given structural characteristics of the productive system affect income and import determination in an open economy;
- how some structural changes influence the growth potential of the economy.

In this light the proposed approach makes it possible to combine two different lines of research, rather common in the literature: the comparison of multipliers at the macroeconomic level (see for example Thirlwall and Dixon, 1979; McCombie, 1985) and the analyses of the "sources of growth", carried out with the input-output tables (see for example Chenery and Syrquin, 1979 and, for a discussion, Dervis, De Melo and Robinson, 1982).

The exercises we presented for the Italian economy are mainly illustrative. Nevertheless, we maintain that the proposed approach may have useful empirical applications, both in comparing different countries, and in examining a country's performance over time. Some recent studies show that many industrial countries have similar structural

characteristics, as far as the import requirements are concerned (cf. Michaely, 1985); on the other hand, the increase in the import content of exports and the fast improving export performance are a common feature in the newly industrialising countries (cf. Galenson, 1985). For these reasons we believe that our approach is quite generally applicable.

Cambridge

G. GIOVANNETTI - D. SINISCALCO

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