

INTERNATIONAL TRADE AND ECONOMIC GROWTH IN A GLOBAL ENVIRONMENT

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Abstract: The present analysis focuses on one of the central aspects of the current process of globalization, that is the liberalization of trade policy aimed at maximizing the favourable effects that an export expansion can generate on economic growth. It has been considered how the relationship between exports and economic growth changes according to income levels as well as during the various phases of economic growth.

It has been found out that integration with the international economy does not seem to constitute a necessary condition in support of the role that an export expansion can play over growth. On the contrary, it has been found out that an increasing international exposure seems to have some negative effects on economic growth. Copyright © 2004 John Wiley & Sons, Ltd.

1 INTRODUCTION

In order to focus on the subject of this study, globalization is here briefly defined as the process of progressive growth of economic activities which transcends any kind of geographical border. It manifests itself essentially as an increasing movement of goods and services—as well as human resources—through trade and investments.

An initial impression of the current process of globalization is provided by the consideration of the speed at which the volume of international trade has been growing in the last three to four decades, which has often reached growth rates by far higher than the ones of world production.¹

Various interpretations can be given about such a progressive empowerment of the process of globalization. For instance, it comes easy to remark the determinant role played at this regard by technology in reducing transport costs and in strengthening international communications. However, it is undeniable that the progressive removal of constraints to international trade has allowed its final success.

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¹Between 1960 and 2000 the world production has more than doubled, while the volume of exports has increased tenfold (source: World Bank, 2003).

Having said that, in various occasions some criticism has been raised against globalization, questioning its very appropriateness in general terms. A quick view to the evolution of the trade volume for different groups of countries seems to provide support to such concerns about the general advantages provided by globalization towards economic growth.

This study will try to reconsider the role played by international trade over economic growth in the particular context of a more and more globalized environment. It will try to estimate how in such conditions an expansion of exports may affect economic growth and how such impact may change according to each particular stage of economic growth.

The theoretical analysis of this issue has often concentrated on the role played by internal supply and external demand. As an 'engine of growth' trade tends to stimulate a certain demand-driven growth; however it is to be considered how such a process is essentially unstable if too much linked to the international market and not enough to the domestic economic structure. The present analysis takes account of such limitation and, while recognising the remarkable impact that globalization can have on economic growth, it tries to emphasize some major conditions for it to happen.

2 DIFFERENT VIEWS ON TRADE LIBERALIZATION

International trade has played a central role in the majority of theories dealing with economic growth. Different perspectives have come up with different opinions and policy recommendations. Instead of going through a comprehensive review of the massive amount of analysis carried out so far on this issue, it is worth highlighting the major points in favour of or against trade liberalization.

2.1 In Favour of Trade Liberalization

According to such a view, trade liberalization allows the optimal use of resources. From the principle of comparative advantage, an advantage for the global economic system is achieved when each country tends to specialize in its most efficient productive sector, whose output is then sold on the international market.

Such approach tends to stress the existence of a direct link between openness to the global market, exports growth and general economic growth.

On the contrary, the negative impact that can be caused by the instability of the international market is usually neglected or at least underestimated.

In particular, trade liberalization:

- should support competition and therefore resource optimization, with consequent reduction of production costs;
- should help to raise productivity, with further reductions of costs;
- should accelerate growth;
- should help to increase access to foreign capital.

It is recognized that some difficulties are likely to occur in the initial stages of liberalization, mainly in relation to the need to modify the existing productive and market structure in order to remove any distortion present in the system.

2.2 Against Trade Liberalization

According to this position, trade liberalization imposes exogenous constraints to economic growth. This is particularly deleterious for young economies, since it contributes to strengthen their condition of dependence on international demand and to increase their vulnerability to the fluctuations of international markets.

In particular, trade liberalization:

- should cause oversupply of products typical from middle and low income countries (mainly primary products), with consequent worsening of their terms of trade;
- should inhibit industrialization, due to the comparative advantage of low income countries in the export-oriented production of primary products;
- should contribute to increase the risk of chronic deficits of the balance of payments encountered by middle and low income countries, due to the high elasticity of their demand for imports and the low elasticity of international demand for their exports.

3 THE DATA FOR THIS ANALYSIS

The present analysis makes use of a sample of 82 countries, subdivided into three groups according to their income percapita: 15 high income, 29 middle income, 38 low income.² The subdivision of the countries in the sample has been done on the basis of their GDP in the year 1980, which has been chosen as a reference year because it falls almost in the middle of the period covered by the study (1960–2002). In this way we have tried to minimize any eventual bias related to the different speed of the process of economic growth experienced by different groups of countries in different periods.³

Income levels for the three groups have been arbitrarily fixed as follows:

- <2000 dollars for low income countries;
- 2000–8000 dollars for middle income countries;
- >8000 dollars for high income countries.

Such values are expressed as purchasing power parity (PPP) dollars, adjusted to the purchasing power for each country, in order to make more significant inter-country comparisons.

In the last part of the study, focusing on international trade and globalization, the sample has been reduced to a restricted number of middle and low income countries in order to strengthen the comparative analysis of the role played by income and level of integration over the link between exports and economic growth.

²The data used throughout this analysis have been sourced through the World Bank *World Development Indicators*.

³In fact, a classification based either on the beginning or the end of the period considered would not allow to catch in a more significant way the variations accrued within the period. That is particularly valid in the case of middle income countries, whose group would slide along the income axis: a few countries among this group might fall into either the low income or high income group if classification was to be based on initial or final values.

4 INITIAL RESULTS: THE ROLE PLAYED BY INCOME LEVELS

This analysis begins with an initial attempt to define the relationship between exports and GDP. Table 1 reports the coefficients of regression for the model below which has been applied to the entire sample of 82 countries.⁴

$$\ln \text{GDP}_{it} = \beta_0 + \beta_1 \ln \text{EXP}_{it}$$

where:

- GDP: income percapita adjusted to purchasing power;
- EXP: exports;
- t and i : indicators for time (years) and individual countries.

The relationship results very significant.⁵ Fixed effect analysis has been applied to verify the general validity of the model identified above for the entire sample independently of the structural characteristics of each country. In order to reduce the level of approximation,

Table 1. GDP and exports

Constant	1.735**	
ln EXP	0.988**	
$\tilde{R}^2$	0.900	
$\sigma_v^2 = 0.991$		$\sigma_v^2/\omega = 0.819$
$\sigma_\varepsilon^2 = 0.218$		$\sigma_\varepsilon^2/\omega = 0.181$

Significance level: * > 0.90; ** > 0.99.

⁴According to the model, an improvement in a country trade performance, shown by an improvement in its balance of trade, will raise its long-term growth rate.

This model is of Keynesian (Kaldor–Thirlwall) type. For Keynes growth is both a long-run phenomenon and is exogenously determined; on the same line, according to Thirlwall, ‘in an open economy exports are the only true component of autonomous demand’ (Thirlwall, 1998).

In fact, in his *balance of payments constrained growth model* Thirlwall argues that countries grow at different rates because demand grows at different rates. The principal reason why constraints on demand exist in open economies is the balance of payments. The rationale for Thirlwall export-led growth is that export expansion stimulates growth without at the same time leading to a deterioration of the balance of payments. As a corollary, the same rate of export growth among different countries will not necessarily produce the same rates of domestic growth since different countries are likely to have different import elasticities of demand. Thus, some countries will have to restrict demand and growth so as to obtain equilibrium in their balance of payments. All in all, if a country is able to expand demand without running into balance of payments difficulties then the pressure of demand upon the existing capacity will raise the growth of capacity.

⁵A consideration is necessary. By definition, exports are a component of GDP and therefore it is very likely that export growth (reduction) will determine an expansion (contraction) of GDP. This may seriously cause problems in terms of autocorrelation and/or multicollinearity. In order to avoid such problems, GDP has been replaced by the variable GDP_{noEXP} obtained by subtracting the value of exports from GDP while keeping unchanged all other variables. However, such replacement has not provided any significant change of the coefficients of the model. Actually, such a replacement has slightly reduced the significance of the model. It has been, therefore, decided to continue the analysis with the original GDP variable. Such a choice is supported by the consideration that any eventual positive association between economic growth and exports cannot be strongly affected by autocorrelation, not even when exports are included in the value of GDP. This can be explained through the consideration that the growth of national product, which is a weighted sum of final domestic demand and exports, can be induced only by a growth of inputs and technological progress. In case of no input growth and/or slow technological progress, GDP growth rate will be necessarily low, even in case of rapid export expansion; in fact in such a case export expansion would reduce the growth of final domestic demand through a slowing down of various sectors of the national economy which could be alternative to imports.

Table 2. GDP and exports

	Income					
	Low (38 countries)		Middle (29 countries)		High (15 countries)	
Constant	3.546**	21.521**	1.479**	-36.929**	-2.258**	0.108
ln EXP	0.899**	-0.826**	1.002**	4.427**	1.149**	0.936**
ln EXP ²		0.041**		-0.076**		0.005*
$\bar{R}^2$	0.850	0.860	0.778	0.792	0.823	0.823
F-inc		95.81		82.31		1.73

Significance level: * > 0.90; ** > 0.99.

the 82 countries have been split into three groups according to their income per capita in 1980, as described earlier on. Results show that the share of total variation ($\omega = \sigma_\nu^2 = \sigma_\varepsilon^2$) estimated *among* the various countries (σ_ν^2) is remarkably higher than the one estimated *within* each country (σ_ε^2). This confirms the doubt that the relationship between GDP and exports is not static, but it rather varies according to income level. On the basis of such results regressions in Table 1 have been repeated on the three samples. The new results are in Table 2.

In order to compare the option of one single model with the one of three separate models, both the Chow test and the introduction of dummy variables have confirmed the existence of significant difference among the three models, one for each income level group, and have as well confirmed the coefficients in Table 2.

The coefficient of ln EXP seems to vary according to income levels; its increase is small but significant, ranging between 0.9 and 1.15 per cent. Although such values of the coefficient appear clearly too high, it is remarkable how the different value of the coefficient at different income levels seems to suggest an increasing weight for exports in the formation of GDP in parallel with a GDP increase.

Once defined both relevance and significance of partial models for income levels, the possibility of non-linearity of the relationship between exports and GDP has been explored. For such a purpose the parabolic model below has been considered:

$$\ln \text{GDP}_{it} = \beta_0 + \beta_1 \ln \text{EXP}_{it} + \beta_2 \ln \text{EXP}_{it}^2$$

Results are in Table 2. First of all, it comes out that the contribution of the new variable to the overall significance of the models is low in all cases. However, the *F* test has confirmed the significance of such contribution in all cases except for the one for high income countries. On the basis of such consideration, the parabolic model would seem to fit rather well at low and middle incomes, while a linear relationship seems more appropriate at high income levels. The different sign of the quadratic variable for low and middle income would suggest an S-type evolution of the income-export relationship. Having said that, the value of the coefficient of ln EXP² is so low as to be considered almost irrelevant.

5 OTHER FACTORS OF GROWTH

In order to widen the analysis on the link between exports and GDP new variables have been included into the model considered so far:

$$\ln \text{GDP}_{it} = \beta_0 + \beta_1 \ln \text{EXP}_{it} + \beta_2 \ln L_{it} + \beta_3 \ln I_{it}$$

where:

- L: labour force;
- I: domestic investments, as proxy for capital stocks.

Technical progress has not been included in the model and is assumed to be proportional to t .

Table 3 reports the results of the regressions. The model seems to be highly significant for all income groups; all variables are highly significant as well and with the expected sign.

As expected, the value of the export coefficient, so far quite high, has reduced its value after the inclusion of the new variables. In this new context, more realistic than the case before, results indicate that a 1 per cent increase of exports seems to determine a GDP increase ranging between 11 and 32 per cent. Such values of the coefficient of exports suggest a parabolic evolution, initially decreasing and increasing in a second phase.

Clearly, a quick comparison between the coefficients of the variables considered in the model shows that the one for exports is never the highest. In other words, despite their strong relevance, exports do not seem to be the main factor affecting the process of growth, in all phases of such a process. In fact, at middle and high income levels—that is in the central and advanced phases of the process of growth—investments end up being more relevant, with a coefficient which is more than double the one of exports, while at low income levels—that is in the initial phases of the process—the main role expected to be played by labour seems confirmed.

In order to take into account the different relevance of the various factors considered and to maintain a relative view of the role played by exports over income the coefficients for investments and labour have been fixed. This allows to determine *ceteris paribus* the impact of export changes over GDP at different income levels. Such analysis has been carried out through the use of dummy variables. The results, all very significant, are in Table 4. On the basis of the restriction imposed, the coefficient of $\ln \text{EXP}$ seems to increase at rising income levels (from 18 per cent for low income to 33 per cent for high income). Having said that, such comparison should be considered only in relative terms, since it imposes the condition that the coefficients of other relevant factors are maintained constant at the various levels of income.⁶

Table 3. Analysis of various factors over GDP

	Income					
	Low (38 countries)		Middle (29 countries)		High (15 countries)	
Constant	3.486**	6.957**	2.080**	0.510	0.508**	-3.892**
$\ln \text{EXP}$	0.323**	-0.004	0.114**	0.256	0.295**	0.774**
$\ln \text{EXP}^2$		0.008**		-0.003		-0.010**
$\ln L$	0.377**	0.367**	0.277**	0.276**	0.217**	0.340**
$\ln I$	0.304**	0.306**	0.676**	0.674**	0.608**	0.483**
$\tilde{R}^2$	0.953	0.953	0.964	0.964	0.991	0.993
F-inc		8.87		0.00		217.50

Significance level: * > 0.90; ** > 0.99.

⁶In this case the coefficients of investments and labour are fictitious and should not be compared among different income groups.

Table 4. Relationship between GDP and various factors according to income level

High income	$\ln \text{GDP} = 1.227 + 0.329 \ln \text{EXP} + 0.351 \ln \text{L} + 0.461 \ln \text{I}$
Middle income	$\ln \text{GDP} = 1.906 + 0.288 \ln \text{EXP} + 0.351 \ln \text{L} + 0.461 \ln \text{I}$
Low income	$\ln \text{GDP} = 3.524 + 0.184 \ln \text{EXP} + 0.351 \ln \text{L} + 0.461 \ln \text{I}$

In Table 3 new attention has been paid to the analysis of the parabolic model in a context of additional independent variables. The inclusion of the quadratic variable does not seem to be able to contribute enough to increase the significance of the model and the quadratic variable is insignificant for middle income countries. In the case of low income countries $\ln \text{EXP}$ becomes non significant and its elimination does not modify significantly the model.

The opposite sign of the coefficient of the second degree variable for low and high income groups seems to support the consideration raised above about the possibility of an S-type evolution of the relationship examined: progressively increasing in its initial phase (low income levels), then increasing at a proportional rate (middle income levels), and finally increasing at a less-than-proportional rate (high income levels).

However, even in this case the value of the coefficient of the quadratic variable remains quite low and can be ignored.

6 OTHER RELEVANT FACTORS: INTEGRATION WITH THE GLOBAL ECONOMIC SYSTEM

The consideration that income levels do not seem to be sufficient to explain the role played by exports in the process of economic growth leads us to shift attention towards another increasingly important aspect of such relationship: the integration with the global economic system. In other words, at this stage the aim of the analysis becomes to verify whether an increasing integration with the global economy can affect economic growth.

In order to try to answer to such question the samples of middle and low income countries have been revised to reflect the evolution of the process of integration of each country within the global economy during the period 1960–2002. For such a purpose an index of integration (INT) has been estimated for each middle and low income country as follows.

$$\text{INT}_{i,1960-2002} = \text{Correl}[(\text{TRD}/\text{GDP})_i, (\text{TRD}/\text{GDP})_{\text{HI}}]_{1960}^{2002}$$

Initially, the ratio between the trade budget and the level of GDP (TRD / GDP) achieved in each single year by each of the 82 countries has been estimated. Then the series of such ratios achieved by each middle and low income country has been compared to the similar series achieved on average by the group of high income countries (HI). The index of correlation estimated this way for each middle and low income country is taken as a measure of the degree of integration between each country and the global economy.

Once the middle and low income countries have been re-grouped according to the new criterion (INT), it is interesting to compare the two distributions (one based on income level and the other based on degree of integration with the international economy). In particular, the difference between middle and low income countries in terms of their level of integration seems to be quite small (approx.: 0.6 per cent vs 0.4 per cent), which means that there are countries rather well integrated in both groups. At the same time, both distributions are quite skewed towards the lower part of the scale, reaching in both cases quite low negative values; which means that both groups include remarkable cases of countries not integrated with the global economy. This is particularly evident with the low income distribution, both in terms of number of cases and of low value of the index.

Finally, it is remarkable that while the countries that could be called *most integrated*⁷ report in general a high level of integration with minimum dispersion around the average, the opposite seems to be the case for the *least integrated* countries, with an average level of integration estimated just below 0 and with a wide range (approx.: between -0.8 per cent and 0.4 per cent). This is represented in Figure 1.

In order to consider the role eventually played by the level of integration with the international economy on the relationship between exports and economic growth, regression analysis carried out earlier on has been repeated on the full sample of middle and low income countries with the inclusion of the level of integration as a new variable (ln INT).

In Table 5 are the results for two models, with the only difference of having ln INT included as a new variable. This allows for a quick comparison. Both models result highly significant, as well as it is the case with the new variable. It is interesting how the value of the coefficient of exports, initially close to the values estimated earlier on, has almost doubled following the inclusion of the new variable. This would suggest that the new variable seems to highlight the positive role played by exports on GDP growth.

Having said that, it is remarkable how the sign of the coefficient for integration raises some doubts about such interpretation. In fact, both the negative sign of ln INT coefficient as well as its value—higher than the one of the coefficient for ln EXP—seem to suggest that an increasing degree of integration can play a negative role over GDP growth, overruling the positive impact directly linked to an increase of exports. Such interpretation seems to support doubts on the relationship between exports and economic growth.

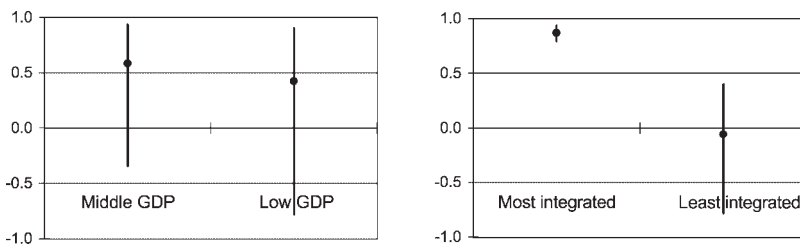


Figure 1. Distributions of index INT according to level of GDP and degree of integration

⁷The expressions '*most integrated*' and '*least integrated*' are used here to identify those countries in the first and last quartile respectively of the distribution of countries arranged according to the index of integration as described above.

Table 5. Analysis of various factors over GDP for middle and low income countries

	All middle- and low-income countries (67 countries)		Most integrated (20 countries)		Least integrated (20 countries)	
Constant	2.029**	5.735**	1.992**	4.516**	13.934**	16.372**
ln EXP	0.250**	0.463**	0.279**	0.405**	-0.165*	-0.113
ln L	0.187**	-0.002	0.088**	-0.030**	0.475**	0.408**
ln I	0.595**	0.469**	0.637**	0.560**	0.236*	0.191**
ln INT		-0.624**		-0.409**		-0.362**
$\bar{R}^2$	0.949	0.966	0.968	0.975	0.355	0.366
F-inc		1300		228		14

Significance level: * > 0.90; ** > 0.99.

In order to verify such interpretation, the sample of middle and low income countries has been reduced to 40 units, the 20 most integrated and the 20 least integrated countries,⁸ with the aim of amplifying the gap between the two groups. Regression models applied so far have been run on such a restricted sample. The new results are also in Table 5.

First of all, as seen above, the inclusion of the new variable raises the value of the export coefficient in the case of most integrated countries. At the same time this inclusion determines a reduction in the value of the coefficients of labour and investments, with the one for labour even becoming negative. Once again the finding about the negative role played by integration over economic growth is confirmed significantly, supporting this way the interpretation given above about the role eventually played by integration with the international economy over growth. Such a role would be partly favourable, through an increasing contribution provided by exports to GDP; however, such a favourable role would be rather counterbalanced by other opposite effects. In this regard it is remarkable how both coefficients of exports and integration are quite close in terms of value although with an opposite sign.

But the most interesting results shown in Table 5 refer to the case of least integrated countries. In fact, in such a case results reveal negative coefficients for exports; in other words, an increase of exports would seem to determine a reduction of GDP rather than its increase. Moreover, even in this case integration with the international market would seem to provide a negative contribution to economic growth. On such a basis, contrary to the case considered earlier on, for least integrated countries an increasing exposure to the international market seems to play a negative role on all possible sides. In this regard it is

⁸The countries in the two groups are the following:

Most integrated		Least integrated	
Middle income	Low income	Middle income	Low income
Spain, Tunisia, Korea, Ireland, Greece, Portugal, Chile, Mauritius, Costa Rica, Philippines, Malaysia	Morocco, Burkina Faso, Indonesia, Lesotho, Papua New Guinea, China, Thailand, Pakistan, Ecuador	Guatemala, El Salvador, Gabon, South Africa, Algeria, Peru, Trinidad and Tobago	Togo, Rwanda, Haiti, Cameroon, Ghana, Sri Lanka, Dem. Rep. of Congo, Malawi, Kenya, Sudan, Bolivia, Central African Rep., Zambia

Myanmar, last but one in the list of least integrated low income countries has been excluded due to insufficient data.

remarkable how the coefficient of $\ln \text{INT}$ is shown to be much more relevant than the one for $\ln \text{EXP}$, both with a negative sign.

Having said that, it is to be recognized the lower significance of the results found in Table 5 for least integrated countries.⁹

In order to focus on the role played by integration with the international system in the process of economic growth a quick comparison has been carried out between the contribution provided in this regard by GDP level and by the degree of integration. In other words, we have tried to identify which of the two factors is more relevant for growth. For such a purpose a dummy for income has been introduced in the analysis of the 40 most and least integrated countries. Results obtained this way are summarized in Table 6.¹⁰

Since the dummy variable has been introduced into two different groups of countries—on the basis of the degree of integration—for which regression analysis has been conducted separately, comparisons among coefficients should be done only within each group. In other words, models for each of the two income groups considered are comparable only within the same integration group.

Remarkably, the groups of high and low integration level, when split into income groups, show a quite different relationship between exports and GDP. In the case of most integrated countries the shift from low to middle income group is linked to a very low—almost irrelevant—increase of the exports coefficient. On the contrary, for least integrated countries such an increment seems to be quite relevant. In fact, it would appear that even for countries with low degree of integration with the international economy a marginal increase of exports could play a relevant role on GDP growth provided a minimum starting GDP level. In such a case the degree of integration does not result as a necessary condition for the positive relationship between exports and GDP identified above to take place.

At this stage, based on partly diverging results achieved so far, it is difficult to identify which of the two factors (level of income vs degree of integration) is more relevant for growth. None of the two seems to be determinant, and the combination of high level of income and high degree of integration does not seem to provide any advantage. At the same time, it seems clear that the opposite combination (low degree of integration and low level of income) does not offer any chance of success for policies blindly supporting export expansion and, more in general, an increasing exposure to the international market.

Finally, it is remarkable how in all cases considered, independently of both the degree of integration and the income level, the coefficient of degree of integration remains negative as well as quite stable in its value. In other words, while the analysis confirms the consideration that the role that exports can play on economic growth can be more or less

Table 6. Relationship between GDP and various factors according to income level and degree of integration

Most integrated	Middle income	$\ln \text{GDP} = 4.074 + 0.389 \ln \text{EXP} + 0.058 \ln \text{L} + 0.527 \ln \text{I} - 0.352 \ln \text{INT}$
	Low income	$\ln \text{GDP} = 4.635 + 0.353 \ln \text{EXP} + 0.058 \ln \text{L} + 0.527 \ln \text{I} - 0.352 \ln \text{INT}$
Least integrated	Middle income	$\ln \text{GDP} = 4.231 + 0.723 \ln \text{EXP} + 0.407 \ln \text{L} - 0.061 \ln \text{I} - 0.304 \ln \text{INT}$
	Low income	$\ln \text{GDP} = 16.516 + 0.087 \ln \text{EXP} + 0.407 \ln \text{L} - 0.061 \ln \text{I} - 0.304 \ln \text{INT}$

⁹In addition to the lower value of R^2 , it is to be considered that the incremental contribution to the explanatory value of the model provided by $\ln \text{INT}$ results significant at 90 per cent probability for the most integrated countries against 80 per cent for the least integrated ones.

¹⁰See Appendix.

relevant according to particular conditions (mainly in terms of various possible combinations between income level and degree of integration), an increasing international exposure seems to have a negative impact on economic growth under all circumstances. Such negative impact seems to be independent from the positive one apparently determined by an increase of exports.

7 CONCLUSIONS

As abundantly indicated in the literature, an increasing openness to the international economy can provide a series of remarkable advantages (among others, access to foreign capital, import of capital goods, technology transfer, . . .) which can stimulate and support an acceleration of economic growth. Having said that it is necessary to consider how such advantages are merely potential and require some minimum preconditions to be achieved.

The present analysis has focused on one of the central aspects of the current process of globalization, that is liberalization of trade policy aimed at maximizing the favourable effects that an export expansion can generate on economic growth.

It has been considered how the relationship between increase in exports and economic growth changes according to income levels. Results show that an export expansion seems to play a significant role in the process of economic growth at all levels of GDP, but with relevance increasing with rising income levels.

In addition, the strong interrelation between various factors of growth has been pointed out (in this study attention has been limited to exports, investments and labour) and it has been found out how the relative contribution of each factor varies through the various phases of growth: during an initial phase the contribution provided by the three factors considered seems equally shared, with a minimum superiority of labour, while the following phases see the clear relevance of the contribution provided by investments as a major determinant of growth.

Holding other factors constant, the analysis confirms the increasing role of exports, as identified above. This would allow to desume that *ceteris paribus* an expansion of exports seems to optimize its own catalytic effect on economic growth only after a certain minimum level, and that its role tends to increase not only as a consequence of increases of income levels, but also—and probably in a more significant way—in parallel to an expansion of other factors of growth such as, particularly, investments.

In terms of the role played by the current process of globalization, it has been found out that integration with the international market does not seem to constitute a necessary condition in support of the role that an export expansion can play over growth. In this regard it seems difficult to define which of the two factors (level of income *vs* degree of integration) is more relevant. In fact, none of the two seems to be determinant and the combination of a high level of GDP with a high degree of integration does not seem to provide any advantage. On the contrary, it is evident that the opposite combination (low level of income and low degree of integration) does not seem to offer any chance of success to policies aimed at an expansion of exports.

Further on globalization, it has been found out that an increasing international exposure seems to have some negative effects on economic growth. Such effects, apparently of relevant size, seem to be independent from the positive effect eventually due to an expansion of exports. This consideration raises a series of very interesting questions which go beyond the scope of the present study, but which are recommendable for further research.

It has been shown how the degree of integration is not linked to GDP level, but it is rather the result of a set of economic policies and of various endogenous factors. Such a consideration helps to relax the relationship between exports and economic growth, shifting attention towards other variables as major determinants of growth.

The present study seems to provide support to the consideration that the gap between two typologies of countries (middle income and well integrated on one side vs low income and poorly integrated on the other) seems to increase, with the first one well on the way along the process of growth and the second group still at its very early stages. It is not hard to envisage that the gap is going to increase, leaving very few chances—if any at all—to the countries in the second group to take part and eventually benefit of the process of global growth. For such countries a mere strategy of export promotion does not seem to be appropriate, providing minimum benefits while on the contrary worsening the risk of negative impact deriving from such increased exposure.

Finally, the message transpiring from the present study is that in general the role that exports can play towards economic growth should not be exaggerated. Clearly, exports help in providing the foreign exchange required to pay for imports, but there is no reason to believe that they can contribute to economic growth more than any other type of economic activity. Under such a perspective, an increasing exposure to the global market cannot be considered as an end in itself and even more cannot be prescribed indiscriminately. In other words, while recognizing the positive role that export promotion—and, more in general, globalization—can play towards economic growth, it is necessary to take into account the necessary conditions for this to happen.

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APPENDIX

In order to generate the models summarized in Table 4 and Table 6 dummy variables have been introduced both as constant and as multiplying factor of the independent variable $\ln \text{EXP}$. In particular, they have been used to separate countries according to income levels, as follows:

Table 4	D_H	1 for high income countries; 0 for the others
	D_M	1 for middle income countries; 0 for the others
Table 6	D_R	1 for middle income countries; 0 for low income countries

Results and significance levels are reported below in Tables 7 and 8 respectively. Coefficients of variables and dummies in Tables 7 and 8 have been added up accordingly in order to generate the models reported in Tables 4 and 6.

Table 7. Analysis of various factors over GDP (with dummies for income level)

Constant	3.524**
Const. D_M	−1.618**
Const. D_H	−2.297**
$\ln \text{EXP}$	0.184**
$\ln \text{EXP } D_M$	0.103**
$\ln \text{EXP } D_H$	0.144**
$\ln L$	0.351**
$\ln I$	0.461**
$\bar{R}^2$	0.979

Significance level: * > 0.90; ** > 0.99.

Table 8. Analysis of various factors over GDP according to degree of integration (with dummies for income level)

	Most integrated (20 countries)		Least integrated (20 countries)	
Constant	2.481**	4.635**	14.350**	16.516**
Const. D_R	-0.273	-0.561*	-11.873**	-12.285**
ln EXP	0.238**	0.353**	0.041	0.087*
ln EXP D_R	0.029*	0.036**	0.618**	0.636**
ln L	0.190**	0.058**	0.471**	0.407**
ln I	0.575**	0.527**	-0.021	-0.061
ln INT		-0.352**		-0.304**
$\bar{R}^2$	0.972	0.977	0.791	0.799

Significance level: * > 0.90; ** > 0.99.

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