

EFFECT OF EXPORTS AND DOMESTIC DEMAND ON ECONOMIC GROWTH IN LATIN AMERICA: AN ANALYSIS USING THE BULMER-THOMAS APPROACH WITH PANEL DATA

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ABSTRACT

In Latin America, there is a broad debate about the role of exports in economic growth. However, the role played by domestic demand has been little studied. The growth model developed by Bulmer-Thomas offers a theoretical framework to study the relationship between the three variables empirically. In this context, the objective of this research is to examine the effect of exports and of internal demand on economic growth in the 28 Latin American countries. Using econometric panel data, we show that the effect of internal demand on economic growth is greater than that of exports. However, the results differ when we classify countries according to their level of per capita income. In high-income countries we find that exports play a more important role than internal demand in increasing output, while in upper-middle-income countries, the effect of internal demand predominates. Finally, the evidence for lower-middle-income countries is not conclusive. These results contribute to the debate about the orientation of production of the countries in the region toward international markets or internal consumption in order to accelerate development.

KEYWORDS: Economic growth, exports, internal demand, Latin America

MSC: 62P20

RESUMEN

En América Latina, existe un amplio debate sobre el papel de las exportaciones en el crecimiento económico. Sin embargo, el papel desempeñado por la demanda interna ha sido poco estudiado. El modelo de crecimiento desarrollado por Bulmer-Thomas ofrece un marco teórico para estudiar empíricamente la relación entre las tres variables. En este contexto, el objetivo de esta investigación es examinar el efecto de las exportaciones y de la demanda interna sobre el crecimiento económico en los 28 países latinoamericanos. Utilizando datos de panel econométrico, mostramos que el efecto de la demanda interna en el crecimiento económico es mayor que el de las exportaciones. Sin embargo, los resultados difieren cuando clasificamos los países de acuerdo con su nivel de ingreso per cápita. En los países de ingresos altos, encontramos que las exportaciones desempeñan un papel más importante que la demanda interna para aumentar la producción, mientras que en los países de ingresos medianos altos predomina el efecto de la demanda interna. Finalmente, la evidencia para los países de ingresos medianos bajos no es concluyente. Estos resultados contribuyen al debate sobre la orientación de la producción de los países de la región hacia los mercados internacionales o el consumo interno para acelerar el desarrollo.

PALABRAS CLAVE: Crecimiento económico, exportaciones, demanda interna, América Latina.

1. INTRODUCTION

Latin America (LA) is characterized by volatile economic growth rates, provoked in part, by the low level of productive specialization in the region. A significant part of economic activities are based on the primary-export sector and in particular on the extraction of natural resources (Sinnott, Nash & De la Torre, 2010; Meller, Poniachik & Zenteno, 2013). Consequently, LA is strongly dependent on the price of export commodities, which experience strong temporal price shocks that are determined by the international market (Alvarado y Toledo, 2017). These particularities of the region have been analyzed in some empirical research and suggest that the main productive processes are associated with primary activities that do not generate significant productive linkages; even direct foreign investment is oriented to natural resources and in small amounts towards activities manufacturing (Alvarado, Iniguez, Ponce, 2017). Excessive dependence on

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commodities conditions the planning of long-term economic policy, generates volatility in national product and puts at risk advances in recent years in reducing inequality and poverty. In fact, there is a broad debate in the region about promoting greater trade openness or strengthening internal consumption as economic development strategies.

In the theoretical literature, the neoclassical economic growth model highlights the importance of physical capital and savings to raise the level of production per worker (Solow, 1957, Swan, 1957), while the endogenous growth model stresses the importance of human capital to increase the level of per capita income (Lucas, 1988, 2009; Barro, 1991). Both models offer formal referential frameworks for understanding why some countries develop more rapidly than others, and the consequent lack of convergence of incomes among them. Nevertheless, neither economic growth model explicitly considers the importance of natural resource-based exports, which is important in the economic performance of LA. Bulmer-Thomas (2014) proposed a focus for analyzing the behavior of product that considers the productive structure of the region. In contrast to the neoclassical and endogenous models, Bulmer-Thomas (2014) breaks total production down into two components: the export sector and the non-export sector. An advantage of this focus for understanding growth in LA is that it is based on the region's low rates of investment in human capital and of savings (World Bank, 2015), which limit the long-term accumulation respectively of human and physical capital.

In this context, the objective of this research is to examine the effect of the export sector (measured by exports) and the non-exporting sector (measured by internal demand) on the economic growth of twenty-eight Latin American countries during the period 1980-2012. We use econometrics for longitudinal data to verify the hypothesis that growth in LA is led by exports (See de Piñeres & Ferrantino, 2000; Hernández and Razmi, 2014; Kristjanpoller & Olson, 2014; Kristjanpoller, Olson & Salazar, 2016). The primary-export productive structure that predominates in most of these countries supports our hypothesis. The regressions carried out in this research are divided into three stages. First, we made an initial regression for the twenty-eight LA countries and for the countries grouped according to per capita income following the Atlas Method (2015) of the World Bank: high-income countries (HIC), upper-middle-income countries (UMC) and lower-middle-income countries (LMC). Second, with the aim of capturing of the temporal dynamic, we incorporate a set of regressions, including an optimum of lags in a dynamic panel model. Finally, in the third stage we included a set of covariants to capture other structural characteristics of the region and the effect of other factors that influence economic growth according to theory and empirical evidence.

The results show the effect of internal demand is greater than that of exports on economic growth for LA and UMC. The results are consistent when we include lags and control variables. In HIC, the results suggest that the role of exports is more important for increasing product, while in LMC, exports play a weak role in economic growth and the role of internal demand is not very significant. Our results show that there is ample space for debate about the orientation of production in the economies of the region in order to accelerate development, and that any generalized conclusion in this respect would be very premature.

This article is structured in five sections. The second section reviews theories and the existing literature. The third section describes the statistical sources and presents the econometric strategy. We present the results in the fourth section. Finally, in the fifth section we present our conclusions.

2. REVIEW OF THE PREVIOUS LITERATURE

Understanding the factors that cause economic growth differs from one country to another and over time. Frequently, the sources of production are the black box of the traditional and modern economy. There has been increasing interest in recent decades in understanding the causes of disparities among countries in economic growth rates. This interest has taken two approaches: first, from the demand perspective, which recognizes the importance of aggregate demand and exports as key factors in explaining the differences in growth rates among countries (Prebisch, 1959; Seers, 1962; Myrdal, 2017); and secondly from the supply perspective through exogenous (Solow, 1956; Swan, 1956) and endogenous growth models (Romer, 1986; Lucas, 1988; Barro, 1989). Based on the first focus, it is evident that in open economies the incomes obtained from exports are necessary to finance the import component (Thirlwall, 2012; McCombie & Thirlwall 2016). In this sense, the role of specialization in exports is relevant to understanding the differences in economic growth as the Export-Led-Growth hypothesis postulates (Abual-Foul, 2004; Naudé, Bosker & Matthee, 2010; Shafiullah, Selvanathan, & Naranpanawa, 2017). Nevertheless, we cannot ignore the importance of internal demand in the process of making local consumption more dynamic and in generating employment (Soressa, 2013).

There have been several investigations that provide theoretical support to verify the positive effect of exports and internal demand on economic growth (Bulmer-Thomas, 2014; Thirlwall, 2006). One of the most often used methodologies to verify the hypothesis is driven by exports is the Granger causality test (1969). Although the review of the results showed a lack of solidity in the estimations (Giles and Williams, 2000), there is an ample empirical literature supporting this hypothesis (Thornton, 1996; Gutiérrez and Cantavella-Jordá, 2011; Zang and Baimbridge, 2012; Alavinasab, 2014; Shihab, Soufan and Abdul-Khaliq, 2014; Ochoa, Ordóñez & Loaiza, 2011; Gokmenoglu, Sehnaz & Taspinar, 2015; Alvarado & Iglesias, 2017). Along this same line, Tekin (2006) suggests that the lack of trade-oriented policies to favor growth of exports slows down economic growth.

There have been several investigations examining the relationship among exports, economic growth and household consumer spending for a country, using time series econometrics: Granger causality models (1969), Johansen's co-integration techniques (1988) and Engle and Granger's error correction models (1987). We found an ample group of works on a set of countries mainly applying econometrics for longitudinal data. The main conclusions of these investigations are that there is a positive long-term effect of exports on growth. In this regard, we highlight the works of Abou-Stait (2005), Tsen (2010), Awokuse and Alavinasab (2007), who maintain that exports and imports play important roles in stimulating growth and suggest the existence of a dynamic relationship between exports, domestic demand, and economic growth. In general, most of the results from research focused on a single country suggest that economic growth is driven by exports (Mah, 2007; Zang and Baimbridge, 2012; Shihab, Soufan and Abdul-Khaliq, 2014).

The results of research for groups of countries are consistent with the data from individual countries. Among other factors, the empirical evidence verifies the importance of exports to reach stable growth levels. Although the evidence in this respect is not unanimous, the hypothesis of Export-Led-Growth is supported by extensive evidence (Lee and Huang, 2002; Giles and Williams, 2010). Exports play a key role in economic growth in Latin America, in particular in recent years owing to the strong increases in the prices of commodities exported from the region (Pinilla, Jiménez and Montero, 2012; Hernández and Razmi, 2014). These findings are similar to those obtained by Sanjuán-López and Dawson (2010) in a study of 42 developing countries, which provided evidence supporting the hypothesis of export-driven growth where the income elasticity of exports is greater for non-agricultural exports. The evidence favoring the hypothesis of export-driven growth is maintained even after correcting for the temporal dynamic (Bahmani-Oskooee, Mohtadi and Shabsigh, 1991).

Likewise, Minondo (2010) developed a study applied to 113 countries and found that countries specialized in products associated with higher levels of productivity have a greater propensity to grow more rapidly than countries specialized in other types of goods. The role of export-oriented companies, specialization in exporting high-technology products, and the intensity of R&D may explain this result (Falk, 2009; Hessels and van Stel, 2011 and Lee, 2011). As well, this result is due to the fact that economic activities that create added value increase national product to a greater degree than non-industrial activities (Prebisch, 1959 and Kaldor, 1981).

Empirical research has focused on the relationship between economic growth and exports and internal demand separately. However, in practice exports and internal demand affect economic growth together. Two interesting exceptions are the research of Tsen (2010) and Soressa (2013), who estimated the relationship among exports, internal demand and economic growth in China and Ethiopia, respectively. In the results of both investigations, we observe the importance of including the simultaneous effect of exports and internal demand on economic growth. Likewise, the referential framework of Bulmer-Thomas (2014) allows for capturing the productive reality of the Latin American region in a single econometric estimation. The results are reported in the fourth section.

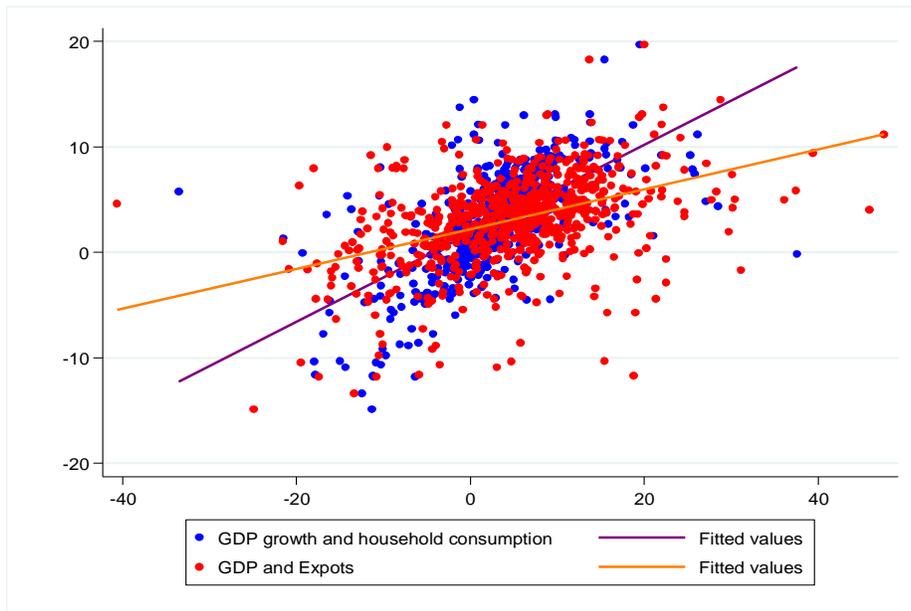
3. STATISTICAL SOURCES AND ECONOMETRIC MODEL

3.1. Data

In this research, we used data from the World Development Indicators compiled by the World Bank (2015) for the twenty-eight countries of the region. The rest of the countries in the region were eliminated from the research due to the lack of data for all the countries of all the variables. The data correspond to the 1980-2012 period. The period of analysis was chosen because of the availability of statistical information. We classify the countries of the region according to their per capita income levels,

high-income countries (HIC), upper-middle-income countries (UMC) and lower-middle-income countries (LMC), respectively. Although the region has structural characteristics, there are differences in the level of development between countries. As a result, one cannot expect the same effect of exports and domestic demand in a developed country as in a low-income country. We incorporated the GDP logarithm in all of the regressions, of exports and internal demand, and control variables. As a starting point, we examine the correlation between growth of exports and of internal demand with economic growth, respectively. Both relationships are positive; nevertheless, the adjustment between internal demand and economic growth is better than the adjustment between exports and economic growth. As well, the slope clearly indicates which of the two independent variables has a greater effect on the dependent variable. This initial correlation suggests the possible direction and the size of the coefficients subsequently estimated.

Figure 1. Correlation among exports, internal demand and economic growth in LA



Source: The authors, based on World Bank data (2015)

2.2. Econometric strategy

Following Bulmer-Thomas (2014), we assume that the product of an economy can be broken down into two sectors: the export sector (X) and non-export sector (NX). In this investigation, the export sector is measured by exports and the non-export sector is measured by internal demand. Using a Cobb-Douglas type production function and adding sub-indices of panel data yields the following initial equation:

$$Y_{it} = X_{it}^{\alpha} NX_{it}^{\beta} \quad (1)$$

Where the subindex i represents the country $i = 1, 2, \dots, 28$ and the subindex t represents the period $t = 1980, 1981 \dots 2012$ in equation (1). The parameters α and β represent the participation of each sector in total product, respectively. Linearizing the equation (1) and adding the constant term (assuming that there is no heterogeneity among the countries) and the composite error term yields an estimable version, based on which we calculate the effect of exports and internal demand on product:

$$y_{it} = \alpha_0 + \alpha_1 x_{it} + \alpha_2 nx_{it} + \delta_i + v_{it} \quad (2)$$

In equation (2) the parameter δ_i is unobserved permanent heterogeneity and v_{it} is idiosyncratic error. The parameters α_1 and α_2 are the elasticity of exports in relation to product and elasticity of internal demand in relation to product, respectively. By estimating the two parameters, we determined which sectors have greater effects directly on the product. With the aim of obtaining consistent and robust estimators and a better predictive capacity for the models, we include the temporal effect of dependent and independent variables.

The optimal length of lag j was determined following the criteria of Akaike (1974), Schwartz (1978) and Hannan and Quinn (1979).

$$y_{it} = \alpha_0 + \alpha_1 x_{it} + \alpha_2 n x_{it} + \alpha_3 \sum_{j=1}^n y_{it-j} + \alpha_4 \sum_{j=1}^n x_{it-j} + \alpha_5 \sum_{j=1}^n n x_{it-j} + \delta_i + v_{it} \quad (3)$$

The independent variables of equation (3) do not constitute all the sources of variation in product. This implies that the parameters α_i does not totally explain the dependent variable. There are other factors in practice that explain the differences in economic growth rates among countries: public expenditures and human capital (Barro, 1991; Siddiqui & Rehman, 2017), educational quality (Hanushek & Woessmann, 2012), natural resources (Stiglitz, 1974), among others. In this sense, we include a set of controls or covariants (Z_{it}) that capture the structural characteristics of the region and other factors that affect product according to macroeconomic theory: the productive structure, direct foreign investment, government spending, physical capital, inflation, unemployment, money, the real exchange rate and the urbanization rate. This relationship is shown in the following equation:

$$y_{it} = \alpha_0 + \alpha_1 x_{it} + \alpha_2 n x_{it} + \alpha_5 Z_{it} + \delta_i + v_{it} \quad (4)$$

In equation (4), Z_{it} is a matrix that includes all the aforementioned control variables. Using the Hausman test (1978), we determined that a panel data model with fixed effects is the most appropriate to formalize the effect of exports and internal demand on economic growth.

4. DISCUSSION OF THE RESULTS

Tables 1, 2 and 3 report the estimators obtained from the estimations in equations (2), (3) and (4) proposed in the econometric strategy. The columns in Table 1 show the results for all of LA, high-income countries (HIC), upper-middle-income countries (UMC) and lower-middle-income countries (LMC). Firstly, we find that the effect of exports on GDP remains stable, with the exception of countries classified as LMC, which have a negative sign, although not statistically significant. The significant parameters range between 0.13 and 0.34 and are highly significant. In general, the results indicate that for the region as a whole, export growth rates in HIC and UMC have positive and significant effects on GDP growth rates and this effect is greater in HIC than in UMC and LMC.

Table 1. Results base for Latin America and groups of countries.

	AL	HIC	UMC	LMC
Exports USD	0.138*** (12.15)	0.341*** (17.46)	0.121*** (9.80)	-0.0129 (-0.45)
Household consumption USD	0.807*** (52.78)	0.511*** (18.46)	0.869*** (51.41)	0.856*** (21.15)
Constant	1.803*** (9.17)	4.027*** (10.76)	0.770*** (3.38)	3.814*** (8.50)
Observations	703	131	384	187
sigma_u	0.1102	0.08	0.11	0.15
sigma_e	0.8029	0.06	0.07	0.08
Rho	0.6387	0.66	0.68	0.76
Groups	28	6	15	7
Wald chi2	14141.7***	3627.7***	1227.7***	2223.9***

Note: t statistics in parentheses and * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Secondly, the effect of the growth rate of internal demand on economic growth is positive and statistically significant in all the regressions, whether for all of LA or for groups of countries. The elasticity of growth of exports in relation to internal demand ranges between 0,51-0,86, which is greater than the effect of the export growth rate. The effect of the growth of internal demand on economic growth is slightly greater in HIC and LMC than in UMC. These results corroborate the statistical relationship shown in Figure 1. The positive effect of exports on growth is consistent with the results of Shihab, Soufan and Abdul-Khaliq (2004); Hernández and Razmi (2014) and Soressa (2013). However, these authors did not consider the temporal dynamic present in the macroeconomic variables or the effect of other determinants of economic growth. In this sense, in the following stage we incorporate both effects.

The incorporation of the temporal dynamic formalized in the equation (2) does not produce significant changes in the coefficients associated with exports or internal demand for LA, HIC and UMC. The results show a change in LMC, given that exports are now significant and internal demand is no longer significant.

The optimal lags (two lags) were fixed with the aforementioned criteria. With the inclusion of the lags, the change in product in the context of the change in exports is between 0.15–0.28, which is very similar to what was obtained with the initial regression.

Table 2. Results for Latin America and groups of countries by income with lags.

	LA	HIC	UMC	LMC
Exports USD 2005	0.172*** (13.77)	0.280*** (7.36)	0.155*** (9.94)	0.153*** (8.31)
Household consumption USD 2005	0.284*** (16.22)	0.188*** (6.03)	0.469*** (18.39)	0.0582 (1.88)
GDP_{t-1} USD 2005	1.203*** (32.24)	1.343*** (14.89)	1.044*** (21.18)	1.225*** (17.19)
GDP_{t-2} USD 2005	-0.237*** (-6.51)	-0.382*** (-4.11)	-0.0874 (-1.85)	-0.265*** (-3.79)
$Exports_{t-1}$ USD 2005	-0.139*** (-7.18)	-0.197*** (-3.40)	-0.121*** (-5.00)	-0.122*** (-4.39)
$Exports_{t-2}$ USD 2005	-0.0226 (-1.65)	-0.0711 (-1.62)	-0.0241 (-1.42)	-0.0224 (-1.12)
$Household\ consumption_{t-1}$ USD 2005	-0.259*** (-9.89)	-0.236*** (-5.35)	-0.330*** (-7.65)	-0.0798 (-1.91)
$Household\ consumption_{t-2}$ USD 2005	-0.00100 (-0.05)	0.0757* (2.00)	-0.104** (-3.14)	0.0518 (1.61)
Constant	-0.00358 (-0.20)	-0.00411 (-0.06)	0.00434 (0.19)	0.0545 (0.52)
Observations	651	120	357	174
sigma_u	0	0	0	0
sigma_e	0.028	0.26	0.025	0.022
Rho	0	0	0	0
Groups	23	5	12	6
Wald chi2	2.30e+06	160823.6	1.92e+06	108604.5

Note: t statistics in parentheses and * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Product elasticity with respect to internal demand ranges between 0.18 and 0.46, a variation that is not related to the elasticity obtained before. Our results are consistent with those of Tsen (2010) and Yew Wah (2010), which implies that the results are consistent with the inclusion of the temporal dynamic. Finally, we include the effect of the covariants on product. A relevant result in this group of regressions is that despite the inclusion of several formalized controls in relation (4), the effects of exports and internal demand remain practically unchanged. The significant coefficients of exports are between 0.15 and 0.28 and the internal demand coefficients are between 0.18 and 0.46. In general, the results show that the effect of internal demand on economic growth is greater than the effect of exports for both LA and UMC, while for HIC the effect of exports is greater and for LMC the effect is not clear or statistically significant in any of the regressions.

Table 3. Results Latin America and groups of countries with control variables.

	AL	HIC	UMC	IMLC
Exports (USD 2005)	0.0628*** (4.78)	0.119* (2.49)	0.0482** (2.73)	0.170*** (6.75)
Household consumption USD	0.156*** (6.37)	0.0836* (2.37)	0.219*** (3.42)	-0.0256 (-0.31)
GVA Agriculture USD	0.0165 (1.12)	-0.0622** (-2.68)	0.0899** (2.98)	0.0422 (0.95)
FDI	-0.000014 (-0.02)	-0.00159 (-0.85)	0.00549** (2.86)	-0.00197* (-2.30)
Government consumption USD	0.0810*** (4.43)	0.219*** (4.35)	0.154*** (7.09)	0.0511 (1.39)
FBKF USD 2005	0.0322*** (3.40)	0.0226 (1.08)	0.0892*** (4.41)	0.113*** (7.07)
GVA manufacturing USD	0.201*** (9.27)	0.217*** (6.42)	0.108*** (5.08)	0.134*** (4.20)
Inflation annual %	-0.000260 (-1.38)	0.000033 (0.05)	0.00093** (3.15)	-0.00077 (-1.47)

M2	0.0174** (3.23)	0.0607*** (3.44)	-0.015*** (-6.47)	0.00434 (1.26)
Real exchange rate	0.00503 (0.28)	0.0321 (0.75)	0.180*** (5.49)	0.0963** (2.82)
Unemployment % annual	-0.00507*** (-4.55)	-0.00182 (-1.16)	0.0095*** (5.26)	0.00146 (0.70)
Urban population	0.0479 (1.80)	-0.0479 (-1.71)	0.00186 (0.06)	0.286*** (8.20)
GVA services USD	0.355*** (10.93)	0.238*** (5.11)	0.345*** (5.18)	0.169* (2.23)
Constant	2.188*** (7.24)	3.958*** (6.55)	-0.597 (-1.54)	3.937*** (8.85)
Observations	267	65	135	57
sigma_u	0.135	0	0	0
sigma_e	0.026	0.025	0.0125	0.009
Rho	0.965	0	0	0
Groups	16	4	7	4
Wald chi2	22239.77	48340.79	451915.58	40753.82

Note: *t* statistics in parentheses and * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Finally, with respect to the control variables, as would be expected, the manufacturing and services GVA logarithms have positive and significant effects on growth and the GVA of agriculture has a negative effect on the HIC group. This result can be explained by the fact that these countries have economies based on tourism and manufacturing. With respect to the IED, a negative but non-significant effect can be observed in LA. This result can occur because of the high degree of volatility of investment and the orientation to speculative activities and natural resource exploitation. At the same time, gross fixed capital formation (GFCF) is significant in all the regressions. The coefficient associated with the inflation rate is negative but not significant for LA, M2 in levels is significant and positive for LA and the HIC group. The variable real exchange rate is positive but not significant in most of the groups.

5. CONCLUSIONS

Latin America is a region highly specialized in primary production based on the extraction of natural resources oriented to the international market. The role of domestic demand in the productive dynamic has been partially ignored. Bulmer-Thomas (2014) proposes a production model based on the structural characteristics of Latin America, which is the theoretical basis of this work. In order to contribute to the empirical literature on the role of the export sector and the non-export sector in the product, in this research we examine the effect of exports and domestic demand on economic growth in Latin America in the 1980-2012. The dependent variable in all the models was the product, while the independent variables were exports and domestic demand. With the aim of incorporating the temporal dynamics and ensuring the robustness and consistency of the estimators, a set of additional regressions was carried out that include the lagged variables and a set of control variables that capture other characteristics of the region. The results are maintained after including both components. The results suggest that although the region specializes in exploiting the primary sector oriented to international markets, the role of domestic demand is very significant and relevant to understand the economic behavior of Latin America as a region and countries according to their level of income. The policy mechanisms suggested by the empirical literature to increase exports include import substitution industrialization as suggested by Shihab and Shatha (2014), promoting the export of non-traditional goods (Abou-Stait, 2005), strengthening industrial exports over agricultural (Alavinasab, 2013; Lee and Huang, 2002), subsidies and favorable exchange rates (Zang and Baimbridge, 2012), reduction of tariff barriers (Sanjuán-López and Dawson, 2010), strengthening human capital and economies of agglomeration (Naud, Bosker and Matthee, 2010), among others. These strategies can give a more dynamic role to exports in the growth of these economies. Mechanisms to strengthen domestic demand include restrictions on imports of consumer goods and encourage the importation of capital (Tang, 2006; Tekin, 2006), improvements in income distribution, financial stability and countercyclical policies (Yew Wah, 2004). The combination of the two mechanisms can raise the rates of economic growth in the region. Future research can focus on the use of non-traditional growth models, which can help to understand the differences in growth rates between countries or regions, an aspect that traditional models have failed.

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