

## THE IMPACT OF TRADE OPENNESS IN LATIN AMERICA ON ECONOMIC GROWTH

Have growth rates increased as a cause of the Apertura policy?

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### Abstract

This paper investigates empirically the notion that enhanced levels of foreign trade as a result of the deregulation in international goods market would have spurred economic development and demonstrates that it is not obvious. We shed light on how this relationship applies to the special case of Latin America before and after "La Apertura", the trade liberalization that took place in the late 80s and early 90s. Results show that openness solely is not a determinant of economic growth for the observed countries which stand in contrast to the general findings of existing literature on the topic. Using a single measure of trade openness together with other explanatory variables, this paper fail to confirm the common view that openness is associated with growth.

### Resumen

El presente artículo investiga empíricamente la idea que afirma como un aumento en los flujos del comercio exterior resultado de una desregulación en el mercado internacional de productos, ha estimulado el desarrollo económico, hecho que no es del todo obvio. Por ello se estudiara el caso especial de América Latina en donde se

pretende probar la relación de las variables que plantea la idea, ubicando como escenario histórico el antes y después de "La Apertura", la denominada liberalización del comercio que tomo lugar después de los ochentas y en los inicios de los noventas. El resultado de la investigación realizada demostró que la apertura no es el único factor determinante del crecimiento económico de los países estudiados quienes reflejaron un contraste entre la documentación existente sobre la hipótesis principal y las conclusiones generales obtenidas.

Usando como única medida la apertura del comercio junto con otras variables representativas, el presente artículo pretende debatir argumentativamente como la idea generalizada de apertura está siendo relacionada con el factor de crecimiento.

### Keywords

Trade Openness, Growth, Latin America, Liberalization.

### Palabras clave

Apertura comercial, Crecimiento, América Latina, Liberalización.

**JEL:** C13; F1; N16; O11; O54

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This paper examines empirically the causal effects of the widely adopted free trade policy on growth. We use cross-country data to investigate this relationship for Latin America. By outlining and questioning the supposed beneficial effects of trade liberalization, this paper adds to the ongoing debate about the relationship between trade openness and economic growth. This discussion is a central issue in the literature and macroeconomic research on economic development. While there is a mainstream perception that this link is positive, also consistent with many economic models, the results of this paper do not confirm this theory, thus adding to the existing controversy on the topic.

The emerging consensus that export-lead growth through economic liberalization in the 80s was the way to go was partly due to the growing awareness of the failure of the Latin American countries. The problems were seen as a consequence of the import substitution strategies that the Latin American countries implemented prior to 1990 in most countries. The protectionism implied both high nominal and effective rates of protection and thus high prices paid by consumers. This strategy led to inefficient resource allocation, slowly growing industry and other problems in the economy, as deficits in their balances. We know that growth performance of Latin America does not reach the high growth rates of the Asian miracle; neither does it fall into the category of stagnating countries, which are mainly concentrated in the Sub-Saharan African continent. For most countries throughout Latin America, economic liberalization programs were implemented from the mid 80s to the mid 90s. The change of trade regime accounts for being one of the main instruments for determining economic policy and it has meant dramatic cuts in tariff rates. The "Apertura", as the policy is commonly referred to, as part of the structural adjustment programs, has been debated and criticized.

A comparison of the development over 35 years with respect to the level of openness for 16 representative Latin American countries is made. For precision and in order to draw some plausible conclusions

regarding the relationship level of income and level of openness the author divided the sample in three income groups (see appendix).

## 1. Theory on the Potential link openness-growth

### *Theoretical Underpinnings*

Most economists agree on the existence of a positive effect of trade openness on economic growth. Openness exposes the domestic industry to foreign competition and will thus, in the short term, cause the close down of the least profitable firms. These firms will also find it costly to restructure, causing the most profitable firms to stay in business (OECD, 1998:29). Only the most productive firms have the ability to pay sunk costs for reallocation, and costs associated with economies of scale. In this case, causality goes from high productivity to greater export performance rather than the other way around (Rivera-Batiz, 2003:118). Firms will rapidly have to respond to globalization of markets and the challenges it brings. Thus, the lesson is that, in order to gain competitiveness the country should specialize in the production where it has a comparative advantage. It is both relocation to more competitive sectors and firms that make trade liberalization beneficial for a country. Ffrench-Davis (2000) concludes: "The value added by the creation of new activities must exceed the value subtracted by the destruction of existing activities improve productivity in order to obtain international competitiveness." (Ffrench-Davis, 2000:40). Consequently, in contrast to potential close-downs in the short term, in the long term, it is believed that through specialization, output will increase, thanks to the productivity gains that the reallocation yields. This discussion above combined with the competition of foreign firms in the domestic market work as an incentive for firms to rationalize and increase productivity (Ffrench-Davis, 2000:36).

Based on the above statements, we find reason to believe that trade openness, via productivity gains, stimulates GDP growth. In this section, we present the channels which this causal relationship has been argued to

work through. (i) It results in cheaper and greater variety in imports that can enhance productivity of domestic firms. It allows for a more efficient use of inputs through new technologies and equipment embedded in the imported inputs. This way, exports are encouraged indirectly by reducing production costs (French-Davis, 2000:58). As mentioned above, (ii) foreign competition forces domestic firms and industries to reduce slack and use inputs more efficiently (Fernandes, 2007:53). Furthermore, (iii) growth can be generated through learning by doing from exporting and (iv) technology spill-over effects originating from trade liberalization, may increase productivity. Openness can also increase firms incentives to invest in technology due to the reduction in opportunity cost of technological effort (Goh, 2000). Finally, (v) trade liberalization changes the relative prices between exportable and import substitutes, making exporting relatively more attractive.

Moreover, trade liberalization implies access to a larger market and therefore a higher potential to profit (Andersson, 2000:9). Another claim is that "good" trade policies reduce monopolistic incentives and since monopolies are a source of inefficiency, trade openness will improve efficiency and raise output.

### Criticism

While earlier empirical cross-country investigations on the topic have been mostly affirmative (e.g. Sachs and Warner (1995), Dollar (1992)) to the problem stated in the beginning of this article there are also substantial sources of criticism. Although most economists agree that there exists a positive link between lower barriers to trade and growth, among the critics we have Rodrik and Rodriguez. They address the question, if countries with lower policy-induced barriers to international trade grow faster, once other relevant country characteristics are controlled for. I.e. is there a reason to believe that trade policy affect growth in income other than through increased trade volumes (Rodrik and Rodriguez, 2000:5)? They point out that previous studies have failed to show good arguments and answers to what the

exact mechanisms are through which the effects of tariff reduction works (Rodrik and Rodriguez, 2000:7). Furthermore, the infant industry argument, which was later accepted by many classical and neoclassical economists, speaks against free trade for poorer nations due to the time it takes to build up a competitive industry. The skeptics have delivered critique primarily for reason of insufficient econometric modeling and weak theoretical foundations, such as Edwards (1993). By using two measures of trade openness, Yanikaya's (2002) cross-country estimations show no direct link between openness and growth, which also stand in contrast to the common findings and views.

## 2. Methodology

### *The Statistical Comparison*

As mentioned above, the sample was divided in three income groups. The higher income countries are those whose average GDP per capita over the 35 years examined exceeded \$900. The middle income ranges from \$400 to \$899 and the lower income group from \$0 to \$399. It is central to the analysis to point out that the statistical comparison measures openness against income levels, thus we do not treat GDP growth rates as in the cross-country regression. In addition, the division into three income groups implies a less exact result since it is based on the mean of each group.

### *The Econometric Model*

We are then going to estimate a cross-country multiple regression model based on the 24 developing countries (see appendix) according to the equation:

$$GDPG_i = \alpha_1 + \alpha_2 OPEN_i + \alpha_3 INVEST_i + \varepsilon_i$$

$$OPEN_i = \beta_1 + \beta_2 GDPG_i + \beta_3 SIZE + \varepsilon_i$$

where GDPG denotes GDP annual growth for country i, OPEN is the degree of openness of country i, INVEST stands for the gross capital formation as share of GDP as the investment rate of country i, SIZE represents the relative size of country i to the largest

economy in the sample, in this case Brazil. The data-set consists of 24 countries for which we will estimate cross-country regressions on a five year basis from 1970 to 2005, that is, eight separate regressions. In this manner, changes in coefficients will tell us among other things how the growth-openness relationship has evolved. The reason why we see a varying number of observations for different time periods is missing values for some countries regarding some variables at certain points in time.

**Openness:** There is no single measure available to assess the degree of openness in an economy. Here, instead of using tariff reduction an outcome-based measure used, that is, imports and exports as a share of GDP, i.e.:

$$OPEN_{i,t} = \frac{EX_{i,t} + IM_{i,t}}{GDP_{i,t}}$$

The information was taken from UN Comtrade Database

**Growth:** GDP growth is defined as:

$$GDPG_{i,t} = \frac{GDP_{i,t} - GDP_{i,t-1}}{GDP_{i,t-1}}$$

Which is the real change in constant dollars from one year to another expressed in percentage terms. The information of real growth rates was taken from the World Bank Database.

**Investment:** By investment which means the gross capital formation (GCF) of a country at a certain year, defined as:

$$INVEST_{i,t} = \frac{GCF_{i,t}}{GDP_{i,t}}$$

**Hypothesis 1:** Openness has a positive impact on GDP growth, ( $\alpha_2 > 0$ )

**Hypothesis 2:** Investments has a positive impact on GDP growth, ( $\alpha_3 > 0$ )

**Hypothesis 3:** GDP growth has a positive impact on openness, ( $\beta_2 > 0$ )

**Hypothesis 4:** The size of the GDP of a country has a negative impact on openness, ( $\beta_3 < 0$ )

### Causality/Endogeneity

Endogeneity in the openness and growth variables is assumed in the model. One cannot eliminate the possibility that causality is two-way, from openness to growth in the form of enhanced productivity (learning by exporting) and from growth to openness, as countries become richer they pursue a more liberal trade policy, (the theory of self-selection). Furthermore, exports are expected to be correlated with GDP since it is part of it. It can also be argued that openness is not exogenously given but influenced by other policy measures taken since trade reform was accompanied by other related reforms, e.g. stable macroeconomic policy, stronger rule of law, less rent-seeking and inflow in investment due to more open borders. This way, it may be difficult to disentangle the specific effect of trade openness from the vast amount of political and economic reforms implemented.

We use 3SLS in order to manage simultaneity bias and endogeneity which are inherent to the model. As a consequence, we will control for the causality problem and estimate the different causal effects. It seems that investment could suffer from the same causality problem since it can be argued that investment not only contributes to the growth of a country by accumulation of capital but a high growth rate might stimulate further investments. However, this is not going to be controlled for in the estimation process.

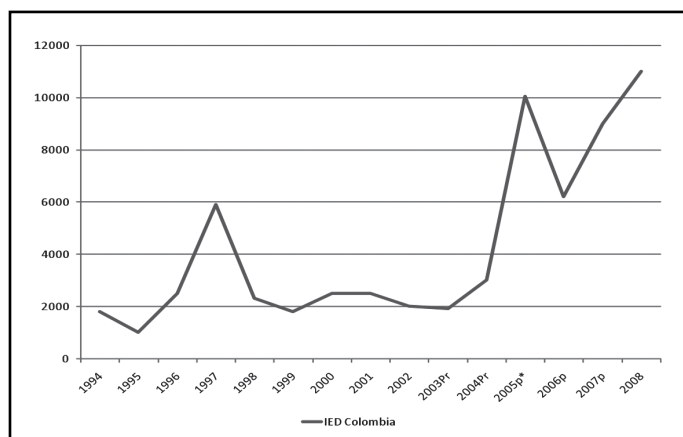
### 3. Results

#### Statistical Comparison of the Apertura analysis

The 16 representative Latin American countries were divided in three income groups (see appendix). Plotting the development over time produces the following result:

**FIGURE I**

**TRADE OPENNESS IN LATIN AMERICA, BY INCOME GROUP**



In order to assess the impact of the “Apertura”, we calculated an average value of the Pre-apertura and Post-apertura openness. The years 70-85 are classified as “Pre-

apertura” while the “Post-apertura” is considered the years 90-05. The result is shown in Table 4.2.

**TABLE I**

**OPENNESS AVERAGES FOR THE PRE AND POST-APERTURA PERIODS BY INCOME GROUP**

Openness Mean	Pre-apertura	Post-apertura
Higher Income	27.28 %	39.01 %
Middle Income	33.74 %	36.46 %
Lower Income	46.90 %	47.59 %

Source: UN Comtrade, The World Bank.

For all the income groups, the Post-apertura mean was higher than the Pre-apertura mean although it increased more for the richer countries, indicating a higher growth rate of openness. Thus, it follows that the richest countries are the ones that have gone through the highest amount of changes in terms of openness. However, the initial

level of openness was much higher for the lower income countries, a pattern that persists through all the observed values for the examined period. The evidence suggests that a low level of income is associated with higher trade levels while a high level of income is related to a larger increase in trade openness.

**TABLE 2**

TERMS OF TRADE FOR THE PRE- AND POST-APERTURA PERIODS BY INCOME GROUP

Terms of Trade	Pre-apertura	Post-apertura
Higher Income	1.20	1.26
Middle Income	0.73	0.81
Lower Income	0.74	0.54

Source: UN Comtrade

We observe current account deficits for both the lower and the middle income groups for both the pre- and post aperture period. The terms of trade have improved for

the higher and middle income groups, while for the lower income group it deteriorated during the years examined.

**TABLE 3**

REGRESSION RESULTS CROSS-COUNTRY MODEL

Dependent Variable: GDPG	1970	1975	1980	1990	1995	2000	2005
OPEN	-0.027 (0.051)	-0.010 (0.079)	-0.164 (0.097)*	0.116 (0.091)	0.082 (0.189)	-0.199 (0.275)	0.131 (0.187)
INVEST	0.247 (0.940)***	0.189 (0.228)	0.470 (0.201)**	0.146 (0.168)	0.120 (0.304)	0.676 (0.621)	-0.509 (0.642)
Constant	0.013 (0.023)	-0.001 (0.067)	-0.016 (0.046)	-0.041 (0.031)	-0.024 (0.037)	-0.017 (0.041)	0.098 (0.050)**
n	20	20	22	22	22	23	23
R <sup>2</sup>	0.269	0.045	0.154	0.162	-0.015	-2.978	-0.997
X <sup>2</sup>	6.96	0.83	6.14	6.06	2.79	2.20	0.76
Dependent Variable: OPEN	1970	1975	1980	1990	1995	2000	2005
GDPG	1.270 (4.626)	4.624 (3.805)	3.978 (2.503)	4.496 (2.226)**	5.945 (4.166)	7.960 (3.733)**	-39.580 (45.818)
SIZE	-0.498 (0.153)***	-0.666 (0.341)*	-0.438 (0.124)***	-0.200 (0.205)	-0.119 (0.304)	-0.293 (0.172)*	-0.770 (0.924)
Constant	0.419 (0.168)**	0.378 (0.077)***	0.195 (0.118)*	0.262 (0.096)***	0.203 (0.173)	0.203 (0.132)	2.865 (2.677)
n	20	20	22	22	22	23	23
R <sup>2</sup>	-0.023	0.314	-2.269	-0.478	-2.475	-0.016	-11.882
X <sup>2</sup>	12.68	12.76	4.25	7.58	2.75	5.39	0.84

Standard errors are given in parentheses. \*10 percent level of significance, \*\*5 percent level of significance, \*\*\*1 percent level of significance

The cross-section estimates above suggest no obvious consequent relationship throughout all years observed for any variable. Instead, the results are rather mixed. This should be addressed, considering that the sample size could be too small or that this simply indicates that no obvious relationship clearly exists. Turning to the most important issue of the study, the link openness-growth, we see that while there is some evidence that GDP growth may give rise to a higher degree of openness for a country, no strong relationship where causality runs from openness to growth can be detected. Taking all the years into account, the estimates reported present no evidence that there are gains in terms of economic growth from openness to trade. However, this outcome based measure of trade openness may not fully capture the effects of tariff reduction and trade liberalization and therefore it cannot claim to correspond perfectly to the actual policy pursued, but is simply the consequence of more open borders to flows in goods and services. However, we should expect a large positive correlation between trade values and liberal trade policy (e.g. tariff reduction), which could be an indicator of the fact that they are roughly measuring the same thing. Therefore, according to this possible flaw one cannot reject the possibility that openness measured differently will result in faster economic growth. Focusing on the empirical findings of the current regression, however, we find a significant effect on growth only for the year 1980.

The estimate is significant only at a ten percent level and it does not even have the expected sign. Furthermore, there is a large variation overall in the coefficient estimates and the change of sign is frequent. It seems that the negative relationship that existed between growth and openness turned into a positive one from -90 and onward. However, since coefficients are not statistically significant the speculation and interpretation of such variation is irrelevant. The regression results obtained do not support the theory that countries with a more open trade regime fared better than those who were more inward-oriented and we fail to reject the null hypothesis that the openness coefficient is insignificantly different from

zero in seven out of eight cases. One possibility is that the mechanisms through which gains from trade influence growth, work with a lag, hence, we will not observe the effects of an increase in trade openness until some years after.

The effect of investment, on the other hand, is more accurately explained by the model, although it does only apply to the Pre-apertura period. From the results in the cross-sections above, we can draw the conclusion that only in two out of seven cases, the null hypothesis that the coefficient of the variable INVEST is equal to zero can be rejected. In 1970, at a one percent significance level we have that an increase in the investment index is associated with a rise by 0.247 in GDP growth. Similarly, the relationship proved to be strong also ten years later in 1980 contributing to a 0.470 rise at a five percent significance level. From this one can make two plausible points. First, this translates into considerable effects of gross capital formation rate on growth and second it leads one to suggest that it is a more relevant determinant of growth under protectionism while it explains poorly the economic performance under more open market forms. One reason may be that the mechanisms through which openness works on growth are more complex under openness. Another noteworthy comment to make is that the investment coefficients are substantially higher compared to the openness coefficients, giving rise to a higher beneficial impact on growth. It is justified to say that this can be due to less complicated channels through which capital formation affects economic performance. However, in six out of eight cases we cannot reject the hypothesis that the investment coefficient is significantly different from zero.

As for the second equation in the system, one recognizes that there is little evidence that suggests that growth has a positive effect on openness. However, they are to a larger extent significant and the coefficient has an appreciably higher estimated value than the estimated reverse effect. Only during the years 1990 and 2000 we report an estimated effect on openness of 4.496 and 7.960 respectively at a five percent significance level. This piece of evidence suggests that countries

experiencing high growth have a higher tendency to become more open than slower-growing economies. However, only in two out of eight cases, can one reject the null hypothesis that GDP growth is insignificantly different from zero. The large negative coefficient for 2005 visible for the observer in the panel is a clear outlier. However, it is highly insignificant and thus irrelevant for the discussion, which is why no attention will be paid to it.

The estimates for the last explanatory variable, country size, indicate a significant negative relationship with openness for the Pre-apertura period, that is, during the presence of protectionist ideas. This is consistent with the notion that larger economies have a greater interest in protecting their own industry. Most notably, Brazil as the largest economy played an important role in determining these findings, being a strong advocate of protectionism during this period. The abrupt change came expectedly in 1990 where no longer a statistically significant relationship can be observed. We can interpret this as the fact that even larger countries opened up, as a consequence of bad experience during import-substitution, of recognizing the gains from trade openness. This feature is the most prominent in the whole model with only one exception in 2000. Arguably, it is a cause of reduced trade levels in the aftermath of the crisis especially for those having large internal market managing a higher degree of auto sufficiency. In 1970, a rise in the level of openness creates a large effect on the country's trade index, implying a decrease of 0.438. Furthermore, this relationship is highly significant and the same is applicable to the year 1975. We observe a slight increase in the coefficient for the year 1975 for which we report an estimated effect of -0.498. The relationship becomes less significant for the years 1980 and 1985, being significant only at the 10 percent level. The measured effect is negative and is estimated to -0.666 and -0.348 respectively. These results are in line with the expectations derived from theory presented previously. Subsequently, it must be that larger economies were less open during protectionism which confirms our theory.

To sum up the results, we fail to confirm the main hypothesis of the paper, that

is, the existence of a positive effect of trade openness on GDP growth. Investment appears to be a more realistic determinant explaining growth under protectionism. In most of the cases the hypotheses made in the beginning of the chapter cannot be confirmed. Only country size behaves in the expected manner, having a negative impact on trade openness until the time of the general trade liberalization after that country size ceases to matter. When testing for joint significance for each model using the chi square distribution we obtain the result that the equation with growth as the dependent variable is significant on a five percent significance level in three out of eight cases. The openness equation is significant in four out of eight cases, suggesting that it is a slightly better approximation of explaining reality. The chi square test values are especially low for the years -75, -85, -95, -00 and -05 for the regression with GDP growth as the dependent variable and -95 and -05 for the regression that has openness as the dependent variable. Thereby, we can state that the model is less adequate during trade openness than under protectionism. It might be that the channels through which the variables work became more complex in the open economy. Finally, the intercepts of both the models' equations tell us that a large unexplained effect on growth and openness respectively remains, suggesting that there are many omitted variables in the model.

## Conclusion

The paper has drawn upon the question whether trade openness has been a driving factor behind economic growth in Latin American countries. We obtain no clear-cut answer to this question and we cannot say that it is exclusively good or bad to be open in order to attain growth. Although the majority of empirical studies on the topic find positive significant effect of openness on growth, the result of our study does not point in this direction. In fact, we cannot state any clear-cut relationship between the two factors. We find very few evidence that causality goes from growth to openness and no single evidence that the reverse relationship would hold for the cross-country regression results.



We report a positive impact of investment on growth for some years under protectionism. The result that best fits theory is the one obtained when we estimate the impact of size on openness. Here, we found a negative relationship that holds under protectionism.

Our findings suggest that the mechanisms through which openness works on the macro level are more complicated than our model suggests. According to theory, the effect of openness on growth goes via technology transfers, economies of scale, comparative advantage and productivity gains. Investment is probably conditional on investment in education, improved property rights and relies on the institutional framework present in the country (Andersen and Babula, 2008). Whether openness promotes growth or not will most probably be dependent on if the country already has a strong economic base in manufacturing and if the country had a comparative advantage in the sector that accounted for large tariff reductions. One potential lesson we can

draw from this is that the destruction and creation of new industries are not likely to take place immediately after trade liberalization, but rather works through a lagged effect on growth. The lagged effect may hinge upon complex mechanisms as mentioned above.

Existing economic, legal, social and political structures may hinder the transition to the efficient resource allocation that would yield higher growth. One explanation to the "poor" results could be that the channels through which openness works on growth are more complex on the aggregate level than on the disaggregate level. It would therefore be easier to see significant effects using micro-data. Another reason why the predictions are not in line with the expected outcome could be that the linear function is not adequate description of the mechanisms through which openness has an impact on growth. It might well be that these variables are non-linear and thus that our model does not capture these effects. To sum up the discussion, it is justified to declare that many other factors are at play when determining growth.

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## **Appendix:**

### **Countries included of the cross-country regression:**

South Africa, Argentina, Bangladesh, Bolivia, Brazil, Cameroon, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Morocco, Mexico, Nicaragua, Nigeria, Panamá, Peru, Thailand, Tunisia, Turkey, Uruguay, Venezuela

### **Income groups for the statistical comparison for Latin America:**

Higher income GDP per capita >USD 900: Argentina, Chile, Mexico, Uruguay and Venezuela.  
Middle income GDP per capita 400>899: Brazil, Colombia, Costa Rica, Ecuador, Panama and Peru.  
Lower income GDP per capita <400: Bolivia, El Salvador, Guatemala, Honduras and Nicaragua.