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International trade openness and its effect
on economic growth in Latin American
Countries

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“The views expressed in this paper are those of
the student and do not reflect the views of the
University of Paris 1“

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Thanks God, for giving me my childhood dream, I was not able to do it alone. All the Glory Belongs to my Jesus. "Do not tremble or be dismayed, for the LORD your God is with you wherever you go." We did it together as always.

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Dedication

This dissertation is dedicated to my Jesus.

I also dedicated this work to my country Ecuador, especially for all kids who fight every day to get education. I hope you speak up and defend your rights. You never give up. Trust in Jesus and work for your dreams. As new generations, we must stand up for our rights and make the difference in our country. Real change starts with us.

Abstract

This paper studies how the effect of trade openness on economic growth for Latin American Countries may depend on labor market policies that help a country take advantage of trade openness. To do it an extension of the Solow growth equation and a GMM estimator are used. The paper considers a panel-data for 14 Latin American countries over the period 2005-2012. Results showed that in the long run trade openness volume (import plus exports over GDP) has a positive impact on economic growth for LAC that may increase when countries have more flexible labor market policies. All else equal, empirical results show that trade openness volume is likely to benefit more LAC where it is legal to terminate the employment contract of a worker due to redundancy than those where it is forbidden.

Keywords: Trade Openness, Economic Growth, Labor flexibility

Content

1. Introduction.....	1
2. Related Literature.....	5
3. Empirical Framework	14
4. Data Description	16
5. Empirical Analysis.....	21
6. Conclusions and Recommendations	24
7. Annexs	26
8. References.....	29

International trade openness and its effect on economic growth in Latin American Countries

1. Introduction

Is trade openness good or bad for economic growth in developing countries? In the last few decades most of the Latin American countries (LAC) and East Asian countries (EAC) have sought to reverse the protectionist policies which dominated the regions for centuries. After that, both regions have experience a rapid trade liberalization, which has been characterized by the elimination of quotes, reduction in tariffs, multilateral and regional agreements. For instance, between 1980 and 1999 the average tariff reduction in Latin America was from 30% to 10% similar to OECD levels. Nowadays LAC countries have many Free Trade Agreements (FTAs) with industrialized countries North American Free Trade Agreement (NAFTA). These measures were also accompanied by macroeconomic and other structural reforms like strengthening fiscal and monetary discipline to promote economic growth. (Ferranti, Lederman, Perry, and Suescún (2003) - Nenci and Pietrobelli (2007))

However, the level of trade openness was not the same across Latin America countries. While in 2013 for countries like Costa Rica the share of trade in goods and services over the GDP represented more than 70%, in Argentina this share was about 30%. We also notice that Latin American countries are still behind in relationship to East Asian. For instance, in 2013 the average share of trade for LAC was about 50% while for EAC more than 60%. (Ferranti, Lederman, Perry, and Suescún 2003).

On the other hand, comparing the trade lies between Latin American and East Asia countries, we observed that countries like China has targeted the world as its market while Latin America trade is still focus in most of the case in United States and Brazil. Furthermore, while East Asian countries have experience a rapid and extensive economic growth after trade liberalization, the success of different reforms taken in Latin America has been widely criticized, suggesting that LAC are still not getting all the possible benefits from the virtuous circle of more integration with neighbors and the world. That is the reason why there is a lively academic and political debate about whether trade liberalization is good or not for developing countries. (The World Bank's

report “Latin America and the Rising South: Changing World, Changing Priorities”, 2015). In this sense, the present work contributes to the existing literature by providing an empirical analysis from the relationship between trade openness and economic growth for Latin America countries by taking into account the degree of labor market flexibility.

There are many studies in favor of trade openness. For instance, there exists a positive correlation between trade openness and economic growth (Harrison, 1995). There is also a positive and significant relationship between trade openness and per capita income. International Trade increases productivity (Frankel and Romer, 1999 and Broda, Greenfield and Weinstein, 2006). A direct relationship between trade openness and manufacturing labor productivity is observed for some industries in different Latin American countries (Paus, Reinhardt and Robinson, 2003). Some of the channels through which trade openness generates a positive impact on the economic growth are: learning by doing in the exports of goods, access to import products of high-tech and a bigger variety of products. The fact of being exposed to different developed and innovative products may bring new ideas to local producers, improving the quality of domestic products. Basically, developing countries can enjoy from trade openness because of knowledge already accumulated in the industrialized world. (Grossman and Helpman, 1991).

On the other hand, the effect of trade on welfare for Least Developed Countries (LDC) is ambiguous (Young, 1991). The positive link between trade openness and growth is stronger if countries have the enough human capital to absorb the advantages of more commerce (Harrison, 1996). Countries that export products with higher quality and greater variety grow faster than those who do not, which implies that some countries might have a negative impact from trade openness (Huchet-Bourdon, Le Mouël and Vijil, 2002). In addition, trade gains will be influenced by the degree of labor market flexibility (Chang, Kaltani, Norman V. Loayza, 2009). After Brazil trade liberalization Daumal and Ozyurt (2011) found trade openness is more beneficial to states with a high level of income, contributing to income disparities between Southeast and North regions in Brazil. While, after the China Opening Up SUN and HESHMATI (2010) found that net export shares in GDP and high-tech export have a significant positive effect on efficiency. However, authors mentioned that the unbalanced development in high-tech

exports between rich and poor regions widens the income gap. In this sense, according to the OECD analysis reducing income inequality would promote economic growth. Income inequality hurt human capital accumulation through a reduction in education opportunities for individuals in the bottom of the income distribution, which lower social mobility and skills development (Focus on Inequality and Growth OECD 2004). According to these results, trade liberalization will hurt economic growth under a framework of low human and physical capital, which implies that the level of investment and aid for building productive capacity, developed human skills and the introduction of complementary macroeconomic policies will be crucial to promote growth in developing countries (Huchet-Bourdon, Le Mouël and Vijil, 2002).

We observe in the previous paragraphs that the empirical evidence about the effect of trade on economic growth is not conclusive. In determining the relationship about trade openness and economic growth some of the potentials problems are: two-way causality between trade and economic growth due to the omission of relevant variables. On the other hand, openness indicators are not robust to the inclusion of different macroeconomic variables. For instance, the inclusion of different variables such as quality of institutions, and government expenditures makes disappear the relationship between trade and economic growth (Rodrik et al. (2004) and Levine and Renelt (1992)). Another problem is the simultaneity, which means that trade openness variables are related to the level of income (Ha Yan Lee, Luca Antonio Ricci, and Roberto Rigobon, 2004). Another issue, it is that the level of strength in the relationship between trade openness will depend on the data used cross section or panel data (Harrison (1996) and Quah and Rauch (1990)). Last but not least, another problem, it is which variable or combinations of variables are used as proxies of trade openness. Trade openness can be measure such as the share of trade in goods and services over the GDP, an annual index of trade openness based on exchange rate and commercial policies, an index based on tariffs and non-tariff Barriers, a black-market premium Harrison (1996). Which one should be used as measure of trade openness?

By using the General Method Moment the present paper aims at assessing how international trade openness affects the economic growth in Latin America countries from a long-run perspective. Can international trade openness serve as an “engine of

growth” for this region? What kind of economic policies might be implemented to promote higher welfare from trade openness?

I will use two broad categories as measures of trade openness: trade volume and trade restrictions. And by trying to control for specific political features of the region, I include the interaction term between *Trade openness and Labor flexibility* indicator as a possible explanatory variable of economic performance, this variable will tell us if labor market flexibility in Latin American countries might be or not a possible channel to enjoy greater benefits from trade. Essentially, I will try to determine if the fact of allowing enterprises to adapt the kind of employees to changing environments observed in international markets influences the impact of trade openness on economic growth.

For the present analysis, I consider two data sets the World Development and Doing Business Indicators. According to this data, I build an annual panel data over the period 2005-2012 for 14 Latin American Countries. In this sense, the main contribution of this paper will be to consider a Labor Market Flexibility Indicator from the recently created Doing Business Project.

Estimations show that under a long time framework. Trade openness encourages the growth of LAC where there is less rigidity in the labor market related to redundancy rules, therefore contributing to more flexible labor market policies make LAC to enjoy greater benefits from trade openness. All else equal, empirical results show that trade openness is likely to benefit more LAC where it is legal to terminate the employment contract of a worker due to redundancy than those where it is forbidden.

The paper is organized as follows. Section1 presents the introduction of the dissertation, While section 2 the theoretical and empirical literature on trade openness. Section3 describes a standard growth equation. Section 4 the data sources and definitions. The empirical analysis and explanation of the main findings are presented in section 5. Finally, Section 6 concludes and gives recommendations.

2. Related Literature

Since many years economists have explored the relationship between international trade and economic growth. Trade openness applied to trade policy will be neutral if the incentives are neutral between a unit imported and a unit exported, trade policies might be oriented to promote exports through export subsidies and finally, trade policies might be inward oriented through the creation of tariff, quotas, and licenses. A government might take neutral policies in some sectors and inward oriented in others (Harrison 1996).

The neoclassical theory suggests that trade openness will generate static gains. Gains will be obtained through country specialization in the production of goods in which their relative cost is lower in relationship to the world, and countries import goods in which they are less efficient. Free commerce allows countries to devote labor to activities in which is most effectively and most economically, which implies an increase of benefits and production. Due to the scarcity of land and diminishing marginal productivity, isolated nation will have a falling rate of profit and an increase in prices which will decrease economy growth (Ricardo, 1817).

On the other hand, international trade generates a reallocation of resources which implies perfect mobility of factors between traded and non-trade sectors within each nation. According to this, under nations with the same technology, the difference in resource endowments is enough reason to cause trade between countries. International trade of products is a substitute for trade in factors that allow them to compensate for any uneven distribution, which will result in the economic convergence across nations. (Heckscher-Ohlin-Samuelson, 1941).

Considering the New Trade Theory (NTT), we face different challenges such as: 1) the introduction of the scale economies in production, which are linked to the size of firms and market structure. 2) Imperfect markets and 3) Product differentiation. There might be some losses for small producers that are unable to get scale economies but they can be compensated by an increase in the welfare due to a greater consumption basket (Bhattacharjea, 2004). After trade liberalization small countries can enjoy economies arising at an international level (Helpman 1984). For developing countries, trade

openness is an economic tool to expand and overcome the limitations of the domestic market and also allocate the surplus of products in foreign markets (Myint, 1958). The scale of the world economy gives greater to get scale economies and more opportunities to success in the investment of research and development (Krueger, 1978- Grossman and Helpman, 1991). Under cheap and greater communication across borders, countries can enjoy from spillovers effects (Krueger, 1978).

Considering an enough product differentiation, both trading countries can benefit from intra-industry specialization. Essentially, if countries have similar factors endowments there will be intra-industry instead of inter-industry commerce. Under a dominant intra-industry trade, the access to a bigger market after trade liberalization will allow them to overcome any kind of distributional effect. And trade openness allows countries to allocate their resources to area/countries where is more efficient to produce, which implies mutual benefits for all trading nations due to increasing returns on a global (Krugman, 1981)

Indeed, it is interesting to note that both Traditional and New trade theory are unable to manage the dynamic implications of trade related to growth and development, especially for developing countries. Both theories do not explain changes in resource endowments, consumer preferences, technological possibilities and income distribution (Bhattacharjea 2004). That is the reason why it is necessary to consider endogenous models based on technological progress and accumulation of knowledge. Under this framework, an outward orientation will generate a faster economic growth and a higher economic well-being than those observed in protectionist trade economies (inward orientation), because of different channels such as learning by doing in the exports of goods, access to import products of high-tech. The fact of being exposes to different developed and innovative products may bring new ideas to local producers, improving the quality of home products. Basically, developing countries can enjoy from trade openness because a vast stock of knowledge already accumulated in the industrialized world. (Grossman and Helpman, 1991), which implies that developing countries will get more benefits from trade with developed countries than less developed countries. (Halit Yanikkaya, 2003).

But opposing arguments are not too hard to build. For instance, under imperfect markets there might be reciprocal dumpings of exports, or countries that have a big great advantage in the production of goods (Brander and Spencer 1985; Krugman and Obstfeld 1992.). Furthermore, there might be a decline in barter terms of trade for developing countries, which are mainly the primary producing and exporting countries which may contribute to divergence across countries and a transfer of resource from poorest countries to richest one (Prebisch-Singer, 1950). On the other hand, the existence of marked differences between developed and developing countries give a framework able to explain the observed divergence in economic growth between trading partners, which implies that the initial conditions of each economy will be decisive to go toward an underdevelopment trap or toward prosperity (Darity and Davis 2005: 29, pag. 165). Moreover, Multinational Corporation (MNC) practices relating to subsidiaries, threat of denying market access, generate a hegemonic power from developed countries on weaker nations (Bhagwati and Krueger 2001). Considering the Harris–Todaro model where trade gains will be influenced by the degree of labor market flexibility Chang, Kaltani, Norman V. Loayza, (2009) found that the effect of trade openness will be positive on average to economic growth but the effect will depend on different complementary reforms such as educational investment, financial depth and labor market flexibility which implies that complementary reforms are crucial to enjoy greater benefits from trade openness.

If we consider imperfect markets such as dumping of exports, or greater advantages in the production of goods. The government intervention through subsidies that allow “infant industry” to reach scale economies is justified (Brander and Spencer 1985; Krugman and Obstfeld 1992). In addition, a decline in barter terms of trade for developing countries might be generated by two reasons: a secular decline in the long run price of primary products in relationship to manufactured products, and a reduction in the demand for exportable from developing countries due to technological progress. As a consequence the diversification of exports into manufactures, technological capacity building, and development of human capital in developing countries becomes crucial (Prebisch-Singer, 1950). On the other hand, the fact that market differences will affect prosperity implies that history and good fortune are key in the battlefield for understanding economic growth (Darity and Davis 2005: 29). In addition, to overcome with Multinational Corporation (MNC) practices some steps have been taken. For

instance, the creation of the United Nations Conference on Trade and Development (UNCTAD) (1964), SAFTA in South Asia to more(2004) or the Mercosur (1991) in Latin America. However, there is still an evident power and economic divergence between rich and poor countries.

Moreover, the effect of trade openness on economic growth will be affected by complementary reforms (Lipsey and Lancaster, 1956). For instance, in high regulated countries, trade openness will not promote growth due to the inability of flowing of resources to productive sectors. Basically, under inflexible economies, trade expands in the production of wrong goods which prejudice growth (Bolaky and Freund, 2004). Considering the Harris–Todaro model Chang, Kaltani, Norman V. Loayza, (2009) trade openness benefits will be greater under a framework of more public infrastructure, labor flexibility, more access to credits, and education. While the positive effect of trade openness will be lower with more inflation and corruption. Basically, domestic firms will be able to compete in international markets when they have more educated labor force, and a stable macroeconomic and political environment. Labor market flexibilities will allow domestic companies to adapt to changes observed in international markets. In this model, there are two sectors, if a trade reforms reduce the price in sector1 and it has a fixed salary the increase of product wage in that sector will induce firms to reduce the number of workers, while in sector 2 firms will hire more workers which implies a decreasing marginal productivity of labor and a lower wage in sector 2. The impact on total unemployment is ambiguous. Trade openness will increase per capita income if labor market distortions are sufficiently small. According to this, the basic premise is that complementary policies are required to enjoy greater benefits from international trade. On the other hand, trade liberalization can reduce or increase wage inequality and the effect on unemployment rate will depend how many workers are matched and hired, which implies most productive agents will be able to profit from exports (Oleg Itskhoki, 2009). In this sense, according to the OECD analysis reducing income inequality would promote economic growth. Income inequality hurt human capital accumulation through a reduction in education opportunities for individuals in the bottom of the income distribution, which lower social mobility and skills development (Focus on Inequality and Growth OECD 2004). Income inequality will affect growth and its sustainability (Causes and Consequences of

Income Inequality: A Global Perspective Dabla-Norris, Kochhar, Suphaphiphat, Ricka, Tsounta IMF, 2015).

Nowadays, the effectiveness of world trade agreements for developing countries is highly debated in both the academic and political field because of different issues such as outsourcing and the physical location of firms, human skills, macroeconomic and political environment. That is why there are many empirical researches to figure out the *Relationship between Trade openness and Economic growth*. For instance, Harrison (1996) found a positive correlation between trade openness and economic growth but not strong in all cases. The level of strength in the relationship depends on the dataset used cross-section or panel data. Author uses a general production function in which GDP depends on, capital stock, primary and secondary education, population, labor force, technological change and arable land for each country. Then the openness trade variable is included in the production function to test their impact on technological change-growth in output after controlling for increase in resource used. Trade openness variables used are: an annual index of trade liberalization based on exchange rate and commercial policies, an index of trade liberalization based on tariffs and nontariff barriers, a black-market premium and the Dollar index. The results of this research suggest that all the different measures except trade shares exhibit a negative relationship between trade and economic growth (due to more distortions) while trade share have a positive relationship with economic growth.

There is a positive and significant relationship between trade openness and per capita income (Frankel and Romer, 1999). In addition, by using a simultaneous equations system to estimate the effect of trade policy on different determinants for growth and a panel data of 57 countries between 1970 and 1989 Wacziarg (2000) found that trade policy openness promotes economic growth. Author considers a neoclassical production (Solow decomposition) function in which economic growth depends mainly on the level of technology, physical capital, human capital, labor; government consumption. The measure of trade openness is based on a weighted average of three indicators: tariff revenues, non tariff barriers, and an indicator of overall outward orientation. Berg and Krueger (2003) mentioned the positive link between openness and economic growth. Moreover, there is a positive impact of trade in productivity (Broda, Greenfield and Weinstein, 2006). Furthermore, by using a panel data for 27 industries in seven Latin

American countries from 1970 to 1998 and the Arellano-Bond GMM (Paus, Reinhardt and Robinson, 2003) found a positive relationship between trade openness and manufacturing labor productivity. In addition, by trying to control for endogeneity problems because of simultaneity between trade openness and growth, Luca Antonio Ricci, and Roberto Rigobon (2004) use the identification through heteroskedasticity over a panel data for about 100 countries and found that measures of openness such as size of trade, a tariff indicator, and black market premium¹ would have a positive effect on growth, even after controlling for the effect of growth to openness.

In these studies, some of the channels through which trade openness generates a positive impact on the economic growth are: learning by doing in the exports of goods, access to import products of high-tech and a bigger variety of products (SUN and HESHMATI, 2010). Moreover, trade liberalization promotes more investment, foreign direct investment (FDI) and macroeconomic policy quality, macroeconomic policies taken to comply with the framework of international trade agreements, a framework that implies a better settlement of law, the promotion of competitive markets and macroeconomic stability like inflation-preventive policies. (Wacziarg, 2000). Trade liberalization may increase productivity growth by forcing surviving firms to be more competitive, and commercial reforms might bring access to cheaper and higher quality technology imports. Export promotion might bring learning of “best practice”, increase contacts with foreign partners and an increase of higher productivity multinationals (Paus, Reinhardt and Robinson, 2003).

On the other hand, by using an endogenous growth model in which learning by doing will generate spillover across all goods Young (1991) found that the effect of trade on welfare for Developed Countries (DC) is positive because of static and dynamic gains while for Least Developed Countries (LDC) the effect is ambiguous. Moreover, by using a three-equation system, a panel data from 100 developed and developing countries between 1970 and 1997, and considering two groups of measure of trade openness: trade volumes and trade restrictions, Halit Yanikkaya (2003) found a positive relationship between trade restrictions and economic growth which implies that under certain macroeconomic conditions, developing countries can benefit from trade

¹ “Whose sign is adjusted so that a high value means a more open regime” Luca Antonio Ricci, and Roberto Rigobon (2004)

restrictions. Author considers an economic growth function which depend on physical and human capital per person (telephone mainlines and life expectancy rates were used as proxy variables respectively), initial GDP per capital level (as a proxy for the stock of capital for a country), trade openness measures, war deaths, type of regime and geographical factors. As trade volumes variables, author considers the sum of export and import over GDP and population densities, and found that countries with higher densities grow faster than those with lower densities. While for trade restriction variables author uses an index combining import and export taxes, total taxes on international trade, bilateral payments arrangements BPAs², and non tariff barriers. In addition, by using a GMM estimator for 26 Brazilian states over the period 1989-2002 Daumal and Ozyurt (2011) found that the effect of trade openness (which consists in the sum of import and exports over the GDP) on the economic growth of Brazilian states depends on the initial income level of each state. The results of this research suggest that trade openness is more beneficial to states which a high level of income, contributing to income disparities between Southeast and North regions in Brazil and that trade openness contributes more to industrialized states than agricultural states. Moreover, considering a cross-country, panel-data evidence and a GMM estimator Chang, Kaltani, Norman V. Loayza (2009) found that trade openness might deteriorate economic growth under a framework of big labor market distortions. In addition, by using cross-country regressions and after controlling for simultaneity Bolaky and Freund (2004) found that excessive regulations on business entry and labor reduces the positives benefits from trade openness.

Less developed countries will be unable to catch up DC if DC have a greater population and the initial income gap is too big (Young, 1991). Trade openness is more beneficial to states which a high level of income and developed industries due to more developed human capital which implies that trade benefits can be deprived by a low human capital Daumal and Ozyurt (2011). For these authors the important question is not to open or not but to know the pattern of imports and exports before trade liberalization, the type of products to trade, and the benefits of trade openness in the pattern of imports and exports. The unbalanced development in high-tech exports between rich and poor

² In the BPAs agreements central banks guarantee to pay the respective foreign exporter for the export value in the case of default, which help to finance trade with non-dollar world.

regions widens the economic gap SUN and HESHMATI (2010). On the other hand, labor market and financial rigidities will deteriorate the international trade benefits due to inability of flowing of resource to most productive sectors. And trade openness will promote economic growth if there is enough development human capital (Chang, Kaltani, Norman V. Loayza, 2009).

As we can see empirical evidence about trade openness for developing countries is not conclusive and promises more that it can really give us because of several econometric problems. One of the potential problems in determining the relationship between trade openness and growth is the simultaneity, which means that trade openness variables are linked to the level of income. For instance, trade share is a function of GDP which will generate endogeneity problems and for consequence biased results (Ha Yan Lee, Luca Antonio Ricci, and Roberto Rigobon, 2004). Another problem is the accuracy of the trade openness indicators, for instance “trade volume” might be a function of other variables like quality of institutions, health conditions, geographic, availability of natural resources size and so on (Rodriguez and Rodrik , 2004). By using a set of data of 140 countries Rodrik et al. (2004) showed that including variables like quality of institutions measured by the rule of law and property rights makes the relationship between trade and economic growth disappear. Moreover, open economies can induce government authorities to increase public expenditure devoted for exporters in case of foreign shocks which may reduce economic growth (Rodrik, 1998). According to these results, trade openness indicators are not robust to the inclusion of macroeconomic variables.

On the other hand, Harrison (1996) found that the correlation between trade openness and economic growth depends on the time period of dataset. In general, the positive effect becomes significant for longer periods of time. Another issue, it is which variable or combination of variables is used as a proxy of trade openness because it is difficult to aggregate the data in one index. For instance, trade openness can be measure by using the following proxies: exports plus imports over the GDP, an annual index of trade liberalization based on exchange rate and commercial policies, an index of trade liberalization based on tariffs and nontariff Barriers, a black-market premium, or the Dollar index. Finally, there is a clear difference between collected rates and official tariff rates (Pritchett and Sethi, 1994)

In lights of the aforementioned literature, we can expect that the effect of trade liberalization in Latin American countries will depend on different factors such as export and import patterns, human capital dexterity and different political policies. In this sense, the main contribution of this research will be to determine the relationship between economic growth and openness considering a labor market flexibility indicator. The inclusion of the interaction term between *Trade openness volume and Labor flexibility Indicator* as possible explanatory variable will tell us if Latin American countries should or not establish a more flexible labor market framework to experience greater benefits from trade liberalization.

3. Empirical Framework

The Growth Equation

To our knowledge, this study will contribute to the empirical evidence by trying to explore the causal relationship between trade openness and economic growth by taking into account the degree of labor market flexibility in Latin America Countries, using the Solow growth model. The Solow decomposition is a neoclassical production function in which economic performance depends on the level of technology, physical and human capital. In this model, there are diminishing returns to a single factor and constant returns to scale. Authors such as Dollar and Kraay (2004), SUN and HESHMATI (2010) and Daumal and Ozyurt (2011) have used the Solow growth equation.

The empirical analysis conducted in this study will use a panel data set for Latin American Countries over the period 2005-2012, and an extension of the conventional Solow growth equation. According to this, for Latin America Countries, the economic growth will be explained by the following equation:

Eq. 1)

$$\begin{aligned} \ln Y_{it} = & \alpha_0 + \alpha_1 \ln \text{tradeopenness}_{it} + \alpha_2 \ln \text{Labormarketflexibility}_{it} \\ & + \alpha_3 \ln \text{tradeopenness}_{it} * \ln \text{Labormarketflexibility}_{it} \\ & + \alpha_4 \ln X_{it} + h_i + u_t + e_{it} \end{aligned}$$

Where the dependent variable Y_{it} is the economic performance or growth of country i at year t . The measure of trade openness is part of the independent variables and it is sub-classified in two groups: trade volume and trade restrictions (Harrison, 1996). Labor market flexibility indicator and the interaction term between this indicator and trade openness volume are also included as explanatory variables. This interaction term is the core of the present research. It will capture the effect of trade openness on economic growth given the degree of flexibility in the labor market of each country. In other words, it will tell us whether or not the growth due to trade openness is conditioned by labor market flexibility and whether Latin American benefits from trade are greater for countries with flexible labor markets than those with more rigid labor markets.

According to the previous statement, the economic growth generated by trade openness for developing countries considering labor market flexibility will be the sum of coefficients ($\alpha_1 + \alpha_3$). The rest of explanatory variables are part of X_{it} which is divided in three categories: Physical and Human Capital, and Macroeconomic features. On the other hand, h_i represents unobserved and constant individual-specific effect that might affect economic growth (environment and political factors, quality of institutions) (Rodriguez and Rodrik, 2004); u_t is an unobserved time-specific effect and e_{it} is the stochastic error term. The log-linear functional form is adopted to reduce likely heteroscedasticity and to measure the coefficients as elasticities.

As it was mentioned in the previous section the empirical evidence about the effect of trade on economic growth is not conclusive due to different problems such as lack of long period data, omission of relevant variables, and different proxies of trade openness. One of the main challenges about this type of empirical analysis is the endogeneity generated by simultaneity, which means that trade openness variables such as trade share (import plus exports over GDP) are related to the level of income (Ha Yan Lee, Luca Antonio Ricci, and Roberto Rigobon, 2004).

Here, the GMM will be used as a method of estimation. It is an estimator based on different moments, which are features of a population. For instance, the average population used as a measure of central tendency, the variance used as a measure of spread in a distribution. However, in practice we use the sample information. Here, I will use a panel data set for Latin American Countries over the period 2005-2012. Different estimators as OLS and Two-Stage Least Squares are particular cases of the GMM, where the number of sample moments is equal to the number of unknown parameters to estimate. Nevertheless, in some cases this equality fails (there are more sample moments than number of unknown parameters). In this sense, the GMM combines different moments to minimize the asymptotic variance, which implies that moments conditions with higher variance will receive less weight and vice versa. According to this, GMM improves the OLS estimation in the presence of heteroskedasticity of unknown form. Here, since we are working with countries from the same region but with different economic and geographical features we may afford heteroskedasticity problems. Moreover, the GMM does not require any distributional

assumptions about the error. On the other hand, the fact of having more moments than unknown parameters allow us to introduce variables properly excluded (lag variables) from the model as instrument variables, which might be used to control for endogeneity.

Considering the above mentioned panel data, here the GMM process will be. First, differencing to eliminate the unobserved heterogeneity and then the lags included will be instrumental variables for the differenced lagged dependent variable. To summarize, the GMM estimator is used to avoid possible heteroskedasticity, serial correlation³ and nonlinearities.

However, one of the disadvantages of using the GMM is that only consistency is guaranteed, not unbiased like in the OLS. Because in the GMM we can add more moment conditions that do not add much information, meaning that small sample size will be a problem to apply the GMM. In the next section the reader will find the data description to do the empirical analysis.

4. Data Description

In this thesis, I use two data sets providing information on Latin American Countries, the World Development and Doing Business Indicators. According to this data, I build an annual unbalanced panel data over the period 2005-2012 for Latin American Countries. The World Development Indicators were obtained from the World Data Bank and the Doing Business Indicators from the Doing Business Project generated by the World Bank Group.

The World Development Indicators (WDI) are obtained from international sources and they consider national, regional and global estimates. While the Doing Business Project was recently created in 2002 with the idea of providing different measures of business regulations and their enforcement (189 economies are included). It considers domestic small and medium-size companies and how these measures are applied to them. In most of the case, the largest business city is considered in each country, except for (Bangladesh, Brazil, China, India, Indonesia, Japan, Mexico, Nigeria, Pakistan, the

³ In panel data, the original time-varying errors are serially uncorrelated, after the differencing process errors have serial correlation. However, the GMM allow us to work under serial correlation.

Russian Federation and the United States) countries that have a population bigger than 100 million in 2013. For these countries, the second largest business city is also included (population-weighted average). The main goal of this data is to promote economies to use more efficient regulations.

In this section, the reader will observe a detail description of the variables used in the model. I will use the *GDP per capita* as dependent variable and the rest of the variables as explanatory variables. These last are divided in six categories: *Trade Openness measures*, *Physical and Human Capital Proxies*, *Macroeconomic features*, *Labor Market Flexibility Indicator*, and *Interaction Term between Labor Indicator and Trade Openness Volume*.

The dependent variable, state *GDP per capita*, was obtained from World Bank national accounts data, and OECD National Accounts data files. The series are expressed in constant currency (2005 U.S. dollars). The measure of *Trade Openness* which is one of the variables of interest is divided in two groups: *Trade Volume and Trade Restrictions*. *Trade Volume* variable is the sum of import and exports over GDP and it was obtained from World Bank national accounts data, and OECD National Accounts data files. On the other hand, *Trade Restrictions* are: time to export and time to import both of them obtained from World Bank, Doing Business project. Time to export/import is the time necessary in calendar days required to export/import goods. From the moment the action of trade is initiated until it is completed (the time will be affected for legal procedure, additional costs and so on). These variables assume not wasting time and procedures without delay, for instance time during unloading of the cargo.

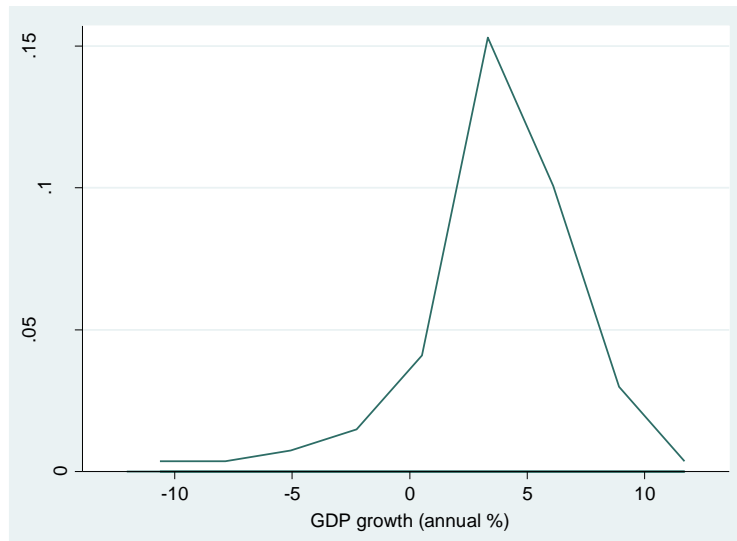
On the other hand, *Physical Capital* is divided in two groups: the *Public Investment* which will be represented by the general government final consumption expenditure (% of GDP) and the *Private Investment* will be gross fixed capital formation, private sector (% of GDP). The public investment includes all government current expenditures in goods and services such as national defense and security excluding government military expenditures while private investment consider all gross outlays by the private industry even though private nonprofit agencies. Both variables are obtained from World Bank national accounts data, and OECD National Accounts data files.

Moreover, School enrollment, secondary (% gross) will be used as a proxy for *Human Capital* variable. This variable is the ratio of total enrollment in secondary level regardless of age. This category requires the successful of basic education that began at the primary level. The data was obtained from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics. In addition to that, considering *Macroeconomic features* the model will include change in active population by taking into account total labor force growth, this variable include people ages 15 and older, people employed and unemployed. The data is obtained from the International Labour Organization, using World Bank population estimates.

In this dissertation, I will use as proxy of *Labor Market Flexibility* an indicator related to redundancy rules. This indicator will tell us if there are restrictions before an employer can consider a worker redundant. It will be a dummy variable which will take the value of 1 for employers who can consider a worker redundant without problem and 0 otherwise. Annex A1 presents a complete description of each variable used.

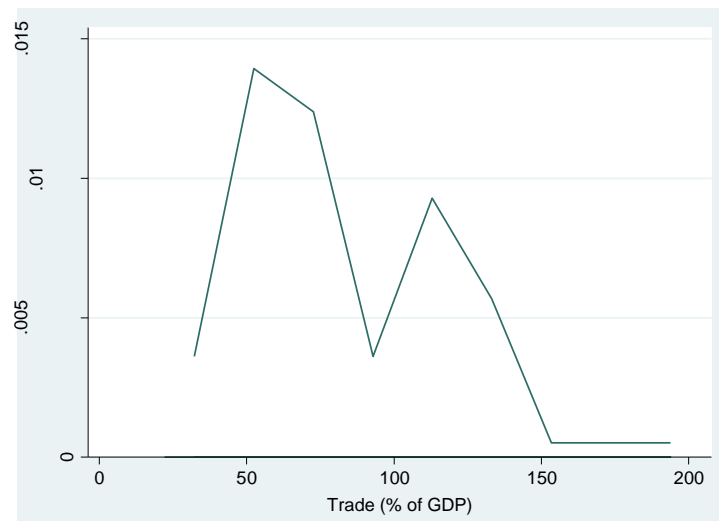
Considering the above data description, for the empirical analysis and trying to determine the relationship between trade openness and economic growth given the degree of labor market flexibility, I will finally work with an unbalanced panel data for 14 Latin American countries over the period 2005-2012. They are: Antigua and Barbuda, Belize, Bolivia, Brazil, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Paraguay, Peru, and Uruguay, the rest of the countries were excluded due to lack of information.

By using the above mentioned sample, here, the reader will find a brief descriptive statistic about some economic indicators of these countries. For instance, on average the degree of trade openness volume for Latin American Countries ranges between 40% and 80%. It can also be observed the existence of big differences in the level of trade openness between LAC. On the other hand, the average GDP for LAC is about 3.7%. Graph1 and 2 support the statement.



Source: World Data Bank

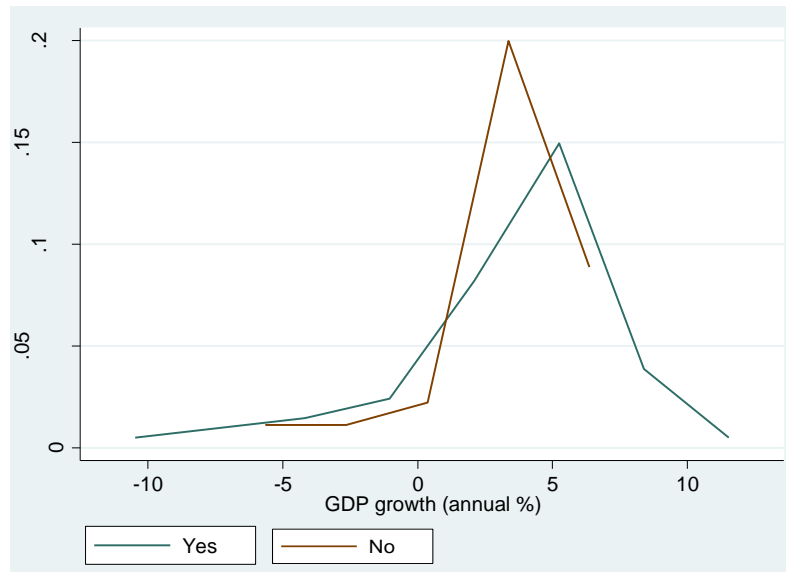
Figure1: Density function of GDP growth (annual %) for Latin American Countries over the period 2005-2012



Source: World Data Bank

Figure2: Density function of Trade share (% of GDP) for Latin American Countries over the period 2005-2012

By taking into account a labor market flexibility indicator related to redundancy rules “Is legal to terminate the employment contract of a worker due to redundancy rules”. In countries where the labor laws allow employers to fire workers due to redundancy rules the economic growth ranges between 1% and 8% while for the rest of countries the range is lower between 2% and 5%. On average the growth rate for LAC under a framework of this restriction is lower than without it (3.6 % and 3.8% respectively). One possible reason behind this, it is the ability of flowing of resources to the most productive sectors (Bolaky and Freund, 2004) See Graph3.



Source: World Data Bank

Figure3: Density function of GDP growth (annual %) for LAC according to redundancy rules (Is it legal for an employer to terminate the employment contract of a worker due to redundancy rules?) over the period 2005-2012.

According to the above statements, it seems that a complementary policy related to labor market flexibility may affect the impact of trade openness on economic growth. In the next section, the reader will find an empirical analysis about the relationship between trade openness and economic growth given the degree of labor market flexibility for Latin American Countries.

5. Empirical Analysis

The Impact of Trade on Economic Growth

Estimation results based on the system GMM estimates of Eq. (1) are presented in Table 1. Since the level of strength in the relationship between trade openness and economic growth may depend on the data used cross section or panel data. (Harrison, 1996). The empirical analysis was made by using the data as it will be dealing with a pooled data and a panel data.

Column 1 shows the results of the OLS estimation, here we observe that trade openness volume has a negative and significant impact on economic growth for LAC. However, since the interaction term between labor market flexibility indicator and trade openness volume was included in the equation the negative sign of the coefficient of trade openness volume (-0.58) should not be interpreted as a pure effect of trade on economic growth. Here, LAC where the labor law allows employers to fire workers due to redundancy rules get a more negative impact of trade on economic growth (-0.58-0.32). However, the impact is not statistically significant. On the other hand, if we consider trade restrictions variables we observe that an increase of one percent in the time required to import may decrease the economic growth about 0.7%. Other variables, such as public and private investment, education enrollment and labor force growth were included to improve the robustness of results. We observe a positive and significant relationship between private investment, human capital and economic growth. However, according to the related literature mentioned in section 2 and by using Hausman test, the OLS estimation results should be interpreted with caution due to an endogeneity problem generated by simultaneity between trade openness volume and GDP per capita, which implies that the coefficients of this estimation will be biased.

Column 2 shows the results of GMM estimation as it will be dealing with a pooled data. Here again, we observe a negative and significant impact of trade volume on economic growth for LAC. But now the coefficient of the interaction term between trade openness volume and labor market indicator becomes positive (0.32), which implies that complementary policies such as labor flexibility may reduce the negative impact of trade openness volume on economic growth (-1.50+0.32). In other words, since I am doing the GMM estimation as it will be dealing with a pooled data. It may be inferred

that the degree of labor market flexibility might decrease the negative effect of trade on economic growth in the short run. However, these results are not statistically significant. Other variables such as private investment and human capital are positive and statistically significant related to economic growth. For instance, an increase of one percent in the secondary school enrollment will generate an increase of 1.23% on economic growth. During the analysis, population density⁴ was used to control for endogeneity.

Table1

Table1-Impact of Trade Openness on Economic Growth for Latin American Countries by taking into account Labor Market Flexibility of each country (GMM estimator, 14 Latin American Countries; 2005-2012) Dependent Variable: GDP per capita			
Ln y_{it} , per capita income (constant 2005 USD)			
Independent variables	(1)OLS	(2) GMM	(3)GMM*
<i>Lntradeopenessvolume_{it}</i>	-0.5772* 0.3205	-1.4964** 0.7361	0.0804** 0.0359
<i>Lntimetoexport_{it}</i>	0.0691 0.4024	0.4022 0.5047	-0.0300 0.0198
<i>Lntimetoimport_{it}</i>	-0.7090** 0.2971	-0.8874** 0.3196	-0.0092 0.0344
<i>Lnprivateinvestment_{it}</i>	0.57178** 0.1688	0.5423*** 0.1376	0.0157 0.0147
<i>Lnpublicinvestment_{it}</i>	0.30727 0.46117	0.7525 0.6042	-0.1888** 0.0662
<i>Lnhumancapital_{it}</i>	1.2083** 0.4684	1.2342** 0.4421	-0.0764 0.1534
<i>Lnlaborgrowth_{it}</i>	-0.0201 0.1091	0.0313 0.1029	0.0078 0.0100
<i>Redundacyrules_{it} **</i>	1.5592 1.6910	-1.2299 2.6113	-0.1965** 0.0663
<i>Lntradeopenessvolume_{it}</i> * <i>Redundacyrules_{it}</i>	-0.3201 0.38412	0.3230 0.6118	0.0366** 0.0131
<i>Coefficient</i>	4.6911** 1.9954	7.3088** 2.8895	1.9646** 0.8217
<i>N. Observations</i>	69	69	50
<i>R2</i>	61%	56%	
Sargan test, p-level			0.57

* **Notes:** Robust standard errors in parentheses. Column 3 shows the GMM estimation considering an unbalanced panel data over the period 2005-2012, where lags of trade openness volume were included as instrument variables to control for endogeneity. (* p<.1; ** p<.05; *** p<.001). During the analysis, to examine the validity of the instruments the Sargan test was used.

** Is legal to terminate the employment contract of a worker due to redundancy rules?

⁴ Annex 2 shows a table related to the validity of the instrument.

On the other hand, considering the Eq. (1) and using an unbalanced panel data over the period 2005-2012 described in the previous section, Column3 shows the results of GMM estimation. Here, one of the most important results is that the pure effect of trade openness volume is positive and statistically significant related to economic growth (0.08), which suggests that the negative effect of trade openness volume on economic growth for LAC might become positive in a longer time period analysis. Moreover, I find the interaction term between trade openness volume and labor market flexibility indicator to be positive and statistically significant associated to economic growth, meaning that an increase of one percent of trade openness volume for LAC where it is legal to terminate the employment contract of a worker due to redundancy rules will generate an increase of 0.11 % (0.08%+0.03%) on economic growth under a longer time period framework. These findings suggest that reforms related to labor market such as redundancy rules have both direct and indirect benefits, making countries to take greater advantage of trade openness, supporting some empirical studies (Bolaky and Freund (2004), and Chang, Kaltani, Norman V. Loayza, (2009)). In other words, in the long run LAC that increase the degree of trade openness with complementary policies such as more labor market flexibility are able to enjoy greater benefits from trade than LAC where it is forbidden to terminate the employment contract of a worker due to redundancy rules. Trade restrictions such as time required to export and to import have a negative effect on economic growth but not statistically significant. Other variables such as private investment and labor force growth are still positive related to economic growth for LAC but their relationship becomes weaker and in some cases not statistically significant.

According to Column3, both the strength and direction of relationship between trade openness volume and economic growth is conditioned to the degree of labor market flexibility. Here, we observe that in the long run LAC that introduces more trade openness together with complementary labor policies such as less difficulty to terminate the employment contract of a worker due to redundancy rules are able to overcome the negative effect of trade on economic growth observed in the short run. One possible explanation for this, it is that trade openness in LAC where employers can terminate the employment contract due to redundancy rules such as Honduras, Mexico, Paraguay and

Brazil can adapt the kind of employees to changing environments observed in international markets, making them able to enjoy benefits from trade in the long run.

6. Conclusions and Recommendations

In this study the relationship between trade openness and economic growth for Latin American Countries by taking into account the Labor market flexibility of each country is investigated. For this purpose, I run several non-linear growth regressions, relying on the system GMM estimator. Econometric results show that in LAC growth effect of trade openness is conditioned by the degree of labor market flexibility under a long time framework. Trade openness encourages the growth of LAC where there is less rigidity in the labor market related to redundancy rules, therefore contributing to more flexible labor market policies make LAC to enjoy greater benefits from trade openness. All else equal, empirical results show that trade openness volume is likely to benefit more LAC where it is legal to terminate the employment contract of a worker due to redundancy than those where it is forbidden.

According to these findings the decision to open their economy is not enough as a tool to promote economic growth in LAC. Complementary policies such as labor market flexibility are required to enjoy greater benefits from trade openness. In other words, both trade openness and labor market policies should be considered to promote benefits from trade.

The present research shows that while trade openness may potentially reduce growth in the short run; it is likely to boost growth for LAC in the long run and this positive effect can increase under a framework of complementary labor policies that allow employers to fire workers due to redundancy rules. These findings have serious policy implications considering the rapid trade liberalization observed in the LAC region during the last decades. Thus the present thesis provides evidence in favor of trade openness and complementary labor reforms to promote economic growth for Latin American Countries, contributing to the debate about the gains from trade openness in developing countries.

On the other hand, as discussed in previous sections, the empirical evidence about the impact of trade openness on economic growth is not conclusive, failing to reveal

undisputed beneficial effect, which contributes to a lively academic and political debate about whether trade liberalization is good or not for developing countries. In this sense, the present analysis can be improved by using a longer time period, incorporating other proxy's variables of trade openness based on tariffs and non-tariff Barriers, and including a better proxy of human capital such as net school enrollment in the tertiary level which will help to inspect robustness of results. Other labor market indicators such as doing business are required in the analysis to inspect for trade benefits on growth considering labor market policies, which were not included due to the lack of information. This suggests the importance of future researches that develop better and more unified proxies of labor market behavior, contributing to the ongoing debate about trade benefits for developing countries.

7. Annexs

Annex1

Indicator Name	Definition
GDP per capita (2005 U.S. dollars).	“GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2005 U.S. dollars.”
Trade Measures	
Trade (% of GDP)	“Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.”
Time to export /import(days)	<p>“Time to export is the time necessary to comply with all procedures required to export goods. Time is recorded in calendar days. The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost, the fastest legal procedure is chosen. It is assumed that neither the exporter nor the importer wastes time and that each commits to completing each remaining procedure without delay. Procedures that can be completed in parallel are measured as simultaneous. The waiting time between procedures--for example, during unloading of the cargo--is included in the measure.”</p> <p>“Time to import is the time necessary to comply with all procedures required to import goods. Time is recorded in calendar days. The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost, the fastest legal procedure is chosen. It is assumed that neither the exporter nor the importer wastes time and that each commits to completing each remaining procedure without delay. Procedures that can be completed in parallel are measured as simultaneous. The waiting time between procedures--for example, during unloading of the cargo--is included in the measure.”</p>

Physical and Human Capital	
Gross fixed capital formation, private sector (% of GDP)	“Private investment covers gross outlays by the private sector (including private nonprofit agencies) on additions to its fixed domestic assets”.
General government final consumption expenditure (% of GDP)	“General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation.”
School enrollment, secondary (% net)	“Net enrollment rate is the ratio of children of official school age who are enrolled in school to the population of the corresponding official school age. Primary education provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.”
Macroeconomic and Geographical Features	
Labor force participation rate, total	“Total labor force comprises people ages 15 and older who meet the International Labour Organization definition of the economically active population: all people who supply labor for the production of goods and services during a specified period. It includes both the employed and the unemployed. While national practices vary in the treatment of such groups as the armed forces and seasonal or part-time workers, in general the labor force includes the armed forces, the unemployed, and first-time job-seekers (...).”
Population density	“Population density is midyear population divided by land area in square kilometers. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. Land area is a country's total area, (...).”

Source: World Development Indicators -World Data Bank

Labor Market Flexibility Indicators
<i>Redundancy rules:</i> “Is it legal for an employer to terminate the employment contract of a worker on the basis of redundancy?”

Source: Doing Business Project -World Bank Group.

Annex2

First-Stage regression*					
Variable	R-sq	Adjusted R-sq	Partial R-sq	Robust F(1,59)	Prob> F
Tradeopennessvolume	0.822 1	0.795	0.1643	10.4909	0.002

*Results suggest that is a valid instrument

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