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The International Crisis and Latin America: Growth Effects and Development Strategies

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Contents

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Abstract

Latin America has been strongly affected by the international crisis and recession since late 2008. In comparison to historical experience, how has Latin America coped with the global crisis, which has been the role of different transmission mechanisms, and how have the region's structural and policy conditions affected its sensitivity to foreign shocks? Moreover, what policies can protect the region better from world crises and shocks, and to which extent should it rely on a strategy of close trade and financial integration into a world economy punctuated by shocks and crises? This paper addresses the latter questions in three steps. First, by assessing empirically the sensitivity of growth in the region's seven major economies during 1990-2009 to large number of structural and cyclical factors, based on high-frequency panel-data estimations. Second, by using the latter results to decompose the amplitude of GDP reductions in both recessions according to the individual and combined contribution of the different growth factors. Third, to derive the main implications of the results for the choice of macroeconomic regimes and development strategies.

1. Introduction[1]

The international economy is recovering from the worst financial crisis since the 1930s. While the origin of the crisis was at the heart of the world's financial centers, the transmission mechanisms of the crisis have been different among regions and countries. The financial crisis in major industrial economies was only halted by massive financial support and rescue programs implemented, while the free fall of demand, output, and employment was only reversed by the combination of large-scale financial intervention and the most aggressive macroeconomic expansion recorded in history. All other economies where financial systems were not in crisis – industrial and developing alike – suffered from international contagion from the financial centers' crisis and the industrial world's recession through conventional financial and trade transmission channels.

This global financial crisis has raised concerns in developing economies about their macroeconomic policy frameworks and their development strategies. Among the questions raised by the crisis are: which policies can protect them best from world crises and shocks?, what role does domestic demand play in shielding them from crises?, and to which extent should they rely on a strategy of close trade and financial integration into a world economy punctuated by shocks and crises?

Latin America has been strongly affected by the international crisis and recession since late 2008. In comparison to previous crises, how has Latin America coped with the global crisis, which has been the role of different transmission mechanisms, and how have the regions structural conditions affected the region's sensitivity to foreign shocks?

This paper addresses the latter issues by assessing the performance of growth in Latin America's seven major economies during 1990-2009, using high-frequency panel-data estimations. The growth model (which encompasses long-term structural and short-term cyclical and policy determinants of growth) identifies the main channels of transmission of foreign shocks (trade and financial, quantity and price channels) and possible interactions between foreign shocks and domestic structural conditions (including measures of external trade and financial openness), and allowing for structural changes observed within the sample period.

[1] The authors wish to thank Mona Haddad, Sebastian Sáez, Luis Ernesto Derbez, and conference participants for very useful comments and discussion. We also thank Ricardo González for outstanding research assistance.

Then the estimation results are used to decompose growth into long-term and cyclical determinants to explain the amplitude of GDP decline during the 1998-99 Asian crisis and the 2008-09 global crisis. This allows to quantify and identify: (i) the differences in unconditional and conditional effects of the global crisis for LAC between both crises, (ii) the role of structural and policy variables that have improved the region's resilience to foreign shocks and crises, and (iii) the main implications for the evaluation of the dominant development strategy adopted by the region since the 1990s.

Section 2 of the paper describes the growth performance of Latin America during 1990-2009 and justifies the focus on the two regional recessions: the 1998-99 recession associated to the Asian crisis and the 2008-09 recession caused by the global financial crisis. Section 3 discusses the growth model and the choice of short and long-term growth factors and their relation to previous literature. Section 4 reports and discusses panel-data estimation results for the region's growth performance. Section 5 uses the latter results to decompose the amplitude of both recessions, comparing the very different roles of external and domestic growth factors in both recessions. Section 6 draws the implications of the previous results for the choice of policy regimes and development strategies in support of the region's growth and resilience to foreign shocks and crises. Final remarks close the paper.

2. Latin America's growth performance

This study focuses on Latin America's seven largest economies – Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela – that account jointly for 91% of Latin America's 2008 GDP. The time sample spans the quarters ranging from 1990q1 through 2009q4. The main variable of interest is the countries' annualized quarterly growth rate of seasonally-adjusted real GDP. GDP data are from National Accounts and follow standard conventions and are seasonally adjusted.

Figure 1 and 2A-2C depict quarterly GDP growth rates for the region and the seven individual countries, respectively.[2] Figure 1 reflects 4 periods of at least two consecutive quarters of negative average growth in the seven countries that represent the LAC region in our study: 1998q3 – 1992q2, 2001q3 – 2002q1, 2002q4 – 2003q1, and 2008q4 – 2009q1. The first episode is linked to the 1997-1998 Asian crisis and the last to the 2008-2009 global financial crisis and world recession. The second and third episodes reflect two very deep but

[2] Seasonally-adjusted GDP data are from official national sources. The full database used in this paper is available upon request.

idiosyncratic recessions in Argentina and Venezuela, more clearly visible in Figures 2A and 2C. The two latter episodes were not caused by international but by domestic factors (a deep and generalized crisis in Argentina and a temporary collapse of oil production in Venezuela associated to a strike in the sector), with almost no consequences for other countries in the region. In contrast to the two latter country-specific episodes, 5 of the 7 countries suffered a recession during the 1998-99 regional contraction, and all 7 countries suffered a recession during the 2008-09 contraction. Hence we focus in this study on the two latter recessions only.

Now let's turn to date the precise extension of the recession. One possibility is to stick to the two windows of consecutive negative growth of the aggregate growth, depicted in Figure 1. However, this aggregate regional growth behavior may mask significant country heterogeneity that does not show in the regional average. Therefore we exploit the full panel-data sample to test for recessions combining alternative recession windows for the 1998-99 recession with different windows for the 2008-09 recession, using panel-data estimations.[3] We find that the best results are those for the four-quarter window spanning 1998q3 – 1999q2 (Asian Crisis) and the two-quarter window 2008q4 – 2009q1 (global financial crisis). The latter results are identical to the recession periods for aggregate LAC GDP, depicted in Figure 1.

However, for the purpose of the final choice of contraction periods relevant for our growth decomposition analysis performed below, we also consider the behavior of output gaps around recessions (Figure 3).[4] The average output gap in LAC during the first recession period declines precisely during the 4-quarter window that was selected above, i.e., in 1998q3-1999q2. The output gap starts to close in 1999q3, i.e., actual GDP growth exceeds estimated trend growth since the latter quarter. However, after the second recession period the output gap continues to widen in 2009q2 and 2009q3, reflecting a weak growth recovery in the aftermath of the global financial crisis. This takes us to extend the contraction period relevant for our 1998-99 growth decomposition by one quarter, to obtain a three-quarter recession period. Accordingly, we have identified 1998q3-1999q2 (4 quarters) and 2008q4-2009q2 (3 quarters) as the recession periods in this study.

For the empirical analysis carried out below, the dependent variable is the annualized quarter-to-quarter rate of growth of seasonally-adjusted real GDP. The sources of our

[3] Results are not reported here but available on request.

[4] In order to construct output gaps for each country, we use 2010-2014 GDP projections from Consensus Forecast. Then we use the 1990-2014 quarterly country time series for past and projected future GDP levels to estimate trend GDP series based on the Baxter-King filtering method. The output gap is defined as the percentage deviation of actual (or projected future) GDP from trend GDP.

dependent and all other independent variables are national sources, ,the International Monetary Fund's International Financial Statistics, the Inter-American Development Bank's Latin Macro Watch, and the World Bank's World Development Indicators. We refer the reader to Table 1 for a brief description of data sources and construction for the variables used in this paper.

3. Growth Model

The literature on long-term growth is very wide on both theoretical and empirical sides. While theoretical studies usually analyze the role of a key growth determinants in isolation, the empirical literature takes a wider view, considering several structural and policy growth factors. Our approach is to encompass the largest possible set of structural, institutional, policy, and cyclical determinants of short and long-term growth, anchored in theory and international evidence. Next we describe the variables selected for our growth specification and their relation to previous research and empirical findings. We group our variables in five major sets.

20 years of empirical cross-country growth models have identified a large array of structural and policy variables that potentially matter for long-term growth – see, among others, Barro (1991), King and Levine (1993), Easterly and Rebelo (1993), Easterly, Loayza, and Montiel (1997), Levine, Loayza, and Beck (2000), Dollar and Kraay (2002), Calderón, Fajnzylber and Loayza (2004), Barro and Sala-i-Martin (2004), and Calderón, Loayza and Schmidt-Hebbel (2006). From the latter studies we have identified five potentially important drivers of long-term growth. The first is a measure of domestic financial depth. We follow Levine, Loayza, and Beck (2000), among others, in using the ratio of private domestic credit supplied by private financial institutions to GDP as a proxy of financial depth. A deep and efficient capital market promotes long-run growth since it allows for better risk diversification by trading, pooling, and hedging financial instruments. A deep capital market is more likely to channel resources to profitable investment projects, as well as to reduce moral hazard and adverse selection problems that lead to inefficient resource allocation.[5] Next we include secondary school enrollment as a proxy for schooling and human capital investment, as by Barro (1991)

[5] See Levine (2004) for a survey of theoretical foundations and firm-level, industry-level, and cross-country empirical evidence pointing to the positive effect of financial development on long-term economic growth.

and Mankiw, Romer, and Weil (1992), among others. In the endogenous growth literature, the effects of human capital accumulation could counteract diminishing returns to physical capital, raising long-run growth. Furthermore, education and human capital supports technological innovation and eases technological adoption (see Borensztein, De Gregorio and Lee, 1995).[6]

Our third long-run growth variable is inflation as a measure of monetary stability and credibility, like in Easterly, Loayza, and Montiel (1997), among many others. A sound monetary policy contributes, through low and predictable inflation, to a stable macroeconomic environment, which is beneficial for growth since it reduces uncertainty and hence encourages financial intermediation, efficient investment, and innovation. Next we introduce the fiscal balance ratio to GDP as a measure of fiscal soundness, sustainability, and credibility. A strong and sound fiscal framework is likely to promote growth by contributing to macroeconomic stability, too. Our final long-run growth factor is a measure of political certainty reflected by country risk. The latter index is an aggregate of institutional and political features – including political leadership, domestic and external conflict, government corruption, political tensions and terrorism – that impinge on growth through physical and human capital investment, as well as through productivity gains.

Our next set is comprised by structural growth determinants that reflect development strategies vis-à-vis globalization and international integration. We start with two measures of international openness or global integration. Financial openness – proxied by the ratio of external assets and liabilities to GDP – is likely to spur economic growth because it may lower the cost of capital (therefore raising domestic investment) and increase international portfolio diversification (hence stabilizing aggregate demand and output, raising investment and innovation through higher macroeconomic stability). Trade openness raises growth since trade liberalization promotes resource allocation towards more productive sectors and firms, raising productivity. More trade is also likely to contribute to better diffusion of technical and organizational innovation through the interaction with foreign markets and firms.

Now we turn to three structural variables related to a country's external strength and resilience to foreign shocks, which are usually absent from the traditional literature on cross-country growth empirics. One is a measure of a country's external strength: its net external position reflected by the sum of foreign assets and liabilities as a ratio to GDP. A stronger net

[6] Recent literature has stressed the role of the quality of education as opposed to years of schooling a (i.e., Hanushek and Wößmann, 2008) as a long-term growth determinant. Once quality of education is considered (proxied by student test scores in literature, science or math), years of schooling is no longer a relevant growth determinant. However lack of systematic data for LAC on education quality leaves us no choice other than using educational attainment data.

asset position reduces the likelihood of a domestic financial crisis when adverse foreign shocks hit, lessening the likelihood of deep output losses. The second variable is a measure of a country's gross external liquidity position (a particular component of net foreign assets): the ratio of gross official reserves to GDP. A higher level of foreign liquidity provides a cushion against drops in capital inflows (IMF 2009a), limiting the real effects of sudden stops and thus reducing the likelihood of deep recessions. Our final structural growth determinant is the exchange rate regime, a dummy variable which takes a value of 1 if a country has a flexible exchange-rate regime in place and zero otherwise.[7] [8] Exchange-rate flexibility provides a crucial shock absorber in the form of nominal (and real) exchange-rate adjustment when foreign shocks hit. Moreover, exchange-rate flexibility is the foundation for conducting expansionary counter-cyclical monetary policy when adverse foreign shocks hit, complementing the market-induced exchange-rate depreciation. This lessens macroeconomic volatility and, again, the likelihood of deep and protracted recessions. By contrast, countries under non-flexible exchange rate scheme (fixed or crawling pegs and exchange-rate bands) are prone to speculative attacks. Central banks attempt to defend against such attacks by using foreign reserves and adopting contractive monetary policies, deepening domestic recessions.

Latin America records major improvements in net external balance sheets, foreign reserve levels, and non-reserve gross asset holdings during the 2000s (IADB 2008, IMF 2009b, Ocampo 2009, World Bank 2009, Jara, Moreno and Tovar, 2009). Latin America made good use of very favorable terms of trade and large capital inflows during 2003-2007. At the same time, many LAC countries have adopted flexible exchange-rate regimes since 1998-2000. The latter improvement in foreign positions and exchange-rate regimes implies a quantum shift from policy regimes and foreign positions that were in place in the region's past experience, like when the Asian crisis hit. The literature on the short-term and cyclical behavior of aggregate output (or the output gap) is very wide, particularly on the empirical side. Every short-term macroeconomic model – including the DSGE models used in short-term macroeconomic analysis and projections – includes a macroeconomic equation for short-term output, determined by supply and/or demand factors, including external conditions

[7] Foreign reserves are unnecessary under a clean float and complete financial markets. Yet this textbook case is of little empirical relevance in a world punctuated by liquidity and solvency crises, sudden stops in the supply of foreign capital, and current account reversals. Hence countries may adopt a dirty float while at the same time they build up gross international reserves. Both price and quantity instruments are used as buffers to lessen the prospects of crises or, when they hit, to actively make use of them to cushion its effects. Therefore we include both the flexible exchange-rate regime and the level of international reserves as potential growth determinants.

[8] We use the IMF de facto classification of exchange rate regimes. Flexible exchange rate regimes allow for exchange-rate interventions or dirty floats. However, we consider two country departures from the IMF's classification, described in Table 1.

and domestic policy variables. By including short-term or cyclical growth determinants in our growth model for high-frequency (quarterly) data, omission bias is avoided. An additional reason for including short-term factors is that cyclical shocks and stabilization policies may not only affect cyclical fluctuations but also long-run growth. Fatás (2000a and 2000b) argues cyclical and trend growth are interrelated processes.

Recent work has focused on the nature of the financial and trade shocks faced by LAC and other emerging-economy regions, as well as their policy response to the global financial crisis and the 2008-09 world recession, including Österholm and Zettelmeyer (2007), Caruana (2009), Jara, Moreno and Tovar (2009), IADB (2009a), IADB (2009b), IMF (2009a), IMF (2009b), Ocampo (2009), World Bank (2009), and Soto (2010). IMF (2009c) shows evidence that links financial crises to deep recessions that lead to persistent medium GDP.

Our third set of growth determinants are five foreign cyclical variables that embody the transmission of foreign trade and financial shocks, considering both price and quantity shocks. All are defined in a way such that they are exogenous to countries in general and domestic growth in particular. On the trade side we include the growth rates of the terms of trade (a conventional factor in cross-country growth regressions), of GDP of trading partners (the weighted real GDP growth of countries engaged in trade with any given country), and of aggregate world exports. The price variable is a conventional regressor found in many cross-country growth studies while the two quantity variables are infrequently used as growth determinants. However, we think that quantum drivers of external demand for domestic exports are potentially important determinants of cyclical growth. On the financial side we include a quantity and a price variable, which are also not found in long-term growth studies but sometimes in short-term projection models. The quantity variable is aggregate capital inflows to Latin America: higher inflows are likely to lead to higher short-term growth as foreign credit is eased and financial constraints on investment projects and durable consumption expenditures are lifted.[9] The price variable is sovereign debt spreads: when sovereign premiums rise, the cost of external financing increases, contracting domestic investment and growth.

Our fourth set of growth determinants is comprised by two domestic macroeconomic policy variables, which play an important role in short-term macroeconomic models. Our fiscal policy measure is the ratio of government consumption to GDP). The latter variable is typically used as a proxy of government burden, affecting negatively growth because of the distorting effects of government taxes. This negative effect turns up in many empirical long-

[9] We use aggregate capital inflows to the region because capital inflows to individual countries are potentially endogenous to country growth.

term growth models (e.g., Barro 1991, among may others). However, since we use high-frequency data, government consumption can also capture a positive Keynesian aggregate-demand impact on short-term growth. Hence the net empirical impact of government consumption on high-frequency growth is ambiguous.. Our monetary policy variable is the ex-ante short-term real interest rate, defined as the nominal monetary policy rate or short-term interest rate adjusted by a measure of inflation expectations. A higher domestic short-term real interest rate – caused by a hike in the nominal policy rate or a decline in inflation expectations – may raise medium-term real rates through the yield curve and have a negative effect on aggregated demand and short-term output.

Our final set of regressors comprises a selective number of potentially relevant interaction effects between structural variables and foreign cyclical variables. Their inclusion is to take account of possible dampening or exacerbating role played by structural variables when foreign shocks hit, reflecting non-linearities in the behavior of growth. Following previous findings by Calderón, Loayza and Schmidt-Hebbel (2006), we include four interaction effects between foreign shocks and domestic structural variables. The first three interaction effects are between financial or trade openness, on one hand, and trading partners' growth or LAC capital inflows, on the other hand. Their expected effects are a priori ambiguous. We include a fourth interaction, between net external assets and sovereign spreads. We expect the latter interaction to have a negative sign, as a higher level of net foreign assets (a lower level of net foreign liabilities) is likely to reduce the negative effect of higher foreign capital costs on growth.

In sum, our reduced-form model for the short and long-term behavior of growth encompasses 21 potential growth factors grouped into 5 sets of variable categories. This model implies a significant departure from the previous literature by including a large variety and number of growth regressors, and considering both linear and interaction effects. In addition, we will test for within-sample changes in the growth model, allowing for structural changes in coefficient estimates. Our aim is to test for possible changes in growth behavior as a result of policy reforms adopted in LAC in the early 2000s, after the 1998-99 Asian crises and recession. The model specification is presented in the Appendix.

4. Growth Estimation Results for 1990-2009

We estimate our growth model applying the fixed-effects panel-data estimator to an unbalanced set of 462 country-quarter observations. The main regression results are reported in Table 2 in stages, going from simple to more complex specifications. Column (1) presents the results without inclusion of interaction effects and without considering structural changes in coefficients. Column (2) reports the results with interaction effects between foreign cyclical variables and structural variables. Finally, column (3) reports the full results that combine interaction effects and structural changes in coefficients that have been observed since 2000-2003. The first sub-column in (3) reports the coefficients estimated for the full sample period and the second sub-column reports the coefficient changes observed after structural breaks in 2000-2003.[10] Therefore the sum of coefficients in both sub-columns represents the coefficient valid since the variable-specific quarter of structural through the end of the sample period (2009q4).

Estimation results are satisfactory, as reflected by the overall fit of the regressions (we explain two thirds of the variation of high-frequency GDP in a panel sample of shock-prone Latin American countries) and the sign and significance of individual parameter estimates. Most parameter estimates are quite robust to different specifications reported in columns 1-3.

We review briefly our main results. The lagged dependent variable is systematically not significant, which is probably due to the inclusion of a large number of growth determinants.[11]

Long-term growth determinants exhibit correct signs and most are statistically highly significant. Domestic financial depth (proxied by the private credit ratio to GDP), monetary stability (reflected by the negative of inflation), secondary school enrollment, the fiscal balance ratio to GDP (a measure of fiscal soundness and credibility), and political credibility have contributed significantly to GDP growth in LAC during 1990-2009. Most sample

[10] Column (3) reports the final results of a grid search conducted over a large number of results with alternative combinations of different dates of structural change for different variables. The precise quarters at which structural changes in coefficients take place are the following for the corresponding variable (the final date identified after a search over a range of dates is noted in parenthesis): inflation (2000q4), political certainty (2001q1), financial openness (2003q2), trade openness (2000q1), international reserves (2000q1), exchange rate regime (2001q1), sovereign spreads (2000q2), and real interest rate (2002q1). Blank cells in the second sub-column reflect non-significant structural changes, which therefore are not reported.

[11] To control for possible bias stemming from the inclusion of the lagged dependent variable, which could be correlated to the error term, we have run alternative regressions (available on request) where we have instrumented the lagged dependent variables using lags of independent variables. The results, both for the lagged dependent variable and the independent regressors, were unchanged.

countries achieved large improvements in macroeconomic stability over the last two decades. Fiscal adjustment and public sector reforms have been reflected in lower public sector deficit and debt levels, while the adoption of new monetary regimes (in particular, inflation targeting) and more orthodox monetary policies led to lower and more stable levels of inflation. The contribution of macroeconomic stabilization to growth is reflected by the large and significant coefficients of the fiscal balance ratio to GDP and of inflation.

The economic significance of two (out of five) long-term variables – that is, their parameter size – has diminished in the early 2000s. Inflation had a coefficient of -0.28 before 2001, which fell to -0.07 thereafter – a likely result of most Latin American countries achieving lower and more predictable levels of inflation, compared to their high-inflation past in the 1990s and before. For similar reasons, the coefficient associated to political certainty has declined from 0.38 before 2001 to 0.32 afterwards.

In addition to macroeconomic stabilization, LAC policy makers have intensified their countries' integration into the world economy and, in the aftermath of the Asian crisis, at strengthening their net and gross external positions, as well as adopting a more flexible exchange-rate regime. We have grouped the latter variables in our second set of growth determinants, our five structural variables. Both financial and trade openness contribute significantly to growth but their influence has changed in the early 2000s. While the role of financial openness to growth has lessened since 2003, the importance of trade openness has increased since 2000. The countries' net foreign position – reflected by the net external asset ratio to GDP – is either significant on its own (column 1) or in interaction with sovereign spreads (column 2) but is not significant when considering structural changes in the early 2000s(column 3).

Building up foreign liquidity in the form of international reserves has been a policy goal in many countries after the Asian crisis, including those that have adopted dirty floats. International reserves made a large contribution to growth before 2000, when they were relatively scarce (with a coefficient of 0.83), which diminished sharply afterwards when reserves were built up (reflected by a much smaller coefficient of 0.26). The exchange-rate regime dummy for a float is not significant before 2001, when most Latin American economies had non-flexible exchange-rate regimes in place. However, afterwards a flexible exchange-rate regime (encompassing dirty floats like in Peru, clean floats like in Mexico, and alternating dirty-clean floats like in Chile, since 2000) has a significant role in raising growth in the region.

Now let's turn to our third class of growth factors: foreign cyclical variables. We measure the contribution of five external cyclical drivers of short-term growth in open economies. On the trade side, the price variable, i.e., terms-of-trade growth, displays the correct sign but is not a statistically significant GDP growth factor. On the quantity side, trading partners' growth is not robustly significant either, but world export volume growth is a very significant growth determinant. On the financial side, the quantity variable, i.e., aggregate capital inflows to LAC, is a very significant growth factor. Finally, the cost of foreign borrowing, reflected by one of its major components, the sovereign spread, affects growth negatively but its effect is not statistically significant.

Our fourth set of growth factors is comprised by two domestic policy variables. As discussed above, government consumption has a negative effect on long-term growth and a positive expansionary effect on short-term growth. Its positive and very significant sign reported in Table 3 suggests that the latter short-term effect dominates in Latin America. Our second policy variable is the short-term real interest rate, which exhibits a significant negative effect on growth. However, monetary policy is more contractive before 2002 (with a coefficient of -0.33) than afterwards (when its coefficient declines to -0.04). The reduction in the impact of monetary policy on output growth in recent years may reflect the larger financial integration into the world economy attained during the past decade.

Finally we turn to our four interaction effects between structural variables and foreign cyclical variables. The interaction effect on growth between trade openness and trading partners is negative but not robustly significant, while the interaction effect on growth between financial openness and trading partners' growth is negative and not robustly significant. We did not have strong priors about the sign and significance of the latter interaction effects but we note that e estimated coefficient signs and significance levels are exactly opposite to those found for the world economy by Calderón, Loayza, and Schmidt-Hebbel (2006) in long-term growth regressions. Our third interaction is between financial openness and capital inflows ton the region, which is negative and not robustly significant either. Finally, we find evidence for a positive and significant growth effect of the interaction between sovereign spreads and net external assets. As expected, this finding shows that the negative direct effect of higher sovereign spreads is dampened by a larger positive ratio of net foreign assets to GDP and exacerbated by a larger negative ratio.

5. Explaining the Amplitude of the 1998-99 and 2008-09 Recessions

Now we put our regression results to work by using them to explain the amplitude of LAC's GDP growth decline in the aftermath of both crises. To start, we compute the amplitude of the growth reduction in the seven sample countries during both recessions, i.e., the cumulative GDP level reduction (expressed in annualized terms) observed between the peak quarter before the recession (labeled in Figure 4 as quarter 0) and the trough quarter of our selected recession periods (labeled in Figure 4 as quarter 4 or 1999q2 for the first recession and quarter 3 or 2009q2 for the second recession). Table 3 reports the annualized recession amplitude for the seven individual countries and the region at large. The peak-to-through cumulative GDP change ranges from a GDP loss of 8.5% in Venezuela to a GDP gain of 3.4% in Mexico during the four-quarter 1998-99 recession. In contrast to the latter, the full country range is in negative terrain during the three-quarter 2008-09 recession, with cumulative GDP losses that range from 0.9% in Colombia to 11.1% in Mexico.

Simple (weighted) country averages of recession amplitudes for the region stand at -3.0% (-1.2%) for the first recession and -4.2% (-5.2%) for the second recession. By any of the latter measures, it is clear that the second recession was much deeper than the first one. Our next task is to explain a significant part of the observed simple-average recession amplitude, making use of our coefficient estimates and the changes in independent variables (and in coefficient estimates, when applicable), according to our decomposition method, summarized in the Appendix.

The results are reported in Table 4, based on our most comprehensive regression results, those shown in column (3) of Table 2. There we report the recession amplitude decomposition for the Asian crisis (column 1) and for the global financial crisis (column 2). The latter column is divided into three sub-columns: the first is based on changes in explanatory variables only, the second is based on changes in estimated parameters only, and the third is the total contribution which is the sum of the two previous sub-columns.

The amplitude of the first recession is -3.0% (reported in the bottom line of Table 5), of which we explain some 90%, i.e., an annualized output decline of 2.7%. Of the much deeper second recession, with an amplitude of -4.2%, we explain some 95%, i.e., an annualized output decline of 4.1%. Which are the factors driving these results?

Let's start with foreign cyclical variables, which reflect the transmission mechanisms from international crises and recessions to the region. A striking difference emerges between LAC's first and second recessions. On average (across countries and across the five foreign cyclical variables), international conditions improved during the first recession, contributing by 0.5% to higher cumulative growth.[12] The opposite is observed during the recent recession, when international conditions deteriorated on average massively for LAC, contributing by -2.7% to (or more than half of) the recession's amplitude. In 1998-99 three out of five foreign variables improved for LAC. However, in 2008-09 all five cyclical variables deteriorated, and the largest single external driver of the recession was the massive decline in trading partner's growth. Hence the 1998-99 was largely home-made, while the 2008-09 recession was significantly caused by the global financial crisis and world recession.

Now let's turn to long-term growth variables. They deteriorated on average significantly during the first recession, explaining a sizeable -1.7%, which is more than half of the 1998-99 recession's amplitude. In contrast, long-term variables improved on average during the second recession, contributing with 0.8% to higher cumulative growth in 2008-09. Higher private credit flows (relative to GDP) and lower inflation contributed most to positive growth, while the deterioration in fiscal balances (relative to GDP) weakened growth. When considering the reduced inflation coefficient observed since 2002, the growth gain from lower inflation is much smaller in 2008-09. Therefore, combining both changes in variables and coefficients, the contribution of long-term variables to the second recession's amplitude is close to nil.

We come to similar conclusions regarding the very different role of changes in structural variables during both recessions: they deepen the recession in 1998-99 (by -0.6%) while they dampen the recession in 2008-09 (by 0.6%). While our ex-post measures of financial and trade openness decline significantly during the most recent recession, the build-up of international reserves more than offsets the latter. However, once we consider the large changes in coefficients after 2000 (smaller for financial openness, larger for trade openness, and smaller for international reserves), the overall contribution of structural variables to the 2008-09 recession amplitude – combining changes in their values and their estimated parameters – is very negative and equals -1.7%.

Domestic macroeconomic policy played on average a contractive role in 1998-99 and an expansionary role in 2008-09. Fiscal policy was expansionary in both recessions, but much more so in the second experience, when it made a positive contribution by 1.1% to

[12] For simplicity we use the term percent change instead of the more precise percentage-point change throughout this section.

cumulative growth. As opposed to the latter, monetary policy was highly contractive in both recessions (due to higher nominal interest rates in 1998-99, and negative inflation expectations in 2008-09), but much less so in the recent experience. Higher real interest rates deepened the 1998-99 recession by 1.0%, while higher real rates (combined with the decline in the real interest rate absolute coefficient) deepened the 2008-09 recession just by 0.1%.

Finally, the growth effects of interactions between structural conditions and foreign shocks were neutral to the first recession but deepened significantly the second recession, by 0.7%. This is not surprising because the interaction terms largely reflect the amplifying effects of the deterioration in foreign conditions observed in 2008-09 but not in 1998-99.

6. Implications for Policies and Growth Strategies

The evidence presented in this paper on Latin America's performance during its two last crises, 1998-99 and 2008-09, shows striking differences between the very different role played by foreign and domestic growth factors in both recessions. The first (less intense) recession was largely homemade, while the second (more intense) recession was largely due to a deteriorating world economy. The combined effect of foreign cyclical factors was positive for Latin America's growth during the first recession, while all foreign cyclical variables deteriorated sharply during the world financial crisis, explaining more than half of the last recession. In contrast to foreign variables, all domestic variables explain more than 100% of the first recession and less than half of the 2008-09 downturn.

The latter result is due to the large changes in development strategies and policy regimes that Latin America started in the 1990s and deepened in the 2000s. While populist policies have reemerged in some countries, the region's dominant development approach relies on market and private-sector development, strong commitment to global integration, adoption of sustainable macroeconomic and financial regimes, and some reform progress to make governments more effective in their provision of public goods. Next we derive the implications of our empirical findings for evaluating the region's development strategy in three key areas: macroeconomic regimes and policies, domestic financial development, and international integration of goods and financial markets.

Latin America started a major revamping of its macroeconomic policy frameworks in the 1990s, a drive that was consolidated in the 2000s. Fiscal policy had been unsustainable in many countries since the 1970s and through the early 1990s, that led to fiscal crises and hyperinflation. Fiscal orthodoxy replaced profligacy in the 1990s, a trend that was intensified in the 2000s, when a significant part of commodity windfalls was saved. In turn, fiscal policy was used as a counter-cyclical stabilizing tool during the 2008-09 recession.

Fiscal trend deficits were dramatically curtailed or turned into surpluses, and public debt levels were generally reduced to low and sustainable levels. Average public and publicly guaranteed debt fell from 30.1% of GDP in the early 1990s to 14.3% of GDP in the late 2000s (Table 5). A final step toward further strengthening of fiscal frameworks in the region – adopting formal fiscal rules and fiscal councils – is still pending. Chile is the only country that has in place a fiscal rule since 2001.

Our results provide strong evidence on the growth impact of the latter shift in the region's fiscal policy. First, the fiscal balance makes a robust and economically large contribution to growth. Second, government consumption has a significant stabilizing effect on short-term growth. Our growth decomposition shows that the stabilizing role of government consumption was more heavily used during the 2008-09 contraction, when countries had more room for counter-cyclical fiscal policy.

The second regime change in macroeconomic policies was the shift from inflexible toward flexible exchange-rate regimes, largely implemented after the Asian crisis. Either forced by markets or as a result of policymakers' conviction, many countries replaced their crawling pegs or exchange-rate bands by floats, which exceptionally are of the clean type (like in Mexico) and more frequently of the dirty type, i.e., with high-frequency non-announced interventions (like in Brazil or Peru) or low-frequency pre-announced intervention periods (like in Chile). Latin America has reaped three benefits from flexible exchange rates: avoidance of recurring currency crises (that often lead to recessions), use of nominal (and hence real) exchange-rate adjustment as a buffer against adverse foreign shocks (therefore avoiding costly unemployment and output losses), and allowing full conduct of an independent monetary policy.

Flexible exchange rates have not precluded countries from engaging in trend accumulation of international reserves to strengthen their foreign liquidity positions. Drawing lessons from recurring past experience with inflexible exchange-rate regimes and currency crises, Latin America has adopted an eclectic framework that combines exchange-rate flexibility with self-insurance in the form of holding significant levels of international reserves. Our empirical

evidence shows that both a flexible exchange-rate regime and foreign exchange holdings contribute to growth in Latin America. Most revealing is our finding that while reserve holdings had a very large effect and the exchange-rate regime a non-significant effect on growth in the 1990s, the relative importance of both variables was reversed after the shift toward floats. Since 2000-01, the flexible exchange rate regime has a significant and large effect on growth, while the effect of reserve holdings has declined in size albeit not in statistical significance. Moreover, during the 1998-99 recession, central banks sold reserves and therefore contributed to deepen the recession, while in 2008-09 they did the opposite, contributing to higher growth.

The third component of macroeconomic policies is the monetary regime. As noted above, a flexible exchange rate is a necessary condition for exercising an independent monetary policy. Fiscal sustainability and responsibility precludes fiscal dominance over monetary policy, which is a second macroeconomic regime condition for the exercise of an independent and credible monetary policy. Finally, de jure (or, at least, de facto) central bank independence strengthens the conduct of a monetary policy that is independent of direct interference by government or private-sector interests. Adoption of inflation targeting, today's monetary regime of choice among many central banks in the world, requires the three latter conditions to be satisfied. Therefore it is no coincidence that several central banks adopted inflation targeting in Latin America after obtaining legal or de facto independence, after severing their links with government budgets, and during or after their transition toward floating exchange rates. With inflation targeting (and sometimes without it), central banks have made significant progress in adopting a framework of careful and responsible exercise in monetary policy. The success of monetary policy is reflected in low inflation, which has declined in Latin America from an annual average of 34% in the early 1990s to 7% in the last five years (Table 6). Our findings support the conclusion that lower inflation contributes significantly to higher growth.

The gains in monetary policy credibility reaped from low inflation allow gradually central banks to adopt counter-cyclical monetary policies. While central banks were busy defending their inflexible exchange-rates during the 1998-99 recession, they allowed their local currencies to depreciate in 2008-09 and exercised counter-cyclical monetary policies. Our evidence shows that central banks raised nominal (and hence real) interest rates in 1998-99, while they cut nominal interest rates in 2008-09. Although the latter cuts were not sufficient to compensate for a significant decline in inflation expectations, they helped in avoiding excessively high real interest rates. Our evidence shows that growth was significantly curtailed by contractive monetary policy in 1998-99, as opposed to the 2008-09 experience.

The macroeconomic regime shifts that Latin America has implemented in the last decade have contributed to hold aggregate demand growth in check during the last decade, leading to healthy current account balances and significant reduction in public and private net external liabilities. Our findings confirm that the build-up of net external assets has had a significant positive effect on the region's growth performance, either directly or interacting with sovereign debt premiums. Moreover, when the global financial crisis and world recession of 2008-09 hit, Latin America's fiscal and external position was healthy and policy regimes were strong, enabling the region to face very well – compared to 1998-99 or 1981-82 – the severe deterioration in international conditions, adopting effective counter-cyclical policies for the first time in its recorded history.

The second area of significant progress in the region has been in the development of domestic financial and capital markets. During the last decade Latin America's banking sector has developed both in size and diversity of financial services, while improving its health and resilience to domestic and external shocks. Domestic financial deepening (and financial integration) has been facilitated by macroeconomic stability, deregulation of domestic financial activities, privatization of banks, opening up to foreign ownership of banks, privatization of non-financial firms, and reduction of controls on foreign capital flows. Restrained from excessive risk taking by reformed financial regulation and supervision – that reflects the right lessons derived from previous financial crises – the region's banks have avoided exposure to U.S. toxic assets and have generally resisted well the recession of 1998-99. In fact, no financial crises were observed during 1998-99 in a region that HAD suffered Recurring banking crises in the past, when hit by severe foreign shocks and domestic recessions. In our findings, the ratio to GDP of private credit from commercial banks contributes significantly to the region's growth. Moreover, the increase in the latter ratio had a mild stabilizing effect during the 1998-99 recession and a largeR expansionary influence during the 2008-09 recession.

Beyond banking, the region adopted capital-market reforms that boosted the development of private debt and equity markets, insurance markets, and pension funds. Financial and capital-market development is a major and robust growth determinant acting through several channels of transmission on saving and investment, and, fundamentally, on productivity growth, as shown by a long literature (e.g., Levine 2005). Deep pension reforms in many Latin American countries have replaced state-run pay-as-you-go pension systems by defined-contribution systems managed by private companies that invest pension funds both domestically and internationally. The latter systems contribute to financial deepening (and financial opening), improve domestic corporate governance, and raise aggregate efficiency.

Hence structural pension reform can contribute significantly to economic growth, as shown in the Chilean case (Corbo and Schmidt-Hebbel, 2003).

The third key area of the region's development strategy is globalization. Latin America in general has deepened its trade and financial integration with the world economy. During the past two decades, the region has largely dismantled its massive historical barriers to trade in goods, services, and capital flows.

Latin American countries have made much progress in reducing import tariffs, eliminating most non-tariff barriers, and putting in place a large number of multilateral and bilateral preferential trade agreements with major world trading partners. An open trade regime contributes to higher long-term growth by reaping the well-known benefits of improved resource allocation and helps to cushion the negative growth effects of adverse regional shocks (such as the 2008-09 recession in industrial countries) through a regionally more diversified trade pattern. The region's large progress in trade integration is reflected by an increase in its average total trade ratio to GDP from 32% in the early 1990s to 49% in the late 2000s (Table 7). The countries that have progressed most in trade integration are Chile and Mexico – a result of their low general trade barriers and having a dominant share of their foreign trade conducted under preferential trade agreements. According to our findings, higher trade openness has a very significant and large effect on the region's growth performance. The drawback of this positive impact on long-term growth is that during recessions, when trade declines more than domestic output, shrinking trade ratios deepen domestic recessions – this was observed moderately in 1998-99 and massively in 2008-09, according to our results.

Regarding financial integration, Latin America has complemented domestic financial liberalization with external financial opening, reducing restrictions on holdings, inflows and outflows of short and long-term foreign direct investment, loans, and portfolio and equity flows. Restrictions on short-term capital inflows – prevalent in some countries during the 1990s – have been abolished and/or not restarted in most countries. International financial integration leads to larger gross external asset and liability holdings, which contribute to a more efficient allocation of resources and better insurance against national idiosyncratic shocks, and hence to higher growth and lower income and output volatility. The region's progress in financial integration is reflected by a rise of the average total external asset and liability ratio to GDP from 89% in the early 1990s to 114% in the late 2000s (Table 8). We have also found that higher financial openness has a very significant and large effect on the region's growth performance. However, while during the 1998-99 recession the GDP ratio of external asset and liability holdings increased, hence lessening the recession, the opposite

occurred during 2008-09, when the significant decline of the latter ratio (reflecting in part the decline in capital inflows to the region) contributed to deepen the recession.

Despite large progress in applying a coherent and sustainable development strategy, Latin America still faces a large pending agenda to raise growth further and to make faster progress in reducing poverty and improving income distribution. On growth the region's main shortcoming is the low level of productivity and the inadequate rate of productivity growth. There is much room to improve the efficiency and competitiveness of domestic markets and to facilitate the process of creative destruction. Labor markets are excessively regulated in the formal sector, leading to high structural unemployment and informal employment. Another area where the equity and efficiency costs of inadequate public policies are very high is in education, which exhibits very low quality levels. Although much progress has been made regarding school enrollment and educational attainment, Latin American countries still rank very low in international education achievement tests, even when controlling for their per capita income levels. Public education suffers from low budgets, poor incentives, lack of accountability, and barriers to education reforms aimed at improving teaching methods and raising teachers' productivity. Finally, regional growth is hampered by wide-spread government corruption and low efficiency of public administration. Government bureaucrats are largely selected on the basis of party affiliation instead of professional merit, which is reflected not only in low quality of government bureaucracies but also their short tenure, linked to government mandates. Notable exceptions are Brazil and Chile, which have introduced, at least partly, meritocratic hiring of government managers and staff. Hence government reform at all levels – from municipalities to public enterprises and to central governments – is also a major development challenge in the region's quest to attain higher growth and more equity.

7. Final Remarks

We conclude that Latin America has changed significantly between the late 1990s and the 2000s. This paper's empirical results show that the region's growth rate has been raised by putting in place a better and stronger development strategy since the late 1990s. While there is still significant intra-regional heterogeneity in economic regimes and policies, the predominant development strategy is based on the adoption of prudent and rule-based macroeconomic policies, deeper and healthier financial systems and capital markets, and

strong integration into world goods and capital markets. Our results show that improvements in many specific variables associated to these three areas have led to higher average growth.

Moreover, Latin America's resilience to adverse foreign shocks has been greatly improved by adopting the latter development strategy. This paper's results show that the last recessions suffered by the region were very different – in magnitude, the role of foreign shocks, and the contribution of domestic conditions and policies. The 1998-99 recession – of a smaller magnitude – was largely homemade, related to the weak macroeconomic and structural policy framework that Latin America had in place in the 1990s. In contrast, the second recession – much deeper and affecting all major Latin American economies – was largely due to deteriorating conditions in the world economy. . The improved resilience of Latin America to foreign shocks and world recessions is reflected by our results in four ways. First, the success in adopting macroeconomic policy regimes that protect better domestic economies against external shocks (like exchange-rate floats, lower levels of foreign net liabilities, and larger levels of gross international reserves) and strengthen adoption of counter-cyclical policies (like inflation targeting, contributing to lower inflation, and improved fiscal policy frameworks, reflected in lower public debts and deficits). Second, the success in building up deeper and healthier financial systems and capital markets. Third, the attainment of larger trade and financial integration. Finally, the indirect benefits of the latter improvements in reducing the sensitivity of growth to adverse conditions, reflected for example by the post-2000 reduction in the sensitivity of growth (i.e., in growth coefficients) of inflation and political uncertainty, and the increase in the sensitivity of growth to trade openness and exchange-rate floats.

Although much has changed in Latin America in the last two decades, there are still many impediments to achieve higher and sustained growth and better opportunities for the poor. A large reform agenda to improve the region's business environment, labor market regulations, quality of education, and government efficiency has to be tackled to raise Latin America's efficiency and equity levels. Lack of progress in the latter areas could result in frustration with macroeconomic responsibility and structural achievements, creating conditions for further spreading of populist policies that inflicted so much damage to the region in the last fifty years. To make significant progress in these areas requires improving significantly the quality and independence of the public sector, learning from successful experience of countries like Australia, Canada, Finland, New Zealand, or Sweden.

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Appendix

Method of Decomposition of Recession Amplitude

The general specification of our growth model is the following:

$$(1)\quad Y_{i,t} = \rho Y_{i,t-1} + \beta_X 'X_{i,t} + \beta_K 'K_{i,t} + \beta_M 'M_{i,t} + \beta_Z 'Z_{i,t} + \beta_{MZ} 'M_{i,t}Z_{i,t} + \mu_i + \varepsilon_{i,t}$$

where *Y* is a vector of country-quarter growth observations, *X* is a matrix of long-term variables, *K* is a matrix of domestic policy variables, *M* is a matrix of structural variables, *Z* is a matrix of foreign cyclical variables, *MZ* is a matrix of interactions between structural and foreign cyclical variables, *μ* is a vector of individual country effects that reflect unobservable country heterogeneity, ε is a vector of error terms, and *i* and *t* are country and time indexes, respectively. The regression equation also allows for unobserved country-specific effects. We do not consider time-specific effects since they are perfectly correlated with common foreign shocks such as the capital inflows to Latin America and the growth rate of world exports.

We estimate equation (1) using the fixed effects panel-data estimator, which is adequate for panels with a large number of time observations (up to 80 quarters, 1990-2009) and a small number of cross-section units (7 countries). We have controlled for a few extreme events reflected in very large outliers of the dependent variable, associated to massive idiosyncratic shocks, visible in Figures 2A and 2C: Argentina (2001q3-2002q1) and Venezuela (2002q4-2003q2 and 2004q1).

Our model is dynamic as it includes the lagged dependent variable. This may give rise to bias due to potential correlation with the error term. This problem is particularly acute in samples with small numbers of time observations, which is not our case.[13] Moreover, below we refer to alternative regression results based on IV estimation where we have instrumented the lagged dependent variable.

Decomposition of the GDP decline or amplitude of the recession is based on equation (2), as reflected by the following equation:

[13] In fact, Nickell (1981) derives an expression for the bias of the lagged dependent variable when there are no exogenous regressors, showing that the bias approaches zero as the time dimension approaches infinity. Therefore our estimation method should perform well, as it is applied to samples of up to 80 quarterly observations.

$$(2)\quad \Delta Y_{i,t} = \hat{\beta}_X' \Delta X_{i,t} + \hat{\beta}_K' \Delta K_{i,t} + \hat{\beta}_M' \Delta M_{i,t} + \hat{\beta}_Z' \Delta Z_{i,t} + \hat{\beta}_{MZ}' \Delta\left(M_{i,t} Z_{i,t}\right)$$ [14]

Note that when we compare both crises, parameter estimates are allowed to exhibit structural changes in some quarter falling within 2000-03. Let $\hat{\beta}_R^{Asian}$ ($\hat{\beta}_R^{Global}$) be the vector of parameters used in the decomposition for the Asian (global financial) crisis, and let $\hat{\beta}_R^{Change}$ be the estimated coefficient for the structural break, corresponding for the vector of regressors R. For the decomposition of the global financial crisis recession, the relation between the latter takes the following form:

$$\hat{\beta}_R^{Global}{}' \Delta R_{i,t} = \hat{\beta}_R^{Asian}{}' \Delta R_{i,t} + \hat{\beta}_R^{Change}{}' \Delta R_{i,t}$$

In Table 4, in column "Structural Change – NO", we report $\hat{\beta}_R^{Asian}{}' \Delta R_{i,t}$, i.e., the contribution of the corresponding change in regressors during the global financial crisis evaluated at Asian crisis parameter values. In column "Structural Change – Change" we report $\hat{\beta}_R^{Change}{}' \Delta R_{i,t}$ and under the column of "Structural Change – YES" we report $\hat{\beta}_R^{Global}{}' \Delta R_{i,t}$.

[14] Note that the coefficient of the lagged dependent variable is not present in the decomposition. This is because it is not significant. However, this is not an adequate reason to discard that term. The right procedure is to use the parameters obtained from estimating equation (2) imposing the hypothesis of ρ=0. Since, the parameters are virtually the same using both methods, we use the parameters reported in Table 3.

Table 1. Determinants of Growth

Variable	Description	Source
GDP Growth	Quarterly growth rate of GDP in constant prices. Series are seasonally adjusted by official national sources	Official national accounts of each country
Private Credit	Domestic private sector credit (average per quarter) ratio to GDP	IADB
Secondary School Enrollment	Secondary school enrollment, private (percentage of total secondary school enrollment).	WDI
Inflation	$\pi/(1 + \pi)$, where π is the annualized quarterly growth rate of the consumer price index (average per quarter)	IFS
Government Consumption	Government consumptionratio to GDP. Series are seasonally adjusted by official national sources	Official national accounts of each country
Political Certainty	Political risk index (average per quarter)	ICRG
Real Interest Rate	(Nominal interest rate - π)/(1 + π), where the nominal interest rate is the 90-day bank deposit rate (average per quarter, annualized) and π is defined above	IFS
Fiscal Balance	Four-quarter moving average of central government balance ratio to GDP.	IADB, IFS, and National Authorities
Trade Openness	(Exports + imports)/GDP, where the three variables are defined in real terms. Series are seasonally adjusted by official national sources	Official national accounts of each country
Financial Openness	(External Assets + External Liabilities)/GDP where the numerator is expressed in constant domestic currency using the nominal exchange rate (average per quarter) and the GDP deflator (average per quarter).	IFS
International Reserves	Gross international reserves of the monetary system as ratio to GDP	IFS and official national sources
Exchange Rate Regime	IMF classification of exchange rate regimes with two modifications based on market interventions: (i) Argentina's regime is classified as intermediate starting in 2004q3; (ii) Peru's regime is classified as fixed during the 1991q4-2007q4 quarter. Variable takes three alternative values: 0 = float, 1 = intermediate, 2 = fixed.	IMF and national central banks
Growth of Terms of Trade	Quarterly growth rate of the terms of trade index (average per quarter)	IADB
Growth of Trading Partners	Trade-weighted average of quarterly growth rates of trading partners' GDP. Series are seasonally adjusted by official national sources	National Accounts and IFS
Growth of World Exports	Annualized growth rate of quarterly world exports	IFS
Capital Inflows to the Region	Gross capital inflows to the seven Latin American countries (LAC-7) as ratio to LAC-7 GDP. Sum of FDI, portfolio debt and equity inflows, and other investments.	IFS
Sovereign Spreads	EMBI/(1+EMBI) where EMBI is the Emerging Market Bond Index (average per quarter) in absolute terms (as opposed to basis points). Series extended back to early1990s using predicted values of a regression of EMBI on ICRG's Financial Risk Index.	JP Morgan and ICRG

Source: Own elaboration. Notes: IADB: Inter- American Development Bank, ICRG: International Country Risk Guide, IFS: International Financial Statistics, IMF: International Monetary Fund, and WDI: World Development Indicators.

Table 2. Growth Regression Results

Estimation Method: Fixed-effects (within) regression
Dependent Variable: Growth of Real GDP
Time Sample: 1990:1-2009:4 (quarterly frecuency)
Countries: ARG - BRA - CHI -COL -MEX - PER - VEN

	Unbalanced Panel	Unbalanced Panel	Unbalanced Panel **w/ Structural Changes**	
	(1)	(2)	(3)	
GDP Growth (lagged)	0.026	0.006	-0.020	
	(0.063)	(0.056)	(0.045)	
Long-Term Variables				
Private Credit	0.080**	0.068*	0.101**	
	(0.035)	(0.036)	(0.040)	
Secondary School Enrollment	0.227*	0.123	0.328*	
	(0.132)	(0.133)	(0.167)	
Inflation	-0.169**	-0.191**	-0.278***	**0.210***
	(0.078)	(0.074)	(0.098)	**(0.115)**
Fiscal Balance	0.610***	0.753***	0.802***	
	(0.208)	(0.213)	(0.240)	
Political Certainty	0.249**	0.292***	0.377***	**-0.055****
	(0.101)	(0.100)	(0.102)	**(0.023)**
Structural Variables				
Financial Openness	0.044***	0.041***	0.087***	**-0.020****
	(0.016)	(0.015)	(0.018)	**(0.009)**
Trade Openness	0.322***	0.319***	0.318***	**0.190*****
	(0.078)	(0.077)	(0.102)	**(0.056)**
Net External Assets	0.081**	0.096***	0.037	
	(0.036)	(0.036)	(0.041)	
International Reserves	0.279***	0.248***	0.829***	**-0.567*****
	(0.071)	(0.078)	(0.202)	**(0.194)**
Exchange Rate Regime	0.011	0.010	0.001	**0.027*****
	(0.009)	(0.009)	(0.011)	**(0.009)**
Foreign Cyclical Variables				
Terms of Trade Growth	0.012	0.007	0.009	
	(0.009)	(0.009)	(0.010)	
Growth of Trading Partners	0.221*	0.215	0.224	
	(0.133)	(0.138)	(0.137)	
Growth of World Exports	0.081***	0.082***	0.081***	
	(0.022)	(0.022)	(0.021)	
Capital Inflows to Latin America	0.573**	0.475**	0.419*	
	(0.244)	(0.239)	(0.252)	
Sovereign Spreads	-0.040	-0.023	-0.039	**-0.032**
	(0.057)	(0.058)	(0.059)	**(0.020)**
Domestic Policy Variables				
Government Consumption	1.386***	1.362***	1.516***	
	(0.328)	(0.319)	(0.304)	
Real Interest Rate	-0.168**	-0.192***	-0.326***	**0.289****
	(0.071)	(0.068)	(0.077)	**(0.119)**
Interactions				
Growth of Trading Partners * Trade Openness		1.170*	0.995	
		(0.657)	(0.607)	
Growth of Trading Partners * Financial Openness		-0.629*	-0.385	
		(0.332)	(0.301)	
Capital Inflows to Latin America * Financial Openness		-1.232**	-0.677	
		(0.603)	(0.609)	
Sovereign Spreads * Net External Assets		0.284**	0.377***	
		(0.125)	(0.130)	
Constant	-0.288**	-0.274**	-0.497***	
	(0.122)	(0.118)	(0.139)	
Observations	462	462	462	
R-squared	0.670	0.680	0.707	

Table 3. Recessions in Latin America

	Amplitude of GDP Growth Decline	
	Asian Crisis	Global Financial Crisis
	1998q3-1999q2	2008q4-2009q2
Argentina	-5.20%	-1.55%
Brazil	-1.03%	-3.99%
Chile	-3.88%	-4.40%
Colombia	-6.82%	-0.87%
Mexico	3.37%	-11.09%
Peru	1.15%	-3.64%
Venezuela	-8.51%	-3.59%
Simple Average	-2.99%	-4.16%
Weighted Average	-1.15%	-5.24%

Source: Own elaboration. Notes: Cumulative GDP growth rates within the reference period. Series de-seasonalized using ARIMA X-11.

Table 4. Decomposition of Latin America's recessions

	Asian Crisis	Global Financial Crisis		
	1998q3-1999q2	2008q4-2009q2		
Amplitude of GDP Growth Decline	-2.99%	-4.16%		
		Structural Changes		
		NO	*Changes*	*YES*
Sources:				
Long-Term Variables	**-1.68%**	**0.77%**		**0.05%**
Private Credit	0.24%	0.44%		0.44%
Inflation	0.65%	0.97%	-0.73%	0.24%
Secondary School Enrollment	-0.14%	0.15%		0.15%
Fiscal Balance	-1.17%	-0.73%		-0.73%
Political Certainty	-1.26%	-0.06%	0.01%	-0.05%
Structural Variables	**-0.57%**	**0.59%**		**-1.70%**
Financial Openness	0.73%	-0.60%	0.14%	-0.46%
Trade Openness	-0.53%	-1.32%	-0.79%	-2.11%
Net External Assets	-0.08%	0.08%		0.08%
International Reserves	-0.68%	2.43%	-1.64%	0.79%
Exchange Rate Regime	-0.01%	0.00%	0.00%	0.00%
Foreign Cyclical Variables	**0.54%**	**-2.60%**		**-2.74%**
Terms of Trade Growth	0.02%	-0.32%		-0.32%
Growth of Trading Partners	0.26%	-1.36%		-1.36%
Growth of World Exports	0.53%	-0.05%		-0.05%
Capital Inflows to Latin America	-0.05%	-0.68%		-0.68%
Sovereign Spreads	-0.22%	-0.19%	-0.14%	-0.33%
Domestic Policy Variables	**-0.99%**	**-0.14%**		**0.99%**
Government Consumption	0.69%	1.12%		1.12%
Real Interest Rate	-1.68%	-1.26%	1.13%	-0.13%
Interactions	**-0.02%**	**-0.67%**		**-0.67%**
Growth of Trading Partners * Trade Openness	0.00%	-0.19%		-0.19%
Growth of Trading Partners * Financial Openness	0.10%	-0.35%		-0.35%
Capital Inflows to Latin America * Financial Openness	-0.09%	-0.10%		-0.10%
Sovereign Spreads * Net External Assets	-0.02%	-0.03%		-0.03%
Structural Changes post-2000		**-2.02%**		
Explained Variation	-2.72%	-4.07%		-4.07%
Unexplained Variation	-0.26%	-0.09%		-0.09%
Total Variation	-2.99%	-4.16%		-4.16%

Source: Own elaboration

Table 5. Public and Publicly Guaranteed External Debt in Latin America (% of GDP)

	1990-1994	1995-1999	2000-2004	2005-2009
Argentina	23.59%	23.92%	56.35%	25.84%
Brazil	20.31%	12.35%	16.91%	7.26%
Chile	23.42%	7.16%	9.15%	6.27%
Colombia	28.04%	17.05%	22.71%	14.10%
Mexico	22.03%	24.06%	14.80%	10.93%
Peru	45.23%	35.13%	36.18%	21.43%
Venezuela	48.10%	34.11%	24.51%	14.41%
Simple Average	30.10%	21.97%	25.80%	14.32%
Weighted Average	23.56%	18.42%	22.51%	11.62%

Source: World Development Indicators, World Bank (2010).

Table 6. Inflation in Latin America

	1990-1994	1995-1999	2000-2004	2005-2009
Argentina	30.46%	0.21%	6.73%	8.26%
Brazil	85.91%	8.56%	7.79%	4.54%
Chile	13.66%	5.26%	2.68%	3.69%
Colombia	20.02%	14.32%	6.55%	4.69%
Mexico	12.32%	19.01%	5.40%	4.04%
Peru	47.09%	7.08%	2.19%	2.54%
Venezuela	30.12%	30.74%	16.75%	18.06%
Simple Average	34.23%	12.17%	6.87%	6.55%
Weighted Average	51.68%	11.16%	7.11%	5.45%

Source: Own elaboration

Table 7. Trade Openness in Latin America

	1990-1994	1995-1999	2000-2004	2005-2009
Argentina	17.20%	22.12%	22.60%	25.98%
Brazil	15.45%	20.44%	22.36%	27.40%
Chile	49.72%	60.85%	68.41%	83.56%
Colombia	29.96%	37.50%	36.76%	44.27%
Mexico	27.26%	40.47%	53.32%	60.89%
Peru	26.00%	32.74%	35.43%	40.56%
Venezuela	61.37%	56.22%	52.46%	61.29%
Simple Average	32.42%	38.62%	41.62%	49.14%
Weighted Average	22.64%	29.53%	33.74%	39.77%

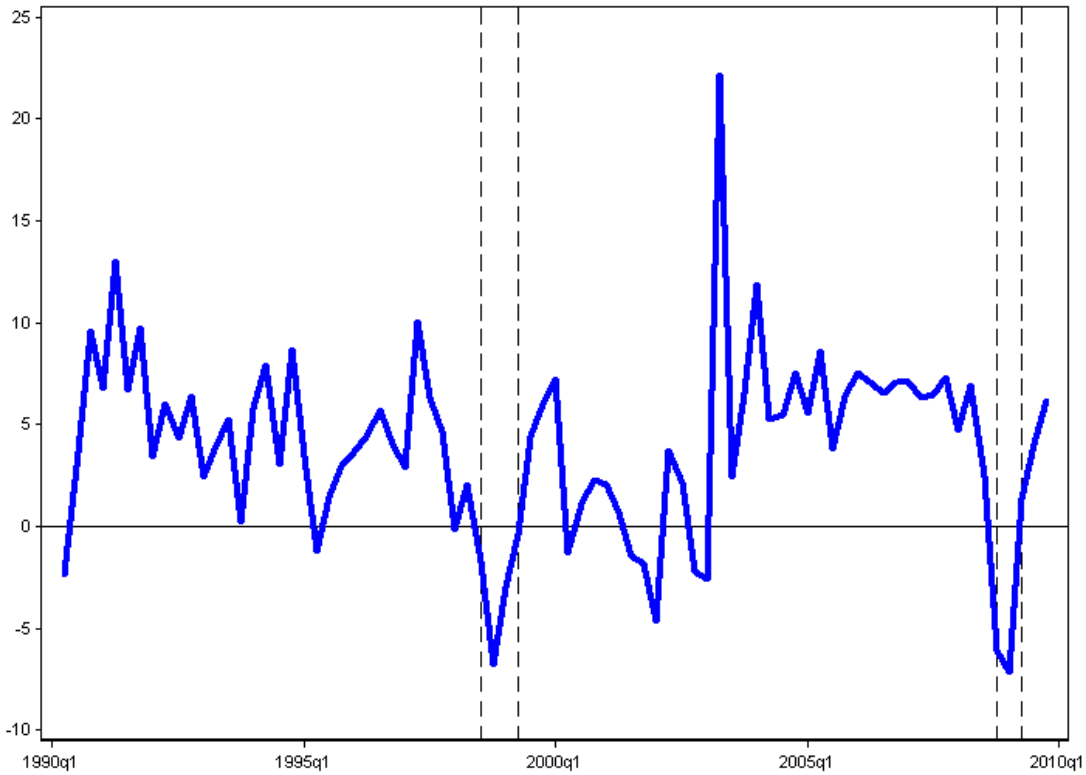
Source: Own elaboration

Table 8. Financial Openness in Latin America

	1990-1994	1995-1999	2000-2004	2005-2009
Argentina	78.47%	103.80%	176.51%	147.57%
Brazil	45.84%	53.18%	86.77%	82.94%
Chile	119.02%	126.87%	192.10%	184.57%
Colombia	51.70%	61.62%	87.07%	78.97%
Mexico	62.99%	81.79%	70.28%	79.52%
Peru	97.99%	100.91%	103.79%	102.45%
Venezuela	156.85%	131.10%	145.50%	122.00%
Simple Average	87.55%	94.18%	123.14%	114.00%
Weighted Average	63.19%	74.23%	100.77%	95.70%

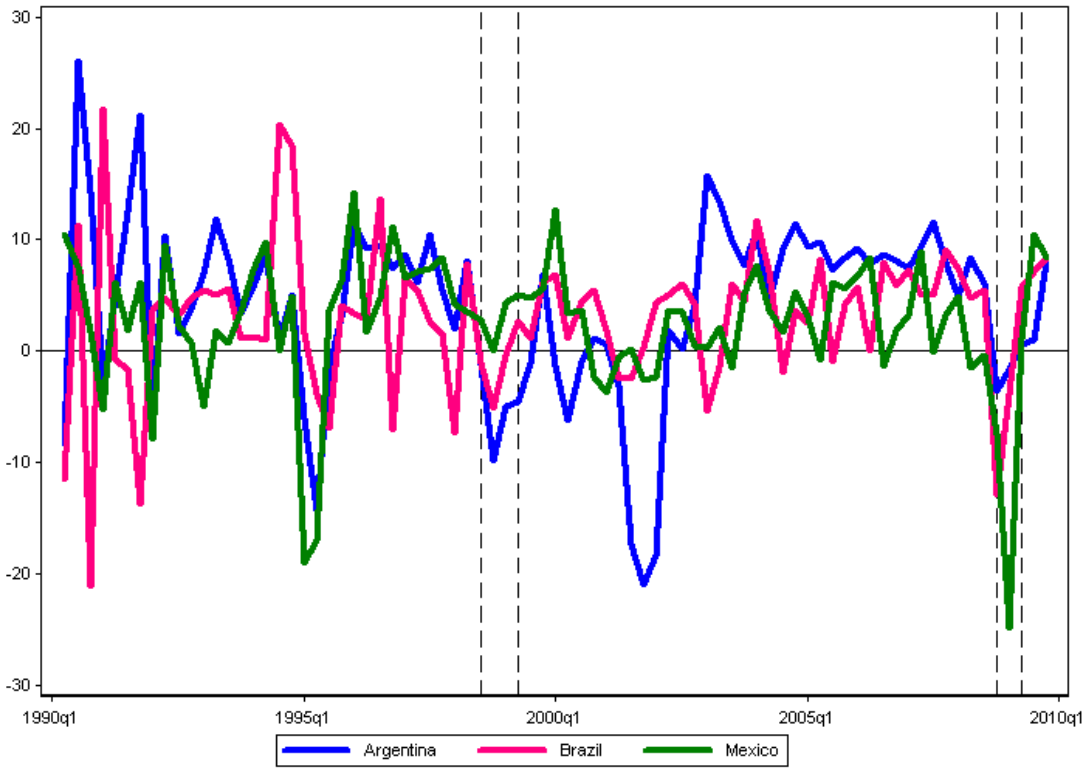
Source: Own elaboration

Figure 1. Average GDP Growth in Latin America



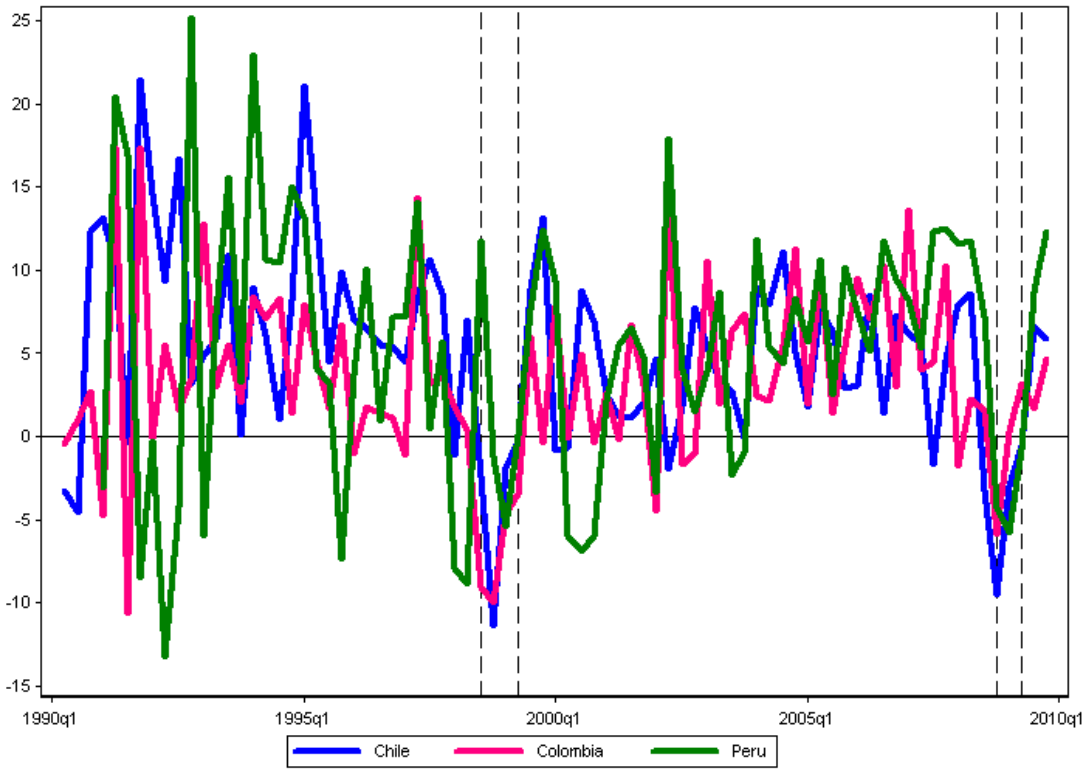
Source: Own elaboration

Figure 2A. GDP Growth in Argentina, Brazil and Mexico



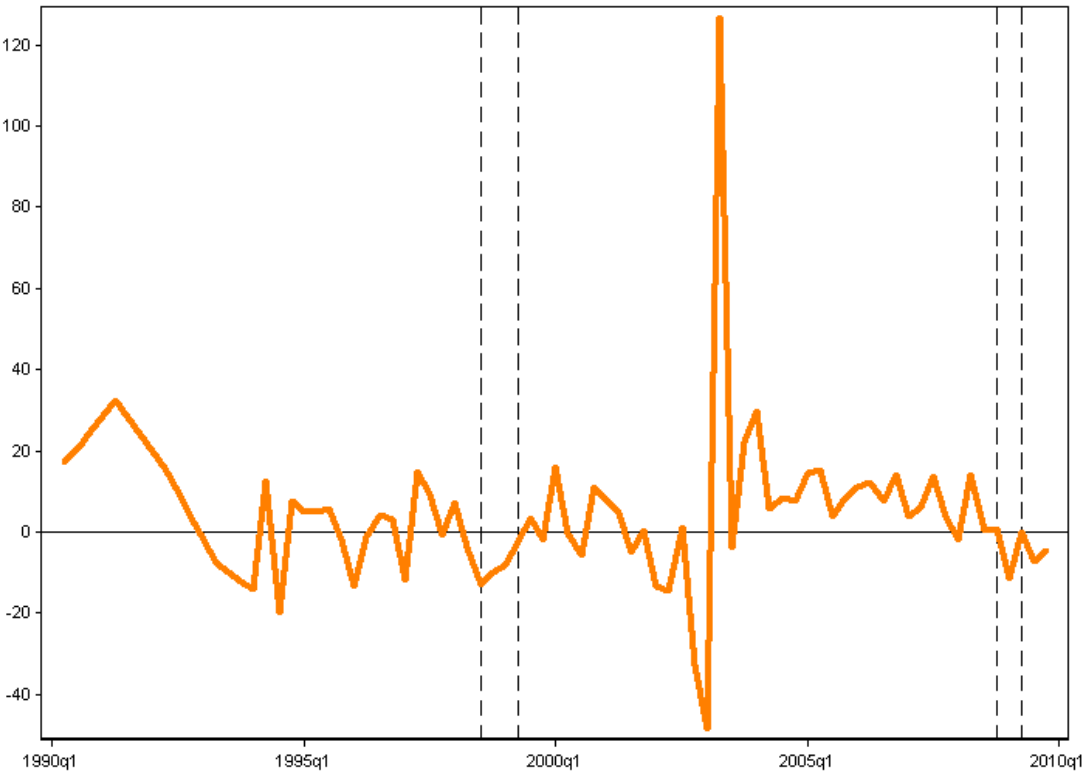
Source: Own elaboration

Figure 2B. GDP Growth in Chile, Colombia and Peru



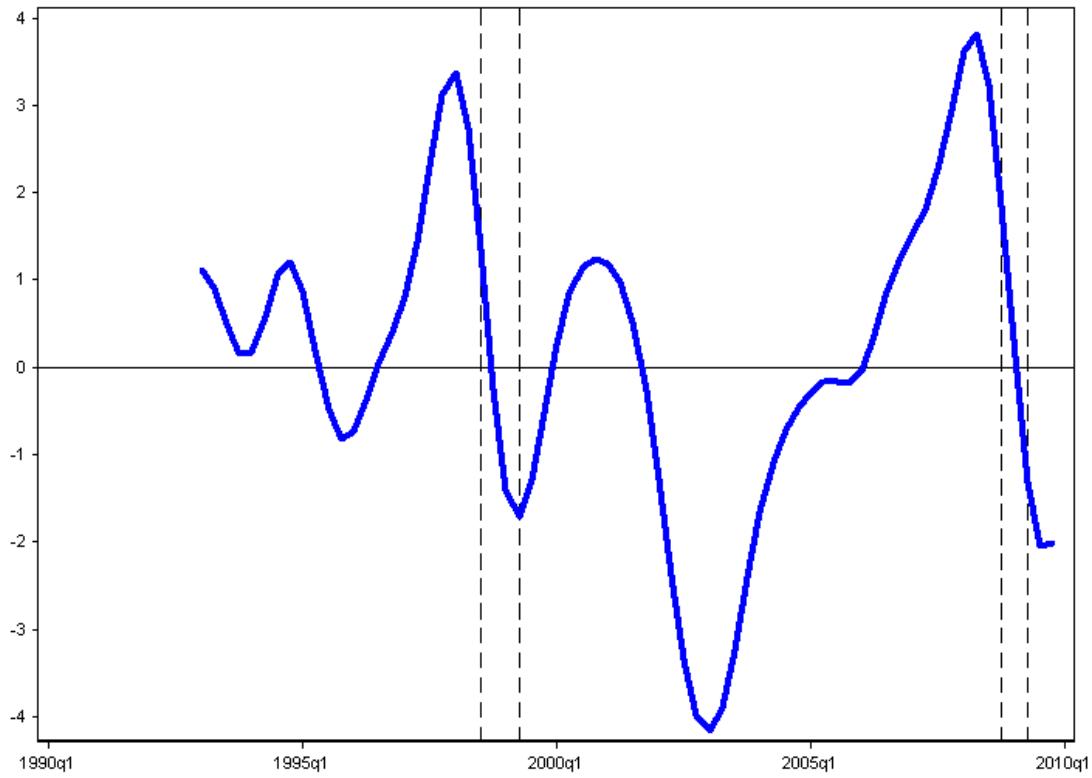
Source: Own elaboration

Figure 2C. GDP Growth in Venezuela



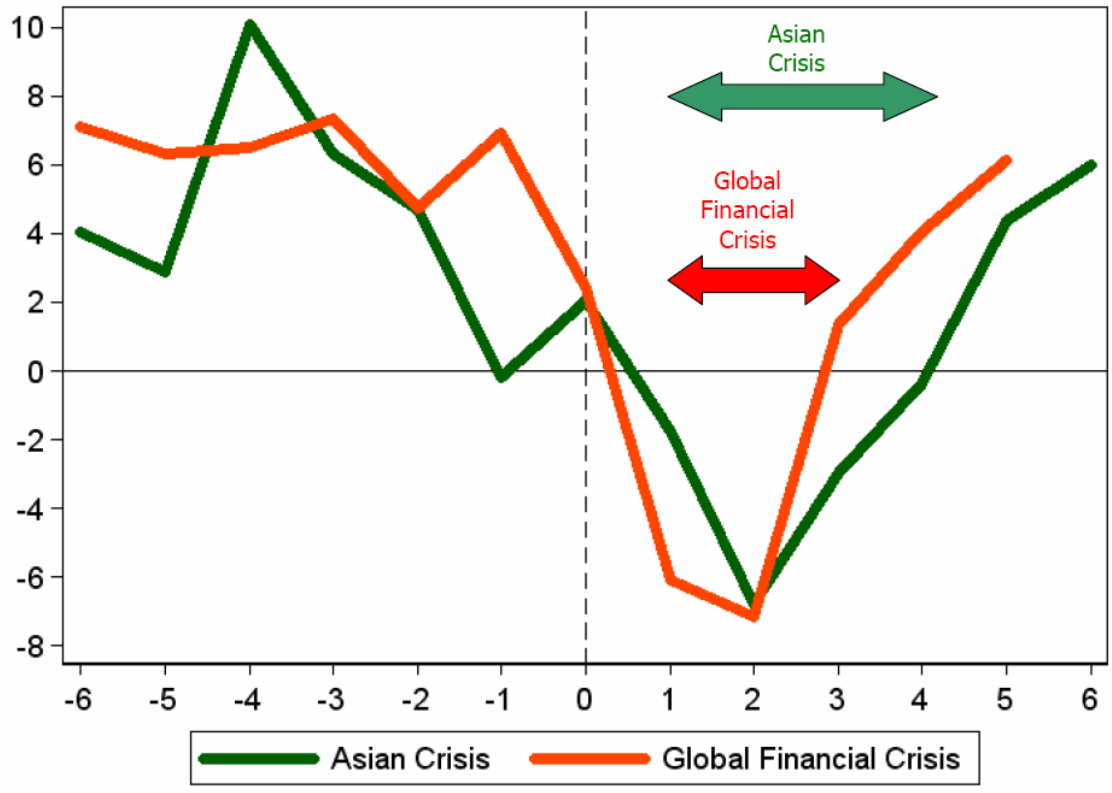
Source: Own elaboration

Figure 3. Average Output Gap in Latin America



Source: Own elaboration

Figure 4. Average GDP Growth around Crises



Source: Own elaboration