The Resilience of Latin America

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Abstract:

By constructing a panel regression I demonstrate that market-friendly economic policies that promote a high degree of liberalization and competitive interest rates promote high GDP growth in Argentina, Brazil, Chile and Venezuela. These neoliberal economic policies contributed to the resilience of the financial crisis of 2008 in these countries. An increase of one unit in the degree of liberalization leads to 0.04% growth in GDP. Moreover, if real interest rate increases by one unit GDP growth decreases by 0.4%. The summary statistics show that Chile is the country with the highest degree of liberalization and the highest GDP growth

I.Introduction

Latin America is well-known for being a region which has suffered a large number of economic and financial crises during the past decades. The costs Latin American countries had to pay as a result of these crises were enormous and include bank collapses and debt defaults. I am interested in studying if neoliberal macroeconomic policies such as the liberalization of trade and capital, the adoption of floating exchange rate systems and central bank reforms allow Latin America to miss a severe crisis after the Great Recession of 2008. A country's success depends on the institutional ability to learn from experience and I would like to know if this applies to Latin America.

Neoliberal economic policies bring stability and growth and are better equipped to deal with external negative factors such as crises and sudden stops. My research question addresses if market-friendly economic policies lead to higher GDP and low inflation. I focus on the following factors: an increase in international reserves, the implementation of flexible exchange rate systems, an independent central bank, and a high degree of liberalization. My hypothesis states that market-friendly economic policies implemented in Latin America resulted in the resilience of the financial crisis of 2008.

II.Literature Review

The 1970s & 1980s

In the second half of the 1970s most Latin American countries oriented their exchange rate policies towards stabilizing prices adopting active crawling peg regimes. Two important external shocks came in 1979: the increase in interest rates by the U.S. Federal Reserve Bank and the oil shock that increased oil prices. In Latin America, all of the economies that had participated in the process of financial globalization during this period ended up with large current account deficits and accumulated foreign debts (Roberto Frenkel and Martin Rapetti, 2010). These imbalances in the current account and fiscal budget, led to balance of payment and financial crises during the 1980s.

Between 1982 and 1990, the interaction of Latin American countries with international financial markets was limited to a series of negotiations of the external debt inherited from the crisis. Chile and Colombia were the only two economies able to avoid the sharp devaluations and extreme high levels of inflation that other countries experienced (Roberto Frenkel and Martin Rapetti, 2010). This led to monetary and fiscal policies oriented towards the management of the fiscal and external disequilibria and their repercussions.

Since the mid-1980s Latin America adopted neoliberal economic policies. These policies are oriented to significantly diminish the role of the state in the economy (Juan Carlos Moreno-Brid and Igor Paunovic, 2008). This idea was inspired by the Washington Consensus, a term coined by John Williamson to describe specific economic policy prescriptions that he considered to be the "standard" reform package for development. These liberal reforms included: financial liberalization, deregulation, privatization, the opening of capital account among others.

The 1990s

The 1990s' experience has left the region with a sense of disappointments regarding the potential benefits of globalization. During the first half of the 1990s Latin American economies were large recipients of capital inflows and foreign direct investment (FDI). Globalization of trade and capital translated into an improvement in economic performance and an increase in growth in the region. Many Latin American governments continued adopting fixed exchange rates in an effort to build credibility and to maintain price stability. The implementation of the currency board in Argentina is an example. It began at an overvalued real exchange rate, which worsened over the ensuing years (Roberto Frenkel and Martin Rapetti, 2010). A pivotal achievement of the fix exchange rate system was low inflation, since countries such as Argentina and Brazil suffered hyperinflation. In spite of low inflation, the region's external debt increased from just above 400 USD billion in 1989 to over 750 USD billion in 1998 (Pablo E. Guidotti, 2007).

At the end of the 1990s and early 2000s the region was severely affected by the reversal of capital flows. This reflected in a negative macroeconomic performance. It was a period in which Latin America experienced many financial crises. Examples of "imported crises" are the Asian financial crisis in 1997 and the Russian crisis in 1998. An example of an internally generated crisis is the Mexican financial collapse of 1995 or Tequila crisis. The Mexican default was followed by the Brazilian crisis in 1999 which resulted in a tremendous devaluation of the Brazilian currency. In 2001-2002 Argentina had a huge economic crisis caused by the hard peg to the dollar which made the country very vulnerable to external shocks. The Brazilian devaluation damaged the Argentinean competitiveness and resulted in a decrease of export demand. There was a need for a real adjustment of the peg but removing the peg would have

implied large balance sheet effects and raised serious financial issues (A. L. Baldi-Delatte, 2009).

The implementation of neoliberal policies did not prevent the crises mentioned above that resulted in capital flight. Governments turned to flexible exchange rate and inflation targeting regimes in order to reduce their vulnerability to sudden stops and to protect the economies from this capital market volatility (Roberto Frenkel and Martin Rapetti, 2010). A sudden stop is a contraction in aggregate capital flows larger than one historical standard deviation in those flows and in excess of 5% of GDP. High risk perceptions in the region lowered capital inflows, especially FDI. This decline in investments brought concerns about the sustainability of public debt levels. Moreover, the presence of liquidity constraints, liability dollarization and institutional weaknesses reflected in the lack of the government's capacity to raise revenue. Excessive public debt levels have made Latin America vulnerable to disruptions in international capital markets and the lack of adequate liquidity management policies exacerbated the sudden stops and their effect on the economy (Pablo E. Guidotti, 2007).

The 2000s

In the past ten years, a number of new left-wing governments have been elected in various countries in Latin America such as Argentina and Venezuela. Some of the reasons that led to the emergence of leftist governments were the disappointing rates of economic growth, productivity and unemployment, the lack of social protection, and the high levels of poverty and inequality after the liberal reforms. This emergence of the left in Latin America is very important regarding economic policies, because these countries implement economic policies that combined orthodox and heterodox elements, that in some sense it differed from the neoliberal

policies the region implemented since the mid-1980s (Juan Carlos Moreno-Brid and Igor Paunovic, 2008). This heterodox economic policies advocate larger role for the state in the economy (Juan Carlos Moreno-Brid and Igor Paunovic, 2008) . Graph one in the figures section indicates the growth rates of Latin America since 1950 to 2006.

The interaction between politics and economics is very important for understanding economic crisis in Latin American since political instability leads to financial vulnerability. Javier Santiso (2003) demonstrates that democracies are less vulnerable to currency crisis. Political budget cycle tends to be directly correlated with the degree of democracy; in more democratic regimes, opportunistic cycles in macroeconomic policies tend to be smaller. Moreover, less democratic governments suffer more from contagion in international markets (Javier Santiso, 2003). Election periods play also an important role in the economic policy making process. The largest financial crisis (Mexico in 1995, Brazil in 1999 and Argentina in 2001) took place within presidential or parliamentary electoral years.

After the period of crises in the late 1990s and early 2000s, the region experienced a dramatic improvement in terms of trade. This was in part due to the booming expansion of some Asian economies that sharply increased the global demand and relative prices of commodities. Latin American countries with a comparative advantage in natural resources saw an increase in fiscal revenue and in the supply of foreign exchange. These factors lifted the fiscal and balance of payments constraints that previously restrain growth in the region. Moreover, it allowed governments to implement heterodox economic policies by freeing them from the conditionality imposed by international financial institutions.

The Great Recession

Latin America is well-known for being a region which has suffered a large number of economic and financial crises during the past decades. The costs Latin American countries had to pay as a result of these crises were enormous such as bank collapses and debt defaults. The 2008 international financial crisis caused by Lehman Brothers' bankruptcy and the near failure of other US financial institutions shows a different story. Even though the 2008 crisis did not hit severely countries in Latin America, it impacted some macroeconomic variables negatively.

As a result, Latin American countries experienced a decline in terms of real GDP after six years of steady growth. According to Lustig (2009), the real GDP in the region decreased by 2% in 2009 (Nora Lustig, 2010). Graph two in the figures section shows the growth rates of Latin America and the Caribbean in 2009.

In Latin America the cumulative GDP deceleration was of approximately 8.3%, while the cumulative deceleration in terms of GDP in regions such as Eastern Europe was higher (10%) and even higher in the Commonwealth of Independent States which was approximately 14% (Porzecanski Arturo, 2009). The author calculated the regional GDP growth deceleration by taking the difference in the 2008/2007 GDP growth rate plus the difference between the 2009F/2008 GDP growth rates. The data is based on IMF and ECLAC statistics. The South American countries were among the less affected. For example, Brazil, Uruguay and Chile experienced a deceleration of around 6%, Argentina 7% and Bolivia 2%. All these numbers are below the average for the region (8.3%). Paraguay is the exception since it experienced a deceleration of 8.5% (Porzecanski Arturo, 2009).

The recent international financial crisis also affected other macroeconomic variables. Production and trade volume decreased worldwide (Porzecanski Arturo, 2009). This was in part due to the reduction of world import demand and particularly due to a decrease in the US import demand, a result of a decrease in consumption and investment spending (Jose Antonio Ocampo, 2009). This negative trade shock is among the most influential impacts on Latin American economies because of its high degree of trade openness and due to the export-led development strategy the region implemented for years. Thus, after years of increase in international trade volume of approximately 9%, Latin America experienced a fall of approximately 9 to 11% in trade volume in 2009 (Jose Antonio Ocampo, 2009). Because of its close economic and trade ties with the United States, countries in Central America and the Caribbean were the most severely affected (Jose Antonio Ocampo, 2009). A decrease in the demand for commodities caused a collapse in its prices in the last two quarters of 2008. This trend was the most influential in most of the Southern Cone countries which export agricultural products. Real agricultural commodity prices in Latin America decreased from 96.6 in the third quarter of 2008 to 72.4 in the last quarter of the same year and in December of 2008 it reached 68.5 (Jose Antonio Ocampo, 2009). Commodity prices started to increase steadily since the first quarter of 2008 (Pamela Cox, 2010).

In spite of the negative impacts on the different macroeconomic variables mentioned above, the international financial crisis did not hit Latin American countries very hard. Many factors contribute to this outcome. Thanks to these factors Latin America is a less vulnerable region economically speaking.

Both Porzecanski (2009) and Ocampo (2009) agree that one main factor that contributed to this outcome was the improvement of the external balance sheets. Latin American countries reduced their vulnerabilities due to a restructuring of the countries' assets and liabilities position.

Assets are everything that is owned such as loans, while liabilities are everything that is owed such as deposits. Latin America countries accumulated assets and more specifically, they increased their assets denominated in foreign currency. Countries such as Brazil increased their international reserves from 18.1% in 2001 to 93.4 % in 2007 and Argentina from 2.2% to 93.4%. Therefore, "the ratio foreign exchange reserves to external debt improved significantly" (Jose Antonio Ocampo, 2009). Latin American countries also changed the composition of their liabilities by decreasing their liabilities denominated in foreign currency thus reducing currency mismatches and increasing the liabilities denominated in local currencies. The development of bond markets in countries such as Brazil helped in increasing the liabilities denominated in domestic currency. "Domestic bonds increased by 15% points of GDP between 2001 and 2007" (Jose Antonio Ocampo, 2009). Thus, by reducing the currency mismatches and increasing Central Bank's international reserves, Latin America was able to avoid the worst of the international financial crisis (Porzecanski Arturo, 2009).

Different reforms that took place in Latin American central banks were also essential contributors to the outcome. Between 1988 and 1995, many Latin American countries such as Brazil, Chile and Venezuela enacted substantial central bank reforms that enhanced central bank independence from the executive branch of the government, increased central bank autonomy and develop new regulatory and supervisory frameworks for the financial system. These reforms changed the central bank's charters so that the primary role would be price stability and they work to insulate central banks form political pressure. Cermeno (2010) shows that the increase in central bank independence after the reforms has real economic effects and it suggests that reforms reversals such as the recently demonstrated in Venezuela should be a reason for concern (Rodolfo Cermeno et al., 2010).

An important factor regarding central banks is that by letting domestic currencies fluctuate naturally, which means, by moving from rigid exchange rate to flexible exchange rates, central banks let domestic currency to depreciate in times of crises to absorb external shocks. This change allowed central banks to pursue an inflation targeting regimen instead of an exchange rate target regimen (Porzecanski Arturo, 2009). This gives central banks the chance to manipulate monetary policy as natural absorbers of external shocks. Most central banks implemented countercyclical monetary policies; they increased interest rates in times of booms to encourage savings, and decreased interest rates in times of crises to encourage an increase in aggregate demand.

Besides central bank reforms and improvements in external balance sheets, improvements in fiscal and external current account balances also played a big role in lessening the impact of the crises. However these improvements in fiscal and external current accounts were not caused by the implementation of countercyclical fiscal policies during the boom (Jose Antonio Ocampo, 2009). Countercyclical fiscal policy means having expansionary fiscal policies in times of crises and reducing government spending in times of booms. These types of fiscal policies are pivotal in order to help the economy to recover by maintaining consumption. Chile was the only country in the region that decreased spending during the 2003-2008 boom, while other countries such as Brazil, Argentina and Uruguay maintain the government's spending very high during this period of time (Jose Antonio Ocampo, 2009). The boom led to an accumulation of government's revenue because of the rise in commodity prices. Thus, most countries still need to adjust government spending. Ocampo (2009) argues that it was an exceptional increase in government revenues and terms of trade and not a reduction in spending during the boom that was a key to lessening the impact of the crisis in the region (Jose Antonio Ocampo, 2009).

In spite of the fact that this recent crisis was spread around the world, Latin America did not experience severe consequences in comparison with other regions such as Eastern Europeans countries and the Commonwealth of Independent States (Porzecanski Arturo, 2009). According to Arturo Porzecanski (2009) and Jose Antonio Ocampo (2009), different factors such as: the accumulation of international reserves, the decrease in currency mismatches, the implementation of countercyclical policies and the development of local bond markets among others contribute to the reduction of vulnerability in Latin America countries' economies.

I am interested in studying if the macroeconomic policies mentioned above such as: improvements in the external balance sheets, the increase in government revenues, the adoption of floating exchange rate regimes, and central bank reforms allow Latin America to miss a severe crisis. A country's success depends on the institutional ability to learn from experience and I would like to know if this applies to Latin America. Today many governments are more conscious today of the benefits of fiscal and monetary policies, lower currency mismatches, and high international reserves. According to Pablo Guidotti, these factors bring stability and growth, and are better equipped to deal with external negative factors such as crises and sudden stops. I strongly agree with him. My hypothesis states that market-friendly economic policies lead to higher GDP and low inflation. Market friendly economic policies include: an increase in international reserves, the implementation of flexible exchange rates, an independent central bank, and a high degree of liberalization. Thus market-friendly economic policies implemented in Latin America resulted in a resilience of the financial crisis of 2008.

III. Economic Model

The aggregate demand (AD) and aggregate supply (AS) model represents economic output or real GDP over a specific period of time. Autonomous components of the AD curve are: consumption spending, investment spending, government spending, and net exports. The formula is represented by:

$$AD = C+I+G+(X-M) \quad (1.1)$$

The AD curve shows the overall level of spending at different price levels. The price level is illustrated by the vertical axis of the graph. The AD curve is downward sloping because a rise in the price level leads to lower levels of aggregate demand. This model is also associated with unemployment; a low real GDP requires fewer units of labour and thus, unemployment rises.

Changes in non-price level factors cause changes in aggregate demand and shift in the entire curve. Autonomous consumption (autonomous consumer spending) depends upon consumer nominal wealth, money supply, autonomous taxes (e.g., sales and property taxes), consumer expectations, and confidence concerning job security and future income. Changes in planned investment spending depend upon real interest rates (i.e., changes in interest rates not caused by changes in the price level), the expected rate of return, business taxes, and the money supply. Changes in government spending also shifts the AD curve. For example, an increase in government spending created by war spending or fiscal stimulus shifts the AD curve to the right. Moreover, any change in net exports shifts the AD curve. For instance, a change in the competitiveness of US goods and services will shift the US AD curve. Central banks use

monetary policy to cause changes in the AD curve, while governments use fiscal policy to create changes.

The autonomous components of the aggregate supply (AS) curve include the following: technology, levels of physical and human capital, cost of key inputs, availability of natural resources, and permanent change in business regulation and taxes. Any change in these components will change the short and long run aggregate supply, thereby shifting both curves. It is worth mentioning that temporary or short run changes in input prices and resource costs will shift the short run aggregate supply curve without changing the full employment level of real GDP or shifting the long run aggregate supply curve. A graphic illustration of this economic model can be found in the figures section. In figure 3 the economy is equilibrium because is operating at full capacity and full employment.

A shift in the AD curve to the right caused by a change in any or all of the factors mentioned above will increase growth and reduce unemployment, but at a cost of higher inflation (a trade-off). Further increases in the AD curve will lead to successively smaller increases in growth and employment at the cost of ever higher inflation. Sustained growth occurs when AS and AD rise at similar rates. In this case, national income can rise without the effect of inflation.

The AD and AS economic model represents what I want to show in my empirical analysis. I predict that neoliberal economic policies such as flexible exchange rate systems, large international reserves, a high degree of liberalization, and independent central banks will likely lead to higher GDP and lower unemployment and inflation. At the same time, capital controls will likely lead to lower GDP, lower unemployment, and higher inflation.

IV. Empirical Strategy

In order to test my hypothesis I will use a panel regression with country fixed effects to control for country-specific effects determined by the economic history of each country. The time period ranges from 1990 to 2008. I focus on four different countries: Argentina, Brazil, Chile, and Venezuela. In order to avoid omitted variable bias and control factors that are unobserved and unmeasured (vary over time bit not over states, or vary over states but not over time) I use a panel regression to control for entities that varies over entities but not over time.

I am testing two models using two dependent variables: GDP growth and inflation since both are important macroeconomic indicators.

My econometric model is:

$$GDP_{it} = \beta_0 + \beta_1 \, exchange\ rate_{it} + \beta_2 \, international\ reserves_{it} + \beta_3 \, current\ account\ balance_{it} + \beta_4 \, degree\ of\ liberalization_{it} + \beta_5 \, capital\ controls_{it} + \beta_6 \, central\ bank\ independence_{it} + \beta_7 \, interest\ rate_{it} + \beta_8 \, fiscal\ behavior_{it} + \beta_9 \, FDI_{it} + u_{it} \quad (2.1)$$

$$Inflation_{it} = \beta_0 + \beta_1 \, exchange\ rate_{it} + \beta_2 \, international\ reserves_{it} + \beta_3 \, current\ account\ balance_{it} + \beta_4 \, degree\ of\ liberalization_{it} + \beta_5 \, capital\ controls_{it} + \beta_6 \, central\ bank\ independence_{it} + \beta_7 \, interest\ rate_{it} + \beta_8 \, fiscal\ behavior_{it} + \beta_9 \, FDI_{it} + u_{it} \quad (2.2)$$

I expect that neoliberal economic policies will lead to high growth and low inflation. These policies are oriented to significantly diminish the role of the state in the economy. These reforms include financial liberalization, deregulation, privatization and the opening of capital accounts.

Thanks to the adoption of neoliberal economic policies during the past years, countries like Argentina, Brazil, Chile and Venezuela recovered easily from the Great Recession of 2008. I argue that Latin America learned from past experiences. My hypothesis is that neoliberal policies such as flexible exchange rate systems, large international reserves, a high degree of liberalization and independent central banks will likely lead to higher GDP and lower unemployment and inflation. At the same time, capital controls will likely lead to lower GDP, lower unemployment and higher inflation.

As mentioned before, my expectations are related to the model of aggregate demand and aggregate supply. The model predicts that by implementing flexible exchange rates, policy makers can avoid current account deficits. A floating regime allows for currency devaluations which make exports more competitive in international markets. A large number of international reserves allow governments to increase savings in foreign currency and thus, lift balance of payment constraints. By encouraging a high degree of liberalization and FDI, a country attracts investment. FDI specifically allows the transfer of knowledge and technology to take place. This can translate to low transportation and communication costs and advantages in business operational strategies and management. An independent central bank means that the institution is not subject to political will. This increases central bank's autonomy and develops regulatory and supervisory frameworks for the financial system. By maintaining a competitive level of interest rate through monetary policy, policy makers encourage domestic firms to borrow. This model will help me in predicting if market-friendly economic policies lead to a country's long run equilibrium maintaining high levels of GDP growth and low levels of inflation and unemployment rate.

In order to test my hypothesis I used the World Development Indicators constructed by the World Bank. I collected the information about my dependent variables such as annual percent of GDP growth and annual percent of inflation measured by GDP deflator. GDP growth is calculated at market prices based on constant local currency, without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Aggregates are based on constant 2000 U.S. dollars. I retrieved the information about my independent variables such as total reserves, current account balance, and FDI from the same database. The data is in current US dollars. Total reserves include gold component which is valued at year-end (December 31) London prices. I constructed the degree of liberalization by adding exports and imports of goods and services as a percent of GDP over total GDP. The level of real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator.

I used the IMF database International Financial Statistics to collect data on government spending. The data was given in each country's currency. I converted government spending from Argentine peso, real, Chilean peso, and bolivar to current US dollars. In order to do so, I divided government spending over the rate of national currency per US dollars.

I created indicator variables for the rest of the independent variables such as central bank independence, exchange rate regime and capital controls. I broke down central bank independence into two categories: the first category is independence from the national government and the second is dependence on the central government. I divided the exchange rate regime variable into a floating and fixed exchange rate system. The floating category includes

both pure and managed floating. I separated capital controls into two different groups; the frist group has capital controls and the second has free capital mobility.

Data on capital controls and exchange rate is gathered from the book *Capital Controls and Capital Flows in Emerging Economies: Policies, Practices, and Consequences* edited by Sebastian Edwards. The capital controls and exchange rate data in Argentina come from chapter seven "International Borrowing and Macroeconomic Performance in Argentina," in which Dominguez and Linda Tesar describe the economic history of Argentina since the 1960s. In the appendix they include a financial market event time line since 1989 where they describe specific events such as the end of the hard peg and the elimination of capital controls in 2001. The chapter written by Kerwin Cowan and Jose de Gregorio entitled "International Borrowing, Capital Controls, and the Exchange rate" includes historical data about capital controls and exchange rate in Chile. Ilan Goldfajn and Andres Minella in the chapter "Capital Flows and Controls in Brazil" include historical data specifying the dates Brazil engaged in capital controls.

The central bank independence data comes from the IMF paper "Any Link Between Legal Central Bank Independence and Inflation? Evidence from Latin America and the Caribbean." The authors Luis Jacome and Francisco Vazquez construct a modified Curkeiman index. The index is constructed through the examination of the following: the rules for the appointment of central bank's board of directors (in addition to those for the appointment of central bank's governors), the degree of central bank independence in the conduct of exchange rate policy, the rules governing lender-of-last-resort facilities and the legal requirements on accountability and transparency. They take into account the widespread adoption of central bank reforms in Latin America since 1988 and thus the changes in central bank legislation.

From 1980 until the most recent data available, Chile has the largest amount of international reserves. Venezuela has a current account surplus, while Argentina, Chile and Brazil have a deficit. Chile is the country with the highest degree of liberalization. In addition, Chile has the highest growth in GDP, followed by Brazil, Argentina and Venezuela. Countries that had the highest inflation rates are Brazil and Argentina, because of hyperinflation during the late 1980s. Venezuela has the lowest interest rate and Argentina and Brazil have the largest amount of government spending. FDI has been very large for Argentina and Chile. The summary statistics can be found in table one in the tables section.

The results of my panel regression show that current account and GDP growth are negatively related, an increase in current account leads to a decrease in GDP growth. The same relationship applies for current account and inflation. This result does not match my expectations, since I expected the relationship to be a positive one. The size of the coefficient is close to zero, meaning that an increase in current account will not cause a major impact on GDP growth or inflation.

The same results apply for FDI. The relationship between FDI and GDP growth is negative, at the same time the relationship between FDI and inflation is also negative. An increase in FDI leads to low GDP growth and high inflation. These results also contradict my prediction that more FDI will likely lead to high GDP growth and low inflation. The coefficient is significantly close to zero. I believe that the results on current account and FDI do not match my predictions because I used nominal variables instead of real variables.

The degree of liberalization and GDP growth are positively related. A high degree of liberalization leads to a higher GDP growth. An increase of one unit in the degree of liberalization leads to 0.04% growth in GDP, which is statistically significant different from zero. The summary statistics show that the country with the highest degree of liberalization has the highest GDP growth. Between the four countries examined Chile has the highest degree of liberalization and GDP growth. This result matches my expectations.

The relationship between real interest rate and GDP growth is negative. Setting interest rates too high will lower GDP growth. Thus, it is essential that policy makers maintain competitive interest rates to ensure growth. If real interest rate increases by one unit GDP growth decreases by 0.4%. This result is statistically significant different from zero. Real interest rates and inflation are closely related. The Fisher Effect states that the real interest rate is equal to the nominal interest rate minus the expected inflation. If inflation rate is high, then expected inflation will be high. My result matches the Fisher effect, since the relationship between inflation and real interest rates is negative. My model predicts that an increase of one unit of real interest rate leads to an increase of 1% in inflation. However, I have endogeneity problems since according to the Fisher Effect inflation defines real interest rates and according to my model real interest rates define inflation.

The panel regression of GDP growth shows that the current account, the degree of liberalization, FDI, and real interest rate are statistically significant at the 5% level. This means that a change in current account, the degree of liberalization, FDI and real interest affects the dependent variable which is this case is GDP growth. The panel regressions that use inflation as the dependent variable show that the current account, the degree of liberalization, the GDP growth, FDI, and the real interest rate are statistically significant at the 5% level.

V. Conclusions & Direction for Further Research

A country's success depends on the institutional ability to learn from experience and I believe that this statement applies to Latin America. Many governments are more conscious today of the benefits of having consistent neoliberal economic policies. Market-friendly economic policies that promote a high degree of liberalization and competitive interest rates promote high GDP growth in Argentina, Brazil, Chile and Venezuela. These neoliberal economic policies contributed to the resilience of the financial crisis of 2008 in these countries. An increase of one unit in the degree of liberalization leads to 0.04% growth in GDP, which is statistically significant different from zero. Moreover, if real interest increases by one unit, then GDP growth decreases by 0.4%. The summary statistics show that Chile is the country with the highest degree of liberalization has the highest GDP growth

Directions for further research include that it is essential to look at real variables, while analyzing the levels of current account, FDI and international reserves. The history of hyperinflation in countries like Argentina and Brazil can produce odd results while analyzing these variables in nominal terms or current dollars. In addition, problems of endogeneity can rise while interpreting the relationship between inflation and interest rate (with inflation being the dependent variables). Moreover, political regimes variables can be included in this type of study.

VI. References

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VII. Tables

Table 1
Descriptive Statistics

Country	Variable Name	Observation	Mean
1	Exchangerate	18	0.388
			(0.501)
2	Exchangerate	19	0.789
			(0.418)
3	Exchangerate	20	1
			(0)
4	Exchangerate	20	0.3
			(0.470)
1	Intreserves	29	1.55e+10
			(1.21e+10)
2	Intreserves	29	3.98e+10
			(4.60e+10)
3	Intreserves	29	1.09e+10
			(6.37e+10)
4	Intreserves	29	1.67e+10
			8.59e+10
1	Cbi	11	0.090
			(0.301)
2	Cbi	13	1
			(0)
3	Cbi	13	0
			(1)
4	Cbi	16	1
			(0)
1	Ca	29	-2.21e+09
			(6.56+09)
2	Ca	29	-7.56e+09
			(1.36e+09)
3	Ca	29	-7.94e+08
			(2.66e+09)
4	Ca	29	6.36e+09
			(1.01e+10)
1	Degreeliberalization	29	13.001
			(8.604)
2	Degreeliberalization	29	20.397
			(45.135)
3	Degreeliberalziation	29	35.0163
4	Degreeliberalization	29	
1	Gdpgrowth	30	2.454
			(6.401)
2	Gdpgrowth	30	2.67133
			(3.403)
3	Gdpgrowth	30	4.820
			(4.456)
4	Gdpgrowth	30	2.052
			(6.295)
1	Inflation	29	275.701
			(671.322)

2	Inflation	29	402.276 (733.915)
3	Inflation	29	12.5866 (9.257)
4	Inflation	29	30.688 (24.376)
1	FDI	29	4.19e+09 (4.89e+09)
2	FDI	29	1.16e+10 (1.29e+10)
3	FDI	29	3.59e+09 (4.05e+09)
4	FDI	29	1.33e+09 (1.71e+09)
1	Realintrate	15	7.927 (9.072)
2	Realintrate	12	50.441 (12.678)
3	Realintrate	29	10.707 (11.448)
4	Realintrate	25	-3.104 (14.139)

Note: country 1 is Argentina, country 2 is Brazil, country 3 is Chile and country 4 is Venezuela

Table 2.

Cross country estimates on GDP growth 1990-2009

Independent variable	(1)
Exrate	3.589
	(1.15)
Intreserves	1.91e-12
	(0.04)
Cbi	_
Gspending	0.0458
	(0.64)
Ca	-2.08e-10
	(2.27)*
Degreeliberalization	0.045
	(2.27)*
Inflation	-0.264
	(2.06)*
Fdi	-3.49e-10
	(2.44)*
Realintrate	-0.414
	(3.59)**
Capitalcontrols	-3.083
	(1.41)
Constant	13.370
	(2.54)*

Note: Dependent variable is GDP growth. Absolute value on t statistics is shown in parenthesis * statistically significant at the 5% level, ** statistically significant at the 1% level.
Source: IMF, World Bank database and author's calculations.

Table 3

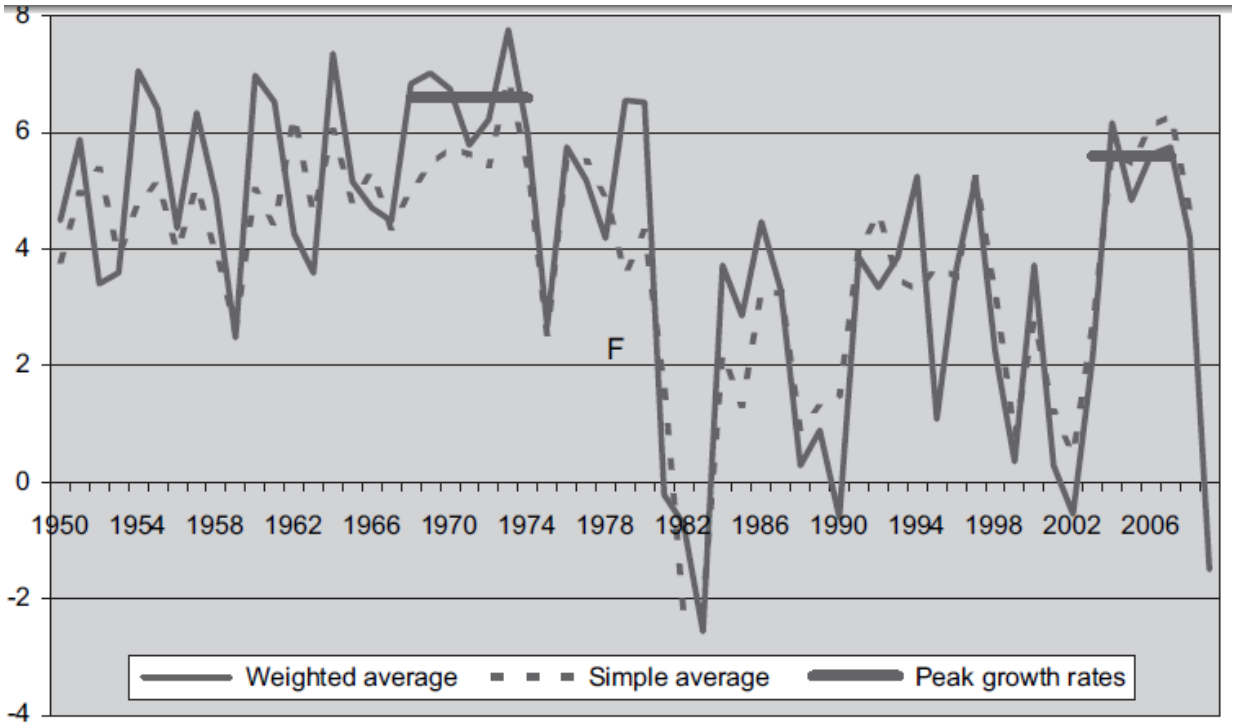
Cross country estimates on inflation 1990-2009

Independent Variable	(1)	(2)	(3)
Exrate	6.914	_	
	(1.71)		
Intreserves	-8.52e-11	-1.57e-11	4.29e-10
	(0.70)	(0.14)	(0.04)
Cbi	_	-5.675	
		(0.66)	
Gspending	0.073	-0.040	-0.048
	(0.45)	(0.27)	(0.32)
Ca	-4.97e-10	-4.37e-10	-4.80e-10
	(2.86)**	(2.46)*	(2.68)**
Degreeliberalization	_	_	0.036
			(0.75)
GDPgrowth	-0.852	-0.828	-0.867
	(3.05)**	(2.90)**	(2.97)**
FDI	-7.19e-10	-7.33e-10	-8.42e-10
	(2.04)*	(2.02)*	(2.27)*
Realintrate	-1.040	-1.04	-1.096
	(6.48)**	(6.20)**	(5.66)**
Constant	34.719	42.076	40.811
	(6.57)**	(8.70)**	(9.72)**

Note: Dependent variable is inflation. Absolute value on t statistics is shown in parenthesis * statistically significant at the 5% level, ** statistically significant at the 1% level.
Source: IMF, World Bank database and author's calculations.

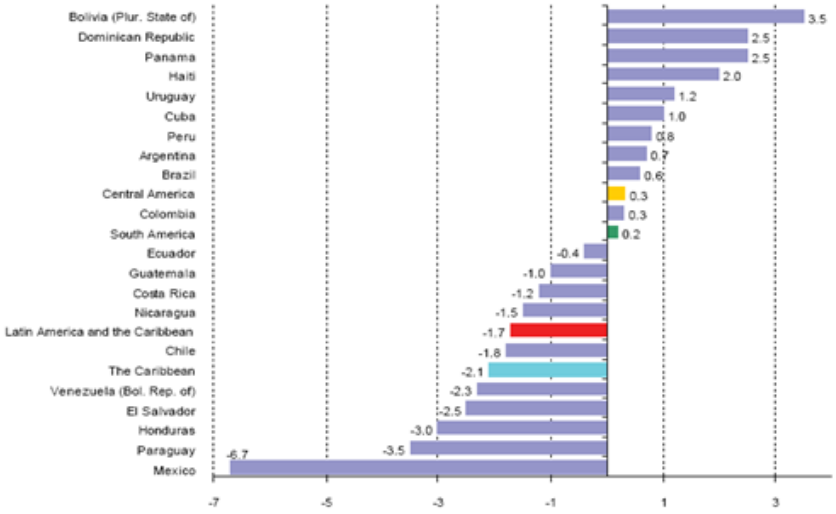
VIII. Figures

Figure1
Latin America: GDP growth, 1950-2006



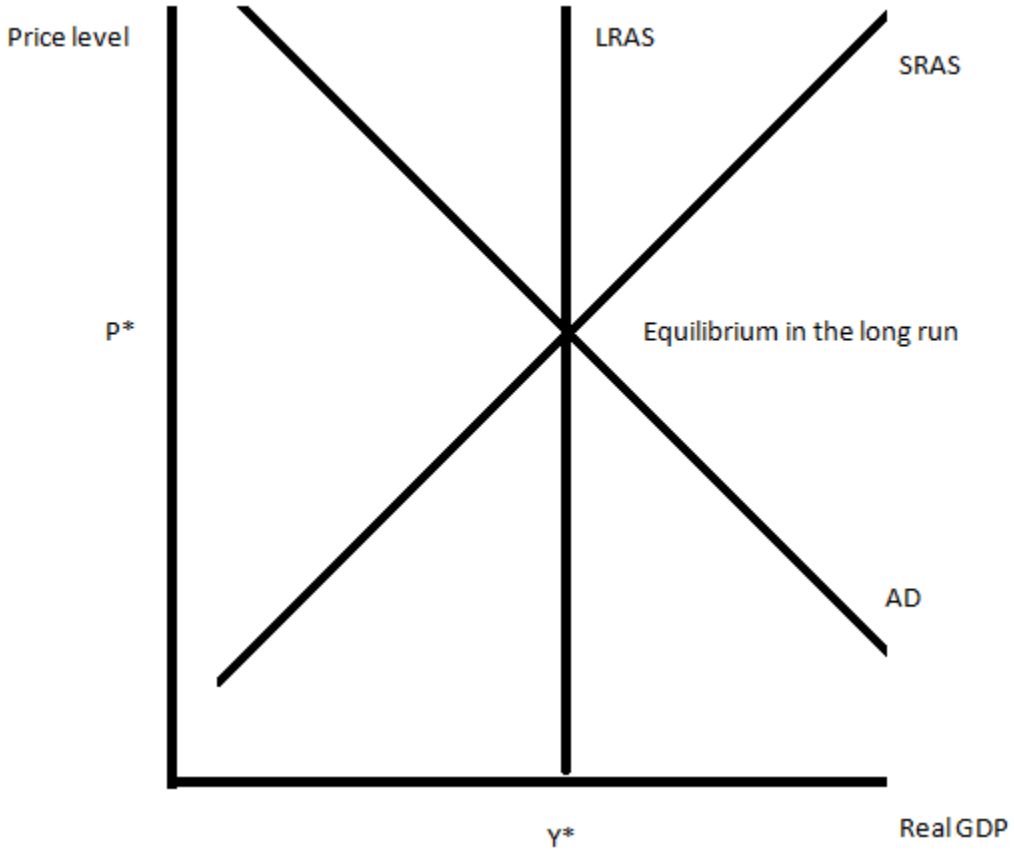
Source: ECLAC

Figure 2
Latin America and the Caribbean: Growth Rates, 2009



Source: ECLAC

Figure 3
Aggregate Demand and Aggregate Supply



Do-file Stata

```
*to create a new variable that specifies countries like numbers
gen countrynew=0

replace countrynew=1 if(country=="Arg")

replace countrynew=2 if(country=="Br")

replace countrynew=3 if (country=="Ch")

replace countrynew=4 if (country=="Vn")

xtset  countrynew year

*to change variable names names

rename monetarypolicy0centralbankindepe cbi

*to change labels
label variable cbi `"cbi"'

*to sum for specific varibale and specific country
sum  gdpgrowth if  countrynew==1

*to cretae dummies

tab  exchangerate, gen (exch)

tab cbi, gen (cbi)

tab capitalcontrols, gen (capitalcontrols)


* to do the panel data GDP growth:

xtreg  gdpgrowth  exrate intreserves cbi gspending ca degreeliberalization
inflation fdi realintrate  capitalcontrols if  year>1989, fe

to do panel data inflation:

xtreg  inflation  exrate  intreserves  gspending  ca  gdpgrowth  fdi
realintrate  if  year>1989, fe

xtreg  inflation  cbi  intreserves  gspending  ca  gdpgrowth  fdi

xtreg  inflation  degreeliberalization intreserves  gspending  ca  gdpgrowth
fdi  realintrate  if  year>1989, fe

xtreg  inflation  capitalcontrols intreserves  gspending  ca  gdpgrowth  fdi
realintrate  if  year>1989, fe

* to graph

xtline gdpgrowth inflation
```

```
*to create new variable
gen canew= ca/100000000
br canew ca

gen fdinew= fdi/100000000
br fdinew fdi

xtreg  gdpgrowth  exrate intreserves cbi gspending canew degreeliberalization
inflation fdinew realintrate  capitalcontrols if  year>1989, fe
```