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Financial Crises in Latin America

María Elisa Farías[1]

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Abstract

Latin American countries face the financial crisis of 2007-2009 under exceptional conditions with respect to the historical patterns of crises in the region. With few exceptions, such as the case of Jamaica and Ecuador, there were not balance of payments problems and contagion in financial markets was attenuated. Unlike Europe and the U.S., most Latin American countries recovered growth within a year from the most critical moments of the crisis in 2009. What made this time different? Three hypotheses have been given by the literature. The first, the decoupling hypothesis, proposes that countries in this region suffered less contagion because their business cycles have been decoupled from the business cycles of the U.S. and Europe. The second, the "learning" hypothesis, attributes the phenomenon to the improved management of economic policy during the last decades. The third hypothesis highlights the role of external conditions, in particular, the boom of commodity prices that the global economy experienced in the years before and following the crisis. Testing the three hypotheses for the crisis experiences of eight Latin American countries between 1900 and 2010, I find that it is not possible to attribute the phenomenon to the decoupling hypothesis. In addition, my results show that a combination of factors, policy and external factors may explain the phenomenon. However, several weaknesses remain in the region today, such as the high dependence on a few export commodities and low productivity rates.

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Keywords: financial crises, external shocks, macroeconomic policy

I.   Introduction

Latin America seems to have overcome some of its endemic problems that maintained its lag behind developed countries. One of the most important trials for the region was the conditions that its countries faced the last financial crisis. Considered the most important crisis in the world's economy since the Great Depression of 1929, the costs of the crisis are still present in many countries worldwide. In addition to the deep output contractions in the critical moments of financial distress, the slow recovery and large and persistent unemployment have reduced citizens' welfare in many places, especially in Europe and the U.S. The situation, however, was different for Latin American countries. With few exceptions, these countries did not suffer severe financial distress, output contractions were moderated, and output growth was recovered a year after the crisis began.

This situation is unusual in Latin American history. With their long history of economic and political instability, Latin American countries commonly suffered contagion when the world suffered a crisis. Crises were often amplified due to the structural problems in the economies of Latin American countries (Kaminsky and Reinhart, 1998; Kaminsky, 2009). As a result, output growth and development were interrupted, reversing growth for several years (see Marichal, 1989; Edwards, 1995, 2004). The main question then is: *what was different at this time?* Several hypotheses have appeared in the literature trying to answer this question (Ishi et al., 2009). The first is the decoupling hypothesis that affirms that contagion was reduced for Latin American countries because the business cycle of these countries has been decoupled from the business cycle of their traditional partners, i.e. Europe and the U.S. The second is the learning hypothesis, which argues that management of economic policy that was much improved than the quality of policymaking decades ago permitted countries to attenuate contagion. The third hypothesis highlights the effect of the favorable external conditions over the regional economies during the crisis, particularly for those that export primary goods (commodities).

Thus, the decoupling hypothesis argues that Latin American countries are more independent in trade and finance from the U.S. and Europe today than years ago, thereby diminishing the risks of contagion. Indeed, other regions[2] with closer links to Europe (and the U.S.) suffered higher contagion than Latin America. The learning hypothesis, on the other hand, proposes that after a large record of macroeconomic imbalances, finally, governments of Latin American countries learned how to control inflation, reduce fiscal deficits, and current account deficits. Consequently, the regional economies were in better conditions to manage the last crisis than they had been in the past. Moreover, in several cases, governments had room to apply countercyclical policy and macro-prudential measures, a luxury they had not enjoyed during earlier crises. In such a way, the scope of contagion would have been limited by better economic policy. Finally, external conditions were extremely favorable for developing countries and especially for Latin America. In fact, before the crisis, the prices of the main commodities that export these countries experienced a boom; there was abundance of international liquidity, and many countries had accumulated foreign reserves or appreciated their currencies due to large capital inflows. Although these conditions ended abruptly with the collapse of Lehmann Brothers, the favorable cycle of prices of commodities recovered its trend soon after the crisis has started and capital flows come back following the fast recovery in emerging countries. Consequently, these favorable conditions would have attenuated the effects of the crisis.

Can the decoupling hypothesis explain limited contagion? How much of the unique conditions those Latin American countries faced the last crisis can be attributed to a better economic policy? How much due to external conditions? To answer these questions was the main motivation of the article titled *Financial Crises in Latin America: Policy or Bad (Good) Luck?* Beyond the anecdotal facts and historical records, these questions are quite relevant for this and other regions around the world. In particular,

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2 Like countries of Eastern Europe.

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the evidence shows that Latin America is still highly vulnerable to external shocks. The region's scarcity of human capital and its lower rates of labor productivity than the OECD countries on average are great sources of vulnerabilities for Latin America. These conditions, as well as a large dependence on a few natural resources for export, constitute the largest weakness of many countries in this region, which have remained for several years.

Analyzing financial crises since 1900 for eight Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay, and Venezuela), this article examines crisis regularities and tests the main hypothesis discussed above. Using the numerical and the econometric results of Farías (2012), the article evaluates the decoupling hypothesis and analyses how much of the last experience can be attributed to economic policy (learning), and how much to external conditions. I use the vast literature of crisis for this purpose, especially definitions of crisis in Kaminsky (2006); Allen and Gale (2007); Reinhart and Rogoff (2009), and Laeven and Valencia (2010). According to these definitions and crisis occurrence, I consider two types of crises, banking crises and external defaults. These two were the most common episodes during the last century in the group of countries. Following Blejer and Skreb (2002); Clarida (2001); Clarida et al. (2001), and Cotarelli and Schaechter (2010), I consider fiscal policy and conventional monetary policy as policy tools.

Among the main results, I find that many crisis experiences of the past century are closely related to adverse external conditions. Thus, deep falls in the prices of the main export commodities, adverse terms of trade and abrupt rises in foreign interest rates were common during crisis periods in the group of countries. However, these conditions were quite favorable during the last crisis, and although primary goods exporting countries were the principal beneficiaries, the evidence suggests that the entire region was helped by this dynamism. On the other hand, I find a strong correlation between external conditions (i.e. foreign interest rates) and the probability of banking crises, and

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between government debt and the probability of external default. These two findings prove then that both external conditions and the quality of policy matters in these events, although the evidence shows that wrong policy was commonly adopted during crisis periods, i.e. fiscal policy was extremely expansionary in periods of booms and the opposite during recessions. To continue with this summary, in section II, I discuss the literature of crises. Section III is devoted the empirical analysis and Section IV concludes the results.

II.   Crises in Latin America

Crises started soon in Latin America after the region achieved independence from Europe[3] and they were more frequent there than in other regions during the twentieth century, during the Great Depression and the debt crises of the 1980s. Even during the Breton Woods era, when crises were almost eliminated around the world, several countries suffered crises in Latin America (Farías, 2012). Usually, crisis episodes were related to currency collapses, debt problems, and diverse macroeconomic imbalances (Kaminsky, 2006). Although the distress would have been generated abroad, the weak internal economic conditions of the regional economies contributed to exacerbate these events, with adverse consequences over output growth, welfare citizens, and development. Looking at Graph 1 that relates the crisis frequency with the rate of output growth between 1980 and 2010 for 17 countries in Latin America, we observe a negative relationship. Growth was lower (on average) in countries that were more prone to suffer crises, as in the cases of Argentina, Uruguay, and Venezuela. By contrast, output growth seemed to be enhanced when crisis frequency diminished. Although other conditions may have affected the economic performance in these countries, the relationship shown in the chart is an indicator of the damage caused by crises.

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3 Mainly Spain and Portugal during the nineteen century.

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The literature classifies the causes of crises by their type and nature (Tornell and Westermann, 2005; Kaminsky, 2006; Reinhart and Rogoff, 2009). Events such as inflation crises, currency crises, debt crises, and external defaults are related to macroeconomic imbalances (Krugman, 1979; Calvo, 1998; Kaminsky, 2006). On the other hand, banking crises and financial distress are connected to financial excess and the intrinsic nature of financial markets (Bryan, 1980; Allen and Gale, 2007). In both cases, market imperfections, such as problems of information that lead to the phenomenon of "self fulfilling prophecies" or agency problems may contribute to trigger or to exacerbate these episodes. Although some of these problems are more common in developing countries, particularly those related to poor institutions and macroeconomic imbalances, others may affect any type of country, as the most recent crisis demonstrated. Because Latin American countries exhibited a large history of macroeconomic imbalances, there is no surprise then that they were more exposed to this threat than other regions. However, hyperinflation, large amounts of external debt, and successive current account imbalances were common in other developing countries as well. Despite that, crises were less frequent and the costs seem to be lower in other regions than in Latin America.

Other conditions then would have contributed to this weakness in Latin American countries. The combination of a large dependence on a small group of commodities for export combined with deep macroeconomic imbalances generated large volatility in these countries. Successive fiscal deficits and inward-looking development strategies created a large dependence from foreign capitals to balance the external accounts. This vulnerability was exacerbated when external factors turned adverse, for instance when governments abruptly opened their economies to the rest of the world after decades of protectionism, as in Chile at the end of 1970s, Mexico in the early-1990s, and Argentina at the end of 1990s. The collapse of the prices of the main export goods and abrupt falls in the terms of trade were common during crises events in Latin America. Often, these shocks were accompanied by huge increases in the foreign interest rates and capital

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flights, triggering multiple crises, i.e. currency crises, debt crises, external defaults, and banking crises. This occurred during the Great Depression, in the 1960s, and in 1970s following the oil price shock of 1973. For the debt crises of 1980s, the seven largest countries in Latin America owed 39 percent of the total external debt in developing countries and six of this group accounted for 74 percent of the external debt of the "severely indebted middle income countries" (Cline, 1995). At that time, most countries had pegged their currencies to the U.S. dollar to control inflation. The accumulation of successive current account deficits and loses of competitiveness caused continuous pressure for central banks' interventions. Large reductions in the flows of international capitals or "sudden stops" (Calvo, 1998; 2003) in developing countries obliged governments to devaluate when external conditions switched from favorable to adverse. Therefore, the economies transited from a debt crisis to a currency crisis. The adverse conditions created in these moments together with a scarcity of domestic liquidity contributed to trigger banking crises, as during the Great Depression and the debt crisis of 1981-1982 (Marichal, 1989; Eichengreen and Arteta, 2002). Overall, external defaults and banking crises were the most common crisis episodes for Latin American countries in the past century (see definitions in Table 1). Whereas external defaults were most frequent from the early twentieth century until the 1980s, banking crises became more important following financial liberalizations. Since 1989, the frequency of banking crises has increased and the frequency of external defaults has decreased.

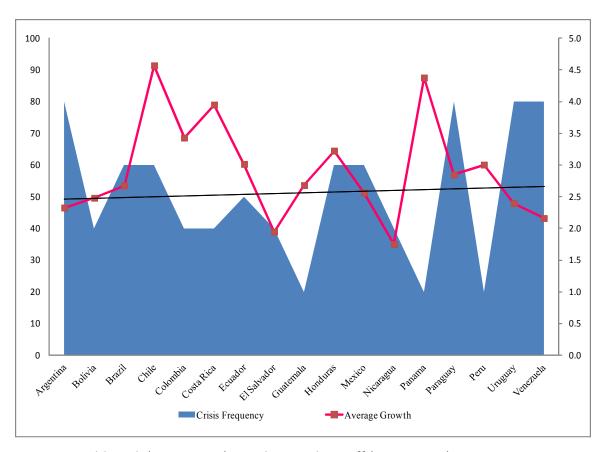Table 1 – Basic Definitions

External Default
A sovereign government is in default when it fails to meet its debt payments on a due date, including a grace period and debt rescheduling (Reinhart and Rogoff (2009) in Farías, 2012). The payments include the principal and interest payments. Commonly, episodes of external defaults are related to diverse macroeconomic imbalances that trigger a balance of payment crisis. In such event, a country that has pegged its currency to a foreign currency (usually to the U.S. dollar in the case of Latin America)

faces a declination in foreign reserves at a point that the government becomes unable to defend the exchange rate. Then, usually, a speculative attack obliges the government to devaluate (Krugman, 1979).

Banking Crisis

Systemic and significant bank runs, or financial distress in the banking system that leads to large capital losses, bank liquidations, and government interventions (Reinhart and Rogoff (2009); Laeven and Valencia (2010) in Farías, 2012). The literature distinguishes between banking crises in developing and developed countries, where developing countries would be more prone to suffer systemic bank runs when they have banking systems poor capitalized. Contrarily, financial distress would be more common in developed countries with more sophisticated financial sectors.

Picture 1 – Frequency of Crises and GDP Growth in Latin America, 1980 – 2010

Source: World Bank (2010, 2011), Reinhart and Rogoff (2009, 2011).

III.   Regularities of Financial Crises for Eight Latin American Countries

To shed light on how the Subprime crisis affected Latin America, this section is devoted to analyze crisis experiences for eight Latin American countries since 1900: Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay, and Venezuela. The group, which represents more than 90 percent of the GDP of developing countries in the region, shares common features (European roots, language, economic orientation) and a history of economic and political instability. Most of these countries experienced as well successive financial crises in the covered period, although the mechanisms used to combat crises and the economic performance varied across the group. To compare experiences with a developed economy, I include the case of the U.S. Following Reinhart and Rogoff (2009), as cases of crises, I use external default and banking crises, according the definitions presented in Table 1.

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Regarding the economic performance, Table 2 shows the main indicators for the group of countries between 1990 and 2010: productivity ratio[4], total factor productivity, and growth of per capita GDP. Looking at these indicators, we see that labor productivity on average was less than the half of the U.S. labor productivity between 1990 and 2009. In most cases as well, the ratio of labor productivity decreased in 2010, despite countries may have recovered growth soon following the Subprime crisis. This trend is more pronounced in Argentina, Brazil, and Uruguay, each of which grew over 6 percent in 2010. Total factor productivity, on the other hand, grew very slowly or decreased in the same period (1990-2009), on average, except for Argentina, Peru, and Uruguay. In 2010, total factor productivity increased in Argentina, Chile, Peru, and Uruguay, but it decreased (or increased very little) in the rest of the countries. The situation of Venezuela seems dramatic; despite having some of the highest ratios of labor productivity in the group between 1990 and 2010, total factor productivity almost remained constant in that period, and it was reduced by 4.8 percent in 2010 (see Table 2).

In terms of growth of per capita GDP, the average of the group was below the regional average between 1990 and 2010. However, in 2010, the group grew over the regional average and more than the average of the OCED countries. In the extreme, the most dynamic economies that period were Argentina, Chile, Peru, and Uruguay that shown a rate of growth over 2 percent. The less dynamic economies were Brazil, Colombia, Mexico, and Venezuela. In 2010, the situation changed, per capita GDP grew over 6 percent on average in Argentina, Brazil, Peru, and Uruguay; in the rest of the countries, per capita GDP grew less than the regional average of 4.6 percent. Again, Venezuela, which exhibited the worst indicators, remained in a recession of 3 percent in 2010. Thus, even though these eight countries may have common features and face common shocks, the economic performance differs largely.

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4 The productivity ratio measures the relative labor productivity between each country and the U.S. labor productivity for a given year.

Comparing the frequency of external defaults with the frequency of banking crises for the group of countries, Table 3 shows that external defaults were more common than banking crises until 1989, on average. Since then, coinciding with economic reforms and financial sectors liberalizations, the frequency of banking crises increased and the frequency of external defaults diminished. This is especially marked in the cases of Brazil and Mexico and less marked in the cases of Colombia and Peru. Contrarily, the probability to suffer both types of crises increased in Argentina after 1989, and external defaults turned out more probable than banking crises in Chile, Uruguay, and Venezuela. In the case of Chile and Venezuela, the results can be affected because the probability to suffer a banking crisis is calculated based on the number of effective events in such period. As Chile has not experienced banking crises since 1990, its probability of suffering a banking crisis is shown as zero. However, according to Reinhart and Rogoff (2011), this country experienced two stock market crashes between 1990 and 2010, one in 1994, and the second one in 2008. The case of Venezuela is similar. Banking crises have been less frequent since 1990, but the country experienced three stock market crashes in such period, in 1992, 1997, and 2007-2008. Thus, the causes of financial crises in the region have changed, switching from bank runs to financial distress, which are more typical of developed financial markets.

The duration of crises and their costs (output lost in the crisis year) also vary across the group of countries. For example, on average, the length of an external default was 1.3 years and the length of a banking crisis was 2.4 years. In the extreme, external defaults lasted for 10 months in Argentina (suffering them with higher frequency) and almost 2 years in Colombia. The length of a banking crisis was 1.8 years in Chile and 4 years in Uruguay. Banking crises not only lasted longer than external defaults but also caused greater losses in output. In some cases, the banking crises were extremely costly; Argentina and Peru lost 11 percent and 14 percent of output, respectively, in the crisis year on average (Farías, 2012). Regarding macroeconomic conditions during crises, the

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data shows that in seven of the eight countries, the inflation rate exceeded 20 percent per year when they suffered either an external default or a banking crisis. Similarly, except for Peru, devaluation was higher than 15 percent in the crisis year. Thus, based on Reinhart and Rogoff (2009), external defaults and banking crises in this group of countries commonly coincided with crises of inflation, currency crashes[5] and balance of payments crises.

There is evidence that many of these episodes coincided with large increases in foreign interest rates (i.e., the U.S. interbank interest rate), as in Mexico for both types of crises, in Peru during external defaults and in Uruguay and Venezuela during banking crises. Argentina and Brazil suffered similar conditions during banking crises, although to a lesser extent. In half of the countries, there was also a deep fall in the terms of trade or abrupt falls in the prices of the main export commodities during the crisis period. Surprisingly, the rest of the countries showed large increases in the terms of trade in the crisis episodes, suggesting some type of bubbles around these events.

Authors suggest that both fiscal policy and monetary policy were highly procyclical in crises periods in Latin America. Moreover, in the case of fiscal policy, fiscal deficits would have been behind of several balances of payment crises in emerging countries in the 1990s and early 2000s (Calvo, 2003). Considering central government debt as a proxy of fiscal policy and money variation (àM1) as a proxy of monetary policy, I find that central government debt increased in half of countries when they suffered an external default. In the rest of the group, debt decreased. However, central government debt increased in most cases during a banking crisis. Sometimes, as in Brazil and Uruguay, these increases were truly huge. These findings coincide with those of Reinhart and Rogoff (2009) and suggest that government debt might increase during banking crises because of government interventions in the banking system. Other than a tool to combat the

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5 These authors define an inflation crisis, when the inflation rate surpasses 20 percent per year, and a currency crisis, when the exchange rate devaluates more than 15 percent per year.

financial distress, the fiscal debt acquired in these events is considered an additional cost of banking crises.

On the other hand, monetary policy was always expansionary during crises, with the money supply (M1) sometimes increasing more than 100 percent, as in the cases of Argentina and Brazil during banking crises. In other cases, as in Peru and Uruguay, money increased more than 50 percent during both types of crises. Five of the eight countries experienced inflation rates over 40 percent, on average, during both types of crises. Reinhart and Rogoff (2009) consider this rate of inflation an episode of high inflation or an inflationary crisis. In other cases, the inflation rate surpassed 20 percent per year. Compared with the U.S. benchmark case, where central government debt increased 12 percent on average during banking crises, and the inflation rate reached 2 percent on average, the indicators suggest that economic policy may have contributed to worsening crises more than to solving them.

Table 2 -Main Indicators for Eight Latin American Countries (LA - 8)						
	Productivity Ratio (1)		Total Factor Productivity (2)		Growth of per capita GDP (3)	
Country/Period	1990-2009	2010	1990-2009	2011	1990-2009	2010
Argentina	41%	41%	1.4%	1.1%	2.2%	7%
Brazil	21%	20%	0.1%	-0.4%	1.2%	6%
Chile	47%	48%	-0.1%	1.3%	3.6%	4%
Colombia	27%	26%	-0.7%	-1.8%	1.8%	3%
Mexico	32%	30%	-0.5%	0.3%	1.3%	4%
Peru	20%	22%	1.7%	2.2%	2.8%	7%
Uruguay	39%	35%	1.2%	3.7%	2.4%	8%
Venezuela	46%	41%	0.3%	-4.8%	0.9%	-3%

(1): Labor productivity per person relative to the U.S. labor productivity, engaged in 1990 US$ (The Conference Board, 2012).
(2): Growth of Total Productivity Factor in 1990 US$ (The Conference Board, 2012).
(3): Growth of per capita GDP in 1990 US$ (The Conference Board, 2012).

Table 3 - Crisis Frequency for Eight Latin American Countries (LA - 8)

| | 1900 - 2010 | | | | 1900 - 1989 | | | | 1990 - 2010 | | | |
	External Default		Banking Crisis		External Default		Banking Crisis		External Default		Banking Crisis	
Argentina	25%	(0.44)	13%	(0.33)	21%	(0.41)	9%	(0.29)	41%	(0.50)	27%	(0.46)
Brazil	26%	(0.44)	13%	(0.34)	31%	(0.47)	11%	(0.32)	5%	(0.21)	23%	(0.43)
Chile	24%	(0.43)	9%	(0.29)	29%	(0.46)	11%	(0.32)	5%	(0.21)	0%	(0.00)
Colombia	16%	(0.37)	7%	(0.26)	20%	(0.40)	7%	(0.25)	0%	(0.00)	9%	(0.29)
Mexico	29%	(0.46)	16%	(0.37)	36%	(0.48)	12%	(0.33)	5%	(0.21)	32%	(0.48)
Peru	5%	(0.23)	2%	(0.13)	7%	(0.25)	1%	(0.11)	0%	(0.00)	5%	(0.21)
Uruguay	20%	(0.40)	6%	(0.24)	21%	(0.41)	7%	(0.25)	14%	(0.35)	5%	(0.21)
Venezuela	16%	(0.37)	10%	(0.30)	13%	(0.34)	10%	(0.30)	27%	(0.46)	9%	(0.29)

Source: My own calculations using data from Reinhart and Rogoff (2009), and Laeven and Valencia (2010).
Standard deviations in brackets.

IV.   Policy or External Conditions? Testing the main hypotheses

Considering the crisis literature and the evidence for the eight Latin American countries, this section is devoted to testing the three main hypothesis of the literature: the decoupling hypothesis, the learning hypothesis, and the role of external factors.

1. The decoupling hypothesis

To test the decoupling hypothesis, we use the business cycle approach, based on the results of Farías (2012). Accordingly, there is coincidence between the business cycles of two countries if the correlation coefficients of their respective output gaps are statistically significant and the value is larger than zero. In the extreme, a coefficient equal to one indicates full coincidence; a coefficient equal to zero indicates no coincidence. Because we need to evaluate changes in coincidence of business cycles along the time, we have to compare the coefficient values for different periods. Comparing the coefficient values then obtained for the total period (1900 to 2009) and those obtained for the last decades, we can check the decoupling hypothesis. If the hypothesis holds, the coefficient value should decrease as well as its statistical significance. Following Gali and Monacelli (2005), the output gap for each country is

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obtained as the difference (in log terms) between the current GDP and long-term GDP.[6] I use two types of filters to calculate the long term GDP, the Hodrick-Prescott (HP) filter and the band pass filter (Christiano and Fitzgerald, 1999). Although, both types of filters permit to separate the long-term trend of the GDP series from its short-term fluctuations, they differ in the length of the business cycle. The HP filter considers a unique time interval of 1.5 to 8 years, which corresponds to the length of an average business cycle in the U.S. and developed countries. The pass band filter considers five time intervals (2-3 years, 2-5 years, 2-8 years, 8-20 years, and 20-40 years) and permits to evaluate business cycles of different duration.

Thus, Table 4 summarizes these results containing the correlations coefficients (co-movements) between the output gap of the eight Latin American countries (on average) and the output gaps of the main partners since 1900, the U.S. and Europe. The output gap of China is included in the last column, to evaluate whether Latin American economies have grown more integrated with this country in the past years. In each column of Table 4, then, the value of the correlation coefficient indicates the coincidence between the business cycles of the group of countries and their main partners. Recall that if the coefficient is zero or statistically insignificant, there is no coincidence. To evaluate the decoupling hypothesis, the table compares the correlation coefficient of the total period (1900 – 2009) with that of the last two decades, on average. If the decoupling hypothesis holds, the coefficient should diminishes toward the end of the period. Comparing correlation coefficients for a classical recession instead of output gaps, we see that the value does not change for the U.S. and there is a small fall for Europe. By contrast, the correlation with China increased from zero to 13 percent. Comparing correlation coefficients through the HP filter on the other hand, I find higher coincidence of business cycles with Europe and China. The coincidence with the U.S. seems to be almost constant. The coefficients obtained with the band pass filter, on the

6 The long term GDP is defined as the level of GDP that the economy reaches when there is full employment, or the rate of unemployment is equal to its natural rate or long-term unemployment rate.

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other hand, differ largely depending on the time interval. For short time intervals, I find that coefficients increase for the U.S. and Europe in the last decades, showing higher coincidence in business cycles. The opposite is found in the case of China. For longer periods, the results change and it increases the coincidence with this country. After all, according to these results we cannot sustain the decoupling hypothesis, meaning that the business cycle of the group of countries has been decoupled from the business cycle of the traditional partners. The most robust conclusion from this exercise is the increasing role of China as a nontraditional partner for the group of countries.

			Latin America-8		
Table 4 - Co-movements of Output Gaps in Latin America (ρ)					
		Period	USA	Europe	China
	Classical Recession	1900-2009	0.11	0.18	0.00
		1990-2009	0.11	0.17	0.13
Hodrick Prescott	1.5 - 8 years	1900-2009	0.07	0.19	0.01
		1990-2009	0.08	0.26	0.12
Band Pass Filter	2 -3 years	1900-2009	0.02	0.10	0.01
		1990-2009	0.30	0.35	-0.05
	2-5 years	1900-2009	0.12	0.17	0.00
		1990-2009	0.32	0.39	-0.10
	2-8 years	1900-2009	0.24	0.24	0.02
		1990-2009	0.25	0.38	-0.04
	8-20 years	1900-2009	0.20	0.22	-0.05
		1990-2009	-0.37	-0.31	0.54
	20-40 years	1900-2009	0.13	-0.08	-0.19
		1990-2009	0.33	0.14	0.23

Output Gap = $\ln(GDP_t / GDP_{lr})$

Source: Farías (2012).

2. The learning hypothesis: how much is attributed to policy?

To evaluate the learning hypothesis and the role of external conditions during crises, Farías (2012) conducts an econometric analysis, estimating the probability of external defaults and the probability of banking crises based on policy variables and external conditions, in addition to other macroeconomic variables. The main goal of this analysis is to examine the statistical significance and the sign of the coefficients of policy

variables in the equation of probability of crises. If the learning hypothesis holds, policy variables should be statistical significant. On the other hand, the sign of the coefficients should be negative for "good" policies and positive for "bad" policies, defining as "good" policies to those that contribute to prevent a crisis (or lead to its solution), and a "bad" policy to that acts in opposite sense (Blejer and Skreb, 2002; Blanchard et al., 2010). Similarly, the role of external conditions is examined through the statistical significance of the external conditions and the sign of their coefficients, where a positive coefficient implies that the variable could contribute to trigger a crisis and the opposite a negative sign.

Table 5 and Table 6 summarize the main results from a panel of eight countries (LA-8) and times series from 1900 to 2010. As policy variables, I use central government debt, variation in central government debt (à *central government debt*), money variation (à *M1*), foreign interest rates, exchange rates, and devaluation. As external conditions, I use variation in terms of trade *(à Terms of Trade)*, commodity index,[7] foreign interest rates, foreign income, and external financial conditions (*Financial Conditions*). Note that foreign interest rates play a dual role, one as policy variables and the other as external conditions. Because it was difficult to obtain complete time series of money variation (or domestic interest rates) for all countries, I use foreign interest rates together with devaluation as proxies of domestic interest rates (for details, see Farías (2012)). To check the effect of contagion between crises, I include the probability of a banking crisis in the equation of external defaults (see Table 5) and the probability of external default in the equation of banking crises (see Table 6). To compare the effect of financial conditions, I estimate two types of models, Model 1 excluding this variable and Model 2 including it. To account for structural changes and individual characteristics at country level, I included several control variables in the analysis. The estimations were obtained using Probit and IV-Probit econometric models.

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7 This index contains the average of the annual prices of the main export commodities for the group of countries, using 2005 as a base year. The source of data is Comtrade (2011) of United Nations.

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Looking at the results of Table 5, we see a positive and significant relationship between the probability of external default and a banking crisis, even though the coefficient values are very small. We observe a similar result using a Probit or an IV-Probit type of model, despite significance decreases in the later. Among the policy variables, central government debt appears to be the most important, both in term of significance and relative to the coefficient value. This result is very robust, the coefficient was always significant and positive, and coincides with Reinhart and Rogoff (2011) in the sense that a large government debt increases the country's probability of suffering an external default. The coefficient of *Foreign Interest Rates* was positive and very significant as well in all the estimations, although its value was much smaller than that of central government debt. Exchange rate variation (à *Exchange Rate*) was positive also and less significant than the other two variables. However, the coefficient value was higher than that of foreign interest rates. These results suggest that the combination of high fiscal debt with liquidity constraint would have been behind many external defaults (and balance of payment crises) in Latin America. As external conditions, the coefficient of à *Terms of Trade* was always significant and negative, implying that despite of its small value, the external accounts of these countries are sensitive to the external conditions. *GDP Growth* was not significant and the coefficient was almost zero in the estimations of Model 1. When I add *Financial Conditions* in Model 2, the coefficient is negative but not significant. Given that *GDP Growth* is an endogenous variable in the equations, a negative sign might indicate that output contractions create adverse conditions during a crisis (external default), but also that output decreases due to the crisis. In such a case, the coefficient represents the cost of the crisis in terms of output lost. The effect of financial conditions is unclear; the coefficient was only significant in the IV-Probit, but it was positive in the two estimations. This result may contradict the relationship found for foreign interest rates, suggesting some sort of bubbles in international financial markets during external defaults.

The results of estimating the probability of banking crisis are summarized in Table 6. Unlike in the previous equations, the probability of external default in the equation of banking crisis was only significant using the IV-Probit type of models. Despite that, the coefficient values were positive suggesting a positive relationship between these two events. Regarding the policy variables, variation of central government debt (à *Central Government Debt*) was positive and significant in all the estimations, but the value of the coefficient increases dramatically when I use IV-Probit instead of Probit models. Similar result is obtained for foreign interest rates, indicating the presence of distortions in the Probit estimations. Indeed, as discussed in Reinhart and Rogoff (2011) and Farías (2012), the positive relationship between banking crisis and variation of government debt would suggest that fiscal debt increases during banking crises because of the government intervention in the financial system and not necessarily because it causes them. Considering the experience of Latin America, this result would indicate as well that the conditions that lead countries to suffer an external default contribute to cause a banking crisis. As before, the positive sign of foreign interest rates confirms the effect of liquidity constraints during crisis events for Latin American countries. The effect of Commodity Index as external conditions on banking crisis is not much clear. The coefficient was little significant and almost zero in the Probit estimations, however, it was negative and highly significant in the IV-Probit estimations. Contrarily, GDP Growth was always significant and negative in all the estimations, where the coefficient value increases slightly in absolute terms when I use IV-Probit estimations. Thus, as before, GDP growth has a double effect in these estimations, indicating on the one hand, that the crisis would be more probable during a recession, and the costs of the crisis, on the other hand. As in the previous estimations, Financial Conditions was significant only using IV-Probit models, although the coefficient was positive. The value of this coefficient was also larger than in the estimations of default.

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Table 5 - Probability of External Default (ED)

$$\text{Prob}\{ED_{it} = 1\} = \alpha_{i1} + \alpha_2 PVit + \alpha_3 \text{Ext Cond}_{it} + \alpha_4 OVit + z_{it}$$

Variable	Model 1		Model 2	
	Probit	IV-Probit	Probit	IV-Probit
Banking Crisis	0.01	0.01	0.01	0.01
	(0.003)**	(0.003)*	(0.003)**	(0.003)*
Central Government Debt	0.94	0.95	0.94	0.95
	(0.011)***	(0.011)***	(0.011)***	(0.011)***
Foreign Interest Rates	0.05	0.04	0.05	0.04
	(0.011)***	(0.011)***	(0.011)***	(0.011)***
Δ Exchange Rate	0.48	0.47	0.44	0.38
	(0.161)**	(0.155)**	(0.166)**	(0.153)*
Δ Terms of Trade	-0.02	-0.02	-0.03	-0.02
	(0.002)***	(0.003)***	(0.002)***	(0.003)***
GDP Growth	0.00	0.00	-0.01	-0.01
	(0.018)	(0.024)	(0.020)	(0.024)
Financial Conditions			0.38	0.49
			(0.220)	(0.208)*
Control Variables:	Yes	Yes	Yes	Yes

Instrumental Variables: Lagged GDP Growth, Foreign GDP Growth, Prices of Foods.

Standards deviations in brackets.

* $p < .05$; ** $p < .01$; *** $p < .0001$.

Notes:

ED = 1, if there is an external default in country "i" at year t, otherwise, ED = 0. PV: Policy Variables, Ext Cond: External Conditions; OV: Other Variables; z is a "well behaved" random variable.

Source: Farías (2012).

Table 6 - Probability of Banking Crises (BC)

$$\text{Prob}\{BC_{it} = 1\} = \beta_{i1} + \beta_2 PVit + \beta_3 \text{Ext Cond}_{it} + \beta_4 OVit + u_{it}$$

Variable	Model 1		Model 2	
	Probit	IV-Probit	Probit	IV-Probit
External Default	0.01	0.02	0.01	0.03
	(0.003)	(0.003)***	(0.003)	(0.003)***
Δ Central Government Debt	0.05	0.72	0.05	0.72
	(0.016)**	(0.010)***	(0.016)**	(0.010)***
Foreign Interest Rates	0.03	0.25	0.03	0.26
	(0.013)*	(0.009)***	(0.013)*	(0.009)***
Commodity Index	0.00	-0.01	0.00	-0.01
	(0.001)*	(0.002)***	(0.002)	(0.002)***
GDP Growth	-0.04	-0.06	-0.05	-0.07
	(0.013)***	(0.018)***	(0.014)***	(0.017)***
Financial Conditions			0.17	1.45
			(0.208)	(0.252)***
Control Variables:	Yes	Yes	Yes	Yes

Instrumental Variables: Lagged GDP Growth, Foreign GDP Growth, Prices of Foods.
Standards deviations in brackets.
* p < .05; ** p < .01; *** p < .0001.
Notes:
BC = 1, if there is a banking crisis in country "i" at year t, otherwise, BC = 0. PV: Policy Variables, Ext Cond: External Conditions; OV: Other Variables; u is a "well behaved" random variable.
Source: Farías (2012).

3. The Role of External conditions

To check the robustness of the econometric results, I examine the role of the external conditions for the group of countries measuring the correlation at country level, between the log of GDP per capita and the log of price indices for a group of commodities. In addition, I summarize the results of Farías (2012), which evaluates the role of policy variables and external conditions on crisis resolution from 1900 and 2010. As commodities I use metals (*Metals*) and crude oil (*Oil*), taken the prices indices from Ocampo and Parra (2003) and IMF (2011). In addition, I use two composed indices, *Index 1* and *Index 2* that include 24 commodities that the group of eight LA countries has exported since 1900. Both indexes (*Index 1* and *Index 2*) are taken from Farías (2012) and are adjusted by export weights and inflation. Whereas *Index 1* is adjusted by domestic inflation, *Index 2* is adjusted by domestic and international inflation.

Table A.1 in the Appendix summarize the correlation coefficients for each country, obtained from a simple OLS model. To evaluate changes in the export structure (and economic orientation) I compare the coefficient values obtained using the full period, 1900 – 2010, with the values obtained for 1990 – 2010. As we can see in the first two columns of Table A.1, I find a positive correlation between log of GDP per capita and the logs of prices indexes, *Metals* and *Oil*, for the group of countries. Despites the values of the coefficients vary among countries; both indices are highly significant. In the case of *Metals*, the values of the coefficients are especially large for Brazil, Venezuela, Mexico, and Colombia between 1900 and 2010. Nevertheless, both the value and the significance decrease after 1990. In the case of *Oil*, the coefficient values decrease after 1990, but the index remains statistically significant. Considering that half of these countries specialized in metal production in the past, and just two of them were oil producers, these results indicate sensitivity to international conditions in a broad sense more than pure demand conditions. When we obtain correlations from the composed indices, *Index 1* and *Index 2*, we observe a different behavior. *Index 1* is significant and positive in the full period (1900 – 2010) just in the half of the group, Argentina, Brazil, Peru, and Venezuela. However, the significance of *Index 1* augments among the group countries after 1990 and the value of the coefficients increases for some of them, i.e. Argentina, Colombia, Peru, Uruguay, and Venezuela. *Index 2* is highly significant for almost all of the countries between 1900 and 2010, although, the significance decreases after 1990. In the last period, *Index 2* is significant just in five of the eight countries. Despite that, the value of the coefficients of *Index 2* increases after 1990, such as in Argentina, Chile, and Venezuela. These figures are indicating that beyond the specific trade orientations, external factors-the prices of export commodities-matter for the group of countries. These factors were especially relevant in the first decades of the 20th century and seem to have acquired relevance for some countries after 1990, such as in the cases of Chile and Venezuela.

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Analyzing the role of policy and external conditions on crisis resolution, Table 7 summarizes the main results, obtained with Cox-types regressions (Cox, 1972; Wooldridge, 2002). As policy variables, I consider the central government debt (*Central Gov Debt*), the variation of the central government debt *(à Central Gov Debt)* as proxies of fiscal policy. In the case of monetary policy, I consider money variation *(àM1)* and domestic interest rates. To include the role of exchange rates in monetary policy, I include *Exchange Rate* and *Devaluation* as policy tools. The external conditions include: terms of trade (*Terms of Trade*), commodity prices (*Metals*, *Oil*, and *Foods*), the two indices (*Index 1* and *Index 2*), foreign interest rates (U.S. interest rate), foreign income (U.S. GDP per capita and Europe-7 GDP per capita), and financial conditions. Thus, the first column of Table 7 displays the statistics significance between the correlation of the aggregate demand and the group of policy variables and external conditions. As the table shows, the policy tools *Central Gov Debt* and *Exchange Rate* were highly significant in the equation of aggregate demand. However, *Devaluation* was not significant. Among the external conditions, commodity prices, either in terms of individual indices and of composed indices were highly significant. A similar result was obtained for *Foreign Interest Rates* and *Foreign Income*; however, *Financial Conditions* was not significant. The second and the third columns of Table 7 contain the results of examining the role of policy and external conditions on the crisis resolution for external defaults and banking crises, respectively. In each case, the table summarizes the significance found for the group of variables when I estimated a Cox-regression for exiting the crisis. Accordingly, *Central Gov Debt*, as fiscal policy, was not significant to exit an external default, although, monetary policy was highly significant. The external conditions, commodity prices (both the individual prices and the composed indices), *Foreign Interest Rates* and *Foreign Income* were highly significant. However, *Financial Conditions* was not significant. In the case of exiting a banking crisis, *Central Gov Debt* was not much significant, but à *Central Gov Debt* was highly significant, as well as monetary policy. Regarding the external conditions, the three variables, *Terms of Trade*, *Foreign Interest Rates,* and *Foreign Income* were highly significant, but commodity prices and *Financial*

Conditions were not significant. We can infer from these results that although fiscal policy matters for aggregate demand, there is no clear role for this policy in exiting an external default. Comparing these results with those obtained in the econometric part, we see that even though successive fiscal deficits (accumulated in central government debt) can lead countries more prone to suffer an external default, a contractive fiscal policy not necessarily contributes to exit this type of crisis in the short term. Because a reduction in government spending has a contractive impact on the aggregate demand and output in the short term, there is a balance sheet effect in the government budget and the crisis would be exacerbated in the short term. This can occur despite the government is moving to reduce absolute fiscal deficit.

In the case of a banking crisis, government intervention is part of the crisis condition, and we cannot talk about "good" or "bad" policy. The results showing positive and significant coefficients for à *Central Gov Debt* just confirm this fact. In opposition, monetary policy appears to play an important role for exiting both types of crisis, external defaults and banking crises. This is found considering both money variation and domestic interest rates. The role of commodity prices as external factors is less clear during banking crises. Related with the aggregate demand and the state of the current account, commodity prices seem to be important for the resolution of an external default, but not much for exiting a banking crisis. Because in this case crisis resolution seeks to recover liquidity, those variables such as foreign interest rates would be more important than commodity prices. Moreover, foreign interest rates seem to be important for exiting both types of crises, external defaults and banking crises. A similar result is found for *Foreign Income*, giving evidence for the dependence of the Latin American economies on external conditions during the analyzed period.

| Policy Variables | Aggregate Demand | Crisis Resolution | |
| | | External Default | Banking Crisis |
	Significant	Significant	Significant
Table 7 - Policy and External Conditions Evaluation			
Fiscal Policy			
Central Gov Debt	Yes	No	Not much
Δ Central Gov Debt	-	-	Yes
Monetary Policy	-	Yes	Yes
Exchange Rate	Yes	-	-
Devaluation	Not Much	-	-
External Conditions			
Terms of Trade	-	-	Yes
Commodity Prices	Yes	Yes	No
Commodity Index	Yes	Yes	No
Foreign Interest Rates	Yes	Yes	Yes
Foreign Income	Yes	Yes	Yes
Financial Conditions	Not much	No	No

Note: "Yes" means that the variable is significant at 5% or more. "Not much" implies that the variable is significant at 10%.
"No" means that the variable is not significant.
-': No data.
Source: Farías (2012).

V.   Conclusions

Testing the three main hypotheses why Latin American countries suffered less contagion in the last crisis, I can conclude that there is a combination of factors at work. On the one hand, after examining crisis experiences (external defaults and banking crisis) for eight Latin American between 1900 and 2010, the data show that it is not clear that business cycles of these countries have been decoupled from the business cycles of U.S. and Europe. Applying different methodologies to examine co movements of business cycles, some indicators show less coincidence in the last decades, but others show that coincidence is growing. Moreover, the indicators show an increasing coincidence between business cycles of the group of Latin American countries and China, which has been driven GDP growth for emerging countries during the last years. Therefore, we cannot conclude that contagion was smaller in 2007-2009 because regional business cycles were decoupled from U.S. and Europe. On the other hand, analyzing the learning hypothesis, I find a strong correlation between fiscal imbalances and central government debt with external defaults. Many of these events as well were accompanied by high inflation rates. In the case of banking crises, the results show a high correlation between crises and financial excesses and between crises and productivity falls. The relationship between banking crises and policy, especially monetary policy, would be more important for crisis resolution. Having succeeded in control inflation and severe macroeconomic imbalances during the last decades, the experience of the group of countries would sustain the "learning" hypothesis. Nevertheless, learning is not enough to explain the extraordinary performance during the crisis of 2007-2009. In fact, analyzing the role of external factors (commodity prices, foreign interest rates, and foreign incomes); my results show a strong correlation between these factors and crises as well as between external factors and crisis resolution. Moreover, I find a strong correlation between external factors (commodity prices) and GDP per capita for 1900 to 2010. Although this correlation decreases after 1990 for some countries, it increases for others, in particular in the cases of Chile, Peru, and Venezuela.

VI.   References

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Appendix

Table A.1 - Correlations Between Per Capita GDP and Prices of Main Commodities

Country/Commodity	1900 - 2010				1990 - 2010			
	Metals (1)	Oil (2)	Index 1 (3)	Index 2 (4)	Metals (1)	Oil (2)	Index 1 (3)	Index 2 (4)
Argentina	0.42	0.22	0.23	0.08	0.21	0.16	0.39	-0.35
	(0.026)***	(0.012)***	(0.059)***	(0.020)***	(0.046)***	(0.032)***	(0.093)**	(0.127)*
Brazil	0.91	0.48	0.21	0.33	0.12	0.13	0.13	0.09
	(0.047)***	(0.020)***	(0.081)*	(0.028)***	(0.035)**	(0.014)***	(0.035)**	(0.041)*
Chile	0.56	0.30	-0.05	0.29	0.15	0.18	0.03	0.41
	(0.036)***	(0.015)**	(0.133)	(0.046)***	(0.050)*	(0.021)***	(0.083)	(0.096)***
Colombia	0.70	0.37	0.07	0.31	0.17	0.17	0.17	0.10
	(0.039)***	(0.017)***	(0.066)	(0.023)***	(0.045)**	(0.021)***	(0.059)**	(0.066)
Mexico	0.74	0.38	0.13	0.29	0.08	0.13	0.00	0.25
	(0.031)***	(0.013)***	(0.072)	(0.025)***	(0.046)	(0.021)***	(0.061)	(0.068)**
Peru	0.55	0.30	0.32	0.03	0.24	0.25	0.38	-0.05
	(0.049)***	(0.023)***	(0.068)***	(0.023)	(0.069)**	(0.029)***	(0.070)***	(0.095)
Uruguay	0.43	0.23	0.01	0.18	0.20	0.15	0.27	-0.08
	(0.028)***	(0.012)***	(0.044)	(0.023)***	(0.043)***	(0.032)***	(0.044)*	(0.023)
Venezuela	0.76	0.41	0.26	-0.08	0.16	0.11	0.37	-0.26
	(0.099)***	(0.047)***	(0.044)***	(0.015)***	(0.017)***	(0.030)**	(0.079)***	(0.089)**

* p < .05; ** p < .01; *** p < .0001.

Standard deviations in brackets.

(1): Metals Price Index in base year 2005. It includes Copper, Aluminum, Iron Ore, Nickel, Zinc, Lead, and Uranium Price Indices (IMF, 2011).

(2): Crude Oil Price Index in base year 2005 (IMF, 2011).

(3): Price index composed by 24 commodities that Latin American countries export since 1900, adjusted by domestic inflation (IMF, 2011, Farías, 2012).

(4): Price index composed by 24 commodities that Latin American countries export since 1900, adjusted by domestic and international inflation (Farías, 2012).