THE ROLE OF LATIN AMERICAN BANKS IN THE REGION'S CURRENCY CRISES

Carroll Howard GRIFFIN[*]

Abstract*: The frequency of currency crises in Latin America has not abated in the last few years, as the Mexican Peso crises of 1982 and 1995, the Brazilian Real Crisis of 1998 and the Argentine Peso crisis of 2001 attest. Although many factors are involved in these crises, Latin American banks have played an important, yet previously unstudied role in the frequency and severity of the region's financial crises. This paper examines four of the most recent currency crises in the region to determine if there are any commonalities or root causes to be found in the region's banking system. It is found that, indeed, the region's banks have had a profound role.*

Keywords*: Currency crises, Latin America, Banking*

JEL Codes*: Banks, International Financial Markets*

1. INTRODUCTION

Throughout the last few decades, several waves of currency crises have swept through Latin America, provoking very serious financial damage after each. These currency crises have been of two general sorts–those that originated in the region and spread to neighboring countries and those that originated outside the region but through a "domino effect" eventually affected Latin America. Historically, financial crises in Latin America have been more frequent and severe than in other regions (Kaminsky and Reinhart, 1998).

This study examines the recent history of Latin America's currency crisis to determine if there is a relationship between the region's banking system and the

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[*] Carroll Howard Griffin, Ph.D., Fontbonne University, 6800 Wydown Blvd., St. Louis MO 63105

prevalence of currency crises over the last 25 years. It will examine the circumstances and economic stability of each country in question over this time period. The study will examine time series data to gain a "bird's eye view" of the trends during the last 25 years. It will then analyze International Monetary Fund data on commercial bank and non-bank financial institution assets and liabilities as well as central bank foreign reserves and what impact these factors have had on each respective country's exchange rate during the time in question.

2. LATIN AMERICA'S CURRENCY CRISES – A BRIEF HISTORY

Several Latin American countries have experienced simultaneous currency and banking crises, such as Chile (1982), Argentina (1982 and 1995), Venezuela (1994) and Mexico (1994-95). Causation may run in either direction, as the two can many times be complementary (Miller, 1998). Research has shown that the "domino effect" in the payment system depends on the pattern of interbank linkages. If a bank is having trouble honoring some of its obligations, it may have to sell off some of its assets. However, not all assets are liquid enough to insure that the obligations are met in a timely manner (Tannuri-Pianto, 2006). Also, according to Miller (1996), a speculative attack on the currency can precipitate a banking crisis if deposit money is used to speculate on the currency and banks are depleted of funds.

According to Obstfeld (1994), a weak banking sector may itself cause a currency crisis if rational speculators anticipate that policymakers will not endure the costs of defending their currency. Calvo (1995) showed that an internal drain (i.e. a bank run) can cause an external drain (i.e. a speculative attack on a currency) if the increased liquidity resulting from a government bailout is inconsistent with the fixed parity. Rojas-Suarez and Weisbond (1995) also discuss how a currency crisis can cause hardship for a weak banking sector if the government defends its currency and increases interest rates. Hattori concurs in that a country's central bank has two means of defending their currency when its value comes under attack–they can either use foreign exchange reserves or they can raise domestic interest rates (2002).

The following is a brief synopsis of each examined country's circumstances and repercussions surrounding its devaluation in the given year.

2.1. Mexico – 1982

In August 1982, Mexico defaulted on its external bank debt. By the end of that year, the peso had depreciated 100 percent. Prior to Mexico's default, several Latin American countries had already experienced currency crises, banking crises or both. When Mexico defaulted, the highly leveraged foreign banks pulled back from emerging markets in general and Latin America in particular (Kaminsky et al, 2003).

2.2. Mexico – 1994/95

The Mexican peso came under attack in December 1994. After several attempts at defending it by the Mexican Central Bank, the currency was left to float freely in January 1995. Speculative attacks on other Latin American countries immediately ensued. The most severely affected countries in the region were Argentina, Brazil, Peru and Venezuela. Interestingly, Chile was a notable exception (Glick and Rose, 1998). According to Fratzcher, the Mexican peso crisis of 1994/95 spread across emerging markets not only due to weaknesses in economic fundamentals, but also due to a high degree of financial interdependence among the affected economies (2003).

2.3. Brazil – 1998/99

The devaluation of the Thai baht on July 2, 1997, generated waves of turbulence in currency and equity markets that surpassed the "tequila" effects in the midst of the 1994 devaluation of the Mexican peso. The crisis first spread through East Asia in the form of a string of devaluations and stock market collapses. As the problems intensified, the currencies of other Asian countries, including Hong Kong and South Korea, came under speculative pressure. As a result of a possible "domino" effect, countries outside the region such as Argentina, Brazil, and Russia suffered sharp declines in their equity markets and periodic bouts of speculation against their currencies (Kaminsky and Reinhart, 1999).

The fall of the Hong Kong stock market in late 1997 affected several Latin American markets, with Brazil being perhaps the hardest hit. Specifically, the Brazilian currency, the Real, came under speculative pressure and its Central Bank's international reserves subsequently declined by about $9 billion. On January 13, 1999, the Brazilian Real was devalued and several weeks later left to float freely, eventually losing 70 percent of its value (Kaminsky et al, 2003).

Also, during the height of the Asian boom in the 1990s, South Korean banks had extended credit to several governments, with Brazil being one of them. Brazilian banks had also invested in Russian short-term treasury securities. When the Asian crisis hit, Korea was affected. The contagion effect spread from that country to Brazil and Russia, thus demonstrating how financial linkages can lead to contagion during times of financial crisis (Khalid and Rajaguru, 2005).

2.4. Argentina – 2001

The Argentine crisis differs from the others in question because the Argentine government in the early 1990s adopted a currency board which set the peso on a one-to-one parity with the U.S. dollar. However, in times of crisis, Argentine investors may have tried to escape their system by developing strong relationships with other currencies. Therefore, there may have been a low dependence between the peso and its neighbor currencies except for in times of crisis (Fukuhara, 2003). When the Brazilian Real was devalued in January 1999, this left the Argentine peso overvalued in comparison. In December 2001, the president announced the country's intentions to devalue its currency, thereby abandoning the peg it had sustained for almost a decade (Kaminsky et al, 2003).

Although the domestic economy had been severely affected, the Argentine crisis was notable for the lack of substantial spillover into other emerging market economies, particularly when compared with other crises from the previous decade. This perhaps can be due to a relative lack of direct trade linkages with any emerging markets' economy except Brazil. Also, widespread anticipation of the crisis may have also limited the spillover into other economies (Hall and Taylor, 2002).

3. THE BANKING SECTOR AND CRISES

Small events at times have large consequences due to chain reactions and cumulative forces. It happens that a liquidity crisis in a unit fractional reserve banking system is precisely the kind of event that can trigger—and often has triggered—a chain reaction. And economic collapse often has the character of a cumulative process. Let it go beyond a certain point, and it will tend for a time to gain strength from its own development as its effects spread and return to intensify the process of collapse (1963).

According to Fratzcher (2003), there are three general causes of currency crisis- contagion, weak economic fundamentals, and shifts in agents' beliefs (which can lead to "herd" behavior). Additionally, it is thought that there are several "generations" of models which attempt to explain contagion. The first generation, led by Krugman, emphasizes unsustainable economic policies and structural imbalances. The second generation, led by Obstfeld, emphasizes self-fulfilling expectations and multiple equilibria (Pesenti and Tille, 2000).

After using trade competition, bank loans and the degree of stock market integration as proxies, Fratzcher finds that financial interdependence is a key cause of past financial crises (2003). Also, political forces can lead to currency crises. Political forces can initially be behind the decision to devalue as well as leading to an increase in speculative pressures on the country in question if one or more of its neighbors chooses to devalue (Drazen, 1998). According to Krugman, "a government-no longer a simple mechanism like that in the classical model, but rather an agent trying to minimize a loss function- must decide whether or not to defend an exogenously specified exchange rate parity" (1996).

The literature has emphasized two separate channels through which a crisis may be spread through the financial sector across markets — (a) by the refusal of banks to roll over loans or provide new funds, and (b) by the decision of investors to withdraw portfolio investments. Additionally, a crisis is more likely to spread across countries that have a common lender (Fratzcher, 2003). According to Pesenti and Tille, several recent studies have emerged which argue that currency and banking crises intensify one another, leading to a vicious downward spiral. A currency crisis has an adverse effect on the banking sector when the banks' liabilities are denominated in a foreign currency. Currency devaluation suddenly magnifies the amount of liabilities outstanding in the domestic currency (2000).

Expressed another way, the likelihood of a currency crisis is heavily dependent on the health of a given country's banking sector (Pesanti and Tille, 2000). A corollary to this line of thought is that if banks believe there is a government safety net or a bailout plan, they are more likely to engage in risky behavior while investors will be more likely to continue lending.

4. The Possible Role of Latin American Banks

There were four major international financial crises during the 1990s-Mexico in 1995, East Asia in 1997-98, Russia in 1998, and Brazil in 1998-99. All of these crises seem to have certain elements in common. First, after a period of

substantial capital inflows, both domestic and foreign investors decided to reduce the amount of their assets in the particular country in response to a change in its fundamentals (real or perceived). Second, after this process went on for some time in these emerging market countries, investors shifted their focus from evaluating the situation in each country to evaluating the behavior of other investors, thus creating a "bank run" mentality. Third, the withdrawal of capital and the associated sudden decline in the exchange rate magnified fundamental weakness, in turn intensifying the financial market response. Lastly, the increased domestic value of the foreign currency liabilities of domestic borrowers further degraded an already weakened financial system, in turn causing further reductions in lending and worsening of the fundamentals (Summers, 2000).

According to Kaminsky and Reinhart (1998), financial crises occur as an economy enters into a recession that follows from a boom in economic activity fueled by the creation of credit and rapid increases in capital inflows. The cycle of overlending can be exacerbated by deposit guarantees (either implicit or explicit), poor banking supervision and moral-hazard problems accompanied by a currency overvaluation and weakening exports. Also, according to Summers, when well-capitalized and supervised banks, effective corporate governance and other elements of a strong financial system are in place, significant amounts of debt will be tolerable. However, when these elements are missing, even small amounts of debt can potentially lead to financial crises (2000). According to Buch and Heinrich, the impact of a currency devaluation on the net worth of commercial banks with a vulnerable foreign exchange position can accelerate a crisis of this sort. Such a negative shock could be the result of an increase in non-performing loans of commercial banks or the removal of a government guarantee to bail out distressed commercial banks (1999).

In a fashion similar to the Asian crisis of 1997, the Mexican currency crisis of 1995 was preceded by a loss in profitability of the banking system and by an increase in non-performing loans. Commercial banks' net worth was affected negatively by the peso depreciation and sharply increased the value of foreign liabilities of commercial banks. Many banks, for a variety of reasons, were not hedged against exchange rate risk and immediately became dangerously overleveraged (Buch and Heinrich, 1999). According to Peltonen, emerging markets with more rigid exchange rate regimes were less likely to experience currency crisis during the last two decades (2006). Mexico's currency crisis of

1994 was the first serious test of Argentina's currency board and its commitment to maintain its parity with the U.S. dollar (Goldberg and Veitch, 2002). Although the Argentine peg stood firm throughout most of the 1990s, it, too, was not invincible.

4. HYPOTHESES

Based on the above literature review, the hypotheses are the following:

H1- There is an inverse relationship between the region's bank and non-bank financial institution assets and the number of currency units per dollar (i.e. the exchange rate vs. the U.S. dollar). In other words, the more assets bank and financial institutions possess, the stronger the exchange rate vs. the dollar.

H2-There is an inverse relationship between central bank foreign reserves and the number of currency units per dollar (i.e. the exchange rate vs. the U.S. dollar). In other words, the more foreign reserves a central bank possesses, the stronger the exchange rate vs. the dollar.

H3- There is a positive relationship between commercial banks' liabilities and the number of currency units per dollar (i.e. the exchange rate vs. the U.S. dollar). In other words, the more liabilities held by commercial banks, the weaker the exchange rate vs. the dollar.

5. METHODOLOGY

The following variables will be used as indicators of to what extent Latin America's banks have contributed to the region's currency crisis: commercial bank assets, commercial bank liabilities, foreign reserves, and non-bank financial institution assets. These variables have been the most frequently cited by the literature as being key in banking and/or currency crises. First, time series analysis will be employed, charting the above five variables across time and examining to what extent each variable responded to the currency crisis in the respective country. This is to gain an overall understanding and a macro view of the long term trends of each of the above variables. Second, a series of OLS regressions will be run using International Monetary Fund data with combinations of the above variables as the independent variables with the foreign exchange rate as the dependent variable. This is in an attempt to statistically quantify the significance of each independent variable on the foreign exchange rate.

6. DATA
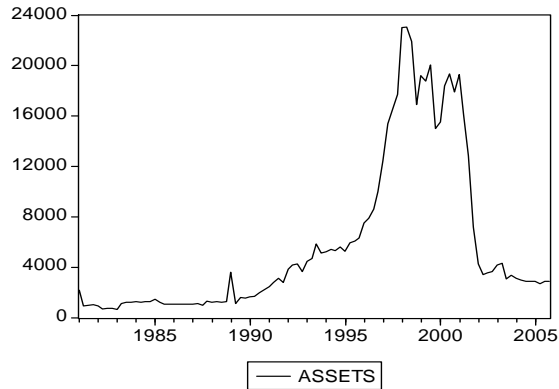
6.1. Time Series Analysis

6.1.a. Argentina

Figure 3 *Argentine Commercial Banks- Assets (Millions US$)*

As can be seen, during the 1990s, commercial bank assets increased dramatically, only to erode quickly after the peso devaluation sparked the currency crisis in late 2001-early 2002. Depositors rushed to withdrawal money and soon afterward the government imposed withdrawal restrictions in an attempt to lessen the run on banks.
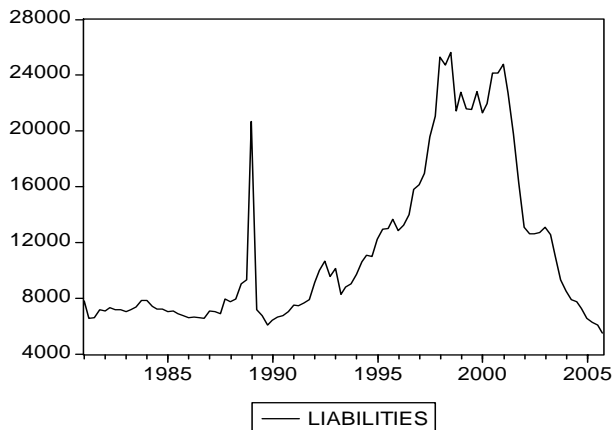

Figure 4 *Argentine Commercial Bank Liabilities (Millions US$)*

Although bank liabilities grew tremendously throughout the 1990s, they quickly decreased after the currency crisis. The rationale behind this remains unclear; however, it could possibly be due to this country's declared debt moratorium.
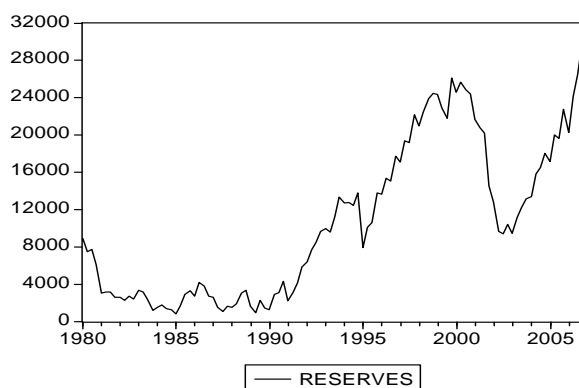
Figure 5 *Argentine Foreign Reserves (Millions US$)*

When the peso was in flux during late 2001 (coming off a one-to-one parity with the U.S. dollar), the government attempted to defend it. However, this was quickly abandoned as foreign reserves began to be depleted.
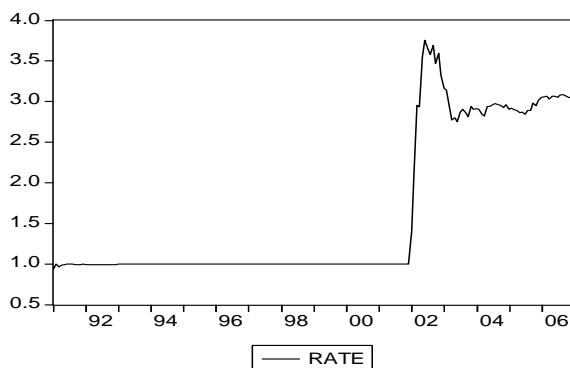

Figure 6 *Argentine Foreign Exchange Rate (Units per US$)*

The peso-dollar exchange rate had been at a one-to-one parity throughout the 1990s. However, this was deemed no longer viable, and it was allowed to float. The peso quickly sunk to approximately 3.5 per dollar before recovering slightly.
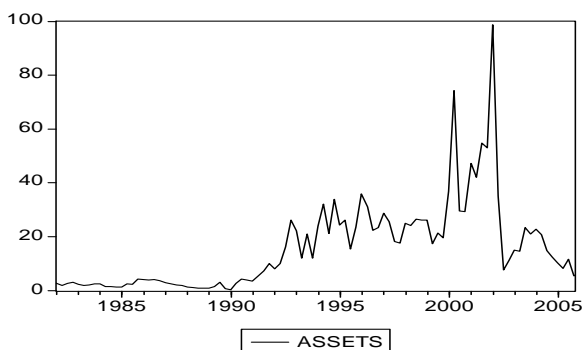
Figure 7 *Argentine Non-Bank Financial Institutions- Assets (Millions US$)*

Like that of banks, non-bank financial institutions had experienced increases in assets throughout the 1990s, only to find them quickly vanishing immediately after the peso was allowed to float in late 2001. It is evident that the average Argentine citizen lost faith in the banking and financial system, preferring to hold onto funds rather than entrust it to the country's financial system.
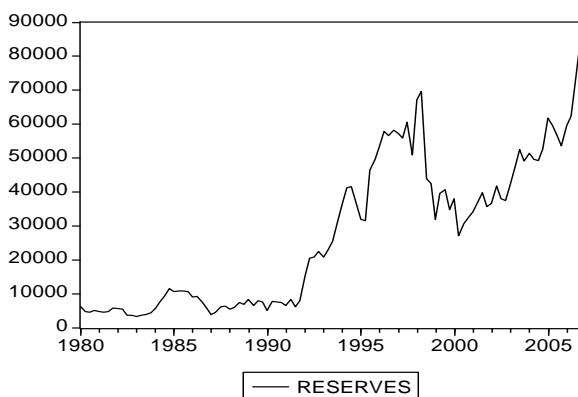
6.1.b. Brazil

Figure 8 *Brazilian Foreign Reserves (Millions US$)*

Brazil, after implementing the Real Plan in July 1994, experienced a strengthening of its macroeconomic fundamentals and a stabilization of its exchange rate. As a result, foreign reserves began to steadily climb. However, they experienced a sharp decline in late 1997 and into 1998 as the Asian crisis swept through other developing regions of the world.
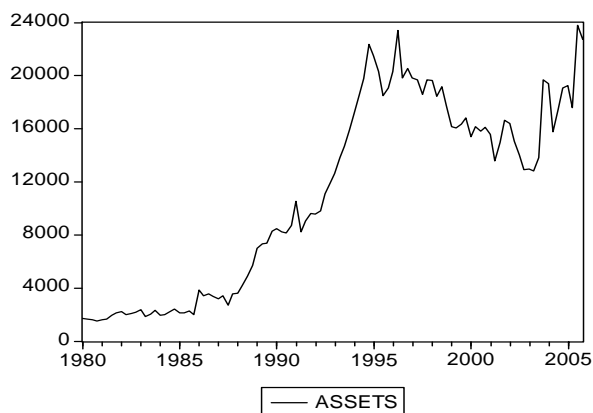
Figure 9 *Brazilian Commercial Bank Assets (Millions US$)*

Brazil's commercial bank assets also steadily increased from the mid-to-late 1980s (Brazil returned to a civilian form of government in 1985 after having been run by the military for many years) onward throughout most of the 1990s before losing ground again as a result of the Asian currency crisis.
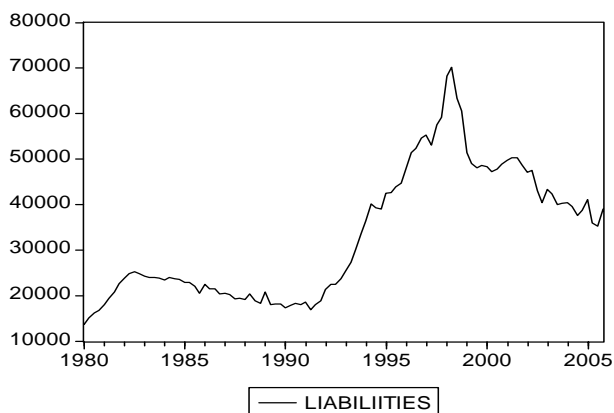

Figure 10 *Brazilian Bank Liabilities (Millions US$)*

As can be seen here, Brazilian bank liabilities were increasing as assets were decreasing during the crisis period of the late 1990s. This quickly strained the ability of this country's banks to remain solvent.
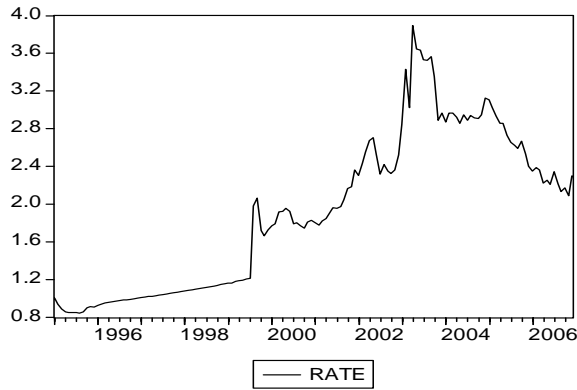
Figure 11 *Brazilian Foreign Exchange Rate (Units per US$)*

After years of hyperinflation, Brazil implemented the Real Plan in mid-1994 and immediately saw an improvement in monetary stability. The Plan began with a new currency, the Real, and pegged it one-to-one against the dollar. Although the Real gradually lost value versus the dollar over the next few years, it provided a level of stability the Brazilians had not known for a long time. However, in 1997 and 1998 the Brazilian government found that it could no longer support the Real at its then current levels and decided to let it float. It immediately sunk and remained very unstable over the next few years, again losing ground as the Argentine peso crisis occurred in 2001 and 2002.
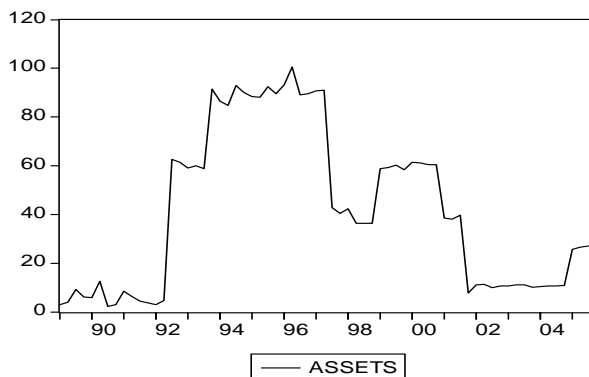

Figure 12 *Brazilian Non-Bank Financial Institutions- Assets (Millions US$)*

This time series chart again confirms what the previous charts demonstrate; namely, the non-bank financial institutions benefited greatly from the Real Plan.

The general macroeconomic stabilization occurred throughout most of the 1990s, only to lose ground once again during the Asian crisis and then the Argentine crisis.
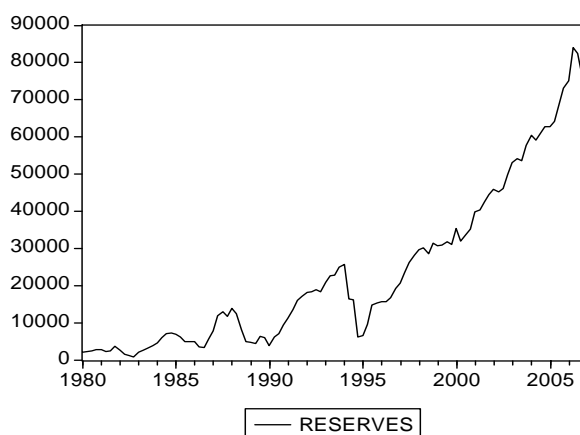
6.1.c. Mexico

Figure 13 *Mexican Foreign Reserves (Millions US$)*

Mexico has seen its foreign reserves climb steadily throughout the last 10-12 years. Although reserves did suffer as a result of the 1994-95 peso crisis, they quickly bounced back and surpassed prior levels.
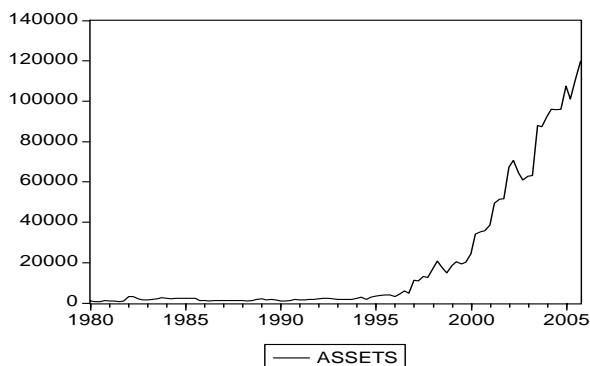

Figure 14 *Mexican Commercial Bank Assets (Millions US$)*

Commercial bank assets strengthened tremendously since the mid-1990s, mirroring what the economy as a whole has done. Mexico was able to "shrug off" the crisis of 1994-95; after a short recession, the government made use of

international emergency fund packages in order to help stave off further economic damage, the country has done relatively well.
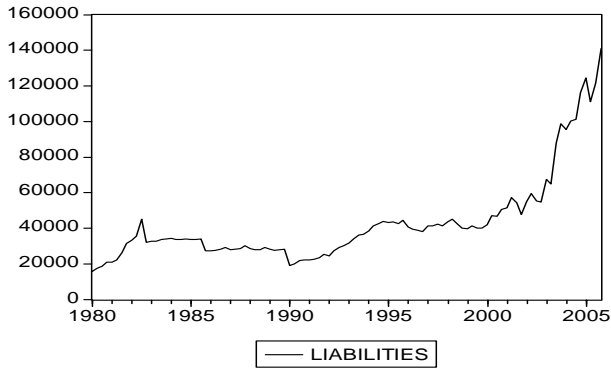

Figure 15 *Mexican Commercial Bank Liabilities (Millions of US$)*

Commercial bank liabilities rose throughout the early to mid-1990s, leveling off after the peso crisis of 1994-95. However, since approximately 2001, liabilities have risen tremendously. This could portend future danger for this country's banking system.
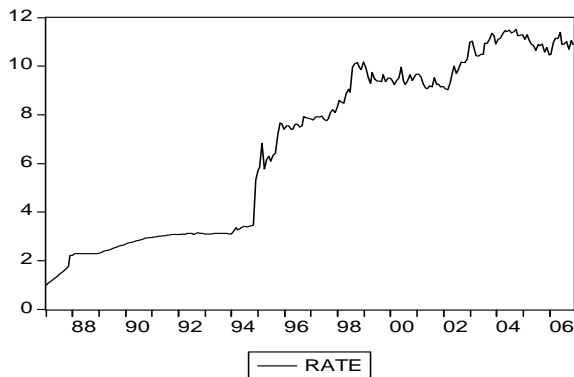

Figure 16 *Mexican Foreign Exchange Rate (Units per US$)*

The currency had been fairly stable for the previous 5-8 years before the crisis, hovering within a fairly small band. However, in December 1994 the government announced that it would allow the currency to float, and its value immediately plummeted. It continued to lose value for several years before eventually stabilizing in 1998. It has traded fairly consistently since that time.

6.2. Ordinary Least Squares

The following results were found for Argentina, Brazil and Mexico using OLS regression analysis. The following parameters were used:

Y = exchange rate

X = 1- commercial bank assets, 2- non-bank financial institution assets, 3- foreign reserves and 4- commercial bank liabilities.

Table 5 *OLS Results*

	Argentina	**Brazil**	**Mexico**
Adjusted R^2	0.574	0.836	0.796
t-stat (X1)	-5.46	-2.65	-4.91
t-stat (X2)	-3.37	-11.4	unavailable
t-stat (X3)	6.67	-0.57	20.48
t-stat (X4)	3.1	-4.05	5.64

From the above table it is evident that all four independent variables (with the exception of Mexico, which had only three) have a strong link to the respective country's exchange rate. Almost all t-stats are significant and high R^2 figures are present in all cases. The following inferences can be made:

(a) There is a strong (statistically significant at the 1 percent level) inverse relation between commercial bank assets and the indirect exchange rate (i.e. number of currency units per dollar) in all three countries.

(b) There is a strong (statistically significant at the 1 percent level) inverse relationship between non-bank financial institution assets and the indirect exchange rate (i.e. number of currency units per dollar) for the two countries for which data was available.

(c) There is an inverse relationship (not statistically significant) between foreign reserves and the exchange rate in one of the three countries.

(d) There is a strong (statistically significant at the 1 percent level) positive relationship between commercial bank liabilities and the indirect exchange rate (i.e. number of currency units per dollar) in two of the three countries.

Thus, through the OLS analysis of the above three countries, Hypothesis 1 is fully supported (see inferences (a) and (b) above) and there is partial support for Hypothesis 3. Hypothesis 2 (the relationship between foreign reserves and the exchange rate) receives very little support.

7. CONCLUSION

The role of Latin America's banks in the region's currency crisis has been profound. Weak economic fundamentals, along with weaknesses in the banking sector, have in part led to repeated currency crises in the region over the last 20 or more years. In order to "turn the tide" of economic performance in the region, it is imperative that banks strengthen their fundamentals. From the above time series and OLS tests, it is clear that bank and non-bank commercial assets as well as commercial bank liabilities have a profound influence on the respective country's exchange rate versus the U.S. dollar. It is in the region's best interest to maintain a healthy banking sector in order to fend off any future attacks, which can be devastating to the country and its citizens.

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