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Capital Flows, Maturity Mismatches and Profitability in Emerging Markets: Evidence from Bank Level Data

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Abstract

Despite the extensive work on currency mismatches, research on the significance of maturity mismatches in emerging market countries is scarce. In this paper, I show that emerging market banks' maturity mismatches increase during periods of high capital inflows, and that banks with high maturity mismatches are less profitable during crisis periods but more profitable otherwise. Hence, banks face a tradeoff between higher returns and risk. These results follow from a panel regression on a data set I constructed by merging bank level data with aggregate data. A simple Diamond-Dybvig (1983) partial equilibrium framework motivates the empirical analysis.

Journal of Economic Literature Classification: E44, F32, F34, F41

Keywords: bank level data, maturity mismatches, liquidity, profitability and debt structure ratios, price volatility, mergentonline.

1. Introduction:

Following the emerging market crises of the past 10 years, countries have adopted regulatory frameworks to strengthen and minimize the risks associated with private sector balance sheets. However, there is evidence pointing to the ineffectiveness of these measures, and the persistence of the balance sheet fragilities. The negative effects of the May-June 2006 turbulence experienced in some countries that have adopted closer supervision and regulation emphasize the importance of understanding the interaction between capital flows, balance sheet fragilities and financial health.

Two of the most cited fragilities in the financial sector are currency and maturity mismatches. After the crisis episodes, a myriad of empirical and theoretical research papers have studied the vulnerability of bank balance sheets with excessive short term foreign currency denominated debt to capital reversals. Research on the role and nature of maturity mismatches, however, is scarce at this point.

This paper is a first attempt at studying the effects of international capital flows on the maturity structure of the banks in emerging markets, and the profitability implications of maturity mismatches during crisis and non-crisis periods using bank level data.

There are three important results: 1) There is a positive relationship between capital flows and maturity mismatches in the absence of a crisis. 2) The degree of maturity mismatches prior to a financial crisis is negatively related to profitability after the crisis. 3) In the absence of a crisis, banks with high maturity mismatches outperform banks with low maturity mismatches. I also find that banks lack liquidity, and shift towards short term finance during periods of high price volatility, and therefore do not or choose not to protect themselves against volatility risks.

My paper has three distinct contributions. First, I use bank level data to assess the significance of capital flows on financial sector liquidity and test whether the resulting liquidity structure has profitability implications. Second, I analyze non-crisis periods in addition to crisis periods. In doing so, I implicitly investigate the reasons behind the resulting maturity structure when there is financial stability. Finally, I construct a partial equilibrium framework similar to that of Diamond and Dybvig

(1983) that is useful for studying the interaction of capital flows, maturity mismatches and profitability.

A majority of the theoretical research conducted in the aftermath of the crises either argue or assume that there is a positive correlation between capital flows and maturity mismatches[1]. Some papers identify the channeling of cheap short term borrowings into long term risky credit under implicit guarantees as the source of maturity mismatches[2]. Others blame the prevalence of short term finance on insufficient financial development, and the reluctance of foreign creditors to offer long term funds[3]. There is also evidence that countries in financial distress are inclined to issue more short term debt[4]. Hence, the cause of maturity mismatches could be unrelated directly to financial development and crony capitalism but might be the macroeconomic instabilities that countries face. The vast majority of the empirical research either studies the dynamics during capital reversals or uses macroeconomic data to study the impact of maturity mismatches.

The widespread argument in the literature in regards to the effects of maturity mismatches on the health of the financial sector during capital reversals is that in a deep and developed financial market, large external shocks have small effects since banks are capable of covering their liquidity shortages relatively cheaply. Moreover, maturity mismatches are accepted as symptoms of an advanced economy where banks convert short term funds into long term assets with relatively lower concern for liquidity shortages[5].

I implicitly test for the significance of maturity mismatches for financial health by comparing the profitability of banks with different maturity structures. If a country has deep financial markets, capital reversals should be relatively less important compared to countries with shallow markets and thus

[1] Inflows increase, outflows decrease maturity mismatches.
[2] See Corsetti Pesenti and Roubini (1998), Calvo, Mendoza (1996).
[3] See for example Caballero and Krishnamurty (2003), Demirguc-Kunt and Detragiache (1998), Beck, Demirguc-Kunt, Levine and Maksimovic (2000), Fan, Titman and Twite (2004), Buch and Lusinyan (2003).
[4] Bussiere, Fratzscher and Koeniger (2004) build a model to show how currency mismatches contribute to maturity mismatches which in turn increases output volatility. In their setup excess volatility of the exchange rate stimulates a switch from more costly long term debt to short term debt which in turn increases output volatility. Short term projects are more risky and increase the likelihood of a crisis. Also see Bleakley and Cowen (2004).
[5] See Rodrik and Velasco (1999) and Demirguc-Kunt and Detragiache (1998) for example.

banking sector performance following capital reversals should be superior. My results imply that the benefits of staying liquid outweigh the benefits from using this extra liquidity to increase revenue during crisis periods, and that the opposite relationship holds in the absence of crises[1]. Nevertheless, there are studies, results of which imply and argue that maturity mismatches are insignificant for the banking sector:

Bleakley and Cowen (2004) find no considerable difference between the amount of investment by firms with low and high maturity mismatches during capital reversals in emerging markets. Using micro level data, similar to this paper, the authors show that their results are robust to different specifications of investment and capital flows. De la Torre and Schmukler (2003) discuss how coping with maturity mismatches by limiting short term contracts can lead to an exchange of a liquidity risk for a default risk. Consistent with my findings, the authors point to the negative profitability effects of capital reversals on firms that have high maturity mismatches despite the absence of any effect on the level of investment.

In contrast to Bleakley and Cowan (2004), this paper examines the financial sector instead of the non financial sector and distinguishes between crisis and non crisis periods. The emphasis on the financial sector is due to two reasons. First, upon initial review of the data, I observed that this sector carries significantly greater degree of maturity mismatches compared to the non financial sector[2]. Second, a vast amount of literature dating back to Keynes and Fisher supports the view that bank balance sheet fragilities amplify the severity of financial crises[3] as was the case in the great depression and the recent emerging market crises[1].

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[1] Rodrik and Velasco (1999) point out the causal relationship between short term debt and the severity of currency crisis. Similar to Section 3 of this paper, they also search for the determinants of maturity mismatches and find that higher M2/GDP which is a proxy for financial depth lead to greater maturity mismatches. Tektas, Gunay and Gunay (2005) employ goal programming methodology to determine strategies like liquidity, foreign exchange holdings, credit risk, foreign exchange risk before and after financial crisis. The authors apply their optimal strategies to a risk averse and a risk taker bank in Turkey and show that increasing liquidity and capital adequacy increases rate of return on assets for both of these banks.

[2] Evidence is provided in Section two.

[3] Fragilities stemming from either the banking sector decisions or the behavior of the non financial sector. See Krugman (1999), Chang and Velasco (1998), Eichengreen and Hausman (2000), Bernanke Gertler Gilchrist (2000), Schneider and

I also test whether banks in countries with high interest rate and exchange rate volatilities hedge themselves against associated risks by holding more liquid assets and lending more short term or whether the high price volatilities constrain the debt structure of these banks to shift towards short term funds[2]. More specifically, I estimate regression models using maturity mismatches as dependent variables and interest rate and exchange rate volatility as independent variables of interest. The findings support the latter of the two explanations. This observation along with the others justify the main policy implication of this paper: Profit motives dominate precautionary motives and the resulting levels of maturity mismatches inflict greater damage on the economy in the event of a crisis. Given that capital flows are positively related to maturity mismatches, and are highly volatile in these markets, the supervision and regulation of maturity mismatches is critical.

In my empirical analysis, I use different variables to proxy capital flows, maturity mismatches, profitability and price volatility, and control for macroeconomic fundamentals as well as country and time fixed effects. Generalized Method of Moments (GMM) is adopted as the empirical strategy. This method reduces causality concerns stemming from the endogenous right hand side variables, and accounts for the possible non-stationarity of the dependent variable.[3] I use different dependent and independent variables and control for macroeconomic fundamentals as well as country and time fixed effects. Different from the literature, I use bank level data which in turn provides more degrees of freedom, allows me to differentiate between small and large banks, and eliminate causality concerns that originate from the utilization of aggregate data.

Tornell (2000), Cespedes, Chang and Velasco (2001), Demirguc and Detragiache (1998). Contrary to the view that banking fragilites originate from non financial sector behavior, Rajan and Bird (2001) propose the optimizing behavior of banks as a determinant of maturity mismatches and show how financial crises can occur in the absence of moral hazard problems.

[1] De la Torre and Schmukler's claims are in a discussion paper. Therefore, I did not have a basis of comparison. Financial structure's lack of effect on investment is also supported by Gilchrist and Sim (2004). The authors consider the effect of currency mismatches on investment.

[2] Valev (2004) investigates the relationship between economic volatility and the term structure of U.S. bank credit to emerging markets using bank level data. Different from Valev's analysis I measure the effect of economic uncertainty on maturity mismatches of domestic banks instead of foreign lenders.

[3] Using bank level data reduces causality concerns in relatively larger countries. However, macroeconomic variables of countries that have few big banks are affected from the financial health of these banks. Hence, using GMM is a better methodology compared to OLS. For a discussion of the GMM properties discussed above, see Arellano and Bover (1995).

Using different degrees of approximation to solve general equilibrium models is not suited to study the ramifications of large shocks economies face during financial crises. Therefore, I use a partial equilibrium framework to examine the effects of capital flows on maturity mismatches, and the profitability of the banking sector during capital reversals[1]. Some of the important results from the model are as follows: Short term inflows increase maturity mismatches. The effect of long term inflows, however, is ambiguous as they increase short term liabilities through wealth effects, but also provide long term funds that can be liquidated in the event of a crisis. Similar to the empirical results, model solution yields a positive relationship between maturity mismatches and losses incurred after a crisis.

This paper is organized as follows. Section 2 discusses the data utilized and some preliminary findings that provide motivation for the rest of the paper. Section 3 studies the relationship between capital flows and maturity mismatches, gauges the effects of maturity mismatches on economic performance for emerging market banks and measures the effect of price volatility on maturity mismatches. Section 4 justifies the empirical analysis using a partial equilibrium model. Section 5 concludes.

2. Data and Descriptive Statistics:

The panel data set includes 18 emerging market countries, and 214 depository institutions that are listed in the stock exchanges of their respective countries. Annual data from 1990 to 2004 are employed in the analysis. The contents of the data are provided in Appendix A. The IFS dataset provides macroeconomic and financial sector variables which are utilized as the control variables, capital flows, and the sources of price volatility. Balance sheet data, and profitability, debt

[1] The model is similar to the partial equilibrium bank run framework of Diamond and Dybvig (1983) where bank runs lead to immature liquidation of long term investments and increase output volatility. Chang and Velasco (1998) apply this framework to show how short term foreign currency denominated debt coupled with capital reversals increase the probability of financial crisis.

management and asset management ratios are extracted from the mergentonline data set[1]. This data set is used to measure maturity mismatches and the performance of the individual banks.

I use liquidity measures[2] such as the quick ratio and the current ratio as well as the ratio of short term debt to total debt to approximate the degree of maturity mismatches. This is due to the fact that companies that are illiquid would be incapable of paying their maturing short term debt. Hence, there would be an increase the amount of short term debt to total debt due to debt rollover. Throughout the paper, maturity mismatches refers to both liquidity variables as well as debt structure variables, which will be defined below.

A preliminary analysis of the banking sector debt structure in emerging markets reveals three important observations[3]. First, short term debt to total debt ratios are lower compared to those in advanced countries. This evidence is consistent with the argument that the presence of deeper financial markets lowers the risks associated with liquidity shortages. Furthermore, banking sector ratios are in general higher than the corporate sector ratios[4].

Second, the higher levels of short term debt accumulated prior to the crisis decreases afterwards[5]. This observation supports the view that relatively unstable capital flows are mostly in the form of short term debt. The positive relationship between capital flows and short term debt ratios, in individual countries becomes strikingly evident when I graph the two variables as displayed in Figures 1 and 2. This observation holds for the group of emerging market countries as a whole as well. As mentioned before the positive correlation may be due to country specific factors like cronyism and premature financial sector deregulation. Nevertheless, the recent surge in emerging market capital inflows in the

[1] Outliers in the bank ratio variables are eliminated by excluding variables that deviate 10 times the standard deviation from the mean, outliers in the other balance sheet variables are not omitted in order to include the largest and the smallest banks in the sample.
[2] Bleakley and Cowan (2004) use the difference between short term liabilities and current assets as a proxy for maturity mismatches.
[3] Refer to Table 1C in Appendix C. Country debt ratios in this table are weighted averages of individual bank ratios. Weights are the total assets of the banks. Non-weighted measures yielded similar figures.
[4] Except for Argentina and Korea weighted ratios are higher than the figures under the IMF column. The difference between the two sectors is more evident in advanced countries.
[5] In general there is an increase (a decrease) in the ratios prior to (following) the Asian, Brazilian, Russian and Argentina, Turkey crisis episodes.

form of short term debt partially reflects the low yields in industrialized economies and the resulting search for yield[1]. Therefore, in my empirical analysis I include U.S. interest rates in the group of capital flow proxies.

Finally, there is also evidence that maturity mismatches are more significant in the financial sector[2]. This in turn emphasizes the importance of analyzing this sector.

Provided that the proportion of short term assets are constant, evidence above suggests that there may be a positive relationship between capital inflows and maturity mismatches even in the absence of a crisis. Assuming that this relationship holds, and banks receiving higher capital inflows carry less liquidity, I investigate the effect of maturity mismatches on financial sector performance after and in the absence of a financial crisis.

In this regard, a simple comparison of the profitability of banks with different maturity structures provides motivation for the empirical analysis to follow[3]. The main conclusions that can be drawn from the summary statistics are the following. On one hand, banks with low maturity mismatches have performed better in terms of profitability one year after the crisis compared to banks with high maturity mismatches in general. However, cross country comparisons show mixed results. For example, while banks with high maturity mismatches in Brazil outperform banks with low maturity mismatches in Malaysia, they are dominated by Brazil's own low maturity mismatch banks.

On the other hand the disparity between the two groups' performance measures seems to disappear starting with the second year after the crisis; possibly pointing to the higher profitability of banks that channel their relatively higher short term debts into long term assets in the absence of a crisis. Finally, banks with lower maturity mismatches are on average bigger in terms of assets compared to the other

[1] We can also see that, Korean and Malaysian banks have acquired more long term debt in the last three years, reflecting the tightening in bank regulation and the process of deleveraging in these countries.
[2] Evidence is provided in Table C2 of Appendix C. Quick ratio is used as a proxy for maturity mismatches. Quick Ratio is defined in appendix B. The quick ratios in the table are the simple averages of the ratios of the banks.
[3] Refer to Table C3 of Appendix C for details. In the table, the Short Term Debt/Current Assets ratio is used as a proxy for maturity mismatches, and the effects of these mismatches are measured by the average rate of return on equity and assets. Banks in each country are divided into groups depending on the level of their maturity mismatches. Banks with ratios greater than the median ratio are classified as high maturity mismatch (MM) group and as low MM otherwise.

group. Therefore, accounting for bank size may capture the idiosyncratic effects of maturity mismatches.

Given this preliminary evidence, a natural question to ask is: To what degree do banks protect themselves against interest rate and exchange rate risks? More specifically, do the banks of countries with high price volatilities choose to hold more precautionary liquid assets, and limit their maturity mismatches? A synopsis of the data shows mixed results[1].

3. Capital Flows, Maturity Mismatches and Profitability:

3.1 Relationship between Capital Flows and Maturity Mismatches

Motivated by the limited evidence reported in the previous section, I investigate whether depository institution balance sheets exhibit more (less) maturity mismatches when capital inflows increase (decrease) in the absence of a crisis[2].

$$Maturity\ Mismatches_{ijt} = f\left(Capital\ Inflows_{jt}, time\ and\ country\ \ fixed\ effects, other\ controls\right)^{3} \quad (1)$$

I estimate the fixed effects panel model shown above using GMM[4], correcting for serial correlation. In doing so, I use different dependent and independent variables which proxy maturity mismatches and capital inflows respectively. Definitions of these variables are provided in Appendix B.

In addition to the two widely used proxies for capital inflows, the 3 month U.S. Tbill interest rates and the net central bank foreign currency reserves[5], I distinguish between equity and debt flows[6], consider capital flows that affect the balances sheets of the banking sector directly, and include the net

[1] For example, Argentina has the greatest interest rate volatility and has stayed more liquid than any other country. However, although Turkey has more price volatility, it has remained less liquid compared to Korea. Table C4 of Appendix C reports the price volatilities along with the weighted and non weighted quick ratios of the banks.
[2] I use Kaminsky (2003) classification to identify crisis periods. I exclude these periods from the dataset of the countries affected by the crisis.
[3] ijt index represents the t'th observation for the ith firm in country j.
[4] I included lags of capital flows up to 3 periods as instruments, and obtained similar results.
[5] See Calvo and Mendoza (1996) for example.
[6] Diamond (1997), Jacklin (1987), and Chang and Velasco (1998) argue that if equity and bond markets are deep then there is no role for the banking sector and the market can replicate all that banks can do. Hence, if capital flows are mostly in terms of debt and equity flows it should have relatively small effects on bank maturity mismatches. I include these variables to account for the growing depth of the financial markets in these countries. See Reisen and Soto (2001), Calvo, Leiderman and Reinhart(1996) for the different properties of equity and debt flows in terms of their effect on growth and their relative tendency to flow out of the country during financial turbulences.

direct investment position of the economy. The latter variable was added to test for the dampening effect it has on capital flight[1], and to test whether its effects on banking sector financial health is different from the other measures of capital flows. The choice of the maturity mismatch proxies was determined by data availability[2].

There are two characteristics of the data that can pose problems in the estimation procedure. Most of the data is reported in local currency units, and there are significant discrepancies in the inflation rates of these countries. To deal with these complications, independent variables are divided by GDP or converted to real dollar values using the CPI and the GDP deflators. While the former method emphasizes financially open economies, the latter method gives more weight to the banks of relatively large countries.

The results using GDP ratios are displayed in Table 2. Each variable along with its standard error are obtained from a regression of the dependent variables listed in row 1 on the independent variables listed in column 1, and control variables. The first two rows of Table 1 summarize the results, and provide support for a positive relationship between maturity mismatches and capital inflows[3].

Majority of the significant coefficients' signs corresponding to columns 2 through 5 in Table 2, which represent the strength of the banks in meeting their short term obligations are negative. Thus, capital inflows (outflows) lead to a disproportionate increase (decrease) in current liabilities compared to current assets, when I control for country and time fixed effects along with other macroeconomic variables. Similarly, positive significant coefficients reported under columns 6 and 7, and the negative significant coefficients in column 8 imply that banking sector debt maturity structure switches from long term to short term as capital flows into the country. The fewer number of significant coefficients under columns 6 to 8 is partially due to the fewer number of reported debt structure variables.

[1] See Kant (1996) for a discussion on the effect of direct investment on capital flight. The author also argues that direct investment has increased in terms of the relative share of capital inflows in developing countries.
[2] Some firms report the liquidity ratios instead of the debt structure variables or vice versa.
[3] All of the significant coefficients except one point to a positive relationship.

The size of the coefficients also indicates that the effect of the capital flow variables on banking sector balance sheets is not insignificant. For instance, a 100 basis point increase in U.S. Tbills leads to a 4.53 percent drop in the quick ratio[1].

While most of the significant coefficients were recorded in the regressions using the quick and the current ratios as proxies, coefficients estimated for the direct investment and BOP net equity liabilities variables were insignificant. The relatively greater importance of BOP net debt liabilities in affecting maturity mismatches compared to equity liabilities partially reflects the independence of bank balance sheets from private sector equity borrowing, and the exposure of domestic banks to the extra amount of debt. The insignificance of direct investment coefficients is in line with the dampening effect hypothesis[2].

Table 3 shows the details of the GDP ratio regression results summarized above. The positive and the negative coefficients of lending rates and inflation respectively point to a positive real interest rate, maturity mismatch relationship. More specifically, the drop in current assets due to the increasing opportunity costs, and the shortage of long term funding accompanied by rising real interest rates causes stronger maturity mismatches. GDP growth and current account surpluses are negatively related to maturity mismatches which signals the ability and the choice of banks to switch from short term obligations to long term obligations as macroeconomic conditions improve. Conflicting with the above argument, I find that budget deficits in a majority of the cases affect maturity mismatches positively. This observation is plausible if we consider the fact that banks' current assets increase as some of the short term debt instruments issued by the government are held by these banks. Finally, consistent with Rodrik and Velasco (1999), I find that a rise in the M2/GDP ratio increases the degree of maturity

[1] These numbers indicate that a significant drop in US interest rates may push the already high ratio of banking sector leverage to critical levels. A 1 percent increase in the net portfolio investment position / GDP ratio leads to a 3.42 percent drop in the quick ratio.

[2] There is also evidence that direct investment during financial crisis may be flowing in to the country instead of flowing out. This type of direct investment in the form of (M&A) seeks to take advantage of the liquidity problems of domestic firms. See Bleakley and Cowan (2004) for the empirical analysis.

mismatches pointing to the lower costs associated with carrying mismatches in financially developed markets.

Except for a few regressions, the significance and signs of the capital inflow variable coefficients are robust to the two different methods of deflating[1]. Overall the proportions of regressions yielding significant coefficients out of the total number of regressions are similar and equal 18/49 and 19/49 for the GDP deflator and CPI regressions respectively. All of the significant coefficients except 4 imply a positive relationship.

Next, I classify banks into two size groups, large and small and estimate the model using data from only the large banks[2]. Banks listed in the stock exchanges were significantly larger than the rest of the firms in the economy. Nevertheless, there was considerable difference between small banks and large banks in terms of their assets, debt structure and liquidity that warranted a separate consideration.[3]

There are two salient observations. First, all of the coefficients signaled a positive capital inflow-maturity mismatch association. Second, the proportion of regressions yielding significant coefficients has increased drastically. More specifically, out of 49 coefficients, 29 and 31 are significant for the GDP ratio and CPI-deflated regressions respectively. Furthermore, the size of the coefficients has increased parallel to the number of significant coefficients.

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[1] Results from estimations using the GDP deflator and the CPI are displayed in Tables C5 and C6 in Appendix C. All the independent variables are log differenced. Table C6 implies that a 1 billion dollar increase in deposit banks' liabilities leads to 4.288 point drop in the quick ratio. This number is significant if we consider for instance that Turkey's 2004 GDP is 300 billion dollars, and a capital inflow of 5 percent of GDP would decrease the quick ratio from 0.48 to 0.27.

[2] Results are shown in Tables C7 and C8 of Appendix C. I used total assets to classify the banks. Omitting twenty percent of the banks in the middle of the distribution did not change the results significantly. I used several other methods to account for size. I included interactive size dummies and used a weighted maturity mismatch variable. These methods produced similar results.

To weigh the dependent variable I multiplied the maturity mismatch ratio of the firm with its total assets and divided by the total assets of the banking sector in the respective year.

$$weighted\ maturity\ mismatch_{j} = \sum_{i=1}^{N_k} maturity\ mismatch\ proxy_{ij} * \frac{total\ assets_{ij}}{total\ assets_{kj}}$$

$$for\ j = 1990\ to\ 2004\ \ and\ \ \ for\ k = 1\ to\ 18$$

where k is the country index, Ni is the number of banks in the country and maturity mismatch proxies are the seven dependent variables discussed above. I obtained greater significance (both frequency and size) for larger banks using this method. This was striking considering the fewer number of observations compared to the non-weighted scheme.

[3] For instance, average total assets (1992-2003, deflated using the CPI) of the largest 3 banks in Argentina, Korea and Turkey were respectively, 66.7,37.8 and 51.6 times the average total assets of the smallest 3 banks. There was similar discrepancy in other countries and in the profitability, debt structure and liquidity ratios.

These results support the hypothesis that larger banks which have greater access to foreign funds and are deemed too big to fail[1] exhibit stronger maturity mismatches during capital inflows[2].

3.2 Profitability Comparison of Banks with Different Maturity Mismatches

A buildup of fragility in balance sheets following capital inflows would not be a concern if banks participated in deep financial markets, and could cover their liquidity shortages relatively cheaper and faster[3]. Under this scenario, banks that carry less liquidity could profit more even during capital outflows. Otherwise, liquidity shortages could increase losses during capital reversals.

To measure the effect of the escalating financial fragilities prior to the crisis on post-crisis financial sector performance, I compare the profitability of banks with different maturity structures. Furthermore, I run a similar experiment using non-crisis periods only to inspect whether banks benefit from the higher leverage when there is financial stability.

In this regard, GMM panel data regressions as shown below are conducted initially for the whole sample period to determine the overall effect of maturity mismatches on profitability. Next, the relationship between maturity mismatches before a financial crisis and profitability afterwards is measured by omitting time periods of countries that are not included in the Kaminsky (2003) crisis classification. Finally, the same experiment is conducted by excluding crisis periods.

$$\Pr ofitability_{ijt} = f\left(Maturity\,Mismatches_{ijt}, time\,and\,country\;fixed\,effects, other\,controls\right) \qquad (2)$$

A total of 49 regressions are run that correspond to the 7 profitability and 7 maturity mismatch variables. Proxies for profitability along with the definitions are provided in Appendix B[4]. The variables that proxy maturity mismatches are the same as above.

Results from the regression model using the quick ratio as a proxy for maturity mismatches and the whole sample period are reported in Table 4. Initial observation is that all of the quick ratio

[1] Hence, face implicit guarantees.
[2] Control variable coefficients and results corresponding to variables deflated by the GDP deflator are not reported because of their similarity to the previous regression results and the results from using CPI deflated variables respectively.
[3] In agreement with this argument, Bleakley and Cowan(2004) find no difference in corporate investment following a crisis.
[4] I use five other profitability ratios in addition to the widely used return on assets and return on equity measures due to data limitations and to check robustness.

coefficients are positive, and 4 out of 7 of them are significant at 5 percent[1]. The insignificance of Rate of Return on Investment (ROI) and Operating Margin (OM) can be due to the insufficient number of observations. Positive coefficients imply that higher liquidity implies higher profitability when we consider the whole sample.

I included log differences of the exchange rates to account for the contribution of currency mismatches to maturity mismatches[2]. The positive coefficients of the liquidity variables add to the findings of Bussiere, Fratzscher and Koeniger (2004), and show that maturity mismatches that are not necessarily due to currency mismatches also have a significant effect on profitability. This is a critical result which implies that maturity mismatches are just as important as currency mismatches in affecting financial sector health.

When we examine the other control variable coefficients, we observe that deposit bank net foreign liabilities are negatively related in a majority of the cases, pointing to the adverse effect of currency risk exposure on profitability. M2/GDP ratio coefficient, which is a measure of financial depth, is positive in majority of the cases pointing to greater profitability in more developed financial markets.

Coefficients of the fundamental macroeconomic variables indicate a positive relationship between favorable macroeconomic conditions and bank performance. In this respect, banks make less profit when there is more inflation, budget deficit and current account deficit, and GDP growth in most cases increases profitability.

Summary of the results from the regressions including the overall sample, crisis periods and non crisis periods respectively provided in Table 1[3]. The second column shows the proportion of regressions with a significant maturity mismatch coefficient, and the third column reports the

[1] It can be seen from the table that liquidity ratios have a non trivial effect on profitability. For instance, a 1 percent increase in the quick ratio corresponds to a 2.26 percent increase in the return on equity.
[2] If a bank has a foreign currency open position, a depreciation of the currency will increase its short term liabilities and have no effect on its assets. In table 11, a one percent depreciation of the currency leads to a 0.19 percent drop in ROE. The coefficients of the exchange rate were similar in the other experiments.
[3] Details are in Tables C9-C12 of Appendix C.

proportion of significant coefficients which imply a negative causal relationship between maturity mismatches and profitability.

There are two conflicting effects of maturity mismatches on profitability. First, banks that lend more short term and seek long term finance, profit less due to the insufficient amount of finance, and the low quality of loans to the private sector. However, these banks are more capable of avoiding liquidity, credit and currency risks.

When I consider the non-crisis periods only, I observe a negative relationship between maturity mismatches and profitability in majority of the cases[1]. This is due to the higher profitability of high maturity mismatch banks in the absence of crises and the fact that this effect dominates the higher profitability of low maturity mismatch banks during and in the aftermath of the financial crises[2]. This was especially true for larger banks. More specifically out of 35 and 23 significant coefficients in overall and large bank regressions 12 and 3 have the signs consistent with a negative relationship respectively. Table 5 tabulates the coefficients from the following set of regressions,

$$profitability_{it+k} = \beta_0 + \beta_1 Maturity\ Mismatches_{it-1} + time\ and\ country\ \ fixed\ effects + other\ controls_{it} + \varepsilon_{it} \quad (4)$$
$$for\ \ i = 1\ \ to\ 214,\ \ t = crisis\ \ periods,\ \ k = 1 to 3$$

The low proportion of significant coefficients are due to the relatively small number of observations left after eliminating periods not corresponding to financial crises. Regressions including large banks only, and using PTM, NPM, OM as dependent variables could not be run for the same reason.

The main observation is that banks with more liquidity prior to the crisis profit relatively more after the crisis. In this regard, all the significant coefficients under the 1 year and 2 year after rows imply a negative relationship between maturity mismatches and profitability. Nonetheless, this relationship disappears after 3 years.

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[1] The signs of rows 1,2,3,4,7 and 5,6 are expected to be positive and negative respectively if profitability is affected negatively by maturity mismatches.

[2] There are 16 crisis periods in the sample: Argentina (02), Brazil (91,99), Colombia(95,97,98,99), Korea(97), Malaysia (97,98), Mexico(94), Philippines(97), Turkey(94,01), Venezuela(94,95).

To check the robustness of the claim above, that in absence of crisis greater maturity mismatches imply greater profitability, regressions omitting periods corresponding to crises are conducted. The results provide support for the statement above, and report a positive relationship between maturity mismatches and profitability[1].

Finally, I also examine the effects of maturity mismatches on investment[2]. The column corresponding to investment in Table 5 shows that there is no relationship between maturity mismatches prior to a crisis and investment afterwards. This is consistent with the findings of Bleakley and Cowan (2004) and Gilchrist and Sim (2007) that capital reversals do not affect corporate investment.

3.3 Checking for Hedging Behavior

Provided that there is evidence supporting the diverse effects of maturity mismatches on profitability depending on the financial conditions in the economy, I test whether banks stay more liquid in periods and countries that are characterized by high interest rate and exchange rate volatilities.

In this respect I estimate the following regression equation using the same methods employed in the previous parts.

$$MaturityMismatches_{it} = \beta_0 + \beta_1 * \sigma_{it}^{\ k} + time\,and\,country\,fixed\,effects + other\,controls_{it} + \varepsilon_{it}$$
$$for\ i = 1\ to\ 214,\ t = 1990 to 2004,\ k = exchange\ rate \quad or \quad interest\ rate \tag{5}$$

where σ_{it}^{k} corresponds to exchange rate and interest rate volatility. Maturity mismatch and the control variables are the same as discussed above, and I use 3 and 2 different measures of exchange rate and interest rate volatility respectively.

There is no consensus in the literature about the use of trade weighted exchange rates. This rate is a good indicator of the exchange rate exposure of a country as a whole, but it is inappropriate when

[1] Results are depicted in Tables C11 and C12 of Appendix C.

[2] Investment is equal to the sum of the changes in investments and advances, loans and lease financing, gross property, plant and equipment, intangible asset items in the balance sheets. This definition of investment is different from that of Bleakley and Cowan (2004) since I am analyzing the financial sector.

applied to every firm in the sample.[1] Since there is no consensus in theory as to which exchange rate is suitable for countries, I use the dollar, an equally weighted and a region adjusted[2] exchange rate consisting of the dollar, the yen and the euro[3].

Lending and deposit rates are employed to measure interest rate volatility. The literature motivates the distinction between the two rates by showing how the risk premium component of the interest rate spread increases as macroeconomic variables become more volatile. This in turn implies greater volatility in interest earnings of banks relative to their interest costs.[4]

Volatility of interest rates and exchange rates are calculated by dividing standard deviation of monthly values by the annual averages. While exchange rates employed are monthly averages of national currency per dollar, yen or euro, interest rates are in percentages.

The results are summarized in Table 1. The third and fourth columns show the proportion of significant coefficients indicating a positive relationship between price volatility and maturity mismatches for the liquidity variables and debt structure variables[5].

There are three main conclusions that can be drawn from the above table. Most of the significant coefficients illustrate the negative relationship between price volatility and maturity mismatches. This observation implies that banks choose not to or are incapable of hedging themselves against currency and interest rate risks by staying more liquid and borrowing more long term.

Another observation is that larger banks' liquidity and maturity mismatches are affected negatively from excess interest rate and exchange rate volatility to a greater extent. In this respect, coefficients indicating a significant negative relationship are more abundant for large banks except for non crisis debt structure regressions.

[1] Dominquez and Tesar (2001) show that trade weighted exchange rates can lead to an under estimation of foreign exchange exposure.
[2] This measure is used due to the unavailability of trade weighted exchange rates. The weights are as follows: South America and Africa=60% $, 20%Euro, 20%Yen, East Asia=60%Yen, 20%Dollar, 20% Euro, Europe=60% Euro, 20% Dollar, 20% Yen.
[3] Up to Jan. 1999, DM is used instead for the euro.
[4] See Saunders and Schumacher (2000).
[5] Detailed results are shown in Tables C13-C16. The significant coefficient value of -0.033 reported in Table C13 implies that a 1 percent rise in the standard deviation of the exchange rate is associated with a 0.033 percent drop in the quick ratio.

Finally, the number of significant coefficients increases when I omit crisis periods, despite some exceptions when the dependent variables are separated into liquidity and debt structure groups. More specifically, smaller banks' debt structure coefficients imply a strong negative relationship in the absence of crisis. However, all of the significant liquidity coefficients supported a positive relationship under this category. This observation possibly reflects the choice of smaller banks to remain liquid due to their inability to borrow long term during periods of high price volatility.

Coefficients of the control variables are not reported due to their similarity to the ones in Table 3. The breakdown of the significant coefficients under different dependent and independent variable definitions reveals that using a basket of currencies yield more significant coefficients[1]. Furthermore, lending rates seem to have a more significant effect on the maturity mismatches of larger banks. The last observation reflects the fact that bank balance sheets are more vulnerable to lending rates, which is in turn consistent with increasing volatility of interest spreads during periods of high price volatility.

Although price volatility is not as significant in determining maturity mismatches compared to capital inflows, the relationship suggests that banks become more illiquid and shift towards short term finance during periods of high price volatility and therefore do not or choose not to protect themselves against volatility associated risks. These results are in agreement with Bussiere, Fratzscher and Koeniger (2004) who find, using macroeconomic data that higher exchange rate volatility is associated with stronger maturity mismatches.

The evidence supporting this behavior is stronger for larger banks and in non crisis periods. Larger banks are less risk averse and are more capable of borrowing during periods of macroeconomic instability, and passing these risks on to consumers, investors, government and smaller banks. During non crisis periods on the other hand, there is more strict regulation that restricts banks to hold more liquid assets and borrow long term.

[1] This result contradicts Dominguez and Tesar (2001), and Allayannis and Ofek (2001). The former finds that trade weighted exchange rates understate exposure. The latter finds no significant difference between using individual and basket of exchange rates. The discrepancy maybe due to the fact that I consider financial institutions that are more likely to have exposure to a basket of currencies than the non-financial sector that is considered in the aforementioned research.

Although analyzing the validity of these claims is outside the scope of this paper, evidence reporting the inferior post crisis performance of banks with high maturity mismatches before crises is consistent with the latter argument.

4. A Partial Equilibrium Framework:

To build a framework favorable to analyzing maturity mismatches and the interaction of the latter with profitability and capital flows, I use a simple three period model. The framework follows that of Chang and Velasco (1998) which is an open economy version of Diamond and Dybvig (1983).

The economy consists of a bank, foreign creditors and consumers. The bank is owned by the consumers. There are two types of consumers: λ impatients and $(1-\lambda)$ patients. The impatient and patient consumers value consumption only in periods 1 and 2 respectively. Each consumer is born with an endowment of *e*. The price of consumption is fixed at one dollar. The bank can borrow from, and the consumers can invest in the international financial markets. One dollar invested in period zero yields one dollar in either period 1 or period 2.

The bank borrows *d* units from foreign creditors at *t=0* and *b* units in period 1. The bank can finance a long term project at *t=0* and collects *R* dollars per unit invested in period 2. This investment is denoted by *k*. If the long term investment is liquidated, bank collects *r* dollars per unit. The impatient and patient agents' consumption is denoted by x and y respectively.

The bank maximizes a representative agent's utility denoted by

$$\lambda u(x) + (1-\lambda)u(y) \tag{6}$$

subject to:

$$k \le d + e \tag{7}$$

$$\lambda x \le b + rl \tag{8}$$

$$(1-\lambda)y + d + b \le R(k-l) \tag{9}$$

$$d + b \le f \tag{10}$$

$$y \geq x \tag{11}$$

$x, y, b, k, l \geq 0 \quad R>1,\ r<1$

Solution to the maximization problem yields the following allocations[1].

$$x = \frac{\theta w}{\lambda} \quad \text{and} \quad y = \frac{(1-\theta)Rw}{(1-\lambda)}$$

I define a maturity mismatch variable at the end of *t=0* as:

$$mm = \theta w - \left(b + r\left(\frac{Rk - f}{R} \right) \right) \tag{12}$$

where $w = e + \left(\frac{R-1}{R} \right) f$ and $\theta = \frac{\lambda R^{\frac{\sigma-1}{\sigma}}}{\lambda R^{\frac{\sigma-1}{\sigma}} + 1 - \lambda}$

I assume that if there is a run on the bank every agent becomes impatient. Hence, the first term on the right hand side is the short term liabilities of the banking sector in the event of a bank run. The second term is the total liquidity the bank would have in period 1 provided that foreign creditors do not renege on their promise to provide short term financing. $\left(\frac{Rk - f}{R} \right)$ is the amount of maximum liquidation that leaves the bank with enough resources to pay back its foreign debt in period 2.

If we substitute in the expressions for *w* and θ, and notice that the foreign finance and the capital financing constraints equations (7) and (10) bind in equilibrium[2], it is straightforward to measure the effect of capital flows and other parameters values on maturity mismatches[3] . Taking derivatives with respect to short term and long term foreign lending one can show that,

[1] For details see Chang andVelasco (1998).

[2] Equations (7) and (10) bind in equilibrium since return on domestic long term investment is higher than the return on the international asset, and the bank borrows as much as it can to maximize the representative agent's utility.

[3] The expression equals: $mm = \left[\frac{\lambda R^{\frac{\sigma-1}{\sigma}}}{\lambda R^{\frac{\sigma-1}{\sigma}} + 1 - \lambda} \right] \left[\left(\frac{R-1}{R} \right)(d+b) + e \right] - \left(b + r\left(\frac{R(d+e) - (d+b)}{R} \right) \right)$

$$\frac{\delta mm}{\delta b} = \left(\frac{\lambda R^{\frac{\sigma-1}{\sigma}}}{\lambda R^{\frac{\sigma-1}{\sigma}} + 1 - \lambda} \right) \left(\frac{R-1}{R} \right) - \frac{R-r}{R} \tag{13}$$

$$\frac{\delta mm}{\delta d} = \left(\frac{\lambda R^{\frac{\sigma-1}{\sigma}}}{\lambda R^{\frac{\sigma-1}{\sigma}} + 1 - \lambda} - r \right) \left(\frac{R-1}{R} \right) \tag{14}$$

Since $\theta < 1$ and b <1, short term capital flows, b decrease maturity mismatches if foreign lenders continue to lend in the event of a bank run. However, the second term on the right hand side of (13) would be $\frac{r}{R}$ with a positive coefficient if ongoing lending was halted[1]. Therefore, the presence of short term capital in the country would aggravate maturity mismatches if there is a reversal. One can also show that higher values of R, λ and σ increase the amount allocated to impatient agents and increase the proportion of short term liabilities, and increase the sensitivity of maturity mismatches to short term capital flows. If λ is higher, banks gives more weight to maximizing the utility of the impatient agents, and if there is higher risk aversion, σ, patient agents that consume at the high productivity period cross-subsidize the impatient agents to a greater extent. The effect of the return on long term projects, R on (13) is ambiguous since it increases the economy's wealth and the cost of liquidation simultaneously[2].

Long term capital flows have two opposing effects on maturity mismatches. On the one hand, they increase the economy's wealth similar to short term flows, and increase short term liabilities. On the other hand, they increase the amount of return in period 2 that can be liquidated. Therefore, the net effect can not be determined without specifying parameter values. Nevertheless, if we consider the

[1] *b=0* in the second term of (12), although the allocation represented in the first term does not change.
[2] When there are lower liquidation costs short term capital inflows lead to a greater increase in maturity mismatches as (13) is related to r positively.

range of values for σ used by the literature, the effect is negative if the proportion of impatient agents is roughly less than liquidation costs[1].

Empirical findings in Section 3 pointed to a negative relationship between profits and maturity mismatches when there is a financial crisis. To investigate whether the model can replicate this result, I define the liquidity shortage of the banking sector and maturity mismatches in the model economy, and measure the relationship between the two when there are capital reversals.

The risk neutral banks do not make profits, and have just enough funds to pay back foreign debt and domestic agents when there is no crisis. Therefore, the change in profits is equal to the losses incurred or equivalently the liquidity shortage in period 1.

I assume that in the event of a crisis, short term foreign funds are not received, and $b = 0$. Furthermore, since banks liquidate long term funds to pay impatient agents, they are unable to meet the deposit demands of patient agents. Hence, patient agents withdraw their funds in the first period, and receive *x*. I investigate three cases corresponding to the behavior of long term creditors and the banking sector.

First, I assume that the bank honor its long term debt *d* and only liquidates *e*. For this case, losses of the banking sector are defined as:

$$\pi_1 = re - x = re - \frac{\theta w}{\lambda} \tag{15}$$

Second, I assume that the long term credits, *d* are not paid. Hence losses equal:

$$\pi_2 = r(d+e) - x = r(d+e) - \frac{\theta w}{\lambda} \tag{16}$$

Finally, I assume that long term credits are withdrawn prematurely, and there are early withdrawal costs. Losses are equal to:

[1] Bernanke, Gertler, Gilchrist (2000) assume that bankruptcy costs are 12% of banks assets. If we adopt this parameter value then the effect of long term inflows on maturity mismatches are negative if the proportion of impatient agents are less than roughly 88%. I could not find a parameter value for this proportion during my survey of the literature.

$$\pi_3 = r(d+e) - x - wc * d = r(d+e) - \frac{\theta w}{\lambda} - wc * d \quad (17)$$

where *wc* represents the withdrawal costs.

Based on the assumption that every agent becomes impatient during a crisis, we can define maturity mismatches before capital reversals as the difference between maximum level of liabilities in period 1 and potential funds from liquidation.

$$MM = x - r(d+e) = \frac{\theta w}{\lambda} - r(d+e) \quad (18)$$

Evidently, this definition leads to a negative relationship between maturity mismatches and every definition of profitability. Nevertheless, the maturity mismatch variables I included in my empirical analysis are constructed using actual levels of liabilities before a crisis, and not potential levels of liabilities. Thus, the definition of maturity mismatches that fits its empirical counterpart is as follows:

$$MM = \lambda x - r(d+e) = \theta w - r(d+e)$$

Given this setup it is straight forward to obtain the relationship between maturity mismatches and losses by means of partial derivatives. Tables 6 shows the sings of the partial derivatives $\frac{d\Pi_i}{dMM}$. Π, *MM* and *i* represent the losses, maturity mismatches, and the three different scenarios.[1]

The most important observation is that parameters and exogenous variables that increase (decrease) maturity mismatches also increase (decrease) the losses incurred for most of the cases. Hence, one can attribute the disparity between the profitability of high and low maturity banks following a crisis to the different variables and parameters these banks face. More specifically, the proportion of impatient customers they have, the amount of short term and long term foreign funds they attract, the relative risk aversion of their customers, the type of projects they finance, and the relative ease in which they can convert long term assets into short term assets determines their maturity mismatches and the losses they incur when there are capital reversals.

[1] The expressions for the partial derivatives are provided in Appendix D.

The negative signs (except for 2 cases) in the last three rows of Table 6 imply that any change in the column variables have different effects on maturity mismatches before the crisis and on losses following the crisis which in turn implies a negative relationship between the two variables.

The first three rows in the first column show that as return on long term investments increase the overall wealth in the economy increases and banks promise a larger amount to impatient agents. Hence, following a crisis when patient agents also withdraw *x*, losses are amplified. Maturity mismatches increase as liabilities in the first period increase due to a rise in *x*.

An increase in liquidation costs which corresponds to a drop in *r*, increases the losses and the maturity mismatches, hence there is a negative (positive) relationship between profits (losses) and maturity mismatches.

If long term foreign credit is higher before a crisis, losses increase when banks honor their long term debt, since they can not liquidate *d* to create liquidity in period 1, and more *x* is promised since higher *d* increases wealth. If long term debt is not paid back, banks can liquidate *d* to meet some of the demand in period 1. However since *x* increases simultaneously the effect on profits is not ambiguous. Nevertheless, for reasonable values of σ and *R*, the effect is positive. Finally, when the foreign creditors withdraw their long term credits prematurely, and bear the early withdrawal costs, the effect of an increase in *d* is ambiguous. However, if foreign liquidation costs are equal to domestic liquidation costs, the effect on profits is negative. The effect on maturity mismatches is ambiguous, as once again the availability of more resources to liquidate is counteracted by the higher levels of *x*. Nevertheless, for reasonable values of σ and *R*, the effect is negative. Hence, the relationship between the changes in losses and maturity mismatches stemming from shocks to *d* is not clear.

Higher levels of short term finance, *b* increase wealth but does not provide potential liquidity in period 1. Hence maturity mismatches and losses increase when *b* increases.

The effect of higher endowments uniformly increases losses for all three scenarios since, the effect of higher wealth (and more *x* promised) dominates the higher levels of potential liquidity. However the

effects on maturity mismatches are not clear. Therefore, the relationship between losses and maturity mismatches is ambiguous.

An increase in λ and σ both decrease profits as the number of impatient agents and the amount of cross subsidization that accompanies higher risk aversion leads to lower liquidity to meet the higher amounts promised to impatient agents.

3. Concluding Remarks:

This paper studies the nature of maturity mismatches in emerging market banking sectors that have been associated with the severe financial crisis experienced in some of these countries. I find that banks face a tradeoff between staying liquid and hedging themselves against a risk of a possible liquidity crunch, and increasing their profitability while carrying stronger maturity mismatches. If we consider the whole sample period, there is a positive relationship between maturity mismatches and profitability. Furthermore, countries that face higher price volatilities banks stay less liquid. These conclusions imply that profit motives dominate precautionary behavior during non-crisis periods, and that the resulting vulnerability in balance sheets amplifies the effects of a financial crisis.

These results have strong policy implications: Maturity mismatches in the financial sector should be under close supervision just like currency mismatches. In this respect, preliminary results showing the significant effects of maturity mismatches that are not necessarily due to currency mismatches provide further justification. Furthermore, the implications of the model imply that the regulatory authorities should also closely monitor idiosyncrasies in the industry. More specifically, types of customers banks have and the behavior of foreign creditors are important determinants of financial sector health.

This analysis does not take account of the interaction between currency mismatches and maturity mismatches at the entity level, since data on foreign liabilities and assets and their maturities at the individual bank level are not available. It would be interesting for further research to measure how much of the deterioration in the debt structure of the banking sector is due to exchange rate effects and

interest rate changes alone, and to model the interactions between interest rate and exchange rate associated risks.

Modeling the effects of maturity mismatches that allows for these interactions would require a general equilibrium framework. In my literature survey, I failed to come across a general equilibrium model that studies how banks with long term assets and short term liabilities, some of which are foreign currency denominated, face liquidity problems when there are capital reversals. In this respect, it would be interesting to build maturity mismatches into a Bernanke Gertler Gilchrist (2000) model or a sudden stop type model to explain the drops in output following capital reversals.

AppendixA:

Period: 1990-2004 Annual					
IFS		**Mergent Online**			
BOP Portfolio Investment Assets	BOP Exports	**Deposit Banks**			
BOP Portfolio Investment Liabilities	BOP Imports	Argentina	13		
INT. INV. Equity Liabilities	BOP Services Credit	Brazil	43		
INT. INV. Debt Liabilities	BOP Services Debit	Bulgaria	1		
INT. INV. Equity Assets	BOP Income Credit	Colombia	8		
INT. INV. Debt Assets	BOP Income Debit	Ecuador	5		
INT. INV. Portfolio Assets	BOP Current Transfers Credit	Egypt	6		
INT. INV. Portfolio Liabilities	BOP Current Transfers Debit	Korea	18		
INT. INV. Monetary Authority Assets	BOP Current Account	Malaysia	18		
INT. INV. Monetary Authority Liabilities	BOP Capital Account Credit	Mexico	15		
INT. INV.Government Assets	BOP Capital Account Debit	Morocco	3		
INT. INV.Government Liabilities	BOP Capital Account	Nigeria	2		
INT. INV.Bank Assets	BOP Direct Investment Abroad	Panama	4		
INT. INV.Bank Liabilities	BOP Direct Investment In Republic	Peru	20		
INT. INV.Derivative Assets	BOP Other Investment Assets	Philippines	13		
INT. INV.Derivative Liabilities	BOP Other Investment Liabilities	Poland	9		
INT. INV. Assets	BOP Financial Account	South Africa	13		
INT. INV. Liabilities	BOP Equity Securities Assets	Turkey	7		
ER $ End of Period	BOP Debt Securities Assets	Venezuela, Rep. Bol.	16		
ER $ Period Average	BOP Equity Securities Liabilities				
RER CPI Based, 2000=100	BOP Debt Securities Liabilities	**Total**	214		
ER $, Yen, Pound, End of Period Per SDR	BOP Mon. Authority Assets				
Monetary Authority Total Reserves - Gold	BOP General Gov. Assets				
Int. Liquidity Deposit Bank Assets	BOP Banks Assets	**Balance Sheet**	**Ratios**		
Int. Liquidity Deposit Bank Liabilities	BOP Other Sector Assets				
Monetary Authority Foreign Assets	BOP Mon. Authority Liabilities	Cash & Cash Equivalents	**Profitability**	Return on Equity (%)	
Monetary Authority Foreign Liabilities	BOP General Gov. Liabilities	Receivables		Return on Assets (%)	
Monetary Authority Claim on Deposit Banks	BOP Banks Liabilities	Other Current Assets		Return on Investment	
Deposit Banks Reserves	BOP Other Sector Liabilities	Total Current Assets		Gross Margin	
Deposit Banks Foreign Assets	BOP Financial Derivatve Assets	Long-term Receivables		Pre-Tax Margin	
Deposit Banks Claims on Central Gov.	BOP Financial Derivatve Liabilities	Investments and Advances		Net Profit Margin (%)	
Deposit Banks Claims on Local Gov.	BOP Balance	Loans and Lease Financing		Operating Margin (%)	
Deposit Banks Claims on Non Fin Public	BOP Reserve Assets	Gross Property, Plant & Equipment		Effective Tax Rate (%)	
Deposit Banks Claims on Non Gov. Dom. Sectors	BOP Use of Fund Credit and Loans	Accumulated Depreciation &	**Liquidity**	Quick Ratio	
Deposit Banks Claims on Other Banking Sector	BOP Exceptional Financing	Net Property & Equipment		Current Ratio	
Deposit Banks Claims on Non Bank Fin Sector	Gov. Budget Deficit	Intangible Assets		Working Capital/Total Assets	
Deposit Banks Demand Deposits	Gov. Budget Revenue	Other Assets	**Debt Mang.**	Current Liabilities/Equity	
Deposit Banks Time, Savings and Foreign Curren	Gov. Budget Expenditure	Total Assets		Total Debt to Equity	
Deposit Banks Other Securities	Gov. Lending	Accounts Payable		Long Term Debt to Assets	
Deposit Banks Restricted Deposits	Gov. Net Domestic Borrowing	Taxes Payable	**Asset Mang.**	Revenues/Total Assets	
Deposit Banks Foreign Liabilities	Gov. Net Foreign Borrowing	Short-term Borrowings		Revenues/Working Capital	
Deposit Banks Gov. Deposits	Gov. Use of Cash Balances	Accrued Expenses			
Deposit Banks Gov. Lending Funds	Gov. Domestic Debt Stock	Deposits			
Deposit Banks Credit From Mon. Authority	Gov. Foreign Debt Stock	Other Current Liabilities			
Deposit Banks Liabilities to Other Bank. Inst.	National Accounts Exports	Total Current Liabilities			
Deposit Banks Liabilities to Non Bank. Inst.	National Accounts Gov. Expenditure	Long-term Debt			
Deposit Banks Capital Accounts	National Accounts Capital Formation	Other Deferred Liabilities			
Monetary Survey Domestic Credit	National Accounts Change in Invento	Deferred Liabilities			
Monetary Survey M2	National Accounts Consumption	Minority Interest			
Monetary Survey M2 Seasonally Adjusted	National Accounts Net Factor Income	Other Liabilities			
Banking Survey Liquid Liabilities	National Accounts Imports	Total Liabilities			
Interest Rates Discount Rate	National Accounts Net Transfers Fro	Common Stock			
Interest Rates Money Market Rate	National Accounts Gross National In	Additional Paid in Capital			
Interest Rates Treasury Bill Rate	National Accounts GDP	Retained Earnings			
Interest Rates Savings Rate	National Accounts GDP Real	Other Stockholders' Equity			
Interest Rates Deposit Rate	GDP Deflator 2000=100	Stockholders' Equity			
Interest Rates Lending Rate	GDP Volume 2000=100	Total Liabilities & Stockholders' Equity			
Interest Rates Gov. Bond Yield	GDP Cons. of Fixed Capital				
Prices Production Labor Share Prices	Population				

Appendix B:

Banking Sector Variables:

Liquidity and Debt Management

Quick Ratio = A measure of a company's liquidity, used to evaluate creditworthiness. Equals quick assets divided by current liabilities.

Quick Assets = Cash and other assets which can or will be converted into cash fairly soon, such as accounts receivable and marketable securities; or equivalently, current assets minus inventory.

Current Ratio = Current assets divided by current liabilities. An indication of a company's ability to meet short-term debt obligations; the higher the ratio, the more liquid the company is.

Current Assets = A balance sheet item which equals the sum of cash and cash equivalents, accounts receivable, inventory, marketable securities, prepaid expenses, and other assets that could be converted to cash in less than one year. A company's creditors will often be interested in how much that company has in current assets, since these assets can be easily liquidated in case the company goes bankrupt.

Current Liabilities = A balance sheet item which equals the sum of all money owed by a company and due within one year.

Current Ratio (Balance sheet) = Current ratio defined above is reported separately by mergent online. For some banks and time periods although balance sheet items are reported ratios, corresponding ratios are missing. Therefore current ratio variable based on the balance sheet values is created.

Current Ratio (Balance sheet + Ratio) = This ratio is constructed to check robustness. Current liabilities are obtained by multiplying Current Liabilities/Equity ratio with Equity value from the balance sheet. This variable in turn is divided by current assets to determine the current ratio.

Short term debt = Loans and obligations with a maturity of less than one year.

Short term debt / Assets = Short term debt is as follows. First total debt to equity is multiplied with equity to obtain total debt. Second long term debt to assets ratio is multiplied with assets to obtain long term debt. Finally short term debt is found by subtracting long term debt from total debt.

Long term debt / Assets = As mentioned above this ratio is reported directly by mergentonline and represents the ratio of loans and obligations with a maturity of more than one year and total assets.

Profitability **(variables are in percentages)**

Return on Equity = A measure of how well a company used reinvested earnings to generate additional earnings, equal to a fiscal year's after-tax income (after preferred stock dividends but before common stock dividends) divided by book value, expressed as a percentage. It is used as a general indication of the company's efficiency; in other words, how much profit it is able to generate given the resources provided by its stockholders.

Return on Assets = A measure of a company's profitability, equal to a fiscal year's earnings divided by its total assets, expressed as a percentage.

Return on Investment = Equal to a fiscal year's income divided by common stock and preferred stock equity plus long-term debt.

Gross Margin = Gross income divided by net sales, expressed as a percentage.

Pre-Tax Margin = Net profit before taxes divided by net sales.

Net Profit Margin = Net profit divided by net revenues, often expressed as a percentage. This number is an indication of how effective a company is at cost control.

Operating Margin = Operating income divided by revenues, expressed as a percentage.

Capital Flow Variables:

Net Portfolio Investment Position = The stock of the difference between portfolio investment liabilities and assets reported in the balance of payments accounts. It reflects not only the sum of balance of payments transactions over time, but also price changes, exchange rate changes, and other adjustments. The item includes transactions with nonresidents in financial securities of any maturity (such as corporate securities, bonds, notes, and money market instruments) other than those included in direct investment, exceptional financing, and reserve assets.

Net Direct Investment = Equity capital and reinvested earnings. Direct investments in the republic net of direct investments abroad.

BOP Net Debt Liabilities = Covers bonds, debentures, notes, etc., and money market or negotiable debt instruments.

BOP Net Equity Liabilities = Includes shares, stocks, participation, and similar documents that usually denote ownership of equity.

Appendix C:

Table C1. Debt Structure

Weighted Short Term Debt / Total Debt												
	90-94	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	IMF (1)
Argentina	30.2	26.8	25.3	26.3	28.0	28.0	30.3	38.8	31.9	27.6	32.3	43.1
Brazil	74.9	94.0	90.1	86.7	84.3	91.4	83.6	82.2	74.0	82.0	91.1	23.5
Colombia	48.3	47.6	47.1	43.9	51.6	49.4	27.0	25.1	28.3	21.9	-	31.3
Egypt	-	-	-	-	-	17.3	23.5	-	20.7	-	-	-
Korea	8.6	1.3	0.8	4.7	28.6	23.8	27.7	33.0	23.4	12.4	14.5	46.0
Malaysia	63.6	84.6	75.8	76.5	74.6	74.3	79.9	73.3	66.5	69.3	64.4	35.8
Mexico	-	-	-	57.6	56.8	58.1	52.8	47.2	63.0	67.2	67.7	27.4
Panama	34.8	5.8	2.2	2.6	0.2	0.4	0.7	0.9	44.6	46.8	-	-
Peru	31.9	22.0	16.7	17.6	16.7	17.6	26.2	18.7	29.2	36.6	29.7	-
Poland	31.9	46.6	49.1	48.3	36.2	43.2	27.2	-	51.4	-	-	37.7
S. Africa	0.2	1.5	-	-	-	-	-	1.3	1.2	23.3	21.3	-
Turkey	39.1	49.3	39.1	62.8	54.1	55.8	60.4	54.7	50.1	57.1	55.2	55.3
Venezuela	-	-	57.1	62.2	47.0	67.6	62.6	67.9	74.2	60.7	63.7	-
Average	**32.3**	**37.9**	**43.9**	**44.5**	**41.5**	**41.0**	**40.1**	**38.1**	**42.9**	**47.8**	**50.0**	**35.7**
Advanced (2)	U.S.		U.K.		Switzerland		France					
	Banks	Corp	Banks	Corp	Banks	Corp	Banks	Corp				
	31.5	5.1	92.0	73.0	93.0	41.1	60.1	39.5				

(1) Global Financial Stability Report, April 2005; developing countries' non bank private sector 1993 – 2003 average.
(2) Source IMF. External Debt data (SDDS). Figures are from the end of year 2003 for U.S., U.K. and Switzerland. 2006 data are used for France. Corp represents the non bank private sector.

Table C2. Quick Ratio

		1999	2000	2001	2002	2003	2004
Argentina	Non_Financial	1.45	0.93	1.56	1.61	1.54	1.37
	Financial	0.87	0.79	1.00	1.09	1.15	1.23
	Difference	**0.58**	**0.14**	**0.56**	**0.52**	**0.39**	**0.14**
Brazil	Non_Financial	0.48	1.24	0.63	0.78	0.52	0.76
	Financial	0.52	0.53	0.55	0.51	0.54	0.40
	Difference	**-0.04**	**0.71**	**0.08**	**0.27**	**-0.02**	**0.36**
Korea	Non_Financial	0.83	0.41	0.66	0.58	1.09	0.37
	Financial	1.05	0.64	0.57	0.54	0.33	0.33
	Difference	**-0.22**	**-0.23**	**0.09**	**0.04**	**0.76**	**0.04**
Mexico	Non_Financial	0.45	1.01	0.53	0.87	0.71	0.81
	Financial	0.49	0.49	0.54	0.42	0.49	0.47
	Difference	**-0.04**	**0.52**	**-0.01**	**0.45**	**0.22**	**0.34**
Turkey	Non_Financial	1.37	0.92	1.06	0.78	1.55	0.70
	Financial	0.34	0.37	0.42	0.38	0.45	0.48
	Difference	**1.03**	**0.55**	**0.64**	**0.40**	**1.10**	**0.22**

Table C3. Post-Crisis Profitability Comparison of High and Low Maturity Mismatch Banks

			Performance After Crisis								
		MM Before Crisis	1 year after crisis		2 years after crisis		3 years after crisis		1-3 year average		% of Assets
			ROE	ROA	ROE	ROA	ROE	ROA	ROE	ROA	
Argentina	Low MM	<0.93	3.58	0.85	9.63	1.02	10.75	0.67	7.99	0.85	14.16
	High MM	>0.93	8.81	1.55	14.48	0.50	12.15	1.50	11.81	1.18	4.24
Turkey	Low MM	<0.14	4.90	3.35	23.35	2.59	-	-	-	-	32.52
	High MM	>0.14	3.21	2.99	28.61	4.08	-	-	-	-	24.64
Brazil	Low MM	<0.43	20.47	2.42	15.85	1.46	14.14	0.52	16.82	1.47	12.76
	High MM	>0.43	4.91	0.86	6.92	1.01	12.55	1.61	8.13	1.16	6.28
Korea	Low MM	<0.37	10.86	0.55	16.50	0.35	6.53	0.45	11.29	0.45	17.31
	High MM	>0.37	-4.01	-0.33	4.05	0.24	3.86	0.24	1.30	0.05	7.69
Malaysia	Low MM	<0.21	1.15	0.10	1.76	0.17	8.72	0.88	3.88	0.38	10.45
	High MM	>0.21	0.49	0.03	2.60	0.20	10.55	0.84	4.55	0.36	6.21
Mexico	Low MM	<0.16	3.82	3.68	6.84	3.28	0.70	0.79	3.79	2.58	18.91
	High MM	>0.16	0.69	1.27	5.56	2.32	7.22	5.85	4.49	3.15	14.42

(*) The dates for the crisis are obtained from Kaminsky (2003) and balance sheet variables before crisis period are those reported on December 31st of the year before the crisis. The remaining countries in the sample are omitted due to small number of banks in the groups.

Table C4. Evolution of Price Volatility and Maturity Mismatches

	90-93	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Argentina												
i-r vol.	30.41	6.22	13.32	4.69	4.91	8.22	9.06	10.00	35.15	45.71	15.49	7.32
e-r vol.	5.93	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	12.73	2.73	1.28
weig. QR	0.97	1.09	1.06	1.00	0.97	0.97	0.88	0.82	0.96	1.39	1.47	1.47
Nonw.QR	1.16	1.12	1.12	1.00	0.95	0.96	0.87	0.79	1.00	1.09	1.15	1.23
Brazil												
i-r vol.	34.41	28.83	12.10	5.75	12.37	13.75	10.01	2.17	5.00	4.12	4.75	3.01
e-r vol.	24.57	22.94	1.48	0.58	0.59	0.66	7.23	1.75	4.11	5.47	3.51	2.30
weig. QR	0.18	0.39	0.44	0.49	0.49	0.48	0.43	0.37	0.41	0.46	0.53	0.44
Nonw QR	0.36	0.40	0.49	0.48	0.55	0.53	0.52	0.53	0.55	0.51	0.54	0.40
Korea												
i-r vol.	1.30		1.88	3.74	2.75	7.85	2.33	1.52	3.24	0.64	2.41	1.45
e-r vol.	0.47	0.28	0.64	0.88	5.58	5.08	1.80	1.08	1.66	1.71	1.31	1.38
weig. QR	0.38	0.37	0.36	0.20	0.22	0.49	1.00	0.68	0.58	0.53	0.32	0.32
nonw QR	0.35	0.36	0.45	0.33	0.34	0.48	1.05	0.64	0.57	0.54	0.33	0.33
Malaysia												
i-r vol.	1.95	5.08	2.06	0.83	2.43	5.07	4.23	0.79	0.65	0.03	0.52	0.00
e-r vol.	0.59	1.31	0.85	0.41	3.79	4.57	0.00	0.00	0.00	0.00	0.00	0.00
weig. QR	0.32	0.20	0.22	0.20	0.21	0.14	0.17	0.18	0.16	0.18	0.19	0.24
nonw.QR	0.72	0.77	0.23	0.21	0.23	0.18	0.21	0.19	3.89	3.45	2.08	0.28
Mexico												
i-r vol.	4.92	10.52	20.70	8.75	5.42	6.26	5.26	4.48	8.62	4.53	5.64	4.07
e-r vol.	0.53	2.35	8.47	1.22	1.24	2.34	1.48	1.38	1.39	1.07	2.09	1.20
weig. QR	0.07	0.14	0.14	0.14	0.13	0.16	0.22	0.28	0.41	0.37	0.42	-
nonw.QR	0.30	3.91	6.28	21.03	0.21	0.40	0.49	0.49	0.54	0.42	0.49	-
Turkey												
i-r vol.	1.38	14.42	4.79	0.90	1.12	2.68	3.66	20.59	15.50	3.43	4.72	3.00
e-r vol.	3.85	10.77	3.58	5.22	5.54	3.66	4.62	2.32	9.77	3.25	3.10	3.00
weig. QR	0.27	0.24	0.27	0.24	0.25	0.28	0.32	0.40	0.34	0.37	0.48	-
nonw.QR	0.36	0.27	0.27	0.23	0.25	0.34	0.37	0.42	0.38	0.45	0.48	-

(*) Interest rate and exchange rate volatilities are annual averages of monthly percentage changes.
(**) Weights are total assets and QR corresponds to quick ratio which is defined in Appendix B.

Table C5. Effect of Capital Flows on Maturity M. (Summary, Capital Flows are deflated by the GDP deflator)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current assets	long term debt / assets
U.S. Tbills	**-4.526**	**-4.286**	-4.238	-2.376	**-2.020**	**-2.052**	-3.498
	(1.123)	(1.137)	(3.039)	(1.161)	(2.021)	(2.036)	(1.517)
Net Portfolio Investment Position	**-0.440**	**-0.420**	-0.128	-0.470	**0.030**	**0.060**	0.078
	(0.030)	(0.036)	(0.149)	(0.252)	(0.008)	(0.018)	(0.191)
Deposit Bank Net Foreign Liabilities	**-3.000**	-1.610	-5.417	-8.388	-0.0370	-0.0269	-2.832
	(1.198)	(1.340)	(5.694)	(4.306)	(0.1019)	(0.2028)	(2.528)
CB Foreign Currency Reserves	0.3788	-0.3570	**-9.972**	-1.785	-0.083	0.2184	-2.071
	(0.6863)	(0.7711)	(3.488)	(2.625)	(0.060)	(0.1149)	(1.534)
Direct Investment	**-0.863**	-0.967	-0.763	-1.377	-0.059	0.019	**-1.593**
	(0.422)	(0.117)	(0.757)	(0.527)	(0.088)	(0.095)	(0.770)
BOP Net Debt Liabilities	**-1.992**	**-1.335**	**-1.404**	**-3.731**	-0.056	0.030	**-2.409**
	(0.133)	(0.155)	(0.647)	(0.516)	(0.015)	(0.027)	(0.362)
BOP Net Equity Liabilities	**-1.559**	-0.601	1.460	2.177	-0.079	-0.407	-0.291
	(0.476)	(0.555)	(2.076)	(3.671)	(0.182)	(0.478)	(1.625)

(*) All numbers are multiplied by 10^4

Table C6. Effect of Capital Flows on Maturity M. (Summary, Capital Flows are deflated by the CPI)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current assets	long term debt / assets
U.S. Tbills	**-4.526**	**-4.286**	-4.238	-2.376	**-2.020**	**-2.052**	-3.498
	(1.123)	(1.137)	(3.039)	(1.161)	(2.021)	(2.036)	(1.517)
Net Portfolio Investment Position	**-0.437**	**-0.418**	-0.093	-0.459	**0.030**	**0.068**	0.142
	(0.030)	(0.036)	(0.150)	(0.260)	(0.008)	(0.018)	(0.196)
Deposit Bank Net Foreign Liabilities	**-4.288**	**-2.682**	-7.392	**-9.767**	-0.131	-0.246	**-6.014**
	(1.207)	(1.351)	(5.743)	(4.417)	(0.105)	(0.210)	(2.615)
CB Foreign Currency Reserves	0.855	0.014	**-11.668**	-2.564	0.0765	0.2110	-2.009
	(0.741)	(0.833)	(3.659)	(2.848)	(0.06600)	(0.1261)	(1.693)
Direct Investment	-0.785	-0.867	-0.356	-1.871	-0.006	0.094	-1.260
	(1.751)	(1.835)	(0.965)	(2.521)	(0.079)	(0.129)	(0.850)
BOP Net Debt Liabilities	**-2.037**	**-1.405**	**-1.640**	**-3.725**	-0.056	0.034	**-2.478**
	(0.130)	(0.151)	(0.629)	(0.505)	(0.015)	(0.027)	(0.355)
BOP Net Equity Liabilities	**-1.624**	-0.634	1.525	2.229	-0.082	-0.425	-0.304
	(0.482)	(0.563)	(2.110)	(3.738)	(0.190)	(0.498)	(1.695)

(*) All numbers are multiplied by 10^4

Table C7. Effect of Capital Flows on Large Bank Maturity M. (Summary, Using GDP ratios)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current assets	long term debt / assets
U.S. Tbills	**-7.211**	**-6.571**	**-6.477**	-6.753	-5.955	-4.408	**-9.553**
	(1.944)	(2.274)	(2.182)	(4.899)	(4.126)	(5.266)	(2.526)
Net Portfolio Investment Position / GDP	-5.902	-5.525	**-7.241**	-6.042	**0.616**	**0.717**	1.798
	(15.528)	(16.163)	(1.387)	(16.164)	(0.071)	(0.083)	(2.068)
Deposit Bank Net Foreign Liab. / GDP	**-5.785**	**-5.888**	**-12.318**	**-5.904**	**0.0182**	**0.0248**	**-0.479**
	(0.854)	(0.877)	(1.306)	(0.876)	(0.0055)	(0.0067)	(0.105)
CB Foreign Currency Reserves / GDP	**-1.4358**	**-1.5151**	**-5.066**	**-1.507**	-0.007	-0.0024	-0.149
	(0.6663)	(0.6839)	(1.032)	(0.684)	(0.004)	(0.0052)	(0.082)
Direct Investment / GDP	**-3.669**	**-2.004**	-0.942	-2.144	0.063	0.012	10.168
	(1.398)	(0.885)	(1.692)	(1.943)	(0.543)	(0.638)	(6.552)
BOP Net Debt Liabilities / GDP	**-1.852**	**-2.100**	**-5.619**	**-2.033**	**0.028**	**0.025**	**-2.880**
	(0.595)	(0.614)	(1.973)	(0.617)	(0.009)	(0.010)	(1.352)
BOP Net Equity Liabilities / GDP	-1.640	-1.131	-1.318	-1.082	**0.068**	**0.092**	-0.071
	(2.652)	(2.740)	(4.402)	(2.738)	(0.021)	(0.025)	(0.384)

Table C8. Effect of Capital Flows on Large Bank Maturity M. (Summary, Deflator=CPI)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current assets	long term debt / assets
U.S. Tbills	**-7.211**	**-6.571**	**-6.477**	-6.753	-5.955	-4.408	**-9.553**
	(1.944)	(2.274)	(2.182)	(4.899)	(4.126)	(5.266)	(2.526)
Net Portfolio Investment Position	**-1.555**	**-1.522**	**-2.608**	**-1.535**	**0.079**	**0.096**	0.002
	(0.351)	(0.372)	(0.373)	(0.371)	(0.022)	(0.027)	(0.052)
Deposit Bank Net Foreign Liab.	-4.309	**-5.715**	**-10.087**	**-1.400**	-0.00136	**0.85924**	**-5.994**
	(2.270)	(2.326)	(0.815)	(0.582)	(0.00359)	(0.43408)	(0.653)
CB Foreign Currency Reserves	**-1.649**	**-1.750**	**-2.728**	**-1.752**	**0.0085**	**0.0120**	**-0.265**
	(0.138)	(0.141)	(0.215)	(0.141)	(0.00092)	(0.0011)	(0.016)
Direct Investment	0.694	0.870	0.655	0.711	0.007	0.008	-0.027
	(0.678)	(0.743)	(0.390)	(0.630)	(0.019)	(0.013)	(0.053)
BOP Net Debt Liabilities	**-10.669**	**-10.545**	**-50.126**	**10.864**	**0.120**	**0.149**	**-0.337**
	(2.577)	(2.665)	(12.216)	(2.674)	(0.049)	(0.055)	(0.087)
BOP Net Equity Liabilities	-0.940	1.062	-1.015	1.028	**-0.023**	**-0.030**	-0.340
	(1.294)	(1.338)	(2.235)	(1.337)	(0.010)	(0.012)	(0.186)

(*) All numbers are multiplied by 10^4

Table C9. Effect of Maturity Mismatches on Profitability (Whole Sample Period)

Independent Variables	Dependent Variables						
	ROE	ROA	ROI	GM	PTM	NPM	OM
Quick Ratio	**-2.262**	**-1.020**	-0.333	-0.059	**-6.756**	**-3.956**	-2.020
	(0.714)	(0.149)	(3.206)	(0.043)	(1.609)	(1.471)	(2.395)
Current Ratio	0.684	**-0.565**	3.125	**-0.078**	**-7.168**	**-4.706**	**-6.334**
	(0.528)	(0.108)	(1.792)	(0.038)	(1.028)	(0.966)	(1.385)
Current Ratio (balance sheet)	-0.159	-0.004	**-2.556**	**0.220**	**-6.55456**	**-3.59950**	**-10.555**
	(0.129)	(0.027)	(0.447)	(0.061)	(1.09284)	(1.01323)	(1.503)
current ratio (balance sheet+ratio)	**-0.315**	-0.037	**-2.600**	-0.001	**-6.5975**	**-3.6360**	**-10.602**
	(0.130)	(0.028)	(0.462)	(0.007)	(1.08980)	(1.0108)	(1.496)
Short Term Debt / Assets	**-0.204**	**0.060**	**-1.381**	**0.001**	**0.592**	**0.596**	0.080
	(0.077)	(0.014)	(0.224)	(0.000)	(0.185)	(0.162)	(0.218)
Short Term Debt / Current A.	0.005	**0.042**	**-0.621**	**0.001**	**0.655**	**0.594**	**0.399**
	(0.047)	(0.008)	(0.133)	(0.000)	(0.083)	(0.069)	(0.110)
Long Term Debt / Assets	**0.121**	0.004	**0.521**	0.000	**-0.154**	-0.016	**-0.361**
	(0.031)	(0.005)	(0.114)	(0.000)	(0.074)	(0.064)	(0.119)

Table C10. Effect of Maturity Mismatches on Profitability (Whole Sample Period, Large Banks)

Independent Variables	Dependent Variables						
	ROE	ROA	ROI	GM	PTM	NPM	OM
Quick Ratio	0.021	**-1.050**	0.001	**-0.030**	**-0.455**	**-0.378**	-0.098
	(0.306)	(0.270)	(0.043)	(0.007)	(0.168)	(0.151)	(0.049)
Current Ratio	0.371	**-0.648**	**-0.149**	**-0.020**	**-0.268**	**-0.309**	**-0.320**
	(0.219)	(0.195)	(0.030)	(0.005)	(0.122)	(0.108)	(0.032)
Current Ratio (balance sheet)	-0.146	**-0.332**	**-0.059**	**-0.016**	-0.01098	0.01797	**-0.157**
	(0.168)	(0.150)	(0.024)	(0.004)	(0.09328)	(0.08351)	(0.026)
current ratio (balance sheet+ratio)	0.342	**-0.704**	**-0.170**	**-0.019**	**-0.2545**	**0.2842**	**-0.321**
	(0.221)	(0.196)	(0.030)	(0.005)	(0.12219)	(0.1091)	(0.032)
Short Term Debt / Assets	-1.106	2.806	-0.273	-0.071	-0.669	-0.234	-0.711
	(2.261)	(2.030)	(0.321)	(0.054)	(1.256)	(1.125)	(0.365)
Short Term Debt / Current A.	-0.439	1.828	-0.255	**0.108**	-1.383	-0.395	-0.259
	(1.460)	(1.310)	(0.207)	(0.035)	(0.808)	(0.726)	(0.236)
Long Term Debt / Assets	-1.355	**4.468**	**-0.840**	0.049	0.728	0.913	-0.319
	(1.180)	(1.039)	(0.162)	(0.028)	(0.655)	(0.586)	(0.191)

Table C11. Effect of Maturity Mismatches on Profitability (Non Crisis)

	Dependent Variables						
Independent Variables	ROE	ROA	ROI	GM	PTM	NPM	OM
Quick Ratio	-0.562	0.037	**-22.164**	0.025	**3.066**	0.413	**7.884**
	(0.402)	(0.079)	(4.340)	(0.029)	(1.124)	(1.018)	(2.098)
Current Ratio	-0.203	**0.116**	**-6.421**	0.002	**2.262**	0.093	3.137
	(0.298)	(0.059)	(2.262)	(0.020)	(1.154)	(0.998)	(1.938)
Current Ratio (balance sheet)	**0.206**	0.009	0.362	-0.011	-1.29471	**-3.11033**	**2.346**
	(0.029)	(0.006)	(0.197)	(0.014)	(1.24583)	(1.04518)	(0.549)
current ratio (balance sheet+ratio)	**0.516**	**0.055**	**1.926**	-0.001	-1.3080	**-3.1199**	**2.359**
	(0.100)	(0.019)	(0.387)	(0.005)	(1.24573)	(1.0454)	(0.551)
Short Term Debt / Assets	**0.552**	**0.269**	**-1.277**	**0.004**	**0.931**	**0.659**	**0.598**
	(0.181)	(0.034)	(0.518)	(0.001)	(0.253)	(0.263)	(0.204)
Short Term Debt / Current A.	**-0.241**	-0.017	**-0.097**	**0.002**	**0.529**	**0.510**	**0.047**
	(0.059)	(0.011)	(0.039)	(0.000)	(0.154)	(0.157)	(0.015)
Long Term Debt / Assets	**-0.122**	-0.004	**-0.084**	**-0.001**	**-0.478**	**-0.371**	**-0.055**
	(0.035)	(0.006)	(0.015)	(0.000)	(0.066)	(0.063)	(0.019)

Table C12. Effect of Maturity Mismatches on Profitability (Non Crisis, Large Banks)

	Dependent Variables						
Independent Variables	ROE	ROA	ROI	GM	PTM	NPM	OM
Quick Ratio	-0.318	**-0.626**	0.033	**-0.015**	**-0.789**	**-0.842**	-0.013
	(0.248)	(0.221)	(0.035)	(0.006)	(0.132)	(0.116)	(0.040)
Current Ratio	0.074	**-0.444**	**-0.069**	**-0.011**	**-0.633**	**-0.592**	**-0.176**
	(0.185)	(0.165)	(0.026)	(0.004)	(0.098)	(0.087)	(0.029)
Current Ratio (balance sheet)	-0.207	-0.210	-0.021	**-0.009**	**-0.49202**	**-0.46381**	**-0.082**
	(0.141)	(0.126)	(0.020)	(0.003)	(0.07415)	(0.06597)	(0.022)
current ratio (balance sheet+ratio)	0.052	**-0.481**	**-0.083**	**-0.010**	**-0.6477**	**-0.6137**	**-0.175**
	(0.186)	(0.165)	(0.026)	(0.004)	(0.09776)	(0.0869)	(0.029)
Short Term Debt / Assets	-1.060	2.773	-0.275	-0.071	-0.583	-0.151	**-0.714**
	(2.262)	(2.031)	(0.321)	(0.054)	(1.256)	(1.125)	(0.365)
Short Term Debt / Current A.	-0.418	1.812	-0.256	**0.108**	-1.344	-0.359	-0.259
	(1.459)	(1.310)	(0.207)	(0.035)	(0.808)	(0.726)	(0.236)
Long Term Debt / Assets	-2.463	**4.969**	**-0.636**	**0.075**	**-2.978**	**-2.648**	0.137
	(1.356)	(1.198)	(0.190)	(0.033)	(0.741)	(0.663)	(0.221)

Table C13. Effect of Price Volatility on Maturity Mismatches (Overall Sample)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current	long term debt / assets
E-R Volatility ($)	**-0.033**	-0.009	0.050	0.113	-0.002	-0.004	0.002
	(0.012)	(0.016)	(0.030)	(0.061)	(0.002)	(0.003)	(0.004)
E-R Volatility ($, Euro, Yen equally weighted)	**-1.199**	-0.640	2.138	2.766	-0.034	0.129	0.040
	(0.424)	(0.591)	(1.477)	(2.261)	(0.062)	(0.100)	(0.144)
E-R Volatility ($, Euro, Yen, Region Adjusted)	**-0.989**	-0.513	2.252	3.123	-0.0529	0.0940	0.099
	(0.429)	(0.597)	(1.473)	(2.274)	(0.0630)	(0.1010)	(0.147)
I-R Volatility (Lending Rates)	-0.0038	-0.0046	-0.010	-0.004	-0.0003	-0.0003	0.000
	(0.0030)	(0.0041)	(0.011)	(0.016)	(0.0005)	(0.0007)	(0.001)
I-R Volatility (Deposit Rates)	**0.343**	0.144	-0.103	0.198	**-0.054**	-0.024	-0.023
	(0.161)	(0.224)	(0.592)	(0.857)	(0.024)	(0.038)	(0.054)

Table C14. Effect of Price Volatility on Maturity Mismatches (Overall Sample, Large Banks)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current	long term debt / assets
E-R Volatility ($)	-0.006	-0.003	**-0.030**	-0.002	-0.001	0.000	0.002
	(0.006)	(0.009)	(0.011)	(0.009)	(0.001)	(0.001)	(0.001)
E-R Volatility ($, Euro, Yen equally weighted)	-0.141	-0.393	**-1.119**	-0.357	**0.045**	**0.149**	-0.019
	(0.186)	(0.258)	(0.335)	(0.257)	(0.016)	(0.039)	(0.031)
E-R Volatility ($, Euro, Yen, Region Adjusted)	-0.082	-0.331	**-1.106**	-0.296	**0.0455**	**0.1340**	0.023
	(0.187)	(0.260)	(0.336)	(0.258)	(0.0164)	(0.0396)	(0.031)
I-R Volatility (Lending Rates)	**-0.0062**	**-0.0180**	**-0.017**	**-0.019**	**-0.0009**	**-0.0013**	**0.0010**
	(0.0024)	(0.0029)	(0.004)	(0.003)	(0.0002)	(0.0005)	(0.0004)
I-R Volatility (Deposit Rates)	0.035	-0.068	0.009	-0.054	**-0.025**	0.023	-0.001
	(0.088)	(0.110)	(0.154)	(0.109)	(0.008)	(0.019)	(0.015)

Table C15. Effect of Price Volatility on Maturity M. (Non Crisis)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current	long term debt / assets
E-R Volatility ($)	0.003	**0.006**	0.008	0.014	**0.0003**	0.001	-0.001
	(0.002)	(0.003)	(0.026)	(0.010)	(0.0001)	(0.000)	(0.000)
E-R Volatility ($, Euro, Yen equally weighted)	0.172	0.278	1.049	0.695	0.015	0.039	**-0.054**
	(0.140)	(0.178)	(1.525)	(0.595)	(0.009)	(0.020)	(0.023)
E-R Volatility ($, Euro, Yen, Region Adjusted)	0.163	0.268	1.059	0.693	0.0149	0.0343	**-0.052**
	(0.140)	(0.178)	(1.532)	(0.600)	(0.0087)	(0.0204)	(0.023)
I-R Volatility (Lending Rates)	**0.0057**	0.0027	0.030	0.017	0.0002	**0.0010**	**-0.002**
	(0.0028)	(0.0037)	(0.032)	(0.012)	(0.0002)	(0.0004)	(0.001)
I-R Volatility (Deposit Rates)	**0.369**	0.280	2.185	0.901	0.003	**0.063**	**-0.083**
	(0.130)	(0.168)	(1.438)	(0.547)	(0.008)	(0.018)	(0.022)

Table C16. Effect of Price Volatility on Maturity M. (Non Crisis, Large Banks)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current	long term debt / assets
E-R Volatility ($)	**-0.036**	**-0.062**	**-0.089**	**-0.061**	-0.001	0.002	**-0.004**
	(0.007)	(0.010)	(0.012)	(0.010)	(0.001)	(0.001)	(0.001)
E-R Volatility ($, Euro, Yen equally weighted)	-0.376	**-0.965**	**-1.686**	**-0.929**	**0.053**	**0.086**	-0.029
	(0.229)	(0.304)	(0.395)	(0.303)	(0.016)	(0.039)	(0.032)
E-R Volatility ($, Euro, Yen, Region Adjusted)	-0.340	**-0.922**	**-1.694**	**-0.887**	**0.0530**	0.0727	-0.035
	(0.230)	(0.305)	(0.397)	(0.305)	(0.0162)	(0.0391)	(0.032)
I-R Volatility (Lending Rates)	**-0.0087**	-0.0205	**-0.020**	**-0.021**	-0.001	0.0000	**-0.0012**
	(0.0029)	(0.0039)	(0.005)	(0.004)	(0.000)	(0.0005)	(0.0004)
I-R Volatility (Deposit Rates)	-0.158	-0.213	-0.128	-0.198	**-0.026**	0.007	-0.025
	(0.107)	(0.145)	(0.193)	(0.145)	(0.008)	(0.019)	(0.015)

Appendix D: Partial Derivatives

$$\frac{\delta \Pi_1}{\delta R} = \frac{\delta \Pi_2}{\delta R} = \frac{\delta \Pi_3}{\delta R} = -\left(\left[\left(\frac{2\sigma - 1}{\sigma}\right)\frac{\theta}{\lambda} - \left(\frac{\sigma - 1}{\sigma}\right)\frac{\theta^2}{\lambda}\right]w + \frac{\theta R}{\lambda}\frac{(d+b)}{R^2}\right) \qquad \frac{\delta MM}{\delta R} = -\lambda\frac{\delta \Pi_1}{\delta R}$$

$$\frac{\delta \Pi_1}{\delta r} = e \qquad \frac{\delta \Pi_2}{\delta r} = \frac{\delta \Pi_3}{\delta r} = e + d \qquad \frac{\delta MM}{\delta r} = -(d+e)$$

$$\frac{\delta \Pi_1}{\delta d} = \frac{\theta}{\lambda}\left(\frac{R-1}{R}\right) \qquad \frac{\delta \Pi_2}{\delta d} = r - \frac{\theta}{\lambda}\left(\frac{R-1}{R}\right) \qquad \frac{\delta \Pi_3}{\delta d} = (r - wc) - \frac{\theta}{\lambda}\left(\frac{R-1}{R}\right) \qquad \frac{\delta MM}{\delta d} = \theta\left(\frac{R-1}{R}\right) - r$$

$$\frac{\delta \Pi_1}{\delta b} = \frac{\delta \Pi_2}{\delta b} = \frac{\delta \Pi_3}{\delta b} = -\frac{\theta}{\lambda}\left(\frac{R-1}{R}\right) \qquad \frac{\delta MM}{\delta b} = \theta\left(\frac{R-1}{R}\right)$$

$$\frac{\delta \Pi_1}{\delta e} = \frac{\delta \Pi_2}{\delta e} = \frac{\delta \Pi_3}{\delta e} = r - \frac{\theta}{\lambda} \qquad \frac{\delta MM}{\delta e} = \theta - r$$

$$\frac{\delta \Pi_1}{\delta \lambda} = \frac{\delta \Pi_2}{\delta \lambda} = \frac{\delta \Pi_3}{\delta \lambda} = -\frac{R^{\frac{\sigma-1}{\sigma}}\left(R^{\frac{\sigma-1}{\sigma}} - 1\right)}{\left(\lambda R^{\frac{\sigma-1}{\sigma}} + 1 - \lambda\right)^2} \qquad \frac{\delta MM}{\delta \lambda} = \frac{\theta w}{\lambda} + \frac{\lambda R^{\frac{\sigma-1}{\sigma}}\left(R^{\frac{\sigma-1}{\sigma}} - 1\right)}{\left(\lambda R^{\frac{\sigma-1}{\sigma}} + 1 - \lambda\right)^2}$$

$$\frac{\delta \Pi_1}{\delta \sigma} = \frac{\delta \Pi_2}{\delta \sigma} = \frac{\delta \Pi_3}{\delta \sigma} = -\frac{(1-\lambda)(\ln R)\frac{1}{\sigma^2}R^{2-\sigma}w}{\left(\lambda R^{\frac{1-\sigma}{\sigma}} + 1 - \lambda\right)} \qquad \frac{\delta MM}{\delta \sigma} = \lambda\frac{\delta \Pi_1}{\delta \sigma}$$

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Table 1. Summary of Regression Results

Capital Flows & Maturity Mismatches Using GDP Ratios		
	# of Significant Coefficients	# of Negative Relationships
Non Crisis, All Banks	20/49	19/20
Non Crisis, Large Banks	29/49	29/29
Profitability		
	# of Significant Coefficients	# of Negative Relationships
Whole Sample Period	35/49	12/35
Whole Sample Period, Large banks	23/49	2/23
Post Crisis Profitability, 1 year after	12/21	12/12
Post Crisis Profitability, 2 years after	8/21	8/8
Post Crisis Profitability, 3 years after	12/21	2/12
Non Crisis	33/49	13/33
Non Crisis, Large Banks	26/49	2/26

Maturity Mismatches & Price Volatility			
	# of Significant Coefficients	# of Liquidity Variables with a Positive Relationship	# of Debt Variables with a Positive Relationship
Whole Sample Period	5/35	3/4	0/1
Whole Sample Period, Large banks	15/35	7/7	5/8
Non Crisis	10/35	0/3	7/7
Non Crisis, Large Banks	19/35	13/13	5/6

Table 2. Effect of Capital Flows on Maturity M.(Summary, Capital Flow Variable/ GDP ratios) (*)

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current assets	long term debt / assets
U.S. Tbills	**-4.53**	**-4.29**	-4.24	**-2.38**	-2.02	-2.05	**-3.50**
	(1.12)	(1.14)	(3.04)	(1.16)	(2.02)	(2.04)	(1.52)
Net Portfolio Investment Position / GDP	**-2.38**	**-2.38**	-0.61	-0.53	0.04	**0.20**	-0.22
	(0.19)	(0.22)	(1.03)	(2.02)	(0.04)	(0.08)	(1.11)
Deposit Bank Net Foreign Liab. / GDP	**-3.42**	**-1.35**	-2.05	-3.68	**0.41**	**0.61**	**-10.53**
	(0.42)	(0.58)	(1.40)	(2.20)	(0.07)	(0.11)	(1.66)
CB Foreign Currency Reserves / GDP	**-0.58**	**-2.26**	**-11.31**	1.31	-0.06	0.19	1.54
	(0.19)	(0.36)	(1.17)	(1.44)	(0.04)	(0.07)	(0.97)
Direct Investment / GDP	-0.24	-0.42	-1.09	-0.32	-0.04	0.42	-3.57
	(0.84)	(0.32)	(1.45)	(1.89)	(0.08)	(0.38)	(3.55)
BOP Net Debt Liabilities / GDP	**0.54**	-0.51	**-4.36**	**-3.31**	0.00	**0.26**	**-1.35**
	(0.27)	(0.30)	(1.38)	(1.00)	(0.02)	(0.04)	(0.61)
BOP Net Equity Liabilities / GDP	-2.66	-1.80	-2.46	2.35	1.88	4.35	2.27
	(1.50)	(1.00)	(8.81)	(17.83)	(0.97)	(2.54)	(8.66)

(*) Values in bold italics are significant at 5%, the numbers in paranteheses are the standard errors

Table 3. Effect of CB Foreign Currency Reserves/GDP on Maturity Mismatches

	Dependent Variables						
Independent Variables	quick ratio	current ratio	current ratio (balance sheet)	current ratio (balance sheet+ratio)	short term debt / assets	short term debt / current assets	long term debt / assets
CB Foreign Currency Reserves/GDP	**-0.58**	**-2.26**	**-11.31**	**1.31**	**-0.06**	**0.19**	**1.54**
	(0.19)	**(0.36)**	**(1.17)**	**(1.44)**	**(0.04)**	**(0.07)**	**(0.97)**
intercept	1.18	1.34	-1.75	-1.06	-0.02	0.03	-0.03
	(0.09)	(0.17)	(0.64)	(0.70)	(0.02)	(0.04)	(0.03)
m2 / gdp	-0.30	-1.92	-14.82	-2.23	-0.04	0.14	-0.90
	(0.87)	(1.70)	(6.40)	(7.14)	(0.17)	(0.30)	(0.31)
current account deficit / gdp	-1.85	-2.09	-4.93	4.26	-0.18	0.51	-0.66
	(0.77)	(1.51)	(6.56)	(5.64)	(0.16)	(0.22)	(0.26)
budget deficit / gdp	-8.93	-9.56	-9.33	-8.12	0.54	0.70	-0.92
	(0.63)	(1.23)	(4.72)	(5.11)	(0.13)	(0.24)	(0.24)
lending rate	0.0096	0.0093	-0.0189	0.0103	-0.0008	-0.0004	0.0006
	(0.0012)	(0.0023)	(0.0092)	(0.0091)	(0.0002)	(0.0004)	(0.0004)
gdp growth	0.0065	0.0037	0.0443	0.0204	-0.0011	-0.0033	0.0070
	(0.0023)	(0.0045)	(0.0180)	(0.0170)	(0.0004)	(0.0007)	(0.0008)
inflation	-0.0049	-0.0073	-0.0119	-0.0086	0.0005	0.0007	-0.0002
	(0.0008)	(0.0016)	(0.0060)	(0.0062)	(0.0001)	(0.0002)	(0.0003)
inflation(-1)	-0.0013	-0.0007	0.0065	-0.0003	0.0001	-0.0001	-0.0003
	(0.0003)	(0.0007)	(0.0027)	(0.0027)	(0.0001)	(0.0001)	(0.0001)
gdp growth(-1)	-0.0329	-0.0371	-0.0583	-0.0812	0.0007	0.0017	-0.0014
	(0.0031)	(0.0060)	(0.0248)	(0.0246)	(0.0006)	(0.0010)	(0.0011)
m2 / gdp (-1)	-0.34	-0.33	-29.82	2.25	0.37	0.84	-1.31
	(0.72)	(1.41)	(4.88)	(6.01)	(0.15)	(0.27)	(0.28)
current account deficit / gdp (-1)	-3.28	-4.56	5.26	8.00	-0.03	-0.48	0.43
	(1.05)	(2.05)	(8.99)	(7.86)	(0.22)	(0.30)	(0.34)
budget deficit / gdp (-1)	-2.28	-2.09	0.10	3.13	0.05	-0.26	-0.51
	(0.49)	(0.96)	(3.67)	(3.66)	(0.08)	(0.15)	(0.17)
Adjusted R-squared	0.38	0.23	0.18	0.12	0.43	0.35	0.36

Table 4. Effect of Maturity Mismatches on Profitability (Quick Ratio)

	Dependent Variables						
Independent Variables	ROE	ROA	ROI	GM	PTM	NPM	OM
quick ratio	**2.26**	**1.02**	0.33	0.06	**6.76**	**3.96**	2.02
	(0.71)	**(0.15)**	(3.21)	(0.04)	**(1.61)**	**(1.47)**	(2.39)
intercept	10.62	-2.21	-390.66	-0.99	26.39	-10.11	-27.53
	(4.86)	(1.04)	(339.92)	(0.29)	(11.31)	(9.30)	(51.56)
m2 / gdp	-68.31	21.60	321.96	14.37	230.14	170.82	0.00
	(45.01)	(9.16)	(2596.87)	(3.02)	(92.11)	(85.46)	0.00
current account deficit / gdp	-165.06	-20.09	0.00	-24.26	-258.62	-366.81	0.00
	(56.89)	(11.49)	0.00	(4.81)	(96.22)	(89.28)	0.00
budget deficit / gdp	-118.67	4.54	-2458.59	-15.09	-242.76	-126.29	0.00
	(31.13)	(6.29)	(2057.27)	(2.14)	(63.90)	(58.90)	0.00
lending rate	0.08	0.01	4.04	0.03	0.24	0.02	-2.12
	(0.06)	(0.01)	(4.78)	(0.00)	(0.13)	(0.12)	(1.31)
gdp growth	0.07	0.03	3.98	0.02	0.37	0.22	-0.52
	(0.11)	(0.02)	(15.44)	(0.01)	(0.24)	(0.22)	(2.49)
inflation	-0.10	-0.01	-3.64	-0.01	0.09	-0.18	3.47
	(0.04)	(0.01)	(2.77)	(0.00)	(0.08)	(0.08)	(2.43)
inflation(-1)	-0.02	0.00	7.95	-0.01	-0.06	-0.03	-1.96
	(0.02)	(0.00)	(2.49)	(0.00)	(0.04)	(0.03)	(1.57)
gdp growth(-1)	0.23	0.07	-2.36	-0.04	0.51	0.27	2.37
	(0.13)	(0.03)	(4.44)	(0.01)	(0.25)	(0.23)	(1.95)
m2 / gdp (-1)	-38.16	10.48	-807.76	-7.89	-234.63	-106.50	0.00
	(38.48)	(7.74)	(2689.35)	(2.54)	(84.88)	(78.16)	0.00
current account deficit / gdp (-1)	394.36	-1.78	0.00	5.98	343.66	303.68	0.00
	(76.53)	(15.90)	0.00	(5.65)	(153.29)	(142.07)	0.00
budget deficit / gdp (-1)	127.21	2.63	1007.02	0.32	-23.15	26.25	-225.72
	(24.81)	(5.12)	(2264.18)	(1.70)	(52.86)	(48.92)	(230.13)
dep. bank net foreign liabs/GDP	-149.03	-14.05	-1255.48	-2.15	-72.10	-37.04	0.00
	(20.68)	(4.03)	(1392.63)	(1.82)	(48.56)	(44.86)	0.00
nominal exchange rate	-0.19	-0.01	-2.57	-0.21	-6.51	-3.60	-10.56
	(0.13)	(0.03)	(0.45)	(0.06)	(1.10)	(0.99)	(1.50)
Adjusted R_Squared	0.39723	0.396	0.394801	0.492204	0.4348836	0.431861	0.51152

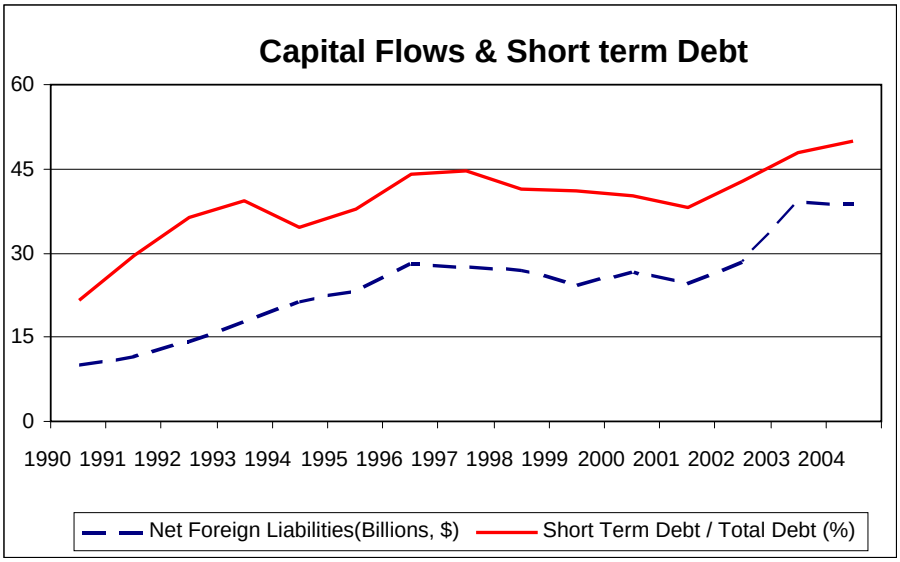
Table 5. The Effects of Maturity Mismatches Before Financial Crisis on Profitability

Independent Var.	Dependent Variables											
	1 Year Before				2 Year Before				3 Year Before			
	ROE	ROA	GM	Investment	ROE	ROA	GM	Investment	ROE	ROA	GM	Investment
Quick Ratio	1.407	2.510	**0.100**	0.012	7.788	-0.525	**0.091**	-0.001	**-0.863**	-1.344	**-0.073**	0.000
	(6.083)	(1.323)	(0.021)	(0.020)	(3.922)	(1.167)	(0.020)	(0.004)	(0.154)	(1.237)	(0.018)	(0.000)
Current Ratio	1.196	1.391	**0.099**	0.001	**7.532**	0.414	**0.089**	0.003	**-0.653**	**-1.398**	**0.070**	**0.001**
	(5.774)	(0.978)	(0.019)	(0.015)	(2.749)	(0.848)	(0.019)	(0.004)	(0.174)	(0.209)	(0.019)	(0.000)
Current Ratio	-0.605	0.013	**11.216**	**0.009**	7.160	0.738	**12.986**	0.004	0.062	0.005	-0.003	-0.001
(balance sheet)	(2.147)	(0.478)	(0.588)	(0.005)	(3.814)	(0.386)	(0.685)	(0.003)	(0.115)	(0.028)	(0.089)	(0.000)
current ratio (balance sheet+ratio)	10.432	2.031	**0.103**	0.005	6.364	0.014	0.085	0.156	0.000	0.000	0.000	0.000
	(9.767)	(1.213)	(0.028)	(0.009)	(3.514)	(1.071)	(0.049)	(0.092)	0.000	0.000	0.000	0.000
Short T. Debt / Assets	**-2.409**	**-0.290**	**-6.240**	-0.619	-2.424	0.791	**-6.857**	0.884	**0.886**	8.570	**6.967**	-0.043
	(0.329)	(0.136)	(1.967)	(0.867)	(3.929)	(1.217)	(1.747)	(1.441)	(0.213)	(4.834)	(1.898)	(0.106)
Short T. Debt/Current A.	**-2.117**	**-0.254**	**-5.481**	**-2.302**	1.916	0.027	**-6.088**	0.691	**0.833**	8.127	**6.097**	-0.030
	(0.280)	(0.117)	(1.694)	(1.024)	(3.404)	(1.053)	(1.496)	(1.251)	(0.202)	(4.574)	(1.635)	(0.180)
Long T. Debt / Assets	**0.068**	-0.002	**0.437**	0.051	**0.547**	-0.036	**0.240**	0.001	**-0.303**	-0.477	**0.308**	-0.015
	(0.025)	(0.007)	(0.087)	(0.080)	(0.173)	(0.061)	(0.097)	(0.030)	(0.060)	(1.480)	(0.100)	(0.035)

Table 6. Partial Derivatives

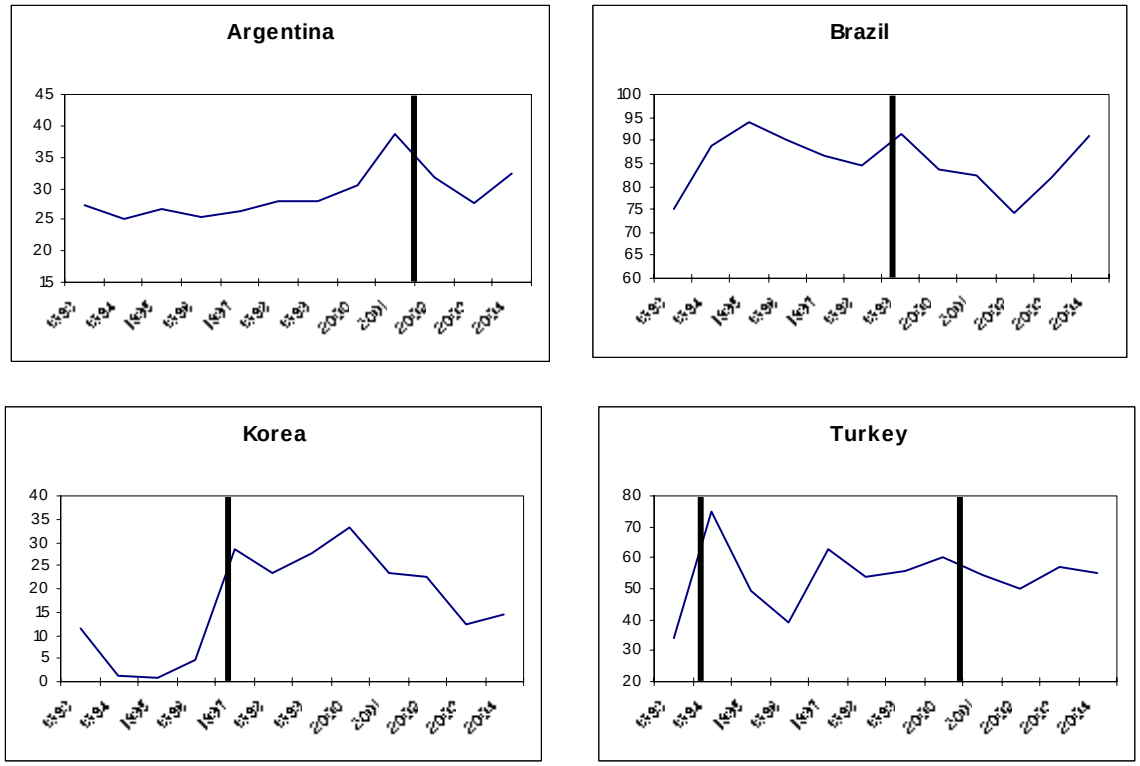
	R	r	d	b	e	lamda	sigma
Pi1	-	+	-	-	amb, -	-	-
Pi2	-	+	amb, +	-	amb, -	-	-
Pi3	-	+	amb	-	amb, -	-	-
MM	+	-	amb, -	+	amb	+	+
dPi1/dMM	-	-	amb, +	-	amb	-	-
dPi2/dMM	-	-	amb, -	-	amb	-	-
dPi3/dMM	-	-	amb	-	amb	-	-

Figure 1



(*) The Net Foreign Liabilities variable is in real dollars and represents the simple average of the banking sector net foreign liabilities in the 18 countries.
(**) ST Debt/ Total Debt ratio is a simple average of the weighted ST Debt / Total Debt ratios. Weights are the total assets of the banks.

Figure 2: Weighted, Banking Sector (Short Term Debt) / (Total Debt) Ratios



(*) The vertical line shows the year corresponding to a crisis. Crisis periods are from Kaminsky (2003).