Credit Expansion and Currency Substitution Interaction: A Built-in De-stabilizer?

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INTERACTION: A BUILT-IN DE-STABILIZER?

1. Introduction

Applying higher levels of reserve requirements to the foreign exchange deposits is a common experience especially in developing countries to make sure that the banks are able to carry the demanded transactions without creating anxiety in the markets. This paper is an attempt to show that the currency substitution between domestic-denominated and foreign-denominated currencies results in ‘automatic’ destabilization in times of crises in case there is a variance in the levels of reserve requirements for those deposits.

The starting point of the paper is to remind that the liberalization of the financial markets gave rise to instabilities in both the developed and developing countries and it has almost become a normal practice to experience crises during the liberalized period. Here we construct a link between the financial liberalization period and the following credit expansion process made mostly possible by international capital movements. It is argued that the expanding credit market is more prone to create additional risks in countries where the banking system is not sound and efficient. Since, either the banking system is unable to internalize the macroeconomic effects of credit expansion on their borrower’s ability to pay in such situations or the regulatory institutions are missing. Hence, market failures are common in the financial system; capital inflow might produce opportunities for banks to expand lending for risky or speculative purposes. Accordingly, it is in these countries where such credit expansion exposes the economy to systemic risk and macroeconomic instability.

Keeping these in mind, the paper asserts that financial liberalization can systematically reinforce economic volatility during currency crises or credit boom-bust cycles in developing countries even without market imperfections. To do so, we are going to build a macroeconomic framework, which rests on some of Keynes’s early ideas that date back to his A Treatise on Money. Accordingly, we argue that the liquidity preference in the Treatise sense and currency substitution made possible by the opening up policies and necessitated by the high rates of inflation and economic instability become entangled and act as a built in destabilizer in the countries that liberalize their capital account and apply changing rates of reserve requirements to domestic and foreign exchange denominated deposits. By doing so we explain why the supply of bank credit can be both pro cyclical and unwarranted in the capital beneficiary countries.
Finally, we empirically show that in a country like Turkey applying higher reserve requirements for foreign exchange deposits creates a built-in destabilizer during times of crises even there is no regulatory or institutional incompetence.

2. Liberalized Capital Markets and Origins of Volatility

There was one persistent factor that has affected all economies over the past six decades and so potential impact on fundamentals needs to be examined. The liberalization of the international financial regime, which started with the introduction of Eurocurrency markets in the 1950s and has been accelerated by the explosive growth of capital markets since the early 1970s, was the one common factor that almost all economies were affected by.

In trying to pin down the origins of financial turbulence all over the financially liberalized world, we ask the following question: Has capital market liberalization led to systemic failures that creates problems for all?

Eatwell and Taylor (2000) argue that the fundamental issue to answer the question is to understand the links between liberalization and the deterioration in economic performance that became part and parcel of the new international financial order. According to their point of view, increased volatility and contagion have made not only the economies of developed world but also the developing world subject to more instability, which does not necessarily worsen the economic performance but may lead to changes in behavior. However, the change in behavior is often responsible for a deteriorating economic performance. Accordingly, they present the developing country examples of financial liberalization followed by financial crisis and economic deterioration such as Mexico, East Asian countries, Brazil, Thailand and Korea.

On the other hand, McKinnon and Pill (1998) emphasized the role of domestic financial systems in controlling the pace and direction of credit expansion mostly financed by inflows of capital from overseas in explaining the origins of the economic volatility. According to the argument, the rapid credit expansion generated by capital flows is less likely to create additional risks in countries where the banking system is sound and efficient. Since, either the banking system is able to internalize the macroeconomic effects of credit expansion on their borrower’s ability to pay in such situations or it is required to do so by the regulatory institution. On the other hand, in those economies where credit generating institutions are not well regulated and market failures are common in the financial system, capital inflow might produce opportunities for banks to expand lending for ill-advised or speculative purposes.
Accordingly, it is in these countries where such credit expansion exposes the economy to systemic risk and macroeconomic instability.

In majority of the literature various moral hazard problems are claimed to cause excessive risk taking in the domestic economy, which explains why capital account liberalization results in a superfluous build up of debt, a fragile financial structure and currency mismatch. Some others have emphasized irrational herd behavior of international portfolio holders that lead to unpredictable shifts in capital flows and contagion effects, which are difficult if not impossible to anticipate. Both approaches hold that some sort of market imperfection is the chief cause of the problem and the concerned market imperfection is either the result of the distortions within the developing country economies or caused by a liberalized international capital market functioning improperly (Ertürk 2005).

3. Origins of Volatility

Even though there is a vast literature on the presence of economic volatility in many of both the developed and developing countries after the implementation of financial liberalization policies, the triggering factors of it has not been explored theoretically in most of the perspectives. One exception has been the literature on currency crisis, which explores the different country cases by focusing on the common characteristics and indicators of such crises. The most striking element among all the common features is the over borrowing made feasible by an unwarranted expansion in bank credit.

First generation models of currency crises explain the capital reversal and over borrowing behavior by the same mechanism which is monetization of government deficits under a fixed exchange rate regime. The monetization is assumed to result in an abrupt increase in credit supply and lead to an unsustainable increase in expenditures and rising prices. Meanwhile domestic currency appreciates in real terms as a by-product of fixed exchange rate regime and this in turn creates a current account deficit too. Consequently, devaluation risk steadily increases and slows down the capital inflow. The crisis occurs when the depletion in the foreign exchange reserves causes the investors to rush out of the domestic currency before the inevitable devaluation takes place. However, the validity of the first generation models became questionable after the East Asian crisis where rising devaluation risk caused by a rising current account deficit and foreign exchange reserve were not relevant as an explanation of the capital reversals.
The second and third generation models also emphasized the presence of an explosive increase in bank credits as well. However, this explosive increase in credit was thought to be the result of bank’s unwillingness to hedge against currency risk. In these situations, banks were lending at a much higher rate in the domestic market as compared to the rate of interest at which they borrowed abroad. This was quite profitable for banks as long as the spread was preserved, and the exchange rate risk could be ignored. The failure to hedge against unexpected exchange rate movements meant that the vulnerability of banks was increasing together with their open positions (Ertürk 2005). This was seen as yet another example of unwarranted risk taking that resulted from moral hazard. As a consequence, moral hazard argument and its complementary issues (the rising volume of risky investments, higher likelihood of the vulnerability of the banking systems of open economies to bank runs especially under fixed exchange rate regime, balance sheet effects of the deteriorating domestic currency) began to replace first generation models as the explanation of excessive credit expansion and debt built up.

In the next section we are going to pursue an explanation of economic volatility in relation to its connection with the explosive increase in credit creation, which is explained independently of moral hazard. The main emphasis in the analysis highlights the link between the currency substitution and liquidity preference and the consequences of that for credit expansion.

4. Currency Substitution

Early studies on currency substitution have focused on the phenomenon in countries that had hyperinflation. With the opening up of economies and increasing financial liberalization, the attention began to shift to the impact of currency substitution on domestic money demand and monetary targeting. The impact of currency substitution on macroeconomic instability and financial regulation in developing countries also became a major issue of concern (Selcuk 1994; Calvo and Vegh 1992).

The existing literature suggests that currency substitution is expected to be more extensive in countries with less developed capital markets and comparatively small outlet for domestic investments. Furthermore, the existence of formalized and secure channels, in other words foreign currency bank deposits, makes it even easier to substitute a more trusted currency for the domestic currency. As long as there are ambiguities regarding the future political and
economic stabilities, there are always incentives for currency substitution (Bahmani-Oskooee and Domac 2003; Selcuk 1994).

It is argued that in an economy that is exposed to a high degree of currency substitution, the store of value services provided by a currency will determine its demand. Consequently, the low inflation currency is expected to have an increasing demand. Namely, the store of value role of the substitute currency is expected to increase with domestic inflation and the underlying motivation of this is the loss of purchasing power of the domestic currency. In such a case rather than being a means of exchange, money becomes a financial asset (Civcir, 2003). The convertibility element is insignificant in this case because both currencies under consideration are fully convertible.

Accordingly, the Turkish experience with currency substitution was not any different from the experiences of other developing countries. High inflation has been a chronic problem in the Turkish economy for the last four decades and as successive stabilization programs failed to achieve price stability, the extent of currency substitution steadily increased. The relative volume of foreign exchange deposits increased considerably following financial liberalization and with the emergence of new financial instruments. In addition, policy decisions concerning the reserve requirements was another major factor that played an important role in the process of currency substitution in Turkey (Bahmani-Oskooee and Domac 2003).

1 The liberalization of the exchange rate regime started in 1981 and the Central Bank started to set and announce nominal foreign currency rates daily by May 1981. With the enactment of Decree no.30 on July 1984 a) foreign residents were set free to have Turkish Lira denominated securities and repatriate profits freely, b) Turkish residents were allowed to hold foreign exchange deposits with domestic banks and c) Domestic banks were set free to extend foreign exchange loans and borrow from international markets. Lastly with the enactment of two consecutive Decrees (no. 30 and amended no. 30) the liberalization of foreign exchange regime and international capital movements completed in August 1989. As a result, a) Commercial banks, Islamic financial institutions and authorized foreign currency brokers were set free to determine the FX rates in their transactions freely, b) private domestic investors were allowed to FX denominated assets with out limitation, and c) limitations on the volume of domestic bank’s borrowing from international markets were abolished (Bahmani-Oskooee and Domac 2003).
The reserve requirement ratio on foreign exchange deposits diverged between 15 and 25 percent during the 1985-1990 periods. Then, the ratio dropped to 11 percent by 1996 and stayed at that level from then on till 2005. On the other hand, the reserve requirement ratio on the TL deposits was 4% till 2004 and increased to 6% then.

Figure 3.1 presents the volume of foreign exchange denominated deposits of the Turkish commercial banking system as a share of total volume of deposits where both series are presented in Thousand YTL. There is a steady rise in the ratio for the whole period 1986-2005 and it is not surprising that the two striking jumps are observed during the two major crisis period. It was slightly below 0.4 in December 1993 and became 0.55 in April 1994, which is the month of a major devaluation of the 1994 financial crisis. Next in January 2001 it was 0.38 and jumped to 0.57 at the end of November 2001.

The Turkish experience with currency substitution started with the introduction of foreign currency deposits in December 1983 and as we see in Figure 3.1 it has been increasing since then due to high rates of inflation and volatile exchange rates.

As presented in Figure 3.2 the periods over which the Turkish Lira was depreciating are the periods of increasing currency substitution.

One other widely used indicator of currency substitution is the share of foreign exchange deposits in broad money supply, (FX/M2Y), and its path was not much different from the trend in FX/Total deposits. Figure 3.3 presents the movement of (FX/M2Y) over time. It is seen that the ratio was at the bottom of preceding seven years in January 2001 with 0.45 after the score in August 1995 with 0.44. From then on it started to climb drastically and reached its pick 0.61 in October 2001.

Figure 4.1
Foreign Exchange Denominated Deposits/ Total Deposits (in 1000 YTL)

(Source: Central Bank of Republic of Turkey)
According to Bohmani-Oskooee and Domac (2003) the causal evidence suggests that the relative decrease in the excess return on Turkish lira deposits over foreign currency deposits played an important role in the increasing currency substitution. An examination of the FX/M2Y ratio and the difference between the interest rate on Turkish lira deposits and FX deposits corrected for changes in the exchange rate is expected to indicate that the periods of high currency substitution is incorporated with negative excess returns on Turkish lira deposits.

2 Including Germany, USA, Italy, France, United Kingdom, Japan, Netherlands, Belgium, Switzerland, Austria, Spain, Canada, Korea, Sweden, Taiwan, Iran, Brazil, China and Greece.
Figure 4.3

Foreign Exchange Deposits/M2Y$^3$ in 1000 YTL

(Source: Central Bank of Republic of Turkey).

5. Liquidity Preference and Currency Substitution

Financial and capital account liberalization, when successful, embed currency substitution within the local banking system and lower transaction costs, channelling thereby these inactive balances into foreign exchange deposits in domestic banks. Thus, foreign currency denominated bank accounts begin to function as ordinary saving account while those denominated in the domestic currency are used for transaction purposes. However, because domestic banks’ reserve requirements are invariably much higher for foreign exchange denominated accounts than for those denominated in local currency, when inactive balances swell in the banking system at a time of rising liquidity preference and economic slowdown, the effect is to lower banks’ liquidity by redistributing deposits within the system from low to high reserve accounts. Likewise, banks’ liquidity situation is improved during times of rising economic activity and falling liquidity preference when the relative size of active balances in

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$^3$ M1=Currency in Circulation + Demand Deposits, M2 = M1 + Time Deposits and M2Y=M2+FX
domestic currency accounts increase in relation to inactive balances that mainly consist of foreign exchange deposits (Ertürk 2005).

The extensive increase in credit expansion is a common mechanism that causes economic volatility in all generations of currency crises models and here it is argued that this can happen because of the different reserve requirement ratios for domestic currency denominated deposits and foreign currency denominated deposits. If it is a pre crisis period, we observe an already booming credit extension volume and since the reserve requirements are lower for home currency denominated deposits, banks will have extra sources of liquidity to loan in such periods. As a result, the bubble continues to grow. However, after the bubble bursts, as the market slows down and liquidity preference increases, the currency substitution directs funds towards foreign exchange deposits (high reserve deposits) leaving banks with even less resources to loan out. As a result, the financial market continues to contract.

The idea that the higher reserve requirement rates for foreign exchange denominated deposits works as a built-in de-stabilizer implies that empirically there should be a negative relationship between the volume of credit extended by the banking system and the currency substitution behavior of the investors.

6. Empirical Analysis

We are going to make a time series analysis of the relation between the currency substitution behavior and total credit volume of the commercial banking system of Turkey for the period 1996-2003. The concerned period covers the period right before and after the currency crisis of November 2000 and February 2001.

First, we need to define a measure of the currency substitution behavior (CURSUB). Selcuk (1994) and Bohmani-Oskooee and Domac (2003) use the change in foreign currency denominated deposits relative to a broad definition of money supply (M2Y) as their measure and that will be the definition used here in this chapter. Accordingly, we will employ the foreign currency denominated deposits of the commercial baking system and M2Y. (Central Bank of Turkey). Both series are in 1000 YTL (New Turkish Lira), so we take the ratio to obtain the desired measure. Hence,

\[
\text{CURSUB} = \frac{\text{Foreign Exchange Denominated Deposits}}{\text{M2Y}}
\]
The nominal total credit volume of the commercial banks is also available in the same database mentioned above. However, we are going to normalize it with GDP before making any regressions in order to be able to observe its change with respect to the national product over time. Both the nominal volume of total credits and GDP are in 1000 YTL. Hence we take the ratio:

\[ \text{NORTOTCRE} = \frac{\text{nominal volume of total credits}}{\text{GDP at Current Prices}}, \]

where NORTOTCRE stands for the normalized total volume of credits.

7. Estimation and Findings

We performed the unit root tests (ADF Test) and the results insure that we can reject the null of a unit root at all levels for the differenced logarithmic currency substitution series. Therefore, we argue that the logarithmic currency substitution series has a single unit root; it is I (1). The regression results for the differenced logarithmic normalized credits also reveal that the logarithmic series has a single unit root as well, that it is I (1).

Table 7.1 Unit Root Statistics

<table>
<thead>
<tr>
<th></th>
<th>Level</th>
<th>Log</th>
<th>Differenced</th>
<th>Log</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CURSUB</td>
<td>-2,20274</td>
<td>-2,16723</td>
<td>-5,79497</td>
<td></td>
</tr>
<tr>
<td>NORTOTCRE</td>
<td>-3,44756</td>
<td>-3,43386</td>
<td>-4,63175</td>
<td></td>
</tr>
<tr>
<td>Critical Values**</td>
<td>-4,0591</td>
<td>-4,0591</td>
<td>-4,0602</td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td>-4,0648</td>
<td>-4,0648</td>
<td>-4,0661</td>
<td></td>
</tr>
</tbody>
</table>

**Based on MacKinnon (1996) one sided p-values.

As both series are I (1) we can look for a cointegration relation between the two.

As argued earlier our aim is to show that there is a negative, statistically significant relationship between the total credit expansions of the commercial banking system and the currency substitution behavior of the investors. In terms of our data, we want to show \( y_t = \beta x_t \). Just because we have established that \( \{y_t\} \) and \( \{x_t\} \) are both I(1), we cannot simply run a
regression of \{y_t\} on \{x_t\} and see if \(\beta\) (head) is significant. Since, as we noted there could be a spurious significance form their both being I(1). What we can do in the case we have of two series that are both I(1) is the following. We regress \{y_t\} on \{x_t\} and look at the residuals \(u_t\). If the residuals are I(0), then the two series are cointegrated of order (1,1). We then have the \(\beta\) (head) from the regression as our estimate of the cointegration \(\beta\), and hence our desired \(\beta\) in \(y_t = \beta x_t\). The confidence level for this \(\beta\) is the confidence level of concluding \(u_t\) which is I(0) and it requires different critical values from the usual ADF critical values.

Hence, we will take the logarithms of the original two variables which are both I(1) and do the needed OLS regression and then test whether the residuals from that regression have no unit roots. We need to first check if the residuals are I(0), and only if they are will it then be valid to look at the \(\beta\) (head) from the regression and see if it has the character we have hypothesized.

The regression result of the unit root test for the residuals is presented in Table 5.7. Since the regression is made with a constant, we chose the no trend no constant option when performing the unit root test for the residuals.

<table>
<thead>
<tr>
<th>Table 7.2</th>
<th>The Regression Result of the Unit Root Test for the Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF Test Statistic</td>
<td>-2.81456 (1%) Critical Value*</td>
</tr>
<tr>
<td></td>
<td>5% Critical Value</td>
</tr>
<tr>
<td></td>
<td>10% Critical Value</td>
</tr>
</tbody>
</table>

*MacKinnon critical values for rejection of hypothesis of a unit root.

Harris (1995) argues that as with univariate unit root tests, the null hypothesis of a unit root and thus no cointegration is based on a t-test with a non-normal distribution. However, unless \(\beta\) is already known (and not estimated using the equation) it is not appropriate to use the standard Dickey-Fuller tables of critical values. He puts forward two major reasons for this. First, due to the way it is constructed, the OLS estimator chooses the residuals in the regression to have the smallest sample variance, even if the variables are not cointegrated, making the \(u_t\) appear as stationary as possible. Therefore, the standard DF distribution would tend to over reject the null hypothesis. Second, the distribution of the test statistic under the null is affected by the number of regressors included in the regression. Hence, different
critical values are needed as the number of regressors change. We also already know that the critical values change depending on whether a constant and/or trend are included in the test of the residuals formed to do the cointegration test.

Fortunately MacKinnon (1991) presents an equation for appropriate critical values:

\[ C(p) = \phi_\infty + \phi_1 T^{-1} + \phi_2 T^{-2}, \]

where \( C(p) \) stands for the p percent critical value, \( T \) is the number of observations and \( \phi_\infty, \phi_1 \) and \( \phi_2 \) are a set of parameters that vary with the desired confidence level and the number of regressors (from 1 to 6). Using the parameter values for the 1 percent level, one equation and \( T=91 \) (Harris 1995), we get a critical value:

\[ (-2.5658 - (1.960/91) - (10.04/91^2)) \approx -2.588550. \]

Thus, we can reject the null of no cointegration even at the 1 percent significance level because the t-value associated is -2.81456 (Harris 1995).

The actual relevant regression result concerning the relationship between logarithmic normalized credits and logarithmic currency substitution is presented in Table 6.3.

It is clear that the direction of the relationship between the logarithm of normalized total credit volume and the logarithm of currency substitution is as expected. Recall this is significant at the 1 percent level because we found the residuals to be I (0) at the 1 percent level.

Table 7.3
The Relationship between Logarithmic Normalized Credits and Logarithmic Currency Substitution

<table>
<thead>
<tr>
<th>Dependent Variable: LNNORMALCREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Least Squares</td>
</tr>
<tr>
<td>Sample(adjusted): 1996:01 2003:07</td>
</tr>
<tr>
<td>Included observations: 91 after adjusting endpoints</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNCURSUB4S</td>
<td>-1.23565</td>
</tr>
</tbody>
</table>

The result of the cointegration procedure is that we have a meaningful statistical support that there is a negative and statistically significant relation between the logarithms of the
normalized total credit expansion of the banking system and currency substitution in Turkey. Thus, the data support our argument that the higher reserve requirement ratio for foreign exchange deposits is an automatic de-stabilizer for the economy through the credit expansion performance of the banking system.

In addition to the above relation, we also checked the direction of the long run relationship between the gap between the volume of YTL deposits and FX deposits deposited in the commercial banks, currency substitution and GDP. Accordingly, we will next work with the following three variables:

\[
\text{DEV} = (\text{Volume of YTL deposits} - \text{Volume of FX deposits})
\]
both in thousand YTL, stands for the deposit gap.

\[
\text{CUR} = (\text{Foreign Exchange Denominated Deposits} / \text{M2Y})
\]
as in above discussion stands for currency substitution.

\[
\text{GDP} = \text{Gross Domestic Product},
\]
in thousand YTL.

As can be seen in Table 6.4 we can reject the null hypothesis of existence of a unit root for 1% level for all three variables for the differenced series and since, all three of them have only a single unit root we are able to perform a cointegration test to see what kind of long-run relations exist among them if there is any.

<table>
<thead>
<tr>
<th></th>
<th>Level</th>
<th>First Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADF</td>
<td>ADF</td>
</tr>
<tr>
<td>CUR</td>
<td>-1,57411</td>
<td>-12,7196</td>
</tr>
<tr>
<td>DEV</td>
<td>0,76993</td>
<td>-6,34039</td>
</tr>
<tr>
<td>GDP PSA</td>
<td>-0,16887</td>
<td>-12,0119</td>
</tr>
</tbody>
</table>

**Critical Values**

|                | -3,48912 | -3,48966         |
|                | -3,48966 | -3,48966         |
|                | -3,48912 | -3,48966         |

**Based on Mac Kinnon (1996) one sided P-values.**
The results of the cointegration test made for the concerned three variables with specification model 3 including eleven Johansen’s centered seasonal dummies as the exogenous series reveal that both the trace test and the Max-eigen value tests indicate 1 cointegrating equation at the 0.05 level and the results are robust with specification models 4 and 5.

Next, we make the diagnostic tests. There is no serious correlation among the residuals and the figures reveal that there is no heteroskedasticity among the residuals either. Finally, we checked the normality of the series and observe that the distribution is normal.

At the beginning we have chosen the lag structure according to the indicators and then increase the lag number after obtaining the diagnostic test results. According to the results of the vector error correction model, we have the following long-run relationship between the three variables:

\[(\text{DEV}) = 83981534 - 2.68E+0.8 \times (\text{CUR}) + 5.555816 \times (\text{GDPSA}).\]

The estimated equation above means that as the gross domestic product increases 1 unit, the deviation between the YTL deposits and FX deposits increases 5.6 units. In other words, an increase in national income leads to an increase in the funds deposited to domestic currency as compared to the funds deposited to foreign currencies.

On the other hand, 1 unit increase in the currency substitution indicator results in a 2.68 units decline in the deviation between the YTL deposits and FX deposits. This might seem a contradicting result if one assumes the deviation as a sort of indicator for currency substitution. However, when we examine the two variables (DEV) and (CUR), we recognize that there is an important item included in the denominator of the (CUR) but is missing in the (DEV). As we know, currency in circulation is one important component of M2Y. So, the existence of a typically unknown amount of foreign currency in circulation might be the reason for the negative relation between the two variables. Co-circulating foreign currency holdings reflect both currency substitution and asset substitution, and the two might have diverse consequences by making the implications of defacto dollarization more complicated to predict.

Finally, there is a negative relationship between the GDP and currency substitution indicator which is in compliance with our earlier regression concerning the relationship between the credit expansion and currency substitution. Accordingly, as GDP grows, currency substitution declines. Since the reserve requirement ratio is higher for foreign currencies, as
the currency substitution declines, the banks will have more funds to loan out while GDP is growing and fewer funds to use while the GDP is contracting.

8. Conclusion

We have argued that the extensive increase in credit expansion is one of the common mechanisms that cause economic volatility in all generations of currency crises models and here we underlined that this can happen due to different reserve requirement ratios for domestic currency denominated deposits and foreign currency denominated deposits. Therefore, if it is a pre-crisis period, we often observe an already booming credit extension volume and since the reserve requirements are lower for home currency denominated deposits, banks will have extra sources of liquidity to loan in such periods. As a result, the bubble continues to grow. However, after the bubble bursts, as the market slows down and liquidity preference increases, the currency substitution directs funds towards foreign exchange deposits (high reserve deposits) leaving banks with even less resources to loan out. As a result, the financial market continues to contract.

The empirical effort has shown that we have a meaningful statistical support in observing a negative and statistically significant relation between the logarithms of the normalized total credit expansion and currency substitution in Turkey. So, when there is a 1 percent increase in currency substitution, there is a more than 1 percent decline in normalized total credit by the banking system. To state the matter differently, when liquidity preference of the public directs funds towards FX denominated deposits, the higher reserve requirement ratio of such deposits leaves banks with even lesser funds to loan out in an already contracting credit market. So, such higher required reserves acts as an automatic de-stabilizer.

We have also shown that there is a negative relationship between the GDP and currency substitution indicator which is in line with our earlier finding. Meaning, as GDP grows, currency substitution between the domestic and foreign currency declines. As the reserve requirement ratio is higher for foreign currencies, while the substitution declines the banks will end up with more funds to loan out as GDP is growing and lesser funds to use as it is contracting.

Consequently, in open economies where chronic high inflation ratios result in an active currency substitution behavior due to store of value matters, reserve requirement ratio can be a highly important policy tool for preventing contractions.
REFERENCES


