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Financial dollarization: Short-run determinants in transition economies

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ABSTRACT

This paper examines the determinants of financial dollarization in transition economies from a short-run perspective. Using aggregate monthly data of deposit and loan dollarization we study the drivers of short-term fluctuations in dollarization and test their importance at different levels of dollarization. The results provide evidence that (a) the positive (negative) short-run effects of depreciation (monetary expansion) on deposit dollarization are exacerbated in high-dollarization countries; (b) short-run loan dollarization is mainly driven by banks matching of domestic loans and deposits, currency matching of assets and liabilities, international financial integration, and institutional quality; and (c) both types of short-run dollarization are affected by interest rate differentials and deviations from desired dollarization.

1. Introduction

Financial dollarization (FD) has been the subject of considerable research over the past two decades. This research has led to the broad consensus that financial dollarization in the presence of large exchange rate fluctuations can become a potential source of balance of payments and financial crises, and pose a serious threat to macroeconomic and financial stability. These reasons have led to the examination of the determinants of financial dollarization as a way of improving our understanding of its development. In this paper we contribute to the literature by providing an empirical analysis of the drivers of *short-term* variations in both deposit (DD) and loan dollarization (LD) in transition economies.[1]

The majority of the studies conducted in the literature have had as a goal to investigate the determinants of long-run dollarization by mostly focusing on foreign currency-denominated deposits. In a recent survey of the literature, De Nicoló et al. (2003) and Levy-Yeyati (2006) summarize the main drivers of deposit dollarization. These are the past rate of inflation according to the currency substitution view (e.g., Savastano, 1996; Sahay and Vegh, 1996), the minimum variance portfolio (mvp) dollarization share according to the portfolio view (e.g., Ize and Levy-Yeyati, 2003), and the quality of institutions and the exchange rate pegs according to the institutional view (e.g., De Nicoló et al., 2005; Rennhack and Nozaki, 2006).

Only recently researchers have re-oriented their attention on the causal factors of loan dollarization or jointly examined both types of dollarization, again within a long-run perspective. Catão and Terrones (2000) represent an early work that develops a theoretical model of FD with a focus on the banking side while Barajas and Morales (2003) and Arteta (2005) evaluate the effects of exchange rate policy on FD. Of the last two studies, the first finds that DD greatly influences LD as banks shift currency risk to their borrowers in Latin America. It also shows that central bank intervention in the foreign exchange market increases loan dollarization. The latter finding is in contrast to Arteta (2005) who shows that floating exchange rate regimes encourage both DD and LD but more strongly DD so that bank currency mismatches are the overall outcome. More recently Luca and Petrova (2008) have produced evidence of banks' desire for currency matched portfolios beyond regulatory requirements, as Barajas and Morales (2003) did but, for a set of transition economies. They also show that increases in banks' net foreign assets adversely influence loan dollarization.

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[1] As typical in the literature, deposit dollarization represents the ratio of foreign currency deposits to total deposits of residents at domestic banks, while loan (or credit) dollarization reflects the ratio of foreign currency loans to total loans of domestic banks to residents.

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Finally, Basso et al. (2007) represents a study that examines both types of dollarization. By developing a theory model that is tested for transition economies, the authors unveil the importance of interest rate differentials and of the presence of foreign banks in the local financial sector.[2]

Our paper differs from the existing literature in an essential way. We examine the drivers of *short-run* variations in *both* deposit and loan dollarization. We are particularly interested in the response of dollarization to exchange rate changes, changes in monetary expansion and the banks' short-run currency matching behavior of loans and deposits, while controlling for the most important drivers found in the long-run literature. Most importantly, the investigation takes account of differences in the determinants of short-run deposit and loan dollarization at different degrees of dollarization. In this way we can examine the extent to which the effects of depreciation and monetary expansion on both short-run DD and LD differ in countries with different levels of dollarization. At the same time, the analysis allows us to consider the potentially asymmetric response of depositors and banks at high-dollarization environments due to the different portfolio instruments available to them.

A priori, domestic currency depreciation (or monetary expansion) of a given size is expected to have a different marginal impact on short-run DD in conditions of high dollarization compared to a low-dollarization environment. Depositors, in the presence of high dollarization, all else the same, would be inclined to hedge more heavily against inflation and exchange rate risks because in such circumstances (of low domestic currency value) the cost of depreciation rises nonlinearly. In addition, high dollarization is associated with fear of future depreciation promoting DD even further in the short-run. Furthermore, if a highly dollarized banking system coexists with a non-flexible exchange rate regime – a typical combination – pressure on the exchange rate can cause a "fear of floating" that will further boost DD as a way of preserving the value of monetary holdings. Such behavior, however, may not be observed with regard to LD of the banking system given that banks may have greater accessibility to foreign financial markets and instruments of diversifying currency risk in their asset portfolios compared to depositors. This, in turn, would reflect a similar marginal impact of a given depreciation on the changes in LD for both low- and high-dollarization situations. These hypotheses related to both sides of banks' balance sheets are formally investigated in this paper.

Our analysis complements and is most closely related to Honohan (2007) who examines the determinants of short-run fluctuations in deposit dollarization for a set of developing countries by paying particular attention to the effects of currency depreciation. He, however, ignores the examination of the short-run drivers of LD and avoids testing whether the effects of these factors differ in situations of high-dollarization. Accounting for these considerations allows us to provide new information about the short-run behavior of banks and also test the response of depositors and banks when dollarization rises. As Luca and Petrova (2008) and Basso et al. (2007), we limit our interest to transition economies as the circulation of foreign currency has been increasing in importance in these countries – over 1993–2006 foreign currency-denominated deposits averaged 40% and loans 48%.

The empirical evidence we obtain echoes our expectations not only as to the determinants of short-run DD and LD, but also as to the importance of distinguishing the effects between different levels of dollarization. First, the positive (negative) short-run effects of depreciation (monetary expansion) on deposit dollarization are exacerbated in countries with high deposit dollarization, while such a phenomenon is absent in the case of loan dollarization. Second, short-run loan dollarization is mainly driven by banks matching of domestic loans and deposits. This means that loan dollarization is positively correlated with deposit dollarization. Third, short-run loan dollarization is also, but to a smaller extent, diminished by international financial integration and institutional quality, and finally, both short-run deposit and loan dollarization are affected by interest rate differentials and deviations from desired dollarization. These findings are robust to a wide range of sensitivity tests, including the use of alternative estimation techniques, regression specifications, instrumentation strategies, and measurement approaches.

The remainder of the paper is organized as follows. Section 2 describes the estimation methodology and the data set. Section 3 presents the main findings of the analysis, while Section 4 reports on the results of extensive robustness tests. Finally, Section 5 concludes.

2. Methodology and data

Our main objective is to examine the short-run determinants of FD in transition economies. We take a broad view by evaluating both sides of the financial intermediaries' balance sheet, and, thereby, examine independently the determinants of both DD and LD.

2.1. Empirical strategy and methodology

Our estimation strategy, in terms of the choice of potential determinants of FD, is driven by the existing literature, as outlined in the introduction. We wish to draw attention, however, to the short-run determinants of FD given the limited empirical work on this front. Given our main interest, the benchmark regression specifications for changes in DD and LD are

$$\Delta \mathrm{DD}_{it} = \alpha_0 + \beta_1 erf_{it} + \beta_2 mbf_{it} + \beta_3 ec_{it} + \sum_{j=1}^{m} \gamma_j X_{j,it} + \varepsilon_{it}, \tag{1}$$

$$\Delta \mathrm{LD}_{it} = \alpha_0 + \alpha_1 \Delta \mathrm{DD}_{it} + \alpha_2 \Delta nfa_{it} + \beta_1 erf_{it} + \beta_2 mbf_{it} + \beta_3 ec_{it} + \sum_{j=1}^{m} \gamma_j X_{j,it} + u_{it}. \tag{2}$$

$\Delta \mathrm{DD}_{it}$ ($\Delta \mathrm{LD}_{it}$) denotes the change in DD (LD) in country i at time t, *erf* represents the exchange rate factor, *mbf* stands for the money base factor, *ec* describes the error-correction term related to the size of desired dollarization, Δnfa denotes the change in banks' net foreign assets, and $X_{j,it}$ includes a list of control variables that are commonly found to explain a substantial variation in both DD and LD in the long-run.[3] In the baseline model, these are the interest rate differential (Basso et al., 2007), the minimum variance portfolio (mvp) dollarization share (Ize and Levy-Yeyati, 2003), the change in the rate of inflation, an index of asymmetry of exchange rate movements (Rennhack and Nozaki, 2006), and an index of exchange rate intervention (Barajas and Morales, 2003). Finally, ε_{it} and u_{it} correspond to the error terms. As we examine the short-run determinants of both DD and LD, the variables *erf*, *mbf*, *ec*, interest rate differential, and mvp differ in Eqs. (1) and (2) to account for this distinction. The three last variables included in the *X* matrix are common in both

[2] The importance of foreign bank ownership, although not within a financial dollarization framework, is highlighted in Berger (2007) for the transition nations of Eastern Europe, Levy-Yeyati and Micco (2007) for Latin America, and Bertus et al. (2008) for a wide set of advanced and developing countries.

[3] With regard to the determinants of short-run LD, we consider the findings of Luca and Petrova (2008) which provide strong evidence of the significance of the supply-side variables driven by the behavior of banks (ΔDD and Δnfa) rather than the demand-side variables.