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Institutions and financial dollarization: Indirect effects based on a policy experiment

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HIGHLIGHTS

- Establishes indirect effects of institutions on financial dollarization.
- Indirect channels operate on top of the direct impact identified in the literature.
- Analysis is based on a unique policy experiment: the EU admission process.
- Impact of main drivers on dollarization significantly lower post-EU entry.
- Findings illustrate the multidimensional effect of institutional improvements.

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ABSTRACT

We provide evidence that institutional improvements lead to lower levels of financial dollarization through previously unidentified channels. These indirect channels operate in addition to the direct impact identified in the literature and further illustrate the importance of institutions for the extent of banking dollarization.

1. Introduction

Financial dollarization (FD) has been an increasing phenomenon over the last two decades, particularly amongst developing and emerging economies. The rise in FD has been matched by a growing academic interest with regard to its causal factors. Research in this area has been driven by the role of FD in inducing balance of payments crises, along with financial and liquidity crises in the event of large exchange rate fluctuations, giving rise to sharp contractions in output. The literature has identified a number of determinants of FD, with institutions playing a central role amongst them. In this paper, we contribute to the literature by further stressing on the importance of institutions. Compared to the existing literature, however, our study is concerned with the indirect channels via which institutions impact upon FD. Our identification strategy makes use of a historical policy experiment proxying for improvements in a country's institutional framework: the EU accession process.

The roots of FD – defined as the holding by residents of a share of their deposits and loans denominated in foreign currency – are attributed to certain factors for which analytical models have been developed. These include (i) the rates of inflation and exchange rate depreciation in line with the currency substitution theory (Savastano, 1996), (ii) the minimum variance portfolio (mvp) dollarization share according to the optimal portfolio theory (Ize and Levy-Yeyati, 2003), (iii) the interest rate differentials between deposits or loans in foreign and local currencies (Basso et al., 2007), and (iv) the quality of institutions based on the

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institutions theory (Levy-Yeyati, 2006). With regard to the latter driver, a series of studies has established that institutional progress directly diminishes FD (Honig, 2009; Vieira et al., 2012).[1] More recently, however, and specific to institutional improvements within the EU admission framework, Neanidis (2010) and Kishor and Neanidis (forthcoming) have shown that the EU accession process and entry induce lower deposit dollarization (DD) and higher loan dollarization (LD). These (direct) asymmetric effects of institutional advancement on the two elements of FD are explained, respectively, by the increased confidence instilled upon the private sector in the domestic currency and by the greater convergence of exchange rates to the euro due to eventual adoption of the common currency.

The current paper follows the lead of the latter studies in using the EU accession process as a way of assessing the impact of institutional development on both types of FD. But it differs in an essential way, as the focus is on the indirect effects of institutions on FD via the channels advanced by the theories described above. In other words, in this study we assess the impact of institutions on FD, not directly, but through the other main drivers of FD: inflation, depreciation, mvp dollar share, and interest rate differential. This allows us to examine whether the impact of institutions on FD has been underestimated in earlier studies.

Our analysis, based on data from recent EU members from Central and Eastern Europe, utilizes a factor augmented VAR (FAVAR) estimation technique that takes account of possible endogeneity concerns. The empirical findings indicate significant indirect effects of institutional quality on both DD and LD. Specifically, the long-run impact on FD of its main drivers, as outlined above, is significantly lower in the period for which institutional improvements have been recorded—signified by the accession and entry into the EU. Thus, institutional quality affects FD not only directly, as evidenced in the literature, but also indirectly via the various traditional drivers. This, in turn, implies the multifaceted impact of institutions on FD, which should not be ignored when assessing its total effect. The rest of the paper is outlined as follows. Section 2 describes the data and the model, Section 3 presents the results, and Section 4 briefly offers our conclusions.

2. Data and model

We use monthly data on twenty-two series related to FD for ten recent EU members (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, Slovenia, and Romania).[2] The series cover the domestic and foreign real economies, prices, exchange rates, interest rates, and banking sector variables. The data span varies for each country and is determined by the availability of data on FD. Table 2 presents summary statistics for DD and LD, illustrating the variety in their levels and in their volatility across countries. All data are transformed to become stationary via an appropriate transformation such as first differences of levels or of logarithms.[3] Then, the stationary data are standardized prior to the analysis and used in the estimation of the FAVAR model.

In this setting, let X_t denote an $N \times 1$ information matrix that contains the time series of the dataset and Y_t an $M \times 1$ vector of endogenous variables that constitutes a subset of X_t. In the case of the DD regression, Y_t contains the degree of DD, the rate of inflation, the rate of domestic currency depreciation, the mvp dollar share, and the interest rate differential. For the case of LD, Y_t replaces DD with LD and adds the domestic financial system's net foreign assets (nfa) as a way of controlling for bank's preferences in matching the overall level of assets and liabilities by currency (Neanidis and Savva, 2009). The traditional way of assessing the links among the endogenous variables in Y_t is to employ a VAR type specification. Nevertheless, in many applications, additional information (not fully captured by Y_t) may be relevant to modeling the dynamics of these series. As shown by Stock and Watson (2005), the additional information can be captured by a few number of unobserved factors F_t, (a $K \times 1$ vector) that summarize most of the information contained in X_t.[4] This includes not only country-specific variables that have been found in the literature to significantly influence FD, such as international financial integration and exchange rate policy intervention, but also variables of large economic entities that can spillover across countries, like the US and the euro area economic growth rates and business cycles. These variables are listed in Appendix as "exogenous variables" and are included in vector F_t.

The joint dynamics of (F_t', Y_t') and the static representation of a dynamic factor model (X_t, F_t, Y_t) are given by the following equations:

$$\begin{bmatrix} F_t \\ Y_t \end{bmatrix} = \Phi(L) \begin{bmatrix} F_{t-1} \\ Y_{t-1} \end{bmatrix} + \upsilon_t \quad (1)$$

$$X_t = \Lambda^f F_t + \Lambda^y Y_t + v_t \quad (2)$$

where $\Phi(L)$ is a conformable lag polynomial of finite order d, which may contain a priori restrictions as in the structural VAR literature.[5] The error term υ_t is mean zero with covariance matrix Σ. Λ^f is an $N \times K$ matrix of factor loadings, while Λ^y is an $N \times M$ matrix of factor loadings which reflect the degree by which variation in the variables included in vector X_t can be explained by each of the factors. Finally, v_t is a vector of error terms which are zero mean.[6]

Having estimated the factors F_t, it is possible to estimate the dynamic FAVAR model in Eq. (1) by replacing the true factors F_t with their estimated counterparts, $\hat{F}_t$. This is achieved by using an identifying assumption for the imposed shock.[7] Following Bernanke et al. (2005), we assume a Cholesky identification scheme with the order of variables being {inflation, depreciation, mvp dollar share, interest rate differential, and DD} for the DD equation. When estimating the LD equation, the order of the variables is {net foreign assets, inflation, depreciation, mvp dollar share, interest rate differential, and LD}. The theoretical rationale on how our variables interact through time is not well established; thus we alter the ordering of variables to verify the robustness of results. As discussed further below, we find results to be unchanged.

To assess the impact of institutional progress on FD, we split our sample into two periods, the pre-EU and the post-EU. The former period is defined as the period prior to the completion of the negotiation process, which signifies that a negotiating country

1 For an explanation of the underlying mechanisms, see Levy-Yeyati (2006).

2 We exclude Cyprus and Malta from the 2004 EU enlargement due to their high levels of institutional quality even before EU entry.

3 The full list of variables, with definitions and transformation codes can be found in Appendix.

4 The main advantage of a FAVAR, compared to a VAR, model is that it represents a more general framework where the importance of unobserved factors can be examined through formal tests. Put differently, the VAR specification is a special case of a FAVAR model. For further details, see Bernanke et al. (2005) and Stock and Watson (2005).

5 These restrictions include a *Cholesky* factorization, partial identification via block lower-triangular exclusion, general restrictions, long run restrictions, etc. (see for details Stock and Watson, 2005). The lag order used is determined by the Schwartz information criterion.

6 Essentially, the static representation of the dynamic factor model described by Eq. (2) allows factors to be estimated by principal components. This method allows for some cross-correlation in v_t that must vanish as N goes to infinity (see Stock and Watson, 2002, 2005).

7 The appropriate number of factors for each case is chosen by the Bai and Ng (2002) criterion.