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Limits of floating exchange rates: The role of foreign currency debt and import structure ☆

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ABSTRACT

A traditional argument in favor of flexible exchange rates is that they insulate output better from real shocks, because the exchange rate can adjust and stabilize demand for domestic goods through expenditure switching. This argument is weakened in models with high foreign currency debt and low exchange rate pass-through to import prices. The present study evaluates the empirical relevance of these two factors. We analyze the transmission of real external shocks to the domestic economy under fixed and flexible exchange rate regimes for a broad sample of countries in a Panel VAR and let the responses vary with foreign currency debt and import structure. We find that flexible exchange rates do not insulate output better from external shocks if the country imports mainly low pass-through goods and foreign indebtedness is high.
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1. Introduction

Traditional arguments for flexible exchange rate regimes, as advanced by Friedman (1953) or Mundell (1961) and Fleming (1962), emphasize the expenditure switching effect. When a country faces an adverse real shock, a nominal depreciation can stabilize output by boosting net exports. Since then the theoretical literature has cast doubt on the effectiveness of flexible exchange rates to stabilize output when there is high foreign currency debt or limited exchange rate pass-through.

Theoretical models that analyze the effects of foreign currency debt on the stabilization properties of exchange rate regimes emphasize the role of balance sheet effects and leverage (Céspedes et al., 2004; Choi and Cook, 2004; Cook, 2004; Devereux et al., 2006; Gertler et al., 2007). With foreign currency debt, a depreciation can increase domestic leverage, which in turn puts upward pressure on borrowing costs and constrains investment. The fall in investment triggers a fall in overall domestic demand and output. However, as we will detail in Section 2, the theoretical literature has not reached a consensus on whether the destabilizing effects of exchange rate fluctuations through balance sheets are strong enough to make output more responsive to external shocks under a float than under a peg.

Expenditure switching effects are absent if there is no exchange rate pass-through. If imported goods are priced in domestic currency, an exchange rate depreciation cannot affect the price of imported goods and the relative price of domestic and imported goods remains unaltered (Devereux and Engel, 2003). While the theoretical implications of limited exchange rate pass-through are less controversial than those of foreign currency debt, we are not aware of any empirical analysis linking pass-through to the buffer properties of different exchange rate regimes. The literature has focused primarily on the extent and determinants of exchange rate pass-through. A key result from this literature is that exchange rate pass-through is higher in countries that import relatively more homogeneous goods (Campa and Goldberg, 2005). Homogeneous good markets tend to be more competitive, which precludes pricing in different currencies. Our empirical analysis will use this result to investigate how import structure affects the insulation properties of floating exchange rates. We also employ alternative measures which the literature has found to be associated with limited pass-through.

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The debate is also unresolved from a practical point of view: the issue what exchange rate regime is more suited to absorb external shocks has been prominently discussed during the Asian crisis, but also in the recent financial crisis, where several countries' access to external finance sharply deteriorated and external demand fell. There is now an active discussion whether a country with high foreign currency debt can shield its economy from such a negative external shock better under a floating or a fixed exchange rate. While an exchange rate depreciation may induce balance sheet effects, a constant exchange rate implies that a real depreciation must be achieved through wage or price disinflation, which may also be very costly.[1]

The main contribution of this study is to address the controversy on the relevance of balance sheet effects empirically and to provide evidence on the role of import structure for the insulation properties of exchange rate regimes. We introduce an Interacted Panel Vector Autoregression (IPVAR) as a framework to test how country characteristics affect the response of the economy to external shocks. Using a sample of 101 countries we estimate a Panel VAR and augment it with interaction terms that allow the VAR coefficients to vary with the exchange rate regime, foreign currency debt, and import structure. With this technique we can directly analyze how the responses of output and investment to external shocks vary with external debt, import structure and exchange rate regime. While researchers routinely use interaction terms in single equation empirics, studies that employ interaction terms in VARs are few. The use of interaction terms in Panel VARs is a simple way to allow for deterministically varying coefficients across time and countries. The framework thereby provides an alternative to the stochastically time-varying coefficient frameworks often employed in single country VARs.[2]

Our results indicate that the insulating properties of flexible exchange rate regimes are strong in economies where the import share of high pass-through goods is large and foreign currency debt is low. With a small share of homogeneous imports and a high degree of foreign currency debt floating and fixed exchange rates display similar stabilization properties, as limited pass-through hinders the adjustment of relative prices under a float and contractionary balance sheet effects become important. For certain combinations of high foreign currency debt and low raw material content, output contracts even stronger in response to external shocks under floats compared to pegs as balance sheet effects dominate.

The results stand in contrast to early empirical studies, comparing the Bretton Woods system of fixed exchange rates to the post Bretton Woods system of floating exchange rates, that found no effects of the exchange rate regime on macroeconomic variables (Baxter and Stockman, 1989; Flood and Rose, 1995), with the exception of the well established fact that the real exchange rate is substantially more volatile under floating exchange rate regimes (Mussa, 1986). A later study by Ghosh et al. (1997) finds that output volatility is lower under flexible regimes, whereas inflation volatility is higher.

However, these studies do not discriminate between real and nominal shocks, whereas Mundell–Fleming logic suggests that fixed exchange rates are preferable if nominal disturbances dominate and flexible exchange rates are preferable if real disturbances dominate. Thus, a series of studies identifies real shocks, taking advantage of the fact that the rest of the world is virtually not affected by domestic conditions in small countries. Comparing the response of GDP to an exogenous variable under different exchange rate regimes in a single equation framework, they generally find that under a flexible exchange rate regime the output growth rate is less sensitive to variations in the terms of trade (Edwards and Levy Yeyati, 2005), world interest rates (di Giovanni and Shambaugh, 2008), and natural disasters (Ramcharan, 2007).

A drawback of the single equation approach is that it does not look at the response to a true, unexpected, shock and its transmission, but at the sensitivity of output to contemporaneous values of a specific exogenous variable. Broda (2004) and Broda and Tille (2003) tackle this issue with a Panel VAR approach and treat the terms of trade as a block exogenous variable. They look at the response of real GDP to a terms of trade shock in a sample of developing countries and find that output responds stronger under a peg. In a similar context, Hoffmann (2007) finds that flexible exchange rates insulate better from shocks to world output and world real interest rates, and Miniane and Rogers (2007) provide evidence that the nominal interest rate in countries with fixed exchange rates responds more to U.S. money shocks.

None of the studies accounts for country characteristics apart from the monetary policy regime such as import structure and foreign currency debt.

To our knowledge there is no empirical study which analyzes the buffer properties of different exchange rate regimes to external shocks for varying levels of foreign currency debt. There is a literature that investigates the link between the effects of exchange rate depreciations and the level of foreign currency debt.[3] Most of these studies find that depreciations tend to be contractionary when foreign currency debt is high (Bebczuk et al., 2006; Cavallo et al., 2005; Galindo et al., 2003). These studies use exchange rate fluctuations as an explanatory variable, whereas we look at output responses conditional on an exogenous shock under different exchange rate regimes. We are not aware of a study that investigates the role of import structure for the adjustment to external shocks.

In the remainder, Section 2 summarizes the theoretical literature on the effects of foreign currency debt and import structure. Sections 3 and 4 explain the data and the estimation technique. Section 5 discusses the main results. Section 6 concludes.

2. Review of the theoretical literature on the stabilization properties of exchange rate regimes

The present section reviews the relevant theory on foreign currency debt and exchange rate pass-through to import prices and the implied testable predictions. While our discussion regarding the predictions remains fairly informal, an appendix (available on request) presents a model based on Céspedes et al. (2003) that synthesizes the literature discussed and formalizes the argument.

2.1. Foreign currency debt and balance sheet effects

At least since the Asian crisis both scholars and policy makers have paid considerable attention to the potentially destabilizing effects of foreign currency debt that may arise because of financial frictions. Aghion et al. (2001) and Krugman (1999) are among the first to incorporate the financial accelerator mechanism (Bernanke et al., 1999) into modern open economy models. If a firm borrows in foreign currency, a depreciation increases its the domestic currency value of debt and reduces its profits and net worth. A lower firm value makes banks more reluctant to lend and the tighter credit conditions lead to a drop in investment, which spills over to total domestic demand and depresses output.

The theoretical literature has not yet reached a clear verdict on whether the contractionary balance sheet effects are strong enough to overturn the expansionary expenditure switching effect. Céspedes et al. (2004), Devereux et al. (2006), and Gertler et al. (2007) find that even with sizable foreign currency debt depreciations remain expansionary. Cook (2004) argues that the results depend on the source

[1] In a recent study, Tsangarides (2010) finds that the output response to the shock during the financial crises 2008/09 of countries with a peg was comparable to countries that maintained floating exchange rate regimes.

[2] Loayza and Raddatz (2007) are closest to our empirical approach, but only let the coefficients on exogenous variables vary and impose homogeneity on the dynamics of endogenous variables.

[3] Hausmann et al. (2001) find that "fear of floating" occurs more often in countries with high foreign currency debt. Authorities limit exchange fluctuations, although they declare themselves officially as floaters. This can be interpreted as indirect evidence of the favorability of fixed exchange rate regimes under such circumstances.

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