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Currency depreciations, financial transfers, and firm heterogeneity[☆]

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ABSTRACT

The present paper investigates five episodes of currency collapse from the perspective of non-financial firms operating in Argentina, Brazil and Mexico. We focus on two aspects: wealth and income transfers from borrowing firms to lenders and firm heterogeneity. At the firm level, we find that the currency collapses are preceded and associated with sharply rising financial transfers from firms to lenders. The debt and income structure is central in explaining the asymmetric firm dynamics. Most affected are firms with high levels of unhedged foreign-currency debt. At the country level, Argentina, Brazil, and Mexico display three contrasting examples. Argentina has a large currency mismatch, Brazil balances the currency denomination of debt and income (natural hedge), and Mexico occupies an intermediate position.

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1. Introduction

This paper studies income and wealth transfers associated with currency crises. It provides evidence based on micro data for three countries (Argentina, Brazil and Mexico) that the currency composition of firm liabilities, as well as the contribution of exports to revenues, determines the

extent to which firms are affected by large currency depreciations.

The distributive dimension of currency crises has been largely understudied with the exception of Halac and Schmukler (2004). This question is, however, central to the understanding of currency crises to the extent that these transfers have macroeconomic effects and determine the length and

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protractedness of currency crises. In a world with perfect markets distributive issues are irrelevant. The efficient market hypothesis argues that the liability structure of firms does not matter for investment decisions. Firms are indifferent in financing investment through equity issues, domestic debt or foreign-currency denominated debt. Similarly, profits are zero in a world with frictionless markets but are non zero in the presence of rigidities, for instance exchange rate pass-through, nominal price stickiness, search and matching frictions, moral hazard, and adverse selection on financial markets.

In particular, the literature on the financial accelerator puts forward that there is a relationship between unanticipated exchange rate fluctuations and firm profitability (and/or net wealth). In the presence of imperfect information commercial banks use firm profitability (and/or net wealth) as explanatory variables for the probability of default. Unanticipated exchange rate movements affect the liability structure of firms indebted in foreign currency and generate transfers between lenders and borrowers. Banks cut credit supply to these firms, which are forced to scale back investment. The probability of default can therefore be inferred by firms' profitability and their debt-to-asset ratio. In *Stiglitz and Weiss (1981)*, profitability accounts for the ability of firms to meet interest payments. In *Bernanke et al. (1999)*, the debt-to-asset ratio is a proxy used by creditors to measure the potential losses in case of firms going bankrupt.

Currency collapses (large nominal depreciations or devaluations) in emerging markets are associated with two types of transfers between lenders and borrowers: income transfers (flows) and wealth transfers (stocks). Debt accumulation in foreign currency without hedging the currency exposure raises the income transfers from borrowers to lenders, when the exchange rate depreciates. The depreciation raises the domestic-currency value of the stock of foreign-currency liabilities and translates into a transfer of wealth from borrowers to lenders. In addition, interest payments in domestic currency increase due to the mentioned stock effect and an associated increase in the risk premium on external finance caused by the reduction in wealth (*Bernanke et al., 1999*).

A firms' ability to meet interest payments is greatly determined by the export structure of their revenues. The exchange rate depreciation also improves firms' competitiveness and foreign sales. The degree of export orientation of firms, which works as a natural hedge against exchange rate risks, is a second distributive issue considered here alongside the composition of debt. In fact, it is shown that, with the exception of Brazil, firms indebted in foreign denominated currency were not necessarily exporting firms.

The present paper investigates and compares five episodes of currency collapses from the perspective of non-financial firms operating in Argentina, Brazil and Mexico. The impact of currency collapses on the income distribution between borrowers and lenders is a complex issue that needs to be settled empirically, ideally at the micro-level. To this purpose we have gathered a detailed firm-level data set on the financial statements of non-financial firms over the period 1994 to 2004. First, the income statements of firms are decomposed into net financial payments and earnings from real activity over time to quantify the impact of the currency collapses on these two components of income. Compared to investment, which is the usual variable considered, firms' income has a distributive aspect since it allows one to separate the generated surplus from financial payments and gives a clear picture of the income distribution. The profit decomposition is done at the average country level and across firms with varying degrees of foreign-currency debt and income. We find that the currency collapses are preceded and associated with sharply rising financial transfers to lenders and that the debt and income structure is central in explaining the asymmetric firm dynamics. Second, using panel regressions, the impact of the currency collapses on firms' income is quantified after controlling for differences in the currency composition of debt, the degree of export orientation, and macroeconomic conditions. To account for the differences across countries and currency collapses, the regressions are estimated for each country individually.

In particular we stress the importance of being indebted in foreign currency as well as being an exporter. This part shares similarities with existing works by *Aguiar (2005)*, *Bleakley and Cowan (2008)*, *Bonomo et al. (2003)*, *Gilchrist and Sim (2007)*, and *Pratap et al. (2003)*. The country studies of *Gilchrist and Sim (2007)* on Korea, and *Aguiar (2005)* and *Pratap et al. (2003)* on Mexico find that investments of firms that are indebted in foreign currency are constrained by adverse balance sheet effect that dominates the competitiveness effects of devaluations. The opposite is found by *Bleakley and Cowan (2008)* who analyze currency mismatches and depreciations for a sample of firms from Argentina, Brazil, Chile, Colombia and Mexico during the 90s. Focusing on investment, they find evidence that firms indebted in foreign currency matched the currency composition of their liabilities with the exchange rate sensitivity of their profits, suggesting that liability dollarization has not been the driving force of the recessionary impact of the

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