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Debt composition and exchange rate balance sheet effect in Brazil: a firm level analysis

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Abstract

In this paper, we study the interaction between macroeconomic environment and firms' balance sheet effects in Brazil during the 1990's. We start by assessing the influence of macroeconomic conditions on firms' debt composition in Brazil. We found that larger firms tend to change debt currency composition more in response to a change in the exchange rate risk. We then proceed to investigate if and how exchange rate balance sheet effects affected the firms' investment decisions. We test directly the exchange rate balance sheet effect on investment, but the results were not statistically significant. We then pursue an alternative investigation strategy, inspired by the credit channel literature. According to this perspective, Tobin's q can provide an adequate control for the competitiveness effect on investment. Our results provide supporting evidence for imperfect capital markets, but not for a balance sheet effect in Brazil. The main effect we found is that firms in industries with higher proportion of imported inputs tend to invest less when the exchange rate is depreciated.

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1. Introduction

The macroeconomic environment interacts with the firms' balance sheet structure in a two-way relationship. On one hand, macroeconomic environment is central in shaping the capital markets, determining what kind of contracts is feasible and enforceable. Moreover, it also affects the incentives faced by firms when selecting their financial contracts. Conversely, the firms' balance sheet structure affects

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crucially the result of macroeconomic policies, influencing policymakers' choices of regimes and policy rules. In this paper, we study the balance sheet effects of exchange rates and interest rates in Brazil since 1990, using a panel data set with firm level variables. For this endeavor, we also consider how the macroeconomic environment affected the balance sheet structure and interacted with firms' balance sheet effects.

Balance sheet effects on investment and production rely on capital market imperfections. According to the credit channel literature (see Bernanke and Gertler, 1995), imperfect information creates a wedge between internal and external finance. An adverse shock to the net worth of a financially constrained firm increases its cost of external financing and decreases the ability or incentive to invest, and to implement production plans. It should impact firms differently, being stronger for firms that face higher premium of external finance costs relative to internal finance (see Hubbard, 1998).

There is substantial empirical evidence that proxies for firms' net worth affect investment more for low net worth than for high net worth firms (Hubbard, 1998). Therefore, to the extent that exchange rate and interest rate variations affect firms' net worth, their balance sheet effect should matter for determining investment. Firms will see their financial condition deteriorate whenever they have substantial debt at floating interest rates, and the relevant real interest rate increases. This can happen if they have foreign denominated debt and the real exchange rate depreciates, entailing an exchange rate balance sheet effect. An interest rate effect takes place when firms have substantial short-term domestic debt or long-term debt contracted at floating rates, since their loans will be rolled over at higher rates.

In the case of interest rates, it engenders a financial accelerator, which magnifies the traditional interest rate channel (Bernanke et al., 1999). In the case of exchange rate, it should counteract the expansionary effect of the competitive channel (Aghion et al., 2001).¹ Thus, while the question in the interest rate literature is about the magnitude of the recessive impact of interest rate rises the debate in the recent exchange rate literature is about whether exchange rate devaluations are expansionary or contractionary.

Harvey and Hoper (1999) argued, in an investigation which used firm level indicators that the exchange rate balance sheet effect greatly exacerbated the Asian Crisis. Bleakley and Cowan (2002) and Forbes (2002) tested the empirical relevance of exchange rate balance sheet effects using multinational panel regressions with firm level data. The former work used a panel data for over 500 non-financial firms in five Latin American countries, dominated by Brazilian firms (52.5% of the observations). They found that holding foreign-currency denominated debt was associated with more investment during exchange rate devaluations, contrary to the predicted sign. However, Forbes (2002) found that more indebted firms had lower net income growth after a large depreciation. Although she used a larger sample of countries, she only examined large depreciations.

¹ Additionally, the existence of imported inputs could also be an extra channel for the exchange rate contractionary effect (Reif, 2001).

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