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Credit scarcity in developing countries: An empirical investigation using Brazilian firm-level data☆

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Abstract

Q4 Q5 The aim of this paper is to investigate whether Brazilian manufacturing firms are credit constrained. We exploit a rich database that contains more than 3000 firms with characteristics that may affect their degree of credit constraints: size, being listed in the Brazilian stock market and level of exports-sales ratio. Our results show that all dimensions considered here may affect the sensitiveness of investment to cash flow. Large firms, stock market listed companies as well as firms with better export capacity are associated with inexistence or less credit restriction. Specifically, considering firm's size, our results corroborate the economic theory prediction and empirical international literature. Furthermore, the influence of being listed in the stock market and export capacity is beyond any possible correlation with size. Even small and middle firms are not credit constraint when listed in the stock market or when the exports-sales ratio is higher.

JEL classifications: C23; D21; D92; E22

Keywords: Credit constraint; Firm's investment; Cash flow; Exports; Stock market

1. Introduction

Credit constraint is a widespread market failure. Under asymmetric information, financial intermediaries provide Q7 less credit to firms with good projects but low net worth than would otherwise do with perfect functioning capital markets. The adverse consequences of this market failure are especially damaging to developing countries, because it inhibits entrepreneur capacity to make investments necessary to overcome backwardness, as evidenced by Banerjee and

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Duflo (2005). Moreover, there is broad evidence that removing credit constraints in fact enables firms to enhance their performance. For instance, Banerjee and Duflo (2014) showed that improving firms' access to direct credit expands production without crowding-out with other forms of credit.

In Brazil, private debt markets to firms are still to be fully developed, especially when it comes to long term finance. According to CEMEC (2016), total credit (including bank-based and market-based debt) to non-financial companies amounted to 38.7% of GDP in 2015. Nevertheless, long-term outstanding private debt was only 5.8% of GDP. Needless to say that the small and medium companies, usually more credit constrained, have more difficulties in access to bond markets. Therefore, our investigation might help policy makers to understand where in the Brazilian economy credit restrictions are more severe. As a consequence, government policies should be able to alleviate these constraints more effectively and eventually burst private sector investments.[1]

Given this institutional framework, this paper tests whether Brazilian companies are credit constrained, and further investigates some qualitative properties of this restraint, considering the investment-cash flow model proposed by Fazzari et al. (1988). The main interest in this case is to verify the sensitiveness of a firm's investment to cash flow and interpret it as synonyms of credit constraint. Our main contribution to the existent literature consists in the use of a richer and still under exploited dataset, which enables us to assess different aspects undermined by previous research. Our dataset gathers balance-sheet information for more than 3000 manufacturing firms with characteristics that may affect the degree of credit constraints, for example, size, the participation in the Brazilian stock market and level of export's sales. Understanding stock market participation as a "domestic" source of external investment's funds and the level of export's sales as a proxy for "foreign" source, once export revenue may be seen as a collateral to get access to international financing, our results may be seem as a test if substitutes for banking funding are effective in alleviating credit constraints, which may be useful for guiding public policy in broader contexts.

Methodologically, we follow the existing literature, as there is a potential endogeneity between cash-flow and investment, adopting a system GMM approach proposed by Arellano and Bover (1995) and Blundell and Bond (1998). In this case, the lagged explanatory variables instruments allow us to identify the importance of cash-flows on investment decisions. Despite heterogeneity in our sample, the presence of non-listed firms imposes some difficulties, as regards to the controls utilized in the estimations. In particular, Tobin's Q may not be used as a proxy for investments opportunities. This problem is circumvented by using multiple alternative proxies. For instance, we consider variation of sales at firm level and sector variation in investment and in value added at an aggregate level in order to control for investment opportunities.

Our main results indicate that Brazilian firms were credit constrained in recent years (2008–2010). Cash flow coefficient is indeed larger than what is usually obtained in the literature for other countries, such as Carpenter and Guariglia (2008), suggesting a higher degree of imperfections in the Brazilian credit market. Furthermore, this coefficient changes when firms are classified according to the three categories that may properly approximate the degree of credit constraint: size, listed on stock markets and the export's sales level. In the first case, Brazilian firms are classified as small, middle and large considering the number of employees. Although previous evidence that analyses the impact of size on credit restrictions has been mixed in Brazil, as observed in Terra (2003) and Aldrighi and Bisinha (2010), our results are in line with the traditional literature: cash flow coefficient is insignificant or at least (depending on the econometric specification) has a lower elasticity magnitude for larger firms.

Our two other categories, companies listed on the Brazilian stock market (public versus non-public firms) and level of export to sales ratio (no export at all, below and above the median) provide evidence that investments for firms listed in stock markets and for those large exporters are not sensitive to cash flow variation. Besides, the influence of these categories is beyond any possible correlation with size. When interacting those dummies, listed and export, with size groups, our results suggest that while non-large firms are in general credit constrained, this credit restriction was softened for listed firms and large exporters.

The above results are particularly interesting for the design of public policy. An institutional feature of Brazil is the existence of a development bank (BNDES) that provides funding to investment projects and, as such, tries to relieve credit constraints. Indeed, after the 2008′s international financial crises BNDES budget increased substantially. But, as there is a wedge between raising and lending interest rates, financial support by the bank is costly, and so it is important to direct resources for firms that are most credit constrained. Our main results, in this regard, suggest that

[1] Eslava and Freixas (2016) discuss the role of public development banks when credit markets allocate inefficiently due to screening costs.

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