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Credit constraints and firm export: Microeconomic evidence from Italy ☆

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ABSTRACT

This paper estimates the impact of credit rationing on firms' export. We use detailed survey data from Italian manufacturing firms that provide a firm-specific measure of credit rationing based directly on firms' responses to the survey rather than indirectly on firms' financial statements. After controlling for productivity and other relevant firm attributes, and accounting for the endogeneity of credit rationing, we find that the probability of exporting is 39% lower for rationed firms and that rationing reduces foreign sales by more than 38%. While credit rationing also appears to depress domestic sales, its impact on foreign sales is significantly stronger. The analysis also suggests that credit rationing is an obstacle to export especially for firms operating in high-tech industries and in industries that heavily rely on external finance.

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1. Introduction

The ability of a country and its businesses to grow is tightly related to the possibility of exporting and penetrating into foreign markets. Indeed, policy-makers debate intensely on the policies that can encourage the expansion of firms beyond national borders. However, such an expansion encounters several challenges. Exporting involves higher entry costs than selling to the domestic market: firms need to acquire information about foreign markets, customize products to fit local tastes and set up distribution networks. Das et al. (2007) estimate that for Colombian exporters average entry costs range from 344,000 to 430,000 U.S. dollars. Furthermore, because most entry costs must be paid up front, only firms with sufficient liquidity can cover them. These features render financial markets crucial for firms' export activity. In particular, when liquidity constraints plague financial markets, whether a firm is constrained or not may influence the firm's decision to sell abroad and the volume of foreign sales. While a growing literature has recently formalized these arguments theoretically (see, e.g., Manova, 2010, and Chaney, 2005), probably because of a dearth of data, the micro-level evidence on this issue remains scant.

The objective of this paper is to help fill this gap using detailed microeconomic data on a large sample of Italian firms. The main source of information for our analysis is a survey conducted by the Italian banking group Capitalia in 2001. The survey constitutes an ideal testing ground for three main reasons. First, it provides unusually detailed information not only on firms' export participation decisions and foreign sales but also on the constraints that firms face in the credit market. Indeed, our measure of credit rationing is taken directly from firms' responses to the survey rather than indirectly inferred from firms' financial statements. Second, the small and medium size of the businesses in our sample, in conjunction with the characteristics of the Italian financial system, ensure that the firms that are constrained by banks essentially lack access to alternative sources of financing. In fact, in Italy stock and bond markets are relatively underdeveloped so that a small or medium-sized firm that is denied loans by banks is typically forced to scale down its investment plans. Finally, a third salient feature of the survey is that by combining it with data on Italian banking regulations we can use an instrumental variable estimation approach and tackle endogeneity issues. This is important because, even if one controls for productivity and other relevant firm characteristics, it is likely that the probability that a firm is credit rationed is related to some unobserved attributes of the firm that also influence its export decisions. In addition, an observed correlation between a firm's export and its liquidity constraints could also reflect the impact that the firm's activity in foreign countries has on its access to the credit market.

After controlling for various firm attributes that may affect exports, we estimate that the probability of exporting is 39% lower for credit rationed firms than for non-rationed firms and that rationing reduces foreign sales by more than 38%. Therefore, limited access to liquidity appears to impact both the probability that a firm exports (the "extensive margin") and firm-level exports, conditional on exporting (the "intensive margin"). Remarkably, while liquidity constraints

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appear to depress domestic sales, we find that their negative impact on foreign sales is significantly more pronounced. This may support the hypotheses put forth in the literature that the liquidity needs associated with set-up costs are especially large for exports (Manova, 2010) and that the enforceability of credit contracts is particularly difficult in international transactions (Chaney, 2005).

Because our measure of rationing is binary, we do not observe how severe rationing a firm faces. For example, some firms could be denied a larger amount of bank credit than others; moreover, some businesses could have easier access than others to forms of financing alternative to bank loans. To address these issues, we exploit information on firms' characteristics and on the industries in which firms operate. Our results reveal that credit constraints especially hinder export by firms with short relationships with creditors and by firms with few creditors. This can reflect the fact that firms with a short credit history or with few creditors suffer more from credit frictions when trying to expand abroad. In line with expectations, the analysis also reveals that liquidity constraints depress firms' export especially in industries with high external financial dependence (as defined by Rajan and Zingales, 1998). Finally, our results suggest that credit constraints impede firms' export primarily in high-tech sectors. This is interesting because these sectors are allegedly less exposed than traditional sectors to the competition of fast-growing economies (e.g., China and India).

The paper is organized as follows. Section 2 reviews the prior literature. Section 3 describes the institutional setting. Section 4 discusses the predictions of theoretical studies. In Section 5, we describe the data. Section 6 examines the impact of credit rationing on firms' export participation decisions. Section 7 looks at its effect on foreign sales. In Section 8, we investigate the heterogeneous response to rationing across firms or industries with different characteristics. Section 9 concludes.

2. Prior literature

This paper is related to the theoretical literature on the effects of credit imperfections on firms' investment and growth (see, e.g., Bernanke and Gertler, 1990; Clementi and Hopenhayn, 2006; Antràs and Caballero, 2009). More specifically, it takes to the data the predictions of a growing literature on the impact of credit imperfections on firms' export (e.g., Manova, 2010; and Chaney, 2005). We shall return to the implications of these theories. From an empirical viewpoint, our work is broadly related to the literature on the implications of financial imperfections for investment decisions (see, e.g., Fazzari et al., 1988; and, for reviews, Schiantarelli, 1996, and Galindo and Schiantarelli, 2003). In particular, it contributes to the studies that link financial development to the patterns of international trade (e.g., Beck, 2002; Svaleryd and Vlachos, 2005; Do and Levchenko, 2007). There is evidence that countries with more developed financial markets have a comparative advantage in industries that rely more on external finance. However, existing studies usually measure the financial development of a country using the amount of credit granted by banks and other financial institutions to the private sector (as a share of GDP). Therefore, firms are assumed to face the same tightness of credit constraints within the country. In contrast, we can observe credit rationing at the firm level and can then provide firm-level evidence on the role of financial constraints in international trade.

Recently, a few micro-level studies have related indirect measures of credit constraints to firms' international activities. Using data from the United Kingdom, Greenaway et al. (2007) investigate the relationship between export and measures of firms' financial health drawn from financial statements. They find no evidence that firms with better financial health are more likely to start exporting, while they obtain evidence that the participation in export markets improves firms' financial health. Berman and Héricourt (2010) analyze a sample of firms in developing and emerging economies and capture firms' liquidity needs with balance-sheet variables. Their results reveal that better financial health promotes entry into the export market but has no impact on the volume of foreign sales. Muûls (2008) finds that Belgian firms with lower creditworthiness are less likely to export and, if they do export, they sell less abroad. Using customs data from China, Manova et al. (2009) demonstrate that foreign affiliates and joint ventures have better export performance than private domestic firms, especially in sectors that heavily depend on external finance. This may suggest that credit frictions hinder export and that foreign firms can overcome such frictions by obtaining liquidity from parent companies. Relative to these studies, we have access to a direct measure of credit rationing rather than to measures derived indirectly from financial statements. Moreover, we can establish a causal effect of credit conditions on firms' export by using measures of regulation of the local credit market as instruments for rationing.

3. Institutional setting

Italy provides an ideal environment for disentangling the impact of credit constraints on firms' export. The industrial structure consists primarily of small and medium-sized businesses and banks are the main source of external finance. In 1999, the ratio between the stock market capitalization and the gross domestic product was 66.1%, compared with 180.8% in the United States. In this context, the external financing of investment and export costs mainly occurs through banks, so that the effect of credit rationing on export that we estimate from our sample can be considered as representative of the effect for Italian firms in general. The central role of banks in the financing of investment and export renders the Italian financial system close to that of other countries of continental Europe, such as France and Germany, and to Japan. However, banks are also a key source of finance in the United States. According to Berger and Udell (1998), in 1993 all financial institutions accounted for 26.71%, and commercial banks 18.75%, of the financing of nonfarm, nonfinancial, and non-real estate U.S. firms. This indicates that in the United States banks play a significant role in firm financing. Collectively, these considerations suggest that our analysis can constitute a first step in understanding the effect of liquidity constraints on firms' export.

A second important feature of the Italian banking system is its delimitation within local areas. These areas roughly coincide with Italian provinces (Sapienza, 2002; Guiso et al., 2003), local entities defined by the Italian law that are similar in size to U.S. counties. In our analysis, we face an issue of endogeneity of firms' credit rationing. The segmentation of the banking system in local areas, in conjunction with the banking regulation, allows us to identify exogenous restrictions on the local supply of banking services which can be used as instruments. In fact, as we elaborate below, until the early nineties the banking regulation that was in place in Italy severely limited the development of the banking system, affecting firms' ability to obtain credit.

4. Theoretical background

The theoretical literature has studied extensively the distortionary impact that credit frictions can have on firms' decisions and dynamics. Bernanke and Gertler (1990) and Clementi and Hopenhayn (2006) respectively demonstrate that credit constraints depress firms' investment and growth. In recent years, the literature has increasingly recognized the role of financial markets in firms' international orientation and stressed that exports are particularly vulnerable to credit imperfections. The studies that yield the most relevant implications for our firm-level empirical analysis are Manova (2010) and Chaney (2005), which embed credit constraints into the heterogeneous firm model of trade of Melitz (2003) and investigate

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