The Role of Financial Constraints in Determining Export Status

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Abstract: In spite of the mounting evidence on the advantages of exporters over firms focused solely on their domestic markets, the source of these differences is yet to be explained. The present contribution analyzes the role of financial constraints as one of the key factors determining firm export status. Through a survey of existing literature and an empirical analysis of Slovenian manufacturing firms the role of financial constraints that limit foreign market access to only a subset of the firms is revealed. It is shown that financial constraints, even when other factors are explicitly considered, determine the firms that will be able to enter into foreign markets and financially constrained firms end up exporting less frequently and smaller quantities than could otherwise be expected.

Introduction

In recent years we have been witness to a surge in both theoretical and empirical research on trade and multinational production with heterogeneous firms, which has managed to shed new light on the popular notion that exporting firms are fundamentally different from non-exporters. This literature has, by and large, confirmed, the existence of considerable foreign-market entry costs that exporters face when entering a new market. Having to bear costs such as establishing awareness of their product, adapting the product to market requirements and local tastes,

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adjusting to market regulations, etc. ensures that only the most productive and/or largest firms are able to enter into foreign markets. Namely, it is the largest and/or most efficient enterprises that will be able to maintain sufficiently high rates of profit to cover the initial sunk costs of entering a foreign market (Bernard in Jensen 2004, Bernard et al. 2003, Das et al. 2004, Head in Ries 2003, Helpman et al. 2004, Melitz 2003, Damijan et al. 2005).

Lately, some of the research on firm performance and trade has focused on a initially overlooked aspect of operating in a foreign market, as attention has been directed toward analyzing the financial restrictions faced by exporters and non-exporters. The issue in this line of research is whether financial restrictions (or limited access to capital) could play a part in determining whether potential exporters can bear the costs of entry into the foreign market. Such research hence represents a synthesis of two distinct fields of literature; substantial literature on capital-market inefficiencies and studies on the effects of capital availability on firm performance. The latter line of research confirms the importance of financial constraints on firm investment, employment, decisions on research and development (see Bond in van Reenen 2005 for a survey of literature). Given the importance of capital markets for the day-to-day operations of firms as well as their medium- and long-term prospects, it is quite likely that they will significantly impact foreign-market operations as well. Enterprises that would, according to their primary characteristics (such as size, capital intensity, productivity, skill structure, etc.), be capable of breaking into the foreign markets could, if facing binding credit constraints, fail to make the grade, while their competitors not facing those restrictions could take full advantage.

The work done so far fully confirms the importance of capital availability for firms trying to enter foreign markets. Campa in Shaver (2002) on a sample of Spanish exporters and Greenaway, Guariglia in Kneller (2005) on UK data confirm the expected impact of financial constraints. In addition, Guariglia in Mateut (2005) (again using a sample of UK firms) find, that access to capital is far easier for firms active in the international markets than it is for firms limited to operations in the domestic market.

The structure of the paper is as follows. The second section includes a description of a simple model of exporting, firm heterogeneity and financial constraints. The third section presents a survey of empirics of exports and liquidity constarints, while the fourth section presents a brief analysis of the effects of limited access to capital markets on the exporting status of Slovenian manufacturing firms. The last section concludes.

Model of International Trade with Heterogeneous, Financially Constrained Firms

The remainder of this section is based on the work of Chaney (2005), whose analysis, in turn, relies on Melitz's (2003) seminal disposition on heterogeneous firms and trade. As was the case with Melitz's model, Chaney bases his approach on the assumption of monopolistic competition, where firms maintain some monopoly power in the market for their own variety of manufacturing products. A constant price-cost markup, heterogeneity of the marginal costs and fixed costs of entry into the foreign market ensure that, in case of existing liquidity constraints, only the most productive enterprises will be able to generate sufficient funds to allow entry into the foreign market. Meanwhile, the remaining firms that could potentially compete in international markets may never get the opportunity to operate abroad as they will not have access to the necessary funds.

We assume two types of goods are produced, a homogeneous good (q_c) produced under constant returns to scale (for instance agriculture) and a differentiated good ($q(x)$) manufactured under increasing returns to scale in a monopolistically competitive market structure (for instance manufacturing). Labor is the only factor in the production of both of the goods. Furthermore, Chaney assumes that the world consists of two countries[1] with populations L and L^*. Agricultural goods serve as a numeraire (the price of agricultural goods is set to unity), which implies that unit labor costs in the production of the homogeneous goods equal $1/w$ units of labor (or $1/w^*$ in the foreign country). If both countries retain production in the homogeneous goods sector, the wages in the two economies will equal w and w^*, respectively.

Consumer utility function is Cobb-Douglas, with a constant elasticity of substitution sub-utility function

$$U \equiv q_0^{1-\mu} \left(\int_{x \in X} q(x)^{\frac{\sigma-1}{\sigma}} dx \right)^{\frac{\sigma}{\sigma-1}\mu} \tag{1}$$

where μ is the elasticity of demand for the composite of differentiated varieties, σ is the elasticity of substitution between any two varieties of the differentiated product. At price $p(x)$ for a given variety, price index in the home country becomes:

$$P = \left(\int_{x \in X} p(x)^{1-\sigma} dx \right)^{\frac{1}{1-\sigma}} \tag{2}$$

A representative consumer has isoelastic demand for any of the varieties, whereby his expenditure on a given variety equals

$$r(x) = \mu w L \left(\frac{p(x)}{P} \right)^{1-\sigma} \tag{3}$$

where $\mu w L$ is the share of (country) income spent on differentiated goods. Fixed costs of entry into the foreign market are denoted with C_f, where they can be expressed in terms of units of labor as $w * C_f$. The existence of fixed entry will be revealed as the crucial assumption for most the implications Chaney draws from the model, although it is not required to show that financial constraints impact the decision to export. As has become common practice in related literature, we assume the existence of iceberg type transport costs[2]. The two countries have the same technology at their disposal, while marginal costs of production for individual firms are constant. Once production starts, firms pay the fixed cost of market entry C_d (those can include legal fees, marketing expenses, etc.), which are, measured in terms of domestic labor, equal to wC_d.[3] As was the case in Melitz (2003), upon entering a market a lottery assigns productivity levels $(x > 0)$ to individual firms. Costs of producing q_d units (or q_f units for exports) are therefore equal to

$$c_d(q_d) = q_d \frac{w}{x} + wC_d \quad in \quad c_f(q_f) = q_f \frac{\tau w}{x} + w * C_f \tag{4}$$

Simple profit maximization, given constant elasticity of demand, yields optimal domestic and foreign-market prices

$$p_d(x) = \frac{\sigma}{\sigma - 1} \frac{w}{x} \quad in \quad p_f(x) = \frac{\sigma}{\sigma - 1} \frac{\tau w}{x} \tag{5}$$

More productive enterprises will be able to offer lower prices in both home- and foreign-country markets, get larger market shares and generate higher profits in both markets.

$$\pi_d(x) = \frac{r_d(x)}{\sigma} - wC_d = \frac{\mu}{\sigma} wL \left(\frac{\sigma}{\sigma - 1} \frac{w}{xP} \right)^{1-\sigma} - wC_d$$

$$\pi_f(x) = \frac{r_f(x)}{\sigma} - wC_f = \frac{\mu}{\sigma} wL \left(\frac{\sigma}{\sigma - 1} \frac{\tau w}{xP*} \right)^{1-\sigma} - w * C_f \tag{6}$$

Based on the above equations the lower bound of productivity that will just allow the marginal firms to stay in the market (break-even level of productivity) can be determined:

$$\pi_d(\bar{x}_d) = 0 \quad in \quad \pi_f(\bar{x}_f) = 0 \tag{7}$$

It becomes clear that more productive firms (those with higher x) will be capable of taking over larger market shares both at home and abroad, while their less productive counterparts will not manage to bear the entry costs and will never enter into exporting. Firm with a productivity of at least $\bar{x}_f$ will export.

Chaney's (2005) contribution lies in the formalization of the liquidity constraints into the above framework, whereby he assumes that informational asymmetries between the markets cause financial restrictions only upon entry into the foreign markets. Credit-giving institutions (banks) do not have information on the conditions in the foreign markets and tend not to give credit to based on exporting revenues.[4] The only way for firms to become exporters is to generate their own funds and use them to finance foreign-market entry costs.

Furthermore, we will assume that each firm is endowed with its own random liquidity shock A (in terms of domestic labor wA). The pair (A,x) for every firm is drawn from a joint distribution with a cumulative distribution function $F(A,x)$ in $\Re^+ \times \Re^+$ space and $F_x(x) \equiv \lim_{A \to \infty} F(A,x)$ in $\Re^+$. At the same time, productivity and liquidity need not be correlated.

In order to export, a firm should have enough liquidity to cover the costs of market entry $w * C_f$. Part of that liquidity is generated from own profits, $\pi_d(x)$, while they also have access to additional liquidity, wA. Given the above, each exporter faces the following liquidity constraint

$$\pi_d(x) + wA \geq w * C_f \qquad (8)$$

More productive firms are able to generate higher profits at home and are therefore less dependent on external sources of finance. Productivity $\bar{x}(A)$ can be defined as the lowest productivity that enables a firm with liquidity A to cover the costs of entry into the foreign market. $\bar{x}(A)$ is defined as

$$\pi_d(\bar{x}(A)) + wA = w * C_f \qquad (9)$$

All firms, whose productivity falls below $\bar{x}(A)$, will therefore never manage to become exporters despite the fact that their productivity would suffice for profitable operation in the foreign markets. In cases when cost of entry $w * C_f$ is high enough even the most productive firms will find they need to supplement their liquidity with external sources of financing. Underdeveloped financial markets with expensive credit (or restricted access to funds) will limit the potential for international activity of domestic firms and severely damage their prospects for long-term growth. On the other hand, in countries with very developed credit markets, where credit (and liquidity) are available to a broader group of firms, the only criterion for entry into

foreign markets will be exporter productivity (as shown in equation 7, it has to exceed $\bar{x}(A)$).

Survey of Empirical Studies

The fact that this area of research has been somewhat overlooked and neglected in the mainstream trade and financial literature is best reflected in the number of empirical studies so far undertaken.

One of the first studies in the field of financial factors and international trade is due to Campa in Shaver (2002). In contrast to some other authors they do not explore the effect of financial constraint on exports, but focus on the impact of exports and exporting status on liquidity constraints instead. Their analysis attempts to answer two crucial questions. Given the diversification of revenue, which is afforded to exporters, the authors predict the income of exporting firms will be more stable causing their investment to be fluctuate less as well. Their second hypothesis deals with access of exporters to external sources of finance. Campa and Shaver find that exporting serves as a strong positive signal to creditors thereby loosening the constraint. The two hypotheses are tested on a sample of Spanish manufacturing enterprises between 1990 and 1998. The estimates fully confirm the above hypotheses. Namely, it turns out that in the period of observation Spanish exporters did in fact have much more stable cash flows and investments while at the same time had far easier access to capital than firms that did not export. Data on new exporters and firms that seized to export in the observed period offers additional confirmation of these findings.

Similar conclusions were reached by Guariglia and Mateut (2005) on a sample of UK manufacturing enterprises between 1993 and 2003. Their analysis of the relationship between financial indicators and sensitivity of investment shows that smaller, younger and riskier firms are more sensitive to different fluctuations in revenue and changes in financial indicators. Likewise, increased sensitivity of investment was observed for non-exporters and firms with no foreign ownership. It turns out that international operations notably reduce investment sensitivity and actually protect internationalized enterprises against financial constraints. Exporting (and other forms of foreign-market participation) functions as a key factor primarily for smaller, younger and riskier firms. The authors also note that early stages of exporting could provide scope for an active government policy, which could, by promoting exports, also influence faster economic growth and enhance the resilience of economic subjects.

Research of Greenaway, Guariglia and Kneller (2005) is somewhat closer to the theoretical framework presented earlier, as the authors explore the role of financial

restrictions on the decision to become an exporter. In contrast to Campa and Shaver (2002) they propose that the direction causality runs from financial constraints to export orientation and not vice versa. They base their hypothesis on the findings of trade theory with firm heterogeneity, but also implement the findings of a rich financial literature that offers answers on the functioning of capital markets and availability of funds. There have been countless analyses linking capital flow sensitivity to markable financial constraints. Liquidity constrained firms, which have limited or no access to external sources of financing (such as loans), will invest only when their own accumulation of funds is high enough. Investment of these firms will ultimately depend completely on the availability of their own funds. Evidence in support financing constraints hypothesis was amongst others reported by Kashyap et al. (1994), Carpenter et al. (1994, 1998) for the US., Guariglia (1999, 2000), Bond et al. (2004) for the UK, Konings et al. (2003) for Poland, Czech Republic, Bulgaria and Romania and Hoshi et al. (2003) for Japan.[5] Using the above framework Greenaway et al. (2005) stipulate that liquidity constrained firms will have limited or no access to foreign markets. Using a number of indicators of financial health and liquidity status the authors show that for financially restricted firms the probability of entering a foreign market is severely limited.[6] The authors see the results as confirmation of the fact that financially healthy firms find it easier to bear the sunk foreign-market entry costs. Smaller or financially weaker firms, which could potentially compete in the foreign markets, would benefit from government aid in gathering the start-up funds for both domestic and international markets. The role of such export subsidies is also emphasized by Zia (2005), who, using an example of Pakistani exporters, verifies the role of sources of credit on firm performance. Removal of subsidized export credit in the initial stages of exporting is shown to have caused a 29% reduction in firm exports.

In contrast to the studies mentioned so far, Blalock and Roy (2005) use the example of the Asian financial crisis and the accompanying currency devaluation of many of the countries in the region to show that, in contrast to theoretical predictions, there was no increase in exports. Firm-level evidence turns out to be far more complex that could be implied from the aggregate data. Substantial devaluation in Indonesia (South Korea, Malaysia, and Thailand) increased the number of first-time exporters; on the other hand, the existing exporters substantially reduced their sales abroad and in some cases ceased exporting altogether. Somewhat unexpectedly, the authors find no support for the proposition that these changes resulted from a worsening in financial health of exporting firms connected to the Asian crisis. The perception of 'economic constraints', with which firms met during the crisis, did not significantly differ between firms that were present in foreign markets and those that had to stop exporting. On the other hand, export activity was noticeably impacted by

such factors as foreign ownership, research and development activity, value of investments and funds devoted to educating the workforce.[7]

Evidence of Liquidity Constraints and Exporting in Slovenian Manufacturing

The data employed in the empirical analysis is firm-level data on Slovenian manufacturing firms active in the period between 1994 and 2002. The dataset at my disposal contains detailed accounting information as well as a fairly complete set of data on external trade and capital flows of individual firms. The original accounting data for the period between 1994 and 2002 was provided by AJPES (Agency of the Republic of Slovenia for Public Legal Records and Related Services) and has been enriched with the addition of trade and FDI data from the Statistical Office of the Republic of Slovenia (1994-2002). All data are in Slovenian tolars and have been deflated using the consumer price index (for data relating to capital stock) and a producer price index (at the 2-digit NACE industry level) for data relating to sales and added value.

Table 1: Description of the debt structure (debt to asset ratio) of firms included in the database

year	non-exporters	exporters		
	short-term debt to asset ratio	long-term debt to asset ratio	short-term debt to asset ratio	long-term debt to asset ratio
1994	.3305	.0587	.4019	.1165
1995	.3380	.0659	.4170	.1321
1996	.3435	.0933	.4236	.1218
11997	.3635	.0850	.4606	.1629
1998	.3661	.0963	.4538	.1673
1999	.3555	.1041	.4872	.1761
2000	.4042	.1018	.4966	.1785
2001	.4092	.1134	.5157	.2109
2002	.3224	.0939	.4155	.1043

Note: Data is given in terms of a ratio not percentages. The included ratio represents averages over all manufacturing enterprises with at least 10 employees in a given year.

For the purposes of this analysis I restrict the sample to manufacturing establishments (NACE rev.1 industries 15 to 37) with at least 10 employees in all

years of observable data. The reason for the restriction lies in the fact that accounting data for very small firms is highly unreliable and noisy. Table 1 describes the debt structure of firms included in the dataset. For illustrative purposes we split the sample into exporters and non-exporting firms.

Even a cursory glance at the data reveals that exporting establishments have noticeably easier access to capital. This, of course, does not imply anything about the direction of causality yet, but it does establish a clear relationship. Evidently both the share of short-term and long-term debt in assets of exporters is larger than in the case of non-exporters. Another feature of the data is that both short- and long-term debt to asset ratios are increasing in the period of observation for the two groups of firms with the notable exception of year 2002 which witnessed a substantial fall in the share of debt. Although illustrative, Table 1 does not provide a definitive description of the differences between the debt structure of exporters and importers. Using average values, namely, does not reflect all the characteristics of the distribution of the debt to asset ratios of exporters and non-exporters. With the aim of reflecting the full range of differences between the two groups of firms in terms of financing their assets we perform Kolmogorov-Smirnov tests of stochastic dominance to show whether the cumulative distribution function of exporters does dominate that of non-exporters in terms of the share short-/long-term debt to assets ratio. Table 2 presents the results of Kolmogorov-Smirnov tests of stochastic dominance performed across the sample period.

Table 2: Results of Kolmogorov-Smirnov stochastic dominance tests between non-exporting and exporting firms between 1994 and 2002

	Short-term debt to asset ratio	Long-term debt to asset ratio		
	D	P-value	D	P-value
non-exporters	0.2230	0.000	0.4138	0.000
exporters	-0.0008	0.997	-0.0012	0.992
KS statistic	0.2230	0.000 (0.000)	0.4138	0.000 (0.000)

Note: Kolmogorov-Smirnov statistic (KS statistic) reports the maximum distance between the cumulative distribution functions of non-exporting and exporting firms. Corrected KS statistic in parenthesis. Number of observations equals 10470.

As evident from Table 2, distribution function of exporting firms clearly dominates that of non-exporters in terms of both short- and long-term debt to asset ratio. As the Kolmogorov-Smirnov statistic reveals, the cumulative distribution function (c.d.f.) of non-exporters is situated to the left (in terms of debt to asset ratios) of the c.d.f. of exporters giving a positive maximum vertical distance between the

two. This confirms that the two distribution functions statistically differ from each other, moreover, it is evident that in terms of debt to asset ratios the distribution function of exporting firms clearly dominates that of non-exporters.

Table 3: Results of Kolmogorov-Smirnov stochastic dominance tests between firms that never exported and those firms that will start exporting in the following period

	Short-term debt to asset ratio		Long-term debt to asset ratio	
	D	P-value	D	P-value
non-exporters	0.1329	0.001	0.1979	0.000
future exporters	-0.0144	0.912	-0.0022	0.998
KS statistic	0.1329	0.001 (0.001)	0.1979	0.000 (0.000)

Note: Kolmogorov-Smirnov statistic (KS statistic) reports the maximum distance between the cumulative distribution functions of non-exporting and exporting firms. Corrected KS statistic in parenthesis. Number of observations equals 4405.

With the above stochastic dominance test we have managed to establish that the distribution functions of non-exporting and exporting firms significantly differ in terms of both short- and long-term debt to asset ratios. Clearly, exporting status is connected with the availability of firm credit, but the direction of causality remains unclear. Namely, we cannot yet claim that firms with better access to credit become exporters, nor that exporters themselves are enabled better access to new funds because of their exporting status.

In order to address the issue of causality we have to adopt a different empirical strategy. We will opt to limit the sample of firms to new exporters only. By looking only at those firms that start exporting within the period of observation, we explore the debt to asset ratio of firms one year before they actually commence with exporting and compare those with firms that never export. By reformulating the problem in such a fashion, we hope to see whether firms that are about to become exporters have better access to credit than those that never venture abroad. The results of additional Kolmogorov-Smirnov tests of stochastic dominance at time t on non-exporters and firms that are about to start exporting at time t+1 are presented in Table 3.

The results presented in Table 3 yield important additional information on the different access to liquidity between exporters and non-exporters. Evidently, the distribution of firms about to become exporters stochastically dominates the distribution of firms that never export in terms of the debt to asset ratio. This implies that even before an exporter starts to export it has better access to liquidity than non-exporters, which can serve as confirmation of the hypothesis that credit

constrained firms do not become exporters. Furthermore, the results are robust to the use of different specifications of debt (short-term and long-term debt to asset ratios yield very similar results). Of course, the above estimates do not yield definitive proof of the effects of credit constraints on exporting as there could be a number of other idiosyncratic factors (other than access to credit) determining the decision to export (such as productivity, firm size, domestic and foreign product-market competition, etc.). Only after controlling for all these factors would one be able to decipher the actual direction of causality between financial liquidity and exporting status.

Scope for future research

Given the limited number of empirical and theoretical studies in the field, there is substantial scope for further work both in terms of exploring new issues as well as continuing the work already started.

Thus far only a limited number of empirical studies of the field[8] have been undertaken, with data covering firms in just two countries (Spain and United Kingdom). First option for future research would therefore be to expand the analyses to a broader range of countries. In spite of some indirect evidence of the effects of financial markets on exporting activity (Van Biesebroeck 2005; Blalock and Roy 2005), an expansion of research to less developed markets would enable a relativization of the obtained results as well as allow researchers to isolate the actual effect of financial markets from other market-driven factors present in developed countries.

The work done so far is marked by a distinct duality of approaches as, on one hand, financial theorists in favor of the financial constraints hypothesis see activities in the foreign markets as a diversification of risk, which may result in easier access to credit. In this line of research exporting status is viewed as a factor impacting the way firms are financed. In contrast, foreign trade literature opts to view the causality between exporting and financial constraints in the opposite direction. Access to financing thus represents a necessary condition for entry into foreign markets, whereby financial factors represent only one of the factors determining a firm's potential international activity. Future work on exporting and financial constraints will have to focus on determining the actual direction of the causality. Whereas access financial markets determines exporting status at least to some extent, exporting status itself also factors in establishing the credit potential of the firm. The difficulty of resolving this issue is best reflected in the case of a similarly endogenous relationship between productivity and exporting, which is yet to be resolved after a decade of intense work by a number of researchers.

The dynamic nature of the relationship between financial indicators and the decision to enter into foreign markets also calls for a change in the theoretical approach to modeling credit markets and firm decisions. The model described in

section 2 would have to be altered to include the temporal dimension both in the choice of financing as well as the decision to export. Similar changes were introduced in models of international trade with firm heterogeneity by Bernard and Wagner (2001), Bugamelli and Infante (2003), Tybout (2003), as well as Greenaway et al. (2005), who established the theoretical framework for dynamic analysis of fixed entry costs. Their approach bases on a rational decision of market entry based on maximizing the expected net revenue flows of exporting. Expected revenue of a firm, depending both on the immediate decision on entering a foreign market as well as on the current export status, is therefore:

$$
\begin{aligned}
&\pi(e_t, x_{it}, y_t) + v_{it}, \text{if } EXP_{it} = 1 \quad and \quad EXP_{i(t-1)} = 1 \\
&\pi(e_t, x_{it}, y_t) - F + v_{it}, \text{if } EXP_{it} = 1 \quad and \quad EXP_{i(t-1)} = 0 \\
&0, \text{if } EXP_{it} = 0 \quad and \quad EXP_{i(t-1)} = 0
\end{aligned}
\tag{10}
$$

where π_{it} is the export profit, dependent on the exchange rate e_t, productivity x_{it}, y_{it} is the exogenous demand shifter and íit is a serially non-correlated error. EXP_{it} is an indicator variable, assuming a value of 1, when a firm exports and 0, when it sales only in the domestic market. Denoting the discount factor as δ, we get the Bellman equation, which describes the pattern of choices about the exporting status across time

$$
\begin{aligned}
V(e_t, x_{it}, y_{it}, v_{it}, EXP_{i(t-1)} = \max\{\pi(e_t, x_{it}, y_t) - (1 - EXP_{i(t-1)})F + \\
+ \delta E_t V(e_{t-1}, x_{it-1}, y_{t-1}, v_{it-1}, EXP_{it})\}
\end{aligned}
\tag{11}
$$

Firms will become exporters only if the following condition holds

$$
\begin{aligned}
\pi(e_t, x_{it}, y_t) - (1 - EXP_{i(t-1)})F + v_{it} + \delta\{E_t V(e_{t-1}, x_{it-1}, y_{t-1}, v_{it-1}, EXP_{it} | EXP_{it} = 1) - \\
E_t V(e_{t-1}, x_{it-1}, y_{t-1}, v_{it-1}, EXP | EXP_{it} = 0)\} > 0
\end{aligned}
\tag{12}
$$

The above equation only reflects the fact that exporters find it profitable to start exporting only if the current profits from exporting (net of fixed cost of entry) and a change in the net value of the firm are positive. Based on the equation for optimized behavior of potential exporters a reduced form of the above equation can be formulated. This simplified equation allows for empirical testing

$$
\begin{aligned}
EXP_{it} = 1, \quad if \ \beta X_{it} + \eta EXP_{it-1} + u_i + u_t + v_{it} > 0 \\
= 0, if \ the \ above \ condition \ does \ not \ hold.
\end{aligned}
\tag{13}
$$

If equation 13 were tested on firm level data, a positive and statistically significant coefficient η would indicate that there are significant fixed costs of entering a foreign market. The inclusion of additional financial variables into (13) would have to change the estimate of η (making it statistically insignificant), if entry costs and financial restrictions (such as access to credit) in fact measure the same entry barriers. In case where financially constrained firms do not export, the information that they did not export in the previous period should not increase the explanatory power of the model (Greenaway et al., 2005).

Conclusion

Improved access to firm-level databases and the introduction of new methods and techniques for microeconomic analysis have enabled a shift in the focus of empirical research from the analysis of the whole economy to actions of the individual firms and other market agents. International trade stands out amongst the areas of economic thought that has seized the opportunity fastest and which has, as result, witnessed an unprecedented expansion in both theoretical and empirical literature.

The primary issue that has implicitly (or even explicitly) dominated the literature on the relationship between exporting and firm characteristics has been the role of firm productivity in the decisions of firms to enter a foreign market as well as the effect of becoming an exporter on productivity. The importance of access to financial markets for the decision to start exporting has, until very recently, been somewhat overlooked despite a substantive literature on the role of financial constraints on firm characteristics. A limited number of theoretical and empirical studies have managed to stress the importance of the relationship between liquidity constraints and exporting in several mature market economies. Credit constraints have revealed themselves as an important determinant in the choice of entering a foreign market. Firms with limited access to credit, may irrespective of their size, productivity, capital intensity and other factors, not be able to break into the foreign markets as they will not be able to cover the fixed costs of market entry. Underdeveloped capital markets will therefore contribute to a less pronounced outward orientation of the economy, possibly leading to reduced competitiveness and lower economic growth.

Our analysis using Slovenian manufacturing data between 1994 and 2002 has reaffirmed the belief that exporting firms have easier access to credit compared with non-exporting firms. Interestingly, we found that even a year before a firm commences with exporting its debt to asset ratio is higher than that of firms that never export. This result favors the explanation that firms with better access to credit markets become exporters, while those with restricted financial liquidity cannot

manage to cover the initial entry costs of the foreign market and will not be able to become exporters.

In addition to providing a number of answers with respect to the correlation between financial liquidity and international activity, the literature reveals additional questions to be explored. Amongst the more intriguing issues still to be answered is the question of causality between access to capital and export status, as empirical studies consistently find support for both explanations of the relationship.

NOTES

[1] Henceforth foreign country variables will be denoted with an asterisk.

[2] This formulation of transport costs suggests that a fraction of the product 'melts away' on the way to the destination. Therefore, if transport costs equal τ, then only $1/\tau$ of the original product makes it to the final destination.

[3] Of course, existence of fixed costs allows producers to take advantage of scale economies ensuring that in equilibrium the number of firms will equal the number of varieties produced.

[4] Additionally, Chaney assumes that exporters cannot obtain funds in international markets because of incompleteness of international contracts.

[5] In recent years, there hs also been evidence to the contrary. Kaplan and Zingales (1997) and Cleary (1999) show that investments of financially healthiest firms are most sensitive to firm cash flows. Furthermore, Cummins et al. (2006) for the US. and Bond et al. (2004) for the UK show that, when alternative investment opportunities are properly accounted for, the sensitivity to cash flows disappears completely.

[6] In addition, other balance sheet variables also turn out to be important.

[7] Van Biesebroeck (2005) offers similar findings on the impact of financial factors on export activity. He finds that for Sub-Saharan Africa financial factors did not have a significant impact on firm export activity.

[8] I use a very narrow definition of the field in this case.

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