External finance, collateralizable assets and export market entry

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Abstract

This paper examines the relationship between collateralizable assets and export market entry. The ability to finance the sunk entry costs associated with an international expansion is one of the factors determining whether or not a firm starts engaging in export activities. Using a large panel of Swedish manufacturing firms over the 1997-2006 period, a firm's access to external finance is proxied by its degree of collateralizable assets. The main finding of the paper is that tangible assets, which can be pledged as collateral in loan applications, constitute an important determinant of export market entry. However, accounts receivable and inventories as an alternative means of facilitating the access to external finance, is not found to influence the entry decision. Previous literature has made little attempt in explaining why future exporters might encounter difficulties in obtaining external finance. Therefore, the novelty of the paper and its contribution to the existing literature on financially constrained exporters is that it investigates an underlying reason to why firms might experience difficulties in financing an export market entry through external finance.

1. Introduction

Growth and entry into new export markets often require capital, both externally and internally generated. Absent perfectly functioning capital markets, external finance may be expensive, if available at all, because of adverse selection and moral hazard problems. These problems are accentuated when assets have low collateral value (Carpenter and Petersen, 2002).[1] Many manufacturing firms, without sufficient amounts of tangible assets that can be employed as collateral in loan applications, might find it difficult to persuade bank officials to contribute with export finance. Hence, even though the expected benefits from entering an export market by far exceed the sunk entry costs, firms with assets of low collateral value and without sufficient amounts of retained earnings to self-finance an export market entry will find it difficult to embark on international ventures. Such export-finance gaps can potentially hinder firms in their internationalisation strategy. Since access to export markets is essential for continuous growth, especially for small open economies like Sweden, the magnitude of the underexploited export possibilities due to financial constraints needs a closer investigation.

This paper will try to explain an underlying reason to the financial obstacles firms face when wanting to engage in international export activities. The specific research question will be to investigate the role of collateralizable assets in firms' decision to enter export markets. It is hypothesised that a shortage of collateralizable assets is an obstacle for firms when trying to get access to external finance for an international expansion. I will employ Swedish data on export activities and collateralizable assets within the manufacturing sector in a panel setting spanning the years 1997-2006.

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1 The International trade centre, a joint agency of the WTO and UNCTAD, lists a number of constraints for firms in the decision to enter export markets. One of these relates to financing: *"firms require the ability to finance operating activities on the basis of an overdraft against accounts receivable. Commercial banks may not offer this means of financing. They may rely solely on physical collateral (despite the willingness of central banks to accept accounts receivable as collateral)".*

The paper contributes to the export-finance literature in the following ways. The problem of asymmetric information between lender and borrower necessitates pledgeable collateral, which previously hasn't been treated to a satisfactory degree in the literature on financial constraints and export market entry. The relatively new literature on the relationship between financial variables and firms' export decisions has almost exclusively been focusing on direct measures of the financial constraints exporters might experience. Hence, there has been no paper investigating the underlying reasons to why future exporters encounter difficulties in obtaining the funds needed to begin exporting. As the credit markets today are somewhat in turmoil, the importance of collateral requirements for loan approvals probably plays an even more accentuated role than before. Furthermore, since two recent studies, Greenaway et al. (2007) and Bellone et al. (2008), conclude differently on whether or not financial constraints act as a barrier to export market entry, new evidence on Swedish firms will hopefully help sorting out the discrepancies between these two papers.

The main empirical finding in the paper is that a high degree of collateralizable assets, implying better access to external financing, is beneficial for export market entry. The results are driven by tangible assets as collateral whereas the intangible assets of accounts receivable and inventories seem to be of no importance as determinant of export market entry.

The remainder of the paper is organized as follows. Section 2 reviews the literature on financially constrained exporters and collateralizable assets. It also describes the hypothesis to be investigated in the empirical analysis. Section 3 describes the data whereas section 4 and 5 present the empirical specification and its results. In section 6 the results are tested for robustness using alternative sample restrictions and variables. Finally, section 7 concludes.

2. Literature review and hypothesis

Financial development and its implications for economic growth has for a long period of time been a subject of study in the economic literature. On an aggregate level, King and Levine (1993) find evidence that financial development spurs growth. They use a variety of indicators of financial development that all seem to be strongly and robustly correlated with growth.[2] On an industry level, Rajan and Zingales (1998) find evidence that industries, which are heavily dependent on external finance, benefit more from financial development than other industries. These papers are but a few that investigate the finance-growth nexus. Most papers within this field find a positive impact of financial development on growth.

Since the quality of the financial system has been found important, one might wonder through what channels the financial system impacts economic growth. Having access to funding of entrepreneurial projects and other investments is of key concern for most firms wanting to grow. However, due to asymmetric information and other market frictions about expected benefits of new projects in new markets, the cash-constrained firm might not receive the bank loans it needs to enter export markets.[3] Tannous (1997) confirms that this is a problem of severe magnitude in questionnaires to export financing executives among Canadian firms. Due to such market frictions, projects with positive net present value might be disregarded. Beginning with Fazzari et al. (1988) on the effects of financial constraints on corporate investment, a large body of literature has followed that, contrary to the Modigliani-Miller theorems, establishes that firms

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[2] Later studies have explored more alternative proxies for financial development. To mention a few, La Porta et al. (2002) focus on the degree of private ownership and Levine and Zervos (1998) construct measures of stock market development as proxies of financial development.

[3] Certainly, many firms have to make sometimes costly investments in, for instance, machinery and equipment prior to export market entry. Alvarez and Lopez (2005) show significant results for such investments both one and two years prior to export market entry. Alongside with export entry financing, such investments are to some extent financed through external finance. Hence, collateral requirements by lending institutions are from early on the reality for firms trying to expand their activities to a larger scale.

with more cash and less debt burdens invest more.[4] Hence, the main finding of this literature is that financially constrained firms invest less.

In order to enter export markets a firm has to incur sunk entry costs. Kneller and Pisu (2007) group such entry barriers into three different categories. Network and marketing barriers are costs associated with obtaining information about the export market, building relationships and marketing. Procedural and exchange rate issues deal with differences in legal, financial and tax system. In some destination countries, tariffs or corruption serve as major obstacles to exports. Exchange rates also belong to this group of export costs. The third type of entry barrier is cultural. Language barriers and other cultural differences belong to this group. Most of these sunk costs can be seen as a form of investment and the ability to afford them is therefore subject to the influence of financial variables.[5] The theoretical literature on sunk costs in export market entry was pioneered in papers by Dixit (1989), Baldwin (1988) and Baldwin and Krugman (1989). Their models predict that hysteresis in export market participation is the cause of sunk entry costs. Examples of empirical studies on the importance of sunk entry costs for firms' export market participation are Campa (2004), Das et al. (2007), Bernard and Jensen (2004), Bernard and Wagner (2001) or Roberts and Tybout (1997).

The theoretical literature on financially constrained exporters started with Chaney's (2005) extension of the Melitz (2003) model of trade with heterogenous firms. Melitz (2003) modelled entry into export markets as a way to sort out the most efficient firms. Chaney's (2005) extension predicts that only the most profitable firms can become exporters since only they are able to generate sufficient liquidity to handle the sunk export market entry costs. Consequently, for less productive firms, financial constraints make exporting impossible, despite the prospects

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[4] However, Kaplan and Zingales (1997) criticize the use of investment cash-flow sensitivity, employed in most of this literature, as a measure of financial constraints.

[5] One should keep in mind that the sunk costs are not constant across markets and destination countries. The closer the export destination country is in terms of geographical distance, language, culture etc., the smaller are usually the sunk costs associated with export market entry.

of a profitable international expansion. Hence, a constraint on access to external financing can, particularly for firms without readily collateralizable assets, lead to otherwise profitable export markets being unexplored.

An empirical linking of the sunk entry costs to financial health is done in Greenaway et al. (2007) where it is shown that export starters display low liquidity and high leverage. This is argued to be a consequence of the sunk costs incurred to enter export markets. However, they do not find any ex-ante self-selection of financially strong firms into export market participation. Instead of the simple liquidity and leverage measures employed in Greenaway et al.'s paper, Bellone et al. (2008) experiment with multidimensional indexes of the access to external finance. Contrary to Greenaway et al. (2007), they find that financial constraints do act as a barrier to export participation.

Further evidence on the existence of an export-finance link is found in Zia (2008). In a natural experiment setting, he combines an exogenous shock in subsidized credit to exporting firms in Pakistan with firm-level data on exports. He finds that the removal of such credit leads to a significant decline in exports. Hence, financial constraints do seem to influence firms' presence in export markets. [6] Similar findings are found in Berman and Héricourt (2010) where firms' export market entry to a large extent is found to be influenced by the access to finance.

There are, to the best of my knowledge, no studies that try to differentiate firms in terms of access to collateralizable assets as a means to externally finance an export market entry. The literature does not to a satisfactory degree integrate the asset side of firms' balance sheets into the measures of financial constraints. Since access to collateral is an underlying determinant of the possibilities to receive external finance, an incorporation of such variables into the

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6 On should bear in mind that the Zia (2008) paper never addresses how prospective entry of new firms into export markets is affected by the policy change.

estimations on propensities to become exporters would advance the understanding of the mechanisms behind the possible link between finance and export behaviour. There are, however, some papers that touch upon these issues. In their questionnaire-based research, Cressy and Olofsson (1997) report the financial conditions for Swedish SME's. They conclude that lack of collateral and uncertainty of the revenue stream make firms more prone to rely on retained earnings to finance investments. Berger and Udell (1998) argue that lenders more often will require riskier borrowers to secure their loans. Furthermore, activities that increase the riskiness of the firm from the lender's perspective, such as export market entry, make the collateral requirements for external finance even more accentuated. All together, this suggests that firms with assets of low collateral value should face substantial difficulties in finding external finance for an international expansion.

Collateralizable assets

One of the Modigliani and Miller (1958) theorems states that capital structure doesn't affect the market value of the firm. However, in later work[7], the existence of a pecking order theory between different sources of capital has questioned the irrelevance theorem of Modigliani and Miller's. Since external finance is associated with information asymmetries, a borrower is often required to pledge collateral in order to access external financial markets. An excessive interest rate could sometimes make a lender willing to provide external finance despite absence of sufficient amounts of collateralizable assets. However, since the pecking order theory states that internal finance is cheaper than external finance, collateral can be seen as a means to reduce the premium on external finance.[8]

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[7] See for instance Myers (1984).

[8] Kiyotaki and Moore (1997) discuss the importance of securing debt with collateral as a means to lower borrowing costs. However, the decision to lend is based not only on collateral. Also two other factors, namely the borrower's expected future revenue streams and past relationships between lender and borrower have an impact on whether or not credit is granted. Due to availability of data, only collateralizable assets will be used in the analysis further down.

From the lender's perspective, a collateral is an asset that readily could be liquidized once a borrower defaults. Among a firm's tangible assets, the preferred source of collateral is such assets that have the most stable value over time. Since the prices of land and real estate are stickier than many other tangible assets, these are the first hand choice of many financial institutions.[9] However, many firms lack such assets. In order to obtain financing at reasonable prices they have to pledge a different kind of collateral. Machinery and equipment are such a secondary source of collateral. These kinds of tangible assets are inferior to land and real estate as it is more difficult to estimate the value of these assets and sell them on secondary markets. A third source of collateral is accounts receivable and inventories. In a sample of firms, Berger and Udell (1995) find that this type of collateral is the most frequent choice among small firms. In their data, 53 percent of all credit to small firms was secured and more than half of these credits with accounts receivable and inventories.

Entering new markets is associated with sunk costs that have to be financed. Firms with better access to external financial markets should, all else equal, find it easier to overcome such costs. Since most external finance requires some degree of collateral it is hypothesized in this paper that firms with assets of high collateral value and better access to external finance are more prone to enter export markets. Hence, a firm's degree of collateralizable assets is considered a proxy for access to external finance. For many firms, external finance constitutes an important source of funds in affording the sunk costs associated with export market entry.

3. Data

Dataset

The data is from Statistics Sweden and contains firm-level data on export activities and financial data. Export information on value, weight and industry codes is available for the years

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[9] Gan (2007) discusses tangible assets such as land and real estate as the primary source of collateral.

1997-2006.[10] Financial data from income and balance statements are compiled for the same time period. An identity number is attached to each firm, which enables a merging of the two sources of data. Furthermore, since some export data, especially to the European Union, is not reported in low quantities, the final dataset does only take firms with ten or more employees into consideration. Also, firms with no information on financial data were removed from the dataset.

Key variables

Export entry

Exporters are identified by having a positive weight and/or value of their exports during a specific year. Since the purpose of the paper is to investigate how the degree of collateralizable assets influence the decision to enter export markets, I will use a sub-sample of firms that have an actual possibility to enter export markets a certain year. For each year this includes those firms that don't export and those that start exporting. Therefore, the sub-sample includes two types of firms, those that started exporting and those that never exported during the time window of study. These firms are called export starters and non-exporters respectively. The purpose of using this sub-sample is to study how collateral affects the entering decision. Therefore, continuous exporters that exported throughout the whole time period are excluded. One should bear in mind that there is no knowledge about firms' export behaviour prior to 1997. Hence, the only restriction on export starters is that they have entry into export markets occurring during 1998-2006.[11]

Collateral

Since exporters tend to be larger than non-exporters (see, for instance, Bernard and Jensen, 2004), size has to be controlled for. However, since various size measures such as number of

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[10] An export market expansion is naturally subject to the influence of demand on world markets. The IT-boom and the subsequent crash the years around the new millennium clearly must have influenced the decisions of many firms. This should be acknowledged when discussing the representativeness of the time period of study.
[11] It is not possible to detect entry in 1997. Hence, all firms included in the sub-sample for 1997 are non-exporting firms that year.

employees or the firm's total assets are correlated to level measurements of different balance sheet assets, ratios that put the collateralizable assets in relation to total assets will be used. Hereby, problems of collinearity in estimating causal effects are reduced.[12] The main collateral variable is the ratio of land and real estate in total assets. As argued, a high ratio means that a borrower can pledge a large part of its assets as collateral, which would facilitate access to external finance.

Some firms don't possess land or real estate. For such firms, other types of collateralizable assets matter for a lender that is about to grant external finance. For the subset of firms that have no land or real estate assets, the importance of machinery and equipment or accounts receivable and inventories in total assets will be employed as collateral variables. Even though tangible assets are the preferred choice of collateral for most lenders, the complexity of machinery and equipment could sometimes make it difficult to estimate the true value of this type of tangible assets. Hence, under such circumstances accounts receivable and inventories could be an alternative source of collateral.

Debt dependence

Having lots of collateralizable assets that already are subject to securitization in existing loans are of limited use as security for firms trying to obtain export finance. Therefore, the empirical analysis will include variables that indicate how bank-dependent a firm is. In the export-finance literature, the leverage ratio of short-term debt to current assets is the predominant measure of how levered a firm is (see for instance Greenaway et al., 2007 or Bellone et al., 2008). Along with this measure of leverage I will also employ the ratio of total debt to equity. This alternative leverage measure is supposed to capture

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[12] Using level estimates of the collateral assets and controlling for total assets as a size measure yields similar results to what is presented further down. Binary variables indicating whether a firm has access to the collateralizable asset of interest or not was also employed with similar results as those presented in the results section.

a firm's overall indebtedness. Hence, in essence it is nothing but a variable on firms' capital structure. By controlling for leverage in the estimations, I am able to better capture the effects of collateralizable assets as a means to facilitate external financing of export activities.

Descriptive statistics

Table 1 reports the means, medians and standard deviations of the variables included in the regressions.[13] The table is cut in three parts. Panel A shows the descriptive statistics for the total sample, whereas panels B and C show the sample characteristics of non-exporting firms and firms with export market entry respectively.[14] The average non-exporting firm tends to have somewhat less of the collateral variables compared to firms that enter export markets during the 1997-2006 period. However, the average differences are small. Firms that decide to enter export markets are more productive and have less leverage than firms choosing to supply only the domestic market. As reported in many studies, firms with export entry are also larger and generate more cash flow than non-exporting firms on average. Finally, firms entering export markets belong to company groups, especially multinational groups, more often than non-exporting firms.

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[13] Deflation of variables is made using the consumer price index holding 2005 as base year. Data on CPI is from OECD.

[14] Running T-tests on differences in sample means between panels B and C shows that all differences between these two are significant at the 10 percent level except for the variables on collateral$_{ME}$ and foreign MNE.

Table 1. Descriptive statistics

Panel A

Variable	obs	mean	median	std. dev.
Collateral$_{LR}$	21349	0,09	0	0,13
Collateral$_{ME}$	21349	0,15	0,11	0,33
Collateral$_{AI}$	21349	0,58	0,58	0,37
No of employees	21349	26	15	83
Labor productivity	21349	11817	6318	59542
Leverage1	21341	0,70	0,49	4,35
Leverage2	21349	0,73	0,76	0,43
Cash flow	21349	2203	1019	34880
Swedish group	21349	0,35	0	0,48
Swedish MNE	21349	0,08	0	0,27
Foreign MNE	21349	0,04	0	0,18

Panel B

Variable	obs	mean	median	std. dev.
Collateral$_{LR}$	11806	0,08	0	0,13
Collateral$_{ME}$	11806	0,16	0,11	0,15
Collateral$_{AI}$	11806	0,57	0,57	0,21
No of employees	11806	22	14	38
Labor productivity	11806	9376	5689	23284
Leverage1	11799	0,75	0,51	4,19
Leverage2	11806	0,75	0,76	0,52
Cash flow	11806	1451	819	13376
Swedish group	11806	0,34	0	0,47
Swedish MNE	11806	0,06	0	0,24
Foreign MNE	11806	0,03	0	0,18

Panel C

Variable	obs	mean	median	std. dev.
Collateral$_{LR}$	9543	0,09	0,02	0,13
Collateral$_{ME}$	9543	0,15	0,11	0,46
Collateral$_{AI}$	9543	0,59	0,60	0,50
No of employees	9543	31	17	117
Labor productivity	9543	14837	7298	85114
Leverage1	9542	0,63	0,46	4,53
Leverage2	9543	0,72	0,76	0,29
Cash flow	9543	3133	1333	49990
Swedish group	9543	0,37	0	0,48
Swedish MNE	9543	0,10	0	0,30
Foreign MNE	9543	0,04	0	0,19

Notes: Panel A reports the descriptive statistics for the whole sample of firms. Panel B is for firms that never export during 1997-2006 and Panel C contains firms entering export markets during this period. The subscripts on the collateral variables stand for land and real estate, machinery and equipment and accounts receivable and inventory. Leverage 1 is the firm's ratio of short-term debt to current assets and Leverage 2 stands for the ratio of total debt to equity.

4. Empirical methodology

The purpose of this paper is to examine an underlying reason to the financial constraints firms might experience when considering an international expansion. In the estimations it is investigated whether those firms entering export markets have an ex-ante advantage in terms of collateralizable assets compared to non-exporting firms. The entry decision of firms is regressed on the degree of collateralizable assets and other controls. Since it is the decision to start exporting that is under investigation, firms that continuously exported during the sample period are excluded.[15] Consequently, the data to examine consists of firms that never export or that start exporting during 1997-2006. Only those observations where there is a possibility to enter are included since it is the characteristics of entering firms vis-à-vis non-entering firms that are the subject of investigation. Hence, the data used in the empirical analysis consists of an unbalanced panel where the precondition for a firm to be included in period t is that it had no exports in period $t-1$, i.e. there is an entry possibility in period t. Since there is no information on whether an observed first entry really is a first encounter with export markets, no restriction is put on the number of entries a firm can have during the sample period. However, in the robustness tests further down, the sample will be restricted so as to allow only one entry per firm. But for now, all years with entry possibilities during the sample period are included.

As the dependent variable is dichotomous, a probit approach will be used. The use of a probit estimator is in line with previous literature on financial constraints and export market participation (see Greenaway et al., 2007 or Bellone et al., 2008). Two models are used. First, a pooled cross-sectional probit model is estimated. This model ignores the panel nature of the data. The results from using the pooled probit regressions are presented as model 1 in the tables. Clustering the standard errors allows the observations to be independent between firms, but not

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[15] The categorization of firms into continuous exporters, non-exporters and export starters are of course only an approximation since there is no data on exporting behaviour for the period before 1997. For instance, non-exporting firms might have had exports prior to 1997. Therefore, the categories only reflect how the firms are perceived during the sample period 1997-2006.

necessarily within the same firm. However, to better exploit the panel nature of the data to control for unobservable individual heterogeneity, a random-effects panel probit estimator is used in model 2.[16] This model reports an additional estimate, rho. This coefficient may be thought of as representing the proportion of the observed total variance of the error term accounted for by unobserved heterogeneity. A test of the random effects model against the pooled probit model evaluates the hypothesis of rho being equal to zero.

The random effects model treats the firm-specific unobserved effects as uncorrelated with the regressors. The error term v_{it} can be decomposed as

$$v_{it} = a_i + u_{it}$$

where a_i denotes firm-specific unobservable effect and u_{it} is the random error. The random effects probit model treats a_i as random, which might not be a plausible assumption. However, the alternative of using a conditional fixed-effects logit estimator would have the disadvantage of dropping all observations for which the dependent variable is always 0 or 1 (Greenaway et al., 2007). Since the comparison sample is the group of non-exporting firms with constant zeros as dependent variable, this whole sample would be dropped using the fixed effects logit.[17] Therefore, a probit model is the preferred binary response model in this case. Both the pooled probit and the random effects panel probit models presented further down are estimated with partial effects at sample mean unless stated otherwise.

There have been several attempts to investigate self-selection of firms into export markets. When empirically investigating the circumstances surrounding export market entry, one must

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[16] Unobserved heterogeneity arises since unobserved effects not included among the regressors are likely to affect firms' export decisions.

[17] Despite this drawback, the specifications will also be estimated using the fixed effects panel logit estimator. This is done in order to evaluate if collateralizable assets matter for the timing of export market entry for firms belonging to the sample of export entering firms.

control for a set of firm characteristics. Larger and more productive firms are more common among export starters, see Wagner (2007) for a survey on the topic or a recent study on Swedish data by Eliasson et al. (2011). Due to the costs associated with an export market entry, the financial health of a firm is proxied by leverage measures and generation of internal funds similarly to Greenaway et al. (2007). Together with a set of control dummies the main reduced-form specification looks as follows[18]:

$$Entry_{it} = a_0 + a_1 Col_{it-1} + a_2 Size_{it-1} + a_3 Lp_{it-1} + a_4 Lev_{it-1} + a_5 Cf_{it-1} +$$

Ownership structure dummies + industry dummies + time dummies + v_{it}

(1)

The subscript i indexes firms and t time. $Entry_{it}$ is a dummy variable taking the value 1 if firm i entered export markets in year t and zero otherwise. Col_{it-1} is the main variable of interest. It represents the degree of collateralizable assets available to the firm. Formally it is defined as the share of land and real estate in total assets when the total sample is used and as the share in total assets of either machinery and equipment or accounts receivable and inventories when the sample is restricted to contain firms without land or real estate. $Size_{it-1}$ and Lp_{it-1} represent the logarithm of the number of employees and labor productivity respectively.[19] Lev_{it-1} stands for leverage ratio. This is defined as either the firm's ratio of short-term debt to current assets or the ratio of total debt to equity. To control for the ability to self-finance, a cash flow variable, Cf_{it-1}, is included.[20] Since much exports is conducted within large company groups, three dummies on ownership structure control for whether the firm belongs to a Swedish domestic group of

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[18] In table A1 of the Appendix, pairwise correlations for the manufacturing firms used in the sample are reported. Except for the relatively high correlation between labor productivity and the size and cash flow measures, most variables are nearly uncorrelated. Hence, the problem of multicollinearity is of limited scale.
[19] Labor productivity is measured as value added per employee. In the estimations, the non-positive values on value added per employee were exchanged for 0.1 to enable logarithms.
[20] The cash flow variable represents the operating profits net depreciation in period $t-1$.

companies, a Swedish multinational or a foreign multinational. Having affiliates in foreign countries are expected to reduce some of the barriers associated with an export market entry.[21]

In order to capture the ex-ante financial health of firms before deciding on entering export markets, all time-varying regressors are lagged once.[22] Industry dummies are included to control for fixed effects across industries. Time dummies control for business cycle effects.

As the main hypothesis is that a high degree of collateralizable assets positively affects firms' chances of receiving external finance, the expected sign of the coefficients on the collateral variables is positive. The size of firms, here represented by the number of employees, has been found to be a robust determinant of exporting behaviour. Bigger-sized firms are expected to have a higher propensity to start exporting. Numerous papers have established a causal link from productivity to exports.[23] Hence, the labor productivity coefficient should show up with a positive sign. When it comes to the leverage ratio, firms that have a high ex-ante degree of debt are assumed to encounter more difficulties in obtaining external financing than firms with lower leverage ratios. Consequently, the coefficient on the leverage ratio variable is expected to have a negative sign. The other side of a firm's financing coin is the ability to self-finance its activities. Hence, the coefficient on the cash flow variable is expected to come out with a positive sign. Among the dummies on corporate ownership structure, it is believed that especially the dummy indicating a Swedish multinational will be positively related to export market entry. This is because much of these firms' exports are conducted within the company group itself.

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[21] This is especially true when the affiliates are situated in the prospective export market destination but some of the foreign market experience can many times also be transferable to other export market destinations.

[22] Lagging the independent variables is in line with previous literature. See for instance Roberts and Tybout (1997), Bernard and Jensen (2004) or Greenaway et al. (2007). However, for robustness purposes, contemporaneous effects of the independent variables and a different lag structure with the independent variables lagged three years instead of one was also explored without any changes in the core results on the collateral variables in tables 2-4 further down.

[23] See Wagner (2007) for a survey of the literature. For Swedish data, the recent study by Eliasson et al. (2011) confirms such a link from productivity to exports.

5. Results

Table 2 shows the results from the pooled probit and random effects panel probit estimations. The whole sample of firms with entering possibilities is used in this table.[24] The collateral variable is the ratio of land and real estate to total assets. In both the pooled probit and the random effects panel probit, the coefficient of the collateral variable is positive and significant. Hence, firms with assets skewed towards land and real estate show a higher likelihood of entering export markets. This confirms the hypothesis set up earlier that firms with higher degrees of collateralizable assets face less restrictions on their internationalization strategies.[25]

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[24] When taking export destinations into consideration in sample splits on five export entry destination regions, similar results in terms of significance of the collateral coefficients are found for most regions. The regions are the Nordic countries, Poland and the Baltic countries, G8 countries, remaining EU countries and lastly the rest of the world.

[25] Using the fixed effects panel logit estimator does not lead to significant results on the collateral variable. These results throw some doubts on the probit estimations. However, the removal of all firms without export market entry during the studied time period indicates that the logit approach investigates something different from what the probit estimations do. Since the number of observations is reduced from over 15.000 down to 6.000, the logit results only indicate that collateralizable assets don't influence the timing of export market entry for firms entering export markets during the 1997-2006 period. They do not really tell if firms entering export markets differ from non-exporting firms depending on access to readily collateralizable assets. Hence, as noted above, the advantages of the probit approach makes it the preferred model in the estimations that follow.

Table 2. Estimates using land and real estate as collateral

Dependent variable: Export entry dummy												
	Model 1						Model 2					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Col_{i(t-1)}$	0.319***	0.345***	0.307***	0.280***	0.336***	0.303***	0.379***	0.416***	0.362***	0.339**	0.401***	0.372***
	[0.106]	[0.106]	[0.108]	[0.107]	[0.108]	[0.107]	[0.138]	[0.138]	[0.139]	[0.139]	[0.140]	[0.140]
$Size_{i(t-1)}$	0.197***	0.175***	0.198***	0.188***	0.167***	0.159***	0.301***	0.269***	0.294***	0.284***	0.252***	0.243***
	[0.023]	[0.024]	[0.025]	[0.025]	[0.026]	[0.026]	[0.029]	[0.030]	[0.031]	[0.031]	[0.033]	[0.033]
$Sw\_group_{i(t-1)}$		0.047			0.049	0.047		0.088**			0.090**	0.088**
		[0.031]			[0.031]	[0.031]		[0.039]			[0.039]	[0.039]
$Sw\_mne_{i(t-1)}$		0.165***			0.200***	0.183***		0.223***			0.265***	0.247***
		[0.054]			[0.054]	[0.054]		[0.068]			[0.068]	[0.068]
$For\_mne_{i(t-1)}$		0.081			0.102	0.087		0.126			0.157	0.137
		[0.081]			[0.082]	[0.081]		[0.097]			[0.098]	[0.098]
$Lp_{i(t-1)}$			-0.006	-0.001	-0.001	0.004			0.000	0.006	0.005	0.011
			[0.011]	[0.011]	[0.011]	[0.011]			[0.013]	[0.013]	[0.014]	[0.014]
$Cf_{i(t-1)}$			0.011**	0.013***	0.012**	0.013***			0.013**	0.014**	0.014**	0.015***
			[0.005]	[0.005]	[0.005]	[0.005]			[0.005]	[0.005]	[0.005]	[0.005]
$Lev1_{i(t-1)}$			-0.061**		-0.067**				-0.068***		-0.073***	
			[0.026]		[0.028]				[0.020]		[0.021]	
$Lev2_{i(t-1)}$				-0.009		-0.006				-0.059		-0.052
				[0.025]		[0.024]				[0.053]		[0.052]
Observations	15910	15910	15908	15910	15908	15910	15910	15910	15908	15910	15908	15910
Rho							0.38	0.38	0.38	0.38	0.38	0.38

Notes: Model 1 is the pooled probit model and Model 2 represents the random effects panel probit estimations. Standard errors are in brackets. In the pooled probit specifications, the standard errors are corrected for clustering. Industry and time dummies are included in all specifications. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

The control variable on size is positive and significant. This is in line with previous literature findings on export starters being predominantly larger firms. The coefficient on labor productivity is insignificant, which partly can be due to the relatively high correlation between size and labor productivity (see the correlation matrix in table A1 of the appendix). The leverage ratio of short-term debt to current assets comes out negative and significant. This reflects the fact that short-term financial obligations restrict firms' possibilities to expand internationally. Capital structure on the other hand has no significant influence on export entry.

In the previous table all firms were included. However, since some firms lack this paper's main variable proxying for collateralizable assets, table 3 and 4 show the estimations for the sub-sample of firms without land or real estate assets. Two alternative sources of collateral for such firms are investigated. The share in total assets of machinery and equipment are explored in table 3 and the share of accounts receivable and inventories in total assets is the subject of study in table 4. Investigating both of these is to some extent redundant since they are quite correlated.[26] However, the investigation of non-tangible assets as collateral has two motivations. First, as pointed out in a footnote earlier, allowing borrowing secured by accounts receivable and inventories could facilitate export entry for firms without sufficient amounts of tangible assets. Second, this means of financing has been found important for smaller firms in e.g. Berger and Udell (1995). We see that the coefficient on the first source of collateralizable assets is positive and significant whereas the second is not. Hence, as both table 2 and 3 show, it seems as if a high degree of tangible assets are a determinant of export market entry. As pointed out above, table 4 indicates that accounts receivable and inventories are of limited use when firms apply for external export financing. This is due to the fact that lending institutions don't attach a high collateral value on such assets.

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[26] See the correlation matrix to find a correlation of about 0.76.

Table 3. Estimates using machinery and equipment as collateral

Dependent variable: Export entry dummy												
	Model 1						Model 2					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Col_{i(t-1)}$	0.557***	0.579***	0.585***	0.557***	0.611***	0.574***	0.595***	0.627***	0.612***	0.598***	0.648***	0.624***
	[0.132]	[0.132]	[0.136]	[0.134]	[0.137]	[0.135]	[0.169]	[0.169]	[0.170]	[0.172]	[0.170]	[0.171]
$Size_{i(t-1)}$	0.128***	0.100***	0.128***	0.119***	0.087**	0.082**	0.218***	0.179***	0.209***	0.201***	0.154***	0.150***
	[0.035]	[0.037]	[0.037]	[0.036]	[0.039]	[0.038]	[0.044]	[0.046]	[0.046]	[0.046]	[0.048]	[0.048]
$Sw\_group_{i(t-1)}$		0.055			0.057	0.053		0.083			0.085	0.081
		[0.046]			[0.046]	[0.046]		[0.057]			[0.057]	[0.057]
$Sw\_mne_{i(t-1)}$		0.248***			0.291***	0.266***		0.314***			0.368***	0.344***
		[0.077]			[0.078]	[0.078]		[0.095]			[0.096]	[0.096]
$For\_mne_{i(t-1)}$		-0.050			-0.020	-0.047		-0.020			0.022	-0.015
		[0.104]			[0.106]	[0.104]		[0.128]			[0.128]	[0.129]
$Lp_{i(t-1)}$			0.006	0.008	0.014	0.015			0.014	0.016	0.023	0.025
			[0.013]	[0.013]	[0.013]	[0.013]			[0.017]	[0.017]	[0.017]	[0.017]
$Cf_{i(t-1)}$			0.002	0.003	0.002	0.004			0.003	0.004	0.003	0.005
			[0.006]	[0.006]	[0.006]	[0.006]			[0.007]	[0.007]	[0.007]	[0.007]
$Lev1_{i(t-1)}$			-0.087**		-0.095**				-0.094***		-0.100***	
			[0.042]		[0.044]				[0.032]		[0.032]	
$Lev2_{i(t-1)}$				-0.048		-0.037				-0.081		-0.068
				[0.053]		[0.052]				[0.080]		[0.078]
Observations	7626	7626	7625	7626	7625	7626	7627	7627	7626	7627	7626	7627
Rho							0.38	0.38	0.38	0.39	0.38	0.38

Notes: Model 1 is the pooled probit model and Model 2 represents the random effects panel probit estimations. Standard errors are in brackets. In the pooled probit specifications, the standard errors are corrected for clustering. Industry and time dummies are included in all specifications. The sample is restricted to include only those firms without real estate and land. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

Table 4. Estimates using accounts receivable and inventories as collateral

Dependent variable: Export entry dummy												
	Model 1						Model 2					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Col_{i(t-1)}$	0.129	0.151	0.047	0.142	0.063	0.160*	0.177	0.198*	0.055	0.193	0.072	0.209*
	[0.092]	[0.092]	[0.099]	[0.094]	[0.099]	[0.094]	[0.117]	[0.117]	[0.125]	[0.120]	[0.125]	[0.120]
$Size_{i(t-1)}$	0.122***	0.096***	0.119***	0.113***	0.081**	0.078**	0.216***	0.179***	0.204***	0.199***	0.153***	0.150***
	[0.035]	[0.037]	[0.037]	[0.036]	[0.039]	[0.039]	[0.044]	[0.046]	[0.046]	[0.046]	[0.049]	[0.049]
$Sw\_group_{i(t-1)}$		0.046			0.047	0.045		0.075			0.076	0.074
		[0.045]			[0.045]	[0.046]		[0.058]			[0.058]	[0.058]
$Sw\_mne_{i(t-1)}$		0.235***			0.270***	0.257***		0.304***			0.350***	0.336***
		[0.077]			[0.078]	[0.078]		[0.096]			[0.097]	[0.097]
$For\_mne_{i(t-1)}$		-0.074			-0.052	-0.070		-0.039			-0.008	-0.031
		[0.104]			[0.105]	[0.105]		[0.129]			[0.129]	[0.130]
$Lp_{i(t-1)}$			0.006	0.006	0.013	0.013			0.014	0.014	0.023	0.023
			[0.013]	[0.013]	[0.013]	[0.013]			[0.017]	[0.017]	[0.017]	[0.017]
$Cf_{i(t-1)}$			0.005	0.007	0.006	0.008			0.005	0.007	0.006	0.008
			[0.006]	[0.006]	[0.006]	[0.006]			[0.007]	[0.007]	[0.007]	[0.007]
$Lev1_{i(t-1)}$			-0.070**		-0.074**				-0.081**		-0.084***	
			[0.034]		[0.036]				[0.032]		[0.032]	
$Lev2_{i(t-1)}$				-0.028		-0.019				-0.072		-0.060
				[0.051]		[0.050]				[0.079]		[0.078]
Observations	7626	7626	7625	7626	7625	7626	7627	7627	7626	7627	7626	7627
Rho							0.39	0.39	0.39	0.39	0.39	0.39

Notes: Model 1 is the pooled probit model and Model 2 represents the random effects panel probit estimations. Standard errors are in brackets. In the pooled probit specifications, the standard errors are corrected for clustering. Industry and time dummies are included in all specifications. The sample is restricted to include only those firms without real estate and land. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

The rho estimate from the random effects panel probit models reveals that the proportion of the total error variance accounted for by unobservable individual heterogeneity is about 40 percent throughout the different estimations in tables 2 to 4. As the null hypothesis of rho being zero is rejected, the random effects model is preferred over the simple pooled probit model. In the following robustness analyses I therefore only report the random effects model.

6. Robustness checks

Removal of outliers

Much of the literature on financially constrained exporters implements procedures to deal with outliers. Greenaway et al. (2007), for instance, cut the tails at 1 percent and 99 percent of the distributions of each variable. One could argue that this is an inappropriate way to handle outliers since many of the observations removed by such procedures are not due to systematic errors in faulty data. In most larger samplings of data, some data points will be further away from the sample mean than what is deemed reasonable. However, whether or not to reject an observation far away from the sample mean based on such criteria involves a lot of subjectivity. Therefore, cutting the tails could be argued to be an objective method to deal with outliers despite the decrease in sample variance this leads to. In the appendix, table A2 reports the same random effects estimations as in tables 2 to 4 but with observations in the 1 percent tails for each variable excluded.[27]

The results from removing outliers don't change the main findings on the land and real estate collateral variable. The coefficients on the machinery and equipment collateral are positive but the significance is poor in some specifications in table A2. As before, accounts receivable and inventories show no effect on export entry. It is notable that a difference from previous tables is the positive and significant estimates on the capital structure variable. However, since the size

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[27] It is the 1 percent tails of the variables in the original dataset obtained from Statistics Sweden that were cut, not necessarily exactly the 1 percent tails of the constructed variables included in the regressions. This method of removing outliers explains the heavy reduction in observations compared to previous tables.

measure in some specifications shows poor significance (one specification even indicates an insignificant coefficient estimate), which would contradict the numerous studies that have found firm size to be a robust determinant of export behaviour, some doubt is thrown on the method of removing outliers and decreasing the sample variance.

No multiple entries

In order to only allow one entry for each firm, the sample is restricted to incorporate only the first entry of each firm over the sample period. Hence, the number of observations in terms of entry possibilities is hereby restricted. Once a firm has entered it is not allowed to have an entry possibility in subsequent years. Running the estimations over this restricted sample prohibits the characteristics of firms entering more than once to affect the estimations multiple times.[28] Table A3 shows only small changes in the estimated coefficients compared to tables 2 to 4 where all observations with entry possibilities were included. Hence, the results seem robust to this alternative restriction of the sample.

A different variable on internal funding

The sunk entry costs associated with export market entry can be handled either through internal or external funding. For robustness purposes, an alternative control variable on the possibilities to internally fund the sunk entry costs is employed. Instead of using cash flow to indicate internal funding capacities, a liquidity variable similar to what Chaney (2005) used in his model of heterogenous exporters to theoretically define liquidity-constrained exporters is employed. Liquidity is defined as the firm's current assets less current liabilities over total assets. This liquidity measure has been used extensively in the finance-export literature. By controlling for this alternative internal funding variable, we limit the possibility that internal funding of export entry is what drives the results on the collateral variables in tables 2 to 4. Except for the change

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[28] Once again we must note that just because a firm has its first entry in the dataset doesn't necessarily mean it has no previous entries in the past.

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from cash flow to liquidity, the control variables in table A4 remain the same as above. As for cash flow it is expected that the coefficient on the liquidity variable should come out positive.

When land and real estate is employed as collateral variable, both the cash flow and liquidity show positive and significant results on the decision to enter export markets. However, contrary to the cash flow variable, liquidity seems to be a determinant of export market entry when the sample is restricted to firms without land and real estate holdings. For the collateral variables of interest the significance of the coefficient estimates remain very similar to the baseline estimations where cash flow was used as variable on internal funding capacities. Hence, the results of a positive effect of tangible collateralizable assets hold when liquidity is used as a measure of the degree of internal funds available to the firm.

7. Conclusion

This paper has investigated an underlying reason to why a firm might experience difficulties in externally financing an international expansion. As a proxy for access to external financial markets, the ratio between collateralizable assets and the firm's total assets was used. Three different types of collateralizable assets were employed; land and real estate; machinery and equipment; and accounts receivable and inventories. Based on a large panel of Swedish manufacturing firms over the period 1997-2006, firms entering export markets were found to have an ex-ante advantage in terms of collateralizable assets compared to non-entering firms. This result holds when the main collateral variable based on land and real estate is employed, but also when machinery and equipment constitute the basis of collateralizable assets in a sample restricted to firms without land and real estate. Hence, tangible assets seem to positively influence the decision to enter export markets. Accounts receivable and inventories on the other hand, don't cause a similar effect. The results were robust to alternative sample restrictions and variables on internal funding.

A weakness of the paper is that the collateral variables only imperfectly proxy for access to external finance. Previous bank relationships and expected benefits from entering export markets also impact on the decision to grant a loan. The paper's focus on balance-sheet collateralizable assets only, with the firm owners' potential pledging of private funds as collateral unaccounted for, is another drawback due to data availability. However, it is argued that a firm with high degrees of collateralizable assets must, all else equal, be considered to have better access to an externally financed export market entry.

Since the literature on financially constrained exporters lacks a service sector perspective, future studies should try to incorporate service sector firms into the analysis on access to external finance and export behaviour. Compared to manufacturing firms, the balance sheets of many firms within the service sector don't contain readily collateralizable assets. Without access to external finance on the basis of an overdraft against accounts receivable or other intangible assets, the international expansion of the growing service sector might be impaired.

A policy implication of this paper is that effort should be made to facilitate the securitization of loans based on other assets than tangible assets. Hereby, one of the obstacles to export market entry associated with the asymmetric information between lender and borrower would be reduced. For small export-depending countries in particular, facilitating the access to export markets is of key importance. In this respect, public intervention plays an important role in helping efficient but financially constrained firms to overcome the sunk entry costs into export markets. This justifies the export promotion policies adopted by many countries during the last couple of decades.

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Appendix.

Table A1. Pairwise correlations

Panel A: The entire sample of firms

Col_{LR}	1,00								
log *Size*	-0,02	1,00							
log *Lp*	0,06	0,39	1,00						
Lev 1	0,00	0,02	-0,07	1,00					
Lev 2	0,01	-0,01	-0,10	0,21	1,00				
log *Cf*	0,12	0,15	0,45	-0,05	-0,18	1,00			
sw_group	-0,05	0,14	0,10	0,01	-0,02	0,03	1,00		
sw_mne	-0,04	0,23	-0,06	0,02	-0,02	-0,06	-0,21	1,00	
for_mne	-0,07	0,12	0,01	0,02	0,00	-0,03	-0,14	-0,05	1,00

Notes: Col_{LR} stands for the ratio of land and real estate to total assets. *Size* is number of employees, *Lp* is labor productivity and *Cf* is cash flow. *Lev* 1 is the firm's ratio of short-term debt to current assets and *Lev* 2 stands for the ratio of total debt to equity. The three variables on corporate ownership structure are Swedish group without foreign affiliates, Swedish MNE and foreign MNE.

Panel B: The sub-sample restricted to those firms without land or real estate

Col_{ME}	1,00									
Col_{AI}	0,76	1,00								
log *Size*	-0,02	0,00	1,00							
log *Lp*	0,01	0,05	0,30	1,00						
Lev 1	-0,01	-0,06	0,02	-0,07	1,00					
Lev 2	0,11	0,10	0,00	-0,10	0,23	1,00				
log *Cf*	0,05	0,00	0,11	0,44	-0,04	-0,16	1,00			
sw_group	-0,02	0,01	0,12	0,10	0,02	-0,02	0,04	1,00		
sw_mne	-0,02	-0,04	0,22	-0,11	0,02	-0,03	-0,08	-0,23	1,00	
for_mne	-0,03	-0,02	0,13	0,00	0,02	0,00	-0,02	-0,18	-0,07	1,00

Notes: Col_{ME} stands for the ratio of machinery and equipment to total assets and Col_{AI} is the ratio of accounts receivable and inventories to total assets. *Size* is number of employees, *Lp* is labor productivity and *Cf* is cash flow. *Lev* 1 is the firm's ratio of short-term debt to current assets and *Lev* 2 stands for the ratio of total debt to equity. The three variables on corporate ownership structure are Swedish group without foreign affiliates, Swedish MNE and foreign MNE.

Table A2. Outliers removed

Dependent variable: Export entry dummy																		
	Panel A						Panel B						Panel C					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
$Col_{i(t-1)}$	0.445**	0.479**	0.498**	0.406**	0.538***	0.441**	0.603**	0.575*	0.689**	0.463	0.663**	0.426	0.053	0.051	0.020	-0.214	0.021	-0.219
	[0.203]	[0.204]	[0.207]	[0.203]	[0.208]	[0.204]	[0.303]	[0.300]	[0.315]	[0.306]	[0.312]	[0.303]	[0.236]	[0.233]	[0.239]	[0.246]	[0.236]	[0.243]
$Size_{i(t-1)}$	0.214***	0.183***	0.203***	0.169***	0.180***	0.147***	0.169***	0.119*	0.191**	0.170**	0.138*	0.115	0.183***	0.134**	0.203***	0.172**	0.149*	0.116
	[0.036]	[0.037]	[0.054]	[0.054]	[0.054]	[0.054]	[0.060]	[0.063]	[0.075]	[0.075]	[0.076]	[0.076]	[0.061]	[0.063]	[0.075]	[0.075]	[0.076]	[0.076]
$Sw\_group_{i(t-1)}$		0.084			0.086*	0.082		0.075			0.079	0.081		0.075			0.076	0.079
		[0.052]			[0.052]	[0.052]		[0.083]			[0.083]	[0.082]		[0.083]			[0.083]	[0.082]
$Sw\_mne_{i(t-1)}$		0.204**			0.212**	0.196**		0.457***			0.455***	0.465***		0.460***			0.457***	0.468***
		[0.087]			[0.088]	[0.087]		[0.137]			[0.137]	[0.135]		[0.137]			[0.137]	[0.135]
$For\_mne_{i(t-1)}$		0.193			0.192	0.181		-0.147			-0.136	-0.137		-0.166			-0.160	-0.152
		[0.133]			[0.133]	[0.132]		[0.211]			[0.211]	[0.210]		[0.211]			[0.211]	[0.209]
$Lp_{i(t-1)}$			0.028	0.044	0.020	0.036			-0.017	-0.010	-0.012	-0.005			-0.020	-0.009	-0.015	-0.004
			[0.045]	[0.046]	[0.044]	[0.045]			[0.051]	[0.052]	[0.050]	[0.052]			[0.051]	[0.052]	[0.051]	[0.052]
$Cf_{i(t-1)}$			-0.004	-0.000	-0.003	0.001			-0.014	-0.009	-0.013	-0.008			-0.011	-0.009	-0.010	-0.008
			[0.008]	[0.008]	[0.008]	[0.008]			[0.012]	[0.012]	[0.012]	[0.012]			[0.012]	[0.012]	[0.012]	[0.012]
$Lev1_{i(t-1)}$			-0.146*		-0.159*				-0.120		-0.123				-0.030		-0.035	
			[0.088]		[0.088]				[0.161]		[0.159]				[0.154]		[0.152]	
$Lev2_{i(t-1)}$				0.312***		0.305***				0.544***		0.566***				0.647***		0.666***
				[0.111]		[0.111]				[0.193]		[0.191]				[0.198]		[0.195]
Observations	6332	6332	6332	6332	6332	6332	2425	2425	2425	2425	2425	2425	2425	2425	2425	2425	2425	2425

Notes: Random effects panel probit estimations. Standard errors are in brackets. Panel A with the share of real estate and land in total assets as collateral, panel B with the share of machinery and equipment in total assets as collateral and panel C with the share of accounts receivable and inventories in total assets as collateral. The sample panels B and C are restricted to include only those firms without real estate and land. Industry and time dummies are included in all specifications. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

Table A3. No multiple entries

Dependent variable: Export entry dummy																		
	Panel A						Panel B						Panel C					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
$Col_{i(t-1)}$	0.396**	0.423**	0.393**	0.366**	0.422**	0.389**	0.614***	0.642***	0.633***	0.607***	0.665***	0.633***	0.225	0.250*	0.133	0.222	0.157	0.247*
	[0.177]	[0.178]	[0.179]	[0.179]	[0.181]	[0.180]	[0.204]	[0.203]	[0.206]	[0.207]	[0.205]	[0.207]	[0.138]	[0.138]	[0.148]	[0.142]	[0.148]	[0.141]
$Size_{i(t-1)}$	0.314***	0.284***	0.304***	0.299***	0.260***	0.258***	0.243***	0.205***	0.223***	0.220***	0.171***	0.171***	0.242***	0.206***	0.221***	0.218***	0.171***	0.170***
	[0.041]	[0.043]	[0.044]	[0.044]	[0.046]	[0.046]	[0.057]	[0.058]	[0.059]	[0.060]	[0.061]	[0.062]	[0.057]	[0.059]	[0.060]	[0.060]	[0.062]	[0.062]
$Sw\_group_{i(t-1)}$		0.070			0.074	0.071		0.064			0.066	0.062		0.056			0.058	0.055
		[0.051]			[0.051]	[0.051]		[0.069]			[0.070]	[0.070]		[0.070]			[0.070]	[0.070]
$Sw\_mne_{i(t-1)}$		0.298***			0.344***	0.325***		0.375***			0.429***	0.408***		0.372***			0.417***	0.408***
		[0.087]			[0.089]	[0.089]		[0.116]			[0.119]	[0.119]		[0.118]			[0.120]	[0.120]
$For\_mne_{i(t-1)}$		-0.074			-0.044	-0.066		-0.183			-0.141	-0.172		-0.199			-0.167	-0.186
		[0.138]			[0.139]	[0.139]		[0.168]			[0.169]	[0.169]		[0.170]			[0.171]	[0.171]
$Lp_{i(t-1)}$			0.009	0.010	0.017	0.018			0.027	0.026	0.036	0.034			0.027	0.025	0.035	0.033
			[0.018]	[0.018]	[0.018]	[0.018]			[0.022]	[0.022]	[0.022]	[0.022]			[0.022]	[0.022]	[0.023]	[0.022]
$Cf_{i(t-1)}$			0.008	0.010	0.009	0.010			-0.002	0.001	-0.001	0.001			0.001	0.004	0.002	0.004
			[0.007]	[0.007]	[0.007]	[0.007]			[0.009]	[0.009]	[0.009]	[0.009]			[0.009]	[0.009]	[0.009]	[0.009]
$Lev1_{i(t-1)}$			-0.062**		-0.070**				-0.070**		-0.076**				-0.053		-0.056	
			[0.027]		[0.028]				[0.034]		[0.034]				[0.034]		[0.034]	
$Lev2_{i(t-1)}$				-0.018		-0.014				-0.005		0.001				0.002		0.007
				[0.051]		[0.051]				[0.102]		[0.103]				[0.104]		[0.105]
Observations	11854	11854	11852	11854	11852	11854	5960	5960	5959	5960	5959	5960	5960	5960	5959	5960	5959	5960

Notes: Random effects panel probit estimations. Standard errors are in brackets. Panel A with the share of real estate and land in total assets as collateral, panel B with the share of machinery and equipment in total assets as collateral and panel C with the share of accounts receivable and inventories in total assets as collateral. The sample panels B and C are restricted to include only those firms without real estate and land. Industry and time dummies are included in all specifications. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

Table A4. Estimates using liquidity instead of cash flow as measure of internal funds available to the firm

Dependent variable: Export entry dummy

	Panel A						Panel B						Panel C					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
$Col_{i(t-1)}$	0.379***	0.416***	0.538***	0.561***	0.581***	0.607***	0.595***	0.627***	0.900***	0.937***	0.940***	0.980***	0.177	0.198*	0.019	0.080	0.037	0.097
	[0.138]	[0.138]	[0.144]	[0.144]	[0.144]	[0.144]	[0.169]	[0.169]	[0.188]	[0.186]	[0.188]	[0.186]	[0.117]	[0.117]	[0.128]	[0.130]	[0.127]	[0.130]
$Size_{i(t-1)}$	0.301***	0.269***	0.302***	0.299***	0.259***	0.257***	0.218***	0.179***	0.227***	0.226***	0.170***	0.170***	0.216***	0.179***	0.210***	0.209***	0.159***	0.159***
	[0.029]	[0.030]	[0.031]	[0.031]	[0.033]	[0.033]	[0.044]	[0.046]	[0.046]	[0.046]	[0.049]	[0.049]	[0.044]	[0.046]	[0.047]	[0.047]	[0.049]	[0.049]
$Sw\_group_{i(t-1)}$		0.088**			0.090**	0.089**		0.083			0.089	0.089		0.075			0.075	0.074
		[0.039]			[0.039]	[0.039]		[0.057]			[0.057]	[0.057]		[0.058]			[0.058]	[0.058]
$Sw\_mne_{i(t-1)}$		0.223***			0.266***	0.262***		0.314***			0.373***	0.367***		0.304***			0.346***	0.336***
		[0.068]			[0.069]	[0.068]		[0.095]			[0.097]	[0.097]		[0.096]			[0.097]	[0.098]
$For\_mne_{i(t-1)}$		0.126			0.163*	0.158		-0.020			0.053	0.046		-0.039			-0.003	-0.014
		[0.097]			[0.098]	[0.098]		[0.128]			[0.129]	[0.129]		[0.129]			[0.130]	[0.130]
$Lp_{i(t-1)}$			0.011	0.014	0.017	0.020			0.012	0.014	0.022	0.023			0.018	0.019	0.027*	0.028*
			[0.012]	[0.012]	[0.013]	[0.013]			[0.015]	[0.015]	[0.016]	[0.016]			[0.015]	[0.015]	[0.016]	[0.016]
$Liquidity_{i(t-1)}$			0.270***	0.337***	0.275***	0.351***			0.348***	0.413***	0.347***	0.421***			0.167*	0.231***	0.154*	0.226***
			[0.069]	[0.066]	[0.069]	[0.066]			[0.092]	[0.086]	[0.092]	[0.086]			[0.087]	[0.085]	[0.086]	[0.084]
$Lev1_{i(t-1)}$			-0.036*		-0.040*				-0.043		-0.048				-0.059*		-0.064*	
			[0.020]		[0.021]				[0.031]		[0.032]				[0.033]		[0.033]	
$Lev2_{i(t-1)}$				0.033		0.044				0.024		0.036				0.003		0.011
				[0.057]		[0.056]				[0.074]		[0.073]				[0.078]		[0.077]
$Observations$	15910	15910	15908	15910	15908	15910	7627	7627	7626	7627	7626	7627	7627	7627	7626	7627	7626	7627

Notes: Random effects panel probit estimations. Standard errors are in brackets. Panel A with the share of real estate and land in total assets as collateral, panel B with the share of machinery and equipment in total assets as collateral and panel C with the share of accounts receivable and inventories in total assets as collateral. The sample panels B and C are restricted to include only those firms without real estate and land. Industry and time dummies are included in all specifications. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.