Chapter 2

Exporting Behavior and Financial Contraint of Chinese Firms

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CHAPTER 2

Exporting Behavior and Financial Constraint of Chinese Firms

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Using comprehensive firm-level panel datasets, we examine a two-way relationship between exporting behavior and financial constraint of Chinese firms. We find that for state-owned and foreign-owned firms, financial constraint reduces firm's probability to start exporting, but there is no such effect for private firms. Regarding the reverse causality, our propensity score matching estimation finds no evidence that exporting helps improve firm's financial condition. We also find that financial constraint affects destination country add and drop, but not product add and drop.

Key words: Financial Constraint, Exporter, China

JEL Classification: F14, G32

1. Introduction

Why do some firms export while other firms in the same industry don't? According to heterogeneous firm theory based on Melitz (2003), high productivity firms are more likely to export. This is because only high productivity firms can overcome fixed export costs such as researching foreign markets and establishing trade networks with foreign buyers. However, in the real world, even in a narrowly defined industry, many exporting firms are less productive than non-exporters (Eaton, Kortum and Kramarz, 2004). Recent research (e.g., Chaney, 2005; Manova, 2010) has extended the Melitz model and emphasized the role of financial constraint in determining firm's export status. With the assumption of imperfect capital market, these theories argue that even high productivity firms may not be able to export if they face financial constraint. For example, liquidity constraint makes it difficult for high productivity firms to cover the upfront fixed costs, even though expected future profits from exporting are sufficiently large.

On the other hand, exporting may also help firms overcome financial constraint. Firms often cite financial constraints as one of their primary obstacles to investment and growth. This is especially true in developing countries since financial markets are less developed in these countries, which makes external financing relatively expensive for firms. As a result, firms will have to rely on internally-generated funds to make future investment. In this case, exporting itself may be an important mechanism for firms from developing countries to overcome their financial constraint (constant cash flow, reputation, financing from foreign countries), and become an engine for firm growth.

The purpose of this paper is to examine the two-way relationship between exporting and financial constraint of Chinese firms. China is an interesting case to study not only because China is the largest exporter in the world, but also because many Chinese private firms face serious financial constraint. Due to the government interference in Chinese banks — especially the requirement that banks must favor the state-owned enterprises — Chinese banking system deprives the emerging private firms of access to bank credit (Huang *et al*., 2011). Such political pecking order also exists in the equity market. According to Chinese government policy on initial public offering, private

firms were almost denied the access to stock market. It has been a puzzle that despite the discrimination and severe credit constraint, Chinese private firms have managed to grow quickly. One explanation in the literature hinges on informal finance (Allen, *et al.* 2005). We want to explore another possible channel — exporting provides alternative source of financing for credit-constrained private firms.

In this study, we use two comprehensive firm panel datasets. The first dataset from the National Bureau of Statistics (NBS) covers all state-owned firms and all non-state firms with sales above 5 million Yuan. This dataset is complemented with a transaction-level dataset from China Customs which includes the universe of Chinese importers and exporters during 2000-2006.

To examine how financial constraint affects firm export, we first estimate a probit model of new exporters. Our estimation results suggest that financial constraint does affect firm's export decision, and it matters more for state-owned firms and foreign invested firms than for private firms. In searching for causal links between exporting and financial constraint, we use propensity score matching and difference-in-difference techniques developed in microeconometrics (e.g., Heckman, *et al.* 1997). Propensity score matching allows us to construct a reasonable counterfactual and determine the changes in firm's financial condition that can be reliably attributed to exporting. Our propensity score matching results show that exporting does not alleviate firm's financial constraint, and this finding holds for all ownership categories.

To further explore the extensive margins, we study the effect of financial constraint on product and destination country add/drop of continuing exporters. We find that financial constraint matters for country add/drop, but not for product add/drop.

The rest of the paper is organized as follows. Section 2 provides a brief literature review.

Section 3 describes our data source and measurement issues. Section 4 presents the empirical strategy and reports the estimation results. The last section concludes with policy recommendations.

2. Literature Review

Recent literature in international trade, best represented by the heterogeneous-firm framework by Melitz (2003), has taken an important step towards the understanding of the adjustment process in an open economy. In Meltiz's framework, firms differ in productivity and need to incur various types of fixed costs to export. Since not all firms expect to receive sufficient operating profits to overcome the fixed export costs, only the relatively more productive firms would find it profitable to export. While the main goal of Melitz (2003) is to analyze welfare and reallocation impact of trade liberalization at the steady state, recent theoretical work has extended this line of research and examined another aspect of firm heterogeneity – financial constraint. Chaney (2005) shows that liquidity constraints affect entry in a Melitz type heterogeneous firm framework. Low productivity aside, in imperfect capital markets, a financially-strapped firm may not be able to borrow enough to afford the fixed export costs, even though it expects to receive a revenue stream from foreign sales sufficient to recover those costs. Based on this framework, it has been shown that a country's level of financial market development is an important source of comparative advantage (Beck, 2002; Manova, 2010). Specifically, in a world where sectors differ substantially in their dependence on external finance for production, nations with better financial institutions would specialize in financially vulnerable sectors.

In addition to sectoral level evidence, there are also increasing number of studies that use firm-level data. Greenaway *et al*. (2007) find a positive correlation between exporting status and financial health. However, they show that such positive correlation appears to be driven mostly by the positive effects of export participation on financial constraint relaxation, rather than the other way around as is postulated by the theoretical literature. Berman & Hericourt (2009) examine both productivity and financial constraint as determinants of export participation (extensive margin). They find that higher productivity and lower financial constraint both enhance export participation. Importantly, they find that these two effects reinforce each other (i.e., productivity effects are stronger when financial constraints are lower). Moreover, they find evidence consistent with a large sunk cost paid for exporting for the first time.

Conditional on exporting, they do not find evidence that financial constraint affects the probability of remaining as exporters nor the intensive margin. They speculate that the fixed costs required to continue the exporting status are substantially lower than the initial start-up cost for exporting. Amiti & Weinstein (2009) study the financial situations of the major banks providing trade finance to the exporters, and find that financial distress is associated with lower exports of the exporters. They argue that this evidence highlights the importance of external finance to exporters.

Our project is closely related to a recent study by Manova, *et al.* (2009). They use Chinese customs dataset to show that foreign invested firms are associated with better export performance compared with domestic private firms. Their argument is that foreign invested affiliates have access to internal capital from their parents, and rely less on borrowing from the domestic capital markets in China. To provide further support to this argument, they show robust evidence that these differences in export performance are larger in financially vulnerable sectors. There are three main differences between their work and ours. First, while they use ownership as a proxy for financial constraint, we use more direct measures of financial constraint from firm financial statements. Second, they mainly examine the impact of financial constraint on trade volume (the intensive margin); we focus on the effects on firms' export participation (the extensive margin). Third, since we do not use ownership types to proxy the financial constraint, we can further study the effects of credit market imperfections on trade across firm ownership types.

Using firm-level data from China, Du & Girma (2007) find that better access to bank loans boost firm exports, especially for politically unaffiliated firms. They also look at FDI as a source of external finance, and how different types of FDI (horizontal, vertical, export-oriented and market-seeking) are associated with firms' export performances. They find that export-oriented FDI enhances exports, especially in labor-intensive sectors, and that market-seeking FDI has a negative impact on firm exports.

3. Data and Measurement

3.1. Data Description

Our main dataset is the above-scale firm dataset (1998-2007) from the National Bureau of Statistics. The dataset contains annual survey data of all state-owned firms and those non-state firms with sales in excess of 5 million Yuan. The number of firms each year grew from about 160,000 firms in 1998 to over 310,000 firms in 2007. This dataset covers about 85-90% of total value-added of the manufacturing industries. It contains firm-level accounting and financial information, such as ownership type, debt, account receivables, and short-term and long-term assets. These firm-level data were used by the NBS to compute gross domestic product and other key macroeconomic variables, which are then reported in the China Statistical Yearbook.

We use unique numerical IDs to link firms of different years in the sample over time. Firms sometimes receive a new ID as a result of restructuring, merger, or acquisition. Where possible, we track firms as their boundaries or ownership structures change, using information on the firm name, industry, address, etc., to link them.

Since our focus is manufacturing industry, mining and utility industries are excluded from our sample. In addition, we drop those observations with missing values for key variables and those that fail to satisfy some basic error checks. Following Jefferson, *et al.* (2008), we delete all firms with less than 8 employees as they fall under a different legal regime (self-employed individual business). Consequently, about 17% of firms in the original dataset are dropped from the sample in 1998, but the fraction drops to less than 6% after 2001. After the clean-up process, we have an unbalanced panel of firms that increases in coverage from 148,685 firms in 1998 to 313,048 in 2007.

A firm's real output and value added are deflated by a sector-specific ex-factory price index. Ex-factory price refers to the price at the factory, and does not include any other charges, such as delivery or subsequent taxes. The capital stock is calculated using the perpetual inventory methods in Brandt, *et al.* (2012). To deal with the biases arising from endogenous input choices (Griliches & Mairesse, 1998), we adopt the Levinsohn & Petrin (2003) procedure that uses intermediate inputs as a proxy for

unobservable productivity shocks. The Levinsohn-Petrin procedure is implemented in this paper using the Stata module "levpet" developed by Petrin, *et al.* (2004).

In our paper, a non-exporter is a firm that never exported up to and including the reporting year. New exporters are firms that did not export in the previous years but started exporting in the year of analysis. Their pre-export characteristics can therefore be matched with those of the non-exporters (see Section 4 for details about the matching approach). Existing exporters are firms that have export records in both current year and previous year. Table 1 reports summary statistics of all exporters, new exporters and non-exporters.

Table 1: Summary Statistics

	All Exporters			New Exporters			Non-Exporters		
Variable	No. Obs.	Mean	Std. Dev	No. Obs.	Mean	Std. Dev	No. Obs.	Mean	Std. Dev
Liquidity 1	536.603	0,052	0,296	56.555	0,051	0,654	1.417.609	0,022	0,313
Liquidity 2	538.090	0,422	0,262	56.555	0,425	0,302	1.416.122	0,403	0,284
Leverage1	541.539	1,035	0,793	56.329	1,152	0,894	1.423.473	1,215	0,976
Leverage2	538.090	0,578	0,262	56.555	0,463	0,354	1.416.122	0,597	0,284
ln(fixed asset)	543.953	8,756	1,83	56.304	8,411	1,722	1.440.000	8,215	1,647
ln(worker)	546.198	5,282	1,174	56.643	4,949	1,083	1.454.253	4,567	1,046
ln(age)	546.198	1,894	0,89	56.304	1,706	0,943	1.454.253	1,921	1,019
ln(TFP)	533.946	2,540	0,991	53.579	2,565	1,014	1.395.685	2,578	1,194

Source: NBS above-scale dataset.

The second dataset we will use is from China customs. It covers the universe of all Chinese firms that import or export over the period of 2000 to 2006. This dataset reports firms' export and import values in US dollars of over 7000 products in the HS 8-digit classification (example of a product: 61124100 - Women's or girls' swimwear of synthetic fibers, knitted or crocheted), from and to over 200 destinations around the

world, by type of enterprise (out of 9 types, e.g. state owned, wholly foreign owned, sino-foreign joint venture), region or city in China where the product was exported from or imported to (out of around 700 locations), customs regime (out of 18 regimes, e.g. process and assembling, process with imported materials). The data also reports quantity, quantity units, customs offices (ports) where the transaction was processed (97 in total), and transportation modes.

3.2. Measuring Financial Constraint

Following the literature, we examine two aspects of financial constraint: liquidity and leverage. A firm with a high liquidity ratio may have sufficient internal funds to pay the fixed costs for exporting, even though it has no access to external finance; whereas a firm with a higher ratio of leverage will find it more difficult to borrow from the financial market. In short, the first measure captures the need to use external finance, while the second one captures the ability to borrow externally. In particular, we measure liquidity and leverage in the following ways.

Liquidity:

- Liquidity 1 = (Short-term asset – Short-term liabilities)/ Total asset (Greenaway *et al*., 2007)
- Liquidity 2 = (Total asset – Total liabilities)/ Total asset (Berman & Hericourt, 2009; Muuls, 2009)

Leverage:

- Leverage 1 = Short-term liabilities/ Short-term asset (Greenaway *et al*., 2007)
- Leverage 2 = Total liabilities/Equity (Minetti & Zhu, 2010)

Figure 1 shows the average values of "liquidity 1" over 1999-2007 by four exporting types. In almost all years, always exporters have highest liquidity, followed by new exporters, export stoppers and never exporters. Same things can be said for "leverage 1". Figure 2 shows the same pattern.

Figure 1: Liquidity 1 Across Exporting Types

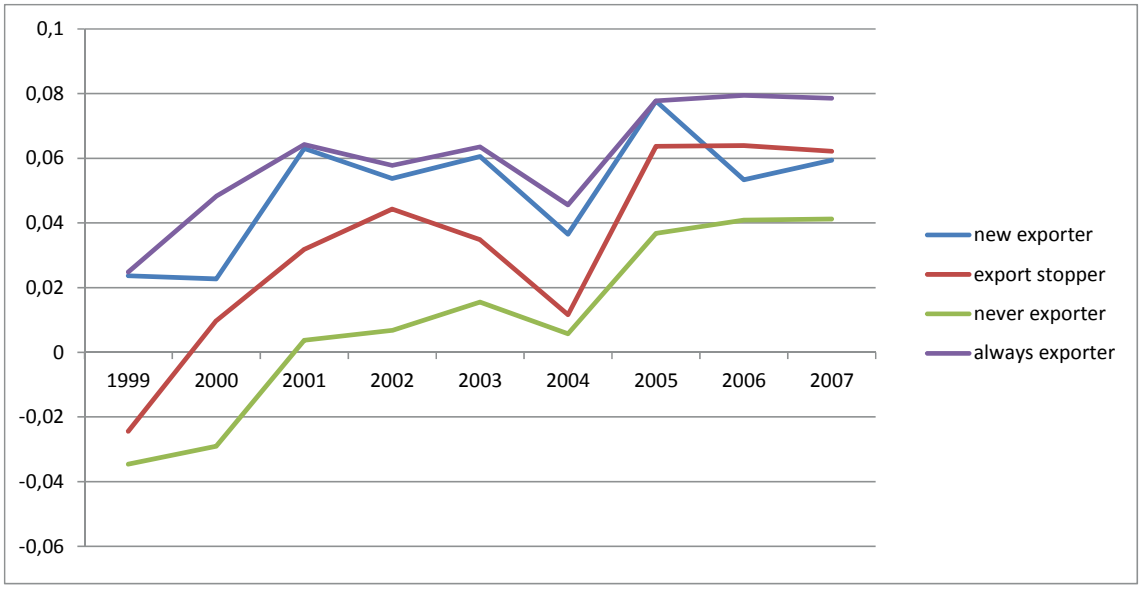
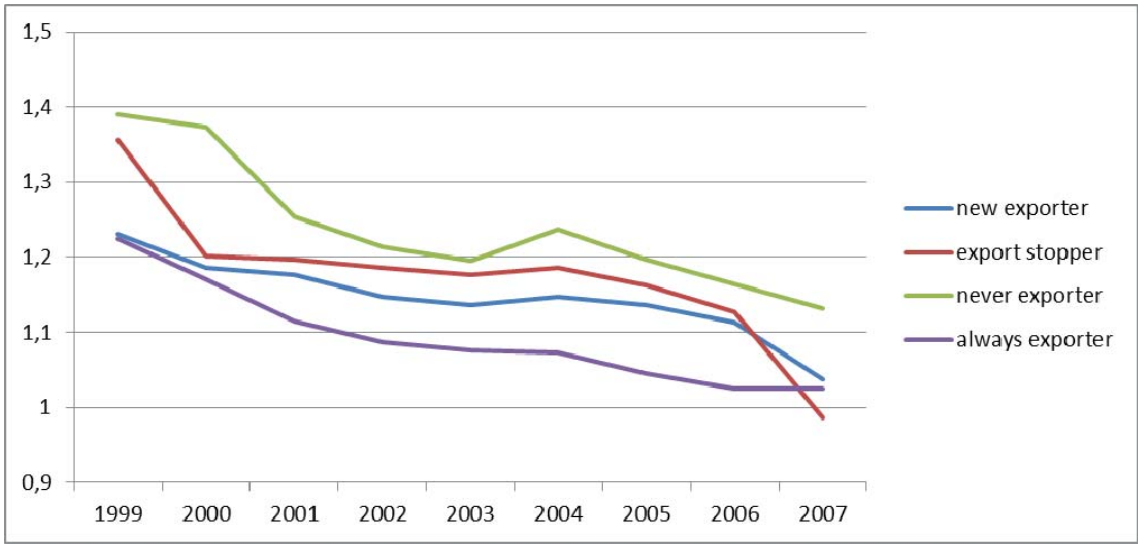


Figure 2: Leverage 1 Across Exporting Types



4. Econometrics Analyses

4.1. Financial Constraint and Firm Export Decision

One would expect that the fixed cost argument of financial constraint theory should better apply to new exporters. Following Bellone *et al*. (2010), we test the self-selection hypothesis that firms with less financial constraint are more likely to *start* exporting. In

this context, initial financial constraint would be important to explain why some firms begin to export while others only sell in the domestic markets.

To examine the empirical validity of this hypothesis, we focus on those firms that do not export initially, which can be further classified into two groups: those that start exporting in the next year and those that stay as non-exporters. Since our data span 1998-2007, we have 9 cohorts of export starters and non-exporters: 1998-1999, 1999-2000, …, and 2006-2007. Pooling these cohorts results in data for 56,555 export starters and 871,990 non-exporters. We estimate the probability of exporting as a function of ex-ante firm performance. In this framework, a negative relationship between ex-ante financial constraint and probability of exporting would support the self-selection hypothesis.

Our probit model is specified as follows:

$$Prob(NEWEXP_{i,t+1}=1) = \Phi(F_{i,t} , X_{i,t}, Province, Industry, Ownership, Year) \quad (1)$$

where Φ is the normal cumulative distribution function. *NEWEXP* is an dummy variable of whether the firm started exporting. *F* denotes our measures for financial constraint. *X* is a vector of firm characteristics that affect the probability of exporting, including the logarithms of TFP, fixed assets, employment and firm age, all lagged by one year. We also include a full set of ownership, three-digit industry, year and provincial dummies.
The results reported in Table 2 support the self-selection hypothesis. The estimates, which correspond to the marginal effects, show that the probability of starting to export is, as expected, increasing in liquidity and decreasing in leverage. estimation results also indicate that those firms that are initially more productive, bigger, younger, and with foreign ownership, are more likely to be export starters.

Table 2: New Exporter Probit Estimation

Dependent Variable: New Exporter Dummy

	Liquidity 1	Liquidity 2	Leverage 1	Leverage 2
Financial Factors	0.043***	0.048***	-0.032***	-0.059***
	(0,010)	(0,012)	(0,009)	(0,012)
ln(TFP)	0.018***	0.016***	0.019***	0.016***
	(0,004)	(0,005)	(0,005)	(0,005)
ln(fixed assets)	0.012**	0.009*	0.012**	0.009*
	(0,004)	(0,004)	(0,004)	(0,004)
ln(worker)	0.180***	0.180***	0.180***	0.180***
	(0,006)	(0,006)	(0,006)	(0,006)
ln(age)	-0.063***	-0.062***	-0.063***	-0.062***
	(0,004)	(0,004)	(0,004)	(0,004)
State	-0.423***	-0.415***	-0.421***	-0.415***
	(0,016)	(0,016)	(0,016)	(0,016)
Foreign	0.468***	0.465***	0.468***	0.465***
	(0,013)	(0,013)	(0,013)	(0,013)
Collective	-0.334***	-0.334***	-0.335***	-0.334***
	(0,013)	(0,013)	(0,013)	(0,013)
N	927.154	928.545	928.921	928.321

Notes: Marginal Effects are reported. Standard errors (clustered at the industry-year level) in parentheses. All regressors, besides fixed effects, are lagged. Year, sector and province fixed effects are always included. Private owership is the omitted category. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

To investigate the heterogeneous effects across ownership types, we split the sample according to firms' ownership. We re-run the probit regressions for each ownership type. The estimation results are reported in Table 3. In general, the financial constraint factors have stronger effects for state-owned firms and foreign invested firms.

For private firms, liquidity and leverage do not seem to affect firm's probability to start exporting. It is well known that in China private firms have difficulty borrowing from state-owned banks. However, private firms had higher growth rate of exports than all other firms despite facing severe financial constraint. Our explanation is that for private firms, productivity and other factors become more important than financial constraint as determinants of exports.

Table 3: New Exporter Probit Estimation by Ownership

Dependent Variable: New Exporter Dummy

Liquidity 1	Liquidity 2	Leverage 1	Leverage 2
Panel A: All Firms			
0.043***	0.048***	-0.032***	-0.059***
(0,010)	(0,012)	(0,009)	(0,012)
Panel B: State Ownerhsip			
0.046***	0.059***	-0.051**	-0.071***
(0,011)	(0,018)	(0,019)	(0,018)
Panel C: Foreign Ownerhsip			
0.047*	0.068*	-0.049**	-0.064*
(0,025)	(0,029)	(0,025)	(0,028)
Panel D: Collective Ownership			
0.041**	-0,002	-0.041*	0,002
(0,020)	(0,022)	(0,024)	(0,031)
Panel E: Private Ownership			
-0,004	0,009	-0,004	0,007
(0,015)	(0,022)	(0,019)	(0,025)

Notes: Marginal Effects are reported. Standard errors (clustered at the industry-year level) in parentheses. All regressors, besides fixed effects, are lagged. Year, sector and province fixed effects are always included. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

4.2. Does Exporting Improve Firms' Financial Health?

Our study finds that the Chinese new exporters (except private firms) tend to be less financially constrained than the non-exporters. However, the relation between financial factors and exporting can go either way. To study if exporting improves firms'

financial health, we apply a matching estimator developed in the program evaluation literature by Heckman, *et al.* 1997). We construct a control group with exporting ('treated') firms that are matched to a comparison group of non-exporting ('control') firms. The two groups are matched as close as possible at the time before exporting based on their propensity score. Difference in financial factors before and after exporting and between the treatment group and the matched control group may then be attributed to the effect of exporting on financial condition. This is the difference-in-differences (DID) matching estimator. The use of matching approach to search for causal effects of starting to export has been widely used in the literature (e.g., De Loecker, 2007). In this study, we use nearest neighbor matching combined with difference-in-differences, which is implemented with Stata module "psmatch2" developed by Leuven & Sianesi (2003).

Panel A of Table 4 reports propensity score matching results of all firms. For all our measures of financial factors, none of them is statistically significant. In panel B-E, we do the same estimation with a subset of firms based on their ownership types. Again, regardless of firm ownership, exporting does not seem to improve firms' financial condition. It seems that exporting cannot be an alternative source of funding to overcome financial constraint for Chinese firms (including private firms).

Table 4: New Exporters' Financial Factors - Propensity Score Matching

	Liquidity 1	Liquidity 2	Leverage 1	Leverage 2
Panel A: All Firms				
	0,001	0,001	-0,012	-0,002
	(0,005)	(0,002)	(0,101)	(0,002)
Panel B: State Ownerhsip				
	0,002	0,003	-0,051	-0.021**
	(0,010)	(0,010)	(0,136)	(0,010)
Panel C: Foreign Ownerhsip				
	0,002	0,082	-0,098	0,002
	(0,006)	(0,008)	(0,231)	(0,005)
Panel D: Collective Ownership				
	0,009	-0,002	0,038	0,002
	(0,009)	(0,007)	(0,134)	(0,007)
Panel E: Private Ownership				
	-0,004	0,001	0,047	-0,001
	(0,004)	(0,003)	(0,241)	(0,003)

Notes: This table examines the impact of exporting on financial factors, using propensity score matching method, combined with difference-in-difference. Standard errors in parenthese.*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table 1 reports the balancing test results of the propensity score matching for variable "liquidity 1".[1] Our matching procedure has passed the *t*-tests for equality of the means that are reported in the last two columns. For the matched firms, we cannot reject the null hypothesis that these variables are identical for new exporters and non-exporters, before the former start exporting.

4.3. More extensive Margin – Product and Country

The financial constraint may also affect the ability to add or drop product and destination country for continuing exporters. In this regard, our paper relates to the theoretical literature that highlights the importance of the extensive margin at the product level (e.g., Chaney, 2008; Arkolakis & Muendler, 2010). Based on a multi-

[1] The balancing tests results for other financial constraint variables are available upon request.

product model extension of Melitz (2003), Bernard, *et al.* (2009) find that in the short run, the intensive margin is the dominant driving force of export growth, while the extensive margin, which consists of both net firm entry and net product addition, plays a more significant role in the long run.

In order to study the effect of financial constraint on product/country churning, we merge the NBS firm data with the transaction-level customs data based on firm names and other contact information. Depending on the year, 37%-48% of export value in the customs dataset is successfully merged to the NBS firm dataset. About 70% of exporters in NBS were merged. Statistics about the merging are reported in Appendix Table 2.

We use the merged data and regress the logarithms of number of products or countries on financial factor variables lagged by one year. The sample includes all exporters in our merged dataset. Tables 5 and 6 report the estimation results. Panel A reports estimation results with the whole sample, while Panel B shows the results with the subsample of private firms. We do not find any pattern for the number of products, but financial constraint consistently affects the number of export destination countries.

Table 5: Effect on the Number of Products

Dependent Variable: ln(number of products)

	Liquidity 1	Liquidity 2	Leverage 1	Leverage 2
Panel A: All Firms				
Financial Factors	-0,0084	-0,0144	-0,0055	0.0019***
	(0,011)	(0,014)	(0,004)	(0,001)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			
N	185.797	186.478	186.841	186.181
Panel B: Private Firms Only				
Financial Factors	-0,0149	-0,0215	-0,0019	0.0024***
	(0,013)	(0,016)	(0,007)	(0,001)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			

N	178.450	179.095	179.710	179.239

Notes: Standard errors (clustered at the industry-year level) in parentheses. All regressors, besides fixed effects, are lagged. Year, sector and province fixed effects are always included. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 6: Effect on the Number of Countries

Dependent Variable: ln(number of countries)

	Liquidity 1	Liquidity 2	Leverage 1	Leverage 2
Panel A: All Firms				
Financial Factors	-0.110***	-0.1970***	0.0219***	0.0067***
	(0,013)	(0,015)	(0,004)	(0,001)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			
N	185.797	186.478	186.841	186.181
Panel B: Private Fims only				
Financial Factors	-0.1220***	-0.2190***	0.0289***	0.0076***
	(0,021)	(0,025)	(0,007)	(0,002)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			
N	68.864	68.604	68.698	68.594

Notes: Standard errors (clustered at the industry-year level) in parentheses. All regressors, besides fixed effects, are lagged. Year, sector and province fixed effects are always included. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

To further explore the extensive margin, we focus on the continuing exporters and study how financial constraint affects the entry and exit of their product/country. To do this, we run probit regressions with all observations of firm-product or firm-country for continuing exporters. In Panel A of Table 7, we report the marginal effects from our probit estimation of product add Panel B deals with product drop. We can see that in most cases, financial constraint does not impact firm's product add/drop decision. Table 8 shows the estimation results with export destination country add and drop. Panel A suggests significant effect of financial factors on country add. But in the country drop regressions such effect is only found for "liquidity 1" and "leverage 1".

Our product/country level estimation suggests that financial constraint mainly affects country add and drop. According to theoretical literature, financial constraint reduces firms' ability to cover the upfront fixed export cost. It seems that adding a new country to existing products involves larger fixed cost than adding a new product to existing destination countries. In fact, much of the fixed export costs for continuing exporters are country-specific costs such as researching foreign market information and setting up distribution network.

Table 7: Probit Estimation Product Add and Drop

	Liquidity 1	Liquidity 2	Leverage 1	Leverage 2
Panel A: Dependent Variable: New Firm-Product Add Dummy				
	0.008	0.001	-0.004	-0.038***
	(0,008)	(0,010)	(0,021)	(0,013)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			
	845.164	845.484	845.882	845.631
Panel B: Dependent Variable: Old Firm-Product Drop Dummy				
	-0.019**	-0.014	0.001	-0.006
	(0,009)	(0,013)	(0,014)	(0,012)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			
N	789.784	789.657	790.324	789.358

Notes: Marginal Effects are reported. Standard errors (clustered at the industry-year level) in parentheses. All regressors, besides fixed effects, are lagged. Year, sector and province fixed effects are always included. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 8: Probit Estimation of Country Add and Drop

	Liquidity 1	Liquidity 2	Leverage 1	Leverage 2
Panel A: Dependent Variable: New Firm-Product Add Dummy				
	0.032***	0.024**	-0.031*	-0.028***
	(0,006)	(0,012)	(0,019)	(0,013)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			
	719.327	721.238	720.641	720.673
Panel B: Dependent Variable: Old Firm-Product Drop Dummy				
	-0.026***	0,005	0.034**	0,004
	(0,008)	(0,011)	(0,017)	(0,015)
Controls	ln_TFP, ln_k, ln_worker, ln_age, state, foreign, collective fixed effects			
N	678.346	680.661	679.437	679.214

Notes: Marginal Effects are reported. Standard errors (clustered at the industry-year level) in parentheses. All regressors, besides fixed effects, are lagged. Year, sector and province fixed effects are always included. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

5. Conclusions and Policy Implications

In this paper, we find that higher liquidity or lower leverage is associated with higher likelihood of starting to export. But we also find that financial constraint is not a determinant of new exporters for private firms. Using propensity score matching, we find that reverse causality does not appear to be a main issue. In other words, there is no evidence that exporting helps improve firm's financial condition. Regarding the extensive margin of product and country, higher financial constraint is associated with fewer destination countries per exporting firm. No such relation is found with the

number of products exported. Similarly, our probit estimation suggests that financial constraint affect country add and drop, but not product add and drop.

Understanding the relation between financial constraint and export has important policy implications. Such understandings not only enhance our knowledge about the welfare and distributional effects of trade liberalization, but also shed light on economic policies for better managing the economy in the future. For example, the sharp contraction in trade credits is considered one of the main reasons for the collapse in global trade flows during the early phase of the recent global financial crisis (e.g., Chor & Manova, 2009; Freund & Klapper, 2009).

In the Chinese context, exports play a critical role in driving the economic growth. Our results suggest that in addition to productivity, financial constraint matters in an important way for firm exports. Chinese government policies that target export promotion should pay more attention to financial factors. Many high productivity firms cannot export simply because they do not have funds to pay the upfront fixed export costs. This calls upon the re-examination of the functions of the banks and other financial intermediaries in supporting exporting firms. At the same time, government may want to increase its support of trade credit in order to help those potential exporters.

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