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Credit rationing of exporters (very preliminary)

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Motivation

- Financing as a trade costs: selling the output abroad versus domestically might affect the firms' costs of raising external financing
  - Demand for external financing

    Fixed costs of foreign market entry require extra liquidity
  - Supply of external financing
    - Higher risks of export sales compared to domestic ones (-)
    - Longer duration of the transactions (-)
    - Foreign currency revenues (-/+)
- Export promotion policies across the world are heavily biased toward credit subsidization of exporting firms
  - Consistent with costs of exporting story
- Empirical evidence are mixed

Empirical evidence on exporters' costs of financing are controversial

- Earlier aggregate level studies: Kletzer and Bardhan (1987), Qiu (1999), Beck (2002), Matsuyama (2005) argue that credit-market imperfections would adversely affect exporters needing more finance and hence influence trade patterns.
- Firms' heterogeneity and costs of financing started with Greenaway et al (2007), UK firms 1993-2003:
  - no evidence that that firms enjoying better ex-ante financial health are more likely to start exporting
  - exporters exhibit better financial health than non-exporters.
  - strong evidence that persistent participation in export markets improves firms' financial health.
- Wagner (2013) – review of 32 papers on the link between credit constraints and exporting at firm level:
  - Exporting firms are less financially constrained than non exporting
  - Less constrained firms self select into exporting
  - Exporting does not improve financial health of firms

Lit review cont'd

- Theory: Chaney (2013), Muuls (2008), Manova (2013) modify Melitz'2003
  - Firms are likely to be exporters if they are less financially constrained. Financially constrained exporters export less
- Feenstra, Li, Yu (2015) – set a theoretical model with asymmetric information
  - Banks do not observe firm's productivity, so lend less than optimal. Besides, they can not verify for which purpose the credit is used
  - Longer time for export shipment, higher risks of exporters, and fixed costs of exporting induces tighter credit constraints on exporters than on non exporters
  - Conclude that exporters face higher credit constraints irrespective whether for domestic or foreign market activities. Confirm these conclusions empirically on a sample of US firms

Problems with empirical research

- Most of empirical papers measure financial constraints from balance sheets data. Farre-Mensa and Ljungqvist (2013) report that these measures do not identify financially constrained firms
- Muûls (2015), Wagner (2014), Secchi, Tomagni and Tomassi (2013) use firms’ credit rating scores by private rating companies. The problem might be that export status is already incorporated in the scores. Only for few developed countries.

Our contribution

- Data
  - We build a dataset on individual credit lines to firms. Allows controlling for individual credit parameters.
- We ask: are exporters more credit rationed than non exporting firms?
- First, we study demand for credits
- Second, we study the availability of credits conditional on demand
- Third, we jointly estimate credit parameters (collateral, maturity and interest rate)

Preview of results:

- Exporters demand for credits is smaller compared to non exporters
- Exporters face the same availability of credits as non exporters
- Exporters get shorter credits with lower interest rates
- If estimated jointly, shorter maturity fully explains lower interest rate. No extra effect of exporter status on neither of credit parameters in joint estimations.

Data

- A survey of exporting and non exporting firms was specifically designed and implemented in 2012 in Russia
- First, exporters were surveyed
    - 1108 exporters in Manufacturing were surveyed out of around 7000 exporting manufacturing firms in Russia
- Then, a sample on non exporting firms was selected based on similarity of some parameters to surveyed exporters
    - 428 non exporters were surveyed
    - Targeted parameters
        - region, industry, productivity/size

Questionnaires

- Two questionnaires – for exporters and non exporters
  - as similar as possible
  - based on BEEPS survey (or Enterprise surveys by WB)
- Address various costs of exporting
  - Basic information:
    - industry, age, export history, ownership, foreign subsidiaries, etc
  - Human capital:
    - education (focus on business education) of managers and employees, foreign employees (professionals and unskilled), knowledge and usage of foreign languages, wages, additional training
  - Financing:
    - investment structure, sources and composition of external financing, detailed information on the last loan
  - Currency risks:
    - currency composition of revenues and costs, use of hedging, perceived effect of Ruble appreciation and depreciation on export ability

Questionnaires

- Administrative barriers:
  - customs (for export and import), tax administration and VAT refund, sanitary inspections, etc.
- Information costs:
  - composition, use of external consulting and legal services, participation in exhibitions, info on trade agreements
- Government export promotion policies
- Transportation and logistics
- Technical barriers:
  - international certificates, costs of export certification,
- Corruption at home as an obstacle for export
- Current performance and plans for future: share of the firm on domestic market, plans for export expansion, special economic zones, import structure
- Innovations

- Firm Survey in English prof translation.pdf

Data description

- What was the result of your last application for the credit?

	All sample	Exporters	Non exporters
Loan was approved	842 (56%)	614 (57%)	228 (54%)
Declined	110 (7%)	68 (6%)	42 (10%)
In progress	61 (4%)	36 (3%)	25 (6%)
Never asked for a loan	474 (32%)	346 (32%)	128 (30%)
	1487	1064	423

Why did not apply for a credit?

	% of exporters	% of non exporters
No need for external funding	59	49
Complicated procedure	10	10
High effective interest rate	20	21
High demand for collateral	4	9
Not enough of credit size	0	2
Too short period of credit	1	0
Do not believe that the credit might be approved	2	2
Other	5	6

Demand for and accessibility of credits

- To control for selection bias in the accessibility we need to account for credit demand
- We define Firms with demand for credit
  - those who applied for credit
  - those who did not apply because were discouraged
- We define firms that have access to credit
  - Those who were approved
- Apply Heckman probit estimation to control for selection bias among those who wants credit
  - exclusion restriction is a proxy for investment demand

Firm level controls for demand and accessibility

- Size (by employment)
- Age - reveals more information about the firm
- Ownership – foreign and state, proxy for the governance structure
- Transparency is proxied by
  - Reliance on external consulting
  - Firm having international certificates confirming the quality standards (ISO 9000 and others)
- Demand (not accessibility) is proxied
  - Degree of competition on firm’s major market
  - Investment and innovation demand at firm level

	ACCESS TO CREDIT	CREDIT DEMAND
Age	0.0439	-0.0917
	(0.108)	(0.0610)
Size	0.246***	0.0990***
	(0.0557)	(0.0377)
Foreign Ownership	0.233	-0.0552
	(0.252)	(0.192)
State Ownership	-0.784***	0.0167
	(0.297)	(0.216)
External consulting	0.349***	0.257**
	(0.119)	(0.105)
Has ISO	0.290**	0.255**
	(0.125)	(0.106)
Exporter	**0.103**	**-0.202***
	(0.167)	**(0.111)**
Profitability	-0.169	-0.320**
	(0.171)	(0.155)
No competitors		-0.498**
		(0.201)
1-4 competitors		-0.0649
		(0.134)
5-10 competitors		0.144
		(0.117)
Product innovation dummy		0.214**
		(0.107)
Innovation in technology		-0.147
		(0.106)
R&D		0.146
		(0.133)
Constant	-0.457	0.842***
	(0.328)	(0.279)
Observations	953	953
Robust standard errors in parentheses	*** p<0.01, ** p<0.05, * p<0.1	

Credit penetration

- Does your firm have outstanding loans or credit lines at present?

	Total sample	Exporters only	Non exporters only
Have one unpaid loan	375 (37%)	264 (37%)	111 (38%)
Have two or more unpaid loans	208 (21%)	171 (24%)	37 (13%)
Do not have unpaid loans	429 (43)	284 (40%)	145 (49%)
	1012	719	293

Some credit characteristics

- Some credit parameters

	Exporters	Non-exporters
Extent, %	96,4	95,0
Interest rate, %	13,9	15,4
Collateral, %	101,5	101,2
Maturity, months	27,0	29,8

Simultaneity of the decisions on various credit parameters

- Interest rate
- Collateral
- Maturity
- Literature that deals with simultaneity issues wrt to credit parameters is very scarce
  - La Porta et al. (QJE’2003) – no control for simultaneity et all
  - Simultaneity of 2 out of 3 parameters
    - Collateral and interest rate: Steijvers and Voordecker, 2009; Brick, Palia, 2007;
    - Maturity and Interest rate: Ono, Uesugi, 2006

3-stage Least Squares

$$Y_i^j = DY_i^{-j} + AX_i + BZ_i^j + \epsilon_i$$

where

Y – vector of credit parameters

X – firm level controls, universal for all credit parameters

Z – firm level controls, specific for each credit parameters or instruments

- Interest rate – firm profitability, risk management
- Collateral – risk of bankruptcy, availability of collateral (fixed assets)
- Maturity – proportional to intensity of projects financed by credit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	I_rate	Collat	Matur	I_rate	Collat	Matur	I_rate	Collat	Matur
Collateral				-0.00469*		0.00501	-0.059***		0.176*
				(0.00280)		(0.0120)	(0.0174)		(0.0937)
Maturity				0.00911	0.123		0.328**	5.442*	
				(0.0196)	(0.312)		(0.144)	(2.853)	
Interest rate					-1.932	0.344		-16.68***	2.954***
					(1.247)	(0.325)		(4.644)	(0.994)
Age	-0.455	3.329	0.741	-0.462	-2.195	-0.326	-0.235	-3.957	0.663
	(0.300)	(5.024)	(1.062)	(0.309)	(5.814)	(1.084)	(0.555)	(9.179)	(1.689)
Size	-0.683***	2.811	-0.0405	-0.608***	2.106	0.694	-0.571*	-9.447	1.698
	(0.189)	(3.149)	(0.619)	(0.206)	(3.952)	(0.772)	(0.328)	(6.411)	(1.058)
Foreign Ownership	-1.631**	-21.40*	5.884	-1.079	-22.98	-0.341	-1.760	-29.74	5.128
	(0.739)	(12.87)	(3.615)	(0.881)	(16.04)	(3.379)	(1.545)	(24.52)	(5.134)
State ownership	-0.374	-23.98	-3.253	0.296	-21.83	-11.75**	3.740	61.78	-11.54*
	(0.664)	(15.37)	(4.380)	(0.761)	(21.74)	(4.682)	(3.091)	(55.64)	(6.070)
Exporter	**-0.979****	**5.876**	**-4.936*****	**-0.933***	**6.527**	**-0.761**	**-0.181**	**-2.973**	**0.518**
	(0.468)	**(9.712)**	**(1.730)**	**(0.523)**	**(11.54)**	**(2.147)**	**(0.907)**	**(15.15)**	**(2.745)**
Foreign bank	1.218*	-48.07***	1.202	1.483**	-52.23***	-0.326	-1.061	-18.42	3.080
	(0.671)	(10.97)	(2.664)	(0.732)	(12.87)	(3.334)	(1.792)	(26.12)	(6.165)
State bank	-1.289***	-25.01***	-0.481	-1.288**	-11.97	-0.669	-1.532*	-25.69*	4.530
	(0.467)	(9.400)	(1.705)	(0.506)	(11.54)	(2.208)	(0.860)	(14.62)	(3.092)
Profitability	-0.396	-0.330	1.385	-0.477	4.814	-0.585	-0.00459	-0.0249	-0.0201
	(0.524)	(9.588)	(2.016)	(0.551)	(10.43)	(2.602)	(0.999)	(16.46)	(2.978)
Solvency	1.036**			0.977**			0.00315		
	(0.406)			(0.390)			(0.213)		
Firm hedge currency risks	1.135*			1.336*			0.00722		
	(0.687)			(0.778)			(0.241)		
Fixed assets		1.963			2.601			0.0508	
		(3.311)			(4.000)			(1.156)	
External consulting		13.82			4.041			0.488	
		(8.688)			(10.32)			(4.021)	
ISO		-14.44			2.470			-0.0938	
		(9.150)			(9.881)			(3.933)	
Investments			-0.0106			-0.0151			-0.000616
			(0.0199)			(0.0256)			(0.0151)
Product innovation			-0.751			-0.278			-0.171
			(1.743)			(2.123)			(1.512)
			1.374			0.759			0.0323

Preliminary conclusions

- Exporters demonstrate lower demand for credits
  - conditional on size and profitability
  - better capacity management of exporters, which imply demand shock smoothness
- Exporters have equal accessibility to credits after controlling for lower demand
  - Banks might prefer exporters to non exporters
  - Why? Higher exposure to currency risks might be treated beneficially in Russia
- Lower interest rate and shorter maturity of credits for exporters balance one another, so exporters face similar degree of overall credit rationing, but different structure
- Policy implication: export promotion policy should deal with maturities and other risks rather than with credit payments.

Further exercises

- Control for
  - Currency composition of revenues and costs
  - Number of export markets and number of export products