Exporting under financial constraints: the effect on prices

Angelo Secchi* Federico Tamagni** Chiara Tomasi***

*Paris School of Economics - Université of Paris 1 Panthéon Sorbonne, France and LEM, Scuola Superiore Sant'Anna
**Institute of Economics and LEM, Scuola Superiore Sant'Anna
***University of Trento, Italy, and LEM, Scuola Superiore Sant'Anna

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Financial Constraints and firm behavior

- Informational asymmetries and imperfect screening in capital or credit markets might have a distorting impact on firms behavior
- Financial constraints (FC) affect many dimensions of firms' decisions and evolution:
  - investment/divestment decisions
  - decision to expand production or entering new markets
  - cash management
  - R&D policies

No explicit references here means too many references.

Financial Constraints and Exports

- International activities are more dependent on external finance than domestic ones
  - extra fixed and variable costs;
  - longer time-lag between production and receipt of foreign sales;
  - international contracts more complex, risky and less enforceable.
- Italian firms are likely to be highly affected by (external) financing problems [details]

Related Literature: Empirics

- FCs affect probability of becoming exporter
  - Muuls (2008) [Belgium]; Berman and Hericourt (2011)[cross-countries] ; Bellone et al. (2010) [France]; Minetti and Zhu (2011) [Italy]; Manova et al. (2011) [China]
- FCs affect intensive margins of trade (value exported)
  - Manova et al. (2011) [China]; Askenazy et al.(2011)[France]; Bourgeon et al. (2012)[France]
- FCs affect product/country extensive margins of trade
  - Muuls (2008) [Belgium]; Manova et al. (2011) [China]; Askenazy et al.(2011)[France];

Financial Constraints and Exports: our contribution

- The paper considers, for the first time, whether there is any relationship between financial constraints and export pricing (unit values)
- It employs an official credit ratings available for all the firms in the dataset to measure financial constraints
  - Fan, Lai and Li (2012) study the impacts of credit constraints on export prices using an industry measure of financial vulnerability and a provincial proxy for credit access
- It addresses the “potential” endogeneity of access credit conditions

Data description

- Custom data (COE)
  - Transactions level data: export value and quantity for HS6 product-country destination pairs
  - All cross-border transactions, 2000-2003
- Census of Italian firms (ASIA)
  - Census of all operating businesses: sales, employment, main activity of the firm (NACE code)
- Bilanci Civilistici (CADS - Company Accounting Data Service)
  - Annual reports for all limited liability firms

Our measure of financial constraints

- An official credit rating developed by an independent agency
  - It results from a multivariate score that summarizes a wide range of firms' characteristics (but not trade related infos)
  - It captures "the opinion [of the markets] on the future obligor's capacity to meet its financial obligations (Crouhy et al., 2001)"
- Heavy reliance of banks on this rating (it is a proxy of what banks do!)
  - It is very unlikely that a firm with poor rating can receive any credit (Pistaferri, Guiso, Schivardi, 2010)
  - Bad ratings have a strong association with higher cost of credit (Panetta, Schiavardi, Shum, 2009)
- Non Financially Constrained (NFC) firms, rated from 1 to 7, and Financially Constrained (FC) firms, with rating 8 or 9 (sensitivity analyses)

First look at the data

		Our sample	Difference between FC and NFC firm
	(1)	(2)	(3)
Panel A - All firms			
Coverage:			
Number of firms	0.21		
Number of employees		27.614	-14.488*** (2.714)
Age		14.004	-5.899*** (0.120)
Number of Product-country pairs		14.181	-10.887*** (0.490)
Number of observations		107,400	
Panel B - Exporters			
Coverage:			
Number of firms	0.59		
Export value	0.84		
Number of employees		45.695	-16.053* (8.476)
Age		16.777	-7.590*** (0.239)
Number of Product-country pairs		28.763	-17.832*** (1.400)
Number of observations		54,103	

FCs and Export Prices

- How financial constraints influence export prices across firms performing the same product-country transaction?

$$\ln UV_{fpc,t} = \gamma FC_{f,t-1} + \beta \mathbf{Z}_{f,t-1} + FE_{pc} + \varepsilon_{fpc,t} \quad ,$$

where

- UV_{fpct} is the unit value of the export by firm f in product p to country c
- FC_f the dummy for constrained firms
- Z_f the set of firm-level controls
- FE_{pc} product-country fixed effects

FCs and Export Prices

	log Unit Value		
	(1)	(2)	(3)
Panel A - Exporters			
Financially constrained firms dummy (FC)	0.106*** (0.005)	0.225*** (0.006)	0.173*** (0.008)
log labor productivity		0.156*** (0.002)	0.160*** (0.003)
log number of employees		0.149*** (0.002)	0.150*** (0.003)
log age		0.008*** (0.001)	0.007*** (0.002)
log total assets		-0.115*** (0.002)	-0.145*** (0.002)
log gross operating margin		-0.031*** (0.001)	-0.029*** (0.001)
North dummy		0.166*** (0.004)	0.209*** (0.006)
Center dummy		0.197*** (0.004)	0.207*** (0.006)
Number of observations	2,697,263	2,618,584	1,178,960
Adjusted R^2	0.665	0.668	0.709
Product-Country FE	Yes	Yes	Yes
3 dgt sectoral dummies	Yes	Yes	Yes

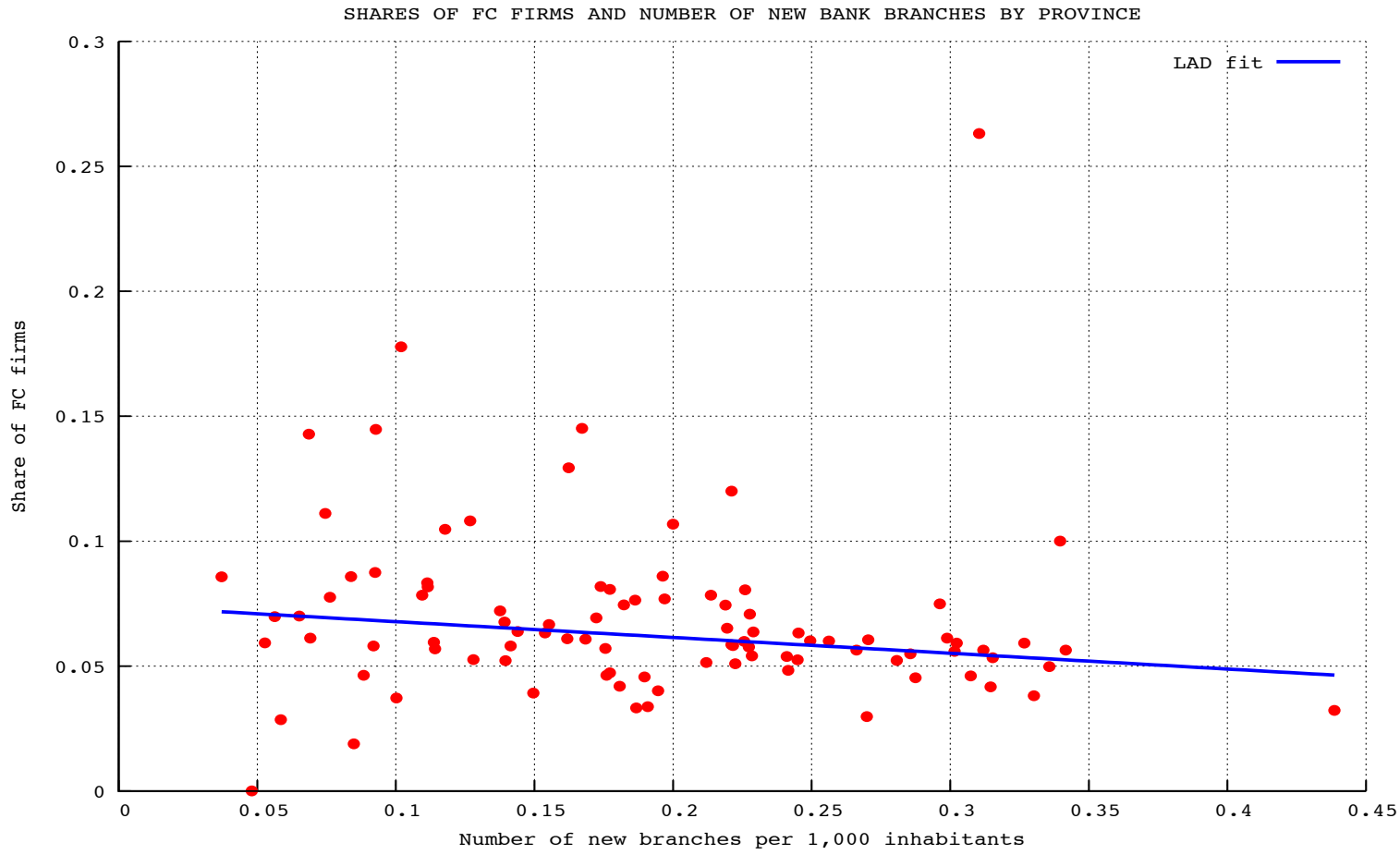
SE clusterd at product-country level

- Constrained firms set higher export prices higher
- Even after removing products and destinations not representing at least 1% of a firm's total export value

Identification strategy

- Exogenous restrictions on the local supply of banking services (Minetti and Zhu, 2011; Guiso et al. 2004)
- Restrictions in the banking system introduced in 1936 by the Bank of Italy and its progressive removal in the 1990s
  - The constrictiveness of the regulation varied across provinces depending on the type of banks (saving vs. cooperative banks)
  - The distribution of types of banks across provinces in 1936 stemmed from the history of Italian unification and not correlated with structural characteristics of the province
- Instruments: to capture the local constrictiveness of the regulation we use the number of branches created by incumbent banks in a province (per 1,000 inhabitants) in 1990-99

Correlation between FC and its instrument



- Least Absolute Deviation regression; estimated parameters reads $0.074^{***}(0.005)$ and $-0.063^{**}(0.024)$ for the intercept and the slope respectively

Probability of Financial Constraints

	FC	
	(1)	(2)
Panel A - Exporters		
Number of new branches	-0.495** (0.249)	-0.495* (0.268)
log labor productivity	-0.161*** (0.025)	-0.161*** (0.025)
log number of employees	-0.096*** (0.019)	-0.096*** (0.017)
log age	-0.353 (0.016)	-0.353 (0.017)
log total assets	0.243*** (0.018)	0.243*** (0.016)
log gross operating margin	-0.289*** (0.009)	-0.289*** (0.009)
North dummy	0.228*** (0.054)	0.228*** (0.049)
Center dummy	0.186*** (0.050)	0.186*** (0.067)
Number of observations	49,785	49,785
Adjusted R^2	0.254	0.254
Brier score	0.032	0.032
Cluster	No	Province

FCs and Export Prices: IV

	log Unit Value	
	(1)	(2)
Panel A - Second Stage on (log) unit value		
Financially constrained firms dummy (FC)	1.042*** (0.032)	1.193*** (0.036)
log labor productivity	0.176*** (0.002)	0.185*** (0.003)
log number of employees	0.164*** (0.002)	0.167*** (0.002)
log age	0.026*** (0.001)	0.032*** (0.002)
log total assets	-0.154*** (0.002)	-0.195*** (0.002)
log gross operating margin	-0.010*** (0.001)	0.003*** (0.002)
Panel B - First Stage on FC		
Instrument (phat)	0.608*** (0.0060)	0.703*** (0.004)
log labor productivity	-0.025*** (0.0006)	-0.023*** (0.0003)
log number of employees	-0.020*** (0.0003)	-0.016*** (0.0003)
log age	-0.009*** (0.0002)	-0.007*** (0.0002)
log total assets	0.021*** (0.0003)	0.017*** (0.0003)
log gross operating margin	0.003*** (0.0003)	0.002*** (0.0002)
R^2	0.135	0.114
Number of observations	2,526,047	1,113,756
Product-Country FE	Yes	Yes
Sectoral & Area Dummies	Yes	Yes

FCs and Export Prices: interpretation

Why constrained firms set higher export prices than those unconstrained?

- Quality models: higher prices are signal of higher quality, but quality also associates with extra costs. Then FC firms will export lower quality goods at lower prices (Fan,Lai and Li, 2012)
- Efficiency models: FC firms set higher prices due to inefficiency (they are less productive and operate at higher marginal costs)
- Prices as a strategic variable per se: FC firms have incentives to sustain short term revenues, and they can do so either via setting higher price per unit sold, or via expanding demand through lower prices (Dasgupta and Titman, 1998; Pichler et al.,2008)

FCs and Export Prices: interpretation

- Price distortion effect: a firm facing tighter credit constraints will reduce its output leading to excess demand which in turn pushes up its price
- Quality adjustment effect: more credit access leads to a higher optimal quality chosen by the firm, which in turn leads to a higher price

"Testing" quality via input prices

- Constrained firms that set higher export prices purchase more costly inputs?

  $$\ln UVImp_{fpct} = \gamma FC_{f,t-1} + \delta Avg \ln UV_{f,t} + \beta \mathbf{Z}_{f,t-1} + FE_{pc} + \varepsilon_{fpct}$$

  where

  - $UVImp_{fpct}$ is the unit value of import, only for intermediate input
  - $Avg \ln UV_{ft}$ is the firm's average unit value of exports across products and destinations

- Preliminary results suggest that quality may play a role in the data ($\delta +$) but the price of imported inputs does not have any significant association with FC (γ NS)

Conclusions

FCs play a statistical robust role in shaping firms' exporting activities:

- Firms charge higher prices when facing tighter credit conditions
- Findings are consistent with models of efficiency sorting: FC firms set higher prices because they operate al lower efficiency (i.e at higher marginal cost)
- The results are also in line with a strategic pricing explanation, with constrained firms that keep prices high in the attempt to offset the negative impact on revenues due to reduced export activity
- Results are difficult to reconcile with model of quality sorting, which would predict that constrained firms reduce prices

Italy: strong dependence on bank credit

- underdeveloped stock market

$\frac{\text{Capitalization (non financial)}}{\text{GDP}}$	ITA	GER	FRA	UK
	19%	38%	59%	95%

- underdeveloped bond market

$\frac{\text{Bonds}}{\text{Financial debt}}$	ITA	UK	US
	8%	24%	44%

- role of banks

	ITA	UK	US
$\frac{\text{Bank credit}}{\text{Financial debt}}$	67%	27%	33%
$\frac{\text{Short-term bank credit}}{\text{Short-term financial debt}}$	37%	43%	26%

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