Credit Constraints, Technology Choice and Exports: A Firm Level Study for Latin American Countries

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- Technology lag and imperfect financial markets in developing countries
- Quantify Credit constraints faced by manufacturing firms
  - Investment in capital goods
  - Cost of foreign market participation

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- Extensions; Schmidt (2010) , Monova (2008)

Extensions in Melitz Model

- Technology Choice-Schmidt (2010)

$$TC_T = \eta_T f + \frac{q}{\varphi^T}$$

$$\eta_H > \eta_M > \eta_L = 1$$

$$\varphi^H > \varphi^M > \varphi^L$$

$$\pi_h\left(\varphi_0^L\right) = p_h\left(\varphi_0^L\right) q_h\left(\varphi_0^L\right) - \frac{q_h\left(\varphi_0^L\right)}{\varphi_0^L} - f$$

$$\pi_h\left(\varphi_1^M\right) + \pi_f\left(\varphi_1^M\right) = \frac{\left(1+\tau^{1-\sigma}\right)}{\rho} E(P\rho)^{\sigma-1}\left(\varphi_1^M\right)^{\sigma-1} - \eta_M f - f_x$$

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- Optimal investment decision -solve the profit maximization problem

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- Introduce technology choice and credit constraints in Melitz (2003) model
- Determine the credit required to upgrade technology

$$C\left(\varphi_0^L\right) = (E\alpha)^{\frac{1}{\beta}} \left[\frac{\sigma-1}{\sigma}\right]^{\frac{\sigma}{\beta}} \left[P\varphi_0^L\right]^{\frac{\sigma-1}{\beta}} \left[\frac{\delta}{1+\tau^{1-\sigma}}\right]^{\frac{1}{\beta}} \left[\frac{1}{R\left(\varphi_0^L,.\right)}\right]^{\frac{1}{\beta}}$$

Data

Table : Countries and Share in Sample

Country	Firms	Percent
Argentina	594	29.2
Bolivia	132	6.49
Chile	388	19.08
Colombia	368	18.09
Mexico	314	15.44
Peru	238	11.70
Total	2034	100

Data Source: Enterprise Survey by World Bank;2006-2010

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- Credit availability and likelihood of Capital investment
- Investment in Capital goods and likelihood of export

Regression Model

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- Semi-parametric maximum likelihood estimation (Klein Spady,1993)

Regression Results for Hypothesis (i)-(iii)

VARIABLES	(1)	(2)	(3)
Credit	0.19*	-0.42	0.68***
	(0.10)	(0.28)	(0.22)
Skilled Labor	0.01	-0.001	0.03
	(0.01)	(0.09)	(0.02)
Support Staff	0.01	-0.06	0.016
	(0.022)	(0.161)	(0.039)
Conglo	0.013	-0.208*	0.018
	(0.038)	(0.070)	(0.059)
N	1733	591	1933
R-sq	0.012	0.056	0.16
Country/Ind FE	Yes	Yes	Yes
Sargan Stat	0.15	0.464	0.334

Table: Regression for Export and Investment

MODEL	Panel XTIV
INVEST	0.144**
	(0.0645)
LABEMP	0.0749
	(0.0664)
CONGLO	0.0401
	(0.0553)
Observations	788
R-squared	0.281
Sargan Test Stat.	0.152

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- Divert resources from trade subsidies to credit for potential exporters