Trade Credit and Markups

Alvaro Garcia-Marin* Santiago Justel** Tim Schmidt-Eisenlohr***

* Universidad de los Andes, ** The World Bank, *** Federal Reserve Board

Overview

Document with U.S. Compustat and Chilean micro data that:

- Trade credit use increases in markups
- Markup effect stronger when borrowing costs higher

Rationalize findings in model with

- Positive markups
- Costly financial intermediation (borrowing rate exceeds deposits rate)

$\Rightarrow$ Financing cost advantage of trade credit.

Introduction

Trade credit is the most important form of short-term finance for firms. In 2019, U.S. non-financial firms had $4.5 trillion in trade credit outstanding, equaling 21 percent of U.S. GDP.

Intuition for main mechanism

Trade Credit: Seller borrows production cost C:

$$FC^{TC} = r_b \underbrace{C}_{\text{Production Cost}} \tag{1}$$

Cash in Advance: Buyer borrows revenue $R = \mu C$; seller deposits surplus liquidity $R - C = (\mu - 1)C$:

$$FC^{CIA} = r_b \underbrace{\mu C}_{\text{Revenues}} - r_d \underbrace{(\mu - 1)C}_{\text{Bank Deposit}} \tag{2}$$

Difference in financing costs:

$$\Delta FC = FC^{CIA} - FC^{TC} = (\mu - 1)(r_b - r_d)C \tag{3}$$

$\Rightarrow$ If there is a positive markup and the borrowing rate is above the deposit rate, cash in advance has higher financing costs than trade credit.

Proposition 1: Payment Choice: Domestic Case

Suppose the borrowing rate is above the deposit rate, $r_b > r_d$, and firms charge a positive markup over effective costs ($\mu > 1 + r_b$). Then, firms should always use trade credit.

Proposition 3: Trade Credit and Markups

Suppose $(1 + r_b^*)\ \tilde{\lambda}^* > (1 + r_d)\ \tilde{\lambda}$, where $(\tilde{\lambda}, \tilde{\lambda}^*)$ are functions of domestic and foreign contract enforcement. Then:

i) The use of trade credit increases with the markup μ.

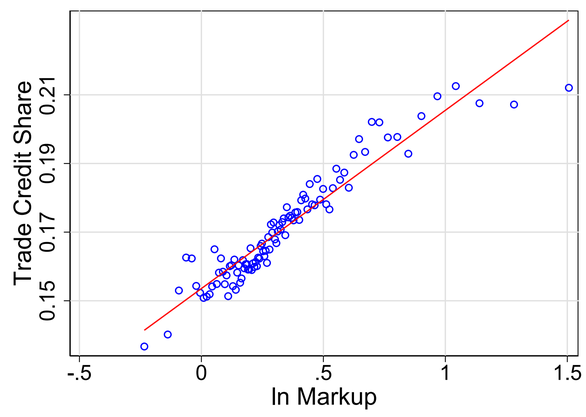
ii) This effect increases with r_b^* and λ^* and decreases with r_d and λ.

Data

- **United States**: Compustat, 1965-2016.
- **Chile**: (i) Customs-level data, containing payment mode information; (ii) Production-level data at the firm-product level from ENIA, 2003-2007.
- Chilean data key for identification: It allows instrumenting markups with physical productivity (TFPQ), and controlling for exhaustive set of fixed effects, including firm-year fixed effects.
- Markups estimation: Follow production-based approach by De Loecker et al (2016), and De Loecker, Eeckout and Unger (2020).

Graphical Evidence

Figure 1:Trade Credit Share Increases with Markups: U.S. Evidence



Empirical Specification

First Stage

$$\ln(\mu_{ipt}) = \gamma_1 \ln(TFPQ_{ipt}) + \gamma_2 \ln(L_{it}) + \alpha_i + \alpha_p + \alpha_{jt} + \varepsilon_{ipjt} \tag{4}$$

Second Stage

$$\rho_{ijpt} = \beta_1 \widehat{\ln \mu_{ipt}} + \beta_2\ \ln(L_{it}) + \delta_i + \delta_p + \delta_{jt} + \epsilon_{ijpt}, \tag{5}$$

Results

Table 1:Baseline Results

Specification:	OLS	Reduced Form	First Stage	Second Stage
	(1)	(2)	(3)	(4)
Dependent Variable:	TC Share	TC Share	ln(markup)	TC Share
ln(Markup)	.0204***	—	—	.1050***
	(.0047)			(.0291)
ln(TFPQ)	—	.0054***	.0519***	—
		(.0015)	(.0038)	—
First Stage F-Statistic	—	—	232.2	—
Firm FE	✓	✓	✓	✓
HS8 FE	✓	✓	✓	✓
Country-Year FE	✓	✓	✓	✓
Observations	93,556	90,727	90,727	90,727
R^2	.368	.371	.692	.368

Table 2:Interaction Terms

Specification	OLS	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln(markup)	-.0215	-.0298	—	—	.539**	.459**	—	—
	(.0311)	(.0318)			(.222)	(.226)		
ln(markup)×r_d	-.533	-.485	—	—	-2.130	-1.551	—	—
	(2.510)	(2.512)			(17.34)	(17.64)		
ln(markup)×r_b^*	.293**	.328***	.308**	.315*	.953*	1.232**	1.136**	1.363**
	(.121)	(.126)	(.135)	(.141)	(.545)	(.562)	(.569)	(.587)
ln(markup)× Rule of Law	—	.0212	—	.0212	—	.239*	—	.209
		(.0151)		(.0164)		(.137)		(.147)
First Stage F-Statistic	—	—	—	—	21.1	16.5	51.7	26.9
Firm-Year FE	✓	✓	—	—	✓	✓	—	—
HS8 FE	✓	✓	—	—	✓	✓	—	—
Country-Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Firm-HS8-Year FE	—	—	✓	✓	—	—	✓	✓
Observations	93,556	93,556	93,556	93,556	90,727	90,727	90,727	90,727
R^2	.420	.420	.437	.437	.409	.402	.435	.430

Conclusions

- Strong link between trade credit provision and markups
- Trade credit allows firms to save on financial intermediation
- International trade data useful to shed light on trade credit trade-offs (because enforcement is harder across borders)

Contact Information

Alvaro Garcia-Marin. E-mail: agarciam@uandes.cl