Scarring Recessions and Credit Constraints:
Evidence from Colombian Firm Dynamics

Marcela Eslava, Arturo Galindo, Marc Hofstetter and Alejandro Izquierdo

Discussion by Michael Koetter

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An important paper on the dark side of recessions
Thought-provoking role for credit constraints

1. Summary (of what I considered a very nice paper!!)
2. Measurement of credit constraints
3. Nature of exits (and other industry dynamics)
4. Inference & and estimation issues

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Do recessions induce inefficient exit?

The idea of a possible dark side to Schumpeterian rejuvenation due to credit constraints

$$Pr(Exit_{it} = 1) = N(\beta_s + \beta_l L_{i,t-1} + \beta_{tfp} TFP_{it} + \beta_c CC_i + \beta_B Bad_t + \beta_{cB} CC_i \times Bad_t + e_{it})$$

What the paper does

- Predict $Exit_{it}$ of 2,652 Colombian manufacturers 1995-2004 as a fcn of ...
- ... productivity, credit constraints (CC), and really bad (2pC) recession (98-01)
- CC comprise dependence on ext. funds and int. reliance on ext. funds
- Within-sector heterogeneity of (time-invariant) CC to identify recession responses

What the paper finds

- Constrained firms are more likely to exit compared to unconstrained ones
- Amplified for low TFP firms during recessions ("exit penalty")
- Qualitatively similar results for probit and LPM FE specs
- Counterfactual analysis give rise to small aggregate effects

My main takeaway: "only" bc of CC, some otherwise productive firms exit

$$Pr(Exit_{it} = 1) = N(\beta_s + \beta_l L_{i,t-1} + \beta_{tfp} TFP_{it} + \beta_c CC_i + \beta_B Bad_t + \beta_{cB} CC_i \times Bad_t + e_{it})$$

$CC = ED_s \times IR_i$

- ED measured a la RZ as observed capex-to-investment ratio of US firms (when?)
- Despite pervasive use in the literature, not beyond concern IMHO
- Does a comparison of lagged "gold standard" data to Colombian data bode well?
- Do U.S. idiosyncratic shocks "disturb" it as a benchmark for transition economies?
- Banks' willingness and ability to provide credit changes over the cycle
- Amplified and mitigated by heterogeneous exposures to shocks and policy!

Exposure to UMP generated heterogeneous lending

Not so absurd to expect different exposures to real shocks to matter, too!

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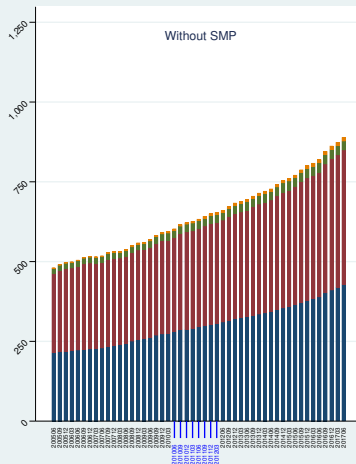
Hold it! This tiny program should affect lending of German banks?
Main mechanism via valuation effects rather than outright unloading of APP securities

Nominal value of non−SMP and SMP securities (in bn Euro)

SMP securities   non−SMP securities

Greece   Italy   Ireland   Portugal   Spain

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Don't we need:

- Yet, IR_i is constant and results from firm-level regressions of π and I on TFP (fn 5)
- Constraints that change endogenously over the cycle?
- A gauge of which CC components are due to firm vs bank traits?
- Smoking gun—observed rejections of loan applications a la Jimenez et al (2012)?

Train of thought: heterogeneous CC cause inefficient exits

Boils down to whether we falsely reject solvent but illiquid projects

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Sparked a number of clarification and possibly conceptual inquiries

- Around 3% of the 18,986 firm-year observations exit – but why?
- Exit is defined as no output reported in $t + 1$ through $t + 5$
- I can envision persistent attrition effects on employment and output if(f):
  - Production factors of exiting firms are not re-deployed elsewhere and fully depreciate
  - Else, human capital migrates elsewhere in close-to-complete labor markets
  - Even less of an issue if exits merely reflect ceasing tax numbers after M&A
- An empirically motivated thought: what (or who) are the zeros here? Incumbents!
- Imagine for a moment the crazy scenario of efficient banks:
- Shouldn't they constrain lo-TFP firms to fund entry of hungry contestants?

- 10m plant-year observations from the BHP
- Covers 50% of DE production capacity
- Generate aggregate entry and exit rates for
- 402 counties and 66 sectors
- Shock: share of plants tied to a SMP bank
- Estimate $Y_{rt/kt} = \alpha_{r/k} + \alpha_t + \gamma SMPshare_{r/k} \times Post_t + \epsilon_{rt/kt}$
- 10,085,408 plant-year obs
- Covering the years 2007-2013

Much less industry dynamics compared to e.g. the USA
But policy shock responses in terms of entry seem as important as exit

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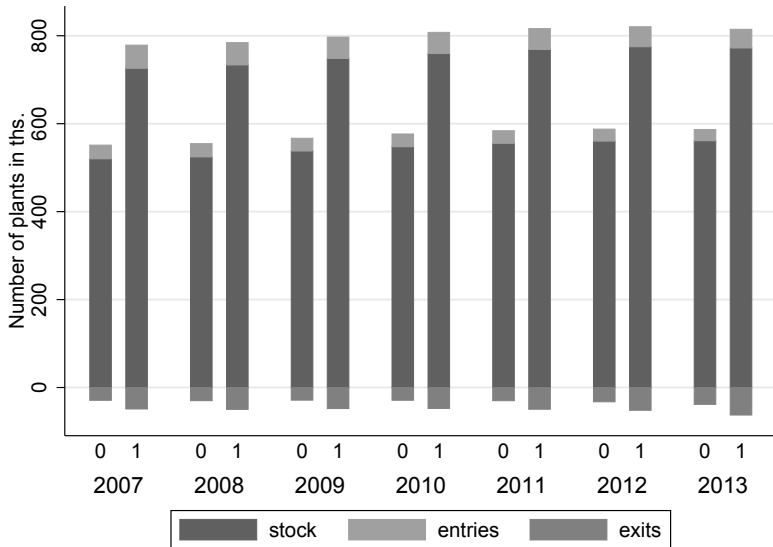Credit
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| | Region | | Sector | |
	Entry	Exit	Entry	Exit
	I	II	III	IV
Post*SMPshare	-0.007***	-0.004***	-0.023	-0.027**
	(0.001)	-0.001	(0.022)	(0.012)
Time FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	-	-
Sector FE	-	-	Yes	Yes
N	2,814	2,814	462	462
R2	0.782	0.746	0.782	0.880
Mean dependent	0.050	0.055	0.055	0.055
SD dependent	0.010	0.009	0.030	0.028
Mean SMPshare	0.418	0.418	0.476	0.476
SD SMPshare	0.188	0.188	0.106	0.106

- Leads and lags as in Gormley and Matsa (2016) bode well
- Most aggregate variables' changes are identical pre-2010
- Excluding financial centers does not alter results

Train of thought: heterogeneous CC cause inefficient exits
Boils down to whether we falsely reject solvent but illiquid projects

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Don't we need:

- Account/compare voluntary vs. forced exits via closure vs. mergers
- More comprehensive assessment of industry dynamics, i.e. entries?
- Does the AMS survey allow you to track human capital migration?

$$Pr(Exit_{it} = 1) = N(\beta_s + \beta_l L_{i,t-1} + \beta_{tfp} TFP_{it} + \beta_c CC_i + \beta_B Bad_t + \beta_{cB} CC_i \times Bad_t + e_{it})$$

TFP obtained as a residual from a revenue production fcn

- I am not a production function econometrician, but . . .
- . . . isn't therefore $TFP_{it} = f(L_{i,t-1})$ by construction, (if labor is sticky)?
- How to disentangle tech change from (sectoral) price changes and from . . .
- . . . firm-specific abilities to realize mark-ups, either due to . . .
- . . . lower MC (hi prod firm or monopsony in factor markets) vs monopoly pricing?

Further challenges I had to draw inference

- Financial friction is in *CC*, but how to rule out that $IR_i \neq f(TFP_{i,t-T})$
- The motivation emphasizes persistent attrition effects of CC
- But the "post-treatment" period of '98–'01 is compared to '95–'97 & '02–'04?

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- Important micro-level evidence on the possible dark side of recessions
- Credit constrained, but otherwise productive firms are forced to exit in really bad recessions
- An important qualification of the many "Armageddon" results of loose policy to ease such CC
- Heterogeneity of CC momentarily modeled a bit "rough on the edges"
- Scope to model financial frictions more directly in production fcn and TFP estimation?

- Section 2 is empty and Figure 1 has no labels on the x-axis
- Still using firms and plants interchangeably at times; how many single-plant firms?
- Why not use continuous constraints as in section 6 all the way?
- Interaction terms in probit subject to Ai and Norton critique?
- Why not multiple CC measures (see e.g. Behr et al 2013) akin to only ED?
- Mandate of Supersociedades? I see prudential bank supervision, but of firms?