How Firms Respond to Business Cycles: The Role of Firm Age and Size

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November 7, 2012

Question, Findings and Significance

- Empirical exploration of cyclical behavior of firms by age and size
- Young/small firms respond more strongly to the business cycle
  - specially more so during the great recession
  - collapse in local housing prices
- Significance of paper's findings and approach:
  - combined with theory, can use micro-data to infer nature of shock
    - ⋆ TFP shock, credit shock
  - nature of shock matters for policy response

A theory to study Firm Responses to TFP and Credit Shocks

- Large number of entrepreneurs distinguished by:
  - Idiosyncratic productivity: e, stochastic
  - Wealth: a, endogenously chose to max. lifetime utility
- Production and factor choice

$$\pi = \max_{l,k} f(k, l, Z_s e_s) - w_s l - (\delta + r_s)k$$

$$s.t.$$

$$k \leq \lambda_s a_s$$

Predictions from TFP shock

- Credit conditions are good (high λ) , and TFP falls (low Z)

$$l, k \propto f(Ze; w, r)$$

  - no further reallocation beyond idiosyncratic shocks

Predictions for Firm Credit Shocks

- credit crunch (i.e. λ_s falls)

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- Who is (un)constrained depends on joint distribution over $\{e, a\}$
  1. low wealth low productivity: young, small, likely unconstrained
  2. low wealth high productivity: young, small, likely constrained
  3. high wealth: old and unconstrained; large or small based on productivity

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- Hope is Age, Size or joint Age-Size distribution inform about $\{e, a\}$

Can a Single Dimension Signal a Credit-Crunch?

- Mixed results in the literature about the role of size:
  - Moscarini and Postely-Vinay (2012): the large are more cyclical
  - Gertler and Gilchrest (1994): small are more responsive to monetary contractions

Can a Single Dimension Signal a Credit-Crunch?

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- This paper: State and time-series variation and time/state fixed effects
  - ▶ Net Growth of Small firms falls significantly relative to Large ‣ tablesize
  - ▶ Consistent with Gertler and Gilchrest

- Although effect of age/size decomposition is stronger, age not essential to detect shock
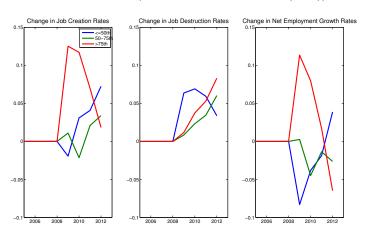 - ▶ Classification by size is enough according to theory ‣ graph

Other Theory-Based Implications to be Tested

- Net growth differential between young/small and large/mature falls
  - But large/mature are net job destroyers. why?
  - Unconstrained firms should be expanding: lower factor prices ▸ graph

- State-level variation in wage adjustment:
  - Are large/mature firms growing faster in states where wages fell the most?

- TFP as cyclical indicator
  - Theory predicts no differential response by firm size age
  - VAR impulse responses to TFP shock consistent with this?

BACK-UP SLIDES

Can Firm Size Alone Signal a Credit-Crunch? Model Implications

- Response to credit crunch (Buera, Fattal-Jaef and Shin (2012)) ▸ main ▸ main2

State and Time Series Variation, Time and State Fixed Effects: Net Growth Differentials by Size Only

Size Only

	(1) diff_net_rate_small_st	(2) diff_net_rate_small_st	(3) diff_net_rate_small_st
Chg. Unemp Rate	-0.828[***]		
	(0.131)		
Real GDP GR		0.114[***]	
		(0.025)	
HP-Filtered Unemp. Rt.			-1.129[***]
			(0.211)
N	1530	1530	1530

Standard errors in parentheses
[*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$