The Impact of Business Cycle Conditions on Firm Dynamics and Composition:
Enterprise Entry and Exit in Egypt, 1911-1948

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Any opinions and conclusions expressed herein are those of the authors and do not necessarily represent the views of the Federal Reserve System, the Board of Governors, or its staff. All results have been reviewed to ensure no confidential information is disclosed.

Why we care

- What is the appropriate approach to modeling the macroeconomy?
  - Representative agent?
  - vs. heterogeneous agent / *firm dynamics*
    - Patterns of firm entry/growth/decline/exit
    - Big implications for labor markets, innovation/productivity growth, transmission of macroeconomic policy, antitrust, etc.

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  - What to expect in a business cycle

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- What are the margins of growth?
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  - What to expect in a business cycle
- Expand a key firm dynamics question to historical/developing setting

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  - Acyclical survival rates for corporation
- Capitalization
  - Countercyclical entry capitalization among general partnerships
  - Procyclical entry capitalization among corporations

Summary of suggestions

1. Getting at the "why" – empirical results help us sort through standard models
    - Cyclical selection and ex ante heterogeneity
    - Persistence of quality differences
2. Linking to broader empirical literature on firm dynamics over the cycle
3. Some other quick assorted points

Taking results back to the theory

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Canonical models of firm dynamics (follow Hopenhayn 1992):

- Aggregate state A
- A measure of firms and potential firms, differ by TFP z
- Revenue function curvature (DRS or imperfect competition)
  - Generate a nondegenerate size distribution
  - Contrast to representative agent framework
  - Side effect: Dampened "responsiveness" → aggregate adjustment requires change in number (not just size) of firms

Two alternative views of entry

Hopenhayn (1992): Entrants are ex ante homogenous / have no information about quality

- Free entry condition determines entry mass:
$$c_e = \beta E \quad V(z'; A, p)$$
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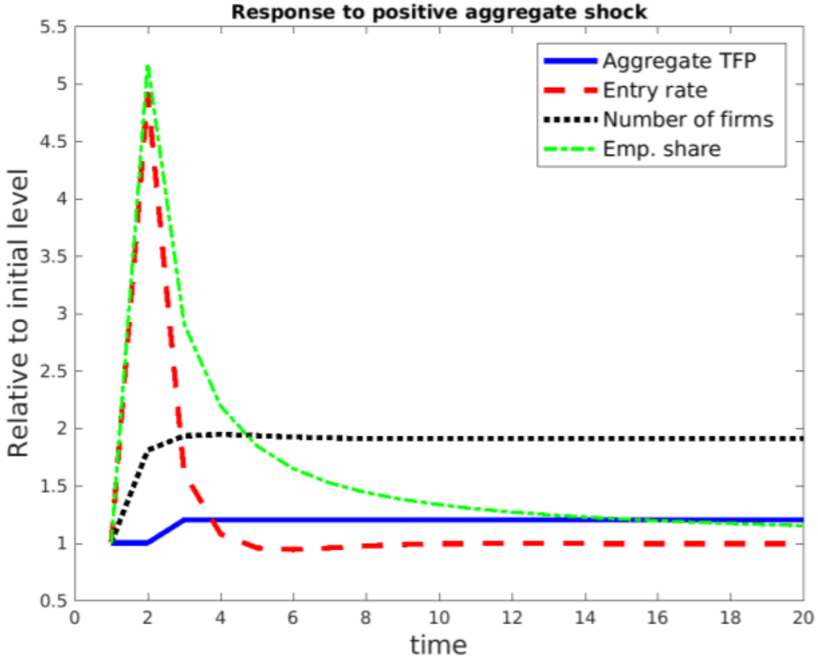
Clementi & Palazzo (2016): Entrants are *ex ante heterogeneous* / receive signal about quality

- Free entry condition determines entry threshold

$$c_e \leq \beta E_z V(z'; A, p)$$

- Can generate procyclical entry and countercyclical productivity threshold → selection
    - May have lower average capitalization among recession cohorts

Ex ante homogenous entrants



Model from Decker, Upton, McCollum 2018

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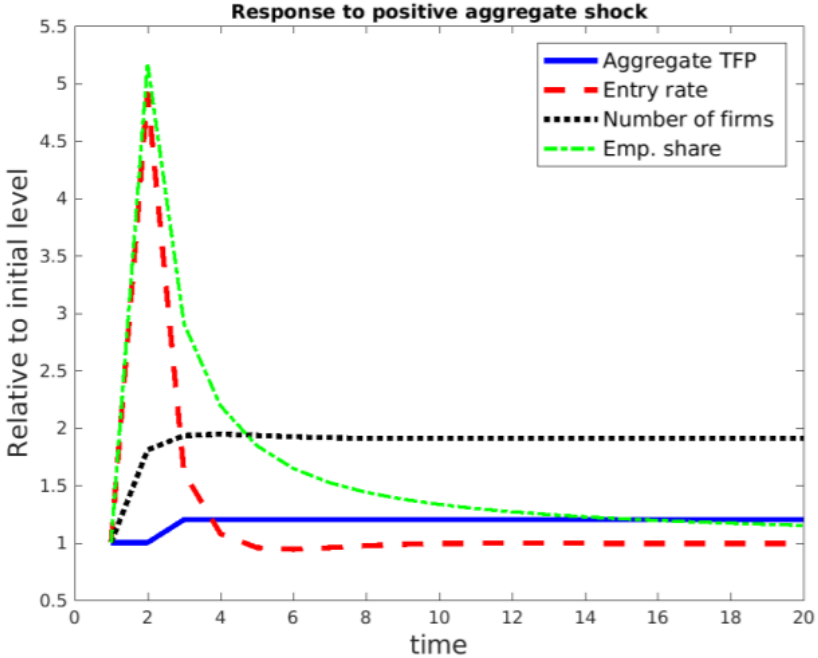

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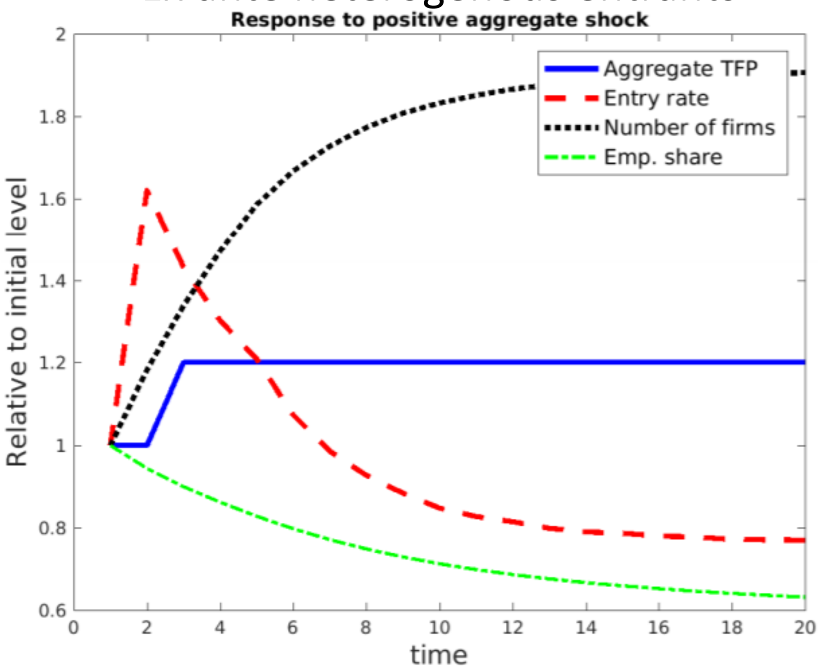
Ex ante heterogenous entrants



- With ex ante heterogeneous (/informed) entrants, rise in firm count facilitated by rising entry, but entrants are low-quality so entrant employment share falls (ie, cyclical selection)

Note: In heterogeneous entrant model, even unweighted entrant effect is calibration dependent (but firm count always rises)

Selection over the cycle

- Higher exit risk and lower capitalization among expansionary cohorts is consistent with cyclical selection
  - Can drill down more: what does exit risk look like *across* the capitalization distribution, over the cycle?
  - That is: is the cyclicality of exit risk primarily driven by low-capitalization (/ marginal) firms?
    - Suggestive evidence: acyclical exit risk among (high-quality?) corporations

Post-entry growth and survival

- How stable are productivity differences?
  - Hopenhayn view: AR(1) process; post-entry growth driven by post-entry "shocks"
  - Alternative: Permanent productivity/quality differences (Pugsley, Sedlacek, and Sterk 2017)

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  - Alternative: Permanent productivity/quality differences (Pugsley, Sedlacek, and Sterk 2017)
- Cihan finds acyclical post-entry capital growth
  - But what happens across the *distribution* of initial capitalization?
  - That is, does everyone stay in their "bin"?

Tying into other (non-mfg) firm dynamics/cyclicality literature

- Adelino, Ma, and Robinson (2017):
  - New firms account for nearly all of employment response to local income shocks (Bartik instrument, U.S. QWI)
- Bernstein et al. (2018)
  - Use global commodity price shocks to identify composition of new firm founders (Brazil)
- Fort et al. (2013)
  - Panel VAR setting (U.S. states): Young firms more responsive to state business cycle shocks
- Decker, McCollum, & Upton (2018):
  - New firms account for > ¼ of employment growth response to shale oil/gas boom (U.S. LBD)

Quick assorted points

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  - Are there tax considerations?
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  - But… what does restructuring look like over the cycle?

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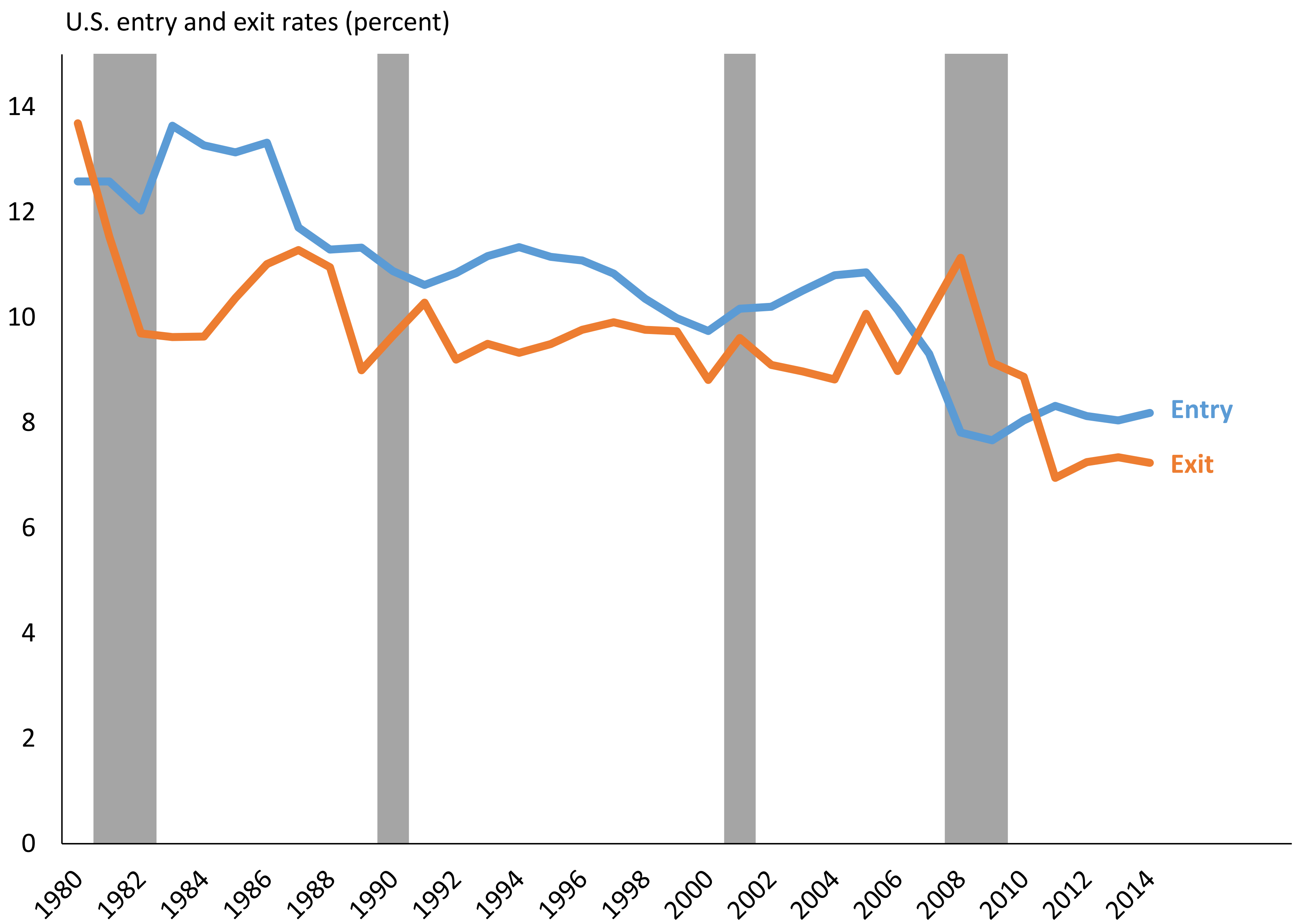
  - But… what does restructuring look like over the cycle?
- Would like to see Figure 3 as *rates* (even if combining partnerships and corps)

Great paper!

- Apparently part of a broader agenda exploring firm dynamics/heterogeneity in historical Egypt/elsewhere
    - Impressive data collection work
- Nice connection to growing/important literature on firm dynamics over the cycle
    - Useful for sorting through competing theories

Thanks



Source: Business Dynamics Statistics. Entry and exit rates defined as in Artunç (2018).