Technological Synergies, Heterogeneous Firms, and Idiosyncratic Volatility

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What Does the Paper Provide?

1. New micro facts on US firm trading relationships: sorting & separation of mismatched firms
2. New GE model: supermodular combo of firm productivity, search & matching with steady state and cycles
3. Quantitative analysis
    - Calibrated model reproduces key facts
    - Large steady state output loss from firm mismatch
    - Uncertainty shocks drive recessions via mismatch

Why I Really Like the Paper

1. The facts are rich and tightly linked to the modeling
   - Assortative matching $\rightarrow$ supermodularity
   - Separations facts $\rightarrow$ search frictions
2. The model is novel, rich, yet still maintains transparency
   - Micro heterogeneity, sorting, search, and GE
   - Steady state and cyclical quantitative analysis
3. The quantitative implications are meaningful
   - A nice fit to untargeted facts
   - Large steady state output losses from mismatch
   - Uncertainty shocks drive a recession via a new channel

What Are My Questions?

With their quantitative framework and relationship data, the authors are well placed to shed light on the following questions:

1. Where is the "big money" for quantitative analysis with this model? Volatility cycles or trends in volatility?

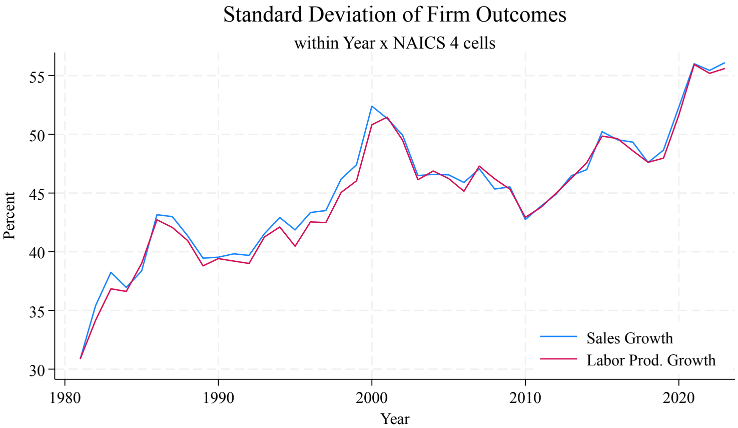
2. Do the details of the firm-level stochastic process matter here for quantitative analysis?

3. How many members should a match include in this quantitative model?

#1: Volatility Cycles or Trends?

- The paper combines steady state and cyclical analysis, but the steady state magnitudes are considerably larger.
- I compute and plot multiple firm-level variance trends in the next two slides. In all cases, trends swamp cycles.
    - US Compustat: unrepresentative, upward trend
    - Spanish ORBIS: more representative, downward trend
- Exploring volatility trends seems natural. An offsetting gain from declining dynamism: more stable firm matches?

#1: Volatility Cycles or Trends?



Source: Compustat 1981-2023 data from the US and my calculations. Note that Compustat volatility trends are well known to be different from privately held trends and overall US trends.

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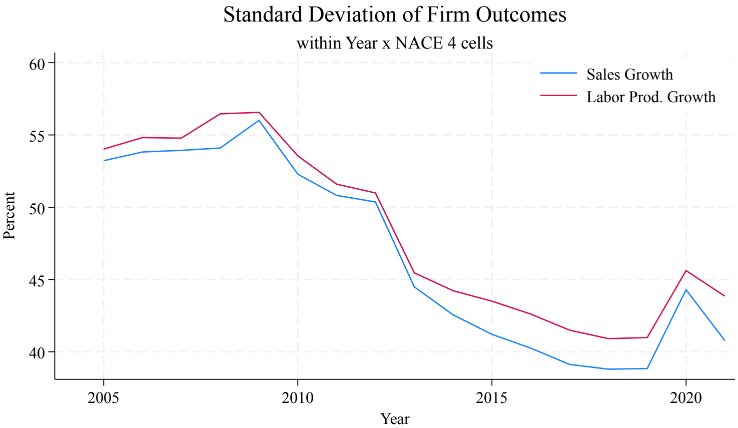

Source: Historical ORBIS 2004-2021 data from Spain and my calculations. Note that this sample is more representative and includes unlisted firms in Spain.

#2: Does the Firm-Level Stochastic Process Matter?

- This paper allows for time-varying volatility but employs an otherwise standard Gaussian AR(1) process for firms.
- Some recent papers propose alternatives:
    - Pugsley, Sedláček, and Sterk (2021) suggests ex-ante heterogeneity matters via LBD.
    - Jaimovich, Terry, and Vincent (2023) suggests fat-tailed, or leptokurtic, shocks matter via ORBIS.
- Could firm fixed effects and/or the higher frequency of small shocks in these papers reduce mismatch?

#3: How Many Members Should A Matched Set of Firms Include?

- The paper uses a pair, i.e., two firms, as its matching unit.
- One could imagine real-world scenarios with partnerships or relationships with more than two firms.
- I examined 2019 Compustat customer data:
  - Mean of 3.6 links, 45% of firms have > 1 link
  - Pairwise match labor prod. corr. $= 0.20$.
  - Match "mean of customers" labor prod. corr. $= 0.31$.
- Might mismatch be less important if there is some substitutability across partners who appear collectively better matched than individual pairs of firms?

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