Turbulent Business Cycles

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This Paper

Turbulences in economics?

- Turbulent industries experience frequent changes in productivity
  - Subtly different than volatility
  - Turbulence means that my current state is **very likely** to change
- In a turbulent industry there is strong reversion to the mean
  - Winners don't stay winners long (high productivity shocks are not persistent)
  - ... but losers also can expect a rebound

Why inefficiencies (isn't it just another RBC shock?)

- No frictions
  - Capital flows to productive firms
- Adjustment costs of factor inputs
  - Frequent rebalancing of capital: losses from reallocation
- Financing frictions (this paper)
  - If constraints are forward looking
  - High productive firms need lots of capital today ...
  - ... but face tight constraints from mean-reversion

This Discussion

- My view of the important results
- What I think the paper is missing so far

How do they do it?

Measurement

- Based on manufacturing productivity within an industry: TFP_{ijt}

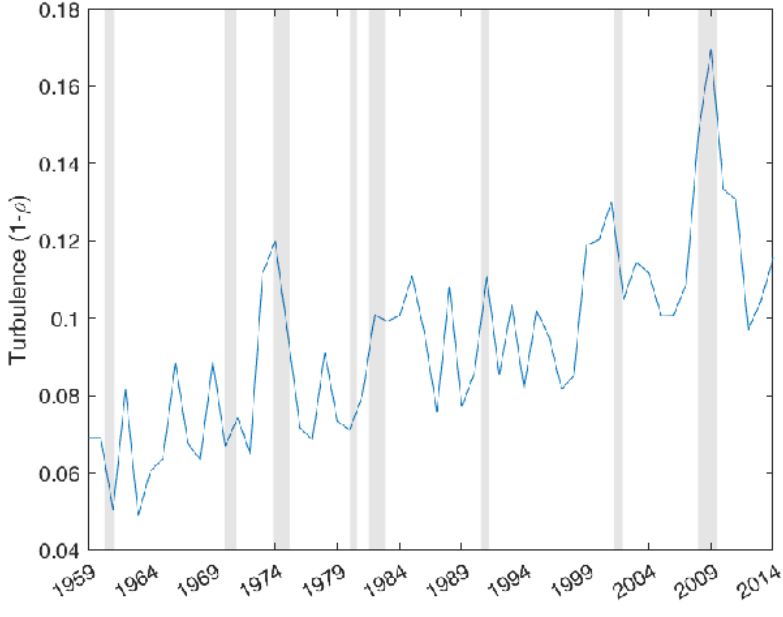
$$\text{Turbulence}_t = \text{corr}(\text{TFP-rank}_{ij,t}, \text{TFP-rank}_{ij,t-1})$$

- Equivalent to estimating the parameter ρ_t which determines the evolution of idiosyncratic productivity

$$z_{j,t+1} = \begin{cases} z_{j,t} & \text{with probability } \rho_t \\ \tilde{z} & \text{with probability } 1 - \rho_t. \end{cases}$$

- High turbulences $\Longrightarrow$ high $1 - \rho_t$
  - Productivity tomorrow is drawn from stationary distribution

How do they do it?



How do they do it?

Some empirical evidence

- Turbulences decouple demand for factor inputs and productivity
  - In turbulent times firms with high TFP do not demand more capital/labor than other firms
- Turbulences interact with financial frictions
  - In turbulent times industries with high financial frictions reduce their dispersion ...
  - ... misallocation

How do they do it?

Quantitative relevance

- RBC model with financial frictions
- Model operates as it should be! (that's a good thing)
- Generate drop in production due to the inefficient reallocation caused by the interaction of financial frictions and turbulences in TFP

Measurement questions

Where should we look

- Why focusing on estimating TFP?
  - Other evidence of "shuffling" in sales, market shares etc.
- Why focus solely on manufacturing?
  - Rise of new firms in new industries
  - Risk of underestimating turbulence in "sleepy" manufacturing sector

Reliance on financial frictions

- Turbulences only matter if interacted with other frictions ...

Empirical questions

Estimating the rank

- In large sample the correlation of the TFP rank recovers ρ_t

$$\text{Turbulence}_t = \text{corr}(\text{TFP-rank}_{ij,t}, \text{TFP-rank}_{ij,t-1})$$

- Are we in large sample?

Empirical questions

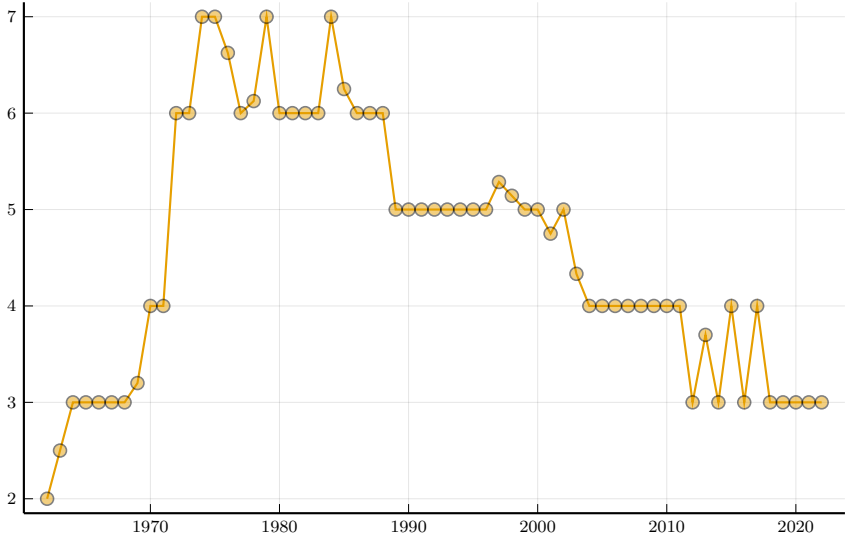


Figure: Median number of firms in industries (3 digits)

Empirical questions

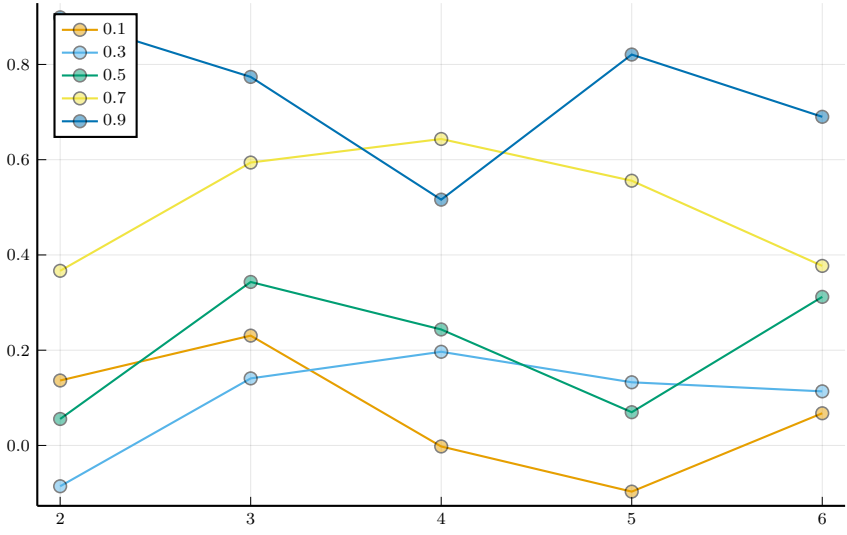


Figure: Estimation of ρ given a number of firms (simulated data)

Empirical questions

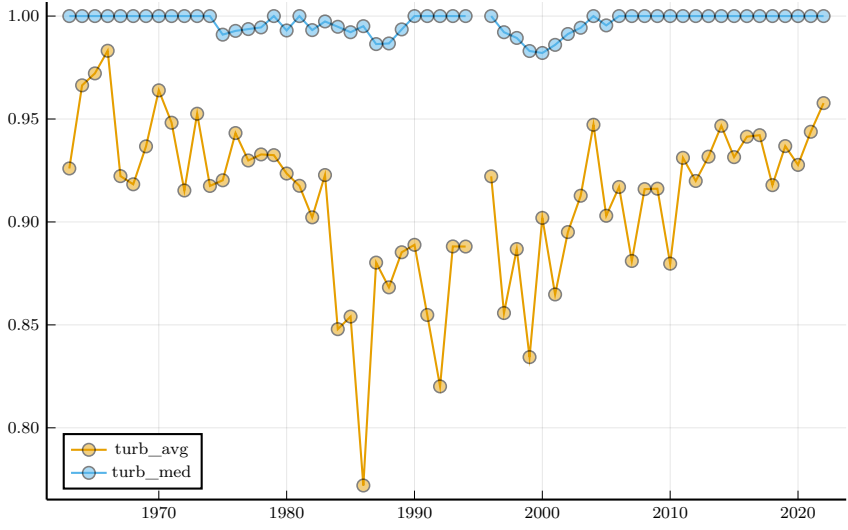


Figure: Rank correlation for sales (3 digits)

Empirical questions

Is turbulent TFP a fundamental object

- Hard to find exogenous (fundamental) factors behind volatility
- Similar for turbulence?
  - Conjunction of volatility and industry organization

How to interpret financial frictions separately from turbulences

- See above: what is the fundamental object?
- Financial frictions at the firm level are likely to be a function of the firms position within the industry

How do we measure misallocation...

- Large body of work on the measurement of misallocation (and its link with financial frictions)
- Dispersion of factor inputs is not a sufficient statistic

The model

Mechanism

- Mechanism hinges on financial frictions today depending on future outcomes
- Additional (direct) evidence on the role of frictions
- So far the reasoning accept the mechanism implicitly

$$\text{turbulence} + \varnothing \Longrightarrow \text{no misallocation}$$
$$\text{turbulence} + \text{financial frictions} \Longrightarrow \text{misallocation}$$

- But we also know that

$$\varnothing + \text{financial frictions} \Longrightarrow \text{misallocation}$$

Use the model to generate additional restrictions

- What is unique about the composition of financial frictions and turbulences?

Adjustment costs

Would simple capital adjustment costs lead to misallocation

- Adjustment costs link capital stock across time periods
- Basic algebra suggests it cannot operate
  - Turbulent productivity means a compression of expected productivity across firms
  - Relatively less investment of currently productive firms ... is not inefficient
- Adjustment costs across future time periods affect decision to invest today
  - Investing today means that I will not have to pay adjustment costs tomorrow (persistent productivity)
  - This mechanism is inoperative with mean-reverting productivity
  - Do we have a lower level of investment to avoid deadweight loss of adjustment costs?

Final Thoughts

Thought provoking Paper! Go read it.

Take away

- Turbulent business cycles: measurement and evaluation
- Independent interaction with financial frictions?