Turbulent Business Cycles

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To begin with...

This was really fun to read!

The idea of (firm-level) turbulence

I think it's a fascinating thing to think about!

- what "level of aggregation" should we be thinking about?
  - e.g. what is turbulence at percentiles, quartiles? Does it matter?
  - can we perhaps standardize by volatility of firm-level TFP?

- paper views it as a structural shock
  - an *aggregate* shock to changes in firm-level productivity?

- could we think of endogenous channels that generate turbulence?

  - e.g. different sensitivity of businesses to (other) shocks

The idea of (firm-level) turbulence in other studies?

The notion of turbulence is around in different contexts. Is there a relationship?

- how is it related to the news shock literature?
  - turbulence in this paper also about *future* growth, "just" at the firm-level
  - also generates a "Pigou cycle": Y, C, I and N moving in same direction
  - on the other hand, news doesn't go in the same direction for all firms...

- how is it related to worker-level turbulence?
  - that literature is about *endogenous* choices (worker productivity, separations)
  - not about *relative position* of workers
  - is there something particular about the relative position of firms?

Empirics

I'd like to know a little more about turbulence

- what is the persistence of turbulence?
    - after switching productivity ranks, (when) does a firm "come back"?

- does turbulence change firm behavior?
    - looking at a firm which has changed ranks, what does it do?
        - in terms of hiring, sales, investment etc
    - are businesses which came from "above" and "below" a rank the same?

- what's with the trend in turbulence?
    - how does this square with other "measures of reallocation"?

Empirics: specifications

Baseline specification looks for interaction of turbulence and firm-level TFP rank

$$x_{jt} = \beta_0 + \beta_1 High\_TFP_{jt} + \beta_2 Turb_t \times High\_TFP_{jt} + \mu_{jt} + \eta_t + \epsilon_{jt}$$

But what if high- and low-TFP firms respond differently over the business cycle?

- see e.g. Gertler, Gilchrist (1994), Moscarini, Postel-Vinay (2013), Decker et al. (2020), Clymo, Rozsypal (2022)

Could you check for that with something like this?

$$x_{jt} = \beta_0 + \beta_1 High\_TFP_{jt} + \beta_2 Turb_t \times High\_TFP_{jt} + \beta_3 \eta_t \times High\_TFP_{jt} + \mu_{jt} + \eta_t + \epsilon_{jt}$$

Similarly for financial conditions

- "High_FF" sectors may respond differently to (other) aggregate shocks

Model: modelling of turbulence

Turbulence viewed as an *aggregate* "news shock"

- "bad" for high-TFP and "good" for low-TFP firms

Can we see these types of model predictions in the data?

- all else equal, high turbulence alleviates constraints for low-TFP firms
- what happens to such firms in the data? Difficult with confounding effects...

"Production thresholds for firms with low productivity are more sensitive..."

- I wasn't quite clear on this – why is it the case?
- does this not generate endogenous turbulence?
- in general has implications for calibration (I'd rather use simulated model)

Model: other reasons for turbulence?

$$\ln z_{j,t+1} = \begin{cases} \ln z_{j,t} & \text{with probability } 1 - p_{j,t}, \\ \ln Z_{t+1} & \text{with probability } p_{j,t} \end{cases}$$

- $p_{j,t}$: probability of innovation
- $\ln Z_{t+1} = \overline{Z} + \ln Z_t + \epsilon_{Z,t+1}$: "frontier technology"
    - $\overline{Z} > 0$: average technology growth
    - $\epsilon_{Z,t} \sim N(0, \sigma_Z^2)$: technology shocks

In this model, firm-specific turbulence, but aggregate "shocks" to productivity (ϵ)

- generates firm-level uncertainty variation
- generates recessionary reallocation cycles ("Schumpeterian downturns")
- generates (endogenous) counter-cyclical turbulence

Model: role of financial frictions

Financial frictions are shown to be important for propagation of turbulence

- intuitively makes a lot of sense, I like it!

- quantitatively I'd like to know more ...

- what controls "elasticity" of financial constraints to turbulence?

  - impact of turbulence on firm values combined with
  - impact of firm values on financial constraints combined with
  - shape of distortion/subsidy distribution(?)

- what disciplines the above, can we do some robustness?

Little things

Empirics:

- sensitivity of turbulence measure to estimates of α
- how is aggregate turbulence measure aggregated from industry levels?
- why manufacturing TFP as a cyclical indicator if turbulence is aggregate?
- should turbulence shocks be defined as *changes* in turbulence?

Model:

- exit when profits (not firm value) are zero is by assumption (fin. frics)?
- I'd love to see details on solution method - must be a monster to solve...
- difference with uncertainty sometimes unclear
  - uncertainty increases hours and firm survival in model, but what about data?
- what does turbulence do in response to A shock?