Discussion of "Small and Large Firms over the Business Cycle" N. Crouzet & N. Mehrotra

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Summary of the Paper

- To what extent are individual firms heterogenously reactive to aggregate shocks?
- Gertler & Gilchrist (1994): Small / Financially constrained firms are more sensitive to BC fluctuations ("Financial accelerator")
- Empirical investigation using a representative survey of US firms
- Result: While small firms are indeed more reactive to shocks, the US economy's granularity is such that the aggregate quantitative impact of this heterogeneity is close to zero

Underlying argument

- US economy is made of a (large) number N of heterogeneous firms:

$$GDP \equiv \sum_f VA^f$$

- Aggregate response of the economy to a common shock decomposes as:

$$\varepsilon = \sum_f \omega^f \varepsilon^f$$

where ε (resp. ε^f) is the elasticity of the aggregate economy (resp. of firm f) and ω^f the share of firm f in aggregate output (taken as fixed to simplify)

- (Abstracting from extensive margin effects)

Underlying argument (ii)

- By definition:

$$\varepsilon = \bar{\varepsilon} + Cov\left(\frac{\omega^f}{\bar{\omega}}, \varepsilon^f\right)$$

  with $\bar{\varepsilon}$ the (simple) mean of elasticities

- Gertler & Gilchrist (1994): Small firms tend to be systematically more reactive to shocks and thus the Covariance is negative: $\varepsilon < \bar{\varepsilon}$

- Crouzet & Mehrotra: Difference is quantitatively small because the economy is granular:

$$\varepsilon = \omega^S \varepsilon^S + (1 - \omega^S)\varepsilon^L$$

  and $(1 - \omega^S)$ is large (and rising): $\varepsilon \approx \varepsilon^L$

Data and empirical strategy

- A **representative**, **quarterly** panel of US manufacturing firms from 1977 to 2014 (balance-sheet variables): 8,122 out of 136,205?
- Evidence of heterogeneous ε^f:

$$d \ln Sales^f = \sum_i \varepsilon^i Pctle_i^f \, d \ln GDP + Controls^f + \varepsilon^f$$

  - Estimated by (weighted?) least squares (See Davezies & d'Haultfoeuille, 2009)
  - Result: $\varepsilon^{[99.5,100]} < \varepsilon^{[0,99.5]}$
  - Note that given the simultaneity bias ($\frac{d \ln GDP}{d \ln Sales^f} = \omega^f$), the estimated elasticity gap is a lower bound

Data and empirical strategy (ii)

- Aggregate impact of heterogeneous elasticities is close to zero:

$$\begin{aligned} \varepsilon &= \omega^S \varepsilon^S + (1-\omega^S)\varepsilon^L \\ &= \varepsilon^L + \omega^S \underbrace{(\varepsilon^S - \varepsilon^L)}_{.600^{***}} \end{aligned}$$

  $\omega^{[0,99.5]}$ small and declining (How small? Share in VA, Combined Domar weights?)

- To what extent is the heterogeneity in ε^f a consequence of heterogeneous financial constraints?
  - Probably not much given the difference is significant between the bottom 99.5% and the top 0.5%
  - Confirmed when estimated within groups of financially strong/weak firms (Endogeneity of these ratios?)
  - Estimates of the response of small and large firms to well-identified monetary shocks confirm the excess sensitivity of small firms, which is not significant however

Implications

- In a world of granularity, what we care about is the elasticity of large firms to various shocks
- Large firms are less sensitive to economic downturns but they are more exposed to other risks...
  - Systemic shocks to the financial system
  - Foreign shocks (di Giovanni et al, 2018)
  - ER risk / liquidity shock in FX markets (Horny et al, 2018)
- ... When exposed to such shock, their reaction diffuses to the rest of the economy (Acemoglu et al, 2012)
- ... Impact on small firms is all the strongest since these firms tend to be poorly diversified (i.e. strongly dependent on their relationships with a small number of large firms)