From a theoretical oligopolistic model to a generative agent-based simulation

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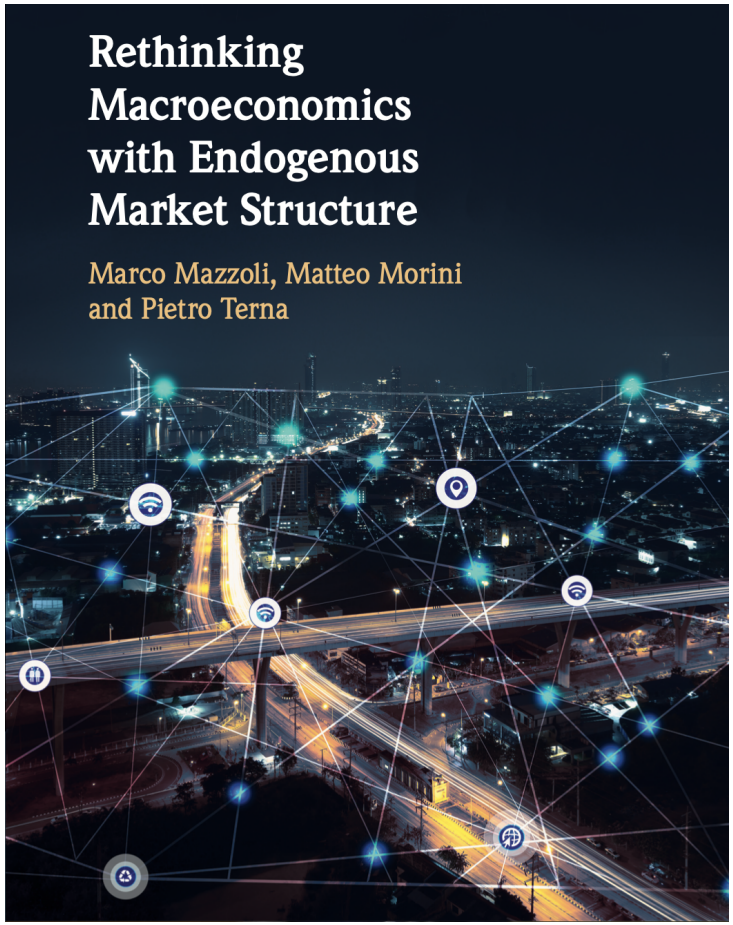
Outline

Starting questions

- Do entry, exit and changes in market structure affect the macroeconomy?
- Is there a link between the strategic interactions among oligopolistic firms and the macroeconomic equilibrium?

This questions are certainly not trivial in modern economies, where large oligopolistic firms play a relevant role and so many meetings among statesmen have the explicit scope of promoting contracts for some large and important firms of their countries.
However, surprisingly enough, the most popular theoretical models in the modern macroeconomic literature hardly see any explicit formalization for the macroeconomic effects of changes in market structure, entry, exit and strategic interactions among oligopolists.



Mazzoli, M., Morini, M., and Terna, P. 2019. *Rethinking Macroeconomics with Endogenous Market Structure*. Cambridge University Press.

Interactions among oligopolistic firms

We introduce a new macromodel where entry, exit and strategic interactions among oligopolistic firms are explicitly formalized and may generate macroeconomic fluctuations.
About macroeconomic impact of business formation we refer to Gabaix (2011). His "granular hypothesis" was initially studied by Jaimovich and Rebelo (2009).

Gabaix, X. 2011. The granular origins of aggregate fluctuations. *Econometrica*, **79**(3), 733?72.
Jaimovich, N., and Rebelo, S. 2009. Can news about the future drive the business cycle? *American Economic Review*, **99**(4), 1097–118.

Aggregate demand

The microfounded optimization problem of the heterogeneous consumers with the same preferences but different budget constraint (depending on wether they are workers, new entrants or incumbent entrepreneurs) yields the following aggregate demand:

$$D(\cdot)_t = \frac{\Omega(R_t)}{P_t}\{A_t + ((1+r_t)(1+\iota)^{-1}\sum_{i=0}^{\infty}[(1+E(r_{t+i})(1+\iota)]^{-i}\cdot$$
$$\cdot E(n_{t+i}(W_{t+i} + h^e_{t+i}\Pi^e_{t+i} + h^{in}_{t+i}\Pi^{in}_{t+i}))\} \quad (1)$$

Π^{in}_{t+i} and Π^e_{t+i} are the nominal profits of the incumbent and new entrants entrepreneurs;
r_t is the real interest rate at time t; R_t is the nominal interest rate on the financial asset at time t (controlled by the central bank); ι is the «core» inflation rate, assumed to be constant under a given monetary policy regime;
W_{t+i} the nominal wage at time $t+i$; n_{t+i} the total number of employed individuals at time $t+i$, h^{in}_{t+i} and h^e_{t+i} the portion of incumbent entrepreneurs and new entrant over the total labor force;
Pi_{t+i} the price level emerging in the oligopolistic industrial sector (which is also the aggregate price level since we have an indifferentiated good);
Ω_{t+i} a monotonically increasing function in the nominal interest rate.

Output of each firm