

I am a macroeconomist who specializes on modeling firm behavior and heterogeneity in macroeconomics as well as suggesting policy-relevant solutions to existing empirical findings. My research relies on theoretical modeling, calibrations of the macroeconomic models to the economy and supporting it with empirical evidence. Let me summarize three current papers relating firm behavior, and relevant aggregate macroeconomic variables affected by that behavior.

**“Costly Competition and Variable Pricing in CES Framework”** (job market paper)

In my job market paper on modeling the variable pricing in CES framework, I contribute to the understanding on how willingness to expand the market by firms can create cyclical and variable markup pricing in the market, something widely discussed in the empirical literature. Conventional general equilibrium model of monopolistic competition with CES preferences is very popular framework for several fields of macroeconomics, however it falls short on explaining some important stylized facts in the data. On one hand, several empirical works show that markups are not constant. As series of works by de Loecker and Eeckhout illustrate, markups increase in recent years across industries in the USA as well as the rest of the world. On the other hand, we see steady increase in advertising and marketing expenditures in the data as well. Suggestive evidence also reveals that higher productivity firms charge higher markups.

I assert these two are related due to the fact that firms compete each other to increase the demand of the product variety they produce, accompanied by increase in marketing expenditures and markups. I extend the baseline Dixit-Stiglitz framework to capture these stylized facts in a simple model. The model features heterogeneous in labor productivity firms and nests the conventional model when heterogeneity is removed. I suggest a way that links productivity to valuation from increased demand which explains increased marketing expenditures and willingness to “fight” other producers. Markup heterogeneity is thus an endogenous result.

Firms in this framework engage into a contest and fight each other to get higher period profits from shifting the demand. I look at the contest outcome as a marginal productivity in marketing expenditures. Marketing investments and investments in labor productivity can be treated as substitutes in the model.

Simulations of the model reveal that higher markups and higher market shares come from the differences in labor productivity, a result that empirical works also support. Industries with more variable labor productivity experience higher differences in markups and market shares. A positive shock on productivity confirms the findings on procyclicality of markups as well. Moreover, the model predicts that markup differences versus the differences in market share in an industry changes with the elasticity of substitution. Industries producing more inelastic goods should feature lower concentration and markups when controlled for productivity, something to be tested on the data.

## **“Insecure Property Rights and the Missing Middle,” with Mattias Polborn**

Together with Mattias Polborn, we analyze the firm heterogeneity effects in markets with insecure rights of ownership. In this theoretical model entrepreneurs’ property rights to their firms are threatened by “raiders” who can challenge them to a contest for control of their firms. In this contest a raider can be considered any agent that has a power to extort firms, even if it’s the government itself (which might be the most common case). These raiders attack firms and try to acquire their property. Firms decide how much capital to invest before raiders decide whom to attack. High productive firms will be always under the radar of the extortive authorities if they reveal their productivity (or the revenue). We illustrate that this type of raiding acts as a tax for highest productive firms, while the investment behavior of mid-productivity firms trying to avoid an attack is affected in a more harmful way. Mid-productivity firms prefer to make sub-optimal capital investments and stay smaller than in a protected world to slip the radar. Our model provides a novel theoretical explanation for the “missing middle” of the firm size distributions observed in many countries with insecure property rights.

## **“Monetary Policy and Endogenous Economic Growth”**

In this work I introduce a mechanism of growth in standard New Keynesian models and analyze interactions between monetary policy and endogenous growth. Empirical evidence suggests the importance of stability in inflation variability to the growth rate of the economy. Inspired by the empirical findings of Barro (1995), I model the fact that monetary policy and growth interact with each other. In this work I suggest that firms can create newer technologies by investing in R&D. This changes technology level of the economy. When a negative monetary policy shock reaches producers, along with the prices they adjust R&D investments as well. The adjustment of R&D investment is the source of destructive effects. I illustrate that the stabilization policy of the central banks can affect long run trends of economies since they cut the R&D investments, even if that’s a temporary cut. The model suggests a way to consider growth rates as a part of the rule monetary authorities use to control the inflation.

