Monetary Policy, Industry Leaders, and Growth

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Motivation

There exists large heterogeneity in monetary policy transmission to firms. While the literature emphasizes financial constraints as a source of heterogeneity (Ottonello and Winberry, 2020), even within unconstrained firms investment responses are very dispersed.

We show that heterogeneity in monetary transmission arises from differences between industry leaders and followers (firms with high and low market shares within their industry). We present evidence that the cost of capital and investment responses of industry leaders are less sensitive to monetary shocks. This muted sensitivity holds true even in the absence of financial constraints, differences in product characteristics, or asset pricing factors.

A mechanism that explains our results is the cyclicality of revenues. Leader firms have low revenue cyclicality whereas follower firms have high cyclicality in the data, possibly due to leaders ability to develop inelastic customers as in Crouzet and Mehrotra (2020). Low revenue cyclicality implies muted passthrough of monetary shocks to firms' cost of capital and investment.

Heterogeneous monetary policy transmission due to market position (eg firms with big market shares) may then have implications for industry dynamics. For example, we see market shares of leaders increase following monetary contractions. Thus, our research highlights previously unexplored distributional consequences of monetary policy.

Objective

We demonstrate heterogenous monetary policy transmission coming from differences between leader and follower firms. We show this heterogeneity in financial markets and real expenditures. Additionally, we argue that this leader premium can originate from differences in revenue cyclicality between leaders and followers.

Mechanism: revenue cyclicality

A profit maximizing firm that only invests in capital, but whose cash flow (or productivity) is cyclical (comoves with the aggregate SDF) faces a return elasticity and an investment semielasticity that both depend on its cyclicality.

Consider a firm maximizing: $V = \max_{\{K'\}} \{\pi - (K' - (1-\delta)K) + \mathrm{E}[M'V']\}$ where K is capital, δ is the depreciation rate, and M' the SDF. Now assume profits can be cyclical: $\pi = (\phi - \varrho M)K^{\gamma}$ where γ is the capital elasticity, ϱ is the sensitivity to the SDF, and ϕ is average productivity.

The resulting return elasticity is: $\frac{dE[MPK']}{dr_f} = 1 + \varrho\gamma K^{\{'\gamma-1\}} Var(M')$. This elasticity is larger (smaller) for highly cyclical (low cyclical) firms. Similarly, we can show that the investment semielasticity is larger for highly cyclical firms (under one regularity condition).

Indeed, the revenue cyclicality for industry leaders is relatively low in the data.

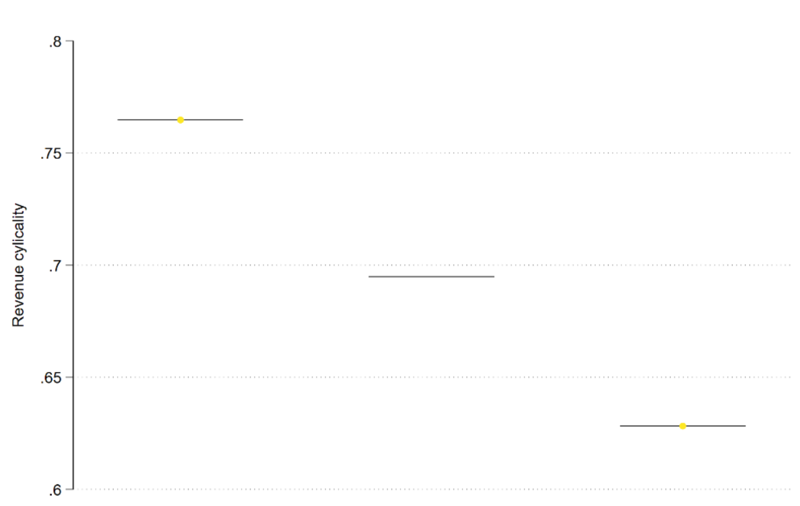

Figure 1. Average revenue cyclicality for fringe, follower, and leader firms.

Leader premium in the data

Data

Our main data comes from Compustat/CRSP and TRACE. Our main variables of interest are market shares (revenue share within 3-digit NAICS industries), physical investment growth, R&D growth as well as a measure for cost of capital, a weighted average of cost of equity (calculated from CAPM model) and cost of bonds (calculated from market yields). Industry leaders are firms with high market shares in their industry. The results here define leaders as top 3 firms, followers as top 4-10 firms, and fringe as bottom 11+ firms. In the paper we show results hold for different definitions of leaders as well as market shares only. Additionally, we use exogeneous monetary policy shocks from Bauer and Swanson (2023).

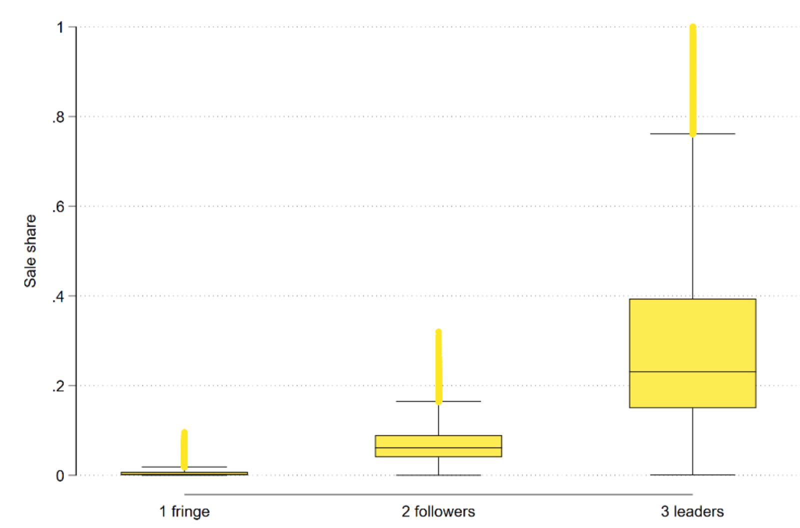

Figure 2. Sale share distribution for fringe, follower, and leader firms.

Leader Premium in financial markets

We show the result of the following regression:

$$\Delta COC_{\{i,t\}} = \alpha_{\{ind,t\}} + \sum_{\{s \in Le,Fo,Fr\}} \beta_s \left(MPS_{\{t-1\}} \times Group^s_{\{i,t-1\}}\right) + \Upsilon' X_{\{i,t-1\}} + \epsilon_{\{i,t\}}$$

Where we are interested in the interaction of the monetary shock and the position of a firm as a leader.

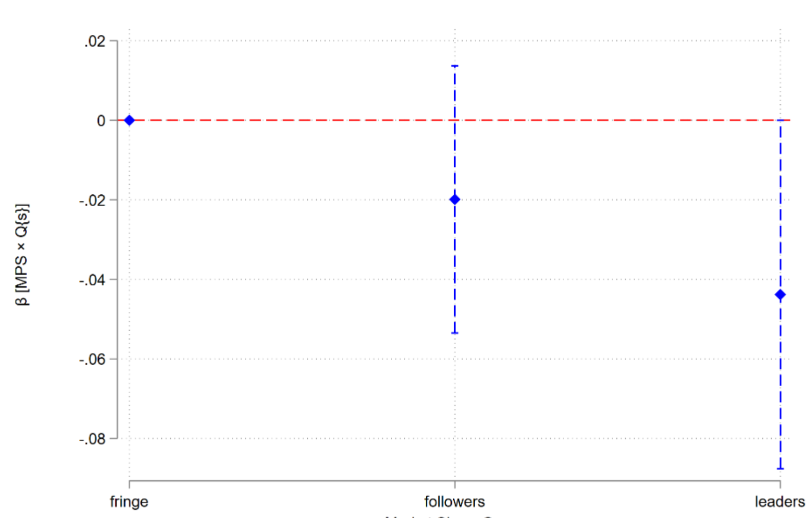

Figure 3. Heterogeneous effect of monetary policy shock on cost of capital.

Cost of capital (both the cost of bonds and the cost of equity but not the interest expense ratio) changes due to monetary shocks are muted for leaders. Rate hikes increases cost of capital relatively less for leaders.

Leader Premium in real expenditures

Now, we look at the reduced form heterogeneous effect on physical capital and R&D growth.

$$\Delta log Y_{\{i,t\}} = \alpha_{\{ind,t\}} + \sum_{\{s \in Le,Fo,Fr\}} \beta_s \left(MPS_{\{t-1\}} \times Group^s_{\{i,t-1\}}\right) + \Upsilon' X_{\{i,t-1\}} + \epsilon_{\{i,t\}}$$

Where we are also interested in the interaction term.

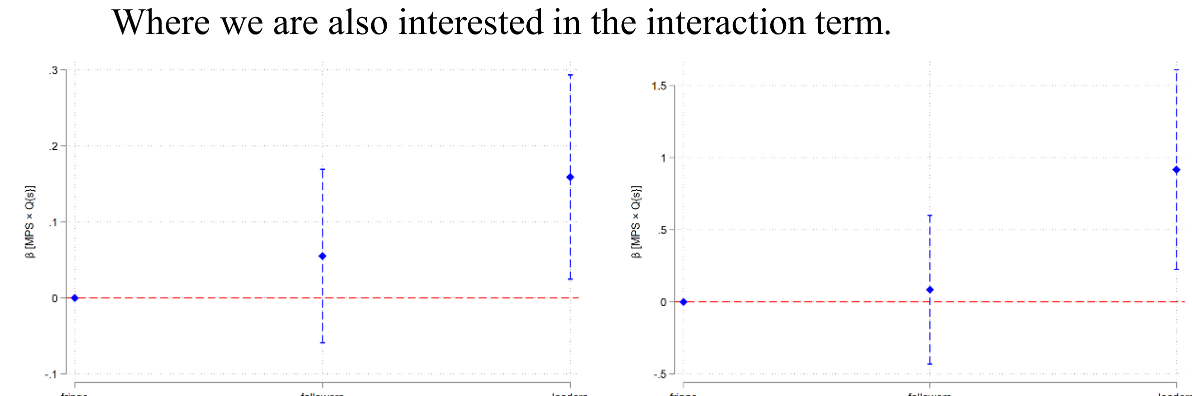

Figure 4. Heterogeneous effect of monetary policy shock on physical capital (left) and R&D (right).

Again, monetary policy shocks are muted for leaders. Physical capital and R&D contracts less for leaders following the shock.

Additional results

Real expenditures and financial markets correlation

We also show that nearly the entire reduced form leader premium in real expenditures is correlated with the leader premium in financial markets.

Financial frictions

Our preferred mechanism that can explain such a leader premium is the difference in revenue cyclicality between leaders and followers. Importantly, our results are above and beyond financial frictions which have so far been the focus of the literature. We show that our results hold when controlling for common financial constraints such as leverage, liquidity, collateral size, or probability of default.

Other characteristics and factors

Our results can also not be explained by other product characteristics or asset pricing factors. Our additional results show that there is no relative passthrough for factors or characteristics nor that any are (meaningfully) correlated with industry leaders or market shares.

Implications

We showed that leader's cost of capital and their investment responses are less sensitive to monetary policy shocks. Contractionary rate changes increase financing costs and lower investment, but leaders are relatively insulated. This leader premium may have distributional consequences.

Impact on industry competition

We can further show that leaders benefit in the medium term from contractionary monetary policy by expanding their revenue footprint within their industry. We run an industry level local projection:

$$Top3share_{\{j,t+h\}} - Top3share_{\{j,t-1\}} = \beta_h \Delta r_{\{t-1\}} + \gamma X_{\{j,t-1\}} + \epsilon_{\{j,t+h\}}$$

Where β_h denotes the effect of a rate change on the total market share of the top 3 firms in industry j, h quarters ahead.

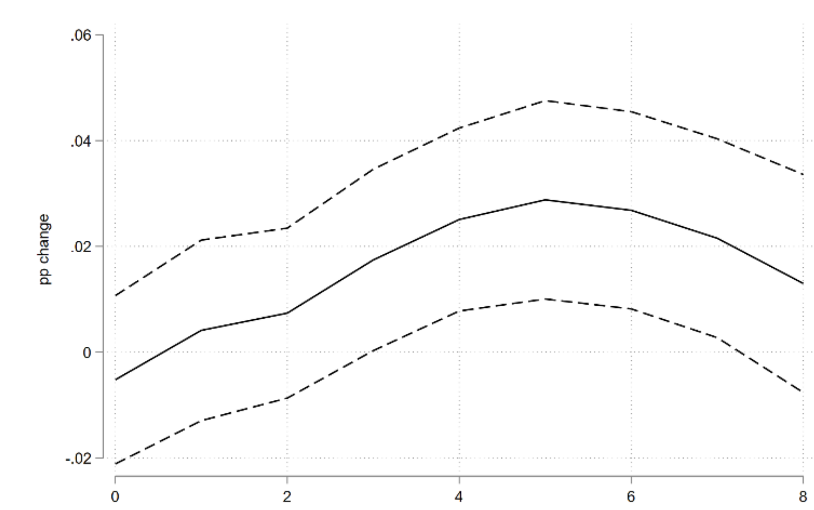

Figure 5. Sales share of top 3 firms due to interest rate increase.

References

- Bauer, Michael D., and Eric T. Swanson. 2023. "A Reassessment of Monetary Policy Surprises and High-Frequency Identification." NBER Macroeconomics Annual 37 (1): 87–155.
- Crouzet, Nicolas, and Neil R. Mehrotra. 2020. "Small and Large Firms over the Business Cycle." American Economic Review 110 (11): 3549–3601.
- Ottonello, Pablo, and Thomas Winberry. 2020, "Financial Heterogeneity and the Investment Channel of Monetary Policy." Econometrica 88: 2473-2502.