Discussion: ”A Tale of Two Margins: Monetary Policy and Capital Misallocation”

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[1]**De Nederlandsche Bank**.

Disclaimer: Views expressed here are my own and do not necessarily reflect official positions of De Nederlandsche Bank or the Eurosystem

Overview of the Paper

How do monetary policy surprises reshape capital misallocation and investment in Spain (1999-2019)?

- Measure capital misallocation as within-industry MRPK dispersion in Spanish microdata [Hsieh and Klenow, 2009].
- Employ aggregated shocks that are identified using high-frequency ECB event windows [Jarociński and Karadi, 2020].
- Estimate impulse responses with local projections:
  - *Sector-level* equations quantify the effect on MRPK dispersion.
  - *Firm-level* equations quantify the effect on firm investment.

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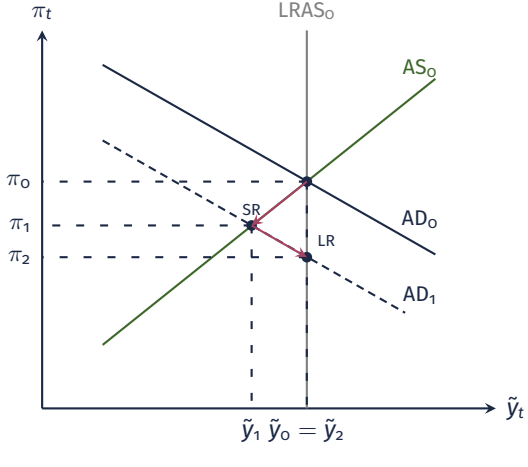
Broader Picture: Monetary policy and the supply side

Conventional View of MP



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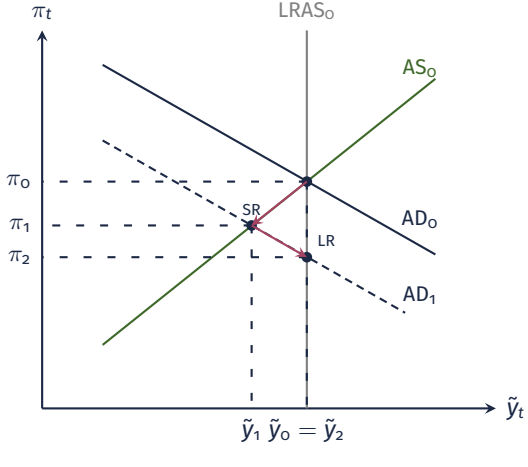
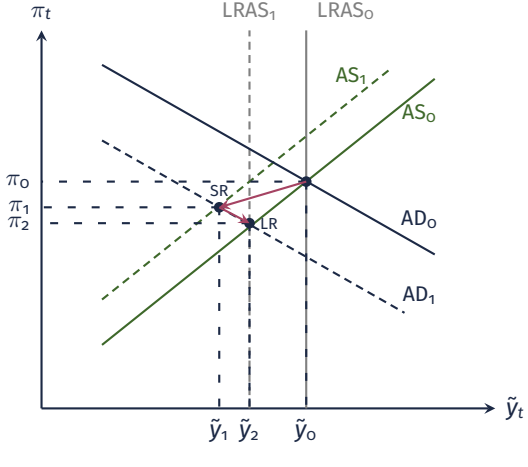


Supply Side Effects of MP



Main Results

Main Message

Expansionary monetary policy reallocates capital towards constrained firms, lowering misallocation.

1. Within two years, a one s.d. easing reduces MRPK dispersion by around 0.8 percentage points.
2. Firms one s.d. above sector-average MRPK increase capital by 2.0% (vs. 1.2% average).
3. MRPK explains investment sensitivity "better" than age, leverage, or cash holdings.
4. Entry increases and exit declines on impact, but intensive margin dominates quantitatively.

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My take

- Timely and well executed paper! ▸ Investment: EA vs US
- Important for modellers and policymakers alike [e.g. Albrizio, González, Nuño and Thaler, 2024]

Plan for the Discussion

- Comment **#1**: Simple theory of financial constraints and MP
- Comment **#2**: Relation between MRPK and other firm observables
- Comment **#3**: Looking ahead: An integrated theory of MP effects on TFP?

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Comment #1: A model of MP and Investment

- **Paper**: Expansionary MP leads to stronger investment increases among firms with high MRPKs.
- These firms also increase debt issuance more than others after easing.
- **Question:** Can a simple model explain the results that **high-MRPK firms** respond more to monetary policy?

Preview of results:

1. No frictions: No (a bit unfair)
2. Only internal finance friction: No
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1. Frictionless benchmark

- **Bellman equation (recursive):**

$$V_t(k_t) = \max_{k_{t+1}} \left[z k_t^{\alpha} + (1-\delta)k_t - k_{t+1} + \frac{1}{1+r_t} V_{t+1}(k_{t+1}) \right]$$

- **Optimal policy:**

$$k_{t+1}^{*} = \left(\frac{\alpha z}{r_t + \delta} \right)^{\frac{1}{1-\alpha}}$$

- **Capital growth:**

$$g_{\text{unc}} = \frac{k_{t+1}^{*}}{k_t^{*}} = \left(\frac{r_{t-1} + \delta}{r_t + \delta} \right)^{\frac{1}{1-\alpha}}$$

- **Interest rate sensitivity:**

$$\frac{dg_{\text{unc}}}{dr_t} = -\frac{1}{1-\alpha} \left(\frac{r_{t-1} + \delta}{r_t + \delta} \right)^{\frac{1}{1-\alpha}} \cdot \frac{1}{r_t + \delta} < 0$$

2. Extreme financial friction: No external finance

- **Assumption:** Firms can only use internal finance

$$k_{t+1} \leq n_t \quad \Rightarrow \quad k_{t+1}^{\text{con}} = n_t \equiv z k_t^{\alpha} + (1-\delta)k_t$$

- **Capital growth:**

$$g_{\text{con}} = \frac{k_{t+1}}{k_t} = z k_t^{\alpha-1} + (1-\delta)$$

- **Interest rate sensitivity:**

$$\frac{dg_{\text{con}}}{dr_t} = 0$$

3. External finance with collateral constraint

Assumption: Firms can borrow up to a multiple of net worth

$$b_t \leq (\theta - 1)n_t \quad \Rightarrow \quad k_{t+1}^{\text{con}} = \theta n_t = \theta \left(z k_t^{\alpha} + (1-\delta)k_t - (1+r_t)b_t \right)$$

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as it depends on the parameters, rate and average leverage of constrained firms!

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Not the Full Story

Stylized model omits key mechanisms:

- **Timing and amplification:** Future effects via default risk, leverage cycles, net worth.
- **Heterogeneous productivity:** Correlation between productivity and being constrained
- **Heterogeneous spreads:** Borrowing costs vary—and co-move with policy.
- **Endogenous exposure:** Some firms are more interest-rate sensitive (e.g., floating debt).
- **Other indirect channels** Demand channel, labor cost channel, etc.

Suggestion: Explore which of these channels drive high-MRPK firm responses in the data.

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Comment #2: Relationship betw. MRPK and other firm observables

- Paper shows that high MRPK firms are more sensitive to MP in relative terms
  [as MP relaxes frictions that hold back investment]
- But who are these firms? The old, the large, the leveraged ones?

Important due to two reasons

1. **Policy.** MRPK is harder to observe and build policy around

   My Suggestion: Relate MRPK to other firm observables. Can be an easy correlation or more sophisticated such as a Random Forest [Krusell, Thürwächter and Weiss, 2023]
2. **Aggregation.** If higher elasticity resides with firms with more capital, then it is more likely to matter in the aggregate.

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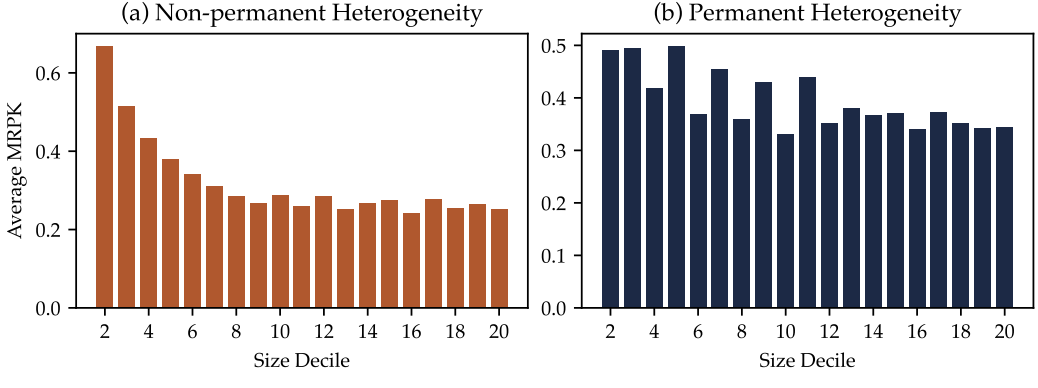
Comment #2: On Aggregation Effects

- **Motivation:** Financial shocks matter more if constrained firms hold substantial capital [Ferreira, Haber and Rörig, 2024]
- **Framework:** Financial frictions + firm heterogeneity [Khan and Thomas, 2013]
  - Case A: Productivity = AR(1)
  - Case B: AR(1) + permanent component
- **Today:** Use the model to link MRPK dispersion to firm size

Comment #2: Marginal Product of Capital in the two worlds



Correlation of size and MRPK: **-0.41**
Effect of financial shock: **small**

Correlation of size and MRPK: **-0.13**
Effect of financial shock: **large**

How much do high-MRPK firms drive investment?

My suggestion: Back of the envelope calculation

- Total capital response [can also use capital share $s_H = \frac{K_H}{K_H + K_L}$]

$$\Delta K = K \cdot \gamma \quad \text{with} \quad \gamma = \frac{d \log K}{d\varepsilon}$$

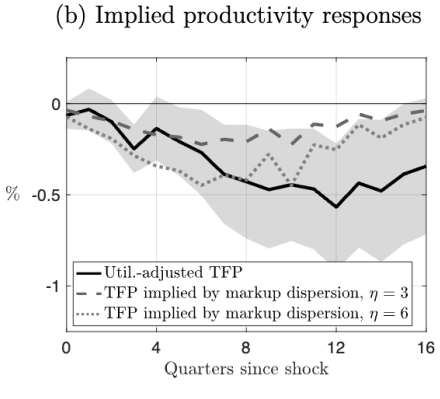
- For group $g \in \{H, L\}$:

$$\Delta K_g = K_g \cdot \gamma_g \quad \Rightarrow \quad \Delta K = K_H \gamma_H + K_L \gamma_L$$

- Contribution of high-MRPK firms:

$$\frac{\Delta K_H}{\Delta K} = \frac{K_H \gamma_H}{K_H \gamma_H + K_L \gamma_L}$$

Comment #3: Why does TFP fall after monetary tightening?



Markup dispersion and TFP

Three channels

- **Markup dispersion** (*SR*)
  Sticky-price firms raise markups
- **Innovation slowdown** (*MR*/*LR*)
  Frontier firms cut R&D
- **Factor misallocation** (*MR*/*LR*)
  Constrained firms can't expand

Idea for future research: Can one framework quantify the contribution of *all three* mechanisms jointly?

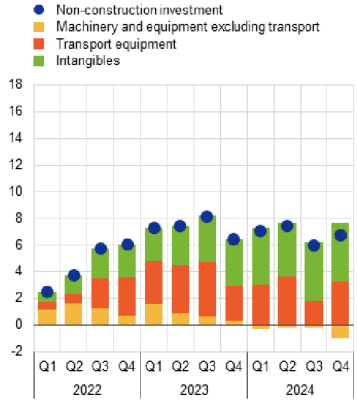
Conclusion

- **Great paper!**
- Would like to see some further implications on the aggregate level
  - How important are these high MRPK firms for the transmission of MP?
  - Who are they?
  - Connection to other sources of TFP losses
- **Important** empirical evidence for future work on:
  1. Models of monetary policy and firm heterogeneity with supply side effects
  2. Empirical studies on investment, innovation and financial frictions

Thank you for your attention!

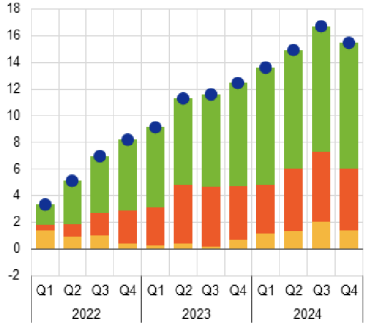
a) Euro area

(cumulated percentage changes and percentage point contributions)



b) United States

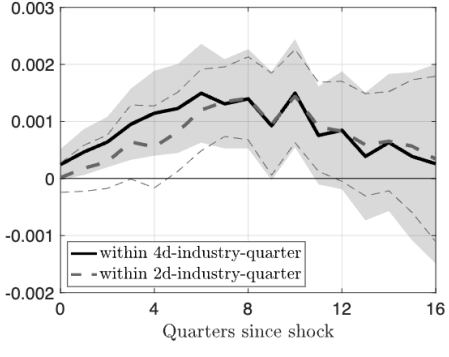
(cumulated percentage changes and percentage point contributions)



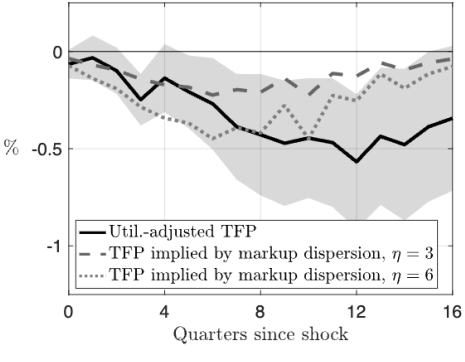
Sources: Eurostat, US Bureau of Economic Analysis, and ECB staff calculations.
Notes: Euro area non-construction investment and intangibles exclude intellectual property products (IPP) in Ireland. Non-construction investment in the United States refers to private fixed non-residential investment excluding structures. Intangibles refers to IPP. The latest observations are for the fourth quarter of 2024.

Markup dispersion and TFP

(a) Baseline markups



(b) Implied productivity responses



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