Banks Maturity Choices and the Transmission of Interest-Rate Risk

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Summary

Paolo introduces endogenous exposure to interest-rate risk into the canonical Gertler and Kiyotaki (2010)-Gertler and Karadi (2011) class of models.

The long-term asset is exposed to interest-rate fluctuations while the short-term asset is not.

A self-insurance mechanism that strengthens financial stability, on average.

Short-term asset provides a valuable hedge against sudden policy rate hikes.

Precisely the right margin for the analysis of the 2021-2023 episode.

A very important, much-awaited addition to this literature.

Macro-Banking

$$V_t(\omega, \mathbf{S}) = \max_{\{a_l', b', n', \text{div}\} \geq 0} \text{div} + \beta \mathbb{E}_t \left\{ \sigma n' + (1-\sigma) V_{t+1}(\omega', \mathbf{S'} | \omega) \right\}$$

subject to:

$$n' = \mathbb{E}_t \left[\omega' R^k_{t+1} \right] Q_t a_l' - b'$$

$$Q_t a_l' + \text{div} = n + q_t b'$$

The standard representative-bank macro-banking framework.

Limit on the leverage multiple: $\lambda Q_t a_l' \leq V_t$ or exit choice as in Paolo's case.

Financial accelerator mechanism logic.

Linearity and aggregation. Bank distribution does not matter.

Only one asset — aggregate capital. Neoclassical setup.

Micro-Consistent Macro-Banking

$$V_t(n, \xi; \omega, \mathbf{S}) = \max_{\{a_l', b', n', div\} \geq 0} div + \beta \mathbb{E}_t \left\{ \sigma n' + (1-\sigma) V_{t+1}(n, \xi'; \omega', \mathbf{S'} | \xi, \omega) \right\}$$

subject to:

$$n' = \mathbb{E}_t \left[\xi' \omega' R^k_{t+1} \right] Q_t a_l' - b'$$

$$Q_t a_l' + div = n + q_t b'$$

$$\log \xi' = \sigma_\varepsilon \varepsilon' \,, \; \varepsilon \sim \mathcal{N}(0,1)$$

$$\mathbf{S}' = \Gamma(\mathbf{S})$$

A heterogeneous-bank extension. ξ is uninsured idiosyncratic bank return risk.

Distribution of banks is an endogenous, dynamic state.

Must forecast with Γ. Krusell and Smith (1998) logic.

Source: Jamilov and Monacelli (2025).

Varraso (2025)

$$V_t(n, \xi; \omega, \mathbf{S}) = \max_{\{a_l', a_s', b', n', \text{div}\} \geq 0} \text{div} + \beta \mathbb{E}_t \left\{ \sigma n' + (1-\sigma) V_{t+1}(n, \xi'; \omega', \mathbf{S}' | \xi, \omega) \right\}$$

subject to:

$$n' = \mathbb{E}_t \left[\xi' \omega' R^k_{t+1} \right] Q_t a_l' + a_s' - b'$$

$$\beta a_s' + Q_t a_l' + \text{div} = n + q_t b'$$

$$\log \xi = \sigma_\varepsilon \varepsilon \,, \; \varepsilon \sim \mathcal{N}(0,1)$$

$$\mathbf{S}' = \Gamma(\mathbf{S})$$

Introduce short-term government bond a_s. Safe asset.

Now a portfolio problem *on top of* the standard dynamic leverage problem.

Endogenous maturity gap. Responds to discount factor ("monetary policy") shocks.

Source: Varraso (2025).

Main Comment I

Households are risk-neutral. Strong assumption. At least have log-utility.

Risk-free rate doesn't react to any aggregate shock *except* the discount factor shock.

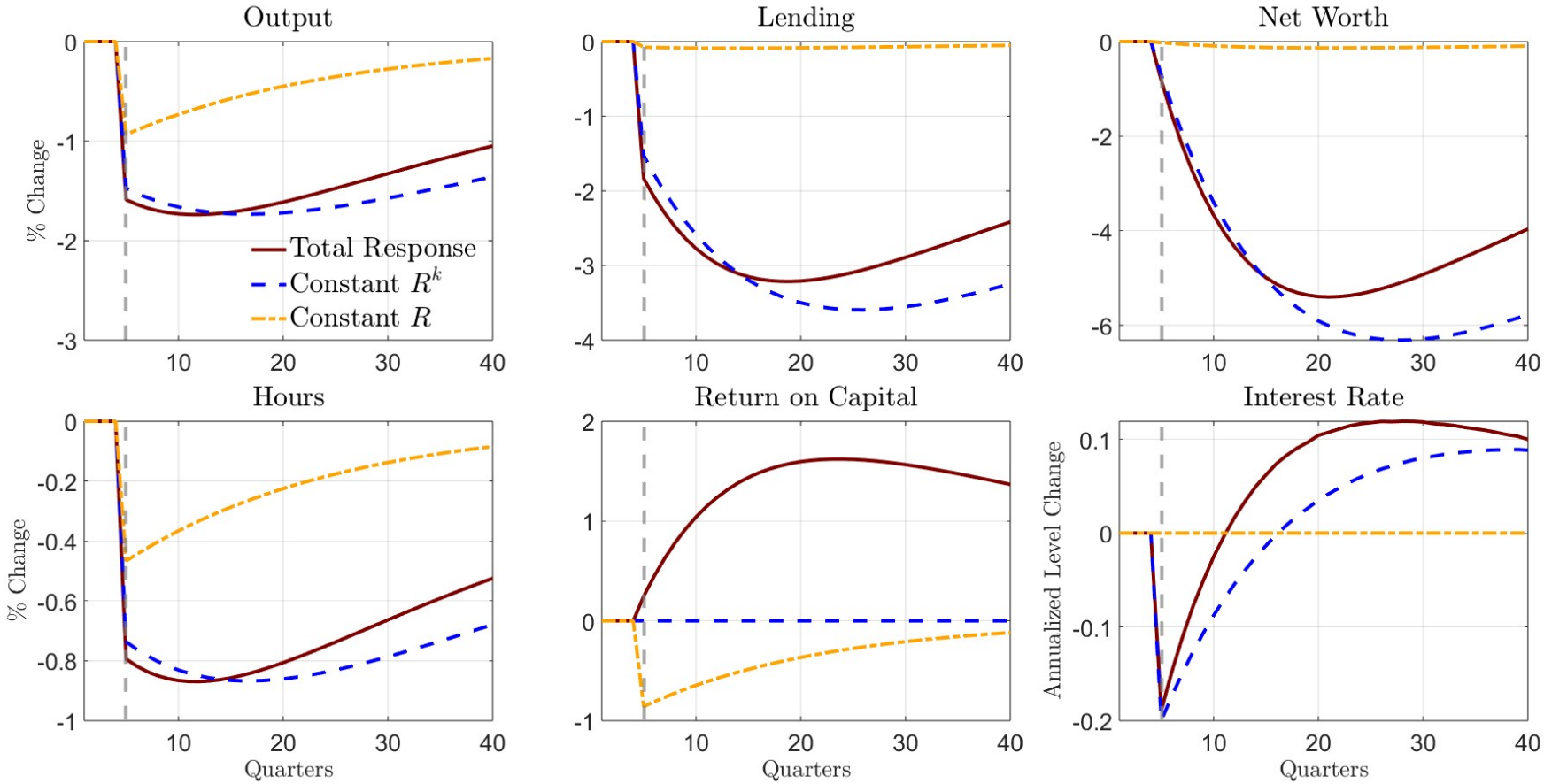
This limits the analysis. Especially with background aggregate risk.

Cannot credibly do TFP, cost-push, financial shocks, etc. The rate will not react.

Could have first-order effects on the macro transmission mechanism (see next slide).

If banks are risk-neutral — totally fine.

Main Comment I - Continued



Notes: Impulse response functions to a one-standard deviation negative shock to aggregate TFP. Red straight lines depict baseline total responses. Yellow dotted lines isolate the direct effect with a time-invariant and exogenous interest rate, R_t. Blue dashed lines isolate the indirect effect with a time-invariant return on capital, R_t^k.

Source: Jamilov and Monacelli (2025).

Main Comment II

The main empirical test in the paper:

$$\Delta \log \text{ Maturity Gap}_{i,t+h} = \beta^h \Delta R_t + \Gamma_1^h \mathbf{X}_{i,t-1} + \sum_{\tau=1}^{4} \Gamma_{2,\tau}^h \mathbf{Y}_{t-\tau} + \alpha_i^h + \varepsilon_{i,t}$$

This is useful both empirically and to discipline the model.

But also useful to run this regression:

$$\Delta a_{i,t+h} = \beta^h \Delta R_t + \vartheta^h \left(\Delta R_t \times \text{Maturity Gap}_{i,t-1}\right) + \Gamma_1^h \mathbf{X}_{i,t-1} + \sum_{\tau=1}^{4} \Gamma_{2,\tau}^h \mathbf{Y}_{t-\tau} + \alpha_i^h + \varepsilon_{i,t}$$

Now the the outcome variable is bank-level lending. Could also be market values if high-frequency, or deposit growth.

Maturity gap is now a characteristic that impacts the transmission mechanism.

Directly tests the heterogeneous effects of monetary policy by portfolio duration.

Main Comment II - Continued

Would be great to see something like this, for heterogeneous firms:

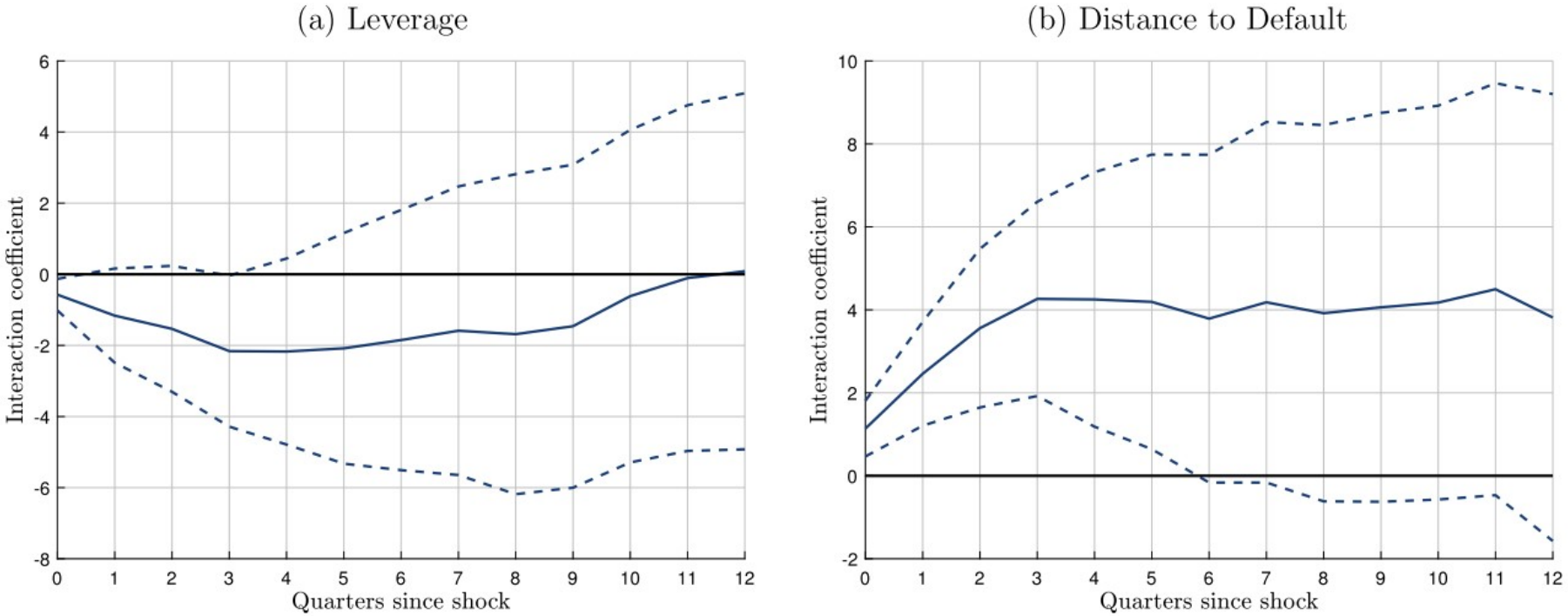
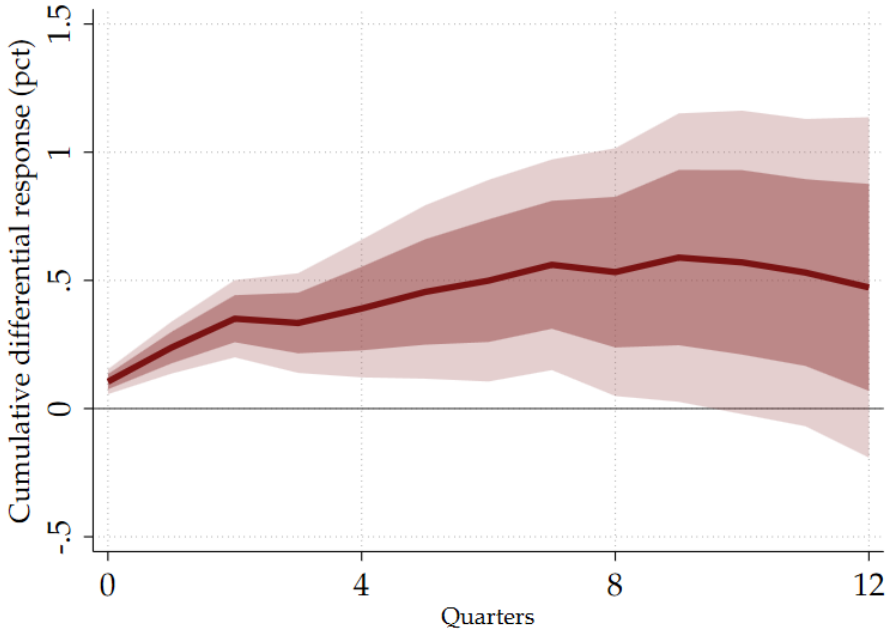


FIGURE 1.—Dynamics of differential response to monetary shocks. Notes: dynamics of the interaction coefficient between financial positions and monetary shocks over time. Reports the coefficient β_h over quarters h from $\log k_{jt+h} - \log k_{jt} = \alpha_{jh} + \alpha_{sth} + \beta_h(x_{jt-1} - \mathbb{E}_j[x_{jt}])\varepsilon_t^m + \Gamma_h' Z_{jt-1} + e_{jth}$, where all variables are defined in the notes for Table III. Dashed lines report 90% error bands.

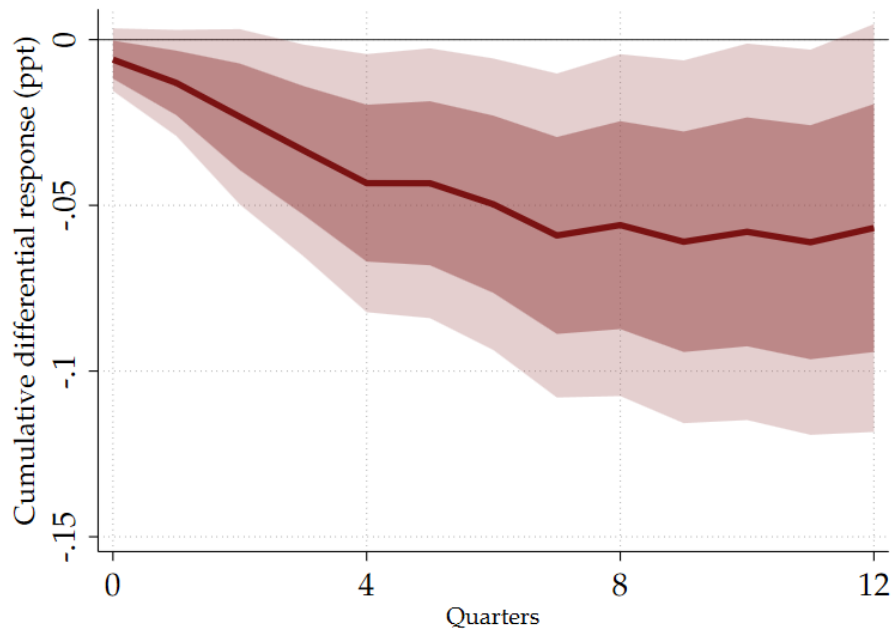
Source: Ottonello and Winberry (2020)

Main Comment II - Continued

Or this, for heterogeneous banks:



(A) Assets



(B) Default Risk

Notes: estimated β_h from: $\Delta Y_{it+h} = \underbrace{\alpha_{ih} + \delta_{th}}_{\text{Fixed effects}} + \underbrace{\beta_h \times D_{it} \times \varepsilon_t}_{\text{Size interaction}} + \underbrace{\varphi_h D_{it}}_{\text{Interaction controls}} + \underbrace{\sum_{\ell=1}^{4} \gamma_{h\ell} \Delta Y_{it-\ell}}_{\text{Lagged controls}} + u_{iht}.$

Source: Bellifemine et al. (2025)

Minor Comments

1. Footnote 5: *"I assume that deposits are generally risky for households. However, each period the government may intervene, bailing out the defaulting bank and repays depositors in full."*

   I did not quite understand this. Do banks *know* that they can be bailed out? If yes, this is a friction/externality. Or is this just "deposit insurance"? This should be clarified.

2. Labor supply should be endogenized. Try linear dis-utility of labor or GHH.

3. Is bank net worth really a state for you? Can you generate a stationary distribution of net worth? Please show the steady-state densities of net worth, long-term assets, short-term assets, and deposits. How close are they to the data?

4. Numerical solution accuracy should be discussed. This is especially relevant for bounded-rationality methods, like yours. Is forecasting the average capital stock sufficient? Do the Den Haan (2010) test to confirm.

Conclusion

The standard macro-banking framework with bank heterogeneity abstracts from endogenous interest-rate risk exposure.

Not because we think this is not important. Because it is hard.

Paolo provides an important contribution to this literature.

With some refinements, this will be an influential paper. Both for academia and policy.

References

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