

## Abstract

The degree of risk aversion between households, firms, and bankers is differentiated to assess its influence in the business cycle. A Constant Relative Risk Aversion (CRRA) utility function is assumed for all agents to compare three different transmission channels: standard, financial, and risk aversion shocks. Our non-linear framework allows a reinterpretation of economic and financial dynamics under several risk aversion levels and fluctuations. Agents' risk aversion is found to be an essential indicator for policymakers.

We find that an increased risk aversion level generally attenuates the response of output to economic and financial shocks. A positive risk aversion shock substantially influences the real economy. Differentiating the degree of risk aversion between agents matches better the business cycle, while a risk aversion shock is found to substantially influence central and retail bank interest rates through consumption smoothing and precautionary saving behaviors.

## Introduction

### Motivation

- Changes in the economic environment are assumed to have an impact on the preferences, especially in terms of risk.
- How risk aversion influences the business cycle?

### Concept

$$RRA = -\frac{c \times u''(c)}{u'(c)} = \sigma$$

In a CRRA utility function,  $\sigma$  governs both intertemporal substitution and intra-temporal risk attitude. They are inverse of each other.

- The RRA is the attitude of consumers toward risky outcomes within a given time period (intra-temporal).
- The intertemporal elasticity of substitution is the attitude of consumers toward smoothing consumption between time periods.

### What do we do?

- We release the hypothesis of  $\sigma$  constant: we assume  $\sigma$  time-varying and heterogeneous between agents.
- We make *simulations* to determine the transmission channel of economic shocks under different scenarios of aversion.
- We make Bayesian *estimations* to determine the level of RRA for each agent.
- We analyze the transmission channel of an *estimated RRA shock* for each agent.

## Methods and Materials

### Intuition

- The RRA can be considered as an explanatory factor of the slow recovery, the dynamics of the real economy, and credit during and after the GFC.
- The risk aversion coefficient varies over time and is heterogeneous across agents' characteristics (Guiso et al. 2018).
- Time-varying risk aversion could be a non-negligible component of output slowdown during the last crises in the Eurozone (Benchimol, 2014).

### Findings

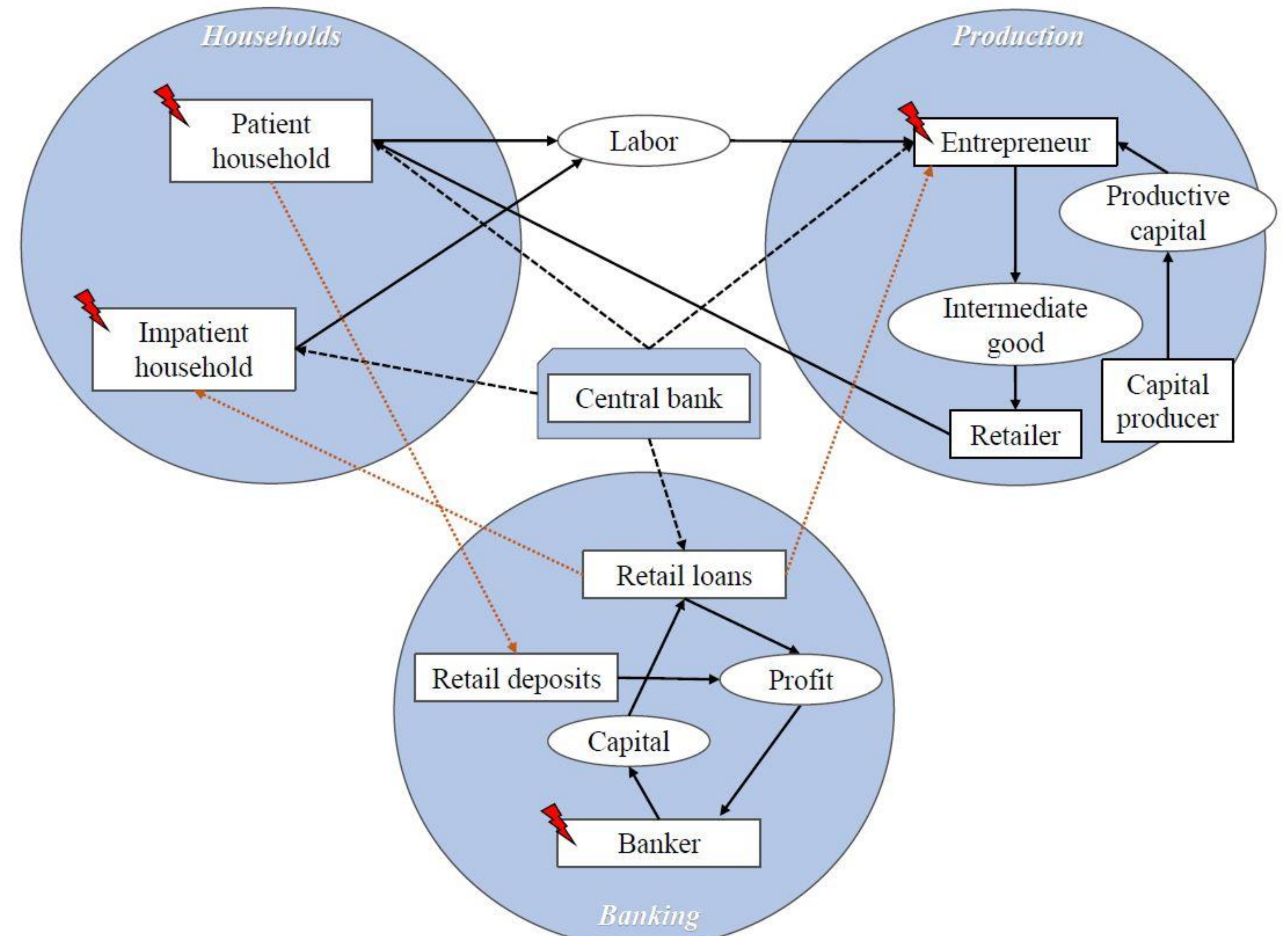
- Several economic channels depend on the RRA.
- Shocks involving the interest rate as a transmission channel are mitigated in the presence of risk aversion.
- A risk aversion shock is transmitted to the economy through inter and intra-temporal effects:
  - **Intra-temporal:** lenders are less inclined to lend and borrowers less inclined to borrow.
  - **Inter-temporal:** preference for agents to consume today is amplified.
- Substantial time-varying RRA and nonlinearities.

### Modeling assumptions

New Keynesian model with financial frictions, credit, and banking based on Gerali et al. (2010):

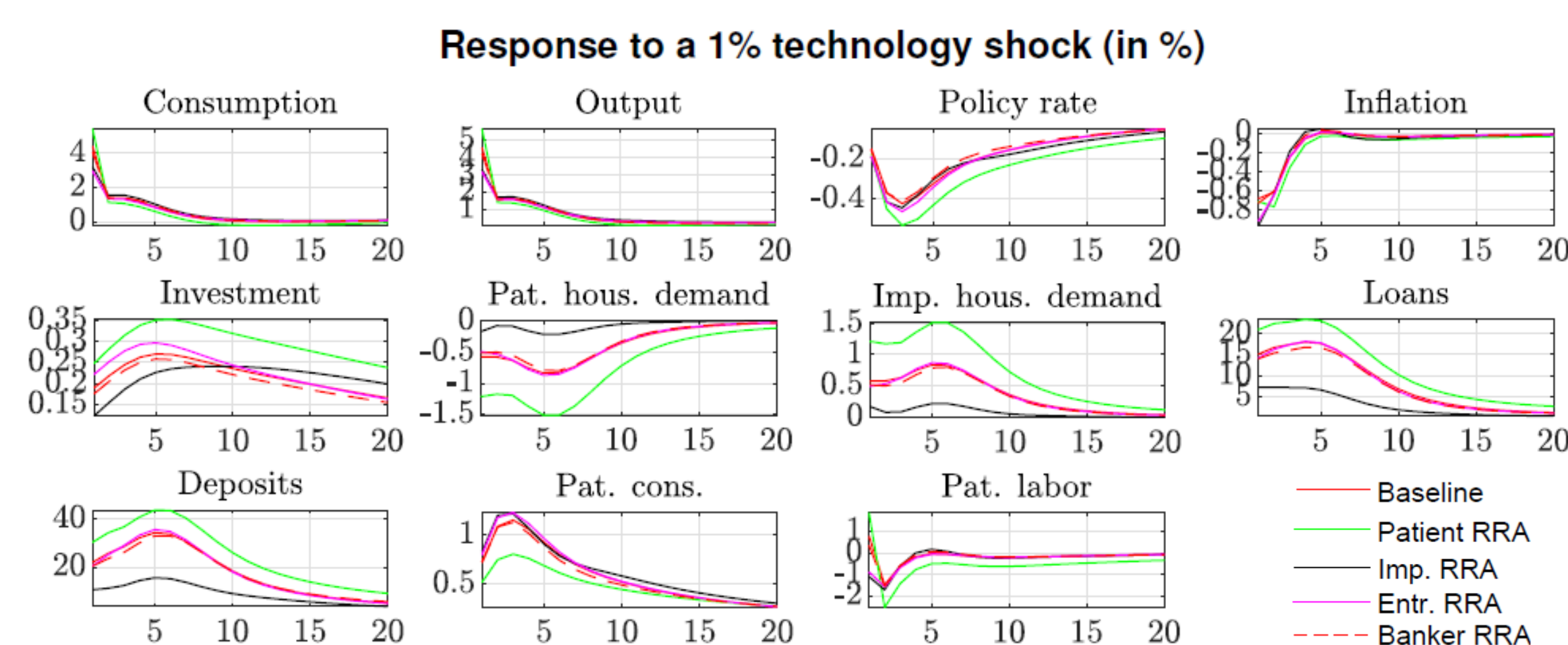
- Financial frictions are modeled using *collateral constraints*.
- Banks are in *monopolistic competition*: they have market power in the interest rate setting.

## Model



Two dimensions related to the rise of the RRA should be taken into account: an inter-temporal dimension and an intra-temporal dimension.

The following figure shows the Impulse response functions to a 1% technology shock in the baseline model ( $\sigma=1$  for all agents, red),  $\sigma=2$  only for patient households (green), etc.



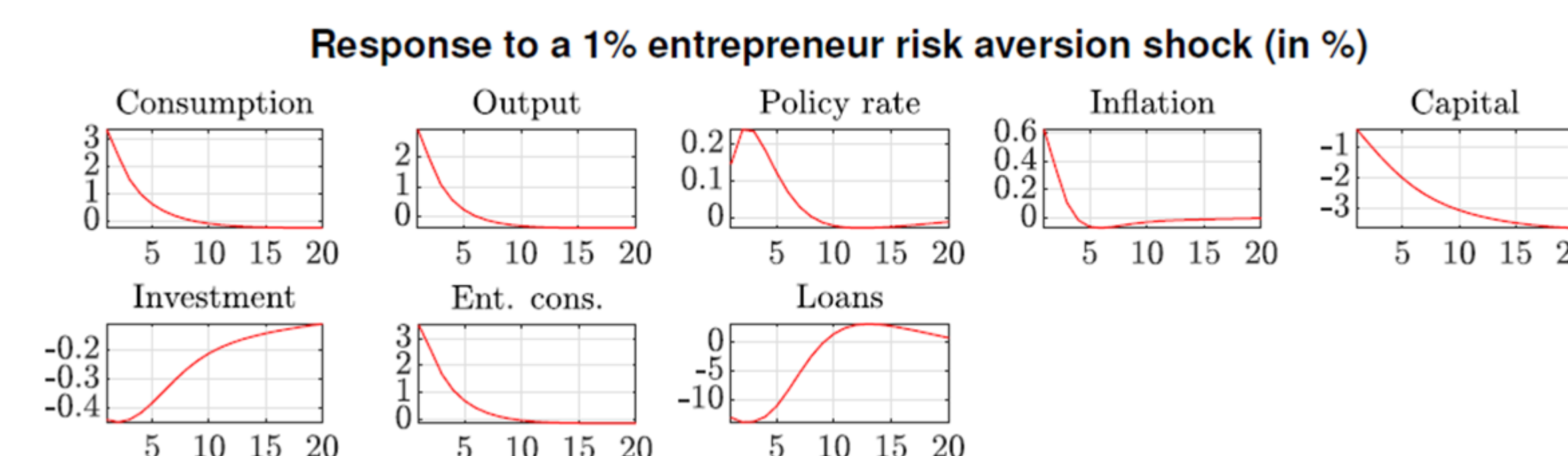
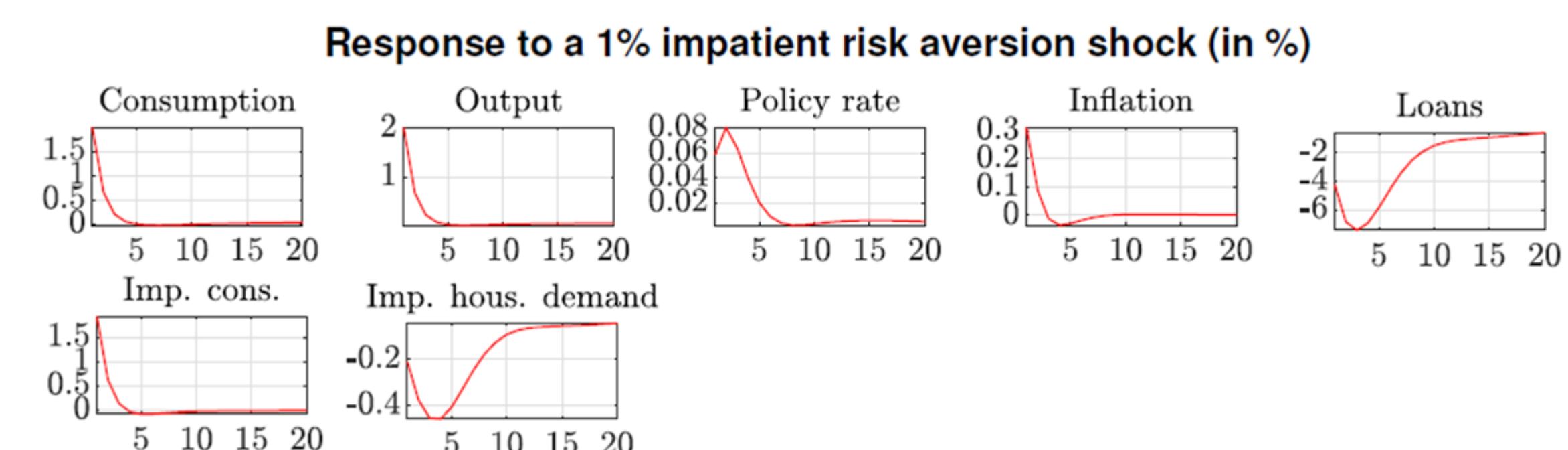
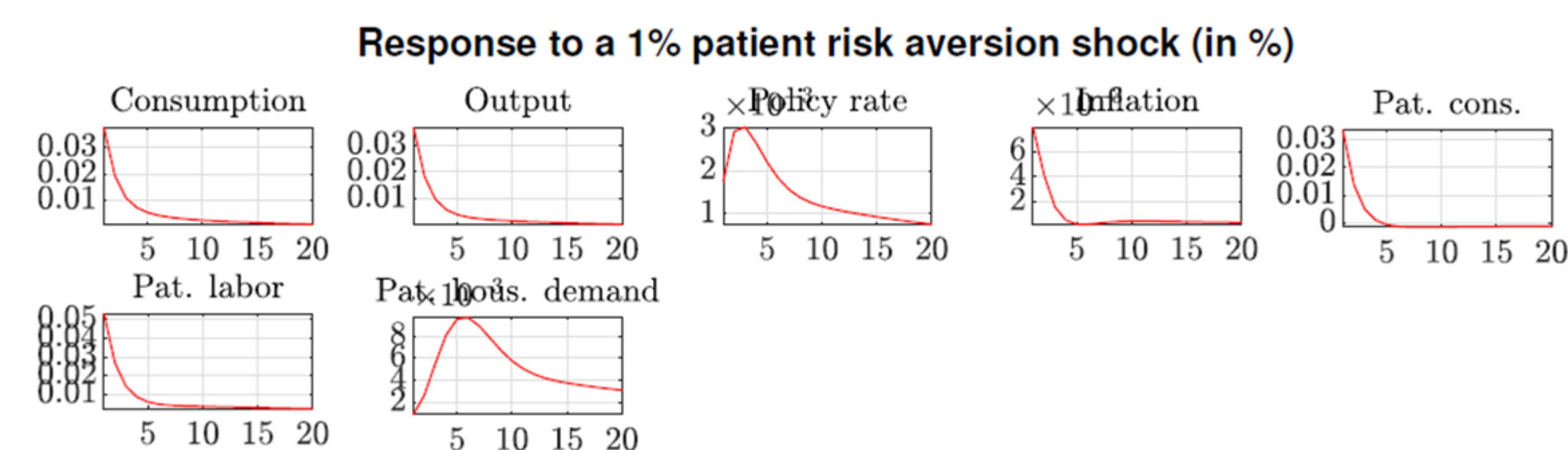
### Lenders

The positive response of consumption is attenuated, the negative response of housing demand is amplified, and the positive response of the labor supply is amplified.

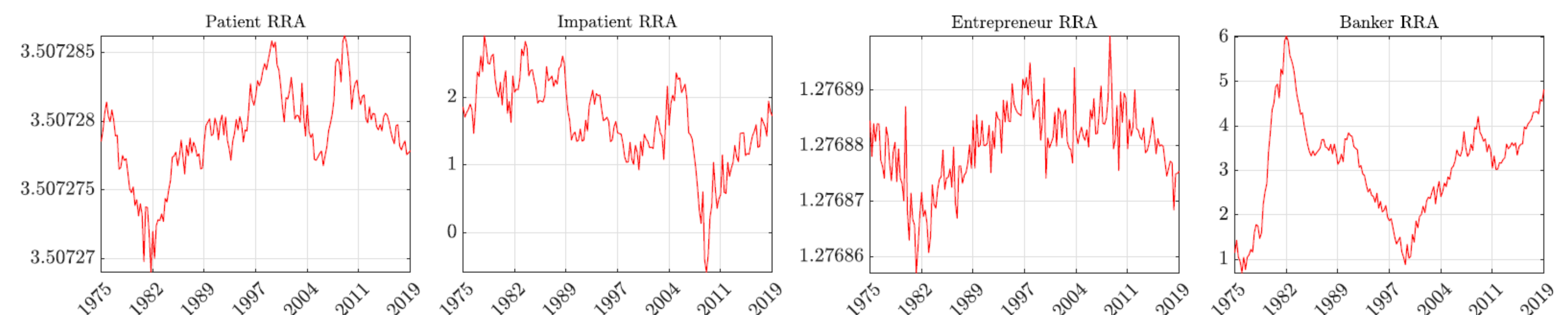
### Borrowers

The effect on consumption and the negative effect on borrowing are mitigated. The responses of impatient households' housing demand and investment are attenuated.

RRA modifies the magnitude of the responses to a change in rate by influencing the agent's sensitivity to rate changes.



Our estimations confirm the **time-varying** and **heterogenous** nature of the RRAs.



## Conclusion

RRA could explain the slow recovery of credit, which has been observed following the GFC. Access to credit over the recovery period was more demand-driven than supply-driven in line with Kremp and Sevestre (2013). Linear models, or nonlinear models without time-varying and heterogenous RRA, could mislead policy decisions. Policymakers could influence the transmission mechanism of economic shocks by acting on RRA.

## References

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