# Does the Financial Accelerator Accelerate Inequalities?*

**Francesco Ferlaino** †

This draft: July, 2026

**Abstract**

I show that corporate financial frictions affect not only the strength of monetary transmission, but also its distributional incidence. Following monetary tightening, weaker firm balance sheets and tighter external financing conditions amplify losses among households most reliant on current earnings and limited self-insurance. Labor-income exposure, rather than household leverage, is therefore the key distributional margin in this framework: corporate distress reaches households through firms' demand for labor. This mechanism remains robust with household illiquid assets, which broaden transmission channels without displacing labor income as the dominant force. The financial accelerator raises welfare costs and concentrates additional losses among low-wealth households.

**Keywords:** Heterogeneous agents, financial frictions, monetary policy, New Keynesian models, inequality.

**JEL codes:** E12, E21, E44, E52, G51

*I am deeply grateful to Domenico Delli Gatti for his invaluable support and guidance throughout this research and the writing of this paper. I particularly thank Alice Albonico, Elton Beqiraj, Diego Bohórquez, Pietro Bomprezzi, Jacopo Bonchi, Dario Bonciani, Cristiano Cantore, Milos Ciganovic, Andrea Colciago, Davide Debortoli, Giovanni Di Bartolomeo, Jordi Galí, Francesco Saverio Gaudio, Jakob Grazzini, Marco Membretti, Francesco Menoncin, Valeria Patella, Emiliano Santoro, Carolina Serpieri, and Barna Szabó for helpful discussions and comments. I would also like to thank participants of the EPOC International Doctoral Workshop, the 5th Sailing the Macro Workshop, Sapienza Macro Workshop, and Unicatt Macro Lunch Seminar for valuable insights. Any remaining errors are my own.

†University of Salerno. Email: fferlaino@unisa.it.

# 1 Introduction

Does the financial structure of the production sector determine how the burden of monetary tightening is distributed? While the Modigliani–Miller theorem (Modigliani and Miller, 1958) implies the irrelevance of capital structure under frictionless conditions, a large macro-finance literature shows that firms' balance sheets, credit-market frictions, and financial conditions are central to business-cycle dynamics (e.g., Adrian et al., 2019; Caldara and Herbst, 2019).

A complementary firm-side literature shows that monetary transmission depends on firms' financial positions. Ottonello and Winberry (2020) show that firms' investment responses to monetary shocks vary systematically with default risk, and that the aggregate effect of monetary policy can depend on the distribution of firm default risk. This evidence implies that corporate financial conditions are not merely passive balance-sheet variables: they shape how monetary shocks are transmitted to firms' investment decisions and, ultimately, to aggregate real activity. Within the rapidly growing Heterogeneous-Agent New Keynesian (HANK) literature, the seminal contribution of Kaplan et al. (2018) established that monetary policy affects household consumption largely through indirect general-equilibrium channels, especially labor income. This finding has important implications for how the effects of corporate financial frictions on households should be interpreted. Although the External Finance Premium (EFP) is borne by firms rather than households, it shapes the wages, profits, and returns through which households experience monetary policy. The question addressed in this paper is therefore not only whether corporate balance sheets amplify aggregate transmission, but how a firm-side financial wedge reshapes the incidence of monetary policy across households.

Aggregate amplification does not mechanically imply a particular distributional incidence. A firm-side financial wedge may deepen the response of investment and output to monetary tightening, but its effect across households depends on how the shock is split across wages, profits, and returns, and on how different households are exposed to those income sources. The distributional implication of an endogenous EFP is therefore ambiguous ex ante: the same mechanism that raises firms' financing costs also changes labor income, profit income, and liquid-asset returns. This paper shows that the labor-income channel dominates. Corporate financial distress reaches households primarily through firms' demand for labor, so the amplified wage decline is borne mostly by low-wealth households.

In household-credit models, the relevant wedge is the borrowing rate faced by households, and the relevant exposure is household indebtedness or access to credit. In my framework, the relevant wedge is the EFP faced by firms, and the relevant exposure is labor-income dependence. Corporate financial frictions do not merely make the recession larger; they tilt the transmission of monetary policy toward wage-income losses, which are borne disproportionately by low-wealth households, while the offsetting return and profit channels accrue mainly to households with larger asset positions. In this sense, the financial accelerator converts aggregate financial amplification into distributional amplification, mainly through the labor-income channel.

Quantitatively, the firm-credit incidence channel is sizable. Following a 25 basis-point annualized monetary tightening, the financial accelerator increases the impact response of consumption inequality by roughly 50 percent relative to a fixed-EFP counterfactual. This amplification is concentrated at the tails of the wealth distribution: low-wealth households experience substantially larger consumption losses because they are highly exposed to current labor income, whereas high-wealth households are partly insulated by return and profit-income channels. The same mechanism carries over to wealth accumulation, where the peak response of wealth inequality is about two-thirds larger when the EFP responds endogenously.

A decomposition of aggregate consumption confirms that the mechanism operates through labor income. In the baseline one-asset economy, where households save only in a liquid risk-free asset, aggregate consumption falls by 0.125 percent on impact when the financial accelerator is active, but the wage channel alone would reduce consumption by 0.177 percent on impact and by 0.419 percent over the first year. In the fixed-premium economy, the corresponding wage-channel declines are smaller, at 0.117 percent on impact and 0.267 percent over the first year. These amplified wage-income losses are partly offset in the aggregate by liquid-return and profit-income effects, which accrue disproportionately to households with larger asset positions. The aggregate consumption response therefore masks a stronger redistribution across households.

To address the role of capital-valuation effects, I extend the baseline model to include illiquid assets, allowing households to hold capital directly. In this environment, monetary tightening also affects households through illiquid returns and capital prices. The main result is robust: capital-valuation effects do not overturn the labor-income-driven incidence mechanism. The financial accelerator continues to raise inequality mainly because it deepens the contraction in labor income, which disproportionately affects households with little liquid wealth. The additional capital-income margin changes the quantitative decomposition but does not reverse the distributional effect.

This unequal incidence is also welfare relevant. A consumption-equivalent welfare calculation shows that the financial accelerator raises the average welfare cost of a monetary tightening and shifts welfare losses toward the bottom of the wealth distribution. In the economy with household illiquid assets, average welfare losses are smaller but still larger under the financial accelerator, and losses remain concentrated below the top of the wealth distribution.

A model-implied hypothesis is that the distributional incidence of monetary policy is state dependent: the distributional effects of a monetary contraction should be larger when corporate financial stress is higher, because EFP amplification is stronger when firms are closer to their financing constraints. I provide suggestive reduced-form evidence consistent with this hypothesis using the Excess Bond Premium of Gilchrist and Zakrajšek (2012) as a proxy for corporate financial stress. Monetary contractions are associated with larger increases in consumption inequality for higher levels of the EBP.

**Related Literature.** This paper contributes to three strands of research. First, the paper contributes to the HANK literature on the transmission of monetary policy. While Two-Agent New Keynesian models provide a parsimonious approximation of aggregate dynamics (e.g., Galí et al., 2007; Bilbiie, 2008; Debortoli and Galí, 2024), fully fledged HANK models show that monetary transmission depends on the joint distribution of income, wealth, and marginal propensities to consume (e.g., Kaplan et al., 2018; Auclert, 2019; Luetticke, 2021). My contribution is to show that firms' financing conditions matter for the distributional consequences of monetary policy, in particular by shaping firms' labor demand and the wage-income losses borne by low-wealth households. Corporate balance sheets determine how strongly monetary policy moves wages, profits, and returns, and therefore affect how aggregate shocks are mapped into household-level outcomes.

Second, the paper contributes to the literature on the financial accelerator and the EFP (e.g., Bernanke et al., 1999; Christiano et al., 2014; Carlstrom et al., 2016). This literature has mainly emphasized aggregate amplification in investment and output. I show that, in a heterogeneous-agent economy, the same balance-sheet mechanism also has consistent distributional consequences. When entrepreneurial net worth falls, the EFP rises and firms reduce investment and labor demand more strongly. The resulting wage-income adjustment is then unevenly transmitted across households because they differ in labor-income exposure, liquid wealth, and self-insurance capacity.

Third, the paper relates to recent work integrating financial frictions into heterogeneous-agent environments (e.g., Guerrieri and Lorenzoni, 2017; Nakajima and Ríos-Rull, 2019; Fernández-Villaverde et al., 2023; Chiang and Żoch, 2022). The closest paper is Faccini et al. (2026), which studies how banking frictions affect inequality by altering households' borrowing conditions. My analysis is complementary but emphasizes a different incidence margin. In household-credit models, monetary policy is transmitted through household borrowing spreads and credit access. In my framework, the relevant pass-through runs from firms' EFP to investment, labor demand, and wages. The two papers therefore highlight different margins through which financial frictions affect inequality.

The remainder of the paper is organized as follows. Section 2 outlines the model. Section 3 explains the calibration. Section 4 presents the baseline quantitative results. Section 5 provides an illustrative check of the model's state-dependence prediction. Section 6 concludes.

# 2 Model

The model comprises households, financial intermediaries, a production sector, a central bank, and the government. Households consume, earn income (either from labor or profit, depending on the household type), and save in a liquid asset, which yields an interest rate. Financial intermediaries obtain deposits from households and lend them to the production sector, which, in turn, is responsible for the production of goods and capital. The central bank is in charge of monetary policy and sets the nominal interest rate, whereas the government acts as fiscal authority and chooses how to finance government spending. Time is discrete and infinite. The behavior of each agent is explained in detail below.

## 2.1 Households

There is a continuum of ex ante identical households of measure one indexed by $i \in [0, 1]$. They are infinitely lived, have time-separable preferences with time-discount factor $\beta$ and their utility function $u$ is affected positively by consumption, $c_{it}$, and negatively by labor, $l_{it}$, with $l_{it} \in [0, 1]$ being hours worked as a fraction of the time endowment, normalized to 1. The utility function $u$ is strictly increasing and strictly concave in consumption and strictly decreasing and strictly convex in labor. Household $i$'s value function is the following:

$$V = E_0 \max_{\{c_{it}, l_{it}\}} \sum_{t=0}^{\infty} \beta^t u(c_{it}, l_{it}) \ , \tag{1}$$

where I assume households have separable preferences with a Constant Relative Risk Aversion (CRRA) form:

$$u(c, l) = \frac{c^{1-\xi}}{1-\xi} - \psi \frac{l^{1+1/\nu}}{1+1/\nu} \ . \tag{2}$$

Following Luetticke (2021), I assume the existence of two household types: workers and rentiers. Workers supply labor, $l_{it}$, in the production sector and have positive idiosyncratic labor productivity, $h_{it} > 0$. Because the wage level, $W_t$, is the same for everyone, their income is given by $W_t h_{it} l_{it}$. Rentiers have zero labor productivity, $h_{it} = 0$, but collect a proportional share of total profits generated from the production sector, $\Pi_t$. Idiosyncratic labor productivity $h_{it}$ follows an exogenous Markov chain according to the following first-order autoregressive process and a fixed probability of transition between the worker and the rentier state:

$$h_{it} = \begin{cases} \exp(\rho_h \log(h_{it-1}) + \epsilon^h_{it}) & \text{with probability } 1-\zeta \text{ if } h_{it-1} \neq 0 \\ h^H_t & \text{with probability } \iota \text{ if } h_{it-1} = 0 \\ 0 & \text{else} \end{cases} \tag{3}$$

where $\epsilon^h_{it} \sim N(0, \sigma_h)$ and $h^H_t$ is the highest possible productivity realization for workers. The parameter $\zeta \in (0,1)$ is the probability that a worker becomes a rentier, while $\iota \in (0,1)$ is the probability that a rentier becomes a worker. As stated above, workers who become rentiers leave the labor market ($h_{it} = 0$), whereas rentiers that become workers are endowed with productivity $h^H_t$.[1] Workers and rentiers pay the same level of taxation, $\tau$, on their income.

The asset market is incomplete: there are no Arrow-Debreu state-contingent securities, households self-insure themselves only through savings in a non-state contingent risk-free liquid asset, $a_{it}$, and they cannot get indebted on that, that is, an *ad hoc* borrowing constraint exists ($a_{it} \geq 0$). Thus, households cannot borrow from financial intermediaries to smooth their consumption. The household's budget constraint is:

$$c_{it} + a_{it+1} = \left(\frac{R_t}{\pi_t}\right) a_{it} + (1-\tau)(W_t h_{it} l_{it} + \mathbf{I}_{h_{it}=0} \Pi_t) \ , \tag{4}$$

where $\mathbf{I}_{h_{it}=0}$ takes the value of 1 if the household is a rentier and 0 otherwise. On the left-hand side, we have households' expenditure, that is, consumption, $c_{it}$ and 1-period-maturity savings, $a_{it+1}$. The right-hand side corresponds to households' total earnings: work/rent income net of taxes, $(1-\tau)(W_t h_{it} l_{it} + \mathbf{I}_{h_{it}=0} \Pi_t)$, and the gross real interest rate on previous savings, $(R_t/\pi_t) a_{it}$, where $\pi_t = (P_t/P_{t-1})$ is the inflation rate.

Households' liquid assets consist of a combination of deposits, $D_t$, and government bonds, $B_t$, resulting in the following equation:

$$A_t = D_t + B_t \ , \tag{5}$$

where $A_t = \int a_{it} di$. Deposits and bonds are perfect substitutes, which means that they carry the same real interest rate, $\frac{R}{\pi}$, and that households are indifferent to the composition of $A_t$.[2]

## 2.2 Financial Intermediaries

Financial intermediaries collect deposits from households and offer returns equal to the real risk-free interest rate, $R/\pi$. I assume that the production sector is run by entrepreneurs, a mass-zero group of managers who receive all the profits generated in the

[1] Appendix A contains details on the transition matrix for household productivity.

[2] I assume that each household has the same portfolio composition of liquid assets, determined by the aggregate levels.

sector and redistribute them to rentier households. Financial intermediaries and entrepreneurs are the key agents responsible for the financial frictions present in this model. In line with Bernanke et al. (1999), there exists a continuum of entrepreneurs, indexed by $j$. Entrepreneur $j$ acquires capital, $K_j$, from capital producers at the end of period $t$ that is used at time $t+1$. To buy capital for production, entrepreneurs rely on two types of financing: internal financing, that is, equity, $N_j$, and external financing, $D_j$.

Entrepreneur $j$'s balance sheet at period $t+1$ is:

$$q_t K_{jt+1} = N_{jt+1} + D_{jt+1} \; , \tag{6}$$

where $q$ is the price of capital at the time of the purchase.

A key condition for the functioning of this financial accelerator is that entrepreneurs are not indifferent to the composition of their balance sheet, meaning that external financing is more costly than internal financing. To capture this, I introduce a Costly State Verification (CSV) problem, as in Townsend (1979), where lenders (i.e., financial intermediaries) incur a fixed auditing cost to observe the realized returns of borrowers (i.e., entrepreneurs). An increase in the demand for debt raises auditing costs, which in turn reduces the total level of capital available for production.

Entrepreneurs repay financial intermediaries with a portion of their realized returns on capital. In this setup, entrepreneurs are risk-neutral, while households are risk-averse, implying a loan contract in which entrepreneurs bear all aggregate risk associated with the realization of their profits. I also assume the existence of an idiosyncratic shock to entrepreneur $j$, $\omega_j$,[3] on the gross return on aggregate capital, $R^K$. The idiosyncratic shock $\omega$ has a log-normal distribution of mean $E(\omega) = 1$ that is i.i.d. across time and across entrepreneurs, with a continuous, once-differentiable c.d.f., $F(\omega)$.[4]

The optimal contract for financial intermediaries is:

$$\bar{\omega}_{jt+1} R^K_{t+1} q_t K_{jt+1} = Z_{jt+1} D_{jt+1} \; , \tag{7}$$

where $Z_j$ is the gross non-default loan rate and $\bar{\omega}_j$ is the threshold value for entrepreneur $j$ such that, for $\omega_{jt+1} \geq \bar{\omega}_{jt+1}$, entrepreneur $j$ repays $Z_{jt+1} D_{jt+1}$ to financial intermediaries and retains $\omega_{jt+1} R^K_{t+1} q_t K_{jt+1} - Z_{jt+1} D_{jt+1}$. When $\omega_{jt+1} < \bar{\omega}_{jt+1}$, instead, entrepreneur $j$ is unable to repay and defaults on the debt, resulting in no repayment. Since entrepreneurs' future capital returns are only known ex-post, financial intermediaries must incur a fixed auditing cost, $\mu$, to recover the remaining value of entrepreneur $j$'s activity after default, which is $(1-\mu)\omega_{jt+1} R^K_{t+1} q_t K_{jt+1}$.

[3] As noted by Christiano et al. (2014), $\omega$ could be thought of as the idiosyncratic risk in actual business ventures: in the hands of some entrepreneurs, a given amount of raw capital is a great success, while in other cases may be not.

[4] Appendix B.1 provides analytical expressions for $F(\omega)$ and other functions employed in the subsequent equations.

Due to the optimal contract, financial intermediaries are expected to receive a return equal to the opportunity cost of their funds. By assumption, they hold a perfectly safe portfolio, meaning they can fully diversify the idiosyncratic risk associated with lending. Thus, the opportunity cost for financial intermediaries is the real gross risk-free rate, $R/\pi$. Therefore, the participation constraint for financial intermediaries that must be satisfied is:

$$[1 - F(\bar{\omega}_{jt+1})]Z_{jt+1}D_{jt+1} + (1-\mu)\int_0^{\bar{\omega}_{jt+1}} \omega_j dF(\omega_j) R^K_{t+1} q_t K_{jt+1} \geq \frac{R_{t+1}}{\pi_{t+1}} D_{jt+1} \ , \tag{8}$$

where $F(\bar{\omega}_j)$ is entrepreneur $j$ default probability. Since financial markets are in perfect competition, (8) must hold with equality. The first term on the left-hand side of (8) represents the revenue financial intermediaries receive from the fraction of entrepreneurs who do not default, while the second term corresponds to what intermediaries can recover from defaulting entrepreneurs after deducting auditing costs.

Following the notation proposed in Christiano et al. (2014), I combine (6), (7), and (8) to write the following relationship:

$$EFP_{jt+1} = f\left(\bar{\omega}_{jt+1}, LEV_{jt+1}\right) \ , \ \text{with} \ f'(LEV_{jt+1}) > 0 \ . \tag{9}$$

where EFP is the "External Finance Premium" that Bernanke et al. (1999) define as the ratio between the return on capital and the real risk-free rate, $R^K/(R/\pi)$, and $LEV = qK/N$ is entrepreneur's leverage. The EFP serves as a measure of the cost of external funds for entrepreneurs and can thus be viewed as a proxy for the intensity of financial frictions. Hence, the EFP is not a return paid to household depositors. It is a wedge between the return required on entrepreneurial capital and the risk-free rate, and affects households indirectly through firms' investment and labor-demand decisions. The $(\bar{\omega}_{jt+1}, LEV_{jt+1})$ combinations that satisfy (9) define a menu of state $(t+1)$-contingent standard debt contracts offered to entrepreneur $j$, who chooses the contract that maximizes its objective.

This distinction matters for the incidence of monetary policy. The financial friction is not a household-specific borrowing spread; it is a production-side wedge in firms' cost of external finance. Household heterogeneity becomes relevant because households are differently exposed to the equilibrium prices affected by this wedge, especially wages, profits, and liquid-asset returns.

In Appendix B.2, I present the optimization problem of entrepreneur $j$, which leads to three key conclusions. First, the EFP increases monotonically with leverage, implying that entrepreneurs with higher leverage face a higher EFP. Second, the default threshold for entrepreneur $j$, $\bar{\omega}_j$, is determined endogenously by the EFP. Third, since $\bar{\omega}_j$ depends solely on aggregate variables ($R$, $R^K$, and $\pi$), it follows that all entrepreneurs will adopt the same firm structure, meaning $\bar{\omega}$ and leverage are the same for everyone. Consequently, the superscript $j$ can be omitted, allowing for the analysis of a representative entrepreneur.

A further fundamental equation describing the functioning of this financial accelerator is the law of motion for entrepreneurs' equity, given by the following expression:

$$N_{t+1} = \gamma \left[ q_{t-1} R_t^K K_t - \frac{R_t}{\pi_t} D_t - \mu G(\bar{\omega}_t) q_{t-1} R_t^K K_t \right] . \tag{10}$$

Equation (10) states that entrepreneurs' equity after the production process at time $t$ is equal to the gross return on capital net of the loan repayment and auditing costs (which are borne by the entrepreneurs due to their risk-neutrality). Parameter $\gamma$ represents the share of surviving entrepreneurs who carry their equity to the production process from one period to the next. Conversely, the share of entrepreneurs $1 - \gamma$ dies and consumes equity at time $t$ (we can think of this as entrepreneurial consumption). As explained by Carlstrom et al. (2016), this assumption avoids excessive entrepreneurs' self-financing in the long run.[5]

Alternatively, (10) can be written in a more compact form as:

$$N_{t+1} = \gamma \left[1 - \Gamma(\bar{\omega}_t)\right] R_t^K q_{t-1} K_t \ , \tag{11}$$

where $[1 - \Gamma(\bar{\omega}_t)]$ is the share of capital returns to which non-defaulting entrepreneurs are entitled.[6] Equation (11), together with (9), explains the financial accelerator mechanism. Equation (9) states that an increase in entrepreneurs' leverage increases also the EFP. At the same time, (11) tells that an increase in the EFP increases $\bar{\omega}$ as well, negatively affecting entrepreneurs' equity level for the next period and, therefore, impacting the aggregate leverage.

## 2.3 Intermediate-Goods Producers

Intermediate-goods producers adopt a standard Cobb-Douglas production function with constant returns to scale, employing aggregate capital, $K$, supplied by entrepreneurs and labor, $L$, from workers:

[5] Note that in (10) I did not include entrepreneurial labor, as usual in the literature (e.g., Bernanke et al., 1999, Christiano et al., 2014). The assumption of entrepreneurial labor was introduced mainly to justify the initial amount of equity for new entrepreneurs that take the place of the dead ones. However, to keep the model as simple as possible, I follow Carlstrom et al. (2016), assuming that new entrepreneurs' initial equity comes from a lump-sum transfer from existing entrepreneurs. Even so, since the funding can be arbitrarily small and since only aggregate equity matters, this transfer can be neglected in equation (10). Bernanke et al. (1999) keep the share of income going to entrepreneurial labor at a very low level (on the order of 0.01), therefore neglecting this income sounds as a reasonable model simplification.

[6] See Appendix B.2

$$Y_t = z_t L_t^{\alpha} K_t^{1-\alpha} \ , \tag{12}$$

where $z$ represents the Total Factor Productivity (TFP).

TFP follows a first-order autoregressive process of type:

$$log(z_t) = \rho_z log(z_{t-1}) + \epsilon_t^z \ , \tag{13}$$

with $\epsilon_t^z$ following a normal distribution with mean 0 and standard deviation $\sigma^z$.

Intermediate-good producers sell their production to resellers at a relative price $MC_t$. Therefore, their profit optimization is given by:

$$\Pi_t^{IG} = MC_t z_t L_t^{\alpha} K_t^{1-\alpha} - W_t L_t - r_t^K K_t \ . \tag{14}$$

Since they are in perfect competition, their profit optimization problem returns the wage paid per unit of labor and the rent paid per unit of capital:

$$W_t = \alpha MC_t z_t \left( \frac{K_t}{L_t} \right)^{(1-\alpha)} \ , \tag{15}$$

$$r_t^K = (1-\alpha) MC_t z_t \left( \frac{L_t}{K_t} \right)^{\alpha} \ . \tag{16}$$

### 2.4 Resellers

Resellers are agents assigned to differentiate intermediate goods and set prices. Price adjustment costs follow a Rotemberg (1982) setup. The demand for the differentiated good $g$ is:

$$y_{gt} = \left( \frac{p_{gt}}{P_t} \right)^{-\eta} Y_t \ , \tag{17}$$

where $\eta > 1$ is the elasticity of substitution and $p_g$ is the price at which good $g$ is purchased.

Given (17) and the quadratic costs of price adjustment, resellers maximize:

$$E_0 \sum_{t=0}^{\infty} \beta^t Y_t \left\{ \left( \frac{p_{gt}}{P_t} - MC_t \right) \left( \frac{p_{gt}}{P_t} \right)^{-\eta} - \frac{\eta}{2\kappa} \left( log \frac{p_{gt}}{p_{gt-1}} \right)^2 \right\} \ , \tag{18}$$

with a discount factor that remains constant over time and is the same as that of households.

The New Keynesian Phillips Curve (NKPC) derived from the F.O.C. for price setting is as follows:

$$log(\pi_t) = \beta E_t \left[ log(\pi_{t+1}) \frac{Y_{t+1}}{Y_t} \right] + \kappa \left( MC_t - \frac{\eta - 1}{\eta} \right) , \tag{19}$$

where $\pi_t$ is defined as $\frac{P_t}{P_{t-1}}$.

## 2.5 Capital Producers

After production at time $t$, entrepreneurs sell depreciated capital to capital producers at a price $q_t$. They refurbish depreciated capital at no cost,[7] and use goods as investment inputs, $I_t$, to produce new capital, $\Delta K_{t+1} = K_{t+1} - K_t$, subject to quadratic adjustment costs. Finally, they resell the newly produced capital to entrepreneurs before entering the next period (therefore still at price $q_t$).

The law of motion for capital producers is:

$$I_t = \Delta K_{t+1} + \frac{\phi}{2} \left( \frac{\Delta K_{t+1}}{K_t} \right)^2 K_t + \delta K_t . \tag{20}$$

where $\delta$ is the depreciation rate for capital.

Then, capital producers maximize their profit, $q_t \Delta K_{t+1} - I_t$, w.r.t. newly produced capital, $\Delta K_{t+1}$. This optimization problem delivers the optimal capital price:

$$q_t = 1 + \phi \frac{\Delta K_{t+1}}{K_t} . \tag{21}$$

This ensures that if the level of aggregate capital increases over time, so does its price.

It follows that entrepreneurs' return on capital does not depend only on goods production, but also on fluctuations of the capital price. Since entrepreneurs buy capital at the end of the period, they see that their capital at the beginning of the next period appreciated (depreciated) if $q$ increases (decreases). The gross return on capital employed at time $t$ can be written as:

$$R_t^K q_{t-1} K_t = r_t^K K_t + q_t K_t (1 - \delta) , \tag{22}$$

where the first term on the right-hand side is the marginal productivity of capital derived in (16) and the second term represents the eventual capital gain (or loss) net of capital depreciation.

I can rearrange and finally derive the gross interest rate of capital as:

$$R_t^K = \frac{r_t^K + q_t(1 - \delta)}{q_{t-1}} . \tag{23}$$

[7] The "no cost" assumption does not mean that $\delta K$ is refurbished for free. Capital producers still need to buy the exact amount of $I$ necessary to refurbish depreciated capital, but do not waste any further resources in this process. In fact, the law of motion for capital producers in the steady state (when $\Delta K = 0$) is $I = \delta K$.

## 2.6 Final-Goods Producers

Final-goods producers are perfectly competitive, buy differentiated goods from resellers at a given price, and produce a single homogeneous final good used for consumption, government spending, and investment. The optimization problem of final-goods producers is:

$$\max_{\{Y_t, y_{gt} \in [0,1]\}} P_t Y_t - \int_0^1 p_{gt} y_{gt} dg \ , \tag{24}$$

subject to the following Constant Elasticity of Substitution (CES) function:

$$Y_t = \left( \int_0^1 (y_{gt})^{\left(\frac{\eta-1}{\eta}\right)} dg \right)^{\left(\frac{\eta}{\eta-1}\right)} \ . \tag{25}$$

From the zero-profit condition, the price index of the final good is:

$$P_t = \left( \int_0^1 (p_{gt})^{(1-\eta)} \, dg \right)^{\left(\frac{1}{1-\eta}\right)} \ . \tag{26}$$

## 2.7 Central Bank

The central bank is responsible for the monetary policy. It sets the gross nominal risk-free interest rate, $R$, reacting to the deviation from steady state inflation, and engages interest rate smoothing. The Taylor-type rule employed by the central bank is as follows:

$$\frac{R_{t+1}}{\bar{R}} = \left( \frac{R_t}{\bar{R}} \right)^{\rho_R} \left( \frac{\pi_t}{\bar{\pi}} \right)^{(1-\rho_R)\rho_\pi} \epsilon_t^R \ , \tag{27}$$

where $\epsilon_t^R$ is the monetary policy shock defined as $log(\epsilon_t^R) \sim N(0, \sigma_R)$. The parameter $\rho_R \geq 0$ rules interest rate smoothing (if $\rho_R = 0$, the next-period interest rate depends only on inflation), whereas $\rho_\pi$ captures the magnitude of the central bank's response to inflation fluctuations: the larger $\rho_\pi$, the stronger the central bank reaction (for the case limit $\rho_\pi \to \infty$, inflation is perfectly stabilized at its steady state level).

## 2.8 Government

The government acts as fiscal authority. It determines the level of public expenditure, $G_t$, tax revenues, $T_t$ and issuance of new bonds, $B_{t+1}$. Its budget constraint is given by:

$$B_{t+1} = \left( \frac{R_t}{\pi_t} \right) B_t + G_t - T_t \ , \tag{28}$$

where $T_t$ are taxes collected from both worker and rentier households:

$$T_t = \tau \left[ \int W_t h_{it} l_{it} d\Theta_t(a, h) + \mathbf{I}_{h_{it}=0} \Pi_t \right] \ , \tag{29}$$

and $\Theta_t(a, h)$ is the joint distribution of liquid assets and productivity across households on date $t$.

Government bond issuance is regulated by the following rule:

$$\frac{B_{t+1}}{\bar{B}} = \left( \frac{B_t \frac{R_t}{\pi_t}}{\bar{B} \frac{\bar{R}}{\bar{\pi}}} \right)^{\rho_B} . \tag{30}$$

The parameter $\rho_B$ captures how fast the government wants to balance its budget. When $\rho_B \to 0$, the government balances its budget by adjusting its spending. Instead, when $\rho_B \to 1$, the government is willing to roll over most of its outstanding debt.

### 2.9 Market Clearing

The labor market clears when:

$$L_t = \int h \, l^*(a, h) \Theta_t(a, h) dadh \, , \tag{31}$$

where $l^*(a, h)$ is the optimal labor supply policy function of the household.

The liquid asset market clears when:

$$A_t = \int a^*(a, h) \Theta_t(a, h) dadh \, , \tag{32}$$

where $a^*(a, h)$ is the optimal saving policy function of the household.

The market for capital clears for (20) and (21).

Finally, good market clearing, which holds by Walras' law when other markets clear, is defined as:

$$Y_t \left( 1 - \frac{\eta}{2\kappa} \left( log(\pi_t) \right)^2 \right) = C_t + G_t + I_t + C_t^E + \mu G(\bar{\omega}_t) R_t^K q_{t-1} K_t \, , \tag{33}$$

where on the left-hand side we have total output net of quadratic costs of price adjustment. On the right-hand side, apart from household consumption, public expenditure and investments, we also find entrepreneurial consumption, $C^E$ (due to dying entrepreneurs), and auditing costs.[8]

### 2.10 Numerical Implementation

To solve the model, I follow the solution proposed in Bayer and Luetticke (2020). Since the joint distribution, $\Theta_t$, is an infinite-dimensional object (and therefore not computable), it is discretized and represented by its histogram, a finite-dimensional object. I solve the household's policy function using the Endogenous Grid-point Method (EGM) developed by Carroll (2006), iterating over the first-order condition and approximating the

[8] Similarly to Kaplan et al. (2018), we can think of this last term as "financial services".

idiosyncratic productivity process using a discrete Markov chain with three states using the Tauchen (1986) method. I solve for aggregate dynamics by first-order perturbation around the steady state, as in Reiter (2009). The joint distribution is represented by a bi-dimensional matrix.[9]

# 3 Calibration

The model is calibrated to the US economy. Since the analysis focuses on conventional monetary policy, business cycle moments are targeted over the Great Moderation in order to exclude periods in which the zero lower bound was binding. Periods in the model represent quarters; consequently, the following values for the calibrated parameters are intended quarterly unless otherwise specified. Table 1 presents a list of calibrated model parameters, with their calibration methodology detailed in this section. Table 2 displays the key moments of the wealth distribution.

## 3.1 Households

For the households' utility function, I assume the coefficient of relative risk aversion $\xi = 2$, which is consistent with the findings of Attanasio and Weber (1995) and already used by Auclert et al. (2021). I set the Frisch elasticity of labor supply $\nu = 1$, in line with the results of Chetty et al. (2011). The parameter for the disutility of labor, $\psi$, is set to 5.5, to have an average value for hours worked equal to 1/2, as in Kaplan et al. (2018). The intertemporal discount factor, $\beta$, is equal to 0.988, so savings in deposits by households are sufficient to have a leverage for entrepreneurs of 2, the same value used by Bernanke et al. (1999) in their model, and a fair calibration given historical levels of corporate leverage. I decide on purpose to impose a non-borrowing condition for households, setting the borrowing limit for liquidity $\underline{a} = 0$. This assumption makes the baseline model a useful limiting case relative to models with consumer-credit spreads: by shutting down the direct household borrowing channel, the analysis isolates the distributional consequences of financial frictions that originate on firms' balance sheets. The absence of an explicit negative borrowing constraint removes an additional parameterization tool, as this feature is often used in the literature to calibrate the share of hand-to-mouth (HtM) or borrowing households. Nevertheless, the model still generates a substantial share of HtM households—approximately 24%—which is consistent with empirical estimates, which typically indicate that around 30% of U.S. households are HtM.[10]

[9]Capital $K$ does not display heterogeneity in the baseline framework. A visual representation of the joint distribution can be found in Appendix A

[10]In line with Kaplan et al. (2014), I identify HtM households as those whose liquid wealth falls below the equivalent of two weeks of the lowest possible labor income realization.

Table 1: Calibrated parameters

| Description | Parameter | Value | Source/Target |
|---|---|---|---|
| Discount factor | $\beta$ | 0.988 | LEV = 2 |
| Relative risk aversion | $\xi$ | 2 | Auclert et al. (2021) |
| Frisch elasticity of labor | $\nu$ | 1 | Chetty et al. (2011) |
| Disutility of labor | $\psi$ | 5.5 | L = 0.5 |
| Borrowing constraint | $\underline{a}$ | 0 | no HHs borrowing |
| Prob. of leaving rentier state | $\iota$ | 0.0625 | Guvenen et al. (2014) |
| Prob. become rentier | $\zeta$ | 0.00055 | Gini wealth = 78% |
| Persistence of idio. prod. shock | $\rho_h$ | 0.98 | Bayer et al. (2019) |
| SD of idio. prod. shock | $\sigma_h$ | 0.06 | Bayer et al. (2019) |
| Labor share of production | $\alpha$ | 0.7 | standard value |
| Depreciation rate | $\delta$ | 0.02 | standard value |
| Elasticity of substitution | $\eta$ | 20 | mark-up = 5% |
| Price stickiness | $\kappa$ | 0.09 | av. price duration = 4 quart. |
| Adjustment cost of capital | $\phi$ | 2.5 | $\sigma$(I)/$\sigma$(Y) = 3 |
| Auditing costs | $\mu$ | 0.12 | EFP = 2% p.a. |
| SD of the id. shock on entr. | $\sigma_\omega$ | 0.27 | Bernanke et al. (1999) |
| Entr. surviving rate | $\gamma$ | 0.985 | EFP = 2% p.a. |
| TFP shock persistence | $\rho_z$ | 0.95 | standard value |
| TFP shock SD | $\sigma_z$ | 0.01 | standard value |
| Nominal int. rate | $R$ | 1.0063 | 2.5% p.a. |
| Int. rate smoothing | $\rho^R$ | 0.8 | Clarida et al. (2000) |
| Reaction to inflation | $\rho^\pi$ | 1.5 | standard value |
| Monetary shock SD (p.a.) | $\sigma_R$ | 0.0006 | 25 b.p. p.a. |
| Tax rate | $\tau$ | 0.3 | G/Y $\approx$ 20% |
| Auto-correlation of debt | $\rho_B$ | 0.86 | Bayer et al. (2019) |

Table 2: Wealth distribution moments

| Target | Model | Data |
|---|---|---|
| Gini index (calibrated) | 0.78 | 0.78 |
| top 10% wealth | 0.71 | 0.67 |
| Share of HtM households | 0.24 | 0.30 |

The calibration of the productivity transition matrix, which determines how households move between the worker and rentier states, aims to provide a distribution of wealth consistent with empirical data. As in Luetticke (2021), I assume that the probability of becoming a rentier is the same for workers independent of their labor productivity, and once they become workers again, they start with the highest productivity realization. The probability of leaving the rentier state is $\iota = 0.0625$, following the findings of Guvenen et al. (2014) on the probability of dropping out of the top 1% income group in the US. The probability of moving from the worker to the rentier state is $\zeta = 0.00055$, a value calibrated to obtain a Gini coefficient for wealth of 78%, in line with empirical data from the Survey of Consumer Finances (Luetticke, 2021). Regarding idiosyncratic income risk for labor productivity, I set autocorrelation $\rho_h = 0.98$ and standard deviation $\sigma_h = 0.06$, as estimated by Bayer et al. (2019).

## 3.2 Financial Intermediaries

The parameters governing financial frictions for firms are consistent with the calibration proposed by Bernanke et al. (1999). Specifically, the auditing cost is set to $\mu = 0.12$, the standard deviation of the idiosyncratic shock to entrepreneurial returns is $\sigma_\omega = 0.27$, and the survival rate of entrepreneurs is $\gamma = 0.985$. These values are calibrated to produce $EFP = 1.005$ (corresponding to a 2% annual corporate spread) when corporate leverage equals 2.

## 3.3 Production Sector

The labor share of production (accounting for profits) and capital depreciation rate follow standard values in the literature and are set respectively to $\alpha = 0.7$ and $\delta = 2\%$. The mark-up is also standard, at 5%, which implies elasticity of substitution between goods varieties $\eta = 20$. The price stickiness parameter in the NKPC, $\kappa = 0.09$, is calibrated to generate a slope of the curve similar to the one that would arise in a model with sticky prices à la Calvo, with an average price duration of four quarters. The adjustment cost of the capital parameter is calibrated to $\phi = 2.5$ to match investment-to-output volatility $\sigma(I)/\sigma(Y) = 3$ after a TFP shock, a standard value in the literature, in the scenario where the financial accelerator is active.[11]

## 3.4 Central Bank and Government

Inflation at the steady state is set to 0% per annum, and the nominal (therefore real) interest rate on bonds is 2.5%, a value in line with the real average federal funds rate for the Great Moderation period. I impose the same interest rate on all types of liquid savings (i.e., government bonds and deposits); otherwise, households would choose to invest only in one asset or the other. Regarding the Taylor rule adopted by the Central Bank, the parameter for interest rate smoothing is $\rho_R = 0.8$, according to the findings

[11] The TFP considered for this calibration has a standard deviation of $\sigma_z = 0.01$ and a persistence parameter of $\rho_z = 0.95$.

of Clarida et al. (2000), whereas the reaction to inflation fluctuations from the steady state is $\rho_\pi = 1.5$, which is a common value in the macroeconomic literature. For the magnitude of the monetary policy shock, I assume that the central bank increases the nominal interest rate by 25 basis points on an annualized basis.

The taxes set by the government are proportional to both labor income and profits, with a tax rate $\tau = 0.3$ that targets the ratio of government spending to GDP to a standard value in the New Keynesian literature, $G/Y \approx 20\%$. For the fiscal policy rule, I follow the estimation in Bayer et al. (2019) and set $\rho_B = 0.86$. This implies that the fiscal dynamic passes through government debt, with public spending adjusting to re-stabilize debt to its steady state level.

# 4 Results

I first document how the financial accelerator modifies the aggregate transmission of a monetary tightening and then show how this aggregate amplification maps into household-level incidence. The aggregate responses connect the model to the standard financial-accelerator mechanism of Bernanke et al. (1999). The distributional responses then show the additional implication emphasized in this paper: once households differ in income exposure and self-insurance capacity, the same balance-sheet channel also determines who bears the adjustment.

The fixed-EFP economy should be interpreted as a wedge counterfactual: it preserves the same household heterogeneity and monetary-policy shock, but removes the endogenous response of firms' EFP. The comparison therefore isolates how a corporate credit wedge changes the income components through which the shock reaches households.

## 4.1 Aggregate Fluctuations

During the first period, the economy experiences an unexpected increase in the nominal interest rate (one-time innovation). Figure 1 compares the response of several aggregate variables to this shock when the EFP responds endogenously (blue solid line) or is held fixed (red dashed line).

Figure 1 shows that the standard financial-accelerator mechanism remains operative in the HANK economy. Following the 25 basis-point annualized monetary tightening, output falls by about 0.65 percent on impact when the financial accelerator is active, compared with about 0.40 percent when the EFP is held fixed. Investment falls by about 3 percent on impact with the financial accelerator, compared with about 2 percent in the fixed-EFP counterfactual. The EFP is the key endogenous wedge behind these responses: after the shock, it rises on impact and remains elevated over the horizon. These aggregate responses identify the first step of the incidence channel. By increasing firms' financing

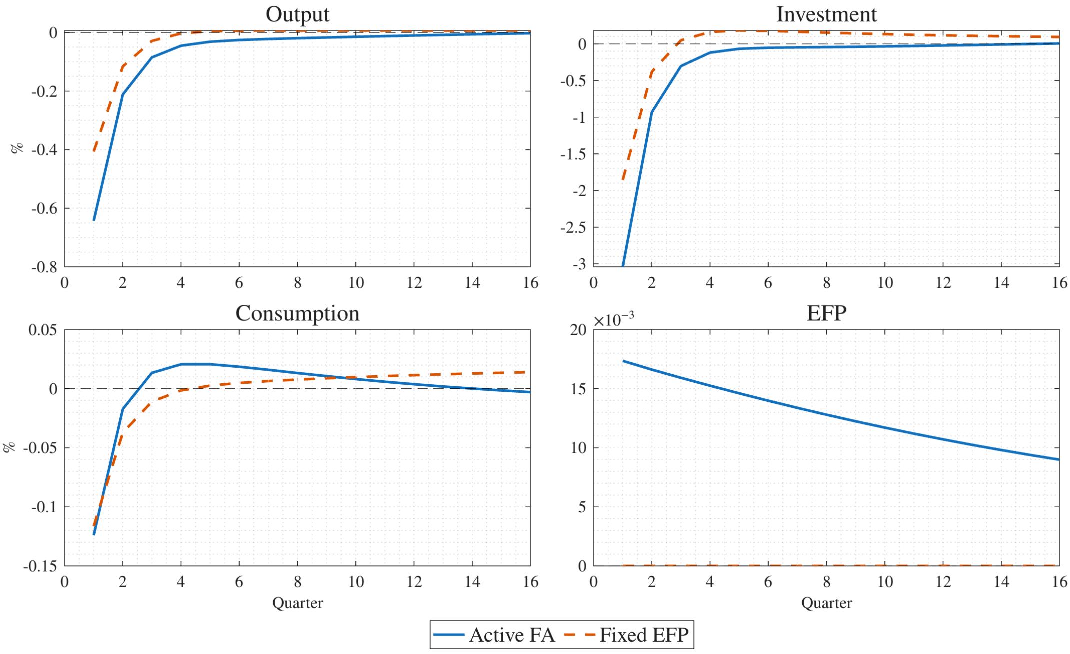


Figure 1: Aggregate responses to a monetary contraction
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

costs, the monetary tightening generates a stronger contraction in investment and labor demand. The distributional question is whether this additional aggregate adjustment is transmitted mainly through income components to which low-wealth households are more exposed.

Results are fairly similar to Figure 3 in Bernanke et al. (1999), with output and investment responses under financial frictions exhibiting higher magnitude on impact and higher persistence over time,[12] although IRFs in the HANK model converge to the steady state (or even overshoot) more rapidly. Aggregate consumption also responds more strongly on impact when financial frictions are active, although the amplification is smaller and less persistent than for output and investment. In the case of active financial frictions, consumption overshoots more quickly than in the fixed-EFP counterfactual. However, this result remains broadly consistent with the existing literature.

To illustrate the dynamics of the financial accelerator in detail, Figure 2 presents the IRFs for leverage, firm equity, household liquidity, and the determinants of labor income.[13] The monetary tightening deteriorates firms' balance sheets on impact. Leverage increases by about 0.42 percent when the financial accelerator is active, compared with about 0.27 percent when the EFP is held fixed. Firm equity falls by about 0.63 percent with active financial frictions, compared with about 0.40 percent in the fixed-EFP counterfactual. Hence, the financial accelerator increases the impact response of leverage and firm equity

[12] Since in Bernanke et al. (1999) there is a fall in the nominal interest rate, the dynamics are mirrored.
[13] More IRFs for aggregate variables are shown in Appendix C.

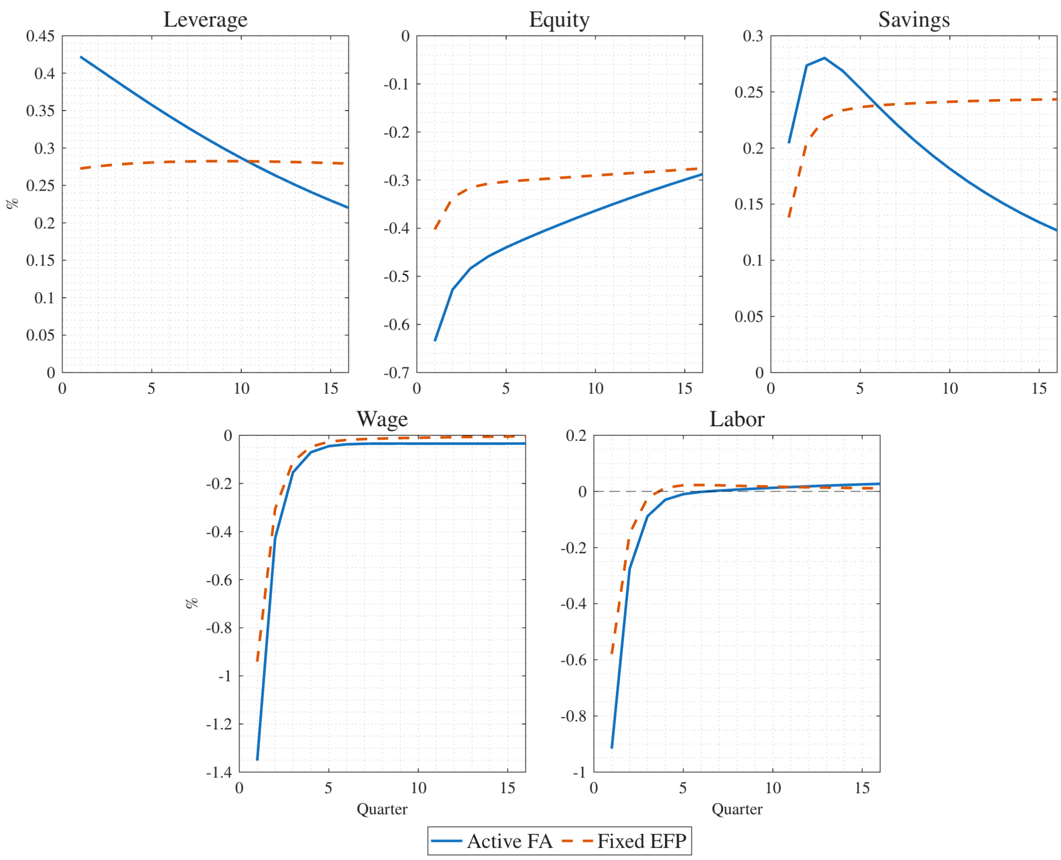


Figure 2: Aggregate responses to a monetary contraction
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

by roughly one half. As suggested by equation (10), the combination of a lower capital price, lower capital accumulation, and higher debt weakens entrepreneurial net worth. Since leverage is defined as $qK/N$, the fall in equity mechanically raises leverage. Higher leverage then raises firms' financing costs through the EFP, as shown by equation (9). At the same time, the entrepreneur's default threshold, $\bar{\omega}$, increases, reducing the share of capital returns accruing to entrepreneurs and further depressing next-period equity. This feedback loop is the core of the financial accelerator: lower equity raises leverage and the EFP, the higher EFP reduces investment and capital accumulation, and weaker capital accumulation further depresses firm net worth.

The medium-run behavior of leverage deserves some attention. While financial frictions persistently amplify output and investment losses over the full horizon, leverage does not remain uniformly higher under active financial frictions. After roughly three years, leverage becomes lower than in the fixed-premium counterfactual. This pattern is not a failure of the amplification mechanism. Rather, it reflects the strength of the friction itself. When the EFP is fixed at its steady-state level, external finance remains relatively cheap. Firms can therefore sustain a higher level of debt, which is supplied

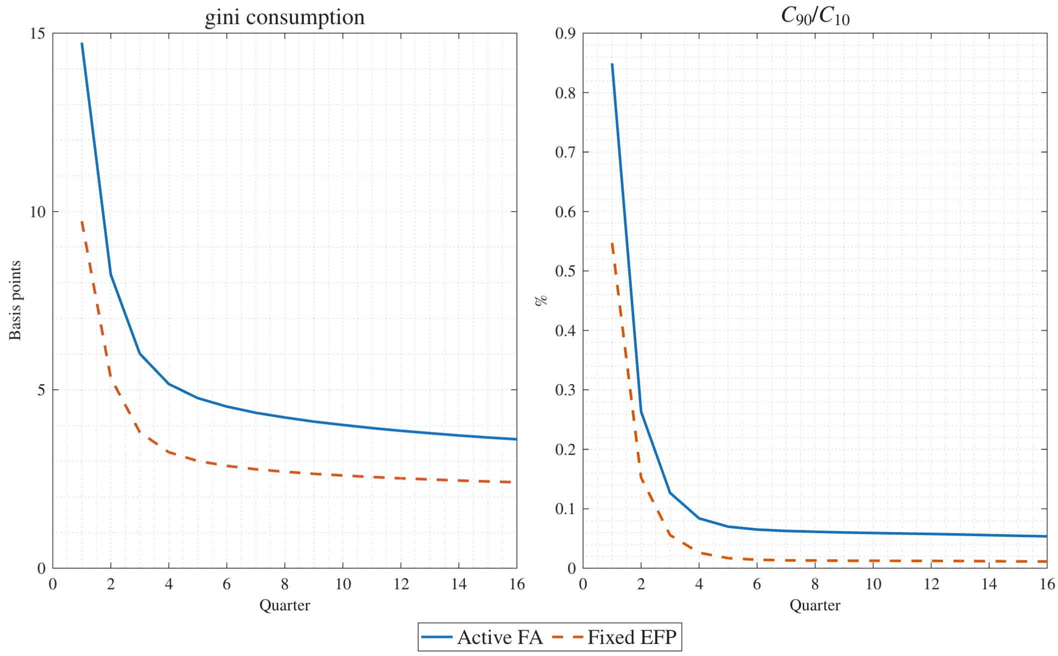


Figure 3: IRF for Gini index and 90/10 percentile ratio of consumption
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

by households through financial intermediaries, especially by wealthier households accumulating liquid assets. By contrast, when financial frictions are active, the endogenous increase in the EFP makes debt finance more expensive and induces a stronger adjustment in firms' balance sheets. As a result, leverage returns toward steady state more quickly, even though output and investment remain more depressed. This distinction is important: the financial accelerator does not require leverage to be higher at every horizon. What matters is that the initial rise in leverage and EFP amplifies the contraction in investment, output, and firm equity.

The last two panels of Figure 2 connect the aggregate financial accelerator to household incidence. Labor falls by about 0.28 percent on impact when financial frictions are active, compared with about 0.15 percent when the EFP is held fixed. Wages fall by about 0.42 percent on impact with the financial accelerator, compared with about 0.30 percent in the fixed-EFP counterfactual. Labor recovers relatively quickly and overshoots after about six quarters, but wages remain below steady state throughout the four-year horizon.

## 4.2 Inequality among Households: Consumption

In this section I examine the evolution of consumption dispersion. Figure 3 presents two commonly used measures of consumption inequality: the impulse responses of the consumption Gini index and the ratio of consumption between the 90th and 10th percentiles of the distribution.

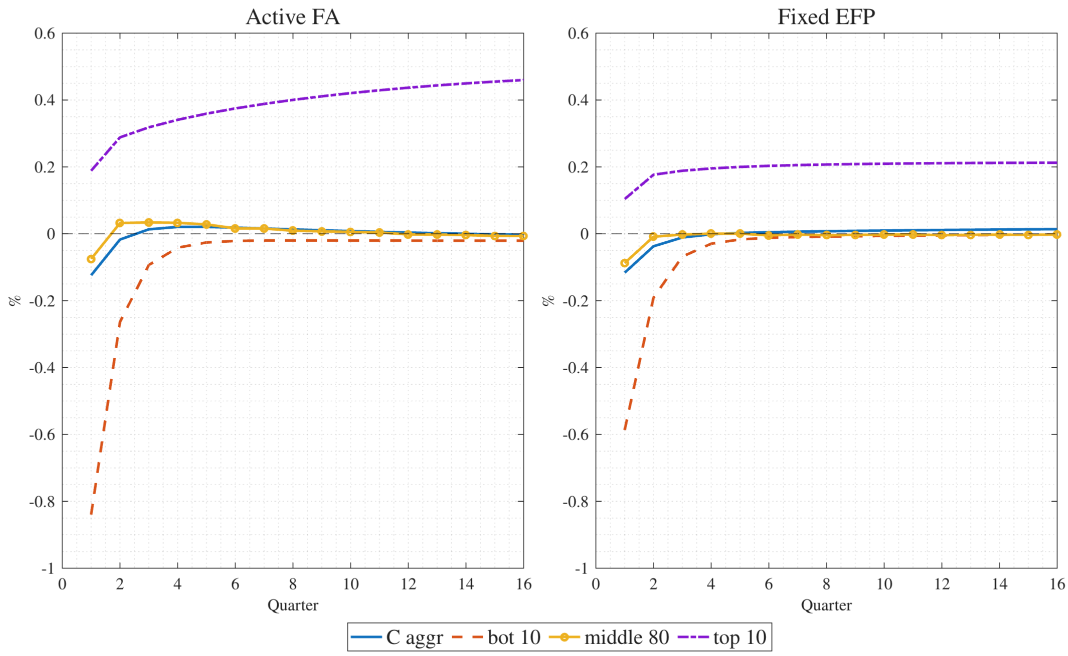


Figure 4: IRFs for consumption, aggregate and averages per wealth share

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line represents the aggregate consumption. Other lines represent the average consumption of specific shares of households. The left panel represents the scenario with active financial frictions, while the right panel depicts the fixed-EFP counterfactual.

Figure 3 shows that contractionary monetary policy increases consumption inequality in both economies, consistent with the empirical literature (e.g., Coibion et al., 2017). However, the increase is substantially larger when the financial accelerator is active. The consumption Gini rises by about 14 basis points on impact with the financial accelerator, compared with about 9 basis points when the EFP is held fixed. Thus, corporate financial frictions increase the impact response of the consumption Gini by roughly 50 percent. The amplification is persistent: after four years, the Gini response remains around 4 basis points with the financial accelerator, compared with about 2 basis points in the fixed-EFP counterfactual.

The 90/10 consumption ratio displays a similar pattern. On impact, the ratio increases by about 0.85 percent when financial frictions are active and by about 0.55 percent when the EFP is held fixed. Hence, the financial accelerator raises the initial widening of the 90/10 consumption gap by roughly 55 percent. Although the response of the 90/10 ratio decays more quickly than the Gini response, it remains higher under active financial frictions throughout the horizon. Taken together, the two panels show that the financial accelerator increases the cross-sectional dispersion of consumption after a monetary tightening.

To understand which households drive this result, Figure 4 decomposes aggregate consumption into the average consumption responses of the bottom 10 percent (who are constrained by the zero-borrowing limit), middle 80 percent, and top 10 percent of the wealth distribution.

Figure 4 shows that the increase in inequality is mainly driven by the opposite responses of households at the two tails of the distribution. At the bottom, consumption falls sharply on impact. Average consumption of the bottom decile declines by about 0.85 percent with the financial accelerator, compared with about 0.60 percent when the EFP is fixed. The financial accelerator therefore deepens the initial consumption loss of the poorest households by about 0.25 percentage points, or roughly 40 percent relative to the counterfactual response. Since these households are constrained by the zero-borrowing limit and hold negligible financial wealth, their consumption response is driven primarily by the deterioration in labor income documented in Figure 2.

The response of the middle 80 percent is much smaller. In both economies, average consumption for this group falls only mildly on impact, by roughly 0.08–0.09 percent, and returns close to steady state within a few quarters. Moreover, differences between the financial-accelerator and fixed-EFP economies are limited for this group. This suggests that the middle of the distribution is not the main source of the rise in consumption inequality. Rather, the inequality response is concentrated at the tails.

At the top of the distribution, consumption increases after the monetary tightening. Average consumption of the top decile rises by about 0.20 percent on impact with the financial accelerator, compared with about 0.10 percent in the fixed-premium economy. The difference becomes more pronounced over time: after four years, top-decile consumption is roughly 0.46 percent above steady state when the financial accelerator is active, compared with about 0.22 percent when it is not. This persistent increase reflects the fact that wealthier households hold most liquid assets and therefore benefit more from the rise in the risk-free return. Hence, the same monetary contraction that reduces labor income for low-wealth households raises financial income for high-wealth households. The distributional pattern is therefore sharper than the aggregate consumption response suggests.

A key feature of Figure 4 is that consumption responses differ not only in magnitude but also in persistence across the wealth distribution. The bottom decile exhibits the largest initial decline, but its consumption converges back to steady state relatively quickly. By contrast, the top decile responds less sharply on impact but remains persistently above steady state. This pattern reflects differences in income sources across households. Low-wealth households rely primarily on labor income, so their consumption follows the relatively short-lived dynamics of aggregate labor. Wealthier households, instead, derive a larger share of income from liquid assets. Since asset holdings and the associated interest income adjust more persistently, the consumption response of the top decile is also more persistent. The wealth-distribution analysis in Section 4.4 shows that the same mechanism generates persistent changes in wealth inequality.

These results are related to Faccini et al. (2026), who also study the distributional effects of monetary policy in a HANK framework with financial frictions. In their model, financial frictions operate mainly through household borrowing conditions, whereas in my framework they operate through firms' EFP. Despite this difference, both analyses find that financial frictions amplify the consumption losses of poorer households after a monetary contraction.

## 4.3 Monetary Policy Transmission with Financial Frictions

To further examine the role of the financial accelerator in the transmission of monetary policy to household consumption, I provide an additional consumption decomposition. Following the existing literature,[14] I decompose the total response of aggregate consumption into partial equilibrium effects that are driven by changes in specific household prices. Using the budget constraint (4), aggregate consumption can be expressed as a function of the sequence of prices $\{\Omega_t\}_{t\geq 0}$, with $\Omega_t = \left\{\frac{R_t}{\pi_t}, W_t, \Pi_t\right\}$:

$$C_t\left(\{\Omega_t\}_{t\geq 0}\right) = \int c_t\left(a, h; \{\Omega_t\}_{t\geq 0}\right) d\Theta_t, \tag{34}$$

where $\Theta_t$ is the joint distribution of liquid assets and idiosyncratic productivity induced by the sequence of prices. By totally differentiating (34), I isolate the contribution of each price variable to the aggregate response.

This decomposition allows me to distinguish between the direct and indirect effects identified by Kaplan et al. (2018). In this model, the direct channel corresponds to the partial-equilibrium effect of changes in the real return on liquid assets, $R/\pi$, while the wage and profit channels capture indirect general-equilibrium effects. The results of this decomposition are shown in Table 3, which displays the effects at two summary horizons: on impact and cumulatively over the first year.

The first row shows the total response of aggregate consumption. On impact, aggregate consumption falls by 0.125 percent when the financial accelerator is active, compared with 0.117 percent when the EFP is held fixed. Over the first year, however, cumulative aggregate consumption falls by 0.108 percent with the financial accelerator and by 0.166 percent in the fixed-EFP counterfactual. The smaller cumulative decline under active financial frictions does not imply that the shock is less contractionary for all households. Instead, it reflects the composition of the channels underlying aggregate consumption.

The liquidity-return row captures the direct effect of changes in the real return on liquid assets. On impact, this channel raises aggregate consumption by 0.030 percent when the financial accelerator is active, while it lowers consumption by 0.015 percent in the fixed-premium economy. Over the first year, the difference becomes much larger: liquidity returns raise aggregate consumption by 0.225 percent with the financial accelerator, compared with only 0.043 percent in the fixed-EFP counterfactual. This positive

[14] See, for instance, Kaplan et al. (2018), Auclert (2019) and Luetticke (2021).

Table 3: Decomposition of the Effect of the Monetary Shock on Aggregate Consumption

| | Impact | | First-year | |
|---|---|---|---|---|
| | Active FA | Fixed EFP | Active FA | Fixed EFP |
| Aggregate consumption ($C$) | −0.125 | −0.117 | −0.108 | −0.166 |
| *Contributions to C* | | | | |
| Liquidity returns | 0.030 | −0.015 | 0.225 | 0.043 |
| Wage | −0.177 | −0.117 | −0.419 | −0.267 |
| Profits | 0.021 | 0.014 | 0.086 | 0.058 |

Notes: The table reports percentage-point responses of aggregate consumption to the monetary shock. "Impact" denotes the response on impact, while "First-year" denotes the cumulative response over the first four quarters. Columns distinguish between economies with an active financial accelerator (Active FA) and the fixed-EFP counterfactual (Fixed EFP). The rows under "Contributions to $C$" decompose the aggregate consumption response into the contributions of liquidity returns, wages, and profits; within each column, these contributions sum to the corresponding aggregate consumption response, up to rounding.

contribution reflects the rise in the real return on liquid assets and the greater role of household claims on firms through financial intermediaries. Since liquid assets are concentrated among wealthier households, this channel mainly benefits the top of the wealth distribution.

The wage row is the main negative component of the decomposition. On impact, the wage channel lowers consumption by 0.177 percent with the financial accelerator, compared with 0.117 percent in the fixed-premium economy. Importantly, the wage contribution is larger in absolute value than the total impact decline in aggregate consumption. Thus, the aggregate response masks the strength of the labor-income channel: absent offsetting effects from liquidity returns and profits, the fall in consumption would be larger. Over the first year, the wage channel lowers consumption by 0.419 percent with the financial accelerator, compared with 0.267 percent in the fixed-EFP counterfactual. The financial accelerator therefore increases the cumulative negative wage contribution by 0.152 percentage points, or about 57 percent relative to the fixed-EFP counterfactual.

The profits row is positive in both economies but quantitatively smaller than the wage component. On impact, profits raise aggregate consumption by 0.021 percent with the financial accelerator and by 0.014 percent in the fixed-EFP counterfactual. Over the first year, the corresponding contributions are 0.086 and 0.058 percent. Profit income therefore provides an additional offset to the wage-income decline, but it is not the dominant force behind aggregate consumption dynamics.[15] Like liquidity returns, profit income is

[15] The sign and magnitude of the profit channel should be interpreted in light of the model's nominal-rigidity structure. In the baseline economy, prices are sticky while wages are flexible, so a monetary tightening can raise measured profit income through movements in markups and labor costs. This feature is familiar in New Keynesian environments and is not central to the mechanism emphasized here.

concentrated among households away from the bottom of the distribution, so this positive channel also contributes to the unequal incidence of the monetary contraction.

The decomposition can also be interpreted through the redistribution-channel framework of Auclert (2019). In the model presented in Section 2, the household balance-sheet and maturity channels are restricted by construction: households hold only a one-period liquid asset and cannot borrow. The mechanism emphasized here instead operates through the exposure of households with different MPCs to changes in labor and profit income, while the liquidity-return contribution bundles Fisher, unhedged interest rate exposure, and intertemporal-substitution effects. The financial accelerator affects the earnings side of this mapping indirectly by changing firms' labor demand and, through equilibrium, the paths of wages, hours, and profits. Appendix D shows that the local labor-income contribution can be separated into an MPC-weighted aggregate labor-income component and a labor-specific earnings-heterogeneity covariance. It must be noted that this mapping is interpretive: the wage contribution reported in Table 3 is a broader dynamic object that also incorporates household-policy responses and the endogenous evolution of the cross-sectional distribution.

The financial accelerator effect on consumption consequently affects household saving decisions throughout the distribution. This aspect is examined in the next section.

## 4.4 Inequality among Households: Wealth

The financial accelerator also affects household saving decisions and, therefore, the distribution of wealth. Empirical research on changes in the U.S. wealth distribution following monetary policy shocks remains limited, primarily because high-frequency household balance-sheet data are scarce.[16] For this reason, theoretical models with household heterogeneity are useful for studying how monetary policy affects wealth inequality. Figure 5 reports the impulse response of the wealth Gini index under active financial accelerator and fixed-EFP counterfactual.

The IRFs show that contractionary monetary policy increases wealth inequality in both economies. However, the increase is substantially larger when the financial accelerator is active. On impact, the wealth Gini rises by about 15 basis points with the financial accelerator, compared with about 10 basis points when the EFP is held fixed. The response peaks after about one year, reaching roughly 20 basis points in the economy with active financial frictions and 12 basis points in the fixed-EFP counterfactual.

Appendix F.5 shows that the main firm-credit incidence result is robust in a variant with flexible prices and sticky wages, closer to the canonical HANK environment of Auclert et al. (2024).

[16] The Survey of Consumer Finances (SCF), the most reliable source of data on household financial positions in the U.S., is conducted every three years. Another potentially valuable dataset is the Distributional Financial Accounts (DFA), which provides quarterly data on wealth distribution across household percentiles. However, since the DFA dataset begins in 2009Q3, it falls outside the timeframe examined in this study, which centers on the Great Moderation period.

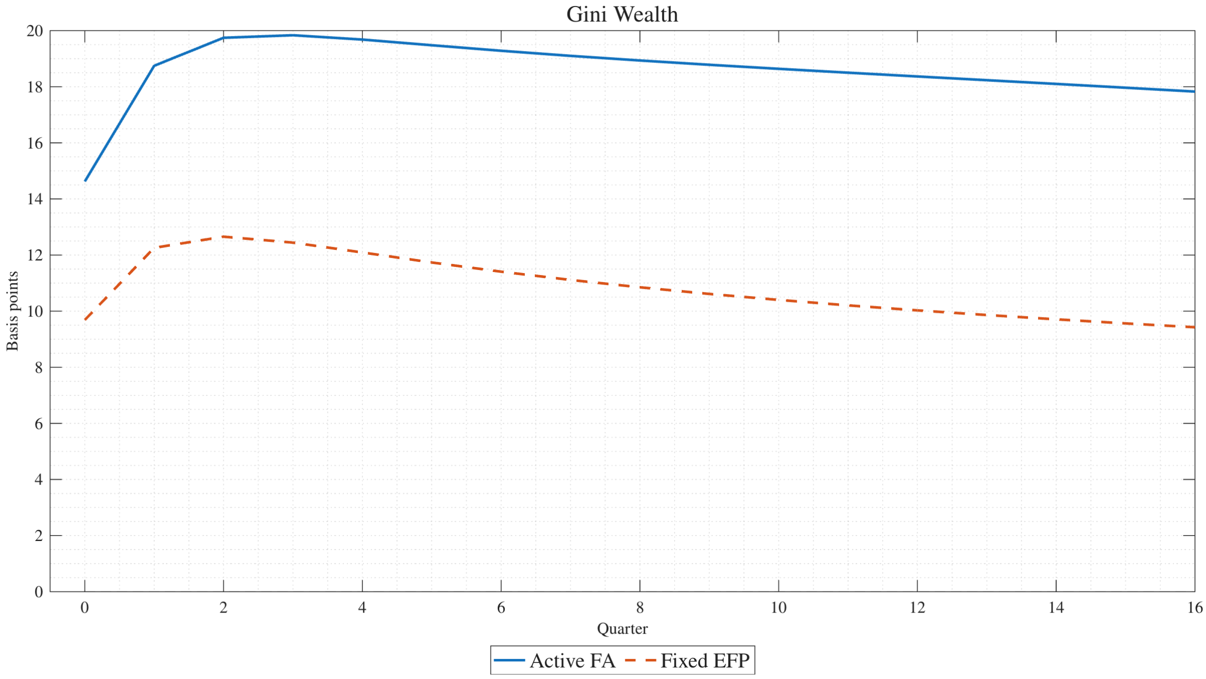


Figure 5: Impulse responses of the Gini index for wealth

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

Thus, the financial accelerator raises the peak response of wealth inequality by about 60 percent.

The amplification is also persistent. Four years after the shock, the wealth Gini remains about 18 basis points above steady state when the financial accelerator is active, compared with about 10 basis points when the EFP is held fixed. Hence, the financial accelerator does not simply raise the short-run response of wealth inequality; it also slows its convergence back to steady state. This persistence reflects the fact that wealth is a stock variable: temporary differences in income and saving decisions accumulate over time and generate longer-lasting effects on household balance sheets.

The Gini index summarizes the overall level of inequality, but it does not identify which part of the distribution drives the response. To address this issue, Figure 6 reports two tail measures: the share of households that are hand-to-mouth (HtM) and the share of total wealth held by the richest 10 percent of households. The first measure captures movements at the bottom of the wealth distribution, while the second captures concentration at the top.

The left panel of Figure 6 shows that the financial accelerator increases the mass of households at the bottom of the wealth distribution. On impact, the share of HtM households rises by about 0.50 percent relative to steady state when financial frictions are active, compared with about 0.34 percent in the fixed-EFP counterfactual. The response peaks after about four quarters at roughly 0.64 percent above steady state with the financial accelerator and 0.39 percent above steady state when the EFP is held


Figure 6: Impulse responses for households' share measures
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue line refers to an economy with an active financial accelerator. The red line refers to the fixed-EFP counterfactual.

fixed. Hence, the financial accelerator raises the peak percentage deviation of the HtM share by about 0.25 percentage points, or roughly 65 percent relative to the fixed-EFP counterfactual. This response reflects the saving behavior of households with little liquid wealth. Since these households receive little financial income, the rise in the risk-free return provides limited insurance. Instead, lower labor income induces them to reduce savings, pushing more households toward the borrowing constraint.

The right panel shows that the top of the wealth distribution also contributes to the increase in wealth inequality. The share of wealth held by the top 10 percent rises by about 0.23 percent on impact with the financial accelerator, compared with about 0.15 percent when the EFP is fixed. The response peaks after about three quarters at roughly 0.29–0.30 percent with active financial frictions and about 0.20 percent in the fixed-EFP counterfactual. Thus, the financial accelerator raises the peak increase in top wealth concentration by about 45–50 percent. The two panels therefore point to a two-sided adjustment. At the bottom, wage-income losses reduce saving and increase the HtM share. At the top, higher liquid-asset returns and profit-income exposure raise wealth concentration. These tail movements explain why the wealth Gini rises more and remains elevated for longer when corporate financial frictions are active.

The baseline model abstracts from household illiquid assets and assumes flexible wages. In Section 4.5 and Section 4.7, I show that the inequality-amplifying effect persists when households can accumulate illiquid assets and wages are subject to stickiness.

## 4.5 An Extension with Household Illiquid Assets

Consistent with the original setup in Bernanke et al. (1999), the baseline model abstracts from the direct role of capital-price movements in households' balance sheets. This feature limits the extent to which fluctuations in asset prices and capital returns can affect household consumption and wealth accumulation. The recent HANK literature has nevertheless emphasized the importance of household portfolio heterogeneity for matching the empirical distribution of wealth and for capturing the transmission of aggregate shocks across households.

HANK models with a two-dimensional household asset structure, typically comprising liquid and illiquid assets, are particularly useful because they capture two key empirical features: (i) the existence of "wealthy hand-to-mouth" households (Kaplan and Violante, 2014), who face liquidity constraints despite holding illiquid wealth; and (ii) the pronounced concentration of wealth at the top of the distribution, with wealthier households holding a larger share of their assets in illiquid form.

This extension provides relevant insights, since the financial accelerator amplifies the response of investment, capital, and asset prices to monetary shocks. In particular, capital-price losses borne by wealthy households could weaken, or even overturn, the labor-income-driven distributional effect documented in the baseline model. To evaluate this possibility, I extend the model by allowing households to supply credit to the production sector through two distinct channels: liquid funds intermediated by financial intermediaries and illiquid assets rented directly to firms. The full details and calibration of this extension are presented in Appendix E.

Figure 7 reports the responses of the two main inequality measures considered in the paper: the Gini index for wealth and the Gini index for consumption. The results show that the firm-credit incidence channel remains present even when households can hold illiquid assets. The wealth Gini rises by about 8 basis points at the first reported horizon when the financial accelerator is active, compared with about 6.5 basis points when the EFP is held fixed. The response peaks after about three to four quarters at roughly 9.6 basis points with active financial frictions and 7.8 basis points in the fixed-EFP counterfactual. Hence, the financial accelerator raises the peak wealth-Gini response by about 20–25 percent. The response is also more persistent: after four years, the wealth Gini remains around 6.9 basis points above steady state with the financial accelerator, compared with about 4.7 basis points in the fixed-EFP counterfactual. The consumption Gini displays a similar pattern. On impact, consumption inequality rises by about 5.5 basis points with the financial accelerator and by about 4.5 basis points in the fixed-premium economy. Thus, corporate financial frictions increase the impact response of consumption inequality by roughly 20 percent. The gap between the two economies remains visible throughout the horizon: after four years, the consumption Gini is still

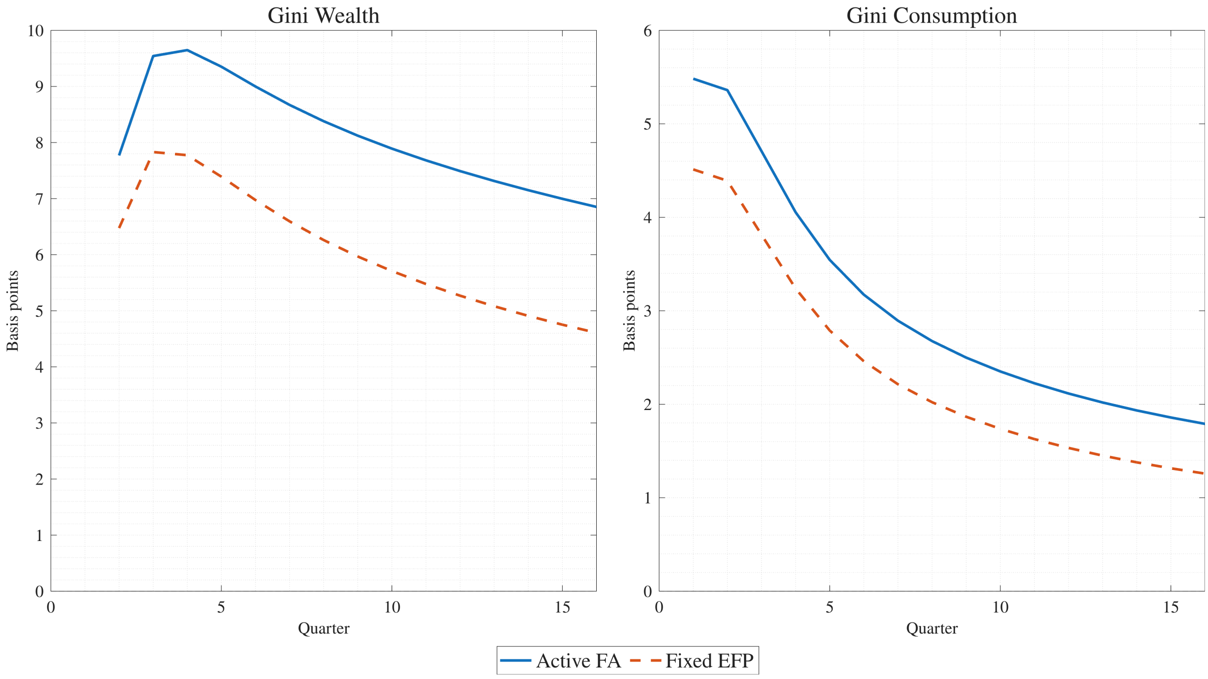


Figure 7: Inequality responses in the two-asset extension

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual. The results correspond to a model in which households can also save in illiquid assets.

about 1.8 basis points above steady state with the financial accelerator, compared with about 1.3 basis points in the fixed-premium counterfactual. Therefore, the two-asset extension confirms the central result of the baseline model: the financial accelerator amplifies both consumption and wealth inequality after a monetary tightening.

The decomposition in Table 4, following the one in Section 4.3, helps clarify why the two-asset extension does not overturn the baseline mechanism. On impact, aggregate consumption falls by 0.212 percent with active financial frictions, compared with 0.191 percent when the EFP is fixed. Over the first year, the corresponding cumulative declines are 0.383 and 0.358 percent. The wage channel remains the dominant negative force. On impact, the wage contribution lowers aggregate consumption by 0.145 percentage points with the financial accelerator, compared with 0.122 percentage points in the fixed-premium economy. Over the first year, the wage channel lowers consumption by 0.361 percentage points with active financial frictions and by 0.303 percentage points in the fixed-EFP counterfactual. Hence, the financial accelerator increases the cumulative negative wage contribution by 0.058 percentage points, or about 19 percent relative to the fixed-EFP counterfactual. This confirms that the labor-income mechanism remains central even when households can hold illiquid assets.

The two-asset model also introduces a quantitatively important capital-return channel. The net return on capital lowers consumption by 0.079 percentage points on impact with the financial accelerator, compared with 0.065 percentage points in the fixed-EFP counterfactual. Over the first year, the corresponding contributions are 0.161 and 0.134

Table 4: Decomposition of the Effect of the Monetary Shock on Aggregate Consumption

| | Impact | | First-year | |
|---|---|---|---|---|
| | Active FA | Fixed EFP | Active FA | Fixed EFP |
| Aggregate consumption ($C$) | −0.212 | −0.191 | −0.383 | −0.358 |
| *Contributions to C* | | | | |
| Liquid returns | −0.012 | −0.023 | 0.051 | 0.005 |
| Wage | −0.145 | −0.122 | −0.361 | −0.303 |
| Profits | 0.022 | 0.018 | 0.089 | 0.074 |
| Net return on capital | −0.079 | −0.065 | −0.161 | −0.134 |
| Capital price | 0.001 | 0.001 | 0.000 | 0.000 |

Notes: The table reports percentage-point responses of aggregate consumption to the monetary shock. "Impact" denotes the response on impact, while "First-year" denotes the cumulative response over the first four quarters. Columns distinguish between economies with an active financial accelerator (Active FA) and the fixed-EFP counterfactual (Fixed EFP). The rows under "Contributions to $C$" decompose the aggregate consumption response into the contributions of liquid returns, wages, profits, the net return on capital, and the price of capital; within each column, these contributions sum to the corresponding aggregate consumption response, up to rounding.

percentage points. Thus, capital-income effects reinforce the contraction in aggregate consumption, and they are somewhat stronger when the financial accelerator is active. However, this additional capital-income margin does not reverse the distributional result: consumption and wealth inequality still rise more under active financial frictions. By contrast, the capital-price channel is quantitatively negligible. Its impact contribution is 0.001 percentage points in both economies, and its first-year contribution is close to zero. This is important because it addresses a natural concern about the baseline model: allowing households to hold capital directly does not generate capital-valuation effects large enough to overturn the labor-income-driven incidence mechanism. The relevant additional margin is the net return on capital, not capital prices themselves.

The remaining channels operate similarly to the baseline economy. Overall, the two-asset extension shows that the inequality accelerator is robust to a richer portfolio structure. The financial accelerator continues to raise consumption and wealth inequality, and the mechanism remains centered on income rather than capital-valuation effects.

### 4.6 Welfare Analysis

The previous sections illustrated how the effects of monetary policy vary across households along the wealth distribution, as well as the relevance of the financial accelerator in shaping this dynamic. To assess the welfare implications of these heterogeneous effects, I compute the one-sided welfare gains and losses across the wealth distribution induced

Table 5: Welfare Effects of a Monetary Contraction

| | Baseline | | Household Illiquid Assets | |
|---|---|---|---|---|
| | Active FA | Fixed EFP | Active FA | Fixed EFP |
| Population-weighted mean | −0.016 | 0.007 | −0.012 | −0.007 |
| *Responses by wealth decile* | | | | |
| Decile 1 | −0.045 | −0.020 | −0.032 | −0.026 |
| Decile 2 | −0.042 | −0.018 | −0.028 | −0.022 |
| Decile 3 | −0.038 | −0.015 | −0.025 | −0.019 |
| Decile 4 | −0.033 | −0.011 | −0.022 | −0.016 |
| Decile 5 | −0.030 | −0.008 | −0.020 | −0.014 |
| Decile 6 | −0.028 | −0.005 | −0.016 | −0.011 |
| Decile 7 | −0.026 | −0.002 | −0.015 | −0.010 |
| Decile 8 | −0.020 | 0.003 | −0.012 | −0.007 |
| Decile 9 | −0.016 | 0.007 | 0.017 | 0.019 |
| Decile 10 | 0.115 | 0.139 | 0.038 | 0.036 |

Notes: Welfare gains from a one-time monetary shock of 25 bps annualized. The table reports consumption-equivalent welfare responses, in percent. Negative numbers indicate welfare losses. Columns distinguish between economies with an active financial accelerator (Active FA) and the fixed-EFP counterfactual (Fixed EFP), separately for the baseline model and the model with household illiquid assets. Deciles are ordered from the bottom to the top of the wealth distribution. For each wealth decile of the initial distribution, I report the distribution-weighted average of household-state consumption equivalents, $\lambda_i = \left[\frac{V_i^{\mathrm{MP}} - V_{l,i}^{\mathrm{ref}}}{V_{c,i}^{\mathrm{ref}}}\right]^{\frac{1}{1-\xi}} - 1$. $V_i^{\mathrm{MP}}$ is the lifetime utility of household share (i) along the monetary-policy shock transition path, while $V_{l,i}^{\mathrm{ref}}$ and $V_{c,i}^{\mathrm{ref}}$ are, respectively, the labor-disutility and consumption-utility components of lifetime utility along the no-shock reference path.

by a monetary contraction.[17]

Table 5 reports the consumption-equivalent welfare effects of the monetary contraction. The table shows that the distributional responses documented above are welfare relevant. In both the baseline economy and the economy with household illiquid assets, the welfare costs of the monetary tightening are concentrated among households at the bottom and middle of the wealth distribution, while households at the top are partly insulated and, in some cases, experience welfare gains.

In the baseline economy, the financial accelerator increases the average welfare cost of the shock. With the EFP held fixed, the population-weighted mean welfare response is slightly positive, at 0.007 percent, owing primarily to gains concentrated in the top wealth decile. The financial accelerator turns this small average gain into a welfare loss of 0.016 percent. The bottom decile experiences a welfare loss of −0.045 percent with the

[17]Following Gornemann et al. (2021) and Bayer et al. (2025), I abstract from questions of optimal policy design or from how systematic policy responses might shape welfare outcomes.

financial accelerator, compared with $-0.020$ percent in the fixed-premium counterfactual. Losses are also larger throughout the lower and middle parts of the wealth distribution. By contrast, the top decile continues to gain from the monetary tightening, although its gain is smaller with the financial accelerator, 0.115 percent compared with 0.139 percent. Thus, in the baseline model, the financial accelerator does not merely change inequality statistics; it turns the average welfare effect of the shock into a loss and deepens the welfare losses borne by low-wealth households.

The economy with household illiquid assets provides a more conservative assessment because households are also exposed to illiquid capital returns. In this case, the monetary tightening generates average welfare losses even when the EFP is fixed. Nevertheless, the financial accelerator still increases the welfare cost of the shock: the average consumption-equivalent response falls from $-0.007$ percent in the fixed-premium economy to $-0.012$ percent when the financial accelerator is active. The losses of the bottom decile rise from $-0.026$ to $-0.032$ percent, and welfare losses are larger for deciles 1 through 8. The top decile is the only exception: for households in the top 10% of the wealth distribution, the welfare gain is slightly larger when the financial accelerator is active, increasing from 0.036 to 0.038 percent. This difference is quantitatively small, but it confirms that the welfare incidence of the financial accelerator is concentrated below the top of the wealth distribution. At the same time, gains at the top of the distribution are much smaller than in the baseline economy. This result is in line with the fact that allowing for illiquid assets dampens the top-end gains generated by the liquid-return channel, but does not overturn the main mechanism.

Overall, the welfare analysis strengthens the interpretation of the financial accelerator as a distributional incidence mechanism. The corporate credit friction amplifies the welfare losses of households with limited wealth and high exposure to current labor income. It also raises the average welfare cost of a monetary tightening. The welfare results therefore complement the impulse responses for consumption and wealth inequality: the financial accelerator is not only associated with larger cross-sectional movements after a monetary contraction, but also with economically meaningful welfare losses concentrated among low-wealth households.

## 4.7 Robustness

I examine several robustness exercises in Appendix F. I begin by assessing whether the results remain robust when key parameter values are varied relative to the baseline calibration. In Appendix F.1, I test the results under a higher value of the parameter governing household risk aversion, $\xi$. In Appendix F.2, I consider the limiting case in which the adjustment costs of capital, $\phi$, are set to zero. In Appendix F.3, I also evaluate the sensitivity of the results to changes in fiscal policy. The results concerning the inequality accelerator continue to hold.

I also examine whether targeting a different steady-state value of firms' leverage has fundamental implications for inequality in the presence of financial frictions. The results are reported in Appendix F.4. Although the dynamics remain qualitatively similar, it becomes evident that the impact of a monetary contraction on the Gini indices is state dependent: targeting a higher leverage steady state level (2.5 instead of the baseline value of 2) and applying the same shock leads to fluctuations that are larger in magnitude.

The recent literature has shown that assuming flexible wages is not particularly problematic in RANK models. In HANK environments, however, this assumption may generate strong redistributive effects that are inconsistent with empirical evidence, as highlighted by Broer et al., 2020. To verify that this assumption does not compromise the main findings presented in this paper, I extend the baseline model to feature flexible prices and sticky wages, in line with the "canonical" HANK framework presented in Auclert et al. (2024). I provide the details of this model variant and the corresponding results in Appendix F.5. Although the results exhibit some quantitative differences, the acceleration effect remains broadly consistent with the dynamics generated by the model outlined in Section 2.

# 5 Corporate Financial Stress and Consumption Inequality in the Data

Motivated by the model's financial-amplification mechanism and by the larger responses obtained in the higher-leverage calibration, I examine whether monetary contractions are associated with larger increases in consumption inequality when corporate financial stress is higher. I use the Excess Bond Premium of Gilchrist and Zakrajšek (2012) as a proxy for corporate financial stress. The aim of this section is to provide a suggestive empirical check of whether the state-dependent pattern highlighted by the model is visible in the data.[18]

I estimate a dynamic regression with distributed lags of the monetary-policy shock and an interaction between the shock and lagged corporate financial stress, following Tenreyro and Thwaites (2016). Formally, I estimate:

$$Y_t = \alpha + \beta(MP_t^{sh} \times EBP_{t-1}) + \sum_{j=0}^{2} \gamma_j MP_{t-j}^{sh} + \phi X_{t-1} + \epsilon_t \tag{35}$$

where the dependent variable, $Y$, is the inequality measure of interest, $MP^{sh}$ represents

[18] The empirical exercise is deliberately narrower than the quantitative analysis. The model makes predictions for both consumption and wealth inequality, but the empirical analysis focuses on consumption inequality because quarterly wealth-distribution data covering the Great Moderation are limited.

the exogenous monetary policy surprise, $EBP$ captures the state of the corporate credit markets, and $X$ is a vector of controls.

I estimate six model variants that differ in the set of controls and in the richness of the dynamic specification. The first is the baseline specification, which includes the contemporaneous interaction between the monetary-policy shock and lagged standardized EBP, the current monetary-policy shock and two of its lags, lagged standardized EBP, one lag of the dependent variable, and lagged unemployment. The second variant adds recession-state controls, namely a lagged recession indicator and its interaction with the monetary-policy shock. The third further adds lagged real GDP growth to control for business-cycle momentum, while the fourth adds lagged inflation and the lagged federal funds rate to account for the policy environment. The fifth variant replaces the baseline dynamics with a richer lag structure: it includes the contemporaneous interaction and two lags of the interaction, the current monetary-policy shock and four of its lags,[19] lagged standardized EBP, four lags of the dependent variable, and lagged unemployment. Finally, the sixth variant is a full-robustness specification, combining the richer dynamic structure of the fifth variant with the recession, business-cycle, inflation, and policy-environment controls used in the second through fourth variants.

The coefficient of interest is $\beta$, associated with the interaction term. A positive $\beta$ means that the conditional association between a monetary tightening and consumption inequality is larger when corporate financial stress is higher. The interaction term uses the lagged standardized value of financial frictions to mitigate reverse-causality concerns. Because $EBP$ is standardized in the interaction term, the coefficient $\beta$ measures how the marginal effect of a monetary policy shock changes when corporate financial stress is one standard deviation above its mean.

I use the narrative monetary policy shock series from Bügel et al. (2024) and measure the degree of corporate financial frictions using the Excess Bond Premium (EBP) proposed by Gilchrist and Zakrajšek (2012). To measure inequality, I employ two indicators constructed by Coibion et al. (2017): the Gini index and the ratio of the 90th to the 10th percentile of the consumption distribution among US households. The data are quarterly and cover the period 1980Q1–2007Q4. Further details on the data, the methodology, and robustness checks are provided in Appendix G.

Table 6 presents reduced-form evidence on the state-dependent response of consumption inequality to monetary policy shocks. Across all specifications, the interaction between the monetary policy shock and lagged EBP is positive for both measures of consumption inequality. The Gini coefficient is positive in every specification and significant at least at the 10 percent level. The evidence is even more stable for the 90/10 percentile ratio, where the interaction coefficient is positive and statistically significant at the 1 percent level in every specification. This pattern is consistent with the theoreti-

[19]Monetary shocks typically exhibit delayed effects on real variables, see Romer and Romer, 2004.

Table 6: State-Dependent Effect of Monetary Policy on Consumption Inequality

| Dependent Variable: | Gini | | | | | |
|---|---|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| MP shock$_t$ × EBP$_{t-1}$ | 0.275** | 0.269** | 0.248* | 0.269** | 0.478*** | 0.496*** |
| | (0.123) | (0.124) | (0.127) | (0.130) | (0.145) | (0.146) |
| *Fit statistics* | | | | | | |
| Observations | 110 | 110 | 110 | 110 | 107 | 107 |
| $R^2$ | 0.23135 | 0.23157 | 0.23631 | 0.25787 | 0.40453 | 0.44573 |
| Adjusted $R^2$ | 0.17860 | 0.16241 | 0.15917 | 0.16606 | 0.31392 | 0.32468 |
| Dependent Variable: | 90th/10th percentile ratio | | | | | |
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| MP shock$_t$ × EBP$_{t-1}$ | 0.019*** | 0.019*** | 0.018*** | 0.020*** | 0.025*** | 0.029*** |
| | (0.006) | (0.006) | (0.007) | (0.007) | (0.008) | (0.009) |
| *Fit statistics* | | | | | | |
| Observations | 110 | 110 | 110 | 110 | 107 | 107 |
| $R^2$ | 0.26981 | 0.27005 | 0.27029 | 0.28489 | 0.48530 | 0.51006 |
| Adjusted $R^2$ | 0.21970 | 0.20435 | 0.19658 | 0.19642 | 0.40698 | 0.40307 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Notes: Newey-West (L=4) standard-errors in parentheses. Columns (1)–(6) are, respectively, baseline, recession controls, business-cycle controls, policy-environment controls, rich dynamics, and full robustness.

cal mechanism of the model: monetary contractions have stronger distributional effects when the corporate sector is financially constrained. The result is robust to alternative controls for recession states, business-cycle conditions, the policy environment, and richer dynamic specifications. Although the exercise remains reduced-form and should be interpreted as suggestive rather than causal, the estimates support the model's state-dependence prediction that firm-side financial stress amplifies the unequal incidence of monetary tightening.

# 6 Concluding Remarks

This study argues that the financial structure of the corporate sector is not merely a driver of aggregate volatility, but also a determinant of the distributional incidence of monetary policy. Monetary tightening weakens firms' balance sheets, raises the EFP, and depresses investment and labor demand. In a representative-agent economy, this mechanism amplifies aggregate fluctuations. In a heterogeneous-agent economy, it also determines who absorbs the adjustment. Low-wealth households bear the amplified wage-income losses because they depend heavily on current labor income and have limited self-insurance capacity, while wealthier households are more exposed to liquid-asset and profit-income channels. Thus, firm-side financial distress becomes a household-incidence mechanism by changing the equilibrium paths of labor demand, wages, profits, and returns.

A key insight of the paper is that this inequality-accelerator mechanism persists even when households can hold illiquid assets and are exposed to capital-price movements. In that environment, monetary policy also affects households through capital income and valuation effects. Nevertheless, these additional margins do not overturn the main result: the regressive distributional effect of the financial accelerator is driven primarily by the amplified decline in labor income. Furthermore, the welfare analysis shows that these distributional responses are not only movements in inequality statistics. In consumption-equivalent terms, the financial accelerator raises the average welfare cost of a monetary tightening and deepens the losses of households with limited wealth and high exposure to current labor income.

These findings complement recent work on banking frictions by highlighting a distinct corporate channel of transmission. While banking constraints primarily affect inequality by changing households' borrowing conditions, corporate financial constraints operate through firms' investment and labor-demand decisions. This distinction matters for monetary policy because financial stress in the corporate sector can make monetary contractions more regressive even when households do not directly borrow at spreads linked to firms' EFP.

An important question left open by this analysis is whether the firm-credit incidence channel can be formally identified in microeconomic data. The model implies a specific empirical prediction: monetary contractions should generate larger wage-income losses, concentrated at the bottom of the earnings distribution, precisely when corporate credit frictions are more severe. Testing this prediction rigorously would require variation in firms' external financing conditions that is plausibly exogenous to the business cycle, matched to panel data on household labor income and consumption. Establishing the firm-credit incidence channel empirically remains an important direction for future research.

# References


Adrian, T., Boyarchenko, N., and Giannone, D. (2019). Vulnerable growth. *American Economic Review*, 109(4):1263–89.

Attanasio, O. P. and Weber, G. (1995). Is Consumption Growth Consistent with Intertemporal Optimization? Evidence from the Consumer Expenditure Survey. *Journal of Political Economy*, 103(6):1121–1157.

Auclert, A. (2019). Monetary policy and the redistribution channel. *American Economic Review*, 109(6):2333–67.

Auclert, A., Bardóczy, B., Rognlie, M., and Straub, L. (2021). Using the sequence-space jacobian to solve and estimate heterogeneous-agent models. *Econometrica*, 89(5):2375–2408.

Auclert, A., Rognlie, M., and Straub, L. (2024). Fiscal and monetary policy with heterogeneous agents. Working Paper 32991, National Bureau of Economic Research.

Bauer, M. D. and Swanson, E. T. (2023). A reassessment of monetary policy surprises and high-frequency identification. *NBER Macroeconomics Annual*, 37(1):87–155.

Bayer, C., Born, B., and Luetticke, R. (2024). Shocks, frictions, and inequality in us business cycles. *American Economic Review*, 114(5):1211–47.

Bayer, C., Kriwoluzky, A., Müller, G. J., and Seyrich, F. (2025). Being and Consciousness: Fiscal Attitudes according to HANK. *Discussion Papers of DIW Berlin*.

Bayer, C. and Luetticke, R. (2020). Solving heterogeneous agent models in discrete time with many idiosyncratic states by perturbation methods. *Quantitative Economics*, 11:1253–1288.

Bayer, C., Luetticke, R., Pham-Dao, L., and Tjaden, V. (2019). Precautionary savings, illiquid assets, and the aggregate consequences of shocks to household income risk. *Econometrica*, 87(1):255–290.

Bernanke, B. S., Gertler, M., and Gilchrist, S. (1999). The financial accelerator in a quantitative business cycle framework. In Taylor, J. B. and Woodford, M., editors, *Handbook of Macroeconomics*, volume 1 of *Handbook of Macroeconomics*, chapter 21, pages 1341–1393. Elsevier.

Bilbiie, F. O. (2008). Limited asset markets participation, monetary policy and (inverted) aggregate demand logic. *Journal of Economic Theory*, 140(1):162–196.

Born, B. and Pfeifer, J. (2014). Policy risk and the business cycle. *Journal of Monetary Economics*, 68:68–85.

Broer, T., Harbo Hansen, N.-J., Krusell, P., and Öberg, E. (2020). The New Keynesian Transmission Mechanism: A Heterogeneous-Agent Perspective. *The Review of Economic Studies*, 87(1):77–101.

Bügel, D., Hidalgo, A., and Luetticke, R. (2024). Unconventional but different after all? a unified series of narrative monetary policy shocks. CEPR Discussion Papers 19163.

Caldara, D. and Herbst, E. (2019). Monetary policy, real activity, and credit spreads: Evidence from bayesian proxy svars. *American Economic Journal: Macroeconomics*, 11(1):157–92.

Carlstrom, C. T., Fuerst, T. S., and Paustian, M. (2016). Optimal contracts, aggregate risk, and the financial accelerator. *American Economic Journal: Macroeconomics*, 8(1):119–47.

Carroll, C. D. (2006). The method of endogenous gridpoints for solving dynamic stochastic optimization problems. *Economics Letters*, 91(3):312–320.

Chetty, N., Weber, A., Guren, A. M., and Day, M. (2011). Are Micro and Macro Labor Supply Elasticities Consistent? A Review of Evidence on the Intensive and Extensive Margins. Technical report.

Chiang, Y.-T. and Żoch, P. (2022). Financial Intermediation and Aggregate Demand: A Sufficient Statistics Approach. Working Papers 2022-038, Federal Reserve Bank of St. Louis.

Christiano, L. J., Motto, R., and Rostagno, M. (2014). Risk Shocks. *American Economic Review*, 104(1):27–65.

Clarida, R., Galí, J., and Gertler, M. (2000). Monetary policy rules and macroeconomic stability: Evidence and some theory. *The Quarterly Journal of Economics*, 115(1):147–180.

Coibion, O., Gorodnichenko, Y., Kueng, L., and Silvia, J. (2017). Innocent bystanders? monetary policy and inequality. *Journal of Monetary Economics*, 88:70–89.

Debortoli, D. and Galí, J. (2024). Heterogeneity and aggregate fluctuations: Insights from tank models. Working Paper 32557, National Bureau of Economic Research.

Faccini, R., Lee, S., Luetticke, R., Ravn, M. O., and Renkin, T. (2026). Financial frictions: Micro versus macro volatility. *American Economic Review*, 116(2):464–501.

Fernández-Villaverde, J., Hurtado, S., and Nuño, G. (2023). Financial frictions and the wealth distribution. *Econometrica*, 91(3):869–901.

Galí, J., López-Salido, J. D., and Vallés, J. (2007). Understanding the Effects of Government Spending on Consumption. *Journal of the European Economic Association*, 5(1):227–270.

Gilchrist, S. and Zakrajšek, E. (2012). Credit spreads and business cycle fluctuations. *American Economic Review*, 102(4):1692–1720.

Gornemann, N., Kuester, K., and Nakajima, M. (2021). Doves for the rich, hawks for the poor? distributional consequences of systematic monetary policy. ECONtribute Discussion Papers Series 089, University of Bonn and University of Cologne, Germany.

Guerrieri, V. and Lorenzoni, G. (2017). Credit crises, precautionary savings, and the liquidity trap. *The Quarterly Journal of Economics*, 132(3):1427–1467.

Guvenen, F., Kaplan, G., and Song, J. (2014). The glass ceiling and the paper floor: Gender differences among top earners, 1981-2012. Working Paper 20560, National Bureau of Economic Research.

Jarociński, M. and Karadi, P. (2020). Deconstructing Monetary Policy Surprises— The Role of Information Shocks. *American Economic Journal: Macroeconomics*, 12(2):1–43.

Kaplan, G., Moll, B., and Violante, G. L. (2018). Monetary policy according to hank. *American Economic Review*, 108(3):697–743.

Kaplan, G. and Violante, G. L. (2014). A model of the consumption response to fiscal stimulus payments. *Econometrica*, 82(4):1199–1239.

Kaplan, G., Violante, G. L., and Weidner, J. (2014). The wealthy hand-to-mouth. Working Paper 20073, National Bureau of Economic Research.

Luetticke, R. (2021). Transmission of monetary policy with heterogeneity in household portfolios. *American Economic Journal: Macroeconomics*, 13(2):1–25.

Miranda-Agrippino, S. and Ricco, G. (2021). The transmission of monetary policy shocks. *American Economic Journal: Macroeconomics*, 13(3):74–107.

Modigliani, F. and Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 48(3):261–297.

Nakajima, M. and Ríos-Rull, J.-V. (2019). Credit, Bankruptcy, and Aggregate Fluctuations. Working Papers 19-48, Federal Reserve Bank of Philadelphia.

Ottonello, P. and Winberry, T. (2020). Financial Heterogeneity and the Investment Channel of Monetary Policy. *Econometrica*, 88(6):2473–2502.

Ramey, V. (2016). Chapter 2 - macroeconomic shocks and their propagation. volume 2 of *Handbook of Macroeconomics*, pages 71–162. Elsevier.

Reiter, M. (2009). Solving heterogeneous-agent models by projection and perturbation. *Journal of Economic Dynamics and Control*, 33(3):649–665.

Romer, C. D. and Romer, D. H. (2004). A new measure of monetary shocks: Derivation and implications. *American Economic Review*, 94(4):1055–1084.

Rotemberg, J. J. (1982). Sticky prices in the united states. *Journal of Political Economy*, 90(6):1187–1211.

Smets, F. and Wouters, R. (2007). Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach. *American Economic Review*, 97(3):586–606.

Tauchen, G. (1986). Finite state markov-chain approximations to univariate and vector autoregressions. *Economics Letters*, 20(2):177–181.

Tenreyro, S. and Thwaites, G. (2016). Pushing on a string: Us monetary policy is less powerful in recessions. *American Economic Journal: Macroeconomics*, 8(4):43–74.

Townsend, R. M. (1979). Optimal contracts and competitive markets with costly state verification. *Journal of Economic Theory*, 21(2):265–293.

# Appendix

# A Idiosyncratic Productivity Process and the Joint Distribution

Households are categorized as either workers, with productivity $h > 0$, or rentiers, with $h = 0$, meaning they do not earn labor income but only profit income. Additionally, I assume that there are only two possible productivity realizations for workers: high productivity, $h^H$, and low productivity, $h^L$. The Markov process generates the following transition matrix:

$$
h_t \quad \begin{array}{c} \\ \\ h^L \\ h^H \\ 0 \end{array}
\begin{array}{c} h_{t+1} \\ \begin{array}{ccc} h^L & h^H & 0 \end{array} \\ \begin{bmatrix} p_{LL}(1-\zeta) & p_{LH}(1-\zeta) & \zeta \\ p_{HL}(1-\zeta) & p_{HH}(1-\zeta) & \zeta \\ 0 & \iota & 1-\iota \end{bmatrix} \end{array}
$$

with probabilities, $p$, determined using the Tauchen method. I assume that new workers are endowed with the highest productivity possible, $h^H$.

At the steady state, a joint distribution of households exists according to their wealth level, $a$, and their productivity, $h$. This joint distribution can be represented by the two-dimensional matrix as follows:

$$
\text{prod. } h \quad \begin{array}{c} h_m \\ \cdots \\ h_2 \\ h_1 \\ \\ \end{array}
\begin{array}{c} \begin{bmatrix} H_{m,1} & H_{m,2} & \cdots & H_{m,n} \\ \cdots & \cdots & \cdots & \cdots \\ H_{2,1} & H_{2,2} & \cdots & H_{2,n} \\ H_{1,1} & H_{1,2} & \cdots & H_{1,n} \end{bmatrix} \\ \begin{array}{cccc} a_1 & a_2 & \cdots & a_n \end{array} \\ \\ \text{wealth } a \end{array}
$$

where $H_{1,1}$ is the share of households with the lowest level of wealth and labor productivity (except for the last state $h_m = 0$, since in this model they are rentiers), and $\int H da dh = 1$.

# B Entrepreneurs' Optimal Contract

## B.1 Idiosyncratic Shock to the Return on Capital

I assume that the Idiosyncratic shock $\omega$ is distributed log-normally. i.e. $\omega \in [0, +\infty)$.[20] Using results from Appendix A.2 in Bernanke et al. (1999) I can write $F(\omega)$, $\Gamma(\omega)$ and $G(\omega)$ in the analytical expressions that I use to solve the model:

$$F(\omega) = \Phi\left[\left(log(\omega) + \frac{1}{2}\sigma_\omega^2\right)/\sigma_\omega\right] , \tag{A1}$$

$$\Gamma(\omega) = \Phi\left[\left(log(\omega) - \frac{1}{2}\sigma_\omega^2\right)/\sigma_\omega\right] + \omega\left\{1 - \Phi\left[\left(log(\omega) + \frac{1}{2}\sigma_\omega^2\right)/\sigma_\omega\right]\right\} , \tag{A2}$$

$$G(\omega) = \Phi\left[\left(log(\omega) + \frac{1}{2}\sigma_\omega^2\right)/\sigma_\omega - \sigma_\omega\right] . \tag{A3}$$

With $\Phi(\cdot)$ being the normal cumulative distribution function and $\sigma_\omega$ the standard deviation of the idiosyncratic shock on entrepreneurs' return on capital.

## B.2 Financial Intermediaries' Participation Constraint and Entrepreneur $j$'s Optimization Problem

After substituting (7) and (6) into (8), I obtain:

$$[1-F(\bar{\omega}_{jt+1})]\bar{\omega}_{jt+1}R^K_{t+1}q_tK_{jt+1}+(1-\mu)\int_0^{\bar{\omega}_{jt+1}}\omega_j dF(\omega_j)R^K_{t+1}q_tK_{jt+1} = \frac{R_{t+1}}{\pi_{t+1}}(q_tK_{jt+1}-N_{jt+1}) . \tag{A4}$$

Divide everything by $\frac{R_{t+1}}{\pi_{t+1}}q_tK_{jt+1}$:

$$\frac{R^K_{t+1}}{\frac{R_{t+1}}{\pi_{t+1}}}\left([1 - F(\bar{\omega}_{jt+1})]\bar{\omega}_{jt+1} + (1-\mu)\int_0^{\bar{\omega}_{jt+1}}\omega_j dF(\omega_j)\right) = \left(1 - \frac{N_{jt+1}}{q_tK_{jt+1}}\right) . \tag{A5}$$

Following the notation used in Bernanke et al. (1999) and Christiano et al. (2014):

$$\Gamma(\bar{\omega}_j) \equiv \int_0^{\bar{\omega}_j}\omega_j dF(\omega_j) + \bar{\omega}_j\int_{\bar{\omega}_j}^{\infty}dF(\omega_j) , \qquad \mu G(\bar{\omega}_j) \equiv \mu\int_0^{\bar{\omega}_j}\omega_j dF(\omega_j) , \tag{A6}$$

[20] Note that other kinds of distribution with values greater or equal to 0 could be used as well. Here I choose to adapt the same distribution as in Bernanke et al. (1999) to give a sense of continuity between the two studies.

where $\Gamma(\bar{\omega}_j)$ is the expected gross share of profits going to the lender and $\mu G(\bar{\omega}_j)$ is the expected monitoring cost paid by the lender. $\Gamma(\bar{\omega}_j)$ can be rewritten as:

$$\Gamma(\bar{\omega}_j) = G(\bar{\omega}_j) + \bar{\omega}_j \left[1 - F(\bar{\omega}_j)\right] \ . \tag{A7}$$

I can now use (A6) and (A7) in (A5) and rearrange to finally obtain:

$$\frac{R^K_{t+1}}{\left(\dfrac{R_{t+1}}{\pi_{t+1}}\right)} = \frac{1}{\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})} \left(1 - \frac{N_{jt+1}}{q_t K_{jt+1}}\right) \ , \tag{A8}$$

where $\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})$ is the share of entrepreneur $j$'s profits going to the lender (as loan repayment), net of auditing costs.

Equation (A8) is the complete version of (9), which explain the function underlying $f\left(\bar{\omega}_{jt+1}, LEV_{jt+1}\right)$. For a higher level of entrepreneur leverage, the EFP increases, raising the return on capital. However, it also increases the probability of an entrepreneur's default, thereby increasing the net share of profit demanded by financial intermediaries as loan repayment, resulting in higher financing costs for entrepreneurs. To see in detail how this mechanism works, I show the entrepreneur $j$'s optimization problem below.

According to the optimal contract set by financial intermediaries, entrepreneur $j$'s expected return can be expressed as:

$$E_t \left\{ \int_{\bar{\omega}_{jt+1}}^{\infty} \omega_j dF(\omega_j) R^K_{t+1} q_t K_{jt+1} - (1 - F(\bar{\omega}_j)) R^K_{t+1} q_t K_{jt+1} \right\} \ , \tag{A9}$$

with expectations taken with respect to the realization of $R^K_{t+1}$. The first term of (A9) represents the entrepreneur's profit when she does not default on debt, while the second term is the amount of profits that she uses to repay the lender. Following the notation used above, and considering that the entrepreneur's return is subject to the participation constraint (8), I write entrepreneur $j$'s optimal contracting problem as:

$$\begin{aligned} &\max_{\{K_{jt+1}, \bar{\omega}_{jt+1}\}} E_t \left\{ \left[1 - \Gamma(\bar{\omega}_{jt+1})\right] R^K_{t+1} q_t K_{jt+1} \right\} \ , \\ &s.t. \quad \frac{R_{t+1}}{\pi_{t+1}} (q_t K_{jt+1} - N_{jt+1}) = \left[\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})\right] R^K_{t+1} q_t K_{jt+1} \ . \end{aligned} \tag{A10}$$

Deriving F.O.C. I obtain:

$$w.r.t. \ \ \omega_{jt+1} : \quad -\Gamma'(\bar{\omega}_{jt+1}) + \lambda_{jt+1} \left[\Gamma'(\bar{\omega}_{jt+1}) - \mu G'(\bar{\omega}_{jt+1})\right] = 0 \ , \tag{A11}$$

$$w.r.t.\;\; K_{jt+1}: \quad E_t\left\{[1-\Gamma(\bar{\omega}_{jt+1})]\,R^K_{t+1} - \lambda_{jt+1}\left[\frac{R_{t+1}}{\pi_{t+1}} - \left(\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})R^K_{t+1}\right)\right]\right\} = 0\,, \tag{A12}$$

$$w.r.t.\;\; \lambda_{jt+1}: \quad E_t\left\{\frac{R_{t+1}}{\pi_{t+1}}(q_t K_{jt+1} - N_{jt+1}) - [\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})]\,R^K_{t+1} q_t K_{jt+1}\right\} = 0\,, \tag{A13}$$

where $\lambda_j$ is the Lagrangian multiplier for entrepreneur $j$'s problem. By rearranging (A11), it is possible to express $\lambda_{jt+1}$ as a function of only $\bar{\omega}_{jt+1}$. Furthermore, rearranging (A12):

$$E_t\left\{\frac{R^K_{t+1}}{\frac{R_{t+1}}{\pi_{t+1}}}\right\} = \frac{\lambda_{jt+1}}{[1-\Gamma(\bar{\omega}_{jt+1}) + \lambda_{jt+1}\left(\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})\right)]}\,. \tag{A14}$$

It can be proven that there is a monotonically increasing relationship between the EFP and $\bar{\omega}_j$. According to (A8), we can extend this relationship between the EFP and the leverage level of $j$, assessing that a higher entrepreneur's leverage implies a higher EFP.[21]

Furthermore, it is clear from (A14) that $\bar{\omega}_j$ is determined only by aggregate variables. Thus, any entrepreneur chooses the same threshold $\bar{\omega}$ for the idiosyncratic shock on capital returns, below which they default, and the same leverage level.[22] This result allows the production-sector part of the model to be written only in terms of aggregate variables, since every entrepreneur has the same firm structure.

# C Impulse Responses to a Contractionary MP Shock

Figure C.1 presents impulse responses for several aggregate variables in response to the monetary policy shock under consideration. These results complement those shown in Figure 1 and Figure 2 from the main text.

[21] See Appendix A.1 in Bernanke et al. (1999) for proofs.

[22] According to (A8), leverage is a function of the EFP (composed of only aggregate variables) and $\bar{\omega}_j$. If $\bar{\omega}_j$ depends only on aggregate variables (since it is a function of the EFP, according to (A14)), then the same can be said for the leverage.

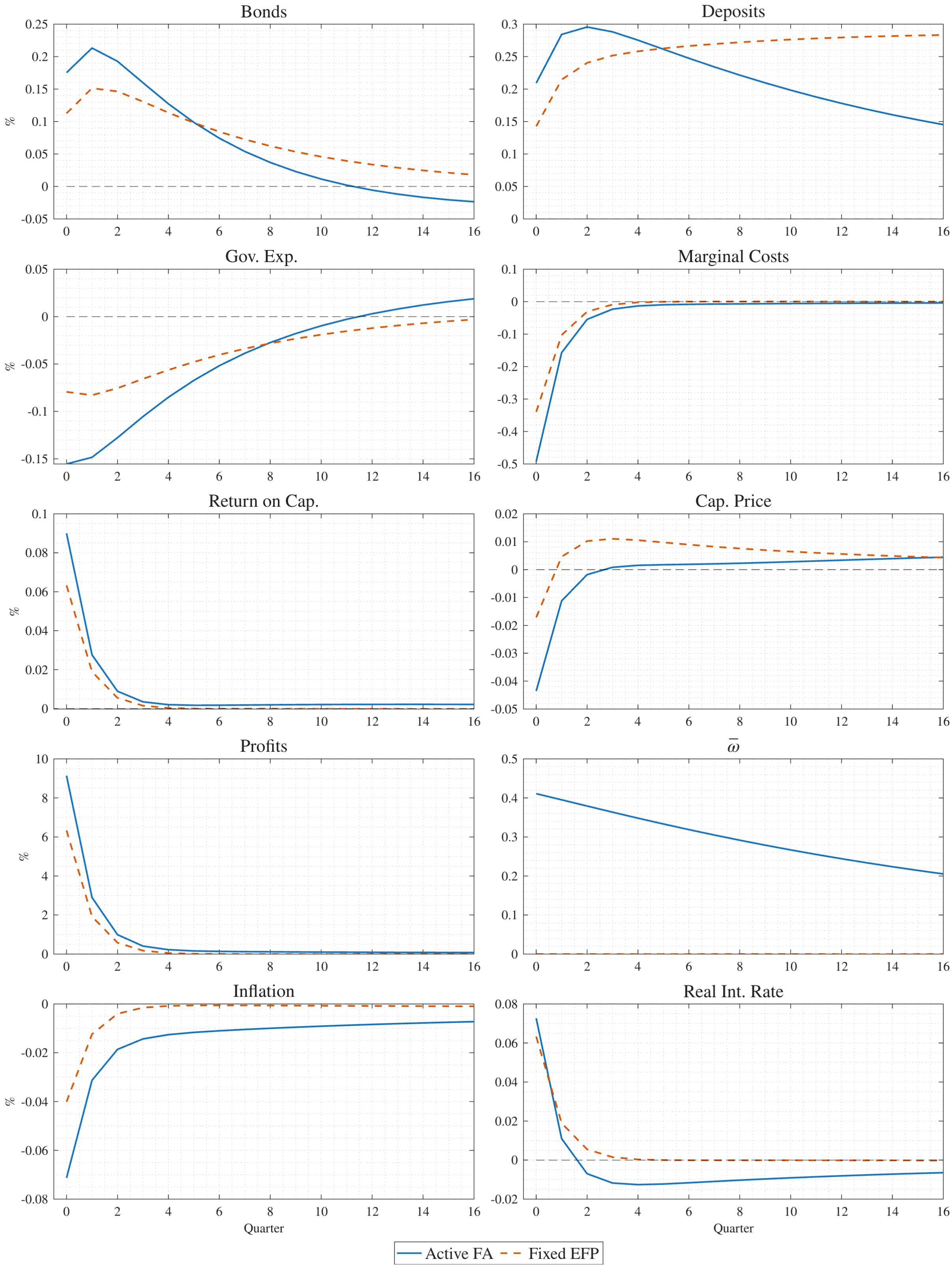


Figure C.1: Aggregate fluctuations consequent to an increase of the nominal interest rate. Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

# D Mapping to the Redistribution Channel

The consumption decomposition in Table 3 is related to the redistribution-channel framework of Auclert (2019). In that framework, monetary policy affects aggregate consumption through aggregate-income and intertemporal-substitution effects, as well as through redistribution channels governed by the covariance between households' marginal propensities to consume and their exposures to income changes, nominal balance-sheet revaluations, and real-interest-rate changes. My baseline model constitutes a restricted environment relative to the framework developed by Auclert (2019): households hold only a one-period risk-free liquid asset, cannot borrow, and do not hold nominal assets with heterogeneous maturities. Accordingly, the decomposition in Table 3 does not separately identify Auclert's Fisher, unhedged interest rate exposure, and intertemporal-substitution channels. These effects are bundled into the consumption response to the sequence of realized real liquid returns, $R_t/\pi_t$.

To establish a clearer mapping, let $\Theta_t^0(a,h)$ denote the cross-sectional distribution of households along the unshocked reference path, normalized to have unit mass, and let $\Delta x_t$ denote the local first-order change in $x_t$ induced by the monetary-policy shock.[23] In a local representation that holds the reference distribution fixed, the MPC-weighted cash-flow contribution to aggregate consumption can be written schematically as:

$$\mathcal{C}_t^{\mathrm{cf}} \simeq \int \widehat{\mathrm{MPC}}_{it} \left[ (1-\tau)\Delta y_{it}^L + (1-\tau)\Delta y_{it}^{\Pi} + a_{it}\Delta\left(\frac{R_t}{\pi_t}\right)\right] d\Theta_t^0(a,h), \tag{A15}$$

where $y_{it}^L = W_t h_{it} l_{it}$ is gross labor income, $y_{it}^{\Pi}$ is household $i$'s profit income, and $a_{it}$ is the stock of liquid assets entering period $t$. The term $\widehat{\mathrm{MPC}}_{it}$ is the adjusted marginal propensity to consume that appears in Auclert's aggregation result after accounting for the endogenous labor-supply response. In the notation of Auclert (2019):

$$\widehat{\mathrm{MPC}}_{it} = \frac{\mathrm{MPC}_{it}}{\mathrm{MPC}_{it} + \mathrm{MPS}_{it}}, \tag{A16}$$

where $\mathrm{MPS}_{it}$ is the marginal propensity to save out of a current income change. As stated before, the last term in (A15) is a model-specific cash-flow effect on predetermined liquid assets. It is not a complete measure of Auclert's unhedged interest-rate exposure, which also includes maturing income and consumption flows, and it does not separately capture the intertemporal-substitution effect.

The labor-income term in (A15) can be separated into an aggregate component and a labor-specific earnings-heterogeneity component. Define reference aggregate labor income, household $i$'s reference labor-income share, and the fixed-distribution change in

[23] All undifferenced household-level objects in the expressions below are evaluated along the reference path.

aggregate labor income as:

$$
Y_t^L \equiv \int y_{it}^L \, d\Theta_t^0(a,h), \qquad s_{it}^L \equiv \frac{y_{it}^L}{Y_t^L}, \qquad \Delta Y_t^{L,\mathrm{fd}} \equiv \int \Delta y_{it}^L \, d\Theta_t^0(a,h). \tag{A17}
$$

Because the household population has unit mass, $\int s_{it}^L \, d\Theta_t^0(a,h) = 1$. The local labor-income contribution is therefore:

$$
\begin{aligned}
\mathcal{C}_t^L &\equiv (1-\tau) \int \widehat{\mathrm{MPC}}_{it} \Delta y_{it}^L \, d\Theta_t^0(a,h) \\
&= (1-\tau) \left[ \int s_{it}^L \widehat{\mathrm{MPC}}_{it} \, d\Theta_t^0(a,h) \right] \Delta Y_t^{L,\mathrm{fd}} \\
&\quad + (1-\tau) \operatorname{Cov}_{\Theta_t^0} \left( \widehat{\mathrm{MPC}}_{it}, \Delta y_{it}^L - s_{it}^L \Delta Y_t^{L,\mathrm{fd}} \right).
\end{aligned} \tag{A18}
$$

The first term on the right-hand side of (A18) is the MPC-weighted aggregate labor-income component. The second term is the covariance between households' MPCs and their labor-income changes relative to the changes implied by a proportional allocation of the aggregate labor-income movement. The residual inside the covariance has zero cross-sectional mean by construction. Hence, the covariance is negative when relative labor-income losses are concentrated among high-MPC households.

Equation (A18) is the labor-income analogue of Auclert's earnings-heterogeneity decomposition. Auclert's original statistic is defined using total gross household income, including dividend income, whereas (A18) isolates labor income. An analogous identity applies to profit income, so both the wage and profit contributions can be located on the earnings side of the redistribution framework. The labor-specific covariance in (A18), however, should not be interpreted as the entire earnings-heterogeneity channel.

The EFP affects these objects only indirectly. It is not a household-specific borrowing rate and is not a return paid to household depositors. Instead, it is a production-side wedge that changes firms' investment and labor demand and, through equilibrium, the paths of wages, hours, and profits. It can therefore change both the aggregate labor-income term and the covariance term in (A18).

It is important to emphasize that this mapping serves a descriptive purpose by linking the analysis conceptually to Auclert (2019), rather than by introducing a further quantitative decomposition. The decomposition underlying Table 3 traces the response of consumption to changes in entire price sequences and allows household policies and the cross-sectional distribution to evolve endogenously, whereas (A18) is a local fixed-distribution representation. A complete separation of the liquid-return contribution into Fisher, unhedged interest rate exposure, and intertemporal-substitution effects would additionally require adapting Auclert's aggregation result to the fiscal closure of the model.

# E A Model with a Financial Accelerator and Household Illiquid Assets

The version of the model that includes illiquid assets in the household portfolio is broadly similar to the one presented in Section 2. Here I report only the components that differ from the baseline framework.

## E.1 Households

The structure of the household sector follows the one proposed in Luetticke (2021). Therefore, households may self-insure through nominal bonds and capital. Holdings of capital must be nonnegative, whereas households are permitted to maintain a negative liquid net position up to a specified limit. More importantly, trading in capital is subject to a friction that restricts market access to a randomly selected fraction of households, $\psi^k$, in each period. All remaining households receive dividends but can adjust only their nominal bond holdings.

While both types of households, adjusters ($ad$) and non-adjusters ($nad$), share the same utility function (which is the one defined in eq. (1)), the budget constraint for adjusters is:

$$c_{it} + a_{it+1} + q_t k_{it+1} = \left(\frac{R_t^I}{\pi_t}\right) a_{it} + [r_t^K + q_t(1-\delta)]k_{it} + (1-\tau)(W_t h_{it} l_{it} + \mathbf{I}_{h_{it}=0}\Pi_t) \ . \tag{A19}$$

The main difference with eq. (4) is that households can now accumulate wealth through illiquid capital, which is subject to price fluctuations, $q_t k_{it+1}$. Capital accumulated in the previous period provides both financial income from renting it directly to the production sector, $r_t^K$, and capital gains net of depreciation, $q_t(1-\delta)$.[24]

While capital holdings cannot be negative, $k_i \geq 0$, households are allowed to hold a negative net liquid position up to a borrowing limit, $a_i \geq \bar{a}$. Households may therefore borrow liquidity, but when doing so they face a wedge on the nominal interest rate. This debt is unsecured, as it is not backed by any collateral, and can be interpreted as analogous to credit card borrowing. Accordingly, $R_t^I$ is defined in two ways depending on household $i$'s liquid wealth position:

$$R_t^I = \begin{cases} R_t & \text{if } a_{it} \geq 0 \\ R_t + \omega^H & \text{if } a_{it} < 0 \end{cases} \tag{A20}$$

[24]Note that this definition of the financial income generated by holding illiquid assets, $[r_t^K + q_t(1-\delta)]K_t$, can be expressed as the gross interest rate on capital, taking into account the price at which the capital was originally purchased, as specified in eq. (22).

The budget constraint for non-adjusters is:

$$c_{it} + a_{it+1} = \left(\frac{R^I_t}{\pi_t}\right) a_{it} + (r^K_t - q_t\delta)k_{it} + (1-\tau)(W_t h_{it} l_{it} + \mathbf{I}_{h_{it}=0}\Pi_t) \ . \tag{A21}$$

where, differently from eq. (A19), households still receive income from renting capital to firms but are unable to trade capital.

The introduction of household portfolio heterogeneity creates a problem of optimal portfolio allocation: households compare the one-period return difference between the two assets in the cases of adjustment and non-adjustment, taking into account the probability of adjustment. For a comprehensive exposition of how this optimization problem is solved, see Luetticke (2021), whose method I adopt throughout this analysis.

## E.2 Financial Intermediaries, Intermediate-Goods Producers, and Capital Producers

The optimization problem faced by financial intermediaries is identical to the one presented in Section 2. The only distinction is that the capital they channel to firms now represents only a fraction of the total capital employed in production.

Therefore, eq. (6) now becomes:

$$q_t K^F_{jt+1} = N_{jt+1} + D_{jt+1} \ , \tag{A22}$$

where $K^F$ denotes the capital supplied to firms by financial intermediaries. It follows that Section 2.2 remains unchanged, except that both the optimization problem and the entrepreneurs' equity law of motion are now defined with respect to $K^F$ rather than the aggregate capital $K$.

The aggregate level of capital used in eq. (12) is consequently defined as:

$$K_t = K^H_t + K^F_t \tag{A23}$$

where $K^H = \int[\psi^k k^*_{ad}(a,k,h) + (1-\psi^k)k_{nad}(a,k,h)]\Theta_t(a,k,h)dadh$ denotes the aggregate supply of capital directly lent by households.

After production, entrepreneurs sell depreciated capital to capital producers. As in Section 2.5, capital producers refurbish depreciated capital at no cost and use goods as investment inputs to produce new capital. They then resell the newly produced capital to entrepreneurs before the next period begins. The key difference is that entrepreneurs must now return $K^H$ directly to households, including the gross capital interest rate $R^K$, and use the remaining capital, $K^F$, to repay financial intermediaries.

## E.3 Government

Because households are now divided into adjusters and non-adjusters, the aggregate level of tax revenues, defined in the baseline model through eq. (29), becomes:

$$T_t = \tau \left[ \psi^k \int w_t h_{it} l_{it}^{ad} d\Theta_t + (1 - \psi^k) \int w_t h_{it} l_{it}^{nad} d\Theta_t + \Pi_t \right]. \tag{A24}$$

## E.4 Calibration

The introduction of an additional asset in the households' portfolio, together with the possibility of holding a negative net liquid position, requires both the recalibration of existing parameters and the calibration of new ones in order to match specific steady-state moments.

For instance, the parameter governing capital adjustment rigidity, $\psi^k$, is calibrated to target a 25% ratio of liquid to illiquid assets in households' portfolios, consistent with Bayer et al. (2024). Moreover, the ad-hoc borrowing limit and the borrowing rate can now be used to calibrate the share of HtM households and the share of borrowing households, respectively. I report the complete calibration of the model in Table E.1, while Table E.2 presents the steady-state moments of the wealth distribution.

Table E.1: Calibrated parameters

| **Description** | **Parameter** | **Value** | **Source/Target** |
|---|---|---|---|
| Discount factor | $\beta$ | 0.986 | LEV = 2 |
| Relative risk aversion | $\xi$ | 2 | Auclert et al. (2021) |
| Frisch elasticity of labor | $\nu$ | 1 | Chetty et al. (2011) |
| Disutility of labor | $\psi$ | 4.9 | L = 0.5 |
| Borrowing constraint | $\underline{a}$ | -0.05 | 16% borrowing households |
| HHs participation in the capital market | $\psi^k$ | 0.05 | $A/K^H = 25\%$ |
| Prob. of leaving rentier state | $\iota$ | 0.0625 | Guvenen et al. (2014) |
| Prob. become rentier | $\zeta$ | 0.0007 | Gini wealth = 78% |
| Persistence of idio. prod. shock | $\rho_h$ | 0.98 | Bayer et al. (2019) |
| SD of idio. prod. shock | $\sigma_h$ | 0.06 | Bayer et al. (2019) |
| Labor share of production | $\alpha$ | 0.7 | standard value |
| Depreciation rate | $\delta$ | 0.02 | standard value |
| Elasticity of substitution | $\eta$ | 20 | mark-up = 5% |
| Price stickiness | $\kappa$ | 0.09 | av. price duration = 4 quart. |
| Adjustment cost of capital | $\phi$ | 2.5 | $\sigma(\mathrm{I})/\sigma(\mathrm{Y}) = 3$ |
| Auditing costs | $\mu$ | 0.12 | EFP = 2% p.a. |
| SD of the id. shock on entr. | $\sigma_\omega$ | 0.27 | Bernanke et al. (1999) |
| Entr. surviving rate | $\gamma$ | 0.986 | EFP = 2% p.a. |
| TFP shock persistence | $\rho_z$ | 0.95 | standard value |
| TFP shock SD | $\sigma_z$ | 0.01 | standard value |
| Nominal int. rate | $R$ | 1.0063 | 2,5% p.a. |
| Borrowing rate | $\omega^H$ | 0.0273 | HtM = 30% |
| Int. rate smoothing | $\rho^R$ | 0.8 | Clarida et al. (2000) |
| Reaction to inflation | $\rho^\pi$ | 1.5 | standard value |
| Monetary shock SD (p.a.) | $\sigma_R$ | 0.0006 | 25 b.p. p.a. |
| Tax rate | $\tau$ | 0.3 | G/Y $\approx$ 20% |
| Auto-correlation of debt | $\rho_B$ | 0.86 | Bayer et al. (2019) |

Table E.2: Wealth distribution moments

| Target | Model | Data |
|---|---|---|
| Gini index (calibrated) | 0.78 | 0.78 |
| HtM share (calibrated) | 0.30 | 0.30 |
| Borrowing HHs (calibrated) | 0.16 | 0.16 |
| Top 10% wealth | 0.71 | 0.67 |

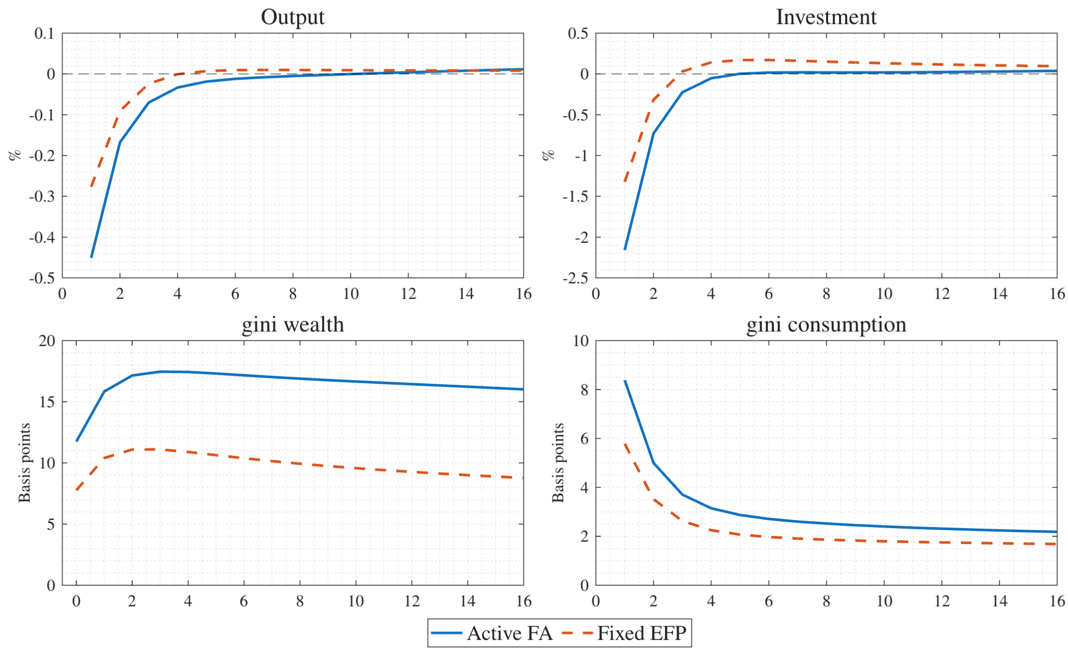


Figure F.1: IRFs for aggregate variables and Gini indices, $\xi = 4$

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

# F Robustness

## F.1 Robustness to Risk Aversion

For the baseline model, I used a parameter for households' risk aversion $\xi = 2$, which is already used in other HANK models in the literature. However, other models used different values; for instance, Bayer et al. (2019) and Luetticke (2021) assume $\xi = 4$. I recalibrated the model with this parameter to obtain relevant moments as in the baseline version. This implies a discount factor $\beta = 0.986$, labor disutility parameter $\psi = 12$, household probability of becoming a rentier $\zeta = 0.0008$ and the parameter governing the adjustment cost of capital $\phi = 4$. Figure F.1 shows fluctuations for selected aggregate variables and inequality indices.

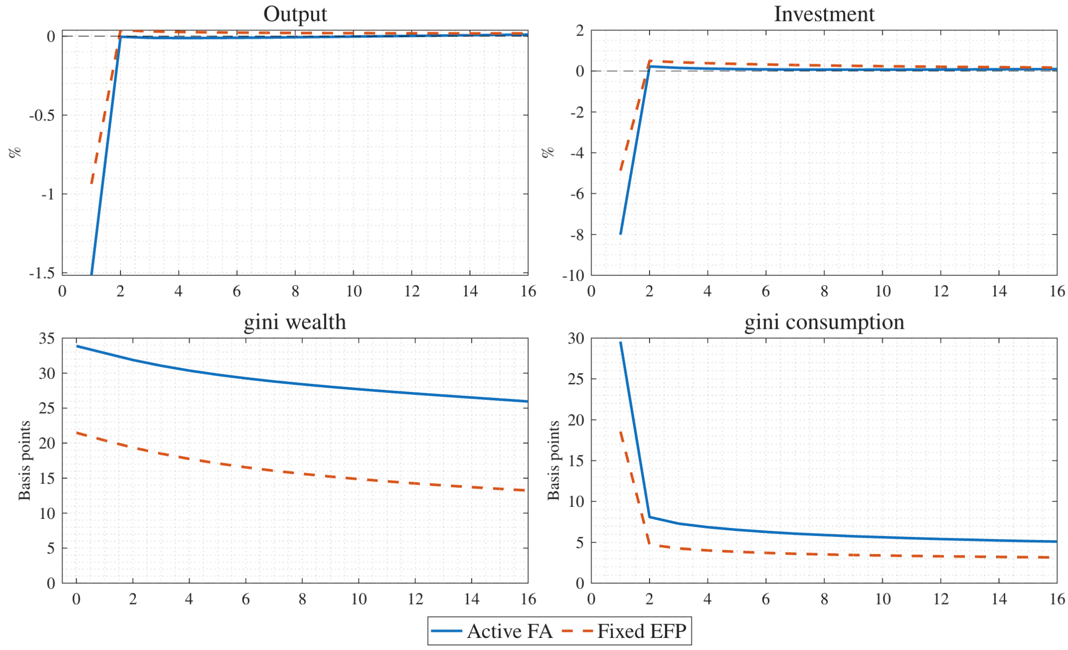


Figure F.2: IRFs for aggregate variables and Gini indices, $\phi = 0$
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

## F.2 Robustness to Investment Cost

The baseline model features quadratic investment costs (the central term on the right-hand side of Eq. (20)) where the parameter $\phi$ is calibrated to match an investment-to-output volatility $\sigma(I)/\sigma(Y) = 3$ after a TFP shock. In Figure F.2 I present the fluctuations of aggregate variables and inequality indices in the limiting case where investment costs are absent, i.e., $\phi = 0$. This means that the capital price $q$ is fixed over time, and entrepreneurs do not make any profit from capital gains or creation of new capital $\Delta K$. This extreme calibration also confirms the financial accelerator: the output, investment, consumption, and inequality indices are all greater when financial frictions are active.

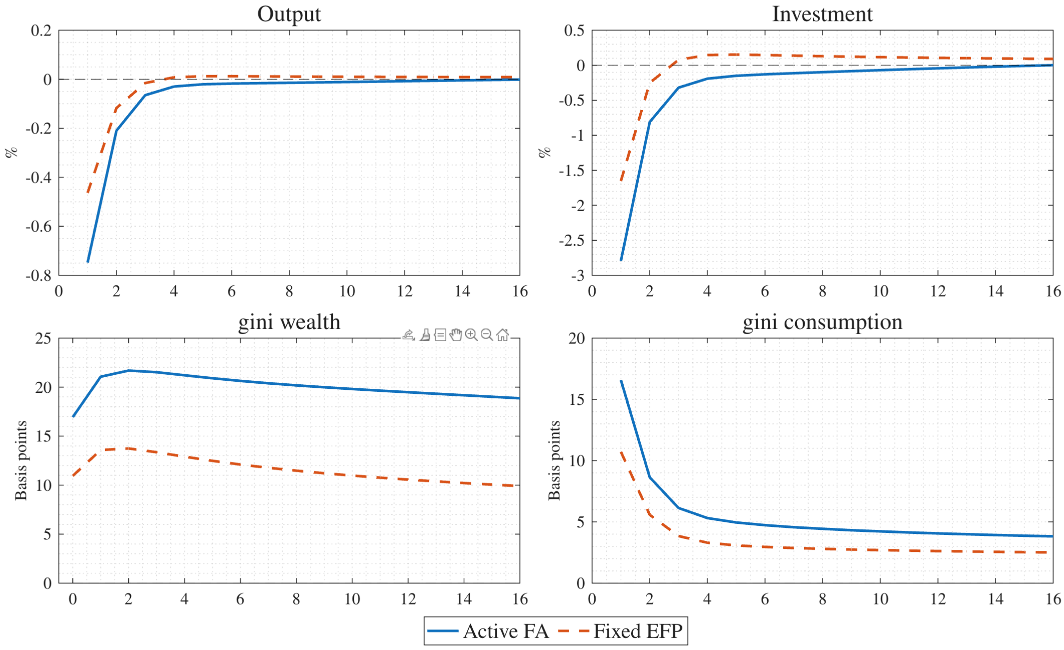


Figure F.3: IRFs for aggregate variables and Gini indices, $\rho_B = 0$

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

## F.3 Robustness to Fiscal Policy

As is standard in models with agent heterogeneity, Ricardian equivalence does not hold, allowing different fiscal policies to significantly influence monetary transmission. In the baseline model, I assume that the government adjusts its spending to bring debt to steady state values. Following Bayer et al. (2019), I set the debt autocorrelation parameter at $\rho_B = 0.86$, indicating that the government is inclined to roll over most of its debt, thereby supporting a higher level of public expenditure. I now examine the extreme scenario in which the government aims to immediately return to its steady state debt level following a contractionary monetary policy shock, by setting $\rho_B = 0$. The results are presented in Figure F.3. In this case, the government exercises debt control by further reducing expenditure, leading to a deeper economic downturn in terms of output and consumption, and exacerbating inequality relative to the baseline model specification.

Alternatively, the government could opt to keep spending at its steady state level and adjust taxation by modifying the tax parameter $\tau$. The results are shown in Figure F.4. Output and investment show no significant deviations from the baseline calibration. Inequality measures remain almost identical to those in the baseline model (if anything, they are marginally higher), further confirming that, even with tax adjustments, the financial accelerator acts as an inequality amplifier.

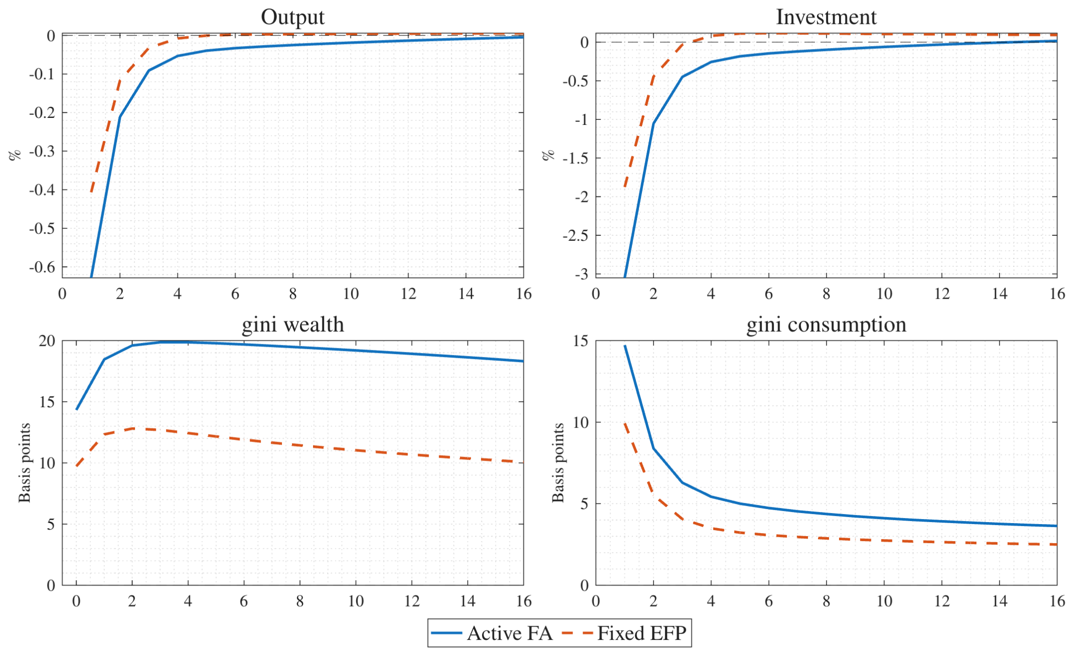


Figure F.4: IRFs for aggregate variables and Gini indices, $\tau$ adjusting

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

## F.4 Robustness to Higher Leverage at Steady State

Figure F.5 reports the fluctuations of output, investment, and the Gini indices for consumption and wealth in a model with a higher initial level of firm leverage. I present results for the case in which leverage is targeted at 2.5, rather than 2 as in the baseline model. To reach this leverage level while maintaining the baseline calibration for the financial friction parameters, I slightly reduce the discount factor to $\beta = 0.987$, increase the labor-disutility parameter $\psi$ to 6, adjust the probability that a household becomes a rentier to $\zeta = 0.0006$, and set the capital-adjustment-cost parameter to $\phi = 8$.

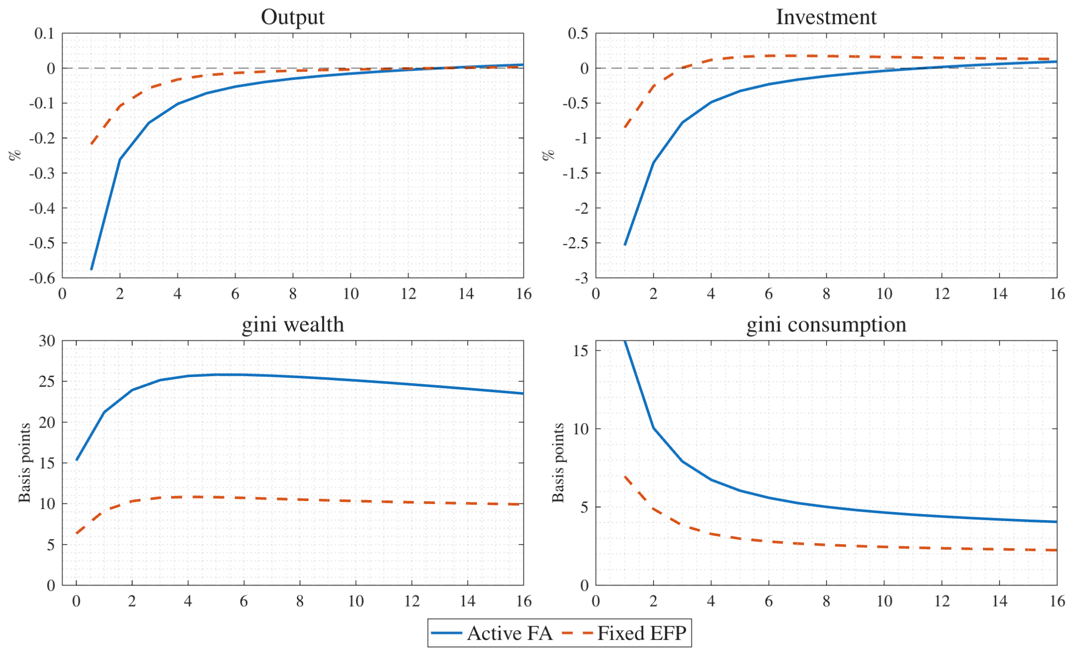


Figure F.5: IRFs for aggregate variables and Gini indices, $LEV = 2.5$

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

## F.5 Robustness to Sticky Wages

I modify the baseline model to feature flexible prices and sticky wages, a feature that avoids any endogenous redistribution through profits, which become cyclical.

To obtain flexible prices, I set the average price duration to one period. To introduce sticky wages in the HANK framework, I follow the approach proposed by Bayer et al. (2024). I assume that workers supply labor services to a mass-one continuum of unions indexed by $j$, with each union offering a distinct labor variety to labor packers. These labor packers then combine the varieties and supply labor services to intermediate goods producers. Final labor services are produced according to the following production function:

$$L_t = \left( \int \hat{l}_{jt}^{\frac{\eta^w - 1}{\eta^w}} dj \right)^{\frac{\eta^w}{\eta^w - 1}} \tag{A25}$$

out of labor varieties $\hat{l}_{jt}$ with elasticity of substitution $\eta^w$. Cost minimization by labor packers implies that each union $j$ (and thus each labor variety) faces a downward-sloping demand curve:

$$\hat{l}_{jt} = \left( \frac{W_{jt}}{W_t^F} \right)^{-\eta^w} L_t, \tag{A26}$$

where $W_{jt}$ is the nominal wage set by union j and $W_t^F$ is the nominal wage at which labor packers sell labor services to intermediate goods producers.

Since unions have market power, they pay households a wage that is lower than the price at which they sell labor to labor packers. Given the nominal wage $W_t$ at which unions purchase labor from households and the nominal wage index $W_t^F$, they maximize their discounted stream of profits. They face Calvo-type wage adjustment frictions, where $\lambda^w$ denotes the fraction of workers unable to reset their wages. Their objective is therefore to maximize:

$$E_0 \sum_{t=0}^{\infty} \beta^t \lambda_w^t \frac{W_t^F}{P_t} L_t \left[ \left( \frac{W_{jt}\bar{\pi}_w^t}{W_t^F} - \frac{W_t}{W_t^F} \right) \left( \frac{W_{jt}\bar{\pi}_w}{W_t^F} \right)^{-\eta^w} \right] \tag{A27}$$

by choosing $W_{jt}$ in period $t$ and holding it constant thereafter, except for indexation to $\bar{\pi}_w$, the steady-state wage inflation rate.

Since all unions are symmetric, I focus on a symmetric equilibrium and derive the linearized wage Phillips curve from the corresponding first-order condition. This is obtained by omitting all terms that are irrelevant at a first-order approximation around the stationary equilibrium:

$$\log\left(\frac{\pi_t^w}{\bar{\pi}_w}\right) = \beta E_t \log\left(\frac{\pi_{t+1}^w}{\bar{\pi}_w}\right) + \kappa_w \left( mc_t^w - \frac{1}{\mu^w} \right), \tag{A28}$$

Eq. (A28) characterizes the evolution of wage inflation, $\pi_t^w$, over time. Wage inflation is defined as:

$$\pi_t^W = \frac{w_t^F}{w_{t-1}^F} \pi_t \tag{A29}$$

where $w_t = W_t/P_t$ and $w_t^F = W_t^F/P_t$ denote the real wages relevant for households and firms, respectively. The marginal cost of wages paid by unions to households is defined as $mc_t^w = w_t/w_t^F$, which in steady state equals $\bar{mc}^w = 1/\mu_t^w = (\eta^w - 1)/\eta^w$. The parameter governing nominal wage stickiness is $\kappa_w = [(1-\lambda_w)(1-\lambda_w\beta)]/\lambda_w$.

I assume an average duration of wage contracts of four quarters, which is a standard value in the literature and supported by empirical estimates (e.g., Smets and Wouters, 2007). This implies $\lambda_w = 0.75$, which in turn yields $\kappa_w = 0.09$. The steady-state wage markup is set to 10%, following Born and Pfeifer (2014), so that $\eta^w = 11$ and, consequently, $\bar{mc}^w = 0.91$. I report the responses for output, investment and Gini Indices in Figure F.6.

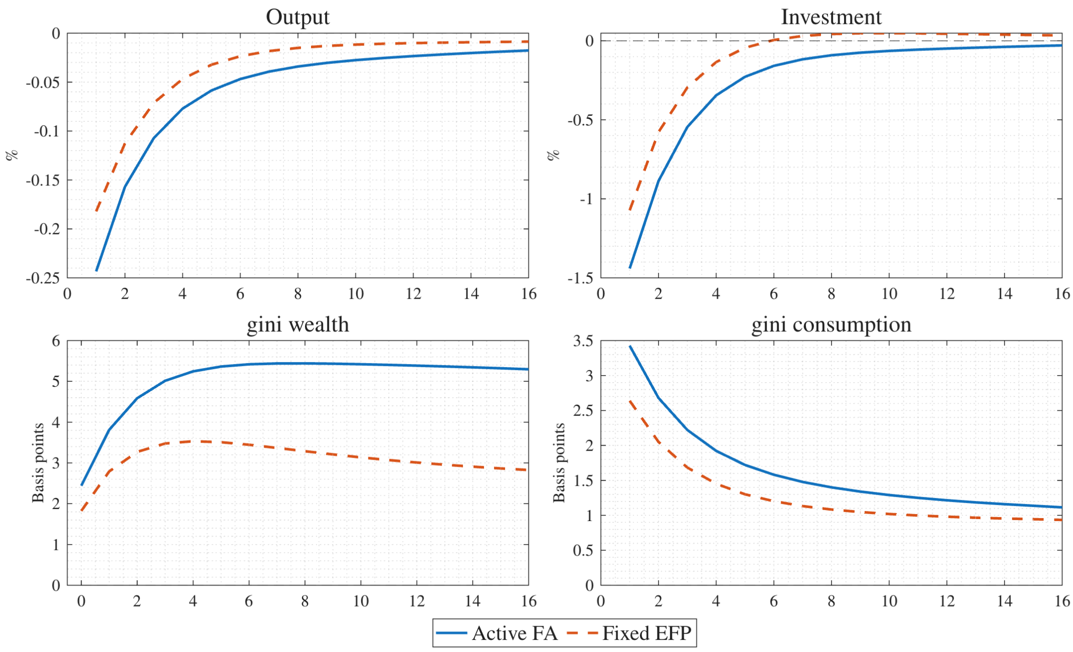


Figure F.6: IRFs for aggregate variables and Gini indices, sticky wages

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with an active financial accelerator. The red dashed line refers to the fixed-EFP counterfactual.

# G The Financial Accelerator State-Dependency in the Data

## G.1 Details on the Data

As discussed in Section 5, the empirical exercise uses quarterly U.S. data to examine whether the association between monetary-policy shocks and consumption inequality depends on the state of corporate credit markets. The dependent variables are two measures of consumption inequality constructed by Coibion et al. (2017): the consumption Gini coefficient and the ratio between the 90th and 10th percentiles of the consumption distribution. In the regressions, I use quarterly first differences of these series. The change in the Gini coefficient is multiplied by 100, while the 90th/10th percentile ratio enters as its quarterly change.

The main monetary-policy shock is the quarterly narrative residual from Bügel et al. (2024), denoted $MP_t^{sh}$. Corporate financial frictions are proxied by the Excess Bond Premium of Gilchrist and Zakrajšek (2012). I standardize the EBP series and interact the monetary-policy shock with its one-quarter lag, $EBP_{t-1}$, so that the interaction coefficient measures how the marginal association between the monetary-policy shock and inequality changes when corporate financial stress is one standard deviation higher.

The underlying consumption-inequality dataset covers 1980Q1–2007Q4. Because the regressions include lagged shocks, lagged EBP, and lagged dependent variables, the effective estimation sample begins after the first observations of the raw dataset. In the baseline, recession-control, business-cycle-control, and policy-environment specifications, the effective sample contains 110 quarterly observations. In the richer dynamic specifications, which include additional lags of the monetary-policy shock, the interaction term, and the dependent variable, the effective sample contains 107 observations.

The baseline specification controls for lagged unemployment, lagged standardized EBP, one lag of the dependent variable, and the contemporaneous monetary-policy shock together with two quarterly lags. The additional specifications add, sequentially, a lagged NBER recession indicator and its interaction with the monetary-policy shock, lagged real GDP growth, lagged inflation, and the lagged federal funds rate. Real GDP growth and inflation are computed as 100 times quarterly log changes in real GDP and the CPI, respectively, and the federal funds rate is measured as the quarterly average of FEDFUNDS. A complete description of the series used and their respective sources is provided in Table G.1.

Table G.1: Data definitions and sources

| Variable | Series ID | Source |
|---|---|---|
| Gini Consumption | C_GINI_CONS_SA | Coibion et al. (2017) |
| 90th/10th Consumption Ratio | C_P9010_LNCONS_SA | Coibion et al. (2017) |
| Excess Bond Premium | ebp | Gilchrist and Zakrajšek (2012) |
| Unemployment Rate | UNRATE | FRED |
| NBER based Recession Indicators | USRECQ | FRED |
| Real Gross Domestic Product | GDPC1 | FRED |
| Consumer Price Index | CPIAUCSL | FRED |
| Federal Funds Effective Rate | FEDFUNDS | FRED |
| Monetary shock, baseline | RR_data | Bügel et al. (2024) |
| Monetary shock, BS | MPS_ORTH | Bauer and Swanson (2023) |
| Monetary shock, JK | MP_median | Jarociński and Karadi (2020) |

## G.2 Regression Results

In Section 5, I report only the coefficient associated with the interaction term between the monetary innovation and the EBP, since this is the main object of interest in the analysis. For completeness, Table G.2 and Table G.3 report the full regression results for the Gini index and the consumption ratio, respectively.

The complete set of results provides additional support for the state-dependent interpretation. The interaction coefficient is not absorbed by controlling for the level of the EBP, recession conditions, or the additional macroeconomic variables. The recession-state interaction and most macroeconomic controls are statistically insignificant, although lagged inflation is significant in the Gini specifications that include the policy-environment controls. These results suggest that the estimated EBP interaction is not simply capturing the contemporaneous effects of broad recessionary conditions, while the reduced-form nature of the exercise precludes a definitive causal interpretation.

The richer dynamic specifications produce larger contemporaneous interaction coefficients for both measures of inequality. For the Gini index, however, the first lag of the interaction term is negative and statistically significant at the 10 percent level in specification (5) and at the 5 percent level in specification (6), suggesting a partial reversal of the contemporaneous effect. In contrast, the lagged interaction terms are not statistically significant for the 90–10 measure, which weakens the robustness of the evidence for such a reversal. Overall, these results provide suggestive evidence that higher corporate credit stress is associated with a larger contemporaneous increase in consumption inequality following a monetary contraction.

## G.3 Robustness to Alternative Monetary Shocks

The narrative monetary policy shock developed by Bügel et al. (2024) and employed in the baseline regression builds broadly on the approach introduced by Romer and Romer (2004). A key advantage of this shock series is that it spans the entire Great Moderation period, thereby allowing the analysis to exploit all available observations in the sample. Nevertheless, narrative-identified shocks to conventional monetary policy have been criticized for failing to satisfy several properties considered desirable in a monetary policy shock series (e.g., Ramey, 2016; Miranda-Agrippino and Ricco, 2021).

To address this concern, I re-estimate regression (35) using two alternative measures of monetary policy innovations that rely on different identification strategies and are widely employed in the recent literature. First, I use the high-frequency, sign-restricted monetary policy shock series constructed by Jarociński and Karadi (2020). Second, I employ the orthogonalized monetary policy surprise developed by Bauer and Swanson (2023). Results are displayed in Table G.4.

The results provide further support for the state-dependent pattern identified using the baseline narrative shock. Across both alternative shock measures, the interaction between the monetary policy innovation and the lagged EBP is generally positive, indicating that monetary contractions are associated with larger increases in consumption inequality when corporate financial stress is elevated. However, the sign and statistical precision of the estimates vary across shock measures and inequality indicators.[25]

The strongest statistical evidence emerges when the monetary policy innovation proposed by Jarociński and Karadi (2020) is employed. For the 90/10 consumption ratio, the estimated interaction coefficient remains positive and quantitatively stable across all specifications and is statistically significant, at least at the 10 percent level, in most cases. The corresponding interaction coefficients for the Gini index are also positive and relatively stable, although they are estimated with lower statistical significance. The Bauer and Swanson (2023) shock provides weaker evidence. For the 90/10 consumption ratio, the interaction coefficient is positive in every specification, but it is statistically significant only in the baseline specification and declines as controls and richer dynamics are introduced. For the Gini index, the interaction is positive in the first five specifications but imprecisely estimated throughout; in the full-robustness specification, it becomes slightly negative and remains statistically insignificant.

[25] Note that the shocks are expressed in different units. Therefore, differences in coefficient magnitude across shock measures do not have a direct economic interpretation.

Table G.2: State-Dependent Effect of Monetary Policy on Consumption Gini Index

| Dependent Variable: | Gini | | | | | |
|---|---|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| *Variables* | | | | | | |
| Constant | -0.138 | -0.146 | -0.175 | -0.067 | -0.144 | -0.184 |
| | (0.196) | (0.219) | (0.201) | (0.190) | (0.221) | (0.206) |
| MP shock$_t$ × EBP$_{t-1}$ | 0.275** | 0.269** | 0.248* | 0.269** | 0.478*** | 0.496*** |
| | (0.123) | (0.124) | (0.127) | (0.130) | (0.145) | (0.146) |
| MP shock$_t$ (quarterly series) | 0.012 | 0.023 | 0.005 | -0.029 | -0.272 | -0.240 |
| | (0.095) | (0.179) | (0.175) | (0.182) | (0.175) | (0.186) |
| MP shock$_{t-1}$ | -0.020 | -0.027 | -0.038 | 0.002 | 0.351* | 0.353* |
| | (0.074) | (0.098) | (0.103) | (0.101) | (0.192) | (0.212) |
| MP shock$_{t-2}$ | 0.169*** | 0.160** | 0.164** | 0.309*** | 0.193** | 0.193 |
| | (0.040) | (0.075) | (0.077) | (0.098) | (0.088) | (0.117) |
| Excess Bond Premium (Std)$_{t-1}$ | -0.035 | -0.034 | -0.028 | -0.012 | -0.045 | -0.008 |
| | (0.033) | (0.031) | (0.032) | (0.032) | (0.035) | (0.040) |
| Lagged Δ Gini | -0.413*** | -0.415*** | -0.415*** | -0.410*** | -0.495*** | -0.524*** |
| | (0.066) | (0.067) | (0.068) | (0.064) | (0.093) | (0.087) |
| Unemployment Rate, lag 1 | 0.028 | 0.030 | 0.024 | 0.033 | 0.033 | 0.030 |
| | (0.032) | (0.038) | (0.035) | (0.034) | (0.036) | (0.037) |
| Recession$_{t-1}$ | | -0.032 | 0.063 | 0.129 | | 0.029 |
| | | (0.217) | (0.217) | (0.225) | | (0.219) |
| MP shock$_t$ × Recession$_{t-1}$ | | -0.018 | 0.022 | 0.299 | | -0.189 |
| | | (0.222) | (0.225) | (0.247) | | (0.571) |
| GDP Growth$_{t-1}$ | | | 0.075 | 0.059 | | 0.163 |
| | | | (0.081) | (0.082) | | (0.104) |
| Inflation$_{t-1}$ | | | | -0.209** | | -0.200** |
| | | | | (0.105) | | (0.098) |
| Federal Funds Rate$_{t-1}$ | | | | 0.001 | | 0.013 |
| | | | | (0.019) | | (0.017) |
| MP shock$_{t-1}$ × EBP$_{t-2}$ | | | | | -0.239* | -0.281** |
| | | | | | (0.143) | (0.139) |
| MP shock$_{t-2}$ × EBP$_{t-3}$ | | | | | -0.025 | -0.028 |
| | | | | | (0.130) | (0.143) |
| MP shock$_{t-3}$ | | | | | -0.113 | -0.017 |
| | | | | | (0.072) | (0.110) |
| MP shock$_{t-4}$ | | | | | -0.093 | -0.045 |
| | | | | | (0.072) | (0.087) |
| Lagged Δ Gini, lag 2 | | | | | -0.326*** | -0.378*** |
| | | | | | (0.115) | (0.123) |
| Lagged Δ Gini, lag 3 | | | | | -0.131 | -0.153* |
| | | | | | (0.086) | (0.085) |
| Lagged Δ Gini, lag 4 | | | | | -0.319*** | -0.336*** |
| | | | | | (0.073) | (0.075) |
| *Fit statistics* | | | | | | |
| Observations | 110 | 110 | 110 | 110 | 107 | 107 |
| $R^2$ | 0.23135 | 0.23157 | 0.23631 | 0.25787 | 0.40453 | 0.44573 |
| Adjusted $R^2$ | 0.17860 | 0.16241 | 0.15917 | 0.16606 | 0.31392 | 0.32468 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Notes: Newey-West (L=4) standard-errors in parentheses. Columns (1)–(6) are, respectively, baseline, recession controls, business-cycle controls, policy-environment controls, rich dynamics, and full robustness.

Table G.3: State-Dependent Effect of Monetary Policy on Consumption 90/10 Ratio

| Dependent Variable: | 90th/10th percentile ratio | | | | | |
|---|---|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| *Variables* | | | | | | |
| Constant | -0.0004 | -0.0004 | -0.0009 | 0.005 | $-6.47 \times 10^{-5}$ | -0.004 |
| | (0.015) | (0.016) | (0.016) | (0.016) | (0.017) | (0.016) |
| MP $\text{shock}_t$ × $\text{EBP}_{t-1}$ | 0.019*** | 0.019*** | 0.018*** | 0.020*** | 0.025*** | 0.029*** |
| | (0.006) | (0.006) | (0.007) | (0.007) | (0.008) | (0.009) |
| MP $\text{shock}_t$ (quarterly series) | -0.003 | -0.004 | -0.004 | -0.008 | -0.027** | -0.025* |
| | (0.005) | (0.009) | (0.010) | (0.010) | (0.011) | (0.013) |
| MP $\text{shock}_{t-1}$ | 0.006 | 0.006 | 0.006 | 0.009 | 0.028*** | 0.027*** |
| | (0.005) | (0.006) | (0.006) | (0.006) | (0.009) | (0.010) |
| MP $\text{shock}_{t-2}$ | -0.002 | -0.0009 | -0.0009 | 0.009 | 0.005 | 0.008 |
| | (0.004) | (0.007) | (0.007) | (0.008) | (0.007) | (0.010) |
| Excess Bond Premium $(\text{Std})_{t-1}$ | -0.0010 | -0.0009 | -0.0008 | 0.0005 | -0.002 | 0.002 |
| | (0.002) | (0.002) | (0.002) | (0.003) | (0.003) | (0.003) |
| Lagged Δ 90th/10th percentile ratio | -0.485*** | -0.483*** | -0.485*** | -0.481*** | -0.579*** | -0.625*** |
| | (0.077) | (0.082) | (0.083) | (0.080) | (0.098) | (0.099) |
| Unemployment Rate, lag 1 | 0.0003 | 0.0003 | 0.0002 | 0.001 | 0.0001 | 0.001 |
| | (0.002) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) |
| $\text{Recession}_{t-1}$ | | -0.0007 | 0.0009 | 0.006 | | 0.004 |
| | | (0.018) | (0.019) | (0.019) | | (0.013) |
| MP $\text{shock}_t$ × $\text{Recession}_{t-1}$ | | 0.003 | 0.004 | 0.023 | | -0.033 |
| | | (0.014) | (0.014) | (0.017) | | (0.044) |
| GDP $\text{Growth}_{t-1}$ | | | 0.001 | 0.0005 | | 0.009 |
| | | | (0.006) | (0.006) | | (0.007) |
| $\text{Inflation}_{t-1}$ | | | | -0.011 | | -0.006 |
| | | | | (0.010) | | (0.009) |
| Federal Funds $\text{Rate}_{t-1}$ | | | | -0.0005 | | -0.001 |
| | | | | (0.001) | | (0.001) |
| MP $\text{shock}_{t-1}$ × $\text{EBP}_{t-2}$ | | | | | -0.010 | -0.009 |
| | | | | | (0.010) | (0.009) |
| MP $\text{shock}_{t-2}$ × $\text{EBP}_{t-3}$ | | | | | -0.004 | -0.002 |
| | | | | | (0.007) | (0.008) |
| MP $\text{shock}_{t-3}$ | | | | | -0.005 | 0.006 |
| | | | | | (0.006) | (0.009) |
| MP $\text{shock}_{t-4}$ | | | | | 0.003 | 0.009 |
| | | | | | (0.004) | (0.006) |
| Lagged Δ 90th/10th percentile ratio, lag 2 | | | | | -0.306*** | -0.346*** |
| | | | | | (0.074) | (0.076) |
| Lagged Δ 90th/10th percentile ratio, lag 3 | | | | | -0.337*** | -0.335*** |
| | | | | | (0.071) | (0.079) |
| Lagged Δ 90th/10th percentile ratio, lag 4 | | | | | -0.479*** | -0.487*** |
| | | | | | (0.089) | (0.092) |
| *Fit statistics* | | | | | | |
| Observations | 110 | 110 | 110 | 110 | 107 | 107 |
| $R^2$ | 0.26981 | 0.27005 | 0.27029 | 0.28489 | 0.48530 | 0.51006 |
| Adjusted $R^2$ | 0.21970 | 0.20435 | 0.19658 | 0.19642 | 0.40698 | 0.40307 |

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Notes: Newey-West (L=4) standard-errors in parentheses. Columns (1)–(6) are, respectively, baseline, recession controls, business-cycle controls, policy-environment controls, rich dynamics, and full robustness.

Table G.4: State-Dependent Effect of Monetary Policy on Consumption Inequality: Alternative MP shocks

| Dependent Variable: | Gini | | | | | |
|---|---|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| BS $\text{shock}_t \times \text{EBP}_{t-1}$ | 0.460 | 0.207 | 0.206 | 0.202 | 0.219 | -0.043 |
| | (0.654) | (0.671) | (0.671) | (0.750) | (0.578) | (0.637) |
| Observations | 78 | 78 | 78 | 78 | 76 | 76 |
| JK $\text{shock}_t \times \text{EBP}_{t-1}$ | 0.376 | 0.365 | 0.375 | 0.412 | 0.358 | 0.455* |
| | (0.321) | (0.350) | (0.337) | (0.334) | (0.275) | (0.238) |
| Observations | 70 | 70 | 70 | 70 | 68 | 68 |

| Dependent Variable: | 90th/10th percentile ratio | | | | | |
|---|---|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| BS $\text{shock}_t \times \text{EBP}_{t-1}$ | 0.066* | 0.049 | 0.050 | 0.049 | 0.030 | 0.021 |
| | (0.039) | (0.041) | (0.039) | (0.042) | (0.040) | (0.037) |
| Observations | 78 | 78 | 78 | 78 | 76 | 76 |
| JK $\text{shock}_t \times \text{EBP}_{t-1}$ | 0.052* | 0.048 | 0.049* | 0.051* | 0.039* | 0.040** |
| | (0.027) | (0.029) | (0.028) | (0.028) | (0.020) | (0.016) |
| Observations | 70 | 70 | 70 | 70 | 68 | 68 |

*Newey-West (L=4) standard-errors in parentheses*
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Notes: Newey-West (L=4) standard-errors in parentheses. Columns (1)–(6) are, respectively, baseline, recession controls, business-cycle controls, policy-environment controls, rich dynamics, and full robustness. The BS shock denotes the orthogonalized monetary-policy surprise developed by Bauer and Swanson (2023), whereas the JK shock refers to the high-frequency, sign-restricted monetary shock proposed by Jarociński and Karadi (2020).

Taken together, the estimates based on the alternative shock measures support the model's qualitative prediction, although less consistently than the baseline results. Their weaker statistical significance may reflect data limitations inherent to the Great Moderation period. First, both alternative shock series begin later than the shock developed by Bügel et al. (2024). Specifically, the Jarociński and Karadi (2020) shock starts in 1990Q1, whereas the Bauer and Swanson (2023) shock begins in 1988Q1, thereby reducing the number of observations available for estimation. Second, as noted by Ramey (2016) and emphasized by Bauer and Swanson (2023), the macroeconomic effects of monetary policy are often estimated imprecisely in samples beginning after approximately 1984. One possible explanation is that monetary policy was conducted more systematically during this period, resulting in a smaller and less informative set of structural monetary policy shocks, whether identified through high-frequency monetary policy surprises or alternative methods, than in the pre-1984 period. These features therefore provide a plausible explanation for the lower statistical significance of the estimates reported in Table G.4. Despite these considerations, the overall findings point to contemporaneous state dependence.