

Does the financial accelerator accelerate inequalities?*

Francesco Ferlaino [†]

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Abstract

This paper investigates the distributional role of the corporate financial accelerator, motivated by empirical evidence suggesting that the response of consumption inequality to monetary shocks is amplified during periods of corporate financial stress. Using a HANK framework, I show that financial frictions act as an “inequality accelerator” for consumption and wealth through two distinct channels. First, the accelerator mechanism deepens the contraction in investment, leading to a sharper decline in labor demand and wages that disproportionately hurts hand-to-mouth households. monetary contraction raises the real return on liquid savings, cushioning the consumption of wealthy savers relative to the poor. This result is robust to extending the model to include illiquid assets: the rise in rental rates driven by the external finance premium offsets capital valuation losses, preserving the divergence in wealth accumulation.

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

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

1 Introduction

Does the financial structure of the production sector shape the distributional consequences of monetary policy? While the [Modigliani and Miller \(1958\)](#) theorem suggests irrelevance, recent empirical findings indicate that firms' financial structure plays a significant role in the business cycle. For instance, [Caldara and Herbst \(2019\)](#) show that the large effects of monetary policy shocks during the Great Moderation are explained by a systematic policy response to financial conditions. Yet, while the "financial accelerator" mechanism is a cornerstone of modern macroeconomics, its implications for household inequality remain largely unexplored. Standard New Keynesian models often ignore firm heterogeneity or assume a representative household, masking the potential trade-offs between corporate financial health and household wealth distribution.

This paper bridges the gap between the financial frictions literature and the Heterogeneous Agents New Keynesian (HANK) framework. I argue that the financial accelerator does not merely amplify aggregate output volatility; it also acts as an "inequality accelerator." When corporate borrowing constraints bind, the transmission of monetary policy shifts: the burden of adjustment falls disproportionately on labor income, severely affecting Hand-to-Mouth (HtM) households, while the associated rise in credit spreads and interest rates offers a cushion, or even a gain, to wealthy savers.

This core intuition is justified by a key insight from the seminal work of [Kaplan et al. \(2018\)](#): in the presence of household heterogeneity, the majority of monetary policy transmission to consumption occurs not through direct effects, such as intertemporal substitution, but through indirect ones, such as labor dynamics, fiscal policy, and fluctuations in asset prices. More specifically, they show that labor income fluctuations are the most important component, accounting for more than half of the percentage change in aggregate consumption, leaving only a modest role for direct intertemporal-substitution effects.

I begin by presenting suggestive empirical evidence of a key stylized fact: the distributional impact of monetary policy is state-dependent. Using data from the U.S. Great Moderation period and the "Excess Bond Premium" (see [Gilchrist and Zakrajšek, 2012](#)) as a proxy for credit market sentiment, I show that a monetary policy contraction exerts a significantly stronger upward pressure on consumption inequality when corporate financial frictions are high. This non-linearity suggests that the standard transmission channels are altered by stress in corporate credit markets, a feature that standard models fail to capture.

To rationalize this finding, I develop a HANK model that incorporates a financial accelerator mechanism à la [Bernanke et al. \(1999\)](#). In this framework, firms face an external finance premium that rises with their leverage. A monetary contraction depresses asset prices and firm net worth, causing a spike in the premium and a sharp contraction

in investment demand. The main finding is that the financial accelerator is also an accelerator of inequalities. The monetary contraction leads to a higher level of the Gini index for wealth and consumption when there are active financial frictions.

The core contribution of this paper is to map this corporate friction into the household distribution. I show that the financial accelerator amplifies inequality through two distinct channels. First, the sharp contraction in investment leads to a deeper decline in labor demand and wages compared to a frictionless economy. This indirect effect hits poorer, HtM households hardest, as they rely entirely on labor income to smooth consumption. Second, the increase in the interest rate, together with the rise in the external finance premium, results in higher returns for lenders. Wealthier households, who intermediate these funds, benefit from a financial income channel that partially mitigates the effects of the aggregate downturn.

I further decompose the aggregate consumption response, demonstrating that under financial frictions, the wage channel becomes the dominant driver of the consumption decline. This confirms that corporate financial distress transmits to the real economy primarily by crushing labor income, thereby exacerbating the vulnerability of constrained households.

A common critique of models linking monetary policy to inequality is that they may overstate the gains to the wealthy if they ignore capital losses on equity. To address this, I extend the baseline model to include illiquid assets, allowing households to hold capital directly. I show that the “inequality accelerator” result is robust to this extension. Even when wealthy households are exposed to asset price declines, the increase in the rental rate of capital (driven by the rising finance premium) compensates for valuation losses, preserving the divergence in consumption and wealth between the rich and the poor.

Related Literature – This paper contributes to the intersection of two major strands of macroeconomic research: the literature on household heterogeneity in New Keynesian frameworks and the study of financial frictions in business cycles.

First, I build on the rapidly expanding HANK literature. While Two-Agent New Keynesian (TANK) models offer a parsimonious approximation of aggregate dynamics (e.g., [Debortoli and Galí, 2017](#); [Bilbiie, 2008](#); [Debortoli and Galí, 2024](#)), they are silent on the full distribution of wealth and consumption. Fully-fledged HANK models (e.g., [Kaplan et al., 2018](#); [Auclert, 2019](#); [Luetticke, 2021](#)) have demonstrated that the transmission of monetary policy relies heavily on “indirect effects” (specifically, fluctuations in labor income) rather than intertemporal substitution. My contribution is to show that the financial structure of the production sector is a primary amplifier of these indirect effects. By embedding a corporate financial accelerator into a tractable HANK framework, I isolate how firm-level frictions reshape the aggregate transmission to household inequality, particularly through the labor market.

Second, this study connects with the extensive literature on the financial accelera-

tor and the “External Finance Premium” (e.g., [Bernanke et al., 1999](#); [Christiano et al., 2014](#); [Carlstrom et al., 2016](#)). While this literature has thoroughly documented how corporate balance sheets amplify aggregate fluctuations, it typically assumes a representative household, thereby masking the distributional consequences of these frictions.

Recent work has begun to bridge these fields by integrating financial frictions into HANK environments (e.g., [Guerrieri and Lorenzoni, 2017](#); [Nakajima and Ríos-Rull, 2019](#); [Fernández-Villaverde et al., 2023](#); [Chiang and Žoch, 2022](#)). However, these studies largely focus on credit crises, bankruptcy dynamics, or aggregate demand sufficiency, rather than the specific transmission of monetary policy shocks to inequality.

In this regard, [Faccini et al. \(2026\)](#) is the most closely related contribution. They investigate how financial frictions in the banking sector affect inequality, finding that constraints on financial intermediaries impair households’ ability to borrow, primarily transmitting shocks through the household borrowing rate. In contrast, my analysis focuses on frictions within the production sector. I show that when non-financial firms face higher financing costs, the primary transmission to households occurs through a sharper contraction in labor demand and wages. These findings are complementary: while [Faccini et al. \(2026\)](#) highlight the credit supply channel affecting borrowers, I highlight the labor income channel affecting workers. Given that a substantial share of households, particularly the HtM, depend entirely on labor income, understanding this production-side mechanism is crucial for a complete picture of how financial frictions shape inequality.

The remainder of this paper is organized as follows. [Section 2](#) provides empirical intuition. [Section 3](#) outlines the model. [Section 4](#) explains the calibration. [Section 5](#) displays quantitative results. [Section 6](#) gives summary conclusions.

2 State-dependency of the financial accelerator

Before turning to the theoretical model, I document a key stylized fact regarding the role of financial frictions in the transmission of monetary policy, testing whether its distributional consequences are state-dependent. To test this hypothesis, I estimate a dynamic regression model that allows the impact of monetary policy to vary with the state of the corporate financial cycle.

The result highlights the quantitative amplification role of financial frictions. While the baseline effect of monetary shocks on inequality is generally muted or delayed, the significant interaction term reveals a distinct non-linearity: in the presence of higher corporate financial frictions, the “accelerator” mechanism kicks in, generating a statistically significant wedge in the inequality response.

My baseline specification is a distributed lag model augmented with an interaction term between the monetary shock and the lagged level of corporate financial frictions,

in line with the methodology proposed by [Tenreyro and Thwaites \(2016\)](#). Formally, I estimate:

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

where the dependent variable, Y , is the inequality measure, MP^{sh} represents the exogenous monetary policy surprise, EBP captures the state of the corporate credit markets, and X is a vector of controls for the lagged state of the EBP , unemployment rate, and dependent variable. These controls ensure that the interaction term captures the specific amplification from financial frictions rather than general business cycle downturns. I also include the monetary policy shock up to 2 lags, as monetary shocks typically exhibit delayed effects on real variables (e.g., [Romer and Romer, 2004](#)). The coefficient of interest is β , which measures the “accelerator” effect. A positive and significant β indicates that high financial stress exerts an upward pressure on inequality relative to the baseline. The interaction term uses the lagged value of financial frictions to mitigate reverse causality concerns.

I use the narrative monetary policy shock series from [Romer and Romer \(2004\)](#), extended up to 2007 by [Miranda-Agrippino and Ricco \(2021\)](#), and measure the degree of corporate financial frictions using the Excess Bond Premium (EBP) proposed by [Gilchrist and Zakrajšek \(2012\)](#). As a measure of inequality, I use the Gini index of consumption for US households from [Coibion et al. \(2017\)](#). The data span cover the Great Moderation period (1980-2007). More details on the data, the methodology used and robustness can be found in [Appendix A](#).

Table 1: State-dependency of the financial accelerator

Dependent Variable: Y	
Variables	Coefficient (Std. Error)
Constant	-0.087 (0.217)
MP_shock _t × EBP _{t-1}	0.186* (0.112)
MP_shock _t	0.016 (0.119)
MP_shock _{t-1}	-0.072 (0.067)
MP_shock _{t-2}	0.133** (0.064)
Observations	110
R ²	0.218
Adjusted R ²	0.164

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

Notes: Newey-West standard errors (4 lags) in parentheses.

Table 1 presents the estimation results, which provide suggestive empirical support for the existence of a state-dependent financial accelerator. The key finding is the positive and statistically significant coefficient on the interaction term β . The estimate indicates that the transmission of monetary policy to consumption inequality is significantly altered by the state of corporate credit markets. A positive coefficient implies that, relative to the baseline response, the presence of financial stress exerts an upward pressure on consumption inequality following a monetary contraction.

While the immediate effect of a monetary shock alone is not statistically significant, a one-standard-deviation increase in the Excess Bond Premium raises the marginal effect of the shock by 0.186 points. Crucially, this result holds when controlling for unemployment. This suggests that the observed amplification is not merely capturing the general cyclicity of inequality during downturns, but stems from a specific channel related to credit market conditions, consistent with the mechanism I explore theoretically in the next section.

3 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.

3.1 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 β 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 value function is the following:

$$V = E_0 \max_{\{c_{it}, l_{it}\}} \sum_{t=0}^{\infty} \beta^t u(c_{it}, l_{it}), \quad (2)$$

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

$$u(c, l) = \frac{c^{1-\xi}}{1-\xi} - \psi \frac{l^{1+1/\nu}}{1+1/\nu}. \quad (3)$$

There are two types of household: 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, Π_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:

$$h_{it} = \begin{cases} \exp(\rho_h \log(h_{it-1}) + \epsilon_{it}^h) & \text{with probability } 1 - \zeta \text{ if } h_{it-1} \neq 0 \\ h_t^H & \text{with probability } \iota \text{ if } h_{it-1} = 0 \\ 0 & \text{else} \end{cases} \quad (4)$$

where $\epsilon_{it}^h \sim N(0, \sigma_h)$ and h_t^H 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_t^H .¹ Workers and rentiers pay the same level of taxation, τ , 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:

$$c_{it} + a_{it+1} = \left(\frac{R_t}{\pi_t}\right) a_{it} + (1 - \tau)(W_t h_{it} l_{it} + \mathbf{I}_{h_{it}=0} \Pi_t), \quad (5)$$

where $\mathbf{I}_{h_{it}=0}$ takes the value of 1 if the household is a rentier and 0 otherwise. On the right-hand side, we have households' expenditure, that is, consumption, c_{it} and 1-period-maturity savings, a_{it+1} . The left-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:

$$A_t = D_t + B_t, \quad (6)$$

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

3.2 Financial intermediaries

Financial intermediaries collect deposits from households and offer returns equal to the real risk-free interest rate, R/π . I assume that the production sector is run by entrepreneurs, a mass-zero group of managers who receive all the profits generated in the 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 type of financing: internal financing, that is, equity, N_j , and external financing, D_j .

Entrepreneur j balance sheet at period $t + 1$ is:

$$q_t K_{jt+1} = N_{jt+1} + D_{jt+1}, \quad (7)$$

¹Appendix B contains details on the transition matrix for household productivity.

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

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 , ω_j ,³ on the gross return on aggregate capital, R^K . The idiosyncratic shock ω 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:

$$\bar{\omega}_{jt+1} R_{t+1}^K q_t K_{jt+1} = Z_{jt+1} D_{jt+1} , \quad (8)$$

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 $\omega_{jt+1} R_{t+1}^K q_t K_{jt+1} - Z_{jt+1} D_{jt+1}$. 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, μ , to recover the remaining value of entrepreneur j 's activity after default, which is $(1 - \mu)\omega_{jt+1} R_{t+1}^K q_t K_{jt+1}$.

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/π . Therefore, the participation constraint for financial intermediaries that must be satisfied is:

$$[1 - F(\bar{\omega}_{jt+1})] Z_{jt+1} D_{jt+1} + (1 - \mu) \int_0^{\bar{\omega}_{jt+1}} \omega_j dF(\omega_j) R_{t+1}^K q_t K_{jt+1} \geq \frac{R_{t+1}}{\pi_{t+1}} D_{jt+1} , \quad (9)$$

³As noted by [Christiano et al. \(2014\)](#), ω 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[Section C.1](#) provides analytical expressions for $F(\omega)$ and other functions employed in the subsequent equations.

where $F(\bar{\omega}_j^F)$ is entrepreneur j default probability. Since financial markets are in perfect competition, (9) must hold with equality. The first term on the left-hand side of (9) 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 (7), (8), and (9) to write the following relationship:

$$EFP_{jt+1} = f(\bar{\omega}_{jt+1}, LEV_{jt+1}) \text{ , with } f'(LEV_{jt+1}) > 0 \text{ .} \quad (10)$$

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. The $(\bar{\omega}_{jt+1}, LEV_{jt+1})$ combinations that satisfy (10) define a menu of state $(t + 1)$ -contingent standard debt contracts offered to entrepreneur j , who chooses the contract that maximizes its objective.

In [Section C.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 π), 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:

$$N_{t+1} = \gamma \left[q_{t-1} R_t^K K_t - \frac{R_t}{\pi_t} D_t - \mu G(\bar{\omega}_t) q_{t-1} R_t^K K_t \right] \text{ .} \quad (11)$$

Equation (11) 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 γ 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

⁵Note that in (11) 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

Alternatively, (11) can be written in a more compact form as:

$$N_{t+1} = \gamma [1 - \Gamma(\bar{\omega}_t)] R_t^K q_{t-1} K_t, \quad (12)$$

where $[1 - \Gamma(\bar{\omega}_t)]$ is the share of capital returns to which non-defaulting entrepreneurs are entitled.⁶ Equation (12), together with (10), explains the financial accelerator mechanism. Equation (10) states that an increase in entrepreneurs' leverage increases also the EFP. At the same time, (12) 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.

3.3 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:

$$Y_t = z_t L_t^\alpha K_t^{1-\alpha}, \quad (13)$$

where z represents the Total Factor Productivity (TFP).

TFP follows a first-order autoregressive process of type:

$$\log(z_t) = \rho_z \log(z_{t-1}) + \epsilon_t^z, \quad (14)$$

with ϵ_t^z following a normal distribution with mean 0 and standard deviation σ^z .

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

$$\Pi_t^{IG} = MC_t z_t L_t^\alpha K_t^{1-\alpha} - W_t L_t - r_t^K K_t. \quad (15)$$

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:

$$W_t = \alpha MC_t z_t \left(\frac{K_t}{L_t} \right)^{(1-\alpha)}, \quad (16)$$

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 (11). 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.

⁶See Section C.2

$$r_t^K = (1 - \alpha) MC_t z_t \left(\frac{L_t}{K_t} \right)^\alpha . \quad (17)$$

3.4 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:

$$y_{gt} = \left(\frac{p_{gt}}{P_t} \right)^{-\eta} Y_t , \quad (18)$$

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

Given (18) and the quadratic costs of price adjustment, resellers maximize:

$$E_0 \sum_{t=0}^{\infty} \beta^t Y_t \left\{ \left(\frac{p_{gt}}{P_t} - MC_t \right) \left(\frac{p_{gt}}{P_t} \right)^{-\eta} - \frac{\eta}{2\kappa} \left(\log \frac{p_{gt}}{p_{gt-1}} \right)^2 \right\} , \quad (19)$$

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:

$$\log(\pi_t) = \beta E_t \left[\log(\pi_{t+1}) \frac{Y_{t+1}}{Y_t} \right] + \kappa \left(MC_t - \frac{\eta - 1}{\eta} \right) , \quad (20)$$

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

3.5 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 uses 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:

$$I_t = \Delta K_{t+1} + \frac{\phi}{2} \left(\frac{\Delta K_{t+1}}{K_t} \right)^2 K_t + \delta K_t . \quad (21)$$

⁷The “no cost” assumption does not mean that δK 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 $I = \delta K$.

where δ 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, ΔK_{t+1} . This optimization problem delivers the optimal capital price:

$$q_t = 1 + \phi \frac{\Delta K_{t+1}}{K_t} . \quad (22)$$

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:

$$R_t^K q_{t-1} K_t = r_t^K K_t + q_t K_t (1 - \delta) , \quad (23)$$

where the first term on the right-hand side is the marginal productivity of capital derived in (17) 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:

$$R_t^K = \frac{r_t^K + q_t (1 - \delta)}{q_{t-1}} . \quad (24)$$

3.5.1 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:

$$\max_{\{Y_t, y_{gt} \in [0,1]\}} P_t Y_t - \int_0^1 p_{gt} y_{gt} dg , \quad (25)$$

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

$$Y_t = \left(\int_0^1 (y_{gt})^{\frac{\eta-1}{\eta}} dg \right)^{\frac{\eta}{\eta-1}} . \quad (26)$$

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

$$P_t = \left(\int_0^1 (p_{gt})^{(1-\eta)} \right)^{\frac{1}{1-\eta}} . \quad (27)$$

3.6 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:

$$\frac{R_{t+1}}{\bar{R}} = \left(\frac{R_t}{\bar{R}} \right)^{\rho_R} \left(\frac{\pi_t}{\bar{\pi}} \right)^{(1-\rho_R)\rho_\pi} \epsilon_t^R, \quad (28)$$

where ϵ_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 ρ_π captures the magnitude of the central bank's response to inflation fluctuations: the larger ρ_π , the stronger the central bank reaction (for the case limit $\rho_\pi \rightarrow \infty$, inflation is perfectly stabilized at its steady state level).

3.7 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:

$$B_{t+1} = \left(\frac{R_t}{\pi_t} \right) B_t + G_t - T_t, \quad (29)$$

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

$$T_t = \tau \left[\int W_t h_{it} l_{it} d\Theta_t(a, h) + \mathbf{I}_{h_{it}=0} \Pi_t \right], \quad (30)$$

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:

$$\frac{B_{t+1}}{\bar{B}} = \left(\frac{B_t \frac{R_t}{\pi_t}}{\bar{B} \frac{\bar{R}}{\bar{\pi}}} \right)^{\rho_B}. \quad (31)$$

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

3.8 Market clearing

The labor market clears when:

$$L_t = \int h l^*(a, h) \Theta_t(a, h) da dh, \quad (32)$$

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

The liquid asset market clears when:

$$A_t = \int a^*(a, h) \Theta_t(a, h) da dh, \quad (33)$$

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

The market for capital clears for (21) and (22).

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

$$Y_t \left(1 - \frac{\eta}{2\kappa} (\log(\pi_t))^2 \right) = C_t + G_t + I_t + C_t^E + \mu G(\bar{\omega}_t) R_t^K q_{t-1} K_t, \quad (34)$$

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

3.9 Numerical implementation

To solve the model, I follow the solution proposed in Bayer and Luetticke (2020). Since the joint distribution, Θ_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 idiosyncratic productivity process using a discrete Markov chain with three states using the Tauchen (1986) method. The log grid for liquid assets consists of 100 points. 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 (capital K does not display heterogeneity) with a total of 300 grid points, maintaining a sufficiently low computational time.⁹

4 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 (1983–2007) 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 2 presents a list of

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

⁹A visual representation of the joint distribution can be found in Appendix B

calibrated model parameters, with their calibration methodology detailed in this section. [Table 3](#) displays the key moments of the wealth distribution used as targets and examines how well the model replicates them.

Table 2: Calibrated parameters

Description	Parameter	Value	Source/Target
Discount factor	β	0.988	LEV = 2
Relative risk aversion	ξ	2	Auclert et al. (2021)
Frisch elasticity of labor	ν	1	Chetty et al. (2011)
Disutility of labor	ψ	5.5	L = 0.5
Borrowing constraint	\underline{a}	0	no HHs borrowing
Prob. of leaving entr. state	ι	0.0625	Guvenen et al. (2014)
Prob. become rentier	ζ	0.00055	Gini wealth = 78%
Persistence of idio. prod. shock	ρ_h	0.98	Bayer et al. (2019)
SD if idio. prod. shock	σ_h	0.06	Bayer et al. (2019)
Labor share of production	α	0.7	standard value
Depreciation rate	δ	0.02	standard value
Elasticity of substitution	η	20	mark-up = 5%
Price stickiness	κ	0.09	av. price duration = 4 quart.
Adjustment cost of capital	ϕ	2.5	$\sigma(I)/\sigma(Y) = 3$
Auditing costs	μ	0.12	EFP = 2% p.a.
SD of the id. shock on entr.	σ_ω	0.27	Bernanke et al. (1999)
Entr. surviving rate	γ	0.985	EFP = 2% p.a.
TFP shock persistence	ρ_z	0.95	standard value
TFP shock SD	σ_z	0.01	standard value
Nominal int. rate	R	1.0063	2.5% p.a.
Int. rate smoothing	ρ^R	0.8	Clarida et al. (2000)
Reaction to inflation	ρ^π	1.5	standard value
Monetary shock SD (p.a.)	σ_R	0.0025	1% p.a.
Tax rate	τ	0.3	G/Y \approx 20%
Auto-correlation of debt	ρ_B	0.86	Bayer et al. (2019)

4.1 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, ψ , is set to 5.5, to have an average value for hours worked equal to 1/2, as in [Kaplan et al. \(2018\)](#). The

Table 3: Wealth distribution moments

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

intertemporal discount factor, β , 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 $\underline{a} = 0$, to highlight the transmission mechanism of monetary policy through financial frictions on the production sector rather than on the lending sector. 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

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](#)), implying a share of rentier households of approximately 0.9%. 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. \(2019\)](#).

4.1.1 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

¹⁰In 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.

the survival rate of entrepreneurs is $\gamma = 0.985$. These values are calibrated to produce $EF\dot{P}_t = 1.005$ (corresponding to a 2% annual corporate spread) when corporate leverage equals 2.

4.1.2 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

4.2 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 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, $G/Y \approx 20\%$. Since I am using a fiscal policy rule similar to the one adopted by [Bayer et al. \(2019\)](#), I also follow their estimation 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.

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

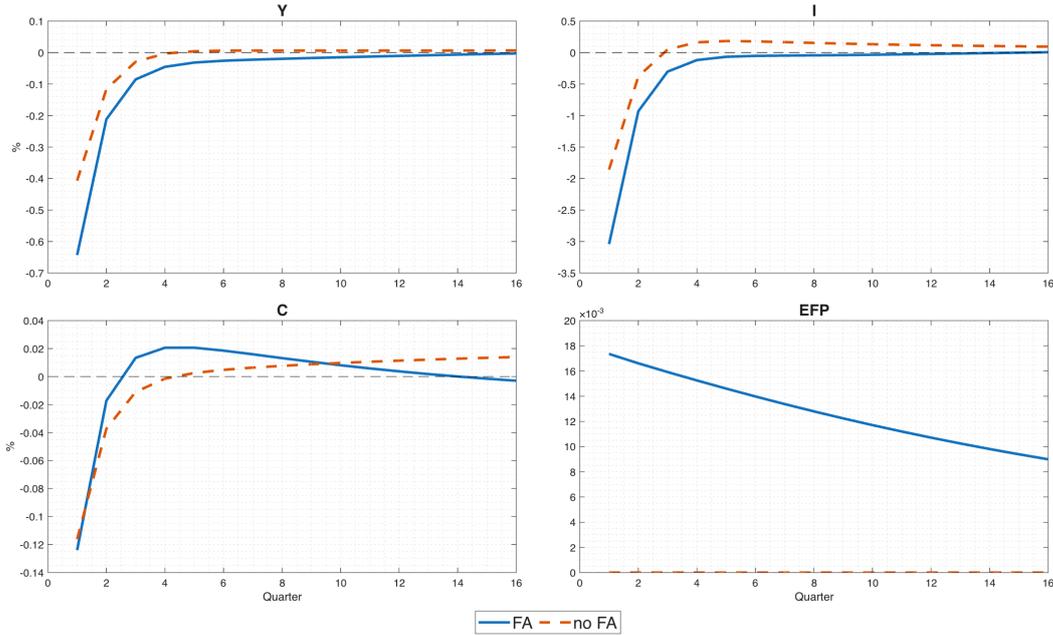


Figure 1: Impulse response to a monetary contraction for aggregate variables
 Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

5 Results

The analysis of the impulse responses begins with an overview of fluctuations in aggregate variables. This helps to assess the consistency of the results with respect to the findings of [Bernanke et al. \(1999\)](#). I then investigate the dynamics of inequality within the model, a key aspect of this study.

5.1 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 financial frictions are active (blue solid line) or not (red dashed line), i.e., when the EFP can fluctuate or is fixed to its steady state value.

The impact of the financial accelerator on aggregate variables is also demonstrated in the presence of heterogeneous households. 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 exhibits an “accelerated” response as well, albeit to a lesser degree and with less persistence than output and investment. In the case of active financial frictions, consumption overshoots more quickly than in the no-frictions counterfactual.

¹²Since in [Bernanke et al. \(1999\)](#) there is a fall in the nominal interest rate, the dynamics are mirrored.

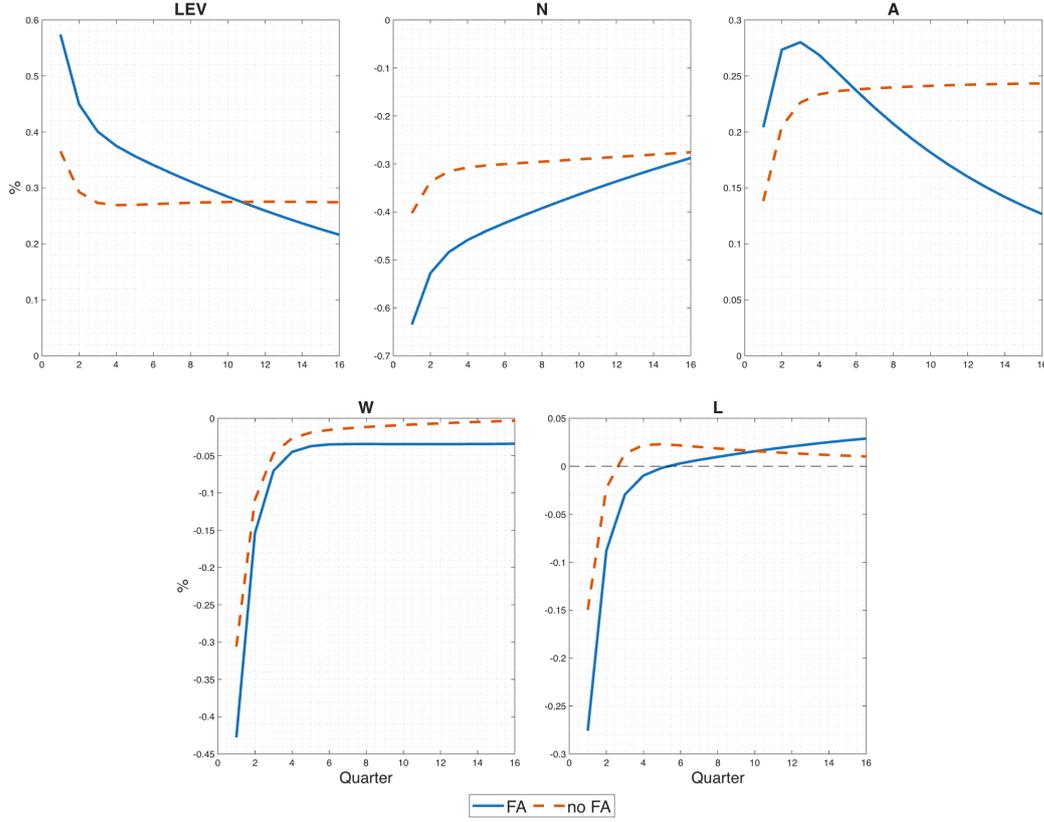


Figure 2: Impulse response to a monetary contraction for aggregate variables
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

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 An increase in the nominal interest rate dampens economic activity, reducing firms' demand for labor and capital and thereby lowering both investment and the price of capital. At the same time, it induces households to accumulate additional liquidity, particularly in the form of loans extended to firms through financial intermediaries. As suggested by equation (11) and shown in [Figure 2](#), lower levels of capital and capital price and higher levels of firms' debt cause a stronger decline in firms' equity and, therefore, a higher level of leverage.¹⁴ Higher leverage implies higher firm financing costs, i.e., higher EFP, as pointed out by eq. (10). Simultaneously, the entrepreneur's default threshold value, $\bar{\omega}$, also increases, which negatively affects the firm's equity level in the next period. With lower equity, firms need to resort to more external financing, but since the latter is more expensive as leverage and EFP increase, the level of capital that firms can afford is even lower, which means less investment and less goods production,

¹³More IRFs for aggregate variables are shown in [Appendix D](#)

¹⁴Recall that in this model leverage is defined as qK/N , or equivalently, $(D + N)/N$.

generating the multiplier effect of the financial accelerator.

It is worth closely analyzing the differences in leverage and output behavior across the two scenarios (active versus passive financial frictions). While financial frictions persistently amplify output fluctuations throughout the considered horizon, leverage exhibits a contrasting pattern, declining to a relatively lower level under active frictions after three years. While seemingly counterintuitive, this outcome is a common finding in the theoretical literature, highlighting the strength of the friction itself. Consider the scenario with inactive financial frictions. In this case, external funding is relatively cheaper for firms because the EFP remains fixed at its steady state level. As a result, firms deleverage more gradually over time, as entrepreneurs prefer to sustain a relatively higher level of debt, which households—particularly wealthier ones—are willing to supply through financial intermediaries. Although the equity IRF remains at a relatively higher level throughout the entire period considered, leverage surpasses the comparative scenario after approximately three years. This occurs because, with a fixed EFP, firms’ debt levels (which correspond to household deposits) exceed those in the comparative scenario after about six quarters.¹⁵ Nevertheless, despite leverage reverting more quickly to its steady-state level under active financial frictions, such frictions still amplify economic downturns, leading to a more persistent contractions in output and investment following a monetary shock.

Figure 2 also reports labor income dynamics, which play a crucial role in shaping household inequality, particularly at the lower end of the distribution. As is standard in models with a Cobb-Douglas production function, a lower capital stock implies a lower marginal product of labor and, consequently, a lower wage. Both wages and aggregate labor decline more sharply when financial frictions are active. Yet, although aggregate labor overshoots after six quarters in both cases, wage levels do not return to their baseline for the first four years, and wages remain persistently lower when the financial accelerator is operative. Given that households depend on labor and financial income to different extents across the distribution, these aggregate effects carry important distributional implications, as I show in the following sections.

5.2 Inequality among households: consumption

I begin by examining the evolution of consumption dispersion to assess whether the model’s results align with the existing empirical literature and the evidence presented in Section 2. Figure 3 presents two commonly used measures of consumption inequality in the literature: the impulse responses of the consumption Gini index and the ratio of consumption between the 90th and 10th percentiles of the distribution.

¹⁵The impulse response for deposits/debt (D) is presented in Figure D.1. Nonetheless, its shape closely resembles that of the household wealth (A)

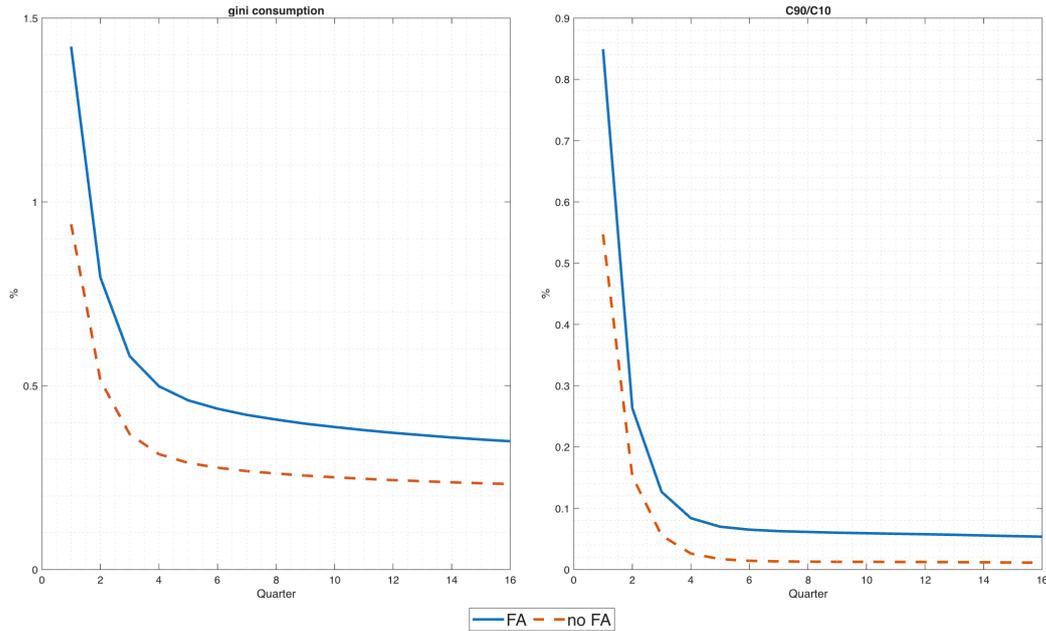


Figure 3: IRF for Gini index and 90/10 percentile ratio of consumption
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

The model is consistent with the empirical literature showing that contractionary monetary policy increases inequality (e.g., Coibion et al., 2017), regardless of whether the financial accelerator is active or passive. The impact of financial frictions in amplifying consumption inequality is clear, and this effect persists across the quarters displayed. Thus, the financial accelerator appears to exacerbate consumption inequality, confirming the intuition presented earlier in this study in Table 1.

The results for the Gini index indicate that overall inequality rises more significantly due to the financial accelerator. Moreover, the trend for the 90/10 ratio shows that the disparity in consumption between poorer and wealthier households expands further due to the frictions examined. To gain a deeper understanding of these dynamics, I decompose the impulse response of aggregate consumption by analyzing average consumption across different household wealth shares. Figure 4 displays the impulse response for aggregate consumption, along with the average consumption of the bottom 10% of the wealth distribution—who are constrained by the zero-borrowing limit—the bottom 50%, and the top 10%.¹⁶

Figure 4 reveals some critical key insights. A monetary contraction leads to a stark decline in average consumption among poorer households, aligning with findings in the existing literature. The bottom 10% of the wealth distribution experiences a significant drop in consumption relative to aggregate consumption, regardless of the presence of

¹⁶Note that the average consumption of the bottom 50% also includes consumption of the bottom 10%

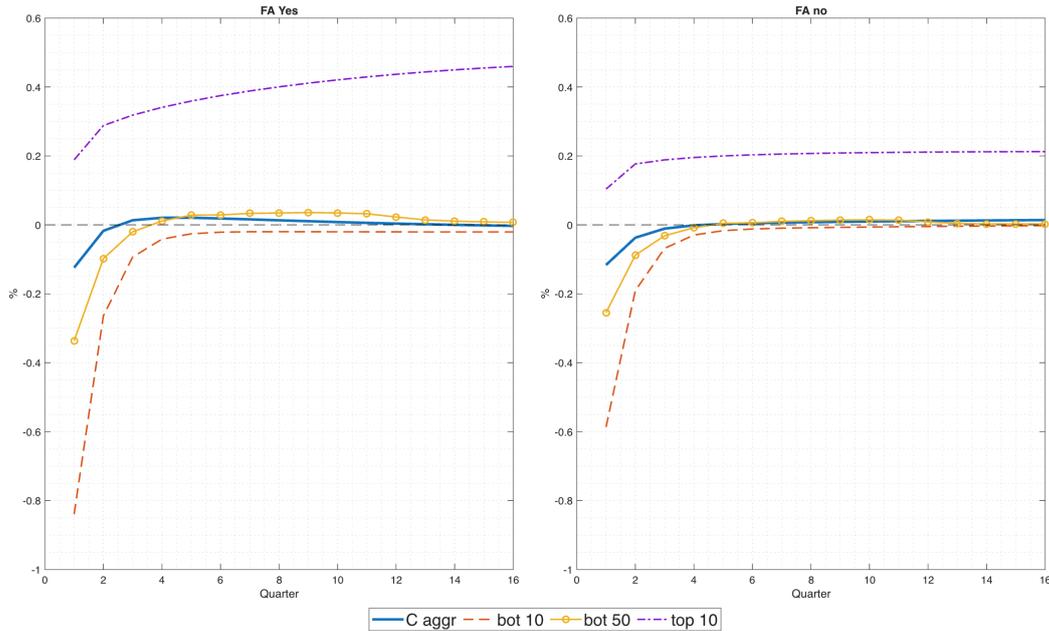


Figure 4: IRFs for consumption, aggregate and averages per wealth share
 Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line represents the aggregate consumption. Other lines represent the average consumption of specific shares of households. The left panel represents the scenario with active financial frictions, while the right panel depicts the case where financial frictions are shut off.

financial frictions. Since these households are fully constrained, this decline is entirely driven by worsening labor market conditions. The contraction extends up to the bottom 50% of the distribution; however, in this case, consumption overshoots after approximately one year, as some households within this group possess liquidity holdings and benefit from financial income. Notably, this overshooting effect is more pronounced when the financial accelerator is active.

On the other hand, the average consumption at the top of the wealth distribution increases steadily. In this model, where households can only save in liquid assets, a rise in the interest rate benefits wealthier households, who hold substantial liquidity. Although wealthier households have a lower marginal propensity to consume, their financial gains are sufficiently large to generate a noticeable increase in their average consumption. Nevertheless, the significance of the marginal propensity to consume becomes evident when comparing the percentage deviations of the IRFs across the wealth distribution. On impact, independent of the presence of financial frictions, the percentage deviation in consumption among constrained households far exceeds the corresponding increase among the richest 10%.

Another key insight from Figure 4 is the difference in the persistence of impulse responses for consumption across the wealth distribution. While consumption for the bottom 10% exhibits greater initial volatility, it rapidly converges to its steady-state level. In contrast, consumption at the top of the distribution fluctuates less on impact but remains persistently elevated over time. This divergence arises from differences in

income sources across the wealth distribution. As previously noted, HtM households rely predominantly on labor income dynamics, which tend to recover quickly following a monetary shock. In contrast, wealthier households derive a substantial share of their income from financial assets, which, in this model, are determined by their accumulated wealth. The consumption pattern observed for the top 10% suggests that these households are experiencing wealth gains, pushing them to a higher financial position relative to the steady state. Given that wealth dynamics tend to exhibit greater persistence, this results in a more sustained change in consumption behavior for households that depend more heavily on financial income. In [Section 5.4](#), I conduct a wealth distribution analysis to assess whether this pattern holds.

Finally, the financial accelerator primarily acts as an amplifier of fluctuations. When financial frictions are active, the magnitude and persistence of the impulse responses at both extremes of the distribution increase compared to the counterfactual scenario, explaining the amplification effect obtained in [Figure 3](#).

As previously discussed, an important contribution to the study of financial frictions within a HANK framework is the work by [Faccini et al. \(2026\)](#). Among the aggregate shocks examined in their analysis, the authors also present impulse responses for consumption across different percentiles of the wealth distribution following a monetary policy contraction. Consistent with my findings, their results indicate that, even under a different type of financial friction, poorer households significantly reduce their consumption compared to a scenario in which this friction is absent. Their results for the upper segments of the wealth distribution appear to diverge quantitatively with respect to the one shown in this section, with the latter suggesting a stronger impact of financial frictions on firms. However, it is essential to note that the discrepancy in results at the upper end of the distribution may not be entirely attributable to differences in friction dynamics but also to distinct calibration choices, given that their model is based on the Danish economy.¹⁷

5.3 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 that aligns with the recent theoretical literature.

Following the approach proposed by [Luetticke \(2021\)](#), and previously employed by [Kaplan et al. \(2018\)](#) and [Auclert \(2019\)](#), I decompose the total response of composite consumption into partial equilibrium effects that are driven by changes in specific household prices. Using the budget constraint (5), aggregate composite consumption can be

¹⁷Danish data assume that the top 10% of the wealth distribution holds 55% of total wealth, whereas US data estimate this share to be around 67%. In a model featuring only liquid assets, this discrepancy could lead to slightly weaker responses in the Danish case.

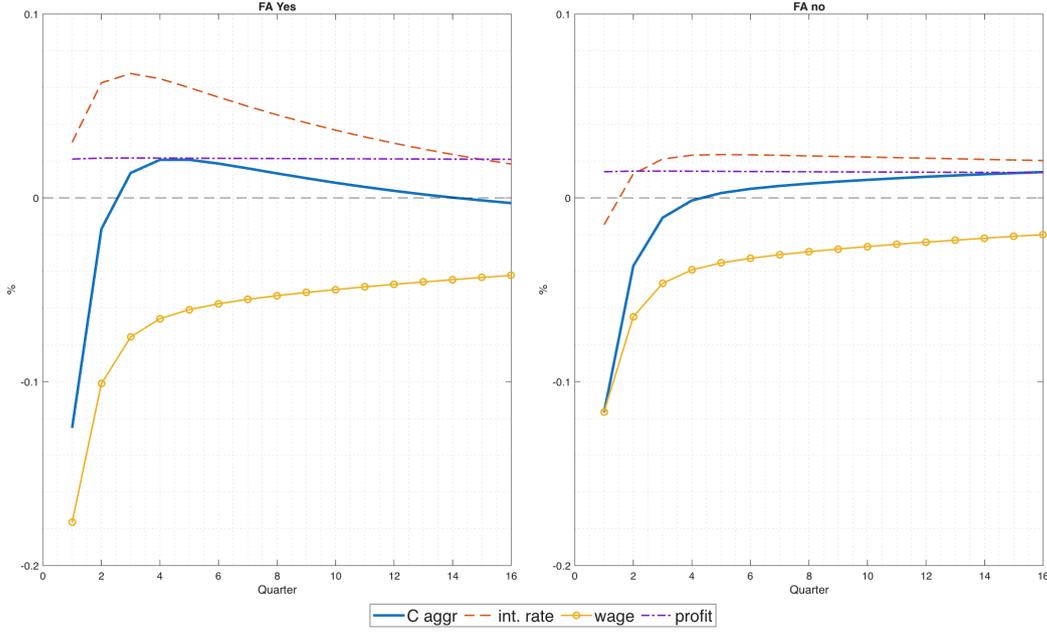


Figure 5: IRFs for consumption decomposition relative to key prices

Monetary shock $\epsilon^R = 25$ b.p. (annualized). Decomposition of aggregate consumption into the effect of each price sequence by using household policy functions. The left panel represents the scenario with active financial frictions, while the right panel depicts the case where financial frictions are shut off.

expressed as a function of the sequence of prices $\{\Omega_t\}_{t \geq 0}$, with $\Omega_t = \left\{ \frac{R_t}{\pi_t}, W_t, \Pi_t \right\}$:

$$C_t(\{\Omega_t\}_{t \geq 0}) = \int c_t(a, h; \{\Omega_t\}_{t \geq 0}) d\Theta_t, \quad (35)$$

where $\Theta_t(da, dh; \{\Omega_t\}_{t \geq 0})$ is the joint distribution of liquid assets and idiosyncratic productivity. By totally differentiating (35), 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 specific model, the direct effect operates through changes in the real interest rate, R/π , while the remaining effects are considered indirect. The outcomes of this decomposition, both with and without active financial frictions, are displayed in Figure 5.

Especially on impact, the financial accelerator has significant implications for the relative importance of households' various income sources. While profit income remains relatively similar across the two scenarios, substantial differences arise regarding the roles of wages and the real interest rate.

When financial frictions are switched off, both wages and the interest rate account for the decline in aggregate consumption on impact, although the IRF for the interest rate contribution exhibits an immediate overshooting. The wage channel emerges as the dominant driver of the monetary transmission on the aggregate consumption response, in line with the evidence reported by Kaplan et al. (2018).

In the presence of an active financial accelerator, by contrast, the contribution of the real interest rate turns positive. This occurs because, as the economy contracts further, firms rely more heavily on household debt, thereby increasing the stream of financial revenues from interest payments. Another notable difference concerns the magnitude of the wage contribution to fluctuations in aggregate consumption, which becomes substantially stronger and more persistent under financial frictions. In fact, it becomes the sole factor driving the decline in consumption.

This last finding confirms the initial intuition developed in this paper. A financial friction affecting the sector from which households earn their labor income amplifies the indirect effects associated with this component. Since a share of households (specifically, those at the bottom of the wealth distribution) depend primarily or exclusively on labor income to finance their consumption, the resulting amplification generates an even stronger consumption-inequality effect, as shown in [Section 5.2](#).

This financial accelerator effect on consumption should, in turn, also influence household saving decisions across the distribution. I examine this aspect in the next section.

5.4 Inequality among households: wealth

Empirical research on changes in wealth distribution following monetary policy shocks in the U.S. remains limited, primarily due to the absence of suitable databases for statistical analysis.¹⁸ As a result, theoretical models that account for household heterogeneity play a key role in shedding light on these dynamics. To examine the evolution of wealth inequality within the framework presented in this study, [Figure 6](#) displays IRFs for the respective Gini index, illustrating percentage deviations from its steady-state value under both active and passive financial accelerator scenarios.

The IRFs for both scenarios exhibit a significant and persistent increase, peaking one year after the shock before gradually reverting. This prolonged effect has already been observed in consumption dynamics ([Figure 3](#)) and is similarly reflected in household liquidity fluctuations ([Figure 2](#)).¹⁹ Also in the context of wealth, the financial accelerator serves as a mechanism that intensifies inequality. This is evident from the red dashed line, which illustrates the IRFs for the Gini index in the absence of financial frictions, showing significantly weaker and less persistent effects.

The Gini index offers the significant advantage of summarizing the overall level of

¹⁸The 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.

¹⁹In the baseline framework, households are limited to holding liquid assets, since the model restricts them to saving through deposits and government bonds. Nonetheless, as demonstrated in [Section 5.6](#), the main result still applies when households are permitted to save in illiquid assets.

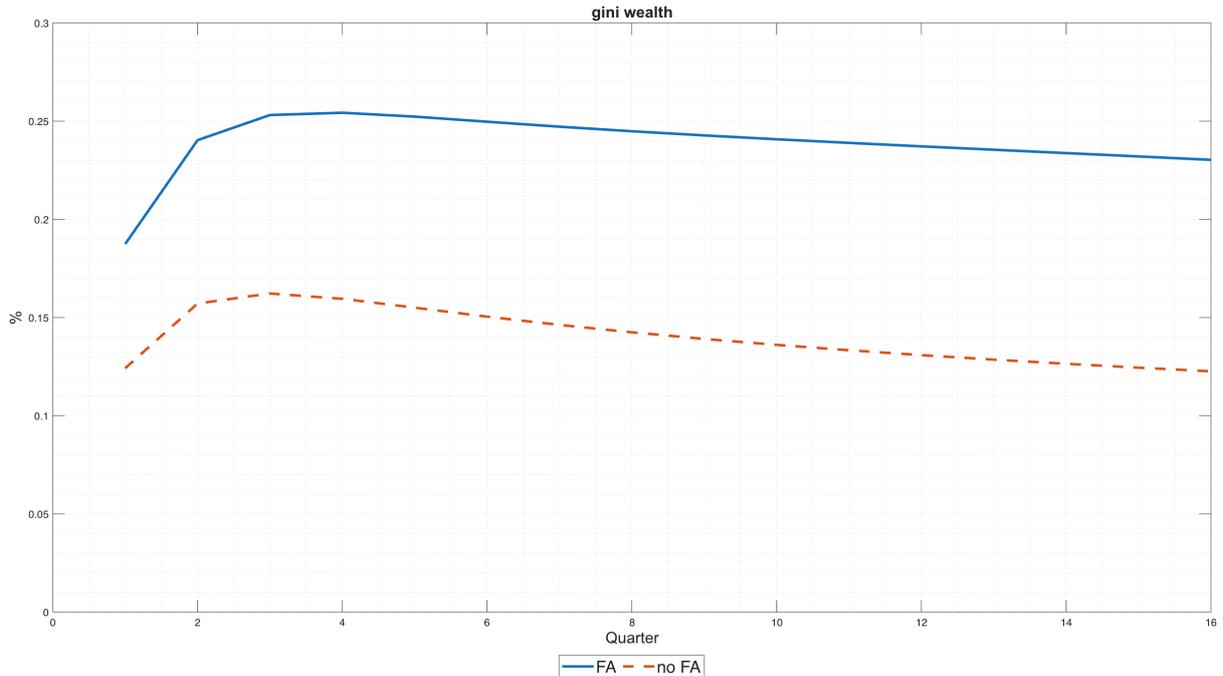


Figure 6: Impulse responses of the Gini index for wealth

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off. The green line with circles (with values on the right side of the figure) represent the percentage variation between the two IRFs.

inequality with a single percentage value. However, it does not specify which portion of the distribution is driving those changes. To address this issue, I examine fluctuations in two key measures that are representative of the opposite tails of the distribution: the share of households that are HtM, and the share of wealth held by the richest 10% of the population. While the first measure focuses on poorer households, the third provides insights for the top tail. The results are presented in [Figure 7](#).

Let us consider the scenario with active financial frictions (blue solid line). [Figure 7](#) reveals that (i) the number of poorer households increases as more become HtM, (ii) wealth concentration among richer households strengthens, and (iii) the rise in the Gini index is driven by substantial shifts at both extremes of the wealth distribution. However, the underlying mechanisms behind these changes operate in fundamentally different ways.

HtM households hold zero or very limited savings. Consequently, an increase in the interest rate has little to no direct effect on their financial income. However, indirect effects, as emphasized by [Kaplan et al. \(2018\)](#), particularly those linked to fluctuations in labor income, drive the rise in the share of liquidity-poor households. The economic downturn induced by contractionary monetary policy reduces labor demand and wages (as shown in [Figure 2](#)). Since poor households primarily depend on labor, they reduce their savings (if they possess any) in order to smooth consumption. Therefore, a growing number of them become HtM, as the aggregate shock pushes them to the lowest end of the wealth distribution.

Given the structure of the baseline setup, households in the top 10% of the wealth

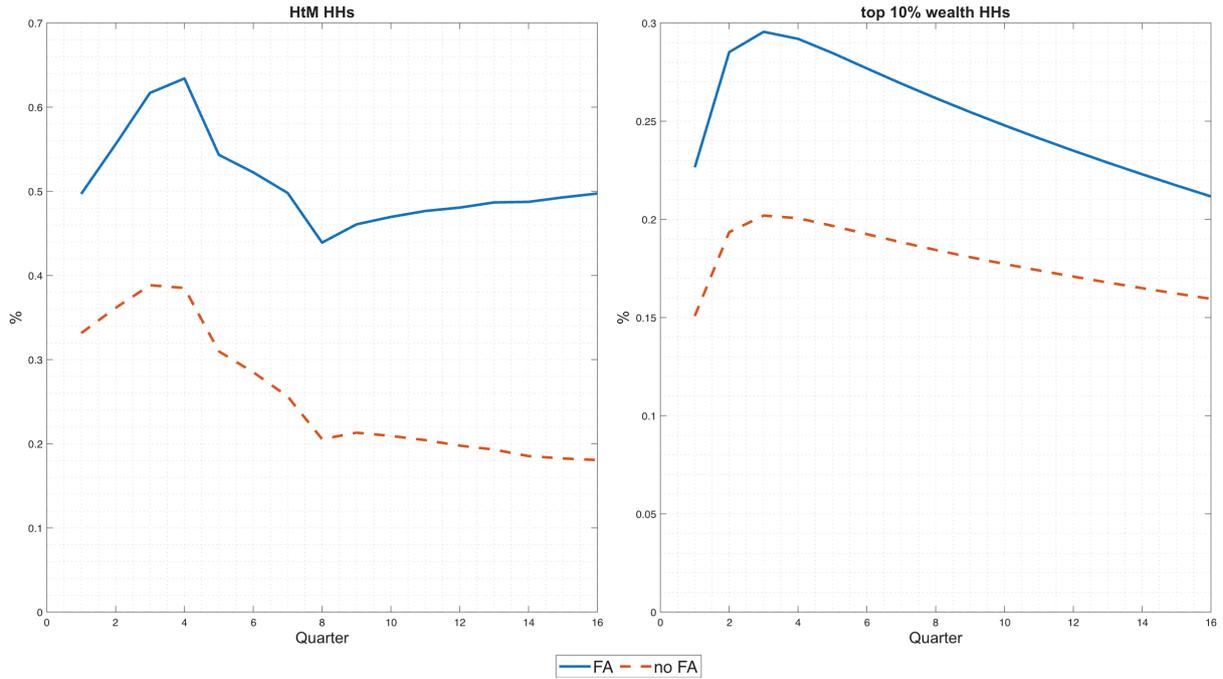


Figure 7: Impulse responses for households' share measures

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue line refers to an economy with a financial accelerator. The red line refers to the case where financial frictions are shut off.

distribution are strongly affected by the direct effects of monetary policy, since their portfolios consist exclusively of liquid assets and they therefore experience a substantial increase in financial income. Additionally, wealth accumulation in the top decile is further reinforced by an increase in firms' profits, which, as is standard in the New Keynesian framework with flexible wages, exhibit countercyclical behavior. Although the proportion of rentiers, who are the sole recipients of profits, is relatively small (less than 1% of the population), they are almost entirely concentrated within the top 10% of the distribution.

Consistent with the findings discussed thus far, the financial accelerator magnifies the magnitude of the impulse responses for the wealth-related measures analyzed and, in particular, strengthens the “indirect effects” of monetary policy at the lower end of the distribution, namely the labor income dynamics shown in [Figure 2](#). The evolution of aggregate labor, and especially the persistent decline in wages under active financial frictions, is the primary force behind the sustained increase in the share of constrained households.

The evolution of aggregate household deposits provides insight into the wealth held by the top 10% of the distribution. A substantial share of firms' debt is financed through the deposits of these wealthy households. When financial frictions are absent, firm financing becomes less costly, allowing firms to obtain larger amounts of funding from households (via financial intermediaries) as the initial economic contraction begins to dissipate. Therefore, when examining fluctuations in the wealth of the top decile, we observe a faster return to the steady state in the scenario with active financial frictions,

since external financing is more costly for entrepreneurs. The fluctuations in the real interest rate are crucial as well. As shown in the IRFs in [Appendix D](#), the real interest rate rises more on impact when financial frictions are active but subsequently undershoots the level observed in the counterfactual case, introducing an additional channel that accelerates the reversion to the steady state in this scenario.

To address some limitations of the baseline model, such as the absence of illiquid assets in the household portfolio or the counter-cyclicalities of profits, in [Section 5.6](#) and [Section 5.7](#) I show that the effect of the financial accelerator on inequality persists even when households are allowed to save in illiquid assets or when wages are sticky.

5.5 Inequality Between Households: Workers and Rentiers

The framework described in [Section 3](#) incorporates heterogeneity among households in terms of both wealth and productivity. As a result, an important complementary exercise is to examine how inequality develops between workers, who earn labor income, and rentiers, who receive firms' profit income. Workers can be further classified into two categories based on productivity: low and high. As expressed in equation (5), pre-tax labor income for workers is given by $W_t h_{it} l_{it}$. Since the wage level, W_t , is uniform across all individuals and not idiosyncratic, a high-productivity worker, h_{it} , will earn a higher salary than a low-productivity worker if both supply the same amount of labor, l_{it} . Accordingly, and with an abuse of notation, I categorize households into three groups: unskilled (low-productivity workers), skilled (high-productivity workers), and rentiers (profit collectors). I analyze the evolution of wealth inequality across household types and examine the impact of the financial accelerator on these dynamics. To do so, I compute the wealth Gini index for each household category. The results, presented in [Figure 8](#), indicate that the financial accelerator is active also along this dimension, amplifying the magnitude of Gini index fluctuations.

Beyond the effects of the financial accelerator, [Figure 8](#) reveals an interesting result: the increase in wealth inequality is different among between household types. In fact, wealth inequality among rentiers decreases, although the magnitude of this change is negligible compared with that observed for workers. This divergence in the behavior of the Gini IRF is likely due to two key factors. First, workers can earn both labor and financial income. Given that they are affected by both dynamics, it seems plausible that the shape of the evolution of their inequality mimics the shape of the global Gini index. In contrast, rentiers always benefit from rising interest rates, as both their financial income and profits increase.²⁰ Consequently, even rentiers at the lower end of the wealth distribution experience gains.

To address the countercyclicalities of profits in the baseline setup, I replicate these

²⁰Recall that, by construction, rentiers do not supply labor.

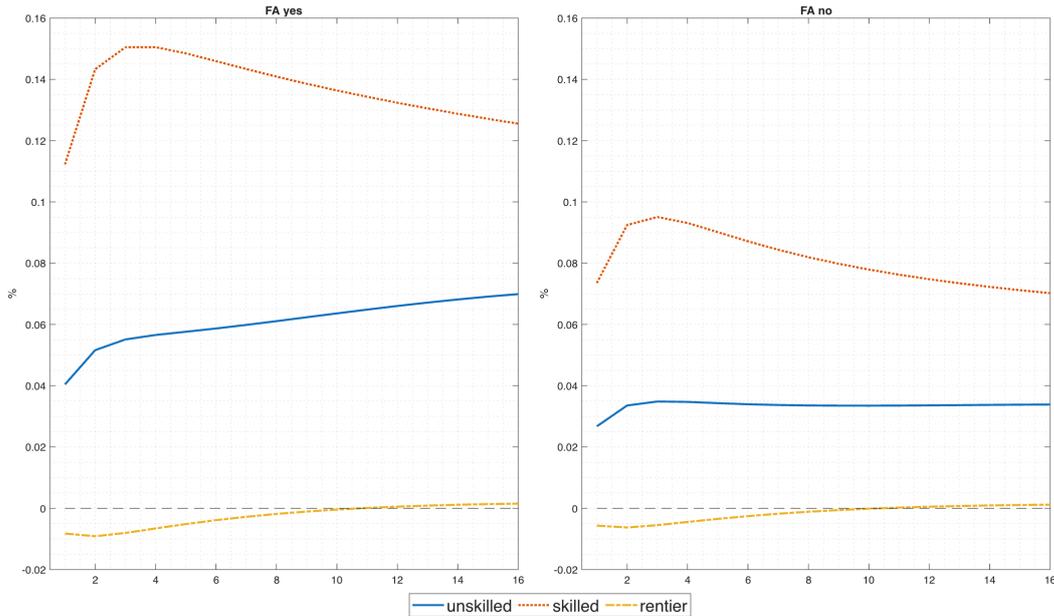


Figure 8: Gini index for wealth inequality according to households type
Monetary shock $\epsilon^R = 25$ b.p. (annualized). Deviations are expressed as percentages relative to their respective steady-state values. The left panel represents the scenario with active financial frictions, while the right panel depicts the case where financial frictions are shut off.

results in a model with flexible prices and sticky wages, as shown in [Figure F.7](#). In this environment, the IRF for the rentiers' Gini index turns positive. However, the fluctuations around the steady state are exceedingly small and, more importantly, the increase in the Gini index for the two worker types is substantially larger. This confirms that, even when profits are cyclical, workers experience a more pronounced rise in wealth inequality during recessions than rentiers, and that financial frictions amplify this pattern.

5.6 Financial Accelerator with Household Illiquid Assets

Consistent with the original setup in [Bernanke et al. \(1999\)](#), the baseline model abstracts from the impact of movements in the capital price and the interest rate on the household budget constraint, which in turn limits their influence on consumption and wealth accumulation. The recent HANK literature has nevertheless underscored the importance of household portfolio heterogeneity, which allows models to match the moments of the household distribution more accurately.

In fact, HANK models in which households save in both liquid and illiquid assets allow: (i) for the presence of a group of households who are “wealthy HtM” (see [Kaplan and Violante, 2014](#)), meaning that they are constrained in terms of liquidity but not in terms of capital; and (ii) richer households to hold a relatively larger share of illiquid wealth, which is more consistent with empirical evidence.

More closely related to the contribution of this study, in a framework with a finan-

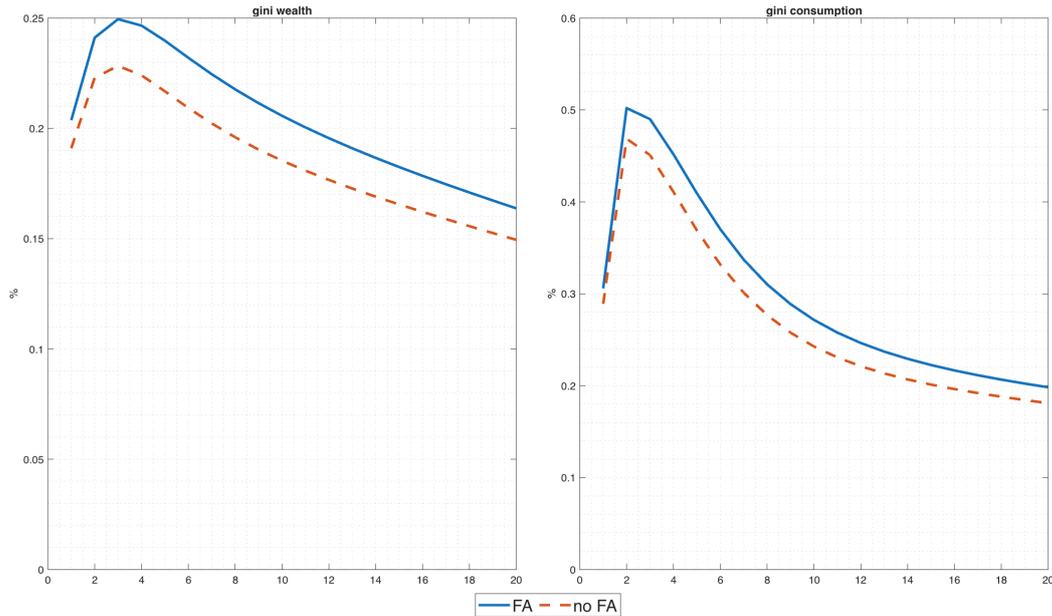


Figure 9: IRFs of the Gini index for wealth and consumption

Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off. The results correspond to a model in which households can also save in illiquid assets

cial accelerator such as the one considered in this paper, the amplified fluctuations in the capital stock could have important consequences for the distribution of wealth and consumption. To assess whether this mechanism alters the main results of the baseline model, I allow households to supply credit to the production sector not only by providing liquidity through financial intermediaries but also by directly lending illiquid assets used in goods production. The details and calibration of this model are presented in [Appendix E](#).

In [Figure 9](#), I present the IRFs for the Gini index corresponding to the two dimensions of inequality examined in this paper: wealth and consumption. The results are broadly consistent with those of the baseline model described in [Section 3](#). Even when households can accumulate wealth in the form of illiquid assets, the financial accelerator continues to operate as an inequality amplifier.

As is standard in the literature, a contractionary monetary policy shock lowers the price of capital, and the financial accelerator further amplifies this response. This mechanism could, in principle, generate a substantial decline in wealth accumulation for households in the upper tail of the distribution, given that most of their savings are held in illiquid assets, thereby yielding potentially ambiguous effects on overall inequality. However, the left-hand panel of [Figure 9](#) shows that this does not occur, and the results remain consistent with those reported in [Figure 6](#). Because the EFP increases in the presence of financial frictions, the income generated by directly renting capital rises as well, offsetting the loss in the value of capital.

The increase in consumption inequality generated by the financial accelerator is also confirmed, although the response of the Gini coefficient now exhibits a hump-shaped pattern. Interestingly, in this case as well, the result aligns with the findings of [Faccini et al. \(2026\)](#) for their model variant in which households include illiquid assets in their portfolios. This reinforces the conclusion from the baseline scenario that both types of frictions, whether affecting households’ ability to borrow or firms’ access to credit, have substantial consequences for the household distribution, even in a more comprehensive framework.²¹

5.7 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 [Section F.1](#), I test the results under a higher value of the parameter governing household risk aversion, ξ . In [Section F.2](#), I consider the limiting case in which the adjustment costs of capital, ϕ , are set to zero. In [Section F.3](#), I also evaluate the sensitivity of the results to changes in fiscal policy. The findings regarding the inequality accelerator hold in all these cases.

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 [Section F.4](#). Although the dynamics remain qualitatively similar, it becomes evident that the impact of a monetary contraction on the Gini indices is highly state dependent: targeting a higher leverage level (2.5 instead of the baseline value of 2) and applying the same shock leads to fluctuations in the IRFs in [Figure F.5](#) that are substantially larger in magnitude.

The recent literature has shown that the assumption of flexible wages is not particularly problematic in RANK models, yet it may generate strong redistributive effects in HANK environments that conflict with empirical evidence (e.g., [Broer et al., 2020](#)). To verify that this assumption does not compromise the main findings presented in this paper, I modify 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 variant of the model and the corresponding results in [Section F.5](#), showing that although the quantitative responses differ substantially, the acceleration effect is broadly consistent with the dynamics obtained in [Section 3](#).

²¹For an analysis of the inequality trade-off between household and firm financial frictions following a monetary shock, see [Ferlaino \(2026\)](#).

6 Concluding remarks

This study argues that the financial structure of the corporate sector is not merely a driver of aggregate volatility but a central determinant of the distributional footprint of monetary policy. By integrating a financial accelerator mechanism into a heterogeneous agent New Keynesian framework, I show that frictions on the production side of the economy amplify the transmission of monetary shocks to household inequality.

The analysis documents a novel stylized fact: the impact of monetary policy on consumption inequality is state-dependent, rising significantly when corporate credit markets are distressed. The structural model replicates this non-linearity and isolates the mechanism. When firm balance sheets are constrained, a monetary contraction triggers a spike in the external finance premium. This transmits to households asymmetrically: it crushes labor demand, severely affecting the HtM households, while simultaneously raising the return on lending for wealthy savers.

A key insight of this study is that this “inequality accelerator” persists even when wealthy households hold illiquid equity and are exposed to asset price declines. I show that the general equilibrium effect of higher rental rates (driven by the scarcity of capital finance) compensates for valuation losses, ensuring that the financial income channel remains a potent force for regressive redistribution.

These findings complement recent work on banking frictions (e.g., [Faccini et al., 2026](#)) by highlighting the corporate channel of transmission. While banking constraints primarily restrict credit supply to households, corporate constraints operate by depressing the labor income share.

While central bankers have not traditionally focused on redistribution trends, their concern with this issue has grown in recent years. From a technical standpoint, the expanding literature on HANK models demonstrates that wealth distribution significantly influences the transmission of monetary policy. From a policymaker’s perspective, these results suggest that financial stability and inequality are intrinsically linked. When central banks lean against rising credit spreads to stabilize aggregate output, they may also be implicitly dampening the forces that drive the sharpest divergences in household welfare.

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Appendix

A Additional info on the state-dependency of the financial accelerator in the data

A.1 Details on the data

As discussed in [Section 2](#), the regression specified in eq. (1) includes a measure of consumption inequality, Y , a proxy for corporate financial frictions, EBP , a monetary policy shock, MP^{sh} , and a vector of lagged controls, $X = \{EBP; UN; Y\}$. The data are quarterly, and the sample period corresponds to the Great Moderation, which is also the period used for calibrating the model in [Section 3](#).

Although the theoretical model includes an analysis of both consumption and wealth inequality, drawing inference on US household wealth is challenging because of limitations in the available data. For this reason, and consistent with standard practice in the literature, I restrict the empirical analysis to the series measuring the percentage change in the consumption Gini index, $\Delta\text{Gini}(\%)$, constructed by [Coibion et al. \(2017\)](#) using data from the Consumer Expenditure (CEX) Surveys. As a proxy for corporate financial frictions, EBP , I employ the “Excess Bond Premium” series developed by [Gilchrist and Zakrajšek \(2012\)](#), which has become widely used in the literature. To capture monetary policy shocks, MP^{sh} , I rely on the narrative measure initially constructed by [Romer and Romer \(2004\)](#) and extended up to the beginning of the Great Financial Crisis by [Miranda-Agrippino and Ricco \(2021\)](#). While various alternative monetary shock measures exist, this measure retains the key advantage of spanning the entire Great Moderation. The control for economic downturns, UN , corresponds to the percentage unemployment series, $UNRATE$, obtained from the FRED database.

A.2 Robustness of the regression

In the baseline specification, I deliberately keep the number of lags parsimonious to preserve degrees of freedom given the sample size (about 110 observations). However, standard narrative identification strategies often employ richer lag structures to fully capture delayed policy transmission (e.g., [Romer and Romer, 2004](#) use up to 36 months of lags). To ensure that the main results are not driven by the truncation of the lag structure, I estimate an extended specification. I augment the baseline model by increasing the lag length for the monetary shock (from 2 to 4 quarters) and including lags of the interaction term itself (from 0 to 2 quarters). Additionally, I increase the dynamic controls to include 4 lags of the dependent variable. Formally, I estimate:

$$Y_t = \alpha + \sum_{j=0}^2 \beta_j (MP_{t-j}^{sh} \times EBP_{t-j-1}) + \sum_{j=0}^4 \gamma_j MP_{t-j}^{sh} + \phi X_{t-1} + \epsilon_t \quad (\text{A1})$$

where X_{t-1} now includes 4 lags of the dependent variable, alongside the lagged unemployment rate and lagged EBP. The results are reported in [Table A.1](#).

Table A.1: State-dependency of the financial accelerator

Variables	Coefficient (Std. Error)
Dependent Variable:	$\Delta \text{Gini} \times 100$
Constant	-0.129 (0.256)
MP_shock _t × EBP _{t-1}	0.365*** (0.122)
MP_shock _{t-1} × EBP _{t-2}	-0.201 (0.123)
MP_shock _{t-2} × EBP _{t-3}	-0.062 (0.124)
MP_shock _t	-0.198 (0.165)
MP_shock _{t-1}	0.175 (0.180)
MP_shock _{t-2}	0.151 (0.130)
MP_shock _{t-3}	-0.040 (0.076)
MP_shock _{t-4}	-0.104 (0.085)
Observations	107
R ²	0.375
Adjusted R ²	0.279

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

Notes: Newey-West standard errors (4 lags) in parentheses.

The results in [Table A.1](#) strongly confirm the baseline findings. The coefficient on the contemporaneous interaction term remains positive and becomes highly statistically significant. The magnitude of the coefficient is larger than in the baseline specification, suggesting that the parsimonious model provides a conservative estimate of the accelerator effect.

C Entrepreneurs optimal contract

C.1 Idiosyncratic shock on return on capital

I assume that the Idiosyncratic shock ω is distributed log-normally. i.e. $\omega \in [0, +\infty)$.²³ 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:

$$F(\omega) = \Phi \left[\left(\log(\bar{\omega}) + \frac{1}{2}\sigma_\omega^2 \right) / \sigma_\omega \right], \quad (\text{A2})$$

$$\Gamma(\omega) = \Phi \left[\left(\log(\bar{\omega}) - \frac{1}{2}\sigma_\omega^2 \right) / \sigma_\omega \right] + \bar{\omega} \left\{ 1 - \Phi \left[\left(\log(\bar{\omega}) + \frac{1}{2}\sigma_\omega^2 \right) / \sigma_\omega \right] \right\}, \quad (\text{A3})$$

$$G(\omega) = \Phi \left[\left(\log(\bar{\omega}) + \frac{1}{2}\sigma_\omega^2 \right) / \sigma_\omega - \sigma_\omega \right]. \quad (\text{A4})$$

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

C.2 Financial intermediaries' participation constraint and entrepreneur j 's optimization problem

After substituting (8) and (7) into (9), I obtain:

$$[1 - F(\bar{\omega}_{jt+1})]\bar{\omega}_{jt+1}R_{t+1}^K q_t K_{jt+1} + (1 - \mu) \int_0^{\bar{\omega}_{jt+1}} \omega_j dF(\omega_j) R_{t+1}^K q_t K_{jt+1} = \frac{R_{t+1}}{\pi_{t+1}} (q_t K_{jt+1} - N_{jt+1}). \quad (\text{A5})$$

Divide everything by $R_{t+1}^R q_t K_{jt+1}$:

$$\frac{R_{t+1}^K}{R_{t+1}^R} \left([1 - F(\bar{\omega}_{jt+1})]\bar{\omega}_{jt+1} + (1 - \mu) \int_0^{\bar{\omega}_{jt+1}} \omega_j dF(\omega_j) \right) = \left(1 - \frac{N_{jt+1}}{q_t K_{jt+1}} \right). \quad (\text{A6})$$

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

$$\Gamma(\bar{\omega}_j) \equiv \int_0^{\bar{\omega}_j} \omega_j dF(\omega_j) + \bar{\omega}_j \int_{\bar{\omega}_j}^{\infty} dF(\omega_j), \quad \mu G(\bar{\omega}_j) \equiv \mu \int_0^{\bar{\omega}_j} \omega_j dF(\omega_j), \quad (\text{A7})$$

²³Note 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:

$$\Gamma(\bar{\omega}_j) = G(\bar{\omega}_j) + \bar{\omega}_j [1 - F(\bar{\omega}_j)] . \quad (\text{A8})$$

I can now use (A7) and (A8) in (A6) and rearrange to finally obtain:

$$\frac{R_{t+1}^K}{\left(\frac{R_{t+1}}{\pi_{t+1}}\right)} = \frac{1}{\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})} \left(1 - \frac{N_{jt+1}}{q_t K_{jt+1}}\right) , \quad (\text{A9})$$

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 (A9) is the complete version of (10), which explain the function underlying $f(\bar{\omega}_{jt+1}, LEV_{jt+1})$. 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:

$$E_t \left\{ \int_{\bar{\omega}_{jt+1}}^{\infty} \omega_j dF(\omega_j) R_{t+1}^K q_t K_{jt+1} - (1 - F(\bar{\omega}_j)) R_{t+1}^K q_t K_{jt+1} \right\} , \quad (\text{A10})$$

with expectations taken with respect to the realization of R_{t+1}^K . The first term of (A10) 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 (9), I write entrepreneur j 's optimal contracting problem as:

$$\max_{\{K_{jt+1}, \bar{\omega}_{jt+1}\}} E_t \{ [1 - \Gamma(\bar{\omega}_{jt+1})] R_{t+1}^K q_t K_{jt+1} \} , \quad (\text{A11})$$

$$s.t. \quad \frac{R_{t+1}}{\pi_{t+1}} (q_t K_{jt+1} - N_{jt+1}) = [\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})] R_{t+1}^K q_t K_{jt+1} .$$

Deriving F.O.C. I obtain:

$$w.r.t. \ \omega_{jt+1} : \quad -\Gamma'(\bar{\omega}_{jt+1}) + \lambda_{jt+1} [\Gamma'(\bar{\omega}_{jt+1}) - \mu G'(\bar{\omega}_{jt+1})] = 0 , \quad (\text{A12})$$

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

$$w.r.t. \lambda_{jt+1} : E_t \left\{ \frac{R_{t+1}}{\pi_{t+1}} (q_t K_{jt+1} - N_{jt+1}) - [\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1})] R_{t+1}^K q_t K_{jt+1} \right\} = 0, \quad (\text{A14})$$

where λ_j is the Lagrangian multiplier for entrepreneur j 's problem. By rearranging (A12), it is possible to express λ_{jt+1} as a function of only $\bar{\omega}_{jt+1}$. Furthermore, rearranging (A13):

$$E_t \left\{ \frac{R_{t+1}^K}{\pi_{t+1}} \right\} = \frac{\lambda_{jt+1}}{[1 - \Gamma(\bar{\omega}_{jt+1}) + \lambda_{jt+1} (\Gamma(\bar{\omega}_{jt+1}) - \mu G(\bar{\omega}_{jt+1}))]}. \quad (\text{A15})$$

It can be proven that there is a monotonically increasing relationship between the EFP and $\bar{\omega}_j$. According to (A9), 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.²⁴

Furthermore, it is clear from (A15) 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.²⁵ This result allows to consider only the aggregate variables in the production sector part of the model, since every entrepreneur has the same firm structure.

D Impulse responses of MP contractionary shock

Figure D.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.

²⁴See Appendix A.1 in Bernanke et al. (1999) for proofs.

²⁵According to (A9), 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 (A15)), then the same can be said for the leverage.

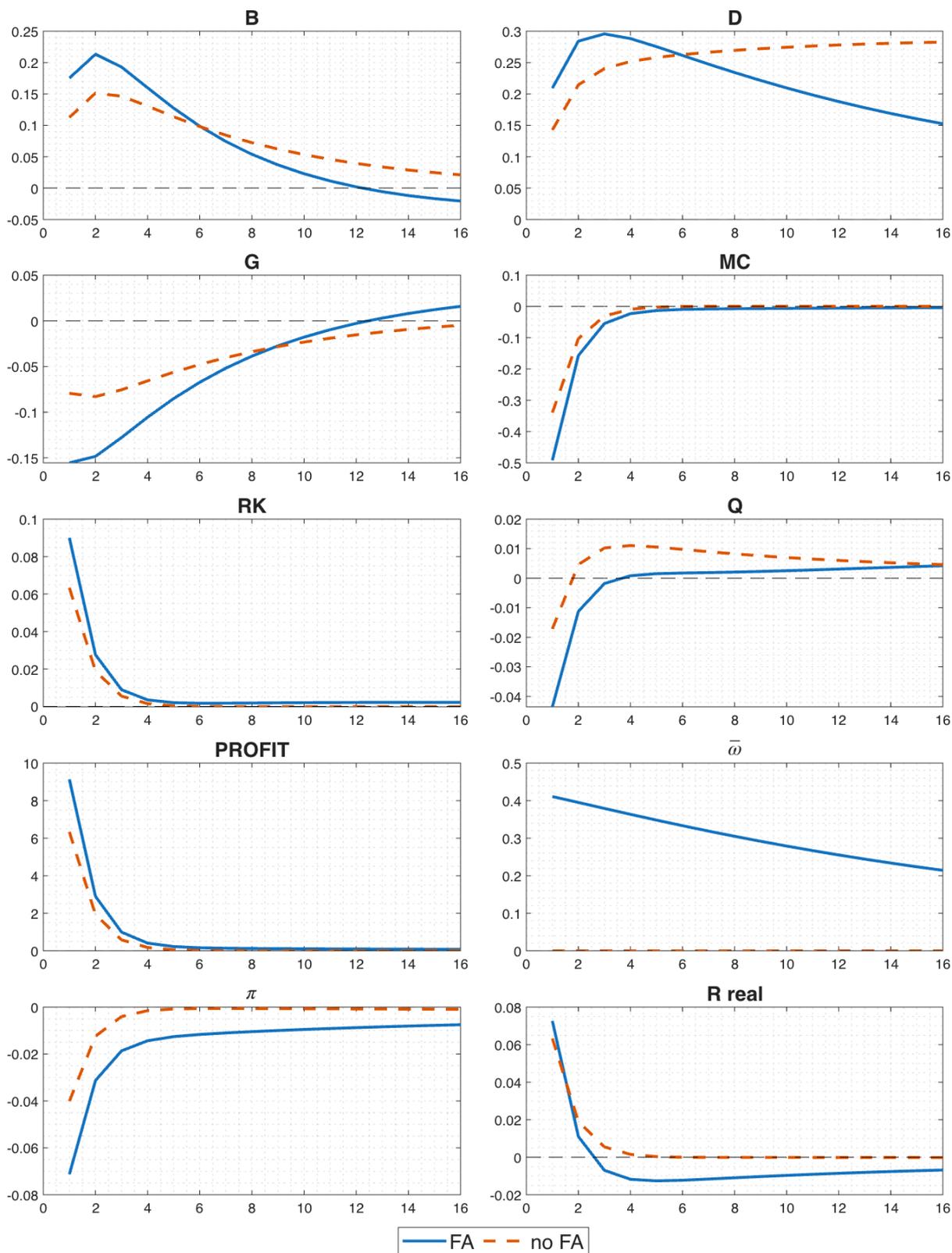


Figure D.1: Aggregate fluctuations consequent to an increase of the nominal interest rate. Monetary shock $\epsilon^R = 0.0025$. The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

E A model with 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 3](#). 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 specified limit. More importantly, trading in capital is subject to a friction that restricts market access to a randomly selected fraction of households, ψ^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. (2)), the budget constraint for adjusters is:

$$c_{it} + a_{it+1} + q_t k_{it+1} = \left(\frac{R_t^I}{\pi_t} \right) a_{it} + [r_t^K + q_t(1 - \delta)]k_{it} + (1 - \tau)(W_t h_{it} l_{it} + \mathbf{I}_{h_{it}=0} \Pi_t). \quad (\text{A16})$$

The main difference with eq. (5) 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, $q_t(1 - \delta)$.²⁶

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:

$$R_t^I = \begin{cases} R_t & \text{if } a_{it} \geq 0 \\ R_t + \omega^H & \text{if } a_{it} < 0 \end{cases} \quad (\text{A17})$$

²⁶Note 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. (23).

The budget constraint for non-adjusters is:

$$c_{it} + a_{it+1} = \left(\frac{R_t^I}{\pi_t} \right) a_{it} + (r_t^K - q_t \delta) k_{it} + (1 - \tau)(W_t h_{it} l_{it} + \mathbf{I}_{h_{it}=0} \Pi_t). \quad (\text{A18})$$

where, differently from eq. (A16), 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 3](#). 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. (7) now becomes:

$$q_t K_{jt+1}^F = N_{jt+1} + D_{jt+1}, \quad (\text{A19})$$

where K^F denotes the capital supplied to firms by financial intermediaries. It follows that [Section 3.2](#) 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. (13) is consequently defined as:

$$K_t = K_t^H + K^D \quad (\text{A20})$$

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

After production, entrepreneurs sell depreciated capital to capital producers. As in [Section 3.5](#), 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. (30), becomes:

$$T_t = \tau \left[\psi^k \int w_t h_{it} l_{it}^{ad} d\Theta_t + (1 - \psi^k) \int w_t h_{it} l_{it}^{nad} d\Theta_t + \Pi_t \right]. \quad (\text{A21})$$

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 households' ability to adjust their capital holdings, ψ^k , is calibrated to match the ratio between illiquid and liquid asset holdings, which is approximately 11, in line with the values reported in [Kaplan et al. \(2018\)](#). Moreover, the ad-hoc borrowing limit and the borrowing penalty 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	β	0.984	LEV = 2
Relative risk aversion	ξ	2	Auclert et al. (2021)
Frisch elasticity of labor	ν	1	Chetty et al. (2011)
Disutility of labor	ψ	4,9	L = 0.5
Borrowing constraint	\underline{a}	-0.15	16% borrowing households
HHs participation in the capital market	ψ^k	0.2	$K^H/A = 11$
Prob. of leaving entr. state	ι	0.0625	Guvenen et al. (2014)
Prob. become rentier	ζ	0.0005	Gini wealth = 78%
Persistence of idio. prod. shock	ρ_h	0.98	Bayer et al. (2019)
SD if idio. prod. shock	σ_h	0.06	Bayer et al. (2019)
Labor share of production	α	0.7	standard value
Depreciation rate	δ	0.02	standard value
Elasticity of substitution	η	20	mark-up = 5%
Price stickiness	κ	0.09	av. price duration = 4 quart.
Adjustment cost of capital	ϕ	2.5	$\sigma(I)/\sigma(Y) = 3$
Auditing costs	μ	0.12	EFP = 2% p.a.
SD of the id. shock on entr.	σ_ω	0.27	Bernanke et al. (1999)
Entr. surviving rate	γ	0.985	EFP = 2% p.a.
TFP shock persistence	ρ_z	0.95	standard value
TFP shock SD	σ_z	0.01	standard value
Nominal int. rate	R	1.0063	2,5% p.a.
Borrowing penalty	ω^H	16%	HtM = 30%
Int. rate smoothing	ρ^R	0.8	Clarida et al. (2000)
Reaction to inflation	ρ^π	1.5	standard value
Monetary shock SD (p.a.)	σ_R	0.0025	1% p.a.
Tax rate	τ	0.3	G/Y \approx 20%
Auto-correlation of debt	ρ_B	0.86	Bayer et al. (2019)

Table E.2: Wealth distribution moments

Target	Model	Data
Gini index (calibrated)	0.78	0.78
HtM households (calibrated)	0.30	0.30
Borrowing HHs (calibrated)	0.16	0.16
Top 10% wealth	0.73	0.67

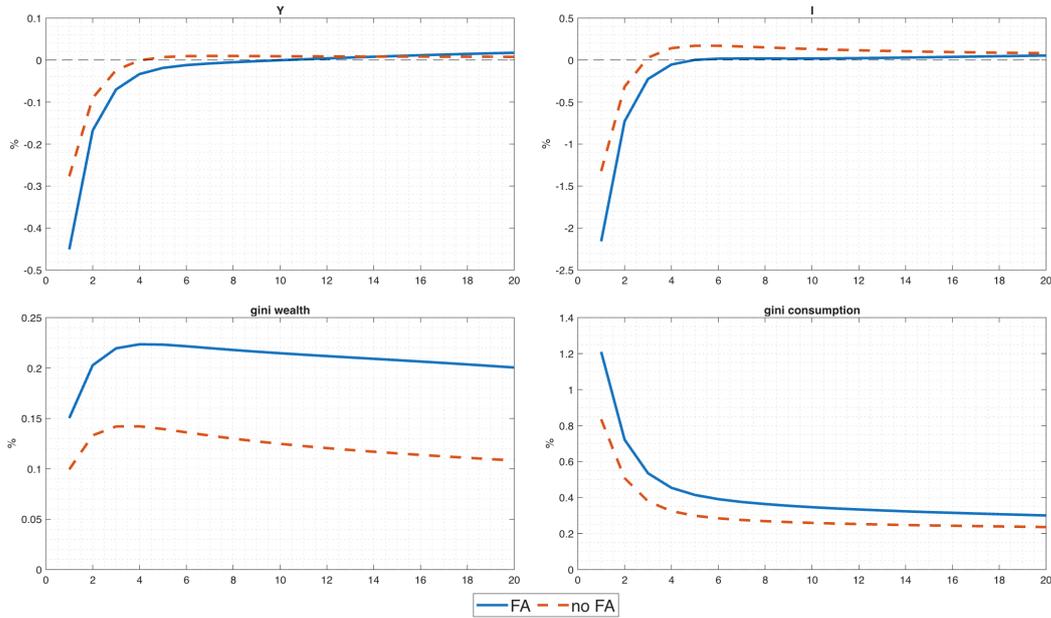


Figure F.1: IRFs for aggregate variables and Gini indices, $\xi = 4$
 Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

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.

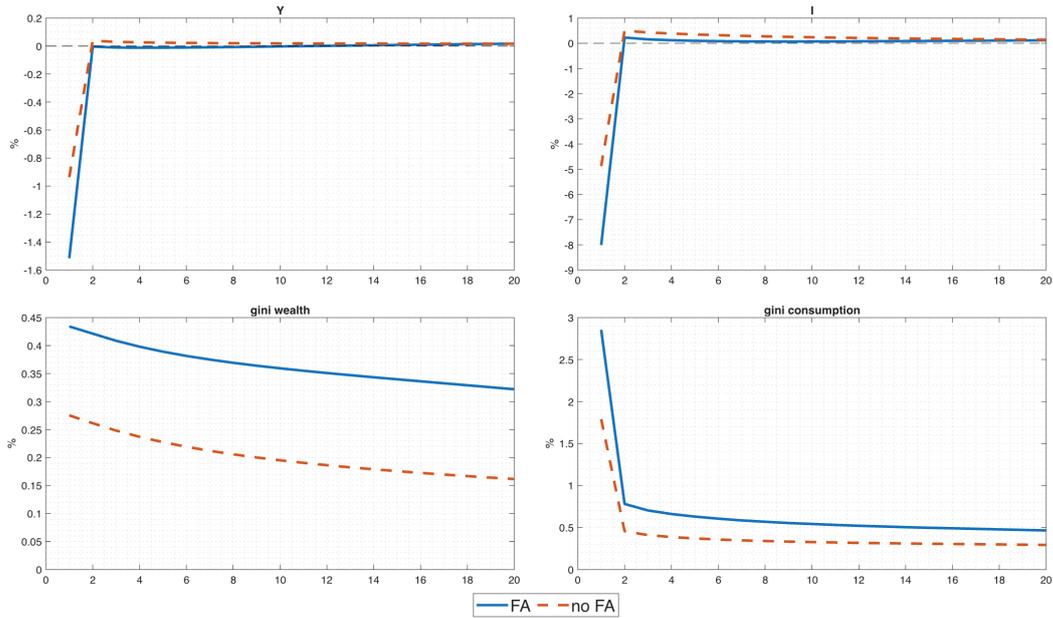


Figure F.2: IRFs for aggregate variables and Gini indices, $\phi = 0$
 Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

F.2 Robustness to investment cost

The baseline model features quadratic investment costs (the central term on the right-hand side of Eq. (21)) where the parameter ϕ 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 ΔK . This extreme calibration also confirms the financial accelerator: the output, investment, consumption, and inequality indices are all greater when financial frictions are active.

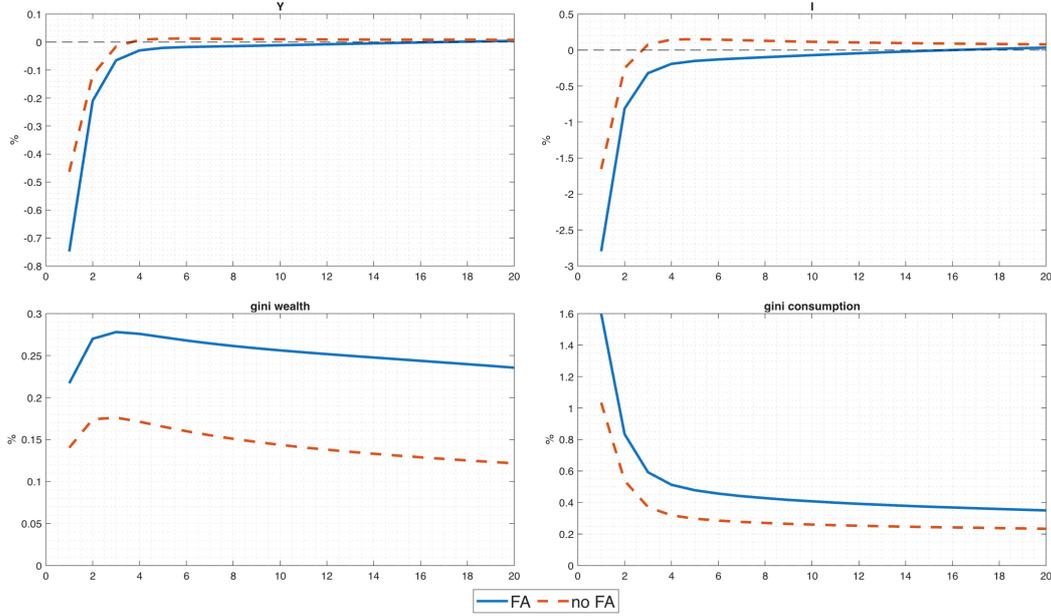


Figure F.3: IRFs for aggregate variables and Gini indices, $\rho_B = 0$
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

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 inequalities 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 τ . 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.

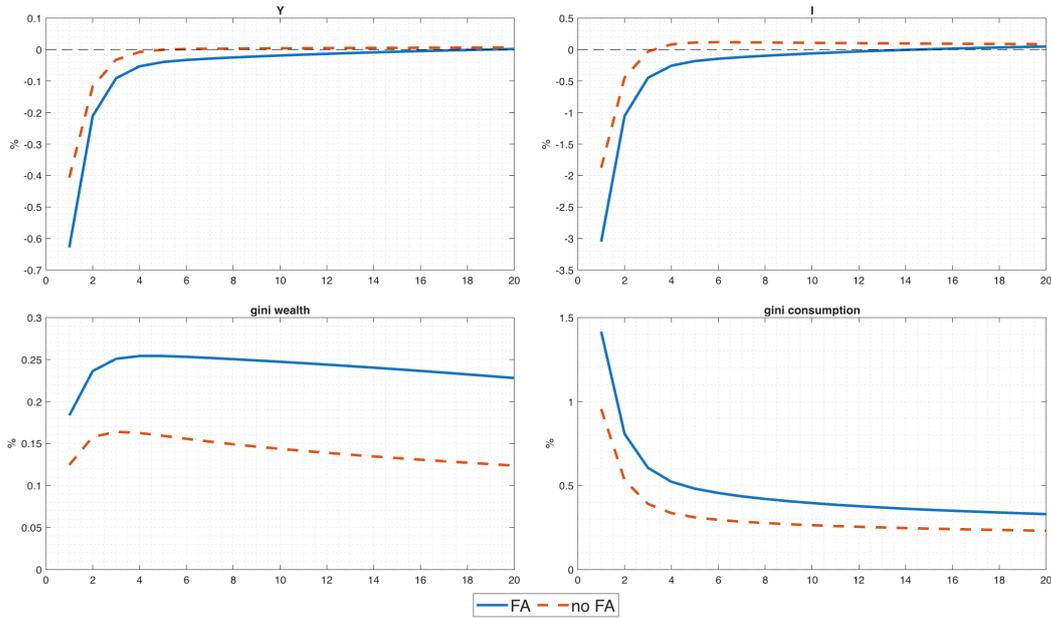


Figure F.4: IRFs for aggregate variables and Gini indices, τ adjusting
 Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

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 ψ to 6, adjust the probability that a household becomes a rentier to $\zeta = 0.006$, and set the capital-adjustment-cost parameter to $\phi = 8$.

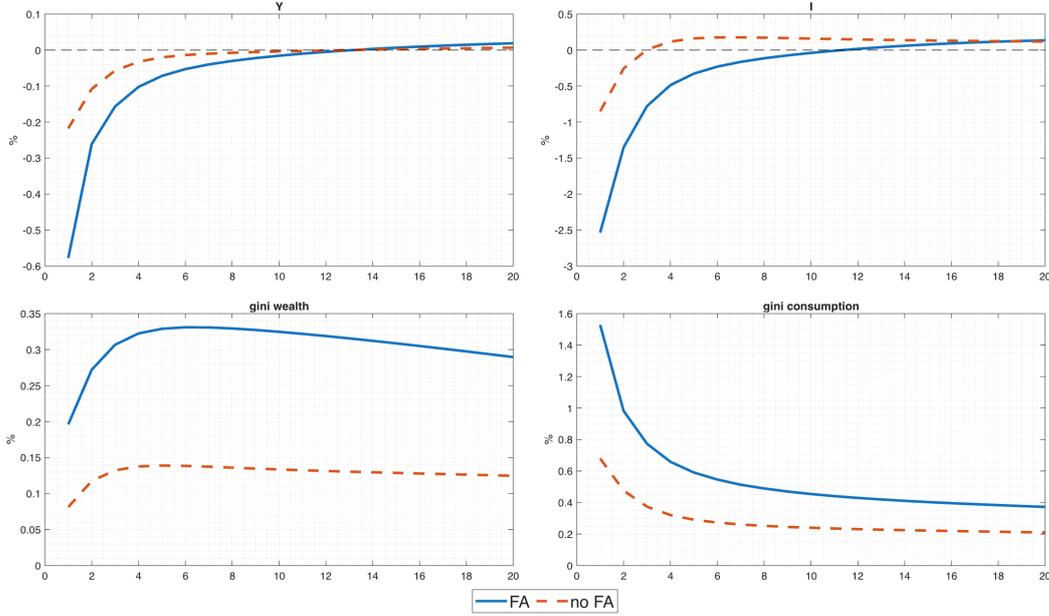


Figure F.5: IRFs for aggregate variables and Gini indices, $LEV = 2.5$
Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

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:

$$L_t = \left(\int \hat{l}_{jt}^{\frac{\eta^w-1}{\eta^w}} dj \right)^{\frac{\eta^w}{\eta^w-1}} \quad (\text{A22})$$

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

$$\hat{l}_{jt} = \left(\frac{W_{jt}}{W_t^F} \right)^{-\eta^w} L_t, \quad (\text{A23})$$

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 λ^w denotes the fraction of workers unable to reset their wages. Their objective is therefore to maximize:

$$E_0 \sum_{t=0}^{\infty} \beta^t \lambda_w^t \frac{W_t^F}{P_t} N_t \left[\left(\frac{W_{jt} \bar{\pi}_W^t}{W_t^F} - \frac{W_t}{W_t^F} \right) \left(\frac{W_{jt} \bar{\pi}_W}{W_t^F} \right)^{-\eta^w} \right] \quad (\text{A24})$$

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:

$$\log \left(\frac{\pi_t^W}{\bar{\pi}_W} \right) = \beta E_t \log \left(\frac{\pi_{t+1}^W}{\bar{\pi}_W} \right) + \kappa_w \left(mc_t^w - \frac{1}{\mu^W} \right), \quad (\text{A25})$$

Eq. (A25) characterizes the evolution of wage inflation, π_t^W , over time. Wage inflation is defined as:

$$\pi_t^W = \frac{w_t^F}{w_{t-1}^F} \pi_t \quad (\text{A26})$$

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 $\bar{m}c^W = 1/\mu_t^W = (\eta^w - 1)/\eta^w$. 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, $\bar{m}c^W = 0.91$. I report the responses for output, investment and Gini Indices in [Figure F.6](#).

The sticky-wage framework helps address the counter-cyclicality present in the standard New Keynesian model, which is inconsistent with empirical evidence. This feature has important implications for the analysis in [Section 5.5](#). Because rentiers are the sole recipients of profits in the model, wage stickiness leads them to incur a decline in profit income after a monetary contraction. This decline modifies their saving decisions compared with the baseline model.

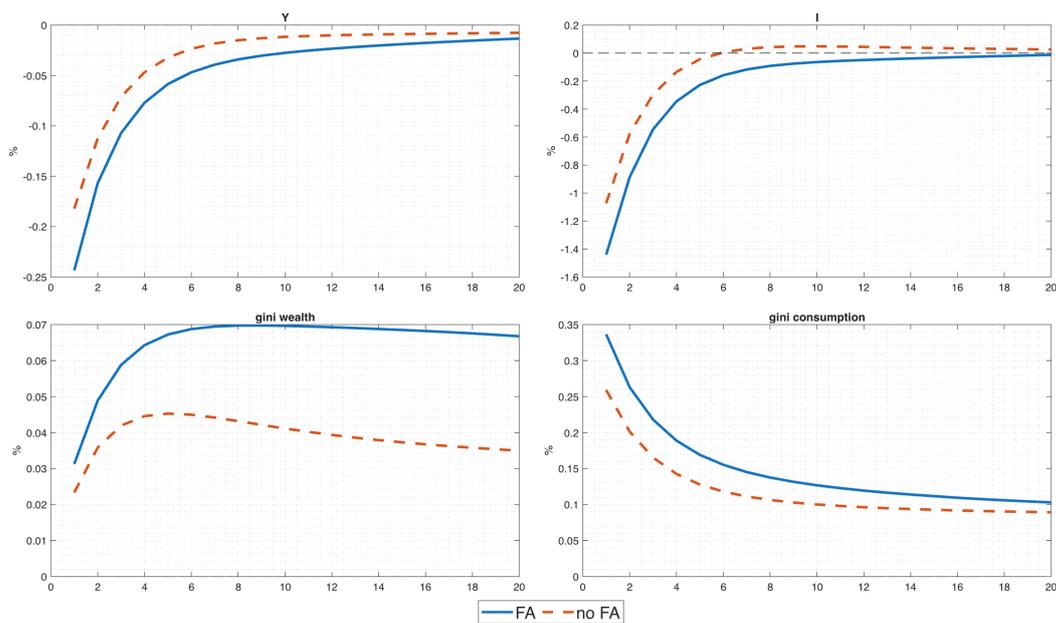


Figure F.6: IRFs for aggregate variables and Gini indices, sticky wages
 Monetary shock $\epsilon^R = 25$ b.p. (annualized). The blue solid line refers to an economy with a financial accelerator. The red dashed line refers to the case where financial frictions are shut off.

In Figure F.7, I plot the impulse responses of the wealth Gini index for the different household types. Unlike the results in Figure 8, rentiers now also experience an increase in wealth inequality, although the magnitude of this increase is negligible. The results for workers remain qualitatively similar, but the rise in inequality is systematically smaller. Nonetheless, the acceleration in inequality driven by financial frictions persists, confirming the baseline model's conclusions even when wages are sticky and profits become cyclical.

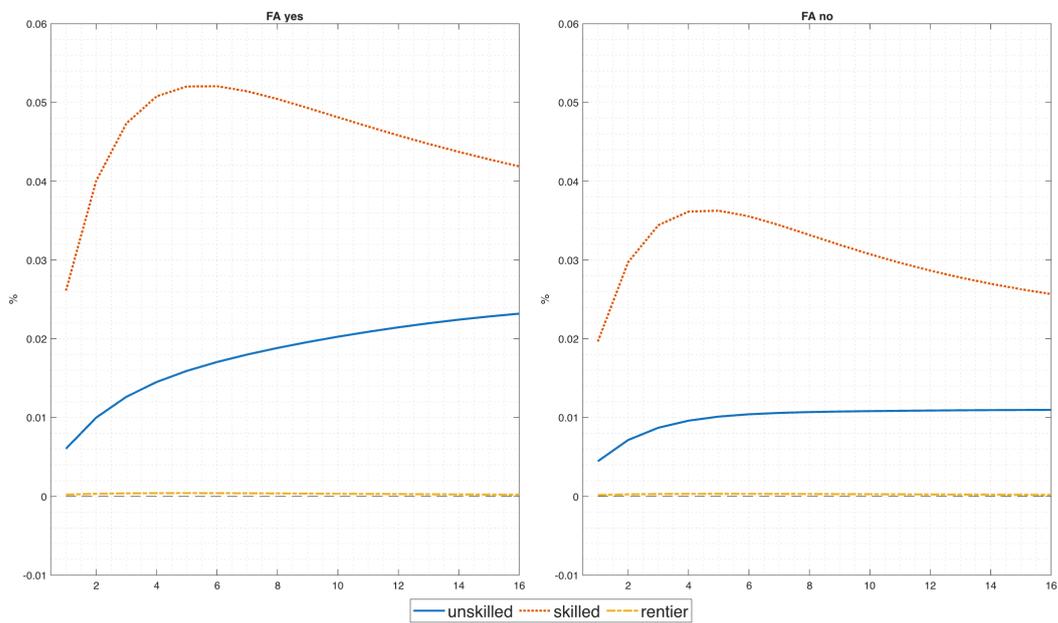


Figure F.7: Gini index for wealth inequality according to households type, sticky wages
 Monetary shock $\epsilon^R = 25$ b.p. (annualized). Deviations are expressed as percentages relative to their respective steady-state values. The left panel represents the scenario with active financial frictions, while the right panel depicts the case where financial frictions are shut off.