Fiscal Policy and the Saving Glut of the Rich*

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Abstract

Since the 1980s, the United States has experienced a pronounced *saving glut of the rich*, a large accumulation of assets among the top 1% of earners. We argue that this development partly reflects a shift in the financing of redistributive policies, from inflationary finance in the 1960s and 1970s to debt finance backed by future taxation beginning in the early 1980s. The central insight is that, in the presence of a progressive tax system, a switch from inflationary to debt financing leads to debt accumulation by top earners. We develop a New Keynesian model with borrowers and savers in which redistributive transfers can be either funded or unfunded. Unfunded transfers generate fiscal inflation that erodes the real value of public and private debt, redistributing wealth through asset revaluation effects. Funded transfers, by contrast, are financed through future taxes borne primarily by high-income households, which respond by accumulating claims on both households and the government. Using a structurally estimated version of the model, we find that the shift from unfunded to funded redistribution in the 1980s contributed significantly to the subsequent *saving glut of the rich*.

JEL Codes: E50, E62, E63, H63, D31.

Keywords: Unfunded fiscal shocks, inflation, saving glut, redistribution, Two-Agent New Keynesian model.

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I Introduction

Since the 1980s, the United States has experienced a pronounced saving glut among high-income households (Mian et al., 2025). The top 1% has accumulated an increasing share of financial assets by lending to both the federal government and the bottom 99% of households. We argue that this saving glut is driven, at least in part, by a structural shift in the financing of redistribution. Since the 1960s, transfer spending in the United States has grown persistently and has disproportionately benefited lower-income households. However, beginning in the 1980s, fiscal policy shifted toward funded transfers, that is, transfers expected to be financed through future taxation rather than inflation (Bianchi et al., 2023; Smets and Wouters, 2024). Crucially, the burden of these anticipated taxes falls disproportionately on high earners. As a result, lower-income households face weaker incentives to save, while affluent households increase both saving and labor supply, accumulating claims on households and the government through public and private debt markets.

To contextualize the relation between the shift in the monetary-fiscal policy mix and the saving glut of the rich, Figure I presents the dynamics of household debt, government borrowing, inflation, real interest rates, and tax incidence, in the United States since the 1960s. Three patterns emerge from the data.

The saving glut of the rich. There is no saving glut of the rich before the 1980s. The net debt position of the bottom 90%-99% is remarkably stable. Public debt is declining over this period of time, despite large spending for the Vietnam war and later on for the Great Society initiatives, a series of large welfare programs launched by Lyndon Johnson in the mid-1960s. A structural break appears to occur in the early 1980s. Household debt relative to GDP rises steadily from the mid-1980s through the 2000s, with a disproportionately larger increase for households outside the top decile. The Bottom 99% more than tripled their household debt-to-GDP ratio between 1985 and 2007, with a notable surge during the housing boom. This rise in leverage—documented by Mian et al. (2025)—reflects both expanding access to credit and growing financial strain among lower-income households. The 2008 financial crisis marked a sharp reversal, yet post-crisis deleveraging remained incomplete relative to pre-1990 levels.[1]

The rise and fall in inflation. In the 1960s and 1970s, we observe a persistent rise in inflation accommodated by the Fed with low real interest rates. This pattern reverses

[1] Figure XII in the Appendix shows that rest-of-world holdings of U.S. government and household debt also increased. Their long-run growth broadly tracks top-1 holdings, so foreign accumulation does not displace the domestic saving-glut mechanism. Consistently, Mian et al. (2025) show that rest-of-world and top-1 demand for U.S. safe assets rose by similar magnitudes despite differing in composition.

in the early 1980s. Real interest rates jump, and inflation drops. Inflation remains low and stable until the post-pandemic rise. The shift in inflation dynamics coincides with the well-documented break in the conduct of U.S. monetary policy in the early 1980s (Clarida et al., 2000, Lubik and Schorfheide, 2004, Bianchi, 2013), that recent contributions have interpreted in the context of a broader change in the monetary-fiscal policy mix (Bianchi and Ilut, 2017).

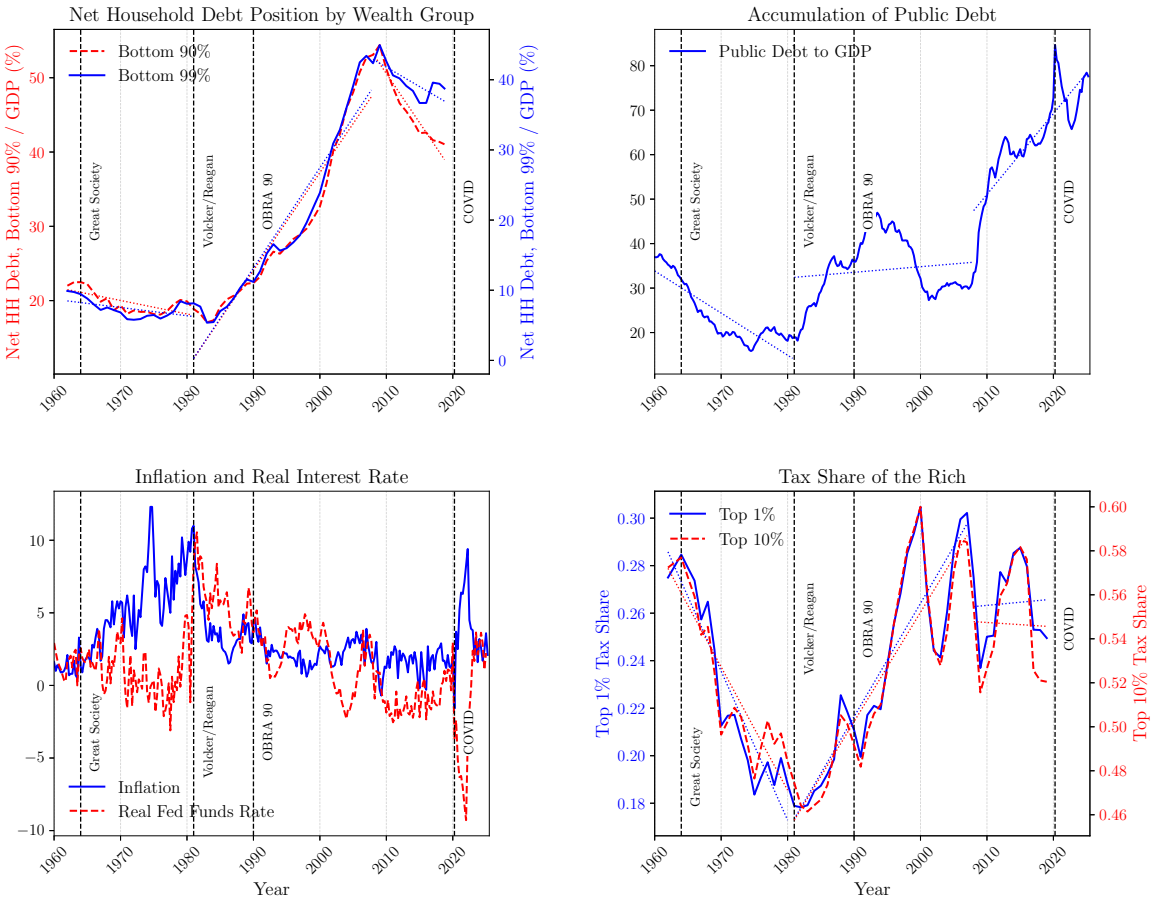
The decline and recovery in the tax share of the rich. In the 1960s and 1970s, we observe a progressive decline in the tax share of the top income earners. This decline is in part driven by the tax bracket creep that was disproportionally affecting low earners, progressively pushed into higher brackets by high levels of inflation. Starting in the early 1980s, this pattern reverses. Since then, the top 1% and top 10% of income earners have borne an increasingly large share of total income taxes, with a partial decline toward the end of the sample.[2]

These stylized facts can be understood through a structural transformation in U.S. fiscal policy. Beginning in the mid-1960s, large welfare programs, most notably those associated with Lyndon Johnson's Great Society initiatives, substantially expanded the scope of redistribution in the United States. Despite this persistent increase in transfer spending, the government debt-to-GDP ratio remained relatively stable prior to the 1980s amid high inflation and low real interest rates, suggesting that transfers were financed, at least in part, through inflationary means. High inflation also shifted part of the fiscal burden toward lower-income households through bracket creep, which disproportionately affected taxpayers outside the highest income brackets. Beginning in the early 1980s, following the Volcker disinflation, fiscal transfers became increasingly debt financed. Public debt rose from less than 40% of GDP in the 1970s to more than 90% by the 2010s, reflecting a persistent change in the financing of government spending. This evolution coincided with the declining use of inflation as a fiscal adjustment mechanism and the growing importance of intertemporal fiscal commitments. The COVID-19 pandemic marked a notable departure from this pattern, as it was accompanied by a large unfunded fiscal expansion (Bianchi et al., 2023; Barro and Bianchi, 2025).

On the monetary side, the most important development of the early 1980s was Reagan's strong political backing of Volcker's disinflation effort. On the fiscal side, two policy developments are particularly noteworthy. First, although Reagan reduced marginal tax rates on top earners, the Economic Recovery Tax Act of 1981 (ERTA) introduced inflation indexation of the federal income tax code beginning in 1985 (Mertens and Montiel-Olea, 2018). Second,

[2]See Appendix A for details on the tax share decomposition.

Figure I: Dynamics of Debt, Inflation, Real Interest Rates, and Taxes



Notes: Panel (a) reports household net debt positions (debt minus assets) relative to GDP for the bottom 90% (red dashed line) and bottom 99% (blue solid line) of the wealth distribution. Panel (b) reports government debt relative to GDP. Panel (c) reports annualized quarterly inflation and the real federal funds rate. Panel (d) reports the shares of total income taxes paid by the top 1% (blue solid line) and top 10% (red dashed line) of the income distribution. Dotted lines report linear trends within the indicated subperiods. Black dashed vertical lines mark the Great Society, Volcker/Reagan, OBRA 90, and COVID episodes.

a major structural break occurred in the early 1990s. This shift coincided with the Omnibus Budget Reconciliation Act of 1993, which created two new federal income tax brackets and significantly increased top marginal tax rates. As a result, the share of federal income taxes paid by the top 1% rose from less than 20% in the 1980s to more than 25% after 1993, while the top 10% consistently accounted for over half of total federal income tax revenues.

We argue that these developments altered both the intertemporal incentives facing households and the redistributive content of transfers. As lower-income households anticipate higher future transfers, their incentives to save decline. By contrast, high-income households have incentives to save in anticipation of a greater future tax burden. To accommodate this

additional saving, their current income must rise relative to that of lower-income households, contributing to rising income inequality. Although measured wealth inequality increases, the incidence of taxes and transfers, together with rising borrowing among lower-income households, can dampen contemporaneous changes in consumption inequality. Taken together, this mechanism provides a unified explanation for rising wealth and income inequality alongside relatively stable consumption inequality.[3] Thus, the shift in the monetary-fiscal policy mix in the 1980s and the emergence of the saving glut of the rich can be understood as two manifestations of the same underlying force.

To evaluate this hypothesis, we identify structural shocks within a VAR using heteroskedasticity (Brunnermeier et al., 2021). This approach yields two distinct fiscal shocks that we label *funded* and *unfunded*, following the logic of Bianchi et al. (2023). The funded fiscal shock generates dynamics consistent with an increase in government spending financed through debt issuance backed by future taxes. This shock leads to an immediate increase in household debt and, subsequently, to an accumulation of public debt. The unfunded fiscal shock produces dynamics consistent with an increase in spending not backed by future taxation. It is characterized by a pronounced rise in inflation, a decline in real interest rates, and no significant debt accumulation. Accordingly, the saving glut of high-wealth households emerges only under funded fiscal expansions. Consistent with this interpretation, we document that unfunded shocks were prevalent during the 1960s and 1970s, whereas funded shocks become increasingly important from the 1980s onward.

To uncover the economic mechanisms at work, we develop and estimate a two-agent New Keynesian model in which funded and unfunded fiscal shocks redistribute resources across households and investors. Borrowers ("households") and savers ("investors") differ in their asset and liability positions, implying that the composition of fiscal shocks has important distributional consequences. In the presence of progressive taxation, funded transfers benefiting borrowers are financed primarily through future taxes on savers. Anticipating higher future transfers, borrowers increase borrowing, while savers, anticipating a greater future tax burden, increase saving by lending to both borrowers and the government. As a result, funded transfers raise both household and government debt. Unfunded transfers, by contrast, are not backed by future taxation and instead generate fiscal inflation, which erodes the real value of nominal assets, redistributes wealth from savers to indebted households through revaluation effects, and reduces both private and public debt.

We estimate a quantitative version of the model using U.S. quarterly data from 1962 to 2022, combining aggregate macroeconomic series with distributional measures of debt, assets, and consumption across the top and bottom of the income distribution. The estimated

[3]See, among others, Saez and Zucman (2016) and Meyer and Sullivan (2023).

model identifies a structural shift in the relative importance of funded and unfunded fiscal shocks. Prior to the mid-1980s, unfunded shocks dominated, consistent with a regime of fiscal dominance in which inflation acted as a fiscal instrument, eroding the real value of government debt and inducing households to deleverage. In subsequent decades, funded shocks became increasingly important, with fiscal expansions financed through higher taxes on top-income households and explicit debt issuance. The resulting shift from inflationary finance to debt-financed redistribution generated persistent increases in both public debt and household borrowing while sustaining the accumulation of financial wealth at the top of the income distribution.

Related literature. Our point of departure is the seminal contribution of Mian et al. (2025), who document the rise of the *saving glut of the rich* by uncovering the balance-sheet structure of the financial sector. Straub (2019) connects the saving glut to rising inequality in the permanent component of labor income. Using non-homothetic preferences, he shows that high-income households save disproportionately more than their lower-income counterparts, accounting for a substantial share of the rise in wealth inequality and the secular decline in real interest rates. We propose a complementary mechanism based on the financing of redistribution. Specifically, we show that both the rise in income inequality and the saving glut of the rich can be explained, at least in part, by a shift in the financing of redistributive policies in the United States. A transition from unfunded to funded redistribution simultaneously increases the incentives of top earners, relative to lower-income households, to work and save. In this respect, our paper relates to the seminal contribution of Barro (1974), which emphasizes that the beneficiaries of government spending need not coincide with the taxpayers who ultimately finance it.

Our paper also contributes to the extensive literature on monetary-fiscal policy interactions. The early literature was largely theoretical and includes, among others, Sargent and Wallace (1981), Leeper (1991), Sims (1994), Woodford (1994, 1995, 2001), Cochrane (1998, 2001), Bassetto (2002), Reis (2017), Bassetto and Sargent (2020), and Leeper and Zhou (2021). More recently, several papers have built on these contributions to provide empirical evidence on the role of monetary-fiscal policy interactions in shaping inflation and debt dynamics. Bianchi and Ilut (2017) estimate a model with regime changes in the monetary-fiscal policy mix, linking the high inflation of the 1960s and 1970s to a fiscally led regime. Bianchi and Melosi (2017, 2022) argue that the possibility of a return to such a regime helps explain the absence of deflation following the Great Recession and the surge in post-pandemic inflation. Bianchi et al. (2023) depart from pure regime-switching frameworks by allowing monetary-led and fiscally led policy rules to coexist, uncovering persistent inflation

dynamics associated with unfunded fiscal shocks, like during COVID. Barro and Bianchi (2025) show that cross-country variation in post-pandemic inflation can be explained by differences in fiscal interventions. Bocola et al. (2026) develop a model in the tradition of Sargent and Wallace (1981) to explain changes in the relationship between inflation and debt in Colombia, Chile, and the United States. Relative to these contributions, we introduce heterogeneity across households and allow funded and unfunded fiscal shocks to coexist while having heterogeneous effects across agents. This innovation enables us to capture distinct redistribution channels, through taxation and fiscal inflation, and to identify their changing roles in shaping both public and private debt dynamics.

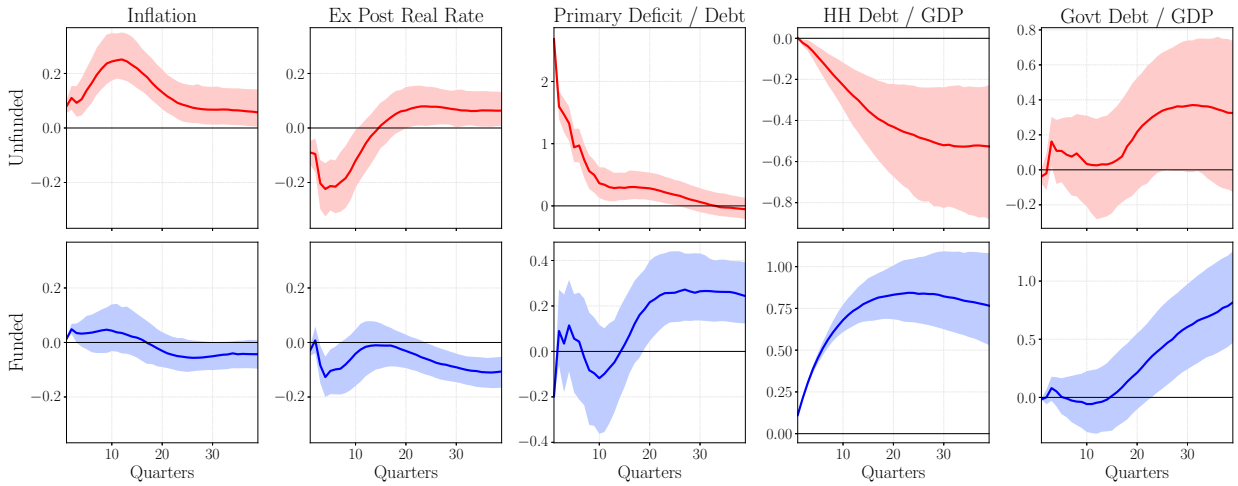
Our work also relates to Catherine et al. (2025), who study how incorporating Social Security wealth affects the measurement of household wealth inequality. Their contribution focuses on the definition and measurement of household wealth. By contrast, we seek to explain why, despite the sustained expansion of redistributive policies since the mid-1960s, the saving glut of the rich emerged only after the early 1980s. Our answer links two influential literatures that have largely proceeded in parallel: the literature on the saving glut of the rich and the literature on monetary-fiscal interactions. We show that changes in the financing of redistribution connect these two phenomena and help explain the joint evolution of inequality, private debt, and public debt.

Finally, our work connects to a series of recent contributions that study monetary-fiscal interactions in tractable models with heterogeneous agents and nominal rigidities. A non-exhaustive list includes Angeletos et al. (2024), Rachel and Ravn (2025), and Dupraz and Rogantini Picco (2025). An important distinction relative to these contributions is that both types of agents in our model engage in consumption smoothing. The relevant heterogeneity arises from differences in portfolio composition, income and wealth profiles, and expected net tax liabilities.

II An Agnostic Look at the Data

In this section, we present evidence that fiscal disturbances in the United States can be classified into two distinct types. We first document that fiscal expansions are associated with two markedly different response patterns and that their relative importance evolves over time. To do so, we adopt an agnostic approach and identify shocks through heteroskedasticity in a VAR, labeling them only ex-post based on their recovered features. We then complement this analysis with local projections based on identified government spending news shocks (Ramey, 2011), showing that distributional outcomes respond differently depending on the progressivity of the taxes expected to finance fiscal expansions.

Figure II: Two Patterns of Fiscal Expansion



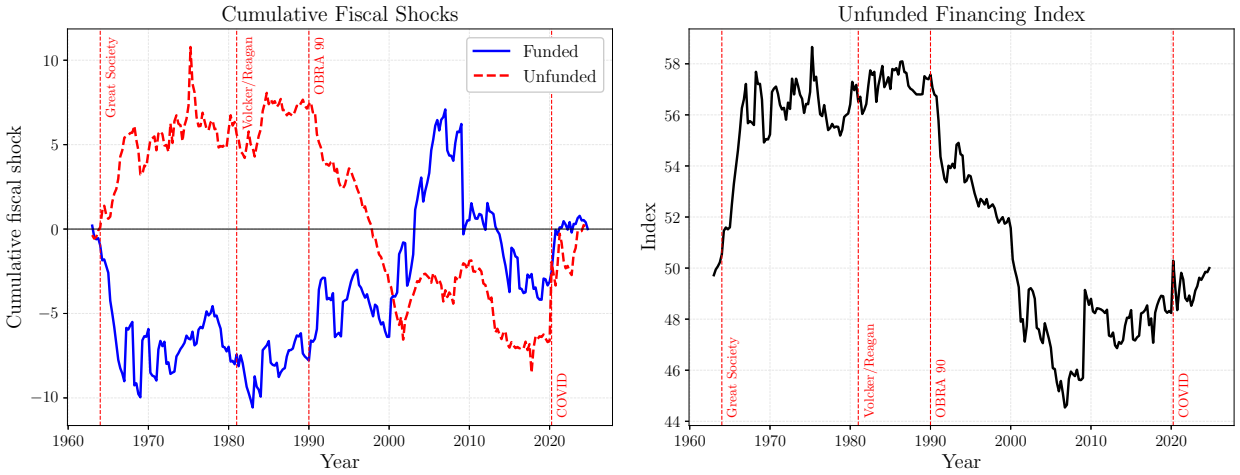
Notes: Impulse responses from the heteroskedasticity-identified quarterly VAR to the two fiscal shocks labeled ex post as unfunded and funded. The VAR includes real GDP growth, inflation, the federal funds rate, the primary deficit-to-debt ratio, bottom-90 household debt-to-GDP, and government debt-to-GDP. Fiscal shocks are normalized so that a positive innovation raises the deficit-to-debt ratio over the response horizon. Shaded areas are 90 percent posterior credible sets; horizons are quarters.

We estimate a quarterly VAR identified through heteroskedasticity, following the approach of Brunnermeier et al. (2021). Identification exploits changes in the volatility of structural shocks across macroeconomic regimes, while leaving the contemporaneous transmission matrix and lag dynamics constant across regimes. The key idea, pioneered by Rigobon (2003), is that changes in the variance of structural shocks across regimes can provide enough information to identify simultaneous-equation models without relying on traditional exclusion restrictions. Appendix B.A describes the methodology in detail.

We include real GDP growth, inflation, the federal funds rate, the primary deficit-to-debt ratio, household debt-to-GDP for the bottom 90%, and government debt-to-GDP. Among the identified shocks, we focus on those that raise the primary deficit-to-debt ratio and are associated with an expansion in economic activity. Two such disturbances emerge with clearly distinct profiles. Following the logic of Bianchi et al. (2023), and consistent with the framework developed in Section III, we label these disturbances *funded* and *unfunded*. These labels describe the empirical patterns and anticipate the model interpretation; they do not impose the model's mechanisms.

Figure II reports the impulse responses. The first disturbance is clearly inflationary. Inflation rises persistently, the ex post real interest rate falls on impact, and the household debt-to-GDP ratio declines. The decline in household debt is consistent with a nominal revaluation channel, whereby higher inflation reduces the real value of outstanding house-

Figure III: Historical Fiscal Shocks and Financing Composition



Notes: The left panel cumulates the standardized funded and unfunded fiscal innovations recovered from the heteroskedasticity-identified VAR. The right panel reports an equal-weight financing index, initialized at 50, that rises with cumulative unfunded innovations and falls with cumulative funded innovations. Vertical lines mark the 1964 Great Society initiatives, the Volcker–Reagan policy shift, OBRA 1990, and the COVID period; these dates are not imposed in the estimation.

hold liabilities. Government debt increases only modestly and remains imprecisely estimated, suggesting that part of the fiscal expansion is effectively absorbed through the inflation tax. The second disturbance exhibits a markedly different profile. Inflation remains subdued and eventually falls below trend, while both household and government debt increase substantially. The increase in household debt is immediate and highly persistent. Government debt rises more gradually but accumulates steadily over time, with the pace of accumulation increasing as private debt growth moderates. In this case, the fiscal expansion is absorbed not through higher inflation but through the creation of nominal claims in both the household and public sectors. These dynamics point to a form of fiscal accommodation driven by balance-sheet expansion rather than by debt revaluation through inflation.

A second observation concerns the historical incidence of the two fiscal shocks. Figure III plots the cumulative identified fiscal innovations together with an equal-weight index summarizing their relative historical importance. The index should not be interpreted as a literal expenditure or financing share; rather, it provides a compact measure of the changing importance of funded and unfunded fiscal disturbances over time. To facilitate interpretation, the figure also reports a set of vertical markers corresponding to major policy events. These dates are included solely as reference points and play no role in the identification. We return to them in a later section that discusses corroborating narrative evidence.

Unfunded innovations accumulate rapidly during the Great Society expansion and remain

relatively important throughout the 1970s. This pattern begins to reverse in the mid-1980s, as funded fiscal disturbances begin to increase. The shift coincides with the Reagan administration and the Volcker disinflation. The transition accelerates during the 1990s, particularly following the Omnibus Budget Reconciliation Act of 1990 (OBRA-90) of President Bush and the subsequent Clinton administration. Large funded shocks are evident in the post-2000 period, especially in the aftermath of the Global Financial Crisis. By contrast, the end of the sample is characterized by a renewed prominence of unfunded shocks during the pandemic period, leading to a sustained increase in the unfunded financing index.

Distributional Local Projections. The heteroskedasticity-identified VAR above shows that U.S. fiscal disturbances are associated with distinct aggregate response patterns. Funded shocks lead to debt accumulation by both the government and lower-income households, whereas unfunded shocks do not. We know from Mian et al. (2025) that a large share of this debt accumulation is ultimately absorbed by top earners. A central hypothesis of this paper is that such wealth accumulation reflects top earners' anticipation of higher future tax liabilities under a progressive tax system. To assess whether tax progressivity shapes the distributional consequences of fiscal shocks, we estimate local projections for the quarterly SCF-based wealth share of the top 10% from Bayer et al. (2025) following a Ramey news spending shock (Ramey, 2011).[4] We split the shocks using the tax-progressivity indicator of Ferriere and Navarro (2018), which classifies a spending episode as progressive if average tax progressivity increases relative to the preceding period. Appendix B.B provides the precise definition of the indicator, data sources, and estimating equation.

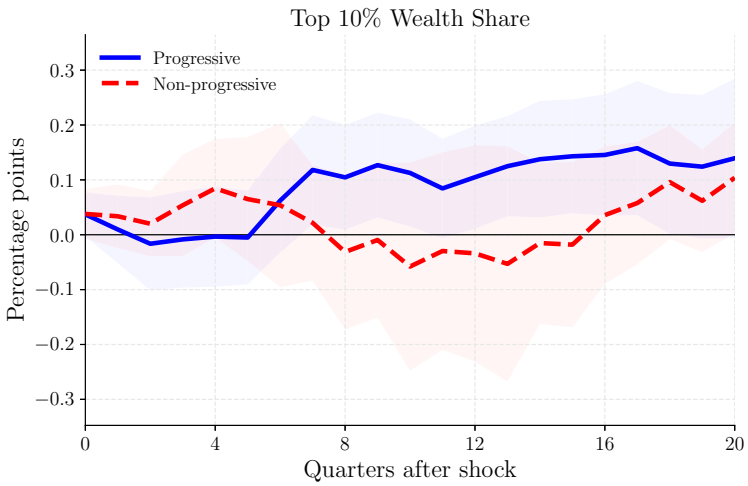
Figure IV reports the response of the SCF top-10% wealth share. The response is small on impact, but at medium horizons the wealth share rises following spending news shocks in progressive tax environments, with the 90 percent confidence band lying well above zero at medium and long horizons. In contrast, the response under a non-progressive tax environment is considerably more uncertain, with all horizons including zero. We interpret this finding as corroborating evidence that fiscal expansions can generate dynamics consistent with a saving glut among the rich when the associated future tax burden is expected to fall disproportionately on top earners.

III A Simple Model

This section presents a stylized model that isolates the mechanism through which the financing of redistribution affects public debt, private debt, and the saving behavior of high-income

[4] We thank Ralph Luetticke for suggesting this exercise.

Figure IV: Top-10 Wealth Share After Ramey News Spending Shocks



Notes: The figure reports local-projection responses of the quarterly SCF-based top-10 wealth share to a one percentage point of GDP Ramey news spending shock. Solid blue: progressive tax environments. Dashed red: non-progressive tax environments. Shaded regions are 90 percent Newey–West confidence bands.

households. Relative to the typical TANK model that distinguishes between savers and hand-to-mouth agents employed by Bianchi et al. (2023), we introduce two types of unconstrained agents and a private debt market. This allows funded and unfunded transfers to affect not only government debt and inflation, but also the allocation of nominal claims between borrowers and savers. Details on the model and the derivation of the log-linearized equations are reported in Appendix C.

Environment. The economy is populated by borrowers/households, indexed by H, and savers/investors, indexed by I. While we only need that fiscal interventions redistribute resources across groups, we make the simplifying assumption that transfers only benefit borrowers, while taxes only affect savers. Borrowers represent the bottom of the wealth distribution. They receive government transfers and issue nominal private debt. Investors represent high-income households. They purchase government bonds and lend to borrowers. The government issues nominal debt, transfers resources to borrowers, and taxes investors. Monetary policy sets the nominal interest rate on government debt.

We abstract from production and labor supply and assume an endowment economy in which aggregate resources are $Y_t = \omega e_t^H + (1-\omega) e_t^I$, where e_t^i is the per-capita pre-tax endowment of type i. Investors have a larger steady-state endowment, $\bar{e}^I > \bar{e}^H$, consistent with their interpretation as top-income households. This fixed income heterogeneity pins down the steady-state tax base and consumption weights; the shocks studied below are

transfer-financing shocks, not endowment shocks.

Let b_t^H denote household debt relative to output, with $b_t^H > 0$ corresponding to borrowing by households, and let b_t^G denote government debt relative to output. Let z_t^H denote transfers to households and t_t^I taxes on investors, both expressed relative to output. A positive transfer improves borrowers' repayment capacity and lowers household debt. For the government, the corresponding primary balance is $\tilde{t}_t^I - \tilde{z}_t^H$.

Linearized system. We log-linearize the model around the deterministic steady state. Tildes denote log-deviations from steady state for all variables except debt ratios and fiscal variables expressed relative to output, which are expressed in level deviations from their steady-state values. The equilibrium is summarized by

$$\tilde{c}_{H,t} = \mathbb{E}_t \tilde{c}_{H,t+1} - \left(\tilde{r}_{n,t}^H - \mathbb{E}_t \tilde{\pi}_{t+1}\right), \tag{1a}$$

$$\tilde{c}_{I,t} = \mathbb{E}_t \tilde{c}_{I,t+1} - \left(\tilde{r}_{n,t}^G - \mathbb{E}_t \tilde{\pi}_{t+1}\right), \tag{1b}$$

$$\tilde{r}_{n,t}^H - \tilde{r}_{n,t}^G = \psi_b \tilde{b}_t^H, \qquad \psi_b > 0, \tag{1c}$$

$$\tilde{b}_t^H = \beta^{-1}\left[\tilde{b}_{t-1}^H + \tilde{r}_{n,t-1}^H - \tilde{\pi}_t - \Delta\tilde{y}_t - (1-\beta)\tilde{z}_t^H\right], \tag{1d}$$

$$\tilde{b}_t^G = \beta^{-1}\left[\tilde{b}_{t-1}^G + \tilde{r}_{n,t-1}^G - \tilde{\pi}_t - \Delta\tilde{y}_t - (1-\beta)\left(\tilde{t}_t^I - \tilde{z}_t^H\right)\right], \tag{1e}$$

$$\bar{y}\tilde{y}_t = \omega \bar{c}_H \tilde{c}_{H,t} + (1-\omega)\bar{c}_I \tilde{c}_{I,t}. \tag{1f}$$

Equations (1a) and (1b) are the Euler equations of borrowers and investors. Equation (1c) captures the private lending wedge: when household debt rises, private loans must pay a higher return relative to government debt. Equations (1d) and (1e) are the laws of motion for private and public debt. Inflation enters both equations with a negative sign, so higher inflation revalues nominal liabilities. The resource constraint is the linearized feasibility condition of the endowment allocation, with $\bar{c}_H$ and $\bar{c}_I$ reflecting the asymmetric steady-state endowments of the two groups.

Funded and unfunded components. Transfers to households have two components:

$$\tilde{z}_t^H = \tilde{z}_t^{H,M} + \tilde{z}_t^{H,F}, \tag{2}$$

where M denotes funded component with respect to which policymakers follow a monetary-led policy mix with fiscal backing, and F denotes the unfunded component, with respect to which policymakers follow a fiscally-led policy mix without fiscal backing, as explained in more detail below. To reflect the fact that large welfare programs are typically announced well before they start having an impact on spending, the two components follow persistent

processes:

$$\tilde{z}_t^{H,M} = \rho_M \tilde{z}_{t-1}^{H,M} + (1-\rho_M)\varepsilon_t^M, \tag{3}$$

$$\tilde{z}_t^{H,F} = \rho_F \tilde{z}_{t-1}^{H,F} + (1-\rho_F)\varepsilon_t^F, \tag{4}$$

where ε_t^M and ε_t^F follow AR(1) processes.

Government debt and inflation can be decomposed into two components:

$$\tilde{b}_t^G = \tilde{b}_t^{G,M} + \tilde{b}_t^{G,F}, \qquad \tilde{\pi}_t = \tilde{\pi}_t^M + \tilde{\pi}_t^F. \tag{5}$$

Investor taxes respond to the two debt components according to

$$\tilde{t}_t^I = \gamma^M \tilde{b}_{t-1}^{G,M} + \gamma^F \tilde{b}_{t-1}^{G,F}, \qquad \gamma^M > 0, \quad \gamma^F = 0. \tag{6}$$

The parameter γ^M is large enough to stabilize the funded component of debt. By contrast, $\gamma^F = 0$ captures the absence of fiscal backing for the unfunded component.

Monetary policy also responds differently to the two inflation components:

$$\tilde{r}_{n,t}^G = \phi_\pi^M \left(\tilde{\pi}_t - \tilde{\pi}_t^F\right) + \phi_\pi^F \tilde{\pi}_t^F, \qquad \phi_\pi^M > 1, \quad \phi_\pi^F \leq 1. \tag{7}$$

The central bank is active against monetary-led inflation, but accommodates fiscal inflation. In the special case $\phi_\pi^F = 0$, the rule becomes

$$\tilde{r}_{n,t}^G = \phi_\pi^M \left(\tilde{\pi}_t - \tilde{\pi}_t^F\right),$$

so $\tilde{\pi}_t^F$ enters like an endogenous inflation target. Unlike an exogenous inflation target, $\tilde{\pi}_t^F$ is the amount of inflation tolerated to stabilize the unfunded fiscal burden.

The shadow economy. Bianchi et al. (2023) show that fiscal inflation $\tilde{\pi}_t^F$ and unfunded debt $\tilde{b}_t^{G,F}$ can be pinned down by a fiscally led shadow economy in which only unfunded transfer shocks are active:

$$\tilde{r}_{n,t}^{G,F} = \mathbb{E}_t \tilde{\pi}_{t+1}^F, \tag{8a}$$

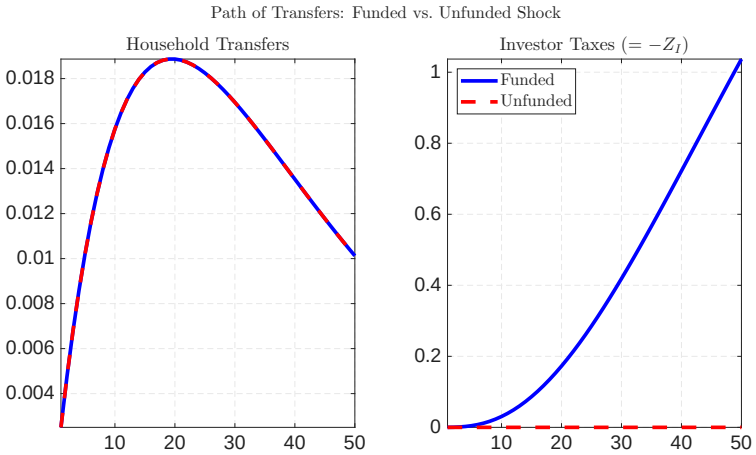
$$\tilde{r}_{n,t}^{G,F} = \phi_\pi^F \tilde{\pi}_t^F, \tag{8b}$$

$$\tilde{b}_t^{G,F} = \beta^{-1}\left[\tilde{b}_{t-1}^{G,F} + \tilde{r}_{n,t-1}^{G,F} - \tilde{\pi}_t^F - \Delta\tilde{y}_t^F - (1-\beta)\left(\gamma^F \tilde{b}_{t-1}^{G,F} - \tilde{z}_t^{H,F}\right)\right]. \tag{8c}$$

The shadow economy tracks the component of debt that is not backed by future taxes and the associated fiscal inflation.

Responses to funded and unfunded transfers. We next compare the responses to the two household transfer shocks, namely the funded and unfunded cases. Figure V reports the paths of household transfers and investor taxes. In both scenarios, households receive the same transfer amount. The key difference lies in the financing mechanism. Under the funded shock, investor taxes increase gradually, reflecting the presence of fiscal backing. In contrast, under the unfunded shock, investor taxes remain unchanged, consistent with the

Figure V: Transfers and Taxes in the Simple Model



Notes: The figure plots the response of household transfers and investor taxes to a household transfer shock. The solid blue line corresponds to the funded shock, while the dashed red line corresponds to the unfunded shock. The x-axis reports quarters; the y-axis reports percentage-point deviations from steady state.

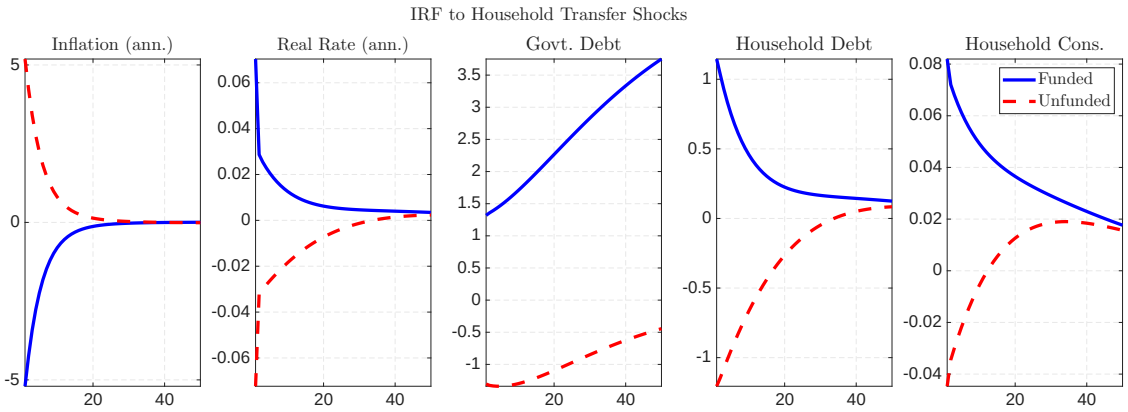
absence of fiscal backing.

Figure VI reports the impulse responses of the remaining model variables. Under a funded transfer shock, households respond to the prospect of future transfers by immediately increasing consumption. This adjustment is facilitated by borrowing from investors, who are willing to expand lending because they anticipate a higher future tax burden and therefore increase saving. Since the associated fiscal expenditures are implemented gradually, government debt does not immediately absorb the additional saving. Over time, as transfers are disbursed and the government issues more debt, investors rebalance their portfolios toward public debt, while households gradually deleverage. Under an unfunded transfer shock, taxes do not increase to support the transfer through future fiscal surpluses. Instead, the real value of outstanding nominal liabilities, both private and public, is eroded by the increase in inflation accommodated by the central bank. Redistribution therefore operates through nominal revaluation rather than explicit future taxation.

The key distinction is therefore in the financing regime. Funded redistribution raises expected future taxes on investors and induces them to accumulate nominal claims. Unfunded redistribution raises fiscal inflation and taxes investors implicitly through the revaluation of nominal assets. The same transfer can therefore generate either a saving glut or a deleveraging episode depending on whether it is backed by future taxes.

Endogenous labor supply. The endowment economy, by construction, rules out any adjustment of income in response to transfers. We thus extend the model to allow for

Figure VI: Funded and Unfunded Household Transfer Shocks



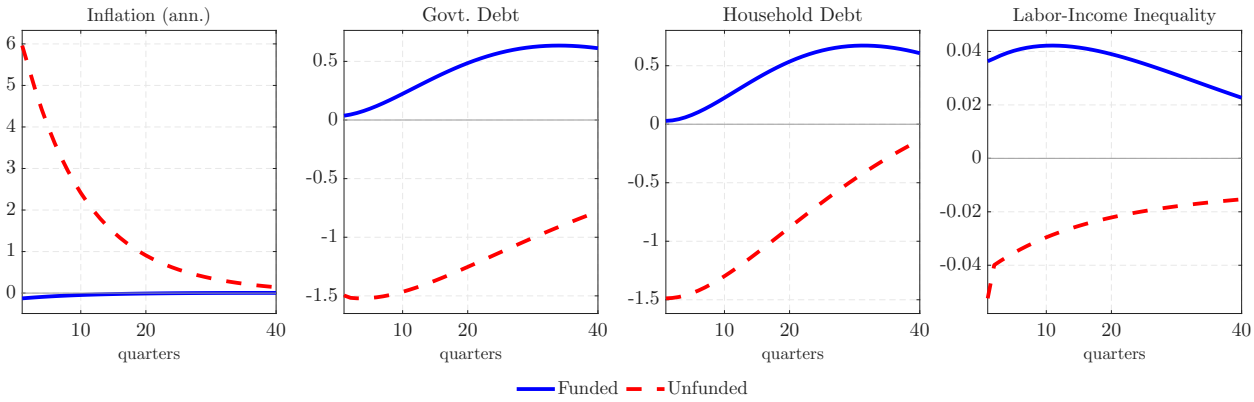
Notes: The figure plots impulse responses to a household transfer shock in the simple model. The solid blue line corresponds to the funded shock, while the dashed red line corresponds to the unfunded shock. Inflation and the real interest rate are annualized. Debt variables are expressed as percentage-point deviations from steady state. The x-axis reports quarters.

endogenous labor supply to show that transfers affect labor supply in addition to saving behavior (see Appendix C.B for details). Figure VII reports the resulting impulse responses for this richer model. The responses of inflation and nominal debt preserve the core mechanism of the endowment economy: a funded transfer increases both government and household debt, whereas an unfunded transfer generates fiscal inflation that erodes the real value of both debt stocks. The two shocks now also differ in their implications for income inequality, measured in the last panel as the log ratio of per-capita investor labor income to per-capita household labor income. Because both groups earn the same real wage in this simplified model, this measure is equivalent to the difference in their labor responses. A funded transfer induces investors to increase labor supply with respect to households, thereby widening labor-income inequality. Investors anticipate higher future taxes and smooth the associated burden by working more and saving more today, whereas households have an incentive to do the opposite. By contrast, an unfunded transfer shock reduces income inequality as both agents adjust to the increase in real activity.

In summary, allowing for endogenous labor supply enables the model to generate qualitative predictions for the evolution of labor-income inequality that are consistent with the evidence documented by Straub (2019). In particular, funded transfers increase labor-income inequality by inducing investors to work more and households to work less.

Structural shift. The simple models deliver the central mechanism of the paper. When redistribution is largely unfunded, transfers generate fiscal inflation, lowering real returns and eroding the real value of nominal debt. As a result, government debt remains contained,

Figure VII: Funded and Unfunded Transfers with Endogenous Labor Supply



Notes: Impulse responses to funded and unfunded household-transfer shocks in the simple model with endogenous labor supply. Labor-income inequality is the log ratio of per-capita investor to household labor income. Inflation is annualized; horizons are quarters.

household leverage declines, and high-income households have little incentive to accumulate nominal assets. When redistribution is funded through future taxes on investors, inflation is stabilized, public debt expands, households borrow against future transfers, and high-income households increase saving in anticipation of future tax liabilities. The transition from an unfunded to a funded redistributive regime can therefore explain the joint rise in public debt, household borrowing, the tax share, and the saving glut of the rich since the early 1980s.

IV A Quantitative Model

In this section, we extend the simplified framework of Section III to a fully specified quantitative model. The model incorporates a series of key features that have proven successful in replicating U.S. business cycle dynamics, a rich fiscal block, and partially unfunded government debt.

IV.A The Economy

The economy consists of a measure $\mathtt{w}$ of borrowers (hereafter, households), a measure $1-\mathtt{w}$ of savers (hereafter, investors), a continuum of monopolistically competitive intermediate goods producers, a continuum of perfectly competitive final goods producers, a fiscal authority, and a monetary authority. Financial markets feature the following assets: (i) a long-term loan between households and investors in zero net supply; (ii) a long-term government bond held in positive net supply by investors; and (iii) a short-term government bond.

Relative to the baseline specification, we allow the two household groups to differ in

fixed labor productivity. Let a_H and a_I denote household and investor labor efficiency, respectively. Aggregate effective labor is

$$L_t^{eff} = \mathtt{w} a_H L_t^H + (1 - \mathtt{w}) a_I L_t^I,$$

and the ratio a_I/a_H is estimated jointly with the other structural parameters. The wage W_t is therefore the wage per efficiency unit, so taxable labor income for type $i \in \{H, I\}$ is $a_i W_t L_t^i$. This heterogeneity fixes the ex-ante mapping between investors and the top 1% and between households and the bottom 99%, while preserving a common aggregate technology.

Households. A household (borrower) indexed by j consumes $C_t^{*H}(j)$, a composite good consisting of private consumption $C_t^H(j)$ and government consumption G_t such that

$$C_t^{*H}(j) = C_t^H(j) + \alpha_G G_t.$$

The parameter α_G governs the substitutability between private and government consumption: a negative value implies complementarity, while a positive value implies substitutability.

External habits in consumption imply that utility depends on current consumption relative to the previous period's aggregate consumption of the composite good, $\theta C_{t-1}^{*H}(j)$, where $\theta \in [0, 1]$ is the habit parameter. Households also incur disutility from supplying differentiated labor services across their members, indexed by l,

$$L_t^H(j) = \int_0^1 N_t^H(j, l)\, dl.$$

The period utility function is given by

$$U_t^H(j) = u_t^b(j) \left[\ln \left(C_t^{*H}(j) - \theta C_{t-1}^{*H}(j) \right) - \frac{N_t^H(j)^{1+\xi}}{1+\xi} \right],$$

where u_t^b is a discount factor shock and ξ is the inverse of the Frisch elasticity of labor supply.

Households can borrow using a long-term debt instrument with payment structure $\rho_H^{T-(t+1)}$ for $T > t$ and $0 < \rho_H < 1$. The value of such an instrument issued in period t in any future period $t + j$ is

$$Q_{t+j}^{(n-j)} = \rho_H^j Q_{t+j}^{(n)}.$$

This asset can be interpreted as a portfolio of infinitely many bonds, with maturity weights given by $\rho_H^{T-(t+1)}$. Varying ρ_H changes the average maturity of debt.

Omitting the index j, the household's state and decision variables are defined as

$$\mathcal{S}_t^H \equiv \{C_{t-1}^{*H}, B_{H,t-1}^{(\rho_H)}\}, \quad \mathcal{D}_t^H \equiv \{C_t^H, C_t^{*H}, B_{H,t}^{(\rho_H)}\}.$$

The household's problem is:

$$V^H(\mathcal{S}_t^H) = \max_{\mathcal{D}_t^H} \quad U_t(C_t^{*H}, C_{t-1}^{*H}, N_t^H) + \beta \mathbb{E}_t \left[V^H(\mathcal{S}_{t+1}^H) \right]$$

subject to

$$(1+\tau_{C,t})C_t^H + B_{H,t}^{(\rho_H)} = (1-\tau_{N,t}^H)a_H \int W_t(l)N_t^H\,dl + \frac{\left(1+\rho_H Q_t^{(\rho_H)}\right)}{Q_t^{(\rho_H)}}\frac{B_{H,t-1}^{(\rho_H)}(j)}{\Pi_t} + Z_{H,t},$$

$$C_t^{*H} = C_t^H + \alpha_G G_t,$$

where $Z_{H,t}$ is a lump-sum transfer, and $\Pi_t = P_t/P_{t-1}$ denotes gross inflation.

Investor. Unlike households, investors can accumulate wealth in the form of physical capital $\bar{K}_t^I$. The stock of capital depreciates at rate δ and increases with investment I_t^I, net of adjustment costs. The law of motion for physical capital is

$$\bar{K}_t^I(j) = (1-\delta)\bar{K}_{t-1}^I(j) + u_t^i\left[1 - s\left(\frac{I_t^I(j)}{I_{t-1}^I(j)}\right)\right]I_t^I(j),$$

where u_t^i is a shock to the marginal efficiency of investment, and $s(\cdot)$ is an investment adjustment cost function satisfying $s(e^{\varkappa}) = s'(e^{\varkappa}) = 0$ and $s''(e^{\varkappa}) \equiv s > 0$. The parameter $\varkappa$ captures the logarithm of the gross steady-state technology growth rate.

Investors rent effective capital $K_t^I(j)$ to intermediate firms, where effective capital is linked to physical capital through

$$K_t^I(j) = \nu_t(j)\bar{K}_{t-1}^I(j),$$

and $\nu_t(j)$ denotes the capital utilization rate. The cost of utilizing one unit of physical capital is given by $\Psi(\nu_t(j))$. In steady state, $\nu(j) = 1$, $\Psi(1) = 0$, and the elasticity condition

$$\frac{\Psi''(1)}{\Psi'(1)} = \frac{\psi}{1-\psi}$$

holds for $\psi \in [0,1)$. The gross rental rate of capital is denoted by $R_{K,t}$, and $\tau_{K,t}$ is the tax rate on capital rental income.

In addition to accumulating capital, investors can save by purchasing one-period government bonds in zero net supply and a portfolio of long-term government bonds in positive net supply. As with private loans, the long-term government bond has a payment structure $\rho_G^{T-(t+1)}$ for $T > t$ and $0 < \rho_G < 1$. The value of such an instrument issued in period t in any future period $t+j$ is

$$Q_{t+j}^{(n-j)} = \rho_G^j Q_{t+j}^{(n)}.$$

This bond can be interpreted as a portfolio of infinitely many bonds, with weights along the maturity structure given by $\rho_G^{T-(t+1)}$.

Each period, the investor receives after-tax nominal labor income, after-tax rental income from capital, lump-sum transfers from the government $Z_{I,t}$, and dividends from firms D_t. These resources are allocated to consumption, investment in physical capital, and asset

accumulation. The period utility function is

$$U_t^I(j) = u_t^b(j)\left[\ln\left(C_t^{*I}(j) - \theta C_{t-1}^{*I}(j)\right) - \frac{N_t^I(j)^{1+\xi}}{1+\xi} - u_t^l W\left(B_{I,t}^{(\rho_H)}\right)\right],$$

where $W(\cdot)$ is the utility of loans and u_t^l is a loan premium shock which follows an AR(1) process. The former has an equivalent interpretation and functional form as specified in equation (20). Omitting the index j for brevity, the state and decision variables are

$$\mathcal{S}_t^I \equiv \{C_{t-1}^{*I}, B_{I,t-1}, B_{I,t-1}^{(\rho_H)}, B_{I,t-1}^{(\rho_G)}, \bar{K}_{t-1}, S_{t-1}\},$$
$$\mathcal{D}_t^I \equiv \{I_t, \bar{K}_t, B_{I,t}^{(\rho_G)}, B_{I,t}^{(\rho_H)}, S_t, C_{I,t}, \nu_t\}.$$

The investor's problem is

$$V^I(\mathcal{S}_t^I) = \max_{\mathcal{D}_t^I} U_t(C_t^{*I}, C_{t-1}^{*I}, N_t^I, B_{I,t}^{(\rho_H)}) + \beta \mathbb{E}_t\left[V^I(\mathcal{S}_{t+1}^I)\right]$$

subject to

$$\begin{aligned}
&(1+\tau_{C,t})C_{I,t} + X_t + B_{I,t} + B_{I,t}^{(\rho_G)} + B_I^{(\rho_H)} + \int_0^1 P_{j,t}^S S_{j,t}\, \mathrm{d}j \\
&= (1-\tau_{N,t}^I)a_I \int W_t(l) L_t^I\, dl + \frac{B_{I,t-1}}{Q_t \Pi_t} + (1-\tau_{K,t}) r_{K,t} \nu_t \bar{K}_{I,t-1} \\
&\quad + \frac{(1+\rho_G Q_t^{(\rho_G)})}{Q_t^{(\rho_G)}} \frac{B_{I,t-1}^{(\rho_G)}}{\Pi_t} + \frac{(1+\rho_H Q_t^{(\rho_H)})}{Q_t^{(\rho_H)}} \frac{B_{I,t-1}^{(\rho_H)}}{\Pi_t} \\
&\quad + \int_0^1 \left[P_{j,t}^S + (1-\tau_{D,t}) D_{j,t}\right] S_{j,t-1}\, \mathrm{d}j + Z_{I,t} - \Phi(\nu_t)\bar{K}_{I,t-1},
\end{aligned}$$

and the capital accumulation equation

$$\bar{K}_{I,t} = \bar{K}_t^I(j) = (1-\delta)\bar{K}_{t-1}^I(j) + u_t^i\left[1 - s\left(\frac{I_t^I(j)}{I_{t-1}^I(j)}\right)\right] I_t^I(j).$$

Production. A continuum of intermediate good firms operate under monopolistic competition. Each firm j rents capital $K_{j,t}$ from investors and hires labor $L_{j,t}$ in perfectly competitive factor markets to produce output according to

$$Y_{j,t} = K_{j,t}^{\alpha}(A_t L_{j,t})^{1-\alpha} - A_t \Omega,$$

where Ω is a fixed cost of production that grows at the labor-augmenting rate of technological progress. Productivity A_t evolves according to a stationary growth-rate process,

$$u_t^a = (1-\rho_a)\varkappa + \rho_a u_{t-1}^a + \varepsilon_t^a, \quad \text{where } u_t^a = \log\left(A_t/A_{t-1}\right).$$

Labor L_t is a composite of differentiated labor services l, aggregated by a competitive labor agency (described below). The firm's problem is

$$V^F(L_{j,t-1}, K_{j,t-1}, P_{j,t-1}) = \max_{K_{j,t}, P_{j,t}, N_{j,t}} \frac{D_{j,t}^{\$}}{P_t} + \mathbb{E}_t\left[M_{t,t+1}^I V^F(L_{j,t}, K_{j,t}, P_{j,t})\right],$$

subject to the intermediate goods demand condition

$$K_{j,t}^{\alpha}(A_t N_{j,t})^{1-\alpha} - A_t\Omega - \left(\frac{P_{j,t}}{P_t}\right)^{-\theta} Y_t = 0, \tag{9}$$

and where nominal dividends are given by

$$D_{j,t}^{\$} = P_{j,t}Y_{j,t} - r_t^K K_{j,t-1}P_t - W_t N_t P_t,$$

and $M_{t,t+1}^I$ is the investors' stochastic discount factor.

Cost minimization yields

$$MC_t = (1-\alpha)^{\alpha-1}\alpha^{-\alpha}(R_{K,t})^{\alpha}W_t^{1-\alpha}A_t^{-1+\alpha}.$$

Price-setting is subject to Calvo frictions: in each period, a firm can reoptimize its price with probability $1-\omega_p$. If it cannot, it follows a partial indexation rule to lagged inflation,

$$P_{j,t} = \Pi_{t-1}^{\chi_p}\bar{\Pi}^{\,1-\chi_p}P_{j,t-1},$$

where $\bar{\Pi}$ is the steady-state inflation target and $\chi_p \in [0,1]$ measures the degree of indexation. If the firm can reoptimize, it chooses $P_{j,t}$ to maximize expected discounted nominal profits:

$$\mathbb{E}_t \sum_{\tau=0}^{\infty}(\beta\omega_p)^{\tau}\frac{\Lambda_{I,t+\tau}}{\Lambda_{I,t}}\left(\left[\prod_{s=1}^{\tau}\Pi_{t+s-1}^{\chi_p}\bar{\Pi}^{\,1-\chi_p}\right]P_{j,t}Y_{j,t+\tau} - MC_{j,t+\tau}Y_{j,t+\tau}\right),$$

which, under symmetry, yields the New Keynesian Phillips Curve.

Labor Agency. Wage-setting frictions follow Erceg et al. (2000). Households and investors supply differentiated labor services l to a competitive labor agency, which hires each type at wage $W_{l,t}$ per efficiency unit. For each differentiated service, the agency first forms effective labor $N_{l,t}^{eff} = \mathtt{w}a_H N_{l,t}^H + (1-\mathtt{w})a_I N_{l,t}^I$, and then aggregates effective services into a homogeneous input:

$$N_t = \left(\int_0^1 \left(N_{l,t}^{eff}\right)^{\frac{1}{\eta_t^w+1}}\,dl\right)^{\eta_t^w+1},$$

where η_t^w is an i.i.d. wage markup shock. The demand for each labor service is

$$N_{l,t}^{eff} = \left(\frac{W_{l,t}}{W_t}\right)^{\frac{-1+\eta_t^w}{\eta_t^w}} N_t.$$

Wages are set à la Calvo: in each period, with probability $1-\omega_w$, a wage can be reoptimized; otherwise, it is partially indexed to past inflation:

$$W_{l,t} = W_{l,t-1}(\Pi_{t-1})^{\chi_w}(\bar{\Pi})^{1-\chi_w},$$

where $\chi_w \in [0,1]$ measures wage indexation. When reoptimizing, the wage $W_{l,t}^*$ solves

$$\max_{W_{l,t}^*}\ \mathbb{E}_t \sum_{k=0}^{\infty}(\beta\omega_w)^k\left[\prod_{s=1}^{k}\Pi_{t+s-1}^{\chi_w}\bar{\Pi}^{\,1-\chi_w}\right]\sum_{i\in\{H,I\}}U_t(C_t^{*i}, C_{t-1}^{*i}, N_t^i),$$

subject to

$$N_{l,t+k}^{eff} = \left(\frac{W_{l,t}^{*} \left[\prod_{s=1}^{k} \Pi_{t+s-1}^{\chi_w} \bar{\Pi}^{1-\chi_w} \right]}{W_{t+k}} \right)^{\frac{-1+\eta_t^w}{\eta_t^w}} N_{t+k}.$$

Fiscal Policy. Assuming that one-period government bonds are in zero net supply, the government's nominal budget constraint can be written, in real terms, as

$$\tau_{C,t} C_t + \tau_{K,t} R_{K,t} K_t + \tau_{N,t} W_t N_t + B_{G,t} + Q_t^{(\rho_G)} B_{G,t}^{(\rho_G)} - Z_t = \frac{B_{G,t-1}}{\Pi_t Q_t} + \frac{1 + \rho_G Q_t^{(\rho_G)}}{Q_t^{(\rho_G)}} \frac{B_{G,t-1}^{(\rho_G)}}{\Pi_t},$$

where C_t and Z_t denote total consumption and total transfers, respectively.

We define $g_t = G_t/A_t$ and $z_t = Z_t/A_t$, and let $s_{b,t}$ denote the debt-to-GDP ratio. Transfer shocks can be funded or unfunded, while we assume that all other shocks are funded. The fiscal authority adjusts government spending $\tilde{g}_t$, transfers $\tilde{z}_t$, and tax rates on capital, labor, and consumption. Labor taxes are allowed to differ across investors and households, so $J \in \{K, N^I, N^H, C\}$. The fiscal rules are:

$$\tilde{g}_t = \rho_G \tilde{g}_{t-1} - (1 - \rho_G)\gamma_G(\tilde{s}_{b,t-1} - \tilde{s}_{b,t-1}^F) + \zeta_{g,t}, \tag{10}$$

$$\tilde{\tau}_{J,t} = \rho_J \tilde{\tau}_{J,t-1} + (1 - \rho_J)\gamma_J(\tilde{s}_{b,t-1} - \tilde{s}_{b,t-1}^F) + \lambda_J(1 - \iota_t^\tau)\tilde{\pi}_t, \tag{11}$$

where $\tilde{s}_{b,t-1} - \tilde{s}_{b,t-1}^F$ is the portion of debt the fiscal authority is committed to stabilize with fiscal adjustments. This commitment implies that the parameters γ_G, γ_Z, and $\gamma_J > 0$ are large enough to ensure stability of the funded debt component. The remaining portion $\tilde{s}_{b,t-1}^F$ is unfunded. The term $\iota_t^\tau \in [0, 1]$ measures tax-bracket indexation to inflation. When brackets are not indexed, $\iota_t^\tau = 0$, inflation raises the effective tax burden through fiscal drag. When brackets are fully indexed, $\iota_t^\tau = 1$, this inflation term drops out. In the estimation, the switch to indexation is taken from the tax-reform chronology. This term is applied to the income-tax rules, while $\lambda_C = 0$ for the consumption tax. The government spending shock $\zeta_{g,t}$ follows an AR(1) process.

Total transfers are given by:

$$\tilde{z}_t \equiv \tilde{z}_t^b + \tilde{z}_t^H + \tilde{z}_t^I.$$

The term $\tilde{z}_t^b$ captures the systematic adjustment of transfers to debt and the business cycle, while allowing for a temporary funded deviation, ζ_{zt}^M, which follows an AR(1) process and is distributed equally between households and investors:

$$\tilde{z}_t^b = \rho_Z \tilde{z}_{t-1}^b - (1 - \rho_Z)\left[\gamma_Z(\tilde{s}_{b,t-1} - \tilde{s}_{b,t-1}^F) + \phi_{zy}\tilde{y}_t\right] + \zeta_{zt}^M. \tag{12}$$

The terms $\tilde{z}_t^H$ and $\tilde{z}_t^I$ denote transfers to households and investors, respectively:

$$\tilde{z}_t^H = \bar{\zeta}_t^{M,H} + \bar{\zeta}_t^{F,H} + \zeta_{zt}^F, \qquad \tilde{z}_t^I = \bar{\zeta}_t^{M,I} + \bar{\zeta}_t^{F,I}.$$

Here, $\bar{\zeta}_t^{M,H}$, $\bar{\zeta}_t^{M,I}$, $\bar{\zeta}_t^{F,H}$, and $\bar{\zeta}_t^{F,I}$ represent persistent funded transfers to households, persis-

tent funded transfers to investors, persistent unfunded transfers to households, and persistent unfunded transfers to investors, respectively. These variables evolve according to AR(1) processes:

$$\bar{\zeta}_t^{M,\chi} = \rho_{\bar{\zeta}^{M,\chi}} \bar{\zeta}_{t-1}^{M,\chi} + (1 - \rho_{\bar{\zeta}^{M,\chi}}) \zeta_t^{M,\chi}, \tag{13}$$

$$\bar{\zeta}_t^{F,\chi} = \rho_{\bar{\zeta}^{F,\chi}} \bar{\zeta}_{t-1}^{F,\chi} + (1 - \rho_{\bar{\zeta}^{F,\chi}}) \zeta_t^{F,\chi}. \tag{14}$$

where $\zeta_t^{F,\chi}$ and $\zeta_t^{M,\chi}$ denote the corresponding fiscal shocks, with $\chi \in \{H, I\}$.

Finally, the shock ζ_{zt}^F is a temporary unfunded transfer shock that follows an AR(1) process. Unlike the temporary funded shock in (12), this temporary unfunded shock is allocated exclusively to households. We introduce it to capture transitory unfunded fiscal stimulus measures, such as those implemented during the pandemic, that were targeted at households below a given income threshold.

Monetary Policy. The central bank adjusts the short-term nominal interest rate $\tilde{R}_{n,t}$ in response to inflation fluctuations arising from typical business cycle shocks and from funded fiscal shocks, while fully accommodating the inflationary movements required to stabilize the unfunded portion of public debt. This behavior can be represented by embedding shock-specific policy responses into a conventional Taylor rule in which the central bank reacts to deviations of inflation from the level necessary to stabilize the unfunded share of debt. We denote this debt-stabilizing level of inflation as *fiscal inflation*, $\tilde{\pi}_t^F$, and we pin it down using a shadow economy (Bianchi et al., 2023). The Appendix provides additional details on the construction of the shadow economy in the presence of separate persistent unfunded transfer shocks to households and investors.

The linearized monetary policy rule is given by:

$$\tilde{r}_{n,t} = -\ln \underline{R}_n, \rho_r \tilde{r}_{n,t-1} + (1 - \rho_r) \left[\phi_\pi \left(\tilde{\pi}_t - \tilde{\pi}_t^F \right) + \phi_y \tilde{y}_t \right] + u_t^m, \tag{15}$$

where u_t^m is a monetary policy shock. A value of $\phi_\pi > 1$ satisfies the Taylor principle, implying that monetary policy actively stabilizes deviations of inflation $\tilde{\pi}_t$ from fiscal inflation.

The policy mix defined by equations (10)-(15) therefore implies that policymakers follow a monetary-led regime in response to deviations of inflation from fiscal inflation and a fiscally-led regime in response to unfunded fiscal shocks. In this configuration, the central bank's willingness to accommodate persistent increases in inflation, combined with the fiscal authority's decision not to stabilize a fraction of outstanding debt, generates fiscal inflation. Thus, a monetary-led stance toward business-cycle shocks coexists with a fiscally-led stance toward unfunded fiscal shocks.

Conceptually, fiscal inflation $\tilde{\pi}_t^F$ plays a role similar to the time-varying inflation target, or drift, introduced in estimated medium-scale DSGE models to capture persistent inflation

dynamics (Smets and Wouters, 2007). The key difference is that, in our framework, the drift is endogenous rather than exogenous. Specifically, fiscal inflation is an endogenous policy variable determined by the coordination of monetary and fiscal authorities to stabilize the unfunded portion of public debt. As we show below, the choice between inflation and progressive taxation as alternative means of financing large redistributive programs plays a central role in explaining the emergence of the saving glut of the rich since the 1980s.

IV.B Solving the Model

We proceed as in the simple model of Section III. We first detrend all nonstationary variables, an essential step given the unit root in labor-augmenting technology, A_t. We then log-linearize the model around the deterministic steady state, including the equations associated with the shadow economy that track fiscal inflation and unfunded debt. The model is finally solved using standard methods for linear rational expectations systems. Appendix D.A provides details and reports the complete set of log-linearized equations.

V Inference

We estimate the model using Bayesian methods, combining prior distributions for the parameters with the model's likelihood function, which is evaluated via the Kalman filter.

V.A Data

The estimation uses quarterly U.S. macroeconomic and distributional data from 1962:Q1 to 2022:Q3. The observables are real per capita GDP, consumption, and investment growth; an hours gap; the effective federal funds rate; real average weekly earnings growth; GDP deflator inflation; real government transfer growth; government consumption and investment growth; the government-debt-to-GDP ratio; two measures of bottom-99 household liabilities-to-GDP; and the 30-year mortgage rate.

To account for the effective lower bound (ELB), we augment the dataset with market expectations of the federal funds rate at horizons of one to ten quarters, constructed from overnight index swap rates (Campbell et al., 2017), and with the five-year breakeven inflation rate. The expected-rate observations span 2008:Q4 to 2022:Q3, while the breakeven inflation series spans 2008:Q1 to 2022:Q3. Outside these sample periods, the corresponding observations enter the Kalman filter as missing values. Rather than imposing a nonlinear ELB constraint, we use these market-based expectations to discipline agents' expected paths for policy rates and inflation.

We construct the distributional variables following the unveiling-based approach of Mian et al. (2025). We integrate measures of households' balance sheets from the Distributional Financial Accounts (DFA) provided by the Federal Reserve Board (Batty et al., 2019) with measures from the Distributional National Accounts (DINA) of Piketty et al. (2017). The baseline household-liability observable is the bottom-99 debt-to-GDP series constructed with the Saez–Zucman/DINA distributional shares, which extends back to the 1960s. We also include the DFA bottom-99 liability series, available from 1989 onward, as a second noisy measurement of the same model object. The DFA series is allowed to differ by an estimated constant wedge and an estimated measurement error, so that the filter uses its post-1989 information without forcing the two sources to coincide level-by-level. In Appendix E, we provide details on the construction of the dataset.

We also incorporate narrative evidence and known policy changes into the structural inference and filtering exercises. Specifically, tax brackets are assumed to be unindexed through 1980:Q4 and fully indexed from 1981:Q1 onward, consistent with the reform chronology documented by Mertens and Montiel-Olea (2018). To capture the pandemic response, we allow for temporary unfunded household shocks from 2020:Q2 through the end of the sample. By contrast, the four persistent group-specific transfer shocks and the common temporary funded shock remain active throughout the sample.

V.B Posterior Distributions

Table I presents the prior and posterior distributions for the estimated model parameters. We choose diffuse priors for the parameters of the model, except for the parameters controlling the persistence of the trend components of funded and unfunded transfers. This choice is akin to an identifying assumption as we are interested in isolating secular shifts in spending and their impact on the dynamics of public and private debt. The table also reports the parameters governing the transitory unfunded transfer component, investor-household productivity heterogeneity, fiscal drag from unindexed tax brackets, and the mapping between the two bottom-99 household-liability series.

The response to inflation in the tax-backed block is estimated close to one, $\phi_\pi = 1.027$, while the response to fiscal inflation is fixed at $\phi_\pi^c = 0$. In line with the literature, we find a fair amount of nominal rigidity, especially in price setting. The parameter controlling substitution between private and government consumption is estimated to be small.

The estimated productivity ratio implies that the top-percentile investor type has substantially higher labor efficiency than the household type. This is the steady-state mapping that allows a one-percent mass of investors to represent the upper tail of the income distribution. The tax-indexation coefficient is positive but small, implying that the switch to

indexation in the post-1980s period is not the driving force behind the results presented below.

Table I: Priors and Posterior Mode

Parameter	Dist.	Prior Mean	Prior Std.	Posterior Mode	Posterior Std.	Description
s_b	N	2.459	0.050	2.352	1.101	Government debt/GDP
b_H/Y	N	0.402	0.010	0.393	0.032	Bottom-99 household debt/GDP
$\varkappa_{100}$	N	0.576	0.014	0.583	0.049	Steady-state growth rate
$\pi^{\star}_{100}$	N	0.545	0.014	0.548	0.061	Steady-state inflation
ξ_I	G	2.038	0.051	1.985	0.095	Inverse Frisch elasticity, investors
ξ_H	G	1.695	0.042	1.666	0.079	Inverse Frisch elasticity, households
μ_H	C	0.990	–	0.990	–	Population share of households
τ_N^I	C	0.240	–	0.240	–	Steady-state labor tax, investors
τ_N^H	C	0.160	–	0.160	–	Steady-state labor tax, households
a_I/a_H	G	10.000	10.000	3.671	0.169	Investor relative productivity
ω_w	B	0.844	0.010	0.855	0.016	Wage Calvo parameter
ω_p	B	0.915	0.010	0.926	0.006	Price Calvo parameter
ψ	B	0.681	0.017	0.696	0.041	Capital-utilization cost
s	N	11.625	0.291	13.029	0.867	Investment-adjustment cost
χ_w	B	0.038	0.001	0.039	0.003	Wage-inflation indexation
χ_p	B	0.247	0.006	0.259	0.034	Price-inflation indexation
θ_I	B	0.405	0.010	0.409	0.048	Habit formation, investors
θ_H	B	0.103	0.003	0.099	0.011	Habit formation, households
ζ_I	G	0.819	0.020	0.800	0.100	Inverse EIS, investors
ζ_H	G	0.0057	0.0001	0.0055	0.000073	Inverse EIS, households
α_g	N	0.110	0.003	0.110	0.098	Substitution between government and private consumption
ϕ_π	C	0.000	–	0.000	–	Interest-rate response to fiscal inflation
ϕ_y	C	0.010	–	0.010	–	Interest-rate response to output
$\phi_{\pi,c}$	N	1.016	0.025	1.027	0.00040	Counterfactual interest-rate response to inflation
$\phi_{y,c}$	N	0.140	0.003	0.133	0.006	Counterfactual interest-rate response to output
ϕ_{zy}	G	0.0238	0.0006	0.0238	0.0005	Transfer response to output
$\gamma_{G,c}$	N	0.0016	0.0001	0.0016	0.0000082	Government-consumption response to debt
$\gamma_{K,c}$	N	0.890	0.022	0.930	0.098	Capital-tax response to debt
$\gamma_{L,c}$	N	0.062	0.002	0.062	0.002	Labor-tax response to debt
$\gamma_{C,c}$	C	0.000	–	0.000	–	Consumption-tax response to debt
$\gamma_{Z,c}$	N	0.0019	0.0001	0.0019	0.000010	Transfer response to debt
γ_j	C	0.000	–	0.000	–	Actual-block debt feedback, all fiscal rules
n_{frp}	C	0.000	–	0.000	–	Unfunded-transfer loading in counterfactual block
ρ_r	B	0.0116	0.0003	0.0116	0.0005	Monetary-policy inertia
ρ_{gc}	B	0.871	0.022	0.895	0.012	Government-consumption rule persistence
ρ_z	B	0.987	0.025	0.991	0.00033	Transfer-rule persistence
ρ_{eg}	B	0.872	0.022	0.879	0.014	Government-consumption shock persistence
ρ_{ez}^{MI}	B	0.586	0.015	0.673	0.042	Funded permanent transfer persistence, investors
ρ_{ez}^{MH}	B	0.639	0.016	0.772	0.031	Funded permanent transfer persistence, households
ρ_{ez}^{FI}	B	0.499	0.012	0.493	0.050	Unfunded permanent transfer persistence, investors
ρ_{ez}^{FH}	B	0.993	0.025	0.993	0.00024	Unfunded permanent transfer persistence, households
ρ_a	B	0.099	0.002	0.104	0.011	Technology-shock persistence
ρ_b	B	0.861	0.022	0.912	0.009	Preference-shock persistence
ρ_{em}	B	0.0194	0.0005	0.0191	0.0010	Monetary-policy shock persistence
ρ_i	B	0.215	0.005	0.226	0.029	Investment-shock persistence
ρ_{rp}	B	0.416	0.010	0.407	0.056	Risk-premium shock persistence
ρ_{zt}	B	0.509	0.013	0.525	0.050	Temporary funded transfer persistence
ρ_{zt}^U	B	0.100	0.050	0.029	0.002	Temporary unfunded transfer persistence
ρ_{bH}	B	0.995	0.025	0.960	0.003	Mortgage-premium persistence
pen_H^{lev}	N	0.0500	0.0013	0.0547	0.0054	Household debt level penalty
pen_H^{adj}	N	0.0001	0.0001	0.00005	0.0000040	Household debt adjustment penalty
σ_{gc}	I	2.512	0.063	2.529	0.155	Government-consumption innovation std. dev.
σ_z^{MI}	I	29.193	0.500	22.523	2.532	Funded permanent transfer std. dev., investors
σ_z^{MH}	I	37.423	0.500	28.318	3.408	Funded permanent transfer std. dev., households
σ_z^{FI}	I	0.108	0.003	0.100	0.00090	Unfunded permanent transfer std. dev., investors
σ_z^{FH}	I	80.911	0.500	98.059	9.999	Unfunded permanent transfer std. dev., households
σ_a	I	1.896	0.047	2.085	0.117	Technology innovation std. dev.
σ_b	I	1.878	0.047	3.358	0.234	Preference innovation std. dev.
σ_m	I	7.867	0.100	9.180	0.964	Monetary-policy innovation std. dev.
σ_i	I	5.043	0.100	6.022	0.539	Investment innovation std. dev.
σ_w	I	0.576	0.014	0.718	0.024	Wage-markup innovation std. dev.
σ_p	I	0.306	0.008	0.288	0.006	Price-markup innovation std. dev.
σ_{rp}	I	0.260	0.006	0.242	0.005	Risk-premium innovation std. dev.
σ_{zt}	I	0.598	0.015	0.719	0.024	Temporary funded transfer std. dev.
σ_{zt}^U	I	20.000	10.000	21.212	2.734	Temporary unfunded transfer std. dev.

Continued on next page

Table I continued

Parameter	Dist.	Prior Mean	Prior Std.	Posterior Mode	Posterior Std.	Description
σ_{bH}	I	0.318	0.008	0.243	0.005	Mortgage-premium innovation std. dev.
σ^{ME}_{GDP}	I	0.920	0.023	0.941	0.036	GDP measurement-error std. dev.
σ^{ME}_{BY}	I	2.200	0.055	2.114	0.120	Government-debt/GDP measurement-error std. dev.
$\sigma^{ME}_{bH_PSZ}$	I	0.290	0.007	0.278	0.006	PSZ household-debt measurement-error std. dev.
$\sigma^{ME}_{bH_DFA}$	I	5.479	0.137	6.186	0.560	DFA household-debt measurement-error std. dev.
Δb^{DFA}_{H}	N	0.916	0.023	0.912	0.101	DFA liability level wedge
λ^{tax}_{π}	G	0.050	0.001	0.050	0.003	Fiscal drag under unindexed taxation
λ^{vol}_{ZLB}	G	1.197	0.030	1.196	0.107	ZLB volatility scale
$\lambda^{vol}_{i,COVID}$	C	1.000	–	1.000	–	COVID fiscal volatility scales, all six transfer shocks

Notes: The table reports the prior, posterior mode, and local posterior standard deviation for the final joint full-sample estimation. Posterior standard deviations use the delta method to transform the optimizer's inverse-Hessian approximation back to the model parameterization. N, B, G, and I denote Normal, Beta, Gamma, and Inverse-Gamma distributions; C denotes a calibrated parameter. Forward-guidance auxiliary coefficients are omitted.

VI Results

In this section, we describe the main results of the model. We first explore the behavior of funded and unfunded fiscal shocks using impulse responses. We then use the model to understand how these two shocks contributed to the saving glut of the rich.

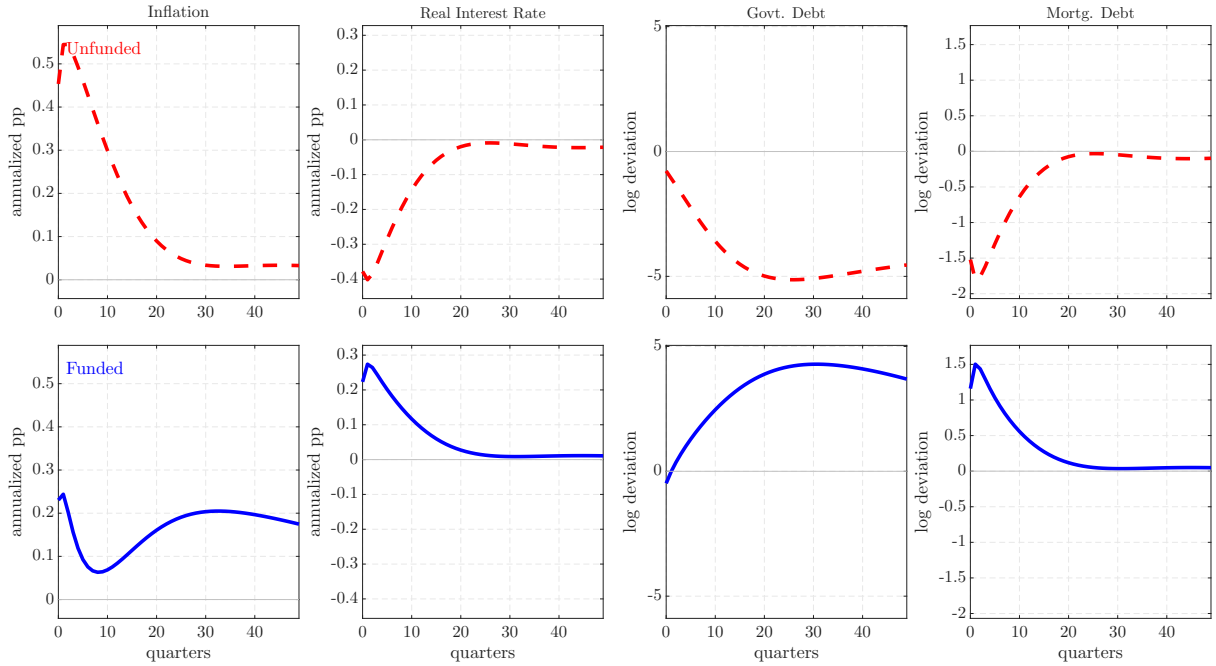
VI.A Impulse Responses

Figure VIII presents posterior-mode impulse responses to one-standard-deviation persistent household-transfer shocks. The top row reports the unfunded shock and the bottom row the funded shock. The two rows use the same axis limits within each observable, so their magnitudes can be compared directly. These responses parallel those analyzed in the simple model in Figure VI of Section III.

Following a funded shock, inflation has a modest increase on impact, triggering an increase in the real interest rate. Household mortgage debt rises temporarily as borrowers smooth consumption despite higher real rates and investors save in anticipation of future taxation. As the amount of spending starts to materialize, government debt increases, reflecting the decision to finance the transfer through borrowing today with the expectation of future fiscal adjustments. This dynamic echoes the funded fiscal shock analyzed in the simple model: the central bank responds more than one-for-one to inflation, stabilizing prices through tighter policy and inducing intertemporal reallocation. Importantly, the saving glut of the rich materializes first via private, then public lending, because the increase in spending is spread over time while households and investors immediately adjust their behavior. In both cases the accumulation of savings by investors is in anticipation of future taxation. Thus, investors are behaving in a Ricardian way in the sense of Barro (1974).

In contrast, an unfunded shock generates a large and immediate increase in inflation, a sharp fall in the real interest rate, and a pronounced decline in government debt as higher

Figure VIII: Impulse responses to funded and unfunded fiscal shocks



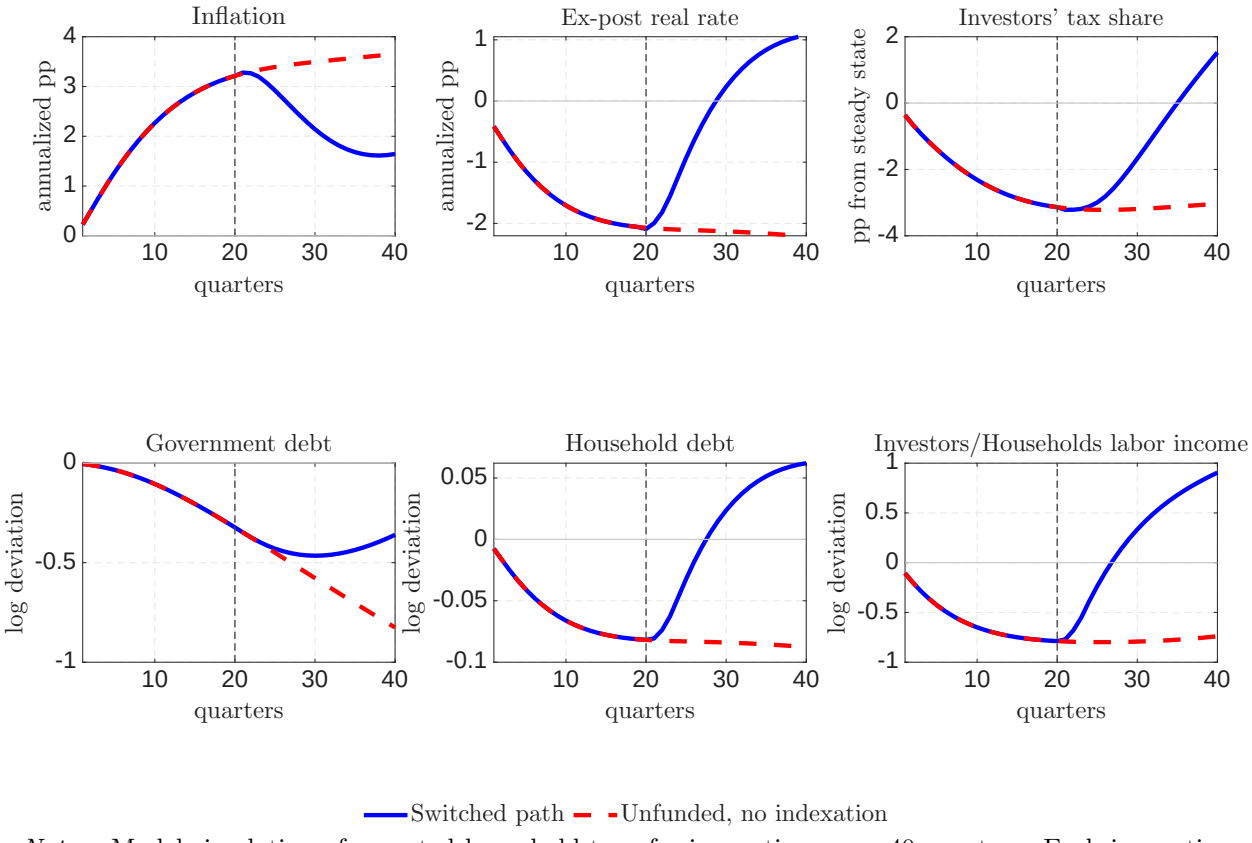
Notes: Posterior-mode quantitative-model responses to permanent household transfer shocks. The blue solid line denotes the funded shock and the red dashed line the unfunded shock. Each innovation equals one posterior standard deviation of its own estimated shock process. Horizons are quarters, and variables are plotted as deviations from steady state in the units reported on the panel axes.

inflation erodes its real value. Mortgage debt drops on impact, consistent with households using the transfer to deleverage, while investors reduce their holdings of nominal claims in anticipation of persistent fiscal expansion and high inflation.

While the quantitative model incorporates a richer set of frictions, a broader range of shocks, and estimated structural parameters that affect shock magnitudes and persistence, its underlying mechanisms remain consistent with those of the simple model presented in Section III: active monetary stabilization in the funded case and inflationary debt erosion in the unfunded case. In response to funded spending shocks, investors accumulate substantial savings, generating a saving glut among the rich. By contrast, in response to unfunded spending shocks, we observe significant deleveraging.

Figure IX provides a complementary exercise meant to capture the consequences of a progressive shift from unfunded to funded spending following the introduction of a large spending program. The economy starts from its deterministic steady state, and the program is introduced at time 0 as a sequence of positive household-transfer innovations. The economy receives an innovation in every quarter of the 40-quarter simulation. Each innovation equals one-half of the corresponding funded or unfunded shock's posterior standard deviation.

Figure IX: Tax Indexation and Fiscal Financing: Policy-Mix Simulation



Notes: Model simulation of repeated household-transfer innovations over 40 quarters. Each innovation equals one-half of the corresponding funded or unfunded shock's posterior standard deviation. Both paths are unfunded and tax brackets are unindexed through quarter 20. Beginning in quarter 21, the blue solid path transitions over four quarters toward fully funded financing and introduces tax-bracket indexation, while the red dashed path remains unfunded and unindexed. The vertical line marks the policy switch; variables are reported in the units shown on the panel axes.

We compare two scenarios. In both cases, during the first 20 quarters, transfers are entirely unfunded and tax brackets are not indexed. Beginning in quarter 21, policymakers in the first simulation index tax brackets to inflation and gradually shift toward funded spending, as occurred in the United States during the early 1980s (solid blue line). Over four quarters, the funded share of each new transfer innovation rises from 0% to 25%, 50%, 75%, and 100%, after which all innovations are fully funded. In the second simulation, the initial regime remains in place: every transfer innovation continues to be unfunded, and tax brackets remain unindexed throughout (red dashed line).

The simulation featuring the shift in financing reproduces the stylized facts highlighted in the Introduction. In the early phase of the new spending program, under unfunded finance, transfers are absorbed in part through inflation and the revaluation of nominal debt, keeping ex post real interest rates low and limiting the accumulation of public and private

liabilities. Once transfers become tax-backed, inflation subsides, and both government debt and household debt increase, supplying the nominal assets accumulated by the top 1%. It is only in this case that the saving glut of the rich appears. Absent this shift in financing, there is no saving glut of the rich, and inflation remains elevated.

The change in financing also accounts for the V-shaped pattern in the top-1 tax share. The initial decline reflects the compression of income inequality under inflationary finance. Prior to the policy switch, inflation acts as an implicit tax on nominal wealth by reducing the real value of outstanding debt. The increase in real activity compresses labor income inequality, lowering the tax share of the top 1%. Following the switch to tax-backed finance, investors anticipate a larger future fiscal burden and increase labor supply more than households, that are instead anticipating future transfers. The resulting rise in income inequality gradually increases the tax share of the top 1%, as in the data.

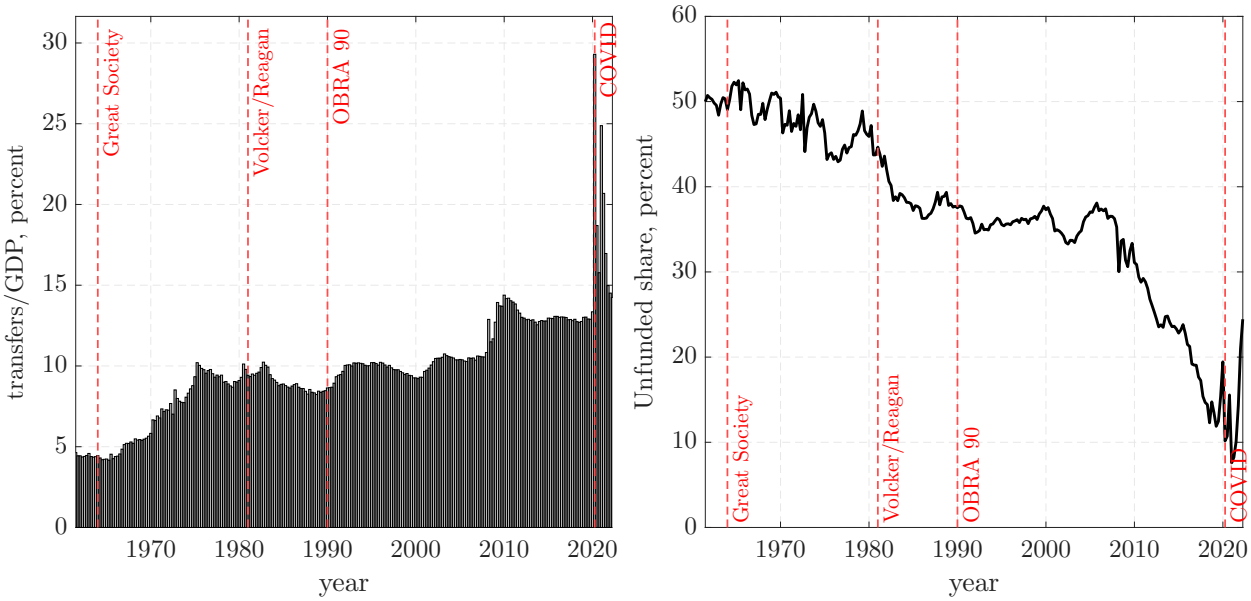
VI.B Fiscal Policy and the Saving Glut of the Rich

Building on the mechanisms illustrated in the previous subsection, we now show formally that the saving glut of the rich and the disinflation of the early 1980s can be jointly explained by a shift in the financing of redistributive policies in the United States. We first document this shift through the lens of the quantitative model and then ask how inflation and the saving glut of the rich would have evolved had this shift not occurred.

Figure X shows the evolution of transfers, Panel (a), and their financing, Panel (b), over time. Transfers accelerate rapidly in the mid-1960s following the introduction of President Lyndon Johnson's Great Society programs. This expansion occurs at a time when transfers are financed largely through unfunded policies. Although the transfer-to-GDP ratio remains relatively stable from the mid-1970s onward, the composition of financing changes markedly, with the unfunded share declining beginning in the early 1980s. The share falls further after 2010, when the government expands spending in the aftermath of the Global Financial Crisis. At the end of the sample, transfers rise sharply in response to the COVID-19 pandemic. Consistent with the evidence in Bianchi et al. (2023) and Barro and Bianchi (2025), these measures are only partially funded, implying a partial reversal of the decline in the unfunded share (see Figure XVI in the Appendix for more details on the COVID period).

In light of the substantial decline in the share of unfunded spending, we conduct a counterfactual exercise to assess how inflation and the saving glut of the rich would have evolved had this shift in financing not taken place. We take the economy in 1981:Q1 as the starting point and construct a counterfactual path in which the composition of fiscal financing remains unchanged from its pre-1981 structure. Specifically, using the fiscal shocks implied

Figure X: Transfer Financing Mix



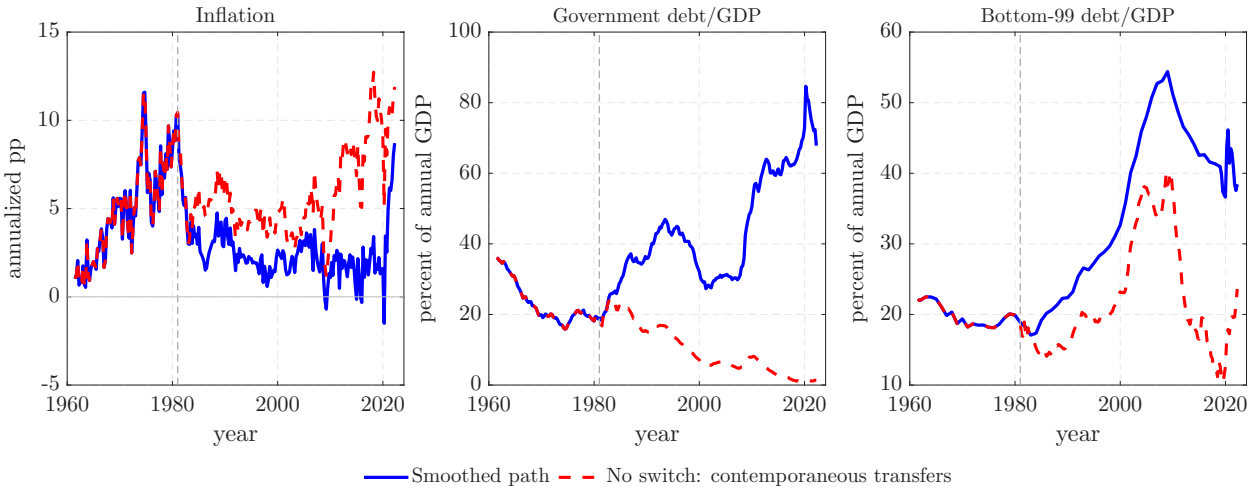
Notes: Panel (a) reports aggregate transfers as a percentage of GDP. Panel (b) reports the unfunded share of persistent transfers; temporary shocks are excluded. Their COVID-period contribution is reported in Appendix Figure XVI. Vertical lines mark the Great Society initiatives, the Volcker–Reagan policy shift, OBRA 1990, and the COVID period.

by the posterior-mode parameter estimates, we reallocate spending between funded and unfunded components to replicate the pre-1981 financing mix, when the share of unfunded spending was higher. All other shocks are held constant. Consequently, any difference between the actual and counterfactual series can be attributed to changes in the financing of the large spending programs introduced in the United States beginning in the 1960s.

Figure XI compares the observed paths of inflation, public debt, and household debt (solid lines) with their counterfactual counterparts (dashed lines). Panel (a) shows that inflation would have been substantially higher in the absence of the financing shift, with a pronounced acceleration following the Global Financial Crisis. Symmetrically, the economy would not have experienced the large accumulation of public and private debt observed in the data. This result reflects a basic economic mechanism: sustained debt accumulation is possible only if lenders expect those claims to be repaid. Absent the financing shift, the economy would therefore have experienced higher inflation and a much smaller buildup of public and household debt. Because these liabilities are held disproportionately by top earners, the counterfactual economy also lacks the accumulation of nominal claims that underlies the saving glut of the rich.

Taken together, the figures connect the change in fiscal financing to the saving glut of the rich. The greater role of funded transfers after the early 1980s shifts adjustment away from

Figure XI: Transfers without the Financing Switch



Notes: The blue solid line is the smoothed model path; the red dashed line keeps the pre-1981 funded–unfunded financing mix in place after 1981. Each quarter's signed net contemporaneous transfer innovation is preserved but reallocated according to the pre-1981 financing mix; all non-transfer disturbances are unchanged. Panel (a) reports inflation, panel (b) government debt/GDP, and panel (c) bottom-99 debt/GDP. Vertical lines mark the financing transition; variables are reported in the panel units.

inflation and toward explicit nominal liabilities. With progressive taxation, the prospect of future fiscal adjustment gives top earners an incentive to accumulate nominal claims. As transfers are paid out and taxes adjust gradually, these claims increasingly take the form of public and household debt. Had the pre-1981 financing mix remained in place, adjustment would instead have continued to occur mainly through inflation: debt issuance and the corresponding accumulation of claims by the rich would have been substantially smaller, and the saving glut would not have emerged.

VII Historical Evidence on the Shift in Fiscal Backing

The financing decomposition is identified econometrically from the model using comovements in the data. We now investigate whether the broader historical record is consistent with the model-implied shift from unfunded toward funded fiscal policy. Before doing so, it is important to keep in mind that whether a fiscal expansion is funded or unfunded can be difficult to assess from fiscal policy in isolation. Fiscal funding is inherently forward looking: with public debt still relatively low and the administration credibly supporting an anti-inflationary Federal Reserve, these deficits were more likely to be financed through future fiscal adjustment rather than inflation. In our framework, funded and unfunded fiscal policy instead describe a monetary–fiscal policy mix. The behavior of the central bank can

often provide an especially informative signal to economic agents—and to our model—of which policy mix is in place, as monetary policy may either succumb to fiscal pressures and accommodate the resulting inflation or receive the fiscal support needed to pursue an independent anti-inflationary policy. Viewed through this lens, the chronology of major U.S. policy changes is broadly consistent with the transition uncovered by the model.

The Great Society and unfunded fiscal policy. The expansion of redistribution that began in the mid-1960s represented a persistent increase in federal commitments. The Great Society initiatives and the Social Security Amendments of 1965 substantially expanded social programs, most notably through the introduction of Medicare and Medicaid. These programs were introduced in an environment of rising inflation and persistently low real interest rates, consistent with monetary accommodation and thereby with these new fiscal commitments being at least partly unfunded. Because federal income-tax brackets were not indexed to inflation, rising nominal incomes pushed taxpayers into higher tax brackets even in the absence of legislated increases in statutory rates. This "bracket creep" broadened the effective tax burden during the Great Inflation and disproportionately affected taxpayers outside the highest income groups. Figure I shows that the share of income taxes paid by top earners declined during the 1960s and 1970s even as redistributive spending expanded. Thus, the historical record is consistent with an unfunded policy mix in which inflation helped absorb the fiscal consequences of redistribution, both by eroding the real value of nominal liabilities and through its interaction with the tax system.

The Volcker–Reagan transition. The early 1980s marked the watershed in the U.S. monetary–fiscal policy mix. Volcker had begun the fight against inflation in 1979, but monetary policy was eased prematurely following pressure from the Carter administration that wanted to introduce price controls. The Federal Reserve tightened again aggressively in late 1980s and maintained exceptionally tight policy as the economy entered the deep 1981–82 recession (Goodfriend and King, 2005). The critical change was that the renewed disinflation policy received strong political support from the Reagan administration. Its February 1981 *Program for Economic Recovery* explicitly endorsed the Federal Reserve's objective of reducing money and credit growth and argued that reducing deficit financing would facilitate the pursuit of price stability. As the costs of disinflation mounted, this commitment was sustained: in July 1981, Kansas City Fed President Roger Guffey emphasized that, unlike in previous episodes, the Fed now had the support of the Administration, and Reagan reaffirmed his confidence in the Federal Reserve's policies and independence during the recession in February 1982 (Bianchi and Ilut, 2017; Bianchi and Melosi, 2022; Weise, 2012). Taken

together, these actions signaled a critical change in monetary–fiscal coordination. With public debt still relatively low and the administration credibly supporting an anti-inflationary Federal Reserve, even the large deficits generated by the initial Reagan tax cuts were more likely to be financed through future fiscal adjustment rather than inflation. Consistent with this interpretation, Bianchi and Ilut (2017) show that primary surpluses rebounded quickly under Reagan, while much of the overall deficit reflected higher interest payments. Since the primary balance is the relevant measure of the fiscal stance, the large headline deficits therefore do not by themselves imply a lack of fiscal backing.

On the fiscal side, the Economic Recovery Tax Act of 1981 sharply reduced statutory marginal tax rates, including those at the top of the income distribution, while also legislating the indexation of individual income-tax parameters to inflation beginning in 1985 (Mertens and Montiel-Olea, 2018). Indexation effectively locked in the new tax schedule in real terms by removing bracket creep, a mechanism through which inflation had previously raised effective tax burdens automatically. The combination of the initial tax cuts and the subsequent shift toward explicit fiscal backing accounts for the V-shaped evolution of the tax share shown in Figure I: the Reagan tax cuts initially reduced the burden at the top, while the transition to a funded regime meant that the fiscal adjustment required to back government liabilities increasingly had to occur through explicit future tax and spending policies rather than through inflation.

The Tax Equity and Fiscal Responsibility Act of 1982, the Social Security Amendments of 1983, and the Deficit Reduction Act of 1984 subsequently provided concrete evidence that future fiscal imbalances would be addressed through legislated tax increases and spending or benefit adjustments rather than inflation. The 1983 Social Security reform is particularly illustrative: it accelerated scheduled payroll-tax increases, introduced taxation of benefits for higher-income recipients, delayed cost-of-living adjustments, gradually raised the full retirement age, and introduced other measures aimed at restoring the program's long-run solvency. Moreover, Reagan's reappointment of Volcker in 1983 provided a further signal that the new monetary–fiscal policy mix was durable (Reagan, 1983).

As public debt rose substantially during the 1980s, evidence that the growing stock of government liabilities would remain funded continued to strengthen. The Omnibus Budget Reconciliation Act of 1990 raised the top statutory individual income-tax rate from 28 to 31 percent and introduced phaseouts of personal exemptions and itemized deductions for high-income taxpayers. At the same time, the Budget Enforcement Act of 1990 introduced discretionary spending caps and pay-as-you-go procedures, requiring new mandatory spending or tax reductions to be offset elsewhere in the budget. These reforms provided further evidence that rising public debt would be financed through explicit future tax and spending

adjustments rather than inflation.

The shift became more pronounced under the Clinton administration. The Omnibus Budget Reconciliation Act of 1993 introduced new 36 and 39.6 percent income-tax brackets, removed the earnings cap on the Medicare payroll tax, and increased the fraction of Social Security benefits subject to taxation for higher-income recipients. These fiscal adjustments explicitly placed a larger share of the future fiscal burden on the upper end of the income distribution. Consistent with this change, Figure I shows a pronounced rise in the share of federal income taxes paid by the top 1 and top 10 percent beginning in the early 1990s. The timing therefore aligns closely with the continued decline in the unfunded share inferred by the model. More generally, with progressive taxation, fiscal backing of debt-financed deficits places a disproportionate share of the future fiscal burden on high-income households, giving them stronger incentives to save and thereby contributing to the saving glut of the rich. The associated increase in private lending through intertemporal substitution provides an additional channel.

The Global Financial Crisis and its aftermath. The American Recovery and Reinvestment Act of 2009 generated a large fiscal expansion, but it was soon followed by measures that reinforced its funded nature. Statutory pay-as-you-go rules were reinstated in 2010 and the Budget Control Act of 2011 introduced multiyear spending caps and other deficit-reduction measures. Subsequent tax legislation also increased the burden on high-income households, including through the Affordable Care Act and the restoration of the 39.6 percent top individual income-tax rate in 2013. Despite the substantial rise in public debt, these measures signaled that the government intended to undertake the fiscal adjustments necessary to keep a large share of those liabilities funded.

The COVID-19 pandemic. The CARES Act of March 2020 introduced an exceptionally large fiscal stimulus in response to the severe economic contraction. In August 2020, the Federal Reserve adopted the flexible average inflation targeting regime that allowed inflation to run moderately above two percent following periods of below-target inflation. Fiscal support expanded again with the American Rescue Plan Act of 2021, which provided an additional 1.9 trillion stimulus as the economy was already recovering. The large fiscal expansions, together with an accommodative monetary stance, were followed by a rapid recovery and a sharp and persistent increase in inflation (Bianchi et al., 2023). The episode therefore represents a partial return toward the unfunded monetary–fiscal policy mix identified by the model.

In sum, these episodes are consistent with a gradual transition beginning in the early 1980s from an unfunded toward a funded monetary–fiscal policy mix, with the pandemic seemingly marking a partial reversal. The watershed was not the disappearance of fiscal deficits. Public debt in fact rose substantially after the early 1980s. What changed was how those deficits were expected to be financed. Monetary policy became credibly committed to price stability and received the political support needed to resist fiscal pressures, while prospective fiscal adjustment increasingly replaced inflation as the expected means of financing government liabilities. As the burden of that adjustment increasingly fell on high-income households, they had stronger incentives to save. At the same time, funded deficits supplied government liabilities whose real value was no longer expected to be eroded through fiscal inflation. The transition toward funded fiscal policy therefore connects the decline in inflation to the accumulation of public and private claims that characterizes the saving glut of the rich.

VIII Conclusions

This paper argues that the saving glut of the rich and the decline in inflation that began in the 1980s can both be understood as the consequence of a shift in the financing of redistributive policies. We first take an agnostic approach to the data by identifying funded and unfunded fiscal shocks using a VAR with heteroskedasticity-based identification. We then build and quantitatively evaluate a two-agent New Keynesian model in which funded and unfunded fiscal shocks coexist and redistribute resources from high-income investors to low-income households. Unfunded redistribution generates inflation and household deleveraging, whereas funded redistribution leads investors to accumulate substantial savings, initially through private lending and subsequently through holdings of public debt.

Estimated on U.S. quarterly data from 1962 to 2022 and combining aggregate macroeconomic series with distributional measures of debt, assets, and consumption, the model uncovers a fundamental transformation in fiscal financing. Before the mid-1980s, unfunded shocks were the primary driver of transfer dynamics, consistent with a regime in which inflation acted as a fiscal instrument. Public debt remained contained, and borrower leverage was persistently lower. After the mid-1980s, funded shocks became dominant, replacing inflationary finance with debt-financed redistribution backed by a progressive increase in the tax share of the rich. This shift supported higher levels of public debt, coincided with a substantial rise in household borrowing, and contributed to the emergence of a persistent saving glut among the rich.

By structurally decomposing the historical contributions of funded and unfunded shocks, the analysis validates mechanisms suggested by the descriptive evidence. The results show

that the method through which fiscal policy redistributes resources, whether through future taxation or inflationary debt erosion, has important implications for inflation, debt accumulation, and the distribution of wealth. The central insight is that, in the presence of a progressive tax system, a switch from inflationary to debt financing leads to debt accumulation by top earners. More broadly, the paper highlights the importance of the financing side of fiscal policy for understanding the interaction between fiscal and monetary policy and the long-run evolution of public and private leverage.

A potential limitation of our microfounded model is that it abstracts from the global saving glut, insofar as it does not explicitly account for the fact that a portion of U.S. public debt is held by foreign investors. However, as argued by Mian et al. (2025), the global saving glut largely mirrors the saving glut of the rich. It is therefore plausible that the same forces driving the accumulation of wealth among high-income households also shape foreign demand for dollar-denominated assets. While our VAR evidence remains unaffected by this consideration, it would be valuable to develop a model that explicitly incorporates external investors who are willing to lend to U.S. consumers when they expect the real value of their claims to be preserved. We view this extension as a promising avenue for future research.

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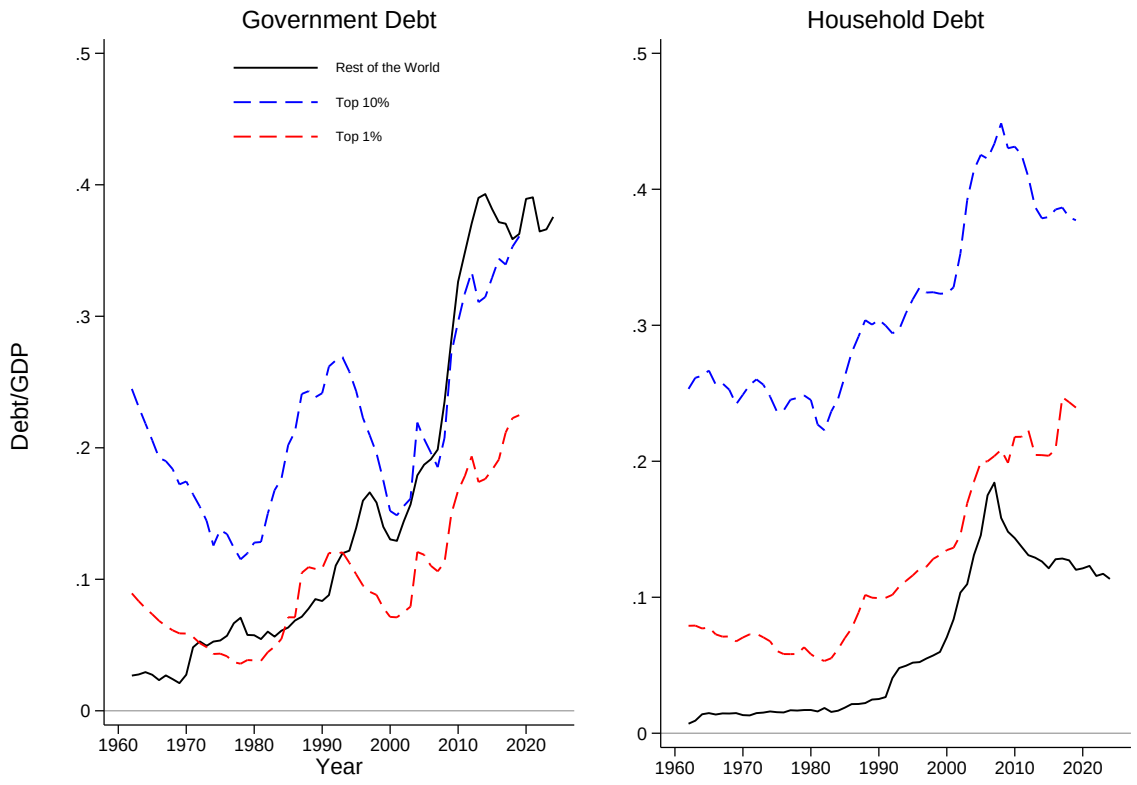
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A Stylized Facts: Additional Material

A.A Additional Figures

Rest of the World Debt Holdings. Figure XII displays debt holdings as a share of national income for three investor groups: Rest of World (black solid line), Top 10% of US wealth distribution (blue dashed line), and Top 1% of US wealth distribution (red dashed line). Left panel shows holdings of US government debt (Treasury securities); right panel shows holdings of household debt (mortgages and consumer credit). Variables constructed as: Rest of World government debt holdings/national income; Top 10% government debt holdings/national income from distributional wealth accounts; Top 1% government debt holdings/national income. Household debt variables constructed analogously. Data sources: Federal Reserve Financial Accounts of the United States (Z.1) for aggregate debt; Piketty et al. (2017) distributional wealth data for Top 10% and Top 1% allocations; rest of world holdings from international investment position data.

Figure XII: Rest of the World Holdings



B Reduced Form Evidence

B.A Heteroskedasticity-Identified VAR

This appendix describes the reduced-form exercise used in Section II. The purpose of the exercise is to provide model-free evidence on the transmission of fiscal shocks. The structural estimation in the main quantitative model does not use these restrictions.

Let

$$y_t = \left[\Delta \log Y_t,\ \pi_t,\ i_t,\ \frac{DEF_t}{B_{t-1}},\ \frac{B_t^H}{Y_t},\ \frac{B_t^G}{Y_t}\right]',$$

where $\Delta \log Y_t$ is real GDP growth, π_t is inflation, i_t is the federal funds rate, DEF_t/B_{t-1} is the primary deficit-to-debt ratio, B_t^H/Y_t is household debt-to-GDP for the bottom 90 percent, and B_t^G/Y_t is government debt-to-GDP. The reduced-form VAR is

$$y_t = c + \sum_{\ell=1}^{p} B_\ell y_{t-\ell} + u_t, \qquad \mathbb{E}[u_t u_t' \mid m(t) = m] = \Sigma_m, \tag{16}$$

where $m(t) \in \{1, \ldots, M\}$ indexes volatility regimes. The ordering of variables in y_t is only notational; identification does not rely on a recursive ordering.

The structural representation is

$$A_0 y_t = a + \sum_{\ell=1}^{p} A_\ell y_{t-\ell} + \varepsilon_t, \qquad \mathbb{E}[\varepsilon_t \varepsilon_t' \mid m(t) = m] = \Lambda_m, \tag{17}$$

where Λ_m is diagonal. The identifying assumption is that the contemporaneous matrix A_0 and the lag dynamics are constant across volatility regimes, while the variances of structural shocks change across regimes. Thus,

$$u_t = A_0^{-1}\varepsilon_t, \qquad \Sigma_m = A_0^{-1}\Lambda_m A_0^{-1\prime}. \tag{18}$$

Identification comes from comparing covariance matrices across regimes. For two regimes i and j,

$$\Sigma_i^{-1}\Sigma_j = A_0' \Lambda_i^{-1}\Lambda_j A_0^{-1\prime}. \tag{19}$$

Since $\Lambda_i^{-1}\Lambda_j$ is diagonal, changes in relative shock variances across regimes identify the rotation from reduced-form innovations to structural shocks, up to sign and permutation, provided that relative variances differ sufficiently across shocks. This is the source of identification.

In the baseline implementation, volatility regimes correspond to major macroeconomic episodes in the U.S. sample, including the oil-shock period, the Volcker disinflation, the savings-and-loan crisis, the Great Moderation, the financial crisis and Great Recession, the ZLB recovery, and the COVID period. The economic content of the shocks is not imposed

by these regimes; the regimes only provide changes in the covariance matrix of reduced-form innovations.

For each posterior draw, we recover the structural shocks and compute impulse responses to one-standard-deviation innovations. Since shocks are identified up to sign and permutation, we label them ex post. We normalize fiscal shocks so that a positive innovation raises the deficit-to-debt ratio. We then identify two fiscal disturbances. The first is labeled *unfunded*: it raises inflation, generates a large fiscal imbalance, and is associated with a decline in household debt-to-GDP. The second is labeled *funded*: it is associated with a muted inflation response and a persistent increase in household and government debt. The remaining shocks are not used for the narrative in the main text, but their impulse responses are reported in Figure XIII.

B.B Distributional Local Projections by Tax Progressivity

This appendix describes the reduced-form local projections reported in Section II. The exercise combines Ramey news spending shocks (Ramey, 2011), the tax-progressivity classification of Ferriere and Navarro (2018), and quarterly SCF-based top-10 wealth shares from Bayer et al. (2025).

The progressivity split follows Ferriere and Navarro (2018). They measure tax progressivity using the log-linear tax function

$$\tau_t(y) = 1 - \lambda_t y^{-\gamma_t},$$

where γ_t indexes progressivity. This implies

$$\gamma_t = \frac{AMTR_t - ATR_t}{1 - ATR_t},$$

with $AMTR_t$ denoting the average marginal tax rate and ATR_t denoting the average tax rate. A quarter is classified as progressive when the average of γ_t over the forward window following the spending episode exceeds the average of γ_t over the preceding window:

$$I_t^P = \mathbf{1}\left\{\bar{\gamma}_t^a > \bar{\gamma}_{t-1}^b\right\}.$$

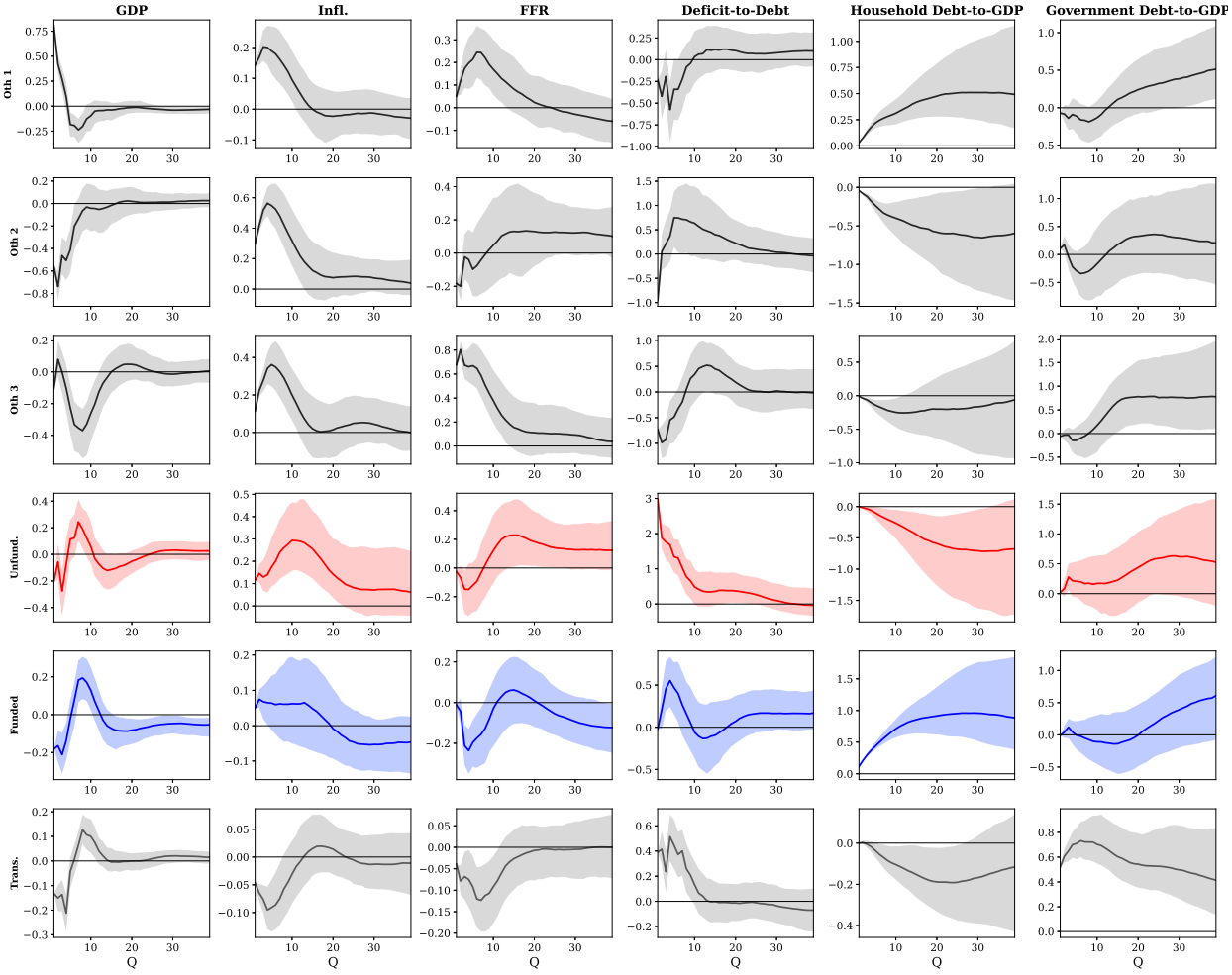
Their benchmark uses a forward window of approximately three years and a backward window of approximately two years. We use I_t^P to split spending innovations into progressive and non-progressive components.

For each horizon $h = 0, \ldots, 20$, we estimate

$$Y_{t+h} - Y_{t-1} = \alpha_h + \beta_h^P \left(I_t^P s_t\right) + \beta_h^N \left(1 - I_t^P\right) s_t + \Gamma_h X_{t-1} + \varepsilon_{t,h},$$

where Y_t is the SCF top-10 wealth share and s_t is the Ramey news spending shock. The coefficient β_h^P gives the response to spending news in progressive tax environments, while β_h^N gives the response in non-progressive environments. The controls X_{t-1} include the pro-

Figure XIII: Heteroskedasticity-Identified VAR: Full Set of Impulse Responses



Notes: The figure reports impulse responses for all identified shocks in the heteroskedasticity-identified VAR. The rows labeled "Unfund." and "Funded" correspond to the fiscal shocks discussed in Section II. Shaded areas denote posterior credible sets. The x-axis reports quarters.

gressivity indicator, lagged outcome growth, lagged progressive and non-progressive shock components, and a linear trend. Standard errors are Newey–West with horizon-specific lag length $h + 1$. Responses are scaled to a positive spending shock equal to one percentage point of GDP.

C Simple Model: Additional Material

C.A Endowment Economy

Time is discrete and infinite, indexed by $t = 0, 1, 2, \ldots$. The economy consists of: (i) a continuum of identical households (borrowers) indexed by $i \in [0, \omega]$; (ii) a continuum of identical investors (lenders) indexed by $i \in [\omega, 1]$; (iii) a monetary authority; and (iv) a fiscal authority.

The simple model abstracts from production and labor supply. Aggregate resources are an endowment,

$$Y_t = \omega e_t^H + (1 - \omega) e_t^I,$$

where e_t^i is the per-capita pre-tax endowment of type $i \in \{H, I\}$. Investors have a larger steady-state endowment, $\bar{e}^I > \bar{e}^H$, which is the simple-model counterpart of their interpretation as high-income households. This asymmetry is fixed and affects the steady-state allocation, the tax base, and the consumption weights in the linearized resource constraint. The experiments below vary the financing of transfers, not the endowment distribution.

The government transfers resources to borrowers, taxes investors, and issues nominal debt held by investors. Fiscal policy satisfies an intertemporal budget constraint, allowing for deficits when needed. The monetary authority sets the nominal interest rate according to a Taylor rule that responds more than one-for-one to inflation under monetary dominance and accommodates fiscal inflation under fiscal dominance.

Borrowers. Households choose consumption and nominal debt issuance. For notational simplicity, we suppress the individual household index i. The household's consumption-saving decision is characterized by:

$$V^H(B_{t-1}^H, \zeta_{s,t}^H, \zeta_{s,t}^I) = \max_{C_{H,t}, B_t^H} \log C_{H,t} + \beta \mathbb{E}_t[V^H(B_t^H, \zeta_{s,t+1}^H, \zeta_{s,t+1}^I)]$$

subject to the real budget constraint:

$$C_{H,t} + R_{t-1}^{(H)} \frac{B_{t-1}^H}{\Pi_t} = e_t^H + Q_t^{(H)} B_t^H + Z_t^H - T_t^H,$$

where $B_t^H > 0$ denotes household nominal borrowing, Z_t^H denotes transfers to households, T_t^H denotes taxes, and Π_t is gross inflation. The Euler equation for household borrowing is

$$Q_t^{(H)} = \mathbb{E}_t \left[M_{t,t+1}^H \Pi_{t+1}^{-1} \right],$$

where $M_{t,t+1}^H = \beta (C_{H,t+1}/C_{H,t})^{-1}$.

Investors. Investors choose consumption, private loans to households, and government bond holdings. Their problem is:

$$V^I(B^{(H)}_{I,t-1}, B^{(G)}_{I,t-1}, \zeta^H_{s,t}, \zeta^I_{s,t}) = \max_{C_{I,t}, B^{(H)}_{I,t}, B^{(G)}_{I,t}} \log C_{I,t} + U(B^{(H)}_{I,t}) + \beta \mathbb{E}_t[V^I(B^{(H)}_{I,t}, B^{(G)}_{I,t}, \zeta^H_{s,t+1}, \zeta^I_{s,t+1})]$$

subject to:

$$C_{I,t} + Q^{(H)}_t B^{(H)}_{I,t} + Q^{(G)}_t B^{(G)}_{I,t} = e^I_t - T^I_t + R^{(H)}_{t-1} \frac{B^{(H)}_{I,t-1}}{\Pi_t} + R^{(G)}_{t-1} \frac{B^{(G)}_{I,t-1}}{\Pi_t}.$$

Investors have a preference for holding private loans up to a steady-state level:

$$U(B^{(H)}_{I,t}) \equiv -\frac{\omega}{2} \left(B^{(H)}_{I,t} - \bar{B}^{(H)}_I \right)^2. \tag{20}$$

This term captures the portfolio motive that pins down a unique steady-state level of private lending. The first-order conditions for private loans and government bonds imply:

$$Q^{(H)}_t \left(1 - C_{I,t} U'(B^{(H)}_{I,t}) \right) = \mathbb{E}_t \left[M^I_{t,t+1} \Pi^{-1}_{t+1} \right],$$
$$Q^{(G)}_t = \mathbb{E}_t \left[M^I_{t,t+1} \Pi^{-1}_{t+1} \right],$$

where $M^I_{t,t+1} = \beta (C_{I,t+1}/C_{I,t})^{-1}$.

Monetary Policy. Let tildes denote log deviations from the deterministic steady state, except for debt ratios and fiscal variables expressed relative to output, which are expressed as level deviations from steady-state ratios. The monetary authority sets the nominal return on government debt according to

$$\tilde{r}^G_t = \rho_R \tilde{r}^G_{t-1} + (1 - \rho_R) \left[\phi^M_\pi \left(\tilde{\pi}_t - \tilde{\pi}^F_t \right) + \phi^F_\pi \tilde{\pi}^F_t + \phi_y \tilde{y}_t \right] + \sigma_m u^m_t. \tag{21}$$

Here $\tilde{\pi}^F_t$ is the fiscally led inflation component generated by unfunded fiscal needs. The coefficient $\phi^M_\pi > 1$ captures an active response to inflation that is backed by fiscal adjustment. The coefficient $\phi^F_\pi \leq 1$ captures accommodation of fiscal inflation. In the limiting case $\phi^F_\pi = 0$, the central bank fully accommodates the inflation component needed to stabilize the unfunded fiscal burden. The monetary policy disturbance satisfies $u^m_t \sim iid\, N(0,1)$.

Fiscal Policy. The government budget constraint is

$$Q^{(G)}_t B_{G,t} + T^I_t = R^{(G)}_{t-1} \frac{B_{G,t-1}}{\Pi_t} + Z^H_t, \tag{22}$$

where $B_{G,t}$ is nominal public debt, T^I_t is the tax revenue collected from investors, and Z^H_t is the transfer paid to households. The simple model focuses on redistribution from high-income investors to borrowers, so fiscal backing is summarized by the investor tax rule. In ratios to output, the primary balance is $(T^I_t - Z^H_t)/Y_t$.

Transfers are decomposed into a funded component and an unfunded component,

$$\tilde{z}_t^H = \tilde{z}_t^{H,M} + \tilde{z}_t^{H,F}, \tag{23}$$

where M denotes the funded component and F denotes the unfunded component. The funded component is monetary-led and fiscally backed; the unfunded component is fiscally led and not backed by future taxes. The two transfer components follow orthogonal AR(1) processes,

$$\tilde{z}_t^{H,M} = \rho_{zM}\tilde{z}_{t-1}^{H,M} + \sigma_{zM}u_t^{zM}, \tag{24}$$

$$\tilde{z}_t^{H,F} = \rho_{zF}\tilde{z}_{t-1}^{H,F} + \sigma_{zF}u_t^{zF}, \tag{25}$$

with $u_t^{zM}, u_t^{zF} \sim iid\, N(0,1)$ and mutually orthogonal to u_t^m. The funded shock u_t^{zM} raises transfers but is backed by future taxes on investors. The unfunded shock u_t^{zF} raises transfers without fiscal backing and is stabilized through fiscal inflation.

The tax rule is

$$\tilde{t}_t^I = \rho_T\tilde{t}_{t-1}^I + (1-\rho_T)\left[\gamma_b^M\tilde{b}_{t-1}^{G,M} + \gamma_b^F\tilde{b}_{t-1}^{G,F}\right], \tag{26}$$

where $b_t^{G,M}$ is the debt component backed by future taxes and $b_t^{G,F}$ is the unfunded debt component associated with the shadow fiscal block. The funded regime has $\gamma_b^M > 0$ large enough to satisfy fiscal backing. The unfunded regime has $\gamma_b^F \simeq 0$, so investor taxes do not rise enough to finance the transfer. Combining the tax rule with the transfer decomposition gives

$$\tilde{t}_t^I - \tilde{z}_t^H = \tilde{t}_t^I - \tilde{z}_t^{H,M} - \tilde{z}_t^{H,F}. \tag{27}$$

The shadow fiscal block isolates the unfunded component. In that block,

$$\gamma_b^F\tilde{b}_{t-1}^{G,F} - \tilde{z}_t^{H,F} = \gamma_b^F\tilde{b}_{t-1}^{G,F} - \tilde{z}_t^{H,F}, \tag{28}$$

$$\tilde{b}_t^{G,F} = \beta^{-1}\left[\tilde{b}_{t-1}^{G,F} + \tilde{r}_{t-1}^{G,F} - \tilde{\pi}_t^F - \Delta\tilde{y}_t^F - (1-\beta)\left(\gamma^F\tilde{b}_{t-1}^{G,F} - \tilde{z}_t^{H,F}\right)\right], \tag{29}$$

and monetary policy responds with ϕ_π^F. The funded component is the residual $\tilde{b}_t^{G,M} = \tilde{b}_t^G - \tilde{b}_t^{G,F}$. This is the policy block underlying equations (2)–(8c) in Section III.

Market Clearing. The loan market clears when:

$$\omega B_t^H = (1-\omega)B_{I,t}^{(H)},$$

and the government bond market clears when:

$$(1-\omega)B_{I,t}^{(G)} = B_{G,t}.$$

Finally, the resource constraint of the economy is:

$$\omega C_{H,t} + (1-\omega)C_{I,t} = Y_t.$$

C.B Production Economy with Endogenous Labor

This subsection reports the production-economy version of the simple model used to generate the robustness figures. The purpose is to verify that the funded-versus-unfunded mechanism does not rely on a fixed endowment. The fiscal experiment is kept unchanged relative to Section III: funded and unfunded household transfer innovations enter the same persistent transfer state and with the same timing. The only change is that output is produced with labor and both groups choose labor supply.

Technology and aggregation. Final output is produced with a linear technology,

$$Y_t = A_t L_t, \qquad L_t = \omega L_t^H + (1-\omega) L_t^I. \tag{30}$$

Prices and wages are flexible in this robustness exercise, so the real wage equals marginal product,

$$w_t = A_t. \tag{31}$$

Aggregate consumption is

$$C_t = \omega C_t^H + (1-\omega) C_t^I, \qquad Y_t = C_t + G_t. \tag{32}$$

Thus movements in output are movements in aggregate labor, holding technology fixed.

Borrowers. Borrowers choose consumption, labor supply, and nominal debt issuance. Their recursive problem is

$$V^H(B_{t-1}^H, \mathcal{S}_t) = \max_{C_t^H, L_t^H, B_t^H} \left[\log\left(C_t^H + \alpha_G G_t\right) - \frac{(L_t^H)^{1+\xi_H}}{1+\xi_H} \right] + \beta E_t V^H(B_t^H, \mathcal{S}_{t+1}) \tag{33}$$

subject to

$$(1+\tau_t^C) C_t^H + R_{t-1}^H \frac{B_{t-1}^H}{\Pi_t} = (1-\tau_{L,t}^H) w_t L_t^H + Q_t^H B_t^H + Z_t^H. \tag{34}$$

The state vector $\mathcal{S}_t$ contains public debt, household debt, the fiscal transfer states, tax states, and the exogenous shocks. The intratemporal condition is

$$(L_t^H)^{\xi_H} = \lambda_t^H (1-\tau_{L,t}^H) w_t, \tag{35}$$

where λ_t^H is the marginal utility value of wealth. Log-linearizing around the deterministic steady state gives

$$\tilde{w}_t + \tilde{\lambda}_t^H - \xi_H \tilde{L}_t^H - \frac{\bar{\tau}_L^H}{1-\bar{\tau}_L^H} \tilde{\tau}_{L,t}^H = 0. \tag{36}$$

Investors. Investors choose consumption, labor supply, private loans to households, and government bond holdings. Their recursive problem is

$$V^I(B^H_{I,t-1}, B^G_{I,t-1}, \mathcal{S}_t) = \max_{C^I_t, L^I_t, B^H_{I,t}, B^G_{I,t}} \left[\log\left(C^I_t + \alpha_G G_t\right) - \frac{(L^I_t)^{1+\xi_I}}{1+\xi_I} + U(B^H_{I,t})\right] + \beta E_t V^I(B^H_{I,t}, B^G_{I,t}, \mathcal{S}_{t+1}) \tag{37}$$

subject to

$$(1+\tau^C_t)C^I_t + Q^H B^H_{I,t} + Q^G B^G_{I,t} = (1-\tau^I_{L,t})w_t L^I_t + Z^I_t + R^H_{t-1}\frac{B^H_{I,t-1}}{\Pi_t} + R^G_{t-1}\frac{B^G_{I,t-1}}{\Pi_t}. \tag{38}$$

The private-loan preference $U(B^H_{I,t})$ is the same quadratic portfolio term in equation (20). The investor labor supply condition is

$$(L^I_t)^{\xi_I} = \lambda^I_t(1-\tau^I_{L,t})w_t, \tag{39}$$

or, after log-linearization,

$$\tilde{w}_t + \tilde{\lambda}^I_t - \xi_I \tilde{L}^I_t - \frac{\bar{\tau}^I_L}{1-\bar{\tau}^I_L}\tilde{\tau}^I_{L,t} = 0. \tag{40}$$

This equation is the labor-margin counterpart of the endowment model. A funded transfer can raise investor labor through the expected explicit-tax burden, while an unfunded transfer can affect labor through the inflationary wealth effect and the induced movement in investor marginal utility.

Fiscal policy and transfer timing. The government budget constraint includes labor-tax revenue, consumption-tax revenue, government purchases, transfers, and nominal debt revaluation:

$$Q^G_t B^G_t + T^L_t + T^C_t = R^G_{t-1}\frac{B^G_{t-1}}{\Pi_t} + G_t + \omega Z^H_t + (1-\omega)Z^I_t, \tag{41}$$

where

$$T^L_t = \omega\tau^H_{L,t}w_t L^H_t + (1-\omega)\tau^I_{L,t}w_t L^I_t, \qquad T^C_t = \tau^C_t C_t.$$

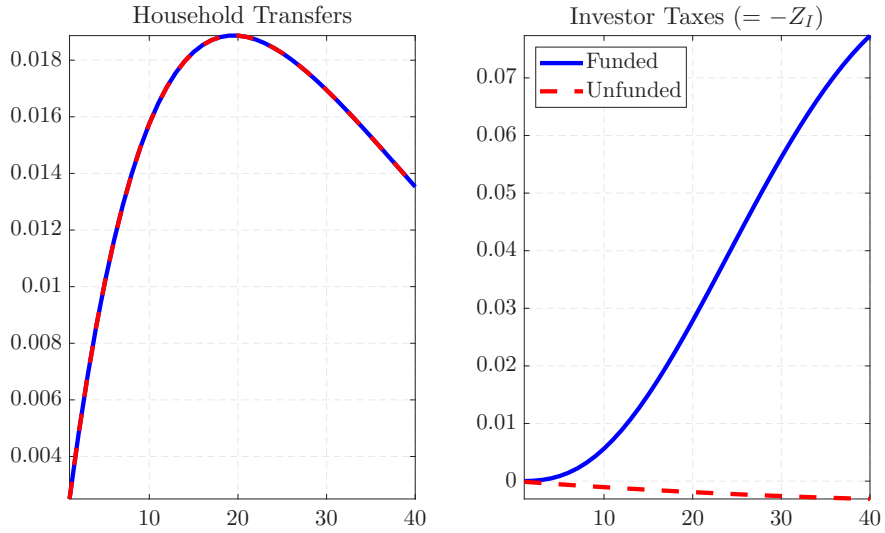
Labor taxes follow debt-feedback rules of the form

$$\tilde{\tau}^i_{L,t} = \rho_{\tau i}\tilde{\tau}^i_{L,t-1} + (1-\rho_{\tau i})\gamma^i_L \tilde{b}^G_{t-1}, \qquad i \in \{H, I\}. \tag{42}$$

In the unfunded block, $\gamma^i_L = 0$, so labor taxes do not back the transfer. In the funded block, the counterfactual fiscal rule uses positive debt feedback, so the fiscal burden is eventually absorbed by explicit taxes and debt rather than by fiscal inflation.

The household transfer process is kept identical across the endowment and production-

Figure XIV: Transfers and Taxes in the Production Economy with Endogenous Labor



Notes: The figure plots the transfer states in the production-economy version of the simple model with endogenous labor supply. The solid blue line is the funded household transfer shock and the dashed red line is the unfunded household transfer shock. The left panel reports household transfers. The right panel reports $-Z_t^I$, so positive values correspond to taxes on investors. The funded and unfunded shocks enter the same persistent household transfer state and with the same timing as in the endowment simple-model exercise.

labor figures. The plotted experiments use the persistent household transfer states

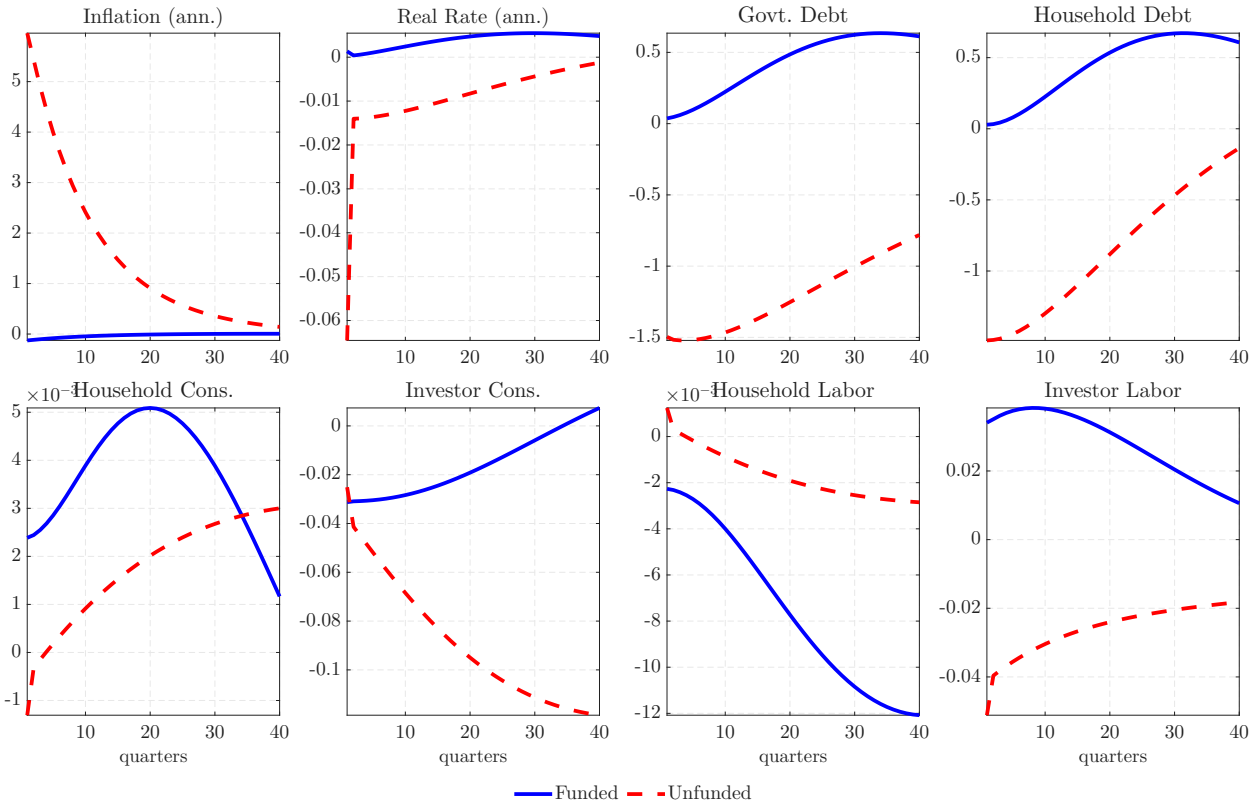
$$\tilde{x}_t^{H,M} = \rho_{eM}\tilde{x}_{t-1}^{H,M} + (1-\rho_{eM})\sigma_M u_t^{zM}, \tag{43}$$

$$\tilde{x}_t^{H,F} = \rho_{eF}\tilde{x}_{t-1}^{H,F} + (1-\rho_{eF})\sigma_F u_t^{zF}, \tag{44}$$

$$\tilde{z}_t^{H} = \rho_z\tilde{z}_{t-1}^{H} + \tilde{x}_t^{H,M} + \tilde{x}_t^{H,F}. \tag{45}$$

A funded household transfer IRF sets $u_t^{zM} = 1$ and $u_t^{zF} = 0$; an unfunded household transfer IRF sets $u_t^{zF} = 1$ and $u_t^{zM} = 0$. In both cases the innovation is dated at the same quarter and enters the household transfer state contemporaneously. The announced and transitory transfer blocks are retained in the code for compatibility but are inactive in the figures below. This makes the production-labor figures directly comparable with the simple-model transfer experiment in Section III.

Figure XV: Funded and Unfunded Transfers with Production and Endogenous Labor



Notes: The figure plots impulse responses in the production-economy version of the simple model. The solid blue line corresponds to the funded household transfer shock and the dashed red line corresponds to the unfunded household transfer shock. The panels report inflation, the ex-post real rate, government debt-to-GDP, bottom-99 household debt-to-GDP, household consumption, investor consumption, household labor supply, and investor labor supply. Inflation and the real interest rate are annualized; debt variables are percentage-point deviations from steady state. The funded and unfunded transfer shocks follow equations (43)–(45).

D Quantitative Model: Additional Material

D.A System of Log-linearized Equations

This model features a trend in the state of labor-augmenting technological progress. In order to make the model stationary, we define the following variables: $y_t = \frac{\gamma_t}{A_t}, c_t^{*I} = \frac{C_t^{*I}}{A_t}, c_t^I = \frac{C_t^I}{A_t}, c_t^H = \frac{C_c^H}{A_t}, k_t = \frac{K_t}{A_t}, g_t = \frac{G_t}{A_t}, z_t = \frac{Z_t}{A_t}, b_t = \frac{P_t^m B_t^m}{P_t A_t}, s_{b,t} = \frac{P_t^m B_t^m}{P_t Y_t}, w_t = \frac{W_t}{P_t A_t}$, and $\lambda_t^I = \Lambda_t^I A_t$.

We list below the equations of the log-linear model, starting with those that characterize the actual-economy block.

Production function:

$$\tilde{y}_t = \frac{y + \Omega}{y}\left[\alpha \tilde{k}_t + (1-\alpha)\tilde{N}_t\right] \tag{46}$$

Capital-labor ratio:

$$\tilde{r}_{K,t} - \tilde{w}_t = \tilde{N}_t - \tilde{k}_t \tag{47}$$

Marginal cost:

$$\widetilde{mc}_t = \alpha \tilde{r}_{K,t} + (1-\alpha)\tilde{w}_t \tag{48}$$

Phillips curve:

$$\tilde{\pi}_t = \frac{\beta}{1+\chi_p\beta}\mathbb{E}_t\tilde{\pi}_{t+1} + \frac{\chi_p}{1+\chi_p\beta}\tilde{\pi}_{t-1} + \kappa_p\widetilde{mc}_t + \kappa_p\tilde{\eta}_t^p + \kappa_p\tilde{u}_t^{NKPC} \tag{49}$$

where $\kappa_p = \left[\left(1-\beta\omega_p\right)\left(1-\omega_p\right)\right] / \left[\omega_p\left(1+\beta\chi_p\right)\right]$. Investor's FOC for consumption:

$$\tilde{\lambda}_t^I = \tilde{u}_t^b - \frac{\theta}{e^{\varkappa}-\theta}\tilde{u}_t^a - \frac{e^x}{e^x-\theta}c_t^{*I} + \frac{\theta}{e^x-\theta}c_{t-1}^{*I} - \frac{\tau^C}{1+\tau^C}\tilde{\tau}_{C,t}, \tag{50}$$

where $\tilde{u}_t^a = u_t^a - \varkappa$. Public/private consumption in utility:

$$\tilde{c}_t^* = \frac{c^I}{c^I+\alpha_G g}\tilde{c}_t^I + \frac{\alpha_G g}{c^I+\alpha_G g}\tilde{g}_t \tag{51}$$

Investor's Euler equation bond:

$$\tilde{\lambda}_t^I = \tilde{r}_{n,t} + \mathbb{E}_t\tilde{\lambda}_{t+1}^I - \mathbb{E}_t\tilde{\pi}_{t+1} - \mathbb{E}_t\tilde{u}_{t+1}^a + \tilde{u}_t^{rp} \tag{52}$$

Investor's Euler equation loan:

$$\tilde{\lambda}_t^I + \mathcal{C}\tilde{b}_{I,t}^H = \tilde{r}_{n,t}^{(H)} + \mathbb{E}_t\tilde{\lambda}_{t+1}^I - \mathbb{E}_t\tilde{\pi}_{t+1} - \mathbb{E}_t\tilde{u}_{t+1}^a + \tilde{u}_t^{rp} \tag{53}$$

where $\mathcal{C}$ is the investor's utility from holding a loan. Household's Euler equation loan:

$$\tilde{\lambda}_t^H = \tilde{r}_{n,t}^{(H)} + \mathbb{E}_t\tilde{\lambda}_{t+1}^H - \mathbb{E}_t\tilde{\pi}_{t+1} - \mathbb{E}_t\tilde{u}_{t+1}^a + \tilde{u}_t^{rp} \tag{54}$$

Maturity structure of bond:

$$\tilde{r}_{n,t} + \tilde{P}_t^{rn} = \frac{\rho}{R}\mathbb{E}_t\tilde{P}_{t+1}^m - \tilde{u}_t^{rp} \tag{55}$$

Maturity structure of loan:

$$\tilde{r}_{n,t}^{(H)} + \tilde{P}_t^{(H,rn)} = \frac{\rho_H}{R}\mathbb{E}_t\tilde{P}_{t+1}^{(H,m)} - \tilde{u}_t^{rp} \tag{56}$$

Investor's household's FOC for capacity utilization:

$$\tilde{r}_{K,t} - \frac{\tau_K}{1-\tau_K}\tilde{\tau}_{K,t} = \frac{\psi}{1-\psi}\tilde{\nu}_t \tag{57}$$

Investor's FOC for capital:

$$\tilde{q}_{\mathrm{t}} = \mathbb{E}_t\tilde{\pi}_{t+1} - \tilde{r}_{n,t} + \beta e^{-\varkappa}\left(1-\tau_K\right)r_K\mathbb{E}_t\tilde{r}_{K,t+1} - \beta e^{-x}\tau_K r_K\mathbb{E}_t\tilde{\tau}_{K,t+1} + \beta e^{-x}(1-\delta)\mathbb{E}_t\tilde{q}_{t+1} - \tilde{u}_t^{rp} \tag{58}$$

Investor's FOC for investment:

$$\tilde{\imath}_t + \frac{1}{1+\beta}\tilde{u}_t^a - \frac{1}{(1+\beta)se^{2x}}\tilde{q}_t - \tilde{u}_t^i - \frac{\beta}{1+\beta}\mathbb{E}_t\tilde{\imath}_{t+1} - \frac{\beta}{1+\beta}\mathbb{E}_t\tilde{u}_{t+1}^a = \frac{1}{1+\beta}\tilde{\imath}_{t-1} \tag{59}$$

Effective capital:

$$\tilde{k}_t = \tilde{\nu}_t + \widetilde{k}_{t-1} - \tilde{u}_t^a \tag{60}$$

Law of motion for capital:

$$\widetilde{k}_t = (1-\delta)e^{-x}\left(\tilde{\bar{k}}_{t-1} - \tilde{u}^a_t\right) + \left[1-(1-\delta)e^{-x}\right]\left[(1+\beta)se^{2x} + \tilde{k}_t\right] \tag{61}$$

Household's budget constraint:

$$\begin{aligned}&\tau_C c^H \tilde{\tau}_{C,t} + (1+\tau_C)\, c^H \tilde{c}^H_t - \bar{b}^{(H)}\rho_H e^{-\varkappa}\tilde{P}^{(H)}_t + \bar{b}^{(H)}\tilde{b}^{(H)}_{H,t} \\ &= \frac{\bar{b}^{(H)}}{\beta}\tilde{b}^{(H)}_{H,t-1} - \frac{\bar{b}^{(H)}}{\beta}\tilde{P}^{(H)}_{H,t-1} - \frac{\bar{b}^{(H)}}{\beta}\pi_t\,(1-\tau_L)\,w_H L_H\left(\tilde{w}_t + \tilde{N}_{H,t}\right) - \tau_L w_H L_H \tilde{\tau}_{N,t} + z\tilde{z}_t\end{aligned} \tag{62}$$

where $\kappa^I_w \equiv \left[(1-\beta\omega_w)(1-\omega_w)\right] / \left[\omega_w(1+\beta)\left(1+\frac{(1+\eta^w)\xi^I}{\eta^{(w)}}\right)\right]$. Investor's wage equation:

$$\begin{aligned}\tilde{w}^I_t =& \frac{1}{1+\beta}\tilde{w}^I_{t-1} + \frac{\beta}{1+\beta}\mathbb{E}_t\tilde{w}^I_{t+1} - \kappa_w\left[\tilde{w}^I_t - \xi_I\tilde{N}_{I,t} + \tilde{\lambda}^I_t - \frac{\tau_L}{1-\tau_L}\tilde{\tau}_{N,t}\right] + \frac{\chi_w}{1+\beta}\tilde{\pi}_{t-1} \\ &- \frac{1+\beta\chi_w}{1+\beta}\tilde{\pi}_t + \frac{\beta}{1+\beta}\mathbb{E}_t\tilde{\pi}_{t+1} + \frac{\chi}{1+\beta}\tilde{u}^a_{t-1} - \frac{1+\beta\chi_w-\rho_a\beta}{1+\beta}\tilde{u}^a_t + \kappa_w\tilde{\eta}^w_t\end{aligned} \tag{63}$$

Household's wage equation:

$$\begin{aligned}\tilde{w}^H_t =& \frac{1}{1+\beta}\tilde{w}^H_{t-1} + \frac{\beta}{1+\beta}\mathbb{E}_t\tilde{w}^H_{t+1} - \kappa_w\left[\tilde{w}_t - \xi_H\tilde{N}_{H,t} + \tilde{\lambda}^H_t - \frac{\tau_L}{1-\tau_L}\tilde{\tau}_{N,t}\right] + \frac{\chi_w}{1+\beta}\tilde{\pi}_{t-1} \\ &- \frac{1+\beta\chi_w}{1+\beta}\tilde{\pi}_t + \frac{\beta}{1+\beta}\mathbb{E}_t\tilde{\pi}_{t+1} + \frac{\chi}{1+\beta}\tilde{u}^a_{t-1} - \frac{1+\beta\chi_w-\rho_a\beta}{1+\beta}\tilde{u}^a_t + \kappa_w\tilde{\eta}^w_t\end{aligned} \tag{64}$$

where $\kappa^H_w \equiv \left[(1-\beta\omega_w)(1-\omega_w)\right] / \left[\omega_w(1+\beta)\left(1+\frac{(1+\eta^w)\xi^H}{\eta^{(w)}}\right)\right]$.

Aggregate households' consumption

$$c\tilde{c}_t = c^I(1-\mathtt{w})\tilde{c}^I_t + c^H\mathtt{w}\tilde{c}^H_t \tag{65}$$

Aggregate resource constraint:

$$y\tilde{y}_t = c\tilde{c}_t + i\tilde{i}_t + g\tilde{g}_t + \psi'(1)k\tilde{\nu}_t \tag{66}$$

Government budget constraint:

$$\begin{aligned}&\frac{b}{y}\tilde{b}_t + \tau_K r_K\frac{k}{y}\left[\tilde{\tau}_{K,t} + \tilde{r}_{K,t} + \tilde{k}_t\right] + \frac{\mathcal{T}^L_H}{y}\left[\tilde{\tau}^H_{N,t} + \tilde{w}_t + \tilde{N}_{H,t}\right] + \frac{\mathcal{T}^L_I}{y}\left[\tilde{\tau}^I_{N,t} + \tilde{w}_t + \tilde{N}_{I,t}\right] + \tau_C\frac{c}{y}\left(\tilde{\tau}_{C,t} + \tilde{c}_t\right) \\ =&\frac{1}{\beta}\frac{b}{y}\left[\tilde{b}_{t-1} - \tilde{\pi}_t - \tilde{P}^m_{t-1} - \tilde{u}^a_t\right] + \frac{b}{y}\frac{\rho}{e^*}\tilde{P}^m_t + \frac{g}{y}\tilde{g}_t + \frac{z}{y}\tilde{z}_t\end{aligned} \tag{67}$$

where $\mathcal{T}^L_H = \mathtt{w}\tau^H_N a_H w N_H$ and $\mathcal{T}^L_I = (1-\mathtt{w})\tau^I_N a_I w N_I$ are steady-state labor-tax revenues.

Fiscal Rules:

$$\tilde{g}_t = \rho_G\tilde{g}_{t-1} - (1-\rho_G)\left[\gamma_G\tilde{s}_{b,t-1} + (\gamma_{G,c}-\gamma_G)\tilde{s}^c_{b,t-1}\right] + \zeta_{g,t}, \tag{68}$$

$$\tilde{z}^b_t = \rho_Z\tilde{z}^b_{t-1} - (1-\rho_Z)\left[\gamma_Z\tilde{s}_{b,t-1} + (\gamma_{Z,c}-\gamma_Z)\tilde{s}^c_{b,t-1} + \phi_{zy}\tilde{y}_t\right] + \tilde{z}^{T,M}_t, \tag{69}$$

$$\tilde{\tau}_{J,t} = \rho_J\tilde{\tau}_{J,t-1} + (1-\rho_J)\left[\gamma_J\tilde{s}_{b,t-1} + (\gamma_{J,c}-\gamma_J)\tilde{s}^c_{b,t-1}\right] + \lambda_J(1-\iota^\tau_t)\tilde{\pi}_t. \tag{70}$$

The transfer processes and their aggregation are

$$\bar{\zeta}_t^{q,\chi} = \rho_{q,\chi}\bar{\zeta}_{t-1}^{q,\chi} + (1-\rho_{q,\chi})\sigma_{q,\chi}\varepsilon_t^{q,\chi}, \qquad q \in \{M,F\}, \quad \chi \in \{H,I\}, \tag{71}$$

$$\tilde{z}_t^{T,M} = \rho_{zt}\tilde{z}_{t-1}^{T,M} + \sigma_{zt}\varepsilon_{z,t}^{T,M}, \tag{72}$$

$$\tilde{z}_t^{T,U} = \rho_{zt}^{U}\tilde{z}_{t-1}^{T,U} + \sigma_{zt}^{U}\varepsilon_{z,t}^{T,U}, \tag{73}$$

$$\tilde{z}_t^{H} = \tilde{z}_t^{b} + \frac{\bar{\zeta}_t^{M,H} + \bar{\zeta}_t^{F,H} + \tilde{z}_t^{T,U}}{\mathtt{w}}, \tag{74}$$

$$\tilde{z}_t^{I} = \tilde{z}_t^{b} + \frac{\bar{\zeta}_t^{M,I} + \bar{\zeta}_t^{F,I}}{1-\mathtt{w}} \tag{75}$$

The temporary funded state is common because it enters $\tilde{z}_t^b$; the household temporary-unfunded state is activated from 2020:Q2 onward.

The tax-backed counterfactual block obeys

$$\tilde{g}_t^c = \rho_G\tilde{g}_{t-1}^c - (1-\rho_G)\gamma_{G,c}\tilde{s}_{b,t-1}^c + \zeta_{g,t}, \tag{76}$$

$$\tilde{z}_t^{b,c} = \rho_Z\tilde{z}_{t-1}^{b,c} - (1-\rho_Z)\left[\gamma_{Z,c}\tilde{s}_{b,t-1}^c + \phi_{zy}\tilde{y}_t^c\right] + \tilde{z}_t^{T,M}, \tag{77}$$

$$\tilde{\tau}_{J,t}^c = \rho_J\tilde{\tau}_{J,t-1}^c + (1-\rho_J)\gamma_{J,c}\tilde{s}_{b,t-1}^c + \lambda_J(1-\iota_t^{\tau})\tilde{\pi}_t^c, \tag{78}$$

$$\tilde{z}_t^{H,c} = \tilde{z}_t^{b,c} + \frac{\bar{\zeta}_t^{M,H} + n_{frp}\left(\bar{\zeta}_t^{F,H} + \tilde{z}_t^{T,U}\right)}{\mathtt{w}}, \tag{79}$$

$$\tilde{z}_t^{I,c} = \tilde{z}_t^{b,c} + \frac{\bar{\zeta}_t^{M,I} + n_{frp}\left(\bar{\zeta}_t^{F,I} + \tilde{z}_t^{T,U}\right)}{1-\mathtt{w}}, \tag{80}$$

$$\tilde{z}_t^{c} = \mathtt{w}\tilde{z}_t^{H,c} + (1-\mathtt{w})\tilde{z}_t^{I,c}. \tag{81}$$

The retained specification sets $n_{frp} = 0$, so unfunded persistent and temporary shocks do not enter the tax-backed transfer block.

Monetary rules:

$$\tilde{r}_{n,t} = \rho_r\tilde{r}_{n,t-1} + (1-\rho_r)\left[\phi_\pi(\tilde{\pi}_t - \tilde{\pi}_t^F) + \phi_{\pi,c}\tilde{\pi}_t^c + \phi_y(\tilde{y}_t - \tilde{y}_t^c) + \phi_{y,c}\tilde{y}_t^c\right] + u_t^m, \tag{82}$$

$$\tilde{r}_{n,t}^c = \rho_r\tilde{r}_{n,t-1}^c + (1-\rho_r)\left[\phi_{\pi,c}\tilde{\pi}_t^c + \phi_{y,c}\tilde{y}_t^c\right] + u_t^m. \tag{83}$$

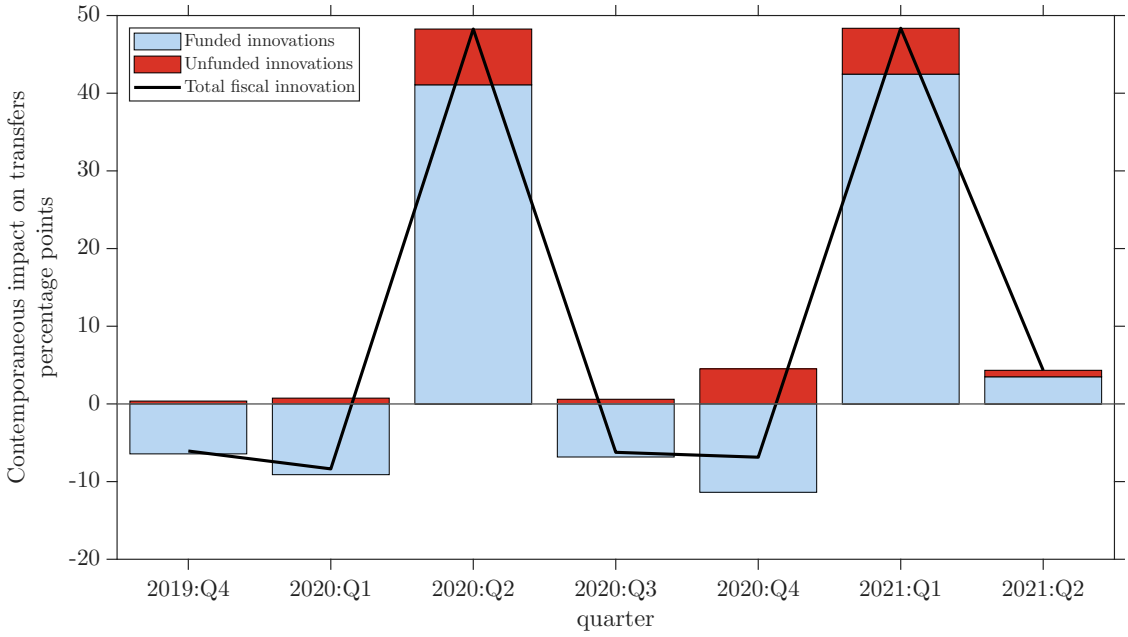
There is no nonlinear ELB operator in these equations. The expected federal funds rate and breakeven-inflation measurement equations discipline expectations during the ELB period.

D.B Additional Figures

D.B.1 COVID Transfer Innovations

Figure XVI reports the high-frequency transfer decomposition omitted from the persistent financing share in the main text.

Figure XVI: COVID Transfer-Innovation Decomposition



Notes: Contemporaneous impacts of the smoothed fiscal innovations on the aggregate transfer state from 2019:Q4 through 2021:Q2. Funded innovations combine the permanent and temporary funded blocks; unfunded innovations combine the permanent and temporary unfunded blocks. The black line is their sum. The figure decomposes fiscal innovations rather than transfer levels. Parameters are fixed at the posterior mode.

E Data Appendix

Our dataset comprises quarterly U.S. macroeconomic and distributional series spanning 1962:Q1–2022:Q3. We combine aggregate data from standard sources with distributional measures from household balance sheets and income accounts.

Aggregate Macroeconomic Variables. Aggregate data are obtained from the Federal Reserve Economic Data (FRED) database and the Bureau of Economic Analysis (BEA). Real GDP growth is computed as the growth rate of nominal GDP (GDP) divided by the GDP deflator (JGDP). Real consumption growth is the growth rate of personal consumption expenditures in non-durable goods (PCND) and services (PCESV), divided by their respective price indexes and scaled by the civilian population 16+ (CNP16OV). Real investment growth is the growth rate of gross private domestic investment (GPDICTPI) plus personal consumption of durable goods (PCDG), deflated and scaled by population. The hours gap is constructed by detrending hours per capita (PRS85006023/CNP16OV) with a fourth-degree polynomial. Nominal wage growth is computed by dividing wage compensa-

tion (A576RC1) by average weekly hours (PRS85006023), creating a nominal wage index, dividing by the GDP deflator index, and taking growth rates. Government debt-to-GDP is the ratio of market value of gross federal debt (MVPHGFD027MNFRBDAL) to nominal GDP. Growth of government consumption and investment is computed by summing federal government consumption expenditures (A957RC1Q027SBEA) and gross government investment (A787RC1Q027SBEA), deflating by the implicit price deflator (A822RD3Q086SBEA), scaling by population, and taking growth rates. Growth of real government transfers sums government social benefits (B087RC1Q027SBEA) and other current transfer payments including grants-in-aid (FGSL), deflates by the GDP deflator and population, and takes growth rates. Inflation is the growth rate of the GDP deflator (JGDP). The interest rate is the Effective Federal Funds Rate (FEDFUNDS). The 5-year breakeven inflation rate (T5YIE) serves as a noisy measure of inflation expectations, with deviations from realized inflation reflecting time-varying risk premia. The 30-year mortgage rate is from MORTGAGE30US. We construct expected federal funds rates one through ten quarters ahead using overnight index swap (OIS) rates, following Campbell et al. (2017). OIS contracts pay the average realized overnight rate over a specified horizon; using OIS rates as measures of expected policy rates allows us to incorporate the ELB constraint into agents' expectations without explicitly modeling the nonlinear constraint in the likelihood function. OIS data are from Bloomberg.

Steady-State Labor-Tax Wedges and Indexation. The model fixes the steady-state labor-tax wedges at 24% for investors and 16% for households. These constants do not change across regimes and are not direct estimates of the Mertens and Montiel-Olea (2018) average marginal tax-rate series. Investors represent the top 1% and households the bottom 99%. The Mertens–Montiel Olea evidence is used as an external comparison for the evolution of top tax rates and as motivation for separating bracket indexation from statutory rates. The known indexation regime changes in 1981:Q1, when the reform is treated as anticipated: before that date inflation raises effective capital- and labor-income tax burdens through fiscal drag; from that date onward this inflation term is removed. The coefficient on pre-indexation fiscal drag is estimated, while the steady-state tax wedges remain fixed.

Distributional Data Sources. We obtain aggregate household debt from the Federal Reserve's quarterly Financial Accounts (Z.1 release), focusing on the household and nonprofit organizations sector (code FL15). Our analysis uses year-end (Q4) data. Distribution shares across wealth groups are obtained from the Federal Reserve's Distributional Financial Accounts (Batty et al., 2019), which provides quarterly estimates of holdings by wealth

percentile. For alternative distribution estimates, we use the Distributional National Accounts (DINA) microdata (Piketty et al., 2017) covering 1962–2019, which provides wealth percentile distributions at the individual unit level. This allows us to construct Saez and Zucman (2016) style distribution shares. Total household debt liabilities are constructed from Home Mortgages (Z.1 Table L.218) and Consumer Credit (Z.1 Table L.222). The time coverage of the distributional data is the following: Financial Accounts 1952–present (quarterly, we use Q4); DFA distribution shares: 1989–present (quarterly); DINA distribution shares: 1962–2019 (annual). Outside each source's coverage, the corresponding observation is left missing and handled by the Kalman filter. Thus, the Saez–Zucman/DINA-based series provides the long historical signal from 1962 onward, while the DFA series enters only from 1989 onward. The two series are included jointly as noisy measurements of the same bottom-99 liability state, with separate estimated measurement-error variances and an estimated constant level wedge for the DFA series.

Distributional Data Construction. Following Mian et al. (2025), we "unveil" financial intermediation to determine which households ultimately hold claims on household debt. For the exact process we refer to their work. Using shares from the Distributional Financial Accounts, we allocate household debt holdings and liabilities to the top 1% and bottom 99%. We distribute each component of household debt holdings using asset-specific shares from DFA, then sum all components. Similarly, for debt liabilities, we use DFA shares for home mortgages and consumer credit. Using DINA microdata, we construct alternative distribution shares following Saez and Zucman (2016)'s methodology. For each wealth group, we distribute using asset-type-specific shares based on the composition of household debt holdings. For mutual funds, we split holdings into bond, equity, and municipal components using aggregate share parameters. We follow similar procedure for debt liabilities. Finally, for each wealth group g, we calculate net household debt position. A positive value indicates the group is a net debtor (owes more household debt than it holds in claims), while a negative value indicates net creditor status. All variables are scaled by GDP. In the structural estimation, the household-liability counterpart is the bottom 99% liability-to-GDP ratio. The observable is $100\log(4L_t^H/Y_t)$, where L_t^H/Y_t is the reported bottom-99 liability ratio and the factor four converts annual-GDP scaling to quarterly model units. We use the Saez–Zucman/DINA-based series as the long historical observable and the DFA-based bottom-99 series as a second post-1989 observable with an estimated level wedge and measurement error.

Transfer and Fiscal Shares. From the Piketty et al. (2017) Distributional National Accounts microdata, for each fiscal measure τ and income group i, we decompose changes in fiscal shares from base year 1980 as:

$$\Delta \text{FiscalShare}^{\tau}_{i,t} = \underbrace{\text{RelRate}^{\tau}_{i,1980} \times (\text{IncShare}_{i,t} - \text{IncShare}_{i,1980})}_{\text{Income Effect}} + \underbrace{(\text{RelRate}^{\tau}_{i,t} - \text{RelRate}^{\tau}_{i,1980}) \times \text{IncShare}_{i,t}}_{\text{Policy Effect}},$$

where $\text{RelRate}^{\tau}_{i,t} = \text{FiscalShare}^{\tau}_{i,t}/\text{IncShare}_{i,t}$ is the average rate. The income effect captures mechanical changes from shifts in pre-tax income distribution (holding policy constant), while the policy effect captures changes from modifications in tax rates or transfer targeting (holding income distribution at current levels).