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ABSTRACT

We study the equilibrium effects of financial repression on government funding costs in an endowment economy with limited asset market participation. We show how a broad set of repression policies operates through a wedge in the Euler equation responsive to government size or by affecting fiscal redistribution between agents. Repression intensity is captured by a policy feedback rule that depends positively on net government spending. When fiscal policy is profligate and monetary policy accommodates, we show that such a repression policy raises bond values, reduces the inflationary cost of unfunded fiscal expansions, and lowers bond risk premia. Repression is not a free lunch for bondholders---they pay a lower inflation tax but also earn lower future real returns. When monetary policy does not accommodate fiscal policy, repression can provide stopgap funding for deficits, allowing the central bank to retain control over inflation while making government debt a hedge for fiscal inflation.

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1 Introduction

Financial repression refers to a set of government policies that raise the price of public debt above the level at which the market would clear frictionlessly. Unlike explicit taxation or surprise inflation, financial repression reduces the sovereign's funding costs by distorting private portfolios toward government securities and affecting the redistributive effects of fiscal policy. The classic textbook examples include interest rate ceilings on bank deposits and loans, capital controls that prevent residents from holding foreign assets, high reserve requirements on banks, and outright minimum holdings of government debt for pension funds, insurance companies, and other regulated intermediaries. We analyze the impact of financial repression on the government's equilibrium cost of funding.

The use of financial repression has been pervasive throughout US history, especially when the federal government faced large spending shocks. In the Civil War, Congress passed the National Banking Act, which allowed national banks to issue banknotes if they were backed by holdings of Treasury securities. During World War II and its aftermath, the US Treasury and the Fed engaged in yield curve control. In the decades following World War II, the United States, the United Kingdom, and most of the major European economies relied heavily on interest-rate caps (e.g., Regulation Q in the U.S.), administered exchange rates, capital controls, and bank reserve requirements to hold down debt-service costs as they liquidated wartime debts.[1]

In recent decades, financial regulators have adopted new tools of financial repression, such as Basel-style risk weights that assign zero capital charge to domestic sovereign exposures, liquidity coverage ratios that require banks to hold high-quality liquid assets (overwhelmingly government securities), leverage constraints that exclude Treasury holdings, and large-scale central bank asset purchases (i.e., "quantitative easing") that absorb sovereign duration onto the central bank balance sheet.[2] Although the policy labels have changed, we show that the core underlying mecha-

[1]See Reinhart and Sbrancia (2015) and Reinhart, Reinhart, and Rogoff (2015) for evidence that the resulting negative real interest rates produced sizable real revenues for advanced-economy treasuries during the Bretton Woods era.

[2]Emerging markets continue to rely on more direct forms of repression as well; see, e.g., Forbes and Warnock (2021) on the resurgence of capital flow management measures.

nism is the same: by limiting investors' ability or willingness to sell government bonds, these policies create captive demand and a wedge between the price the government pays and the price an unconstrained marginal investor would require.

Our paper analyzes the impact of a broad set of financial repression policies on the government's equilibrium cost of funding in an endowment economy with intertemporal and hand-to-mouth agents (e.g., Campbell and Mankiw (1989)) using approximate analytical solutions. We illustrate how forced government bond holdings among marginal investors, capital regulatory requirements, and quantitative easing can all be mapped to an equilibrium repression wedge in the nominal bond pricing Euler equation. In contrast, forced holdings on the hand-to-mouth agents affect fiscal redistribution, which directly impacts the real equilibrium pricing kernel.

We model the intensity of financial repression policy on intertemporal agents (e.g., amount of required holdings) as a third policy instrument, operating alongside the standard monetary and fiscal rules. The government also issues nominal government debt to help finance expenditures. We specify the repression policy as a feedback rule depending on government size to capture how repression intensity increases during major fiscal expansions. The stance of monetary-fiscal policy, jointly with the aggressiveness of the repression policy, determines the equilibrium effects of repression on government discount rates, inflation, and fiscal redistribution.

We focus on a profligate fiscal stance in which tax policy adjustments are insufficient to fully fund spending increases, leaving scope for repression to serve as a fiscal shock absorber. A repression policy that lowers government funding costs during unfunded fiscal expansions increases fiscal capacity. Given profligate fiscal policy, we analyze the role of repression policy conditional on the monetary policy stance. When there is monetary accommodation, repression reduces the inflationary finance requirements to pay for fiscal expansions. Without monetary accommodation, sufficiently aggressive repression allows the central bank to retain control over inflation.

We document a novel impact of repression on bond prices and risk premia in the historically relevant case where monetary policy accommodates profligate fiscal policy by passively adjusting nominal interest rates (a peg is a special case), characterizing a fiscally-led regime (e.g., Leeper (1991)). Inflationary finance pays for unfunded government spending by devaluing nominal debt, as in many major fiscal expansions throughout history.[3] Cram, Kung, Lustig, and Zeke (2025) illustrate how unfunded fiscal expansions redistribute wealth away from marginal bond investors when ex post real bond returns are low from nominal devaluation, generating a government bond risk premium. We show how repression dampens fiscal redistribution risk by smoothing real bond returns and moderating redistribution effects.

A repression policy operating through the Euler equation wedge (e.g., forced holdings on intertemporal agents) in the fiscally-led regime hedges the impact of deficit shocks on ex post real bond values. This fiscal hedging effect of repression dampens the inflation adjustments required to align real debt values with the fiscal backing. Smoothing inflation lowers the bond risk premium, reducing the nominal term premia and real government funding costs. Repression is not a free lunch for bondholders, as it reduces the initial inflation tax they pay for holding nominal bonds, but at the cost of lower future real returns. Indeed, when surpluses are exogenous, the bondholder's real wealth and utility are independent of repression through this margin.

Repression in the form of forced holdings on hand-to-mouth agents does not create a bond pricing wedge but, by contrast, affects fiscal redistribution and the real pricing kernel dynamics—it is not neutral with respect to agents' wealth even when surpluses are exogenous. Forcing the hand-to-mouth to passively hold nominal government bonds implies that they share the inflation tax burden from unfunded fiscal expansions with intertemporal agents, thereby moderating the adverse impact of inflation on the real wealth of marginal investors, but at the expense of the hand-to-mouth agents. Smoothing fiscal redistribution, therefore, dampens the equilibrium response of the real pricing kernel, lowering government bond risk premia.

When monetary policy does not accommodate profligate fiscal policy but instead aggressively adjusts nominal interest rates in response to inflation, government funding costs and debt would explode absent repression—there would be no stabilizing force for debt values. We demonstrate how a repression policy operating through the

[3] Hall and Sargent (2022) documents how inflationary finance played a key role during the fiscal expansions associated with WW1, WW2, and COVID.

pricing subsidy can cover the funding gap arising from insufficient taxation, creating a distinct determinacy region that inherits properties of fiscally-led and monetary-led regimes. Repression provides stopgap funding for a profligate fiscal stance, allowing a hawkish monetary authority to retain control over inflation, while the real debt value is determined by expected future surplus and repression policy. Government debt in this new regime becomes a hedge asset, earning lower real yields than a shadow real risk real asset.

1.1 Related Literature

The concept of financial repression goes back to McKinnon (1973) and Shaw (1973), who used the term to describe the constellation of interest-rate ceilings, capital controls, and directed-credit policies through which governments in developing economies kept domestic borrowing costs below market rates.[4] A subsequent literature documents that the same mechanism played a central role in the reduction of advanced-economy debt-to-GDP ratios after World War II. Reinhart and Rogoff (2009), Reinhart and Sbrancia (2015), and Reinhart et al. (2015) show that the systematic compression of real interest rates via Regulation Q, capital controls, and reserve requirements generated substantial implicit revenues for the U.S., the U.K., and continental European treasuries through the Bretton Woods era.

A second strand of the literature examines the resurgence of financial repression in advanced economies after the global financial crisis (e.g., Reis (2025)). During and after the European sovereign debt crisis, banks in stressed periphery countries dramatically increased their holdings of domestic sovereign debt (Acharya and Steffen, 2015; Becker and Ivashina, 2018) under pressure from their respective governments. The ECB extended cheap loans to banks to fund these purchases of national debt.[5]

[4] Hall and Sargent (2011) decompose post-WWII U.S. debt dynamics and find that low realized real returns on government debt account for a substantial share of the decline in the debt/GDP ratio. Acalin and Ball (2022) focus specifically on the post-WWII U.S. experience and argue that the debt overhang was eliminated largely through interest-rate distortions rather than through fiscal surpluses or growth.

[5] On the normative side, Chari, Dovis, and Kehoe (2020) derive conditions under which forcing banks to hold government debt is part of an optimal fiscal-financial policy because the resulting commitment device relaxes the government's intertemporal budget constraint. Our focus is on the positive question of how financial repression affects the government's equilibrium cost of funding.

When the ECB runs a large balance sheet, it implicitly allows the periphery to borrow from the core at below-market rates. Chien, Jiang, Leombroni, and Lustig (2025b) focus on measuring the cross-border transfers that result in the Eurozone.

Relative to this prior work, our contribution is to build a tractable equilibrium asset-pricing model to characterize the impact of repression on inflation, fiscal wealth redistribution, bond risk premia, and equilibrium determinacy. Our work is closest to recent work by Payne and Szőke (2025) who examine the role of financial repression in sustaining the funding advantage of the U.S. Treasury. They show that the U.S. Treasury's funding advantage is fragile and depends on the continued willingness of investors to hold Treasurys at a price above the level that would clear in frictionless markets. Jeanne (2025) argues that financial repression becomes a politically relevant instrument once debt-to-GDP ratios exceed roughly 100–120%, presenting cross-country evidence consistent with such a threshold. Chien, Cole, and Lustig (2025a) analyzes the role of financial repression in lowering the cost of funding for the Japanese public sector despite large and persistent government deficits.

The fiscal-monetary interactions in our model relate to the work of Sargent and Wallace (1981), Leeper (1991), Sims (1994), Woodford (1995), Cochrane (1998), Bassetto (2002), and Bianchi and Ilut (2017). We depart from this literature by introducing a repression rule as a third policy instrument, alongside the standard monetary and fiscal rules, focusing on how repression affects government funding costs. In particular, we show that a repression rule that depends on government size dampens the inflationary and redistributive effects of unfunded deficits in a fiscally-led regime, reducing government bond risk premia. When monetary policy does not accommodate profligate fiscal policy, we show how repression can produce a determinacy region distinct from the monetary-led and fiscally-led regimes, where government debt becomes a hedge asset.

2 Benchmark Model

This section outlines the benchmark model used to analyze the effects of financial repression on government funding costs. We extend the two-agent endowment economy from Cram et al. (2025) to incorporate repression margins on both agent types along with a government repression policy rule that interacts with the standard monetary and fiscal rules.

2.1 Agents

The economy is populated by a unit mass of households, all sharing identical preferences and utility parameters. Households are heterogeneous in their access to financial markets: a measure $\zeta \in (0,1)$ can trade and make intertemporal consumption-savings decisions (referred to as "asset holders"), while the remaining measure $1-\zeta$ cannot choose to save or borrow ("hand-to-mouth" agents). All households receive an exogenous constant endowment stream $\overline{Y} > 0$ each period.

2.1.1 Asset holders

Agents with market access optimize consumption intertemporally. Their lifetime utility follows Epstein-Zin preferences, defined recursively as

$$U_{At} = \left\{(1-\beta)C_{At}^{\frac{1-\gamma}{\theta}} + \beta\left(\mathbb{E}_t\left[U_{At+1}^{1-\gamma}\right]\right)^{\frac{1}{\theta}}\right\}^{\frac{\theta}{1-\gamma}}, \tag{1}$$

where C_{At} is the consumption of an asset holder, γ is the coefficient of relative risk aversion, ψ is the intertemporal elasticity of substitution, $\theta \equiv (1-\gamma)/(1-1/\psi)$ is defined for notational convenience, and $\beta \in (0,1)$ is the subjective time discount factor.

Asset holders access two classes of securities: government bonds (outstanding supply with face value $\hat{B}_t$) and a spanning set of state-contingent claims (zero net supply). Their period budget constraint is

$$P_t C_{At} + \mathbb{V}'_{At}\iota + \hat{B}_{At}\hat{Q}_t \leq P_t\overline{Y} + \mathbb{V}'_{At-1}\mathbb{R}_t + \hat{B}_{At-1}\hat{Q}_{t-1}R_{gt} + P_t T_{At}, \tag{2}$$

with notation: P_t (price level), $\mathbb{V}_{At} \equiv \mathbb{Q}_t \odot \mathbb{S}_{At}$ (market value of state-contingent portfolio, where $\mathbb{Q}_t$ and $\mathbb{S}_{At}$ denote prices and quantities), $\hat{B}_{At}$ (face value of government bonds held by agents), $\hat{Q}_t$ (nominal price of government bonds), R_{gt} (gross nominal return on government debt), $\mathbb{R}_t$ (vector of gross nominal returns on state-contingent assets), and T_{At} (real transfers net of taxes).

Repression on Asset Holders We model financial repression on asset holders by assuming they face a portfolio constraint that depends, at least in part, on their holdings of government bonds. Formally, for asset holding agent i, we impose the constraint

$$f(\hat{Q}_t \hat{B}_{it}, \ldots) = 0. \tag{3}$$

This formulation nests explicit and implicit holding requirements imposed by government authorities as well as financial regulations that penalize risky asset holdings and give privileged treatment for government bonds.

Let λ_t denote the multiplier on the period budget constraint and let μ_t denote the shadow value of the repression constraint, measured in units of the current marginal value of wealth. Suppressing terms that do not depend on current government bond holdings, the Lagrangian contains

$$\begin{aligned} \mathcal{L}_{it} &= U_{At} + \lambda_t \left[P_t \overline{Y} + \mathbb{V}'_{At-1} \mathbb{R}_t + \hat{B}_{At-1} \hat{Q}_{t-1} R_{gt} + P_t T_{At} - P_t C_{At} - \mathbb{V}'_{At} \iota - \hat{Q}_t B_{it} \right] \\ &\quad + \lambda_t \mu_t f(\hat{Q}_t \hat{B}_{it}, \ldots). \end{aligned} \tag{4}$$

The first order condition with respect to $\hat{B}_{it}$, taking into account the continuation payoff on long-term government debt, yields real value of government bonds

$$\left(1 - \mu_t \frac{\partial f(\hat{Q}_t B_{it}, \ldots)}{\partial \hat{Q}_t B_{it}} \right) = \mathbb{E}_t \left[M_{t+1} \frac{R_{gt}}{\Pi_{t+1}} \right], \tag{5}$$

where M_t denotes the real stochastic discount factor of asset holders. Let Ω_t denote the *pricing wedge* due to financial repression, which is a function of the Lagrangian multiplier on the constraint:

$$\Omega_t = \frac{1}{1 - \mu_t \frac{\partial f(Q_t B_{it}, \ldots)}{\partial Q_t B_{it}}}. \tag{6}$$

This implies that the pricing equation for government bonds satisfies:

$$1 \;=\; \mathbb{E}_t\left[M_{t+1}\frac{R_{gt}}{\Pi_{t+1}}\right]\Omega_t. \tag{7}$$

Through this channel, repression depresses risk-adjusted future real returns, increasing current bond prices. Section 2.2 illustrates how different forms of repression on asset holders (forced holdings, capital regulation, and quantitative easing) map to equation (6).

To obtain tractable analytical solutions, we focus on the limit case where $\psi \to \infty$. The recursion for asset holder utility simplifies to

$$U_{At} = (1-\beta)C_{At} + \beta\left(\mathbb{E}_t\left[U_{At+1}^{1-\gamma}\right]\right)^{\frac{1}{1-\gamma}}.$$

Under this specification, the equilibrium stochastic discount factor exhibits a CAPM-like structure, depending exclusively on asset holder consumption claim returns.[6] The log real pricing kernel in this limit case can be expressed as

$$m_{t+1} = (1-\gamma)\log(\beta) - \gamma r_{At+1}, \tag{8}$$

where $m_{t+1} \equiv \log(M_{t+1})$ is the log one-period real stochastic discount factor and r^A_{ct+1} is the log real return on the consumption claim of asset holders. Realized consumption growth drops out of the pricing kernel in this limit case. As demonstrated in Cram et al. (2025), the key fiscal-inflation dynamics are quantitatively similar across a broad range of values for the IES satisfying an early resolution of uncertainty ($\psi > 1/\gamma$), because the dominant fiscal transmission channel in our framework operates through wealth redistribution (rather than realized consumption redistribution) between asset holders and non-participants.[7]

[6]With financial repression, this depends on the current market value of household assets and endowment claims less future expected discounted losses from repression.

[7]While finite-ψ solutions exist, the resulting expressions are substantially less transparent, making the limit case preferable for analytical exposition.

2.1.2 Hand-to-Mouth

Hand-to-mouth agents share the same preference structure but cannot actively participate in financial markets. Consequently, in each period, they consume all their disposable income plus the net financial income from their passive holdings of government debt

$$P_t C_{Ht} \leq P_t \overline{Y} + P_t T_{Ht} + \hat{B}_{Ht-1} \hat{Q}_{t-1} R_{gt} - \hat{B}_{Ht} \hat{Q}_t, \tag{9}$$

where C_{Ht} is the real consumption, T_{Ht} is the net real transfers, and $\hat{B}_{Ht}$ is the face value of passive holdings of government debt.

Repression on the Hand-to-Mouth We model financial repression on the hand-to-mouth through a government policy that sets the level of passive holdings in government debt $\hat{B}_{Ht}$.

2.2 *Microfoundations for the Repression Wedge*

The repression wedge Ω_t, arising from the constraint on asset holders in the bond pricing equation, can be microfounded through several institutional mechanisms that have been employed historically and in modern interventions in government bond markets. We present three complementary interpretations: forced holdings, financial regulations, and quantitative easing via financial intermediary balance sheets. These margins can then be manipulated to generate a time-varying wedge that maps to a repression policy rule characterized in Section 2.5.

2.2.1 Forced holdings

Governments can mandate that certain institutions (e.g., pension funds, insurance companies, domestic banks) hold minimum quantities of government bonds. Formally, let the constraint from equation (3) take the form:

$$f(\hat{Q}_t \hat{B}_{At}, \ldots) = \hat{Q}_t \hat{B}_{At} - \tilde{B}_t, \tag{10}$$

where $\tilde{B}_t$ is the market value of forced holdings. When this constraint binds, asset holders face an effective portfolio constraint. Varying this minimum requirement as a function of fiscal conditions (e.g., government size) produces time variation in the wedge that can be mapped to a repression rule.

2.2.2 *Capital Regulation*

Alternatively, prudential regulations can create similar wedges without explicit quantity mandates. Capital requirements that treat government bonds as zero-risk assets (as under Basel III) or liquidity coverage ratios (LCR) that mandate government securities as high-quality liquid assets create implicit subsidies for bond holdings. Banks and financial institutions facing these regulatory requirements behave as if they face a constraint similar to (10), with a more general constraint $f(\hat{B}_{At}, \mathbb{V}'_{At}, \dots) = 0$ which can depend on other portfolio holdings.

A particularly direct example is a liquidity requirement, such as a liquidity coverage ratio, under which regulated intermediaries must hold sufficient high-quality liquid assets relative to short-run funding needs. Since government bonds receive privileged regulatory treatment as high-quality liquid assets, asset holders face a constraint of the form

$$f^{LCR}_{At}(\hat{Q}_t\hat{B}_{At}, \mathbb{V}_{At}, \mathcal{O}_{At}) \quad = \quad \hat{Q}_t\hat{B}_{At} + \chi_L \mathbb{V}^L_{At} - \kappa_L \mathcal{O}_{At} \geq 0, \tag{11}$$

where $\mathbb{V}^L_{At}$ denotes other assets that qualify as liquid assets, $\chi_L \in [0, 1]$ is their regulatory haircut, $\mathcal{O}_{it}$ denotes stressed net cash outflows or runnable liabilities, and $\kappa_L > 0$ is the required liquidity coverage ratio.

Government bonds enter with unit weight because they are treated as the most liquid regulatory asset. When the constraint binds, the marginal value of government bonds includes their regulatory liquidity value according to

$$\frac{\partial f^{LCR}_{At}}{\partial \hat{Q}_t\hat{B}_{At}} = 1. \tag{12}$$

Thus, the liquidity regulation maps directly into the repression wedge in the government bond Euler equation. Varying this ratio with fiscal conditions would introduce time variation in the wedge that can be mapped to a repression rule.

2.2.3 *Quantitative Easing*

Quantitative easing (QE) can generate identical macroeconomic effects through its effects on financial intermediaries' balance sheets. Following Gertler and Karadi (2011), we embed a financial intermediary sector between asset holders and government bond markets, which faces a collateral constraint. When this constraint binds, it creates a wedge of the form of Ω_t. By manipulating this constraint, quantitative easing programs create variation in the intermediation wedge Ω_t and can be mapped to a time-varying repression rule. We detail this microfoundation in Appendix C.

2.3 *Monetary Policy*

The central bank sets the nominal short rate i_t according to a Taylor rule in inflation:

$$i_t = i^\star + \rho_\pi(\pi_t - \pi^\star), \tag{13}$$

responding to deviations of log inflation π_t from target $\pi^\star$ with intensity $\rho_\pi \geq 0$.

2.4 *Fiscal Policy*

Real tax revenue τ_t adjusts to stabilize government debt following the rule

$$\tau_t = \tau^\star + \delta_b \log\left(B_t/B^\star\right), \tag{14}$$

where B_t denotes the ex post real market value of government debt outstanding, $B^\star$ is the real debt target, and δ_b governs the strength of the taxation response to debt fluctuations. The intercept $\tau^\star$ is the steady-state revenue. We assume that this rule does not decrease the real value of debt outstanding too much: $\delta_b \in (-\frac{\delta S}{R^{g^r}-1}, \infty)$.

Real government spending G_t comprises a target level plus a persistent shock that evolves as

$$G_t = G^\star + \rho_g \left(G_{t-1} - G^\star\right) + \varepsilon_t, \tag{15}$$

where $G^\star$ denotes the spending target, $\rho_g \in (0,1)$ the persistence of shocks, and ε_t the shocks to spending. We let $g_t = G_t - G^\star$ denote the deviation of government spending from its steady-state level. Government spending G_t is modeled as transfers to households.

The government issues of perpetual bonds with geometric amortization rate $\delta \in (0,1]$ so that each period, a fraction δ of outstanding obligations matures. In nominal terms, the budget constraint of the government can be written as

$$\hat{Q}_t \left(\hat{B}_t - (1-\delta)\hat{B}_{t-1}\right) - \delta \hat{B}_{t-1} = -P_t S_t \tag{16}$$

where $\hat{B}_t$ denotes face value of debt, $\hat{Q}_t$ the nominal price of government bonds, and $S_t \equiv \tau_t - G_t$ the real primary surplus. We can also express the government budget equation in real terms, as:

$$B_t + S_t = B_{t-1} R_t^{gr} \tag{17}$$

where R_t^{gr} denotes the ex post real return on government bonds:

$$R_t^{gr} = \frac{Q_t(1-\delta) + \delta}{Q_{t-1}\Pi_t} \tag{18}$$

and $Q_t \equiv \frac{\hat{Q}_t}{P_t}$ denotes the real price of government bonds. Note that plugging this into the expression for asset pricing given repression, equation (7), yields:

$$Q_t \quad = \quad \mathbb{E}_t \left[M_{t+1} \frac{\delta + (1-\delta)\, Q_{t+1}}{\Pi_{t+1}} \right] \Omega_t. \tag{19}$$

2.5 Repression Policy

We specify separate repression policies for each agent type. The constraint on asset holders evolves so that the wedge Ω_t follows a rule whereby repression increases with government spending, as governments turn to repression to fund fiscal expansions. We assume that repression on the asset holders follows a simple rule increasing in government spending:

$$\log(\Omega_t) = \omega_g g_t \tag{20}$$

where $\omega_g > 0$ captures the intensity of repression.

We assume that forced holdings of the hand-to-mouth follow a rule such that the face value of holdings of government debt by the hand-to-mouth is equal to a constant share, $\omega_H \in [0, 1)$, of the face value outstanding:

$$\hat{B}_{Ht} = \hat{B}_t \omega_H. \tag{21}$$

This implies that forced holdings of the hand-to-mouth increase proportionally with higher debt issuance.

2.6 Market Clearing

Bond market equilibrium requires that the real value of bonds held be equal to the average per-capita holdings of agents:

$$B_t = \zeta B_{At} + (1 - \zeta) B_{Ht}. \tag{22}$$

where asset holders absorb the government debt not mandated for hand-to-mouth agents. State-contingent securities traded by asset holders are in zero net supply. The resource constraint is

$$\overline{Y} = \zeta C_{At} + (1 - \zeta) C_{Ht}. \tag{23}$$

Combining household budget constraints with these clearing conditions yields consumption allocations

$$C_{At} = \overline{Y} + S_t(1-\omega_H)\frac{1-\zeta}{\zeta}\,, \quad C_{Ht} = \overline{Y} - S_t(1-\omega_H). \tag{24}$$

This reveals the redistributive channel through which fiscal surpluses transfer resources from non-participants to asset holders—the central mechanism linking fiscal shocks to the stochastic discount factor. The extent of redistribution depends on repression of the hand-to-mouth: when $\omega_H < 1$ (hand-to-mouth agents hold less than their per-capita share of debt), fiscal surpluses disproportionately benefit asset holders.

2.7 Equilibrium Definition

We define the equilibrium as a function of real allocations, real prices, and inflation. Given an initial stock of real government liabilities B_{-1}, an exogenous government spending process $\{G_t\}_{t\geq 0}$, and policy rules for monetary policy, fiscal policy, and financial repression, a competitive equilibrium is a set of allocations

$$\{C_{At}, C_{Ht}, U_{At}, U_{Ht}, B_{At}, \mathbb{S}_{At}, B_{Ht}\}_{t\geq 0},$$

prices

$$\{\Pi_t, Q_t, R_t^{gr}, \mathbb{Q}_t, M_{t+1}, \Omega_t\}_{t\geq 0},$$

and government policies

$$\{B_t, S_t, \tau_t, T_{At}, T_{Ht}, \Omega_t\}_{t\geq 0}$$

such that:

1. Asset holders choose consumption, government bond holdings, and state-contingent claims to maximize (1) subject to their budget constraint and the financial repression constraint. Their optimality conditions imply the government bond pricing equation (19).

2. Hand-to-mouth agents consume their endowment, transfers, and payoffs from

mandated government bond holdings subject to their period budget constraint.

3. Government policies satisfy the monetary policy rule, the fiscal rule for taxes and primary surpluses, the financial repression rules and the government budget constraint

$$B_t + S_t = B_{t-1} R_t^{gr}. \tag{25}$$

4. Bond markets, state-contingent claims markets, and goods markets clear.

An equilibrium is locally stable if the resulting paths for inflation, bond prices, and real government debt remain bounded around the deterministic steady state following bounded fiscal shocks.

3 The Effects of Repression

This section characterizes how the equilibrium effects of financial repression policy interact with monetary and fiscal policy in our benchmark model. We focus our analysis on the case in which fiscal policy is profligate, where tax policy is insufficient to cover fiscal expansions absent repression. We then analyze the role of repression policy conditional on each agent type and on whether monetary policy accommodates profligate fiscal policy.

When monetary policy accommodates profligate fiscal policy, the repression policy on asset holders reduces the amount of inflationary finance required, decreasing the fiscal inflation risk in government bonds. Repression on the hand-to-mouth dampens fiscal wealth redistribution, dampening the sensitivity of the real pricing kernel to fiscal shocks. Therefore, both forms of repression reduce bond risk premia.

When monetary policy does not accommodate profligate fiscal policy, repression on asset holders can restore equilibrium determinacy, allowing the monetary authority to retain control of inflation. The fiscal support from this repression margin also makes government debt a hedge for fiscal inflation.

3.1 Solution Method

We solve the model analytically using a first-order linearization around the steady-state.[8] The log-linearized model in deviations from the steady-state is characterized by three equations: the Euler equation pricing government bonds (26), the government budget constraint (27), inflation expectation implied by the Taylor rule and Euler equation for the short rate.

$$
\begin{aligned}
q_t &= \mathbb{E}_t\left[q_{t+1}\right]\Theta + \omega_g g_t - \mathbb{E}_t\left[\pi_{t+1}\right] && (26) \\
b_t\Phi &= g_t\Psi - \omega_g g_{t-1} + \Theta\left(q_t - \mathbb{E}_{t-1}\left[q_t\right]\right) - \left(\pi_t - \mathbb{E}_{t-1}\left[\pi_t\right]\right) + b_{t-1} && (27) \\
\rho_\pi \pi_t &= \mathbb{E}_t\left[\pi_{t+1}\right] && (28)
\end{aligned}
$$

where we define composite parameters:

$$
\Theta \equiv \frac{1-\delta}{R^g}, \qquad \Psi \equiv \frac{1}{S}\frac{R^g-1}{R^g}, \qquad \Phi \equiv \frac{1+\frac{\delta_b}{S}\left(R^g-1\right)}{R^g}. \tag{29}
$$

The parameter Θ is the discounted continuation value of a long-term bond. It is larger when the duration of debt is longer, so bond prices depend more on future prices. The parameter Ψ scales the fiscal burden of government spending. It is larger when steady-state funding costs are high or steady-state surpluses are small. The parameter Φ summarizes fiscal backing through the tax response δ_b. The threshold $\delta_b \lesseqgtr S$ corresponds to $\Phi \lesseqgtr 1$.

As in Leeper (1991), the parameter space can be bisected into four regions depending on the monetary and fiscal parameters. Financial repression changes equilibrium dynamics in these regions and can allow for a unique non-explosive equilibrium in the parameter space where fiscal policy does not increase taxes sufficiently to pay for fiscal expansions and monetary policy is not willing to accommodate fiscal expansions with inflationary finance.

Lemma 1 (Determinacy regions)**.** *Consider the log-linearized economy characterized by equations (26)–(28). The equilibrium properties of the model are governed by the monetary*

[8] See Appendix A for further details on the model solution and derivations for the results below.

policy coefficient ρ_π and the fiscal feedback coefficient δ_b:

1. *If $\delta_b < S$ and $\rho_\pi < 1$, fiscal policy does not fully back fiscal expansions and monetary policy accommodates. There exists a unique locally stable equilibrium.*

2. *If $\delta_b > S$ and $\rho_\pi > 1$, fiscal policy fully backs fiscal expansions and monetary policy satisfies the Taylor principle. There exists a unique locally stable equilibrium.*

3. *If $\delta_b < S$ and $\rho_\pi > 1$, fiscal policy does not fully back fiscal expansions and monetary policy does not accommodate. Absent financial repression, there is no locally stable equilibrium. Financial repression restores a unique locally stable equilibrium if*

$$\omega_g = \Psi \frac{1 - \rho_g \Theta}{\Phi - \Theta}.$$

4. *If $\delta_b > S$ and $\rho_\pi < 1$, fiscal policy fully backs fiscal expansions but monetary policy accommodates. The economy features multiple locally stable equilibria.*

We focus on the equilibrium regions with profligate fiscal policy ($\delta_b < S$), regions 1 and 3 above. We discuss equilibrium dynamics with accommodating fiscal policy in section 4.1. All derivations and proofs can be found in Appendix A.

3.2 *Monetary Accommodation to Profligate Fiscal Policy*

We first consider how repression affects the equilibrium dynamics in the parameter region in which taxes do not increase sufficiently to pay for fiscal expansions that are accommodated by passive monetary policy, as summarized by the following assumption:

Assumption 1. *Monetary, fiscal, and repression policy satisfy*

$$0 < \rho_\pi < 1, \qquad \delta_b < S, \qquad 0 \leq \omega_g < \rho_g \Psi \tag{30}$$

In Appendix A, we show that under these parameter restrictions, the equilibrium yields the following solutions for deviations from steady-state in the real value of outstanding debt b_t, the price of government bonds q_t, and inflation π_t:

$$b_t = b_g g_t, \qquad q_t = q_\pi \pi_t + q_g g_t, \qquad \pi_t = \pi_\varepsilon \varepsilon_t + \rho_\pi \pi_{t-1}. \tag{31}$$

where

$$\begin{aligned} b_g &\equiv \frac{\omega_g - \Psi\rho_g}{1-\rho_g\Phi}, \qquad q_g \equiv \frac{\omega_g}{1-\Theta\rho_g}, \\ q_\pi &\equiv -\frac{\rho_\pi}{1-\Theta\rho_\pi}, \qquad \pi_\varepsilon \equiv \frac{1-\rho_\pi\Theta}{1-\Phi\rho_g}\left(\Psi - \omega_g\frac{\Phi-\Theta}{1-\rho_g\Theta}\right). \end{aligned} \tag{32}$$

Figure 1 plots the impulse responses of inflation, bond prices, real debt outstanding, and real government bond returns to an expansionary fiscal shock. The intuition for these graphs and (31) and (32) are as follows. Absent repression, it is clear that unfunded fiscal expansions require inflationary finance ($\pi_\varepsilon > 0$) to make the budget constraint clear. The magnitude of inflationary finance required, absent repression, increases with the fiscal burden of government spending Ψ and decreases with the duration of debt Θ and the persistence of inflation ρ_π, as these latter two factors amplify the impact of inflation.

3.2.1 Repression of Asset Holders

The financial repression of asset holders lowers government funding costs during fiscal expansions via the bond pricing wedge, thereby requiring less inflation (lower π_ε) to satisfy the intertemporal government budget equation. The price of government bonds is decreasing in inflation $q_\pi < 0$, with the sensitivity increasing in the persistence of inflation and longer maturity debt (higher share of government debt value represented by the continuation value Θ). Repression of asset holders works to increase the value of government bonds in response to a fiscal expansion, both directly by pushing up the prices of government bonds now and in the future, as represented by q_g, and indirectly by requiring less fiscal inflation.

Figure 1b shows the combined effects of these forces: repression mitigates the fall in government bond prices caused by an unfunded fiscal expansion. The effect of government spending on the real government debt outstanding b_g is decreased by inflationary finance, with b_g falling with the fiscal burden of government spending Ψ

and the persistence of government spending ρ_g. Repression decreases the amount of inflationary finance and increases b_g.[9] Figure 1c shows the combined effects of these forces. Repression reduces the fall in the real value of the government debt portfolio caused by an unfunded fiscal expansion.

Finally, Figure 1d shows the impulse response of real government bond returns with respect to a positive government spending shock relative to their steady-state value, given by the following expression

$$r_t^{gr} = -\varepsilon_t \frac{\Psi}{1-\Phi\rho_g} + \omega_g \left(\frac{\Phi}{1-\Phi\rho_g} \varepsilon_t - g_{t-1} \right). \tag{33}$$

Expansionary unfunded fiscal shocks reduce government bond returns, as higher future inflation reduces the price of government bonds. Increased repression of asset holders following a fiscal expansion (ω_g) reduces this decrease in government bond prices by increasing bond prices on impact of fiscal shocks, but this comes at the cost of lower future bond returns as repression keeps bond prices higher than their frictionless value (and thus yields and returns are lower).

Proposition 1 formally summarizes the impact of ω_g, the rule governing repression of asset holders, on the impulse response of equilibrium variable $x \in \{q, b, \pi, r^{gr}\}$ to a fiscal shock k periods ago.

Proposition 1. *Under Assumption 1, a larger repression response to fiscal expansions ω_g:*

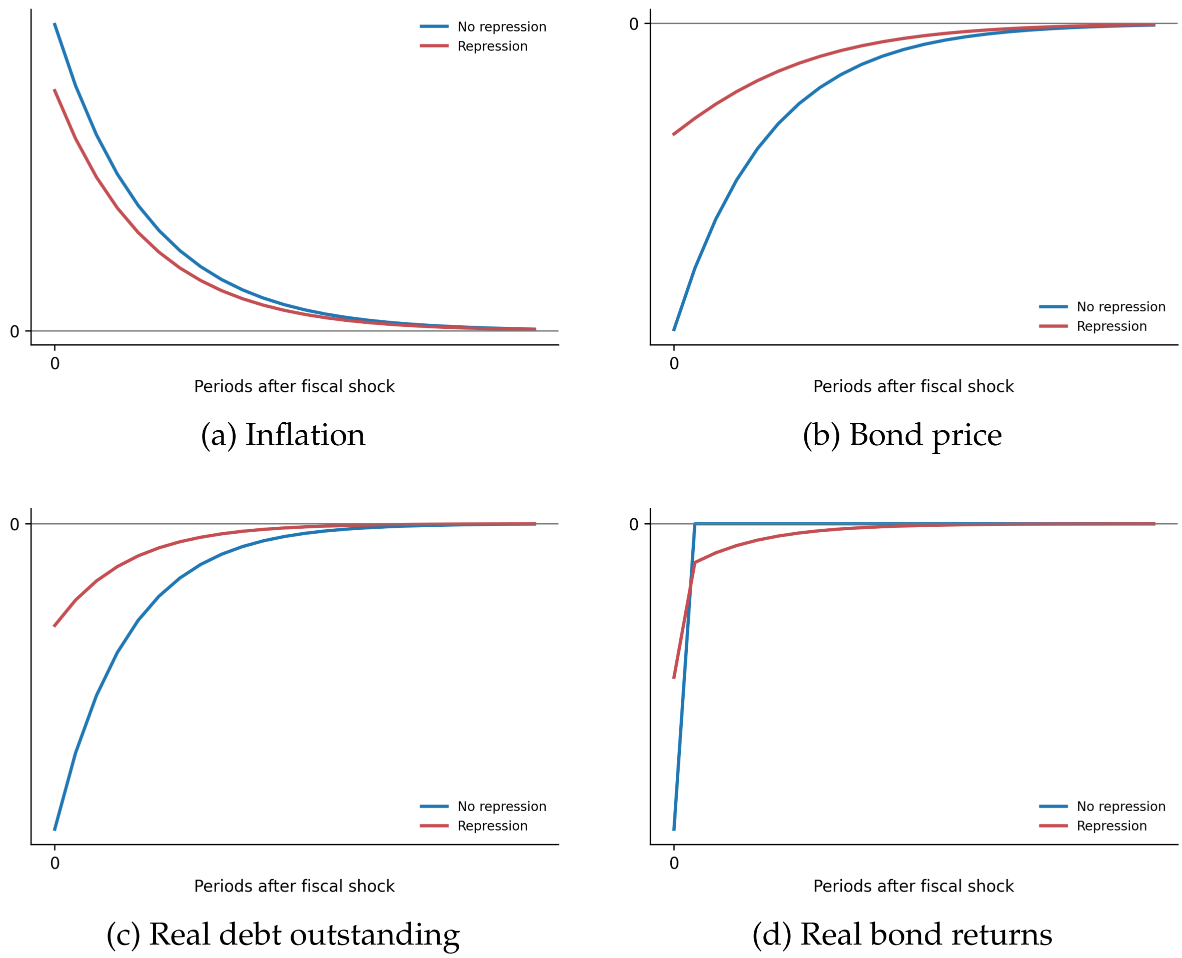
a) *Reduces the inflation caused by an expansionary fiscal shock:* $\frac{\partial \pi_{\varepsilon,k}}{\partial \omega_g} < 0$.

b) *Reduces the fall in real debt outstanding due to an expansionary fiscal shock:* $\frac{\partial b_{\varepsilon,k}}{\partial \omega_g} > 0$.

c) *Reduces the fall in government bond prices due to an expansionary fiscal shock:* $\frac{\partial q_{\varepsilon,k}}{\partial \omega_g} > 0$.

d) *Reduces the fall in real government bond returns on impact of an expansionary fiscal shock, but lowers future real government bond returns:* $\frac{\partial r^{gr}_{\varepsilon,0}}{\partial \omega_g} > 0$, $\frac{\partial r^{gr}_{\varepsilon,k}}{\partial \omega_g} < 0$ *for* $k \geq 1$.

[9] The magnitude of b_g is increasing in the composite parameter Φ. Intuitively, inflationary finance decreases the real value of outstanding debt, and a higher δ_b therefore reduces the taxes collected via the policy rule. A negative δ_b generates higher tax revenues in response to a fiscal expansion in the equilibrium with unfunded shocks and accommodative monetary policy.



(a) Inflation (b) Bond price

(c) Real debt outstanding (d) Real bond returns

Fig. 1. Financial Repression of Asset Holders with Unfunded Fiscal Shocks and Monetary Accommodation

Mapping the repression rule to forced holdings Here we present an example illustrating the mapping of the repression rule on asset holders in equation 20 to one of our microfoundations. The repression rule implies the following forced holdings rule on asset holders:

$$log(\tilde{B}_t) = log(\tilde{B}_t^{\star}) + \frac{\omega_g}{1-\rho_g \Phi} g_t \tag{34}$$

where $\tilde{B}_t^{\star}$ denotes the nominal market value of holdings agents would choose unconstrained. The forced holdings increase in proportion to government spending. We can similarly show how the repression rule maps to the other microfoundations.

3.2.2 Repression of the Hand-to-Mouth

While repression of asset holders manifests as a wedge in the bond pricing equation (19), repression of the hand-to-mouth affects dynamics by changing portfolio shares. This affects not only the redistribution of consumption in (24), but with unfunded shocks also the redistribution of utility (e.g. consumption claim). Let $u_{A\varepsilon}, u_{H\varepsilon}$ denote the elasticity of asset holder and hand-to-mouth utility, respectively, to an expansionary fiscal shock given by

$$\begin{aligned} u_{A\varepsilon} &= -\frac{(1-\omega_H)\,\frac{1-\zeta}{\zeta}}{\overline{Y}+S\,(1-\omega_H)\,\frac{1-\zeta}{\zeta}} \frac{1-\rho_g\beta-\omega_g\delta_b}{1-\rho_g\Phi} \frac{1-\beta}{1-\rho_g\beta} \\ u_{H\varepsilon} &= \frac{1-\omega_H}{\overline{Y}+S\,(1-\omega_H)} \frac{1-\rho_g\beta-\omega_g\delta_b}{1-\rho_g\Phi} \frac{1-\beta}{1-\rho_g\beta}. \end{aligned} \tag{35}$$

These expressions make it clear that unfunded expansionary fiscal shocks lead to redistribution from asset holders to the hand-to-mouth. This redistribution is decreasing in the share of government bonds held by the hand-to-mouth ω_H, as there is less redistribution of consumption across agents. This result is formalized in Corollary 1.1. The magnitude of the redistribution is also decreasing in the share of asset holding agents ζ, as losses are spread across a larger mass of asset holders.

Corollary 1.1. *Forced holdings of government bonds by hand-to-mouth agents ω_H reduces the redistribution of consumption and utility from asset holders to the hand-to-mouth that* *results from an expansionary fiscal shock:* $\frac{\partial^2 C_{Ht} - C_{At}}{\partial \varepsilon \partial \omega_H} < 0$, $\frac{\partial u_{A\varepsilon}}{\partial \omega_H} > 0$, $\frac{\partial u_{H\varepsilon}}{\partial \omega_H} < 0$.

The effect of the repression rule coefficient on asset holders, ω_g, on redistribution of utility depends on the fiscal response. Corollary 1.2 formally signs the effect and introduces a neutrality result: If fiscal policy is exogenous to repression $\delta_b = 0$, then the redistribution of utility is exogenous to ω_g. Intuitively, the consumption claim and utility depend only on the path of government primary surpluses, which is exogenous to repression if $\delta_b = 0$. If repression increases tax revenues, which occurs if $\delta_b > 0$ and taxes rise in the real debt outstanding, then repression decreases the redistribution of utility by increasing taxes. On the other hand, if governments run larger deficits thanks to repression, which occurs if $\delta_b < 0$, then the redistribution is amplified by ω_g.

Corollary 1.2. *If Assumption 1 holds, a larger repression response to fiscal expansions* ω_g

a) Does not affect asset holder utility if fiscal policy is exogenous ($\delta_b = 0$*)*

b) Reduces the decline in asset holders utility caused by an expansionary fiscal shock if repression leads to increased tax revenues ($\delta_b > 0$*)*

c) Increases the decline in asset holders utility caused by an expansionary fiscal shock if repression leads to decreased tax revenues ($\delta_b < 0$*)*

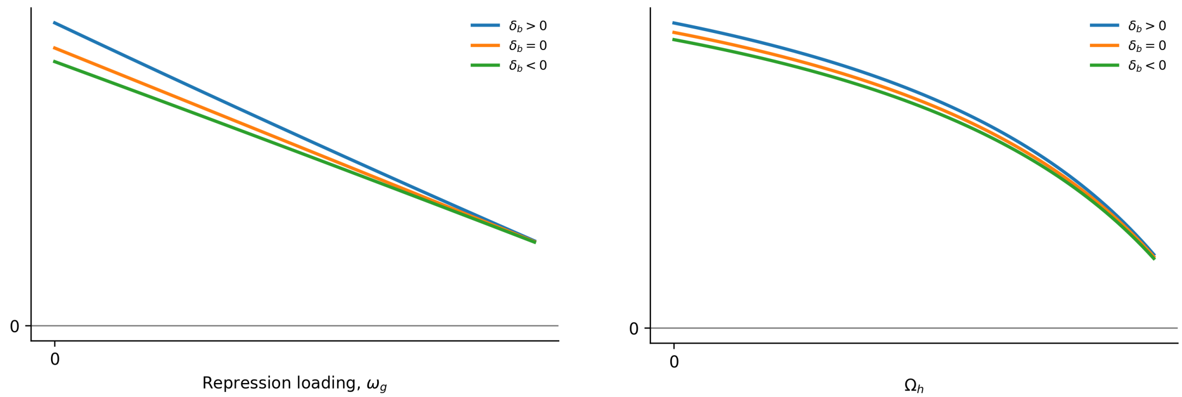
3.2.3 *Asset Pricing*

The level of government bond risk premia is given by

$$rp^{gr} = \frac{(1-\omega_H)\frac{1-\zeta}{\zeta}}{\overline{Y} + S(1-\omega_H)\frac{1-\zeta}{\zeta}} \frac{\left(1-\rho_g\Phi + \delta_b\left(\Psi\rho_g - \omega_g\right)\right)\left(\Psi - \omega_g\Phi\right)}{\left(1-\rho_g\Phi\right)^2} \frac{1-\beta}{1-\rho_g\beta}\gamma\sigma_\varepsilon^2. \quad (36)$$

Corollary 1.3 summarizes the impact of financial repression on risk premia. A larger financial repression response to fiscal expansions (ω_g) reduces risk premia as long as the response of fiscal policy to repression does not reduce tax revenues (and therefore surpluses) by too much. Forced holdings of hand-to-mouth agents ω_H also reduce the magnitude of risk premia. Figure 2 summarizes the effects of repression graphically.

Corollary 1.3 (Risk Premia with $\rho_\pi < 1$)**.** *If Assumption 1 holds,*



(a) Risk premium and ω_g

(b) Risk premium and ω_h

Fig. 2. Risk Premia and Repression in the Fiscal No-Switching Regime

a) The risk premia on government bonds are positive

b) A larger financial repression of asset holders response to fiscal expansions (ω_g) reduces the risk premia on government bonds ($\frac{\partial rp_t^{gr}}{\partial \omega_g} < 0$) if $\delta_b > \delta_b^*$ where $\delta_b^* < 0$ is a composite of model parameters defined in Appendix A.

c) Forced holdings of government bonds by the hand-to-mouth reduce the magnitude of risk premia: $\frac{\partial |rp_t^{gr}|}{\partial \omega_h} < 0$

3.3 Monetary Policy Does Not Accommodate Profligate Fiscal Policy

This section considers the role of financial repression in a scenario where monetary policy is not accommodating profligate fiscal policy but is instead hawkish on inflation, which is summarized by the parameter restrictions below.

Assumption 2. *Monetary and fiscal policy satisfy*

$$\rho_\pi > 1, \qquad \delta_b < S. \tag{37}$$

In Leeper (1991), there are no stable equilibria in this parameter region, as both monetary and fiscal policy authorities are focused on their objectives, but neither ensures the government budget constraint binds. We show that our repression policy on asset holders can allow for unique and stationary equilibria.

3.3.1 Repression on the Asset Holders

Financial repression on asset holders, by reducing the cost of financing government debt, can make the government budget constraint hold and restore the existence of equilibrium. Intuitively, repression can lower the cost of financing sufficiently so that the amount of tax revenues is sufficient to repay the debt accrued with fiscal expansions without requiring inflation. Proposition 2 summarizes the level of repression that achieves this, which depends on fiscal policy parameters.

Proposition 2. *If Assumption 2 holds and the repression rule on asset holders takes the value $\omega_g = \omega_g^\star$, then there exists a unique stable equilibrium characterized by*

$$\pi_t = 0, \qquad q_t = q_g g_t, \qquad b_t = b_g g_t, \tag{38}$$

where

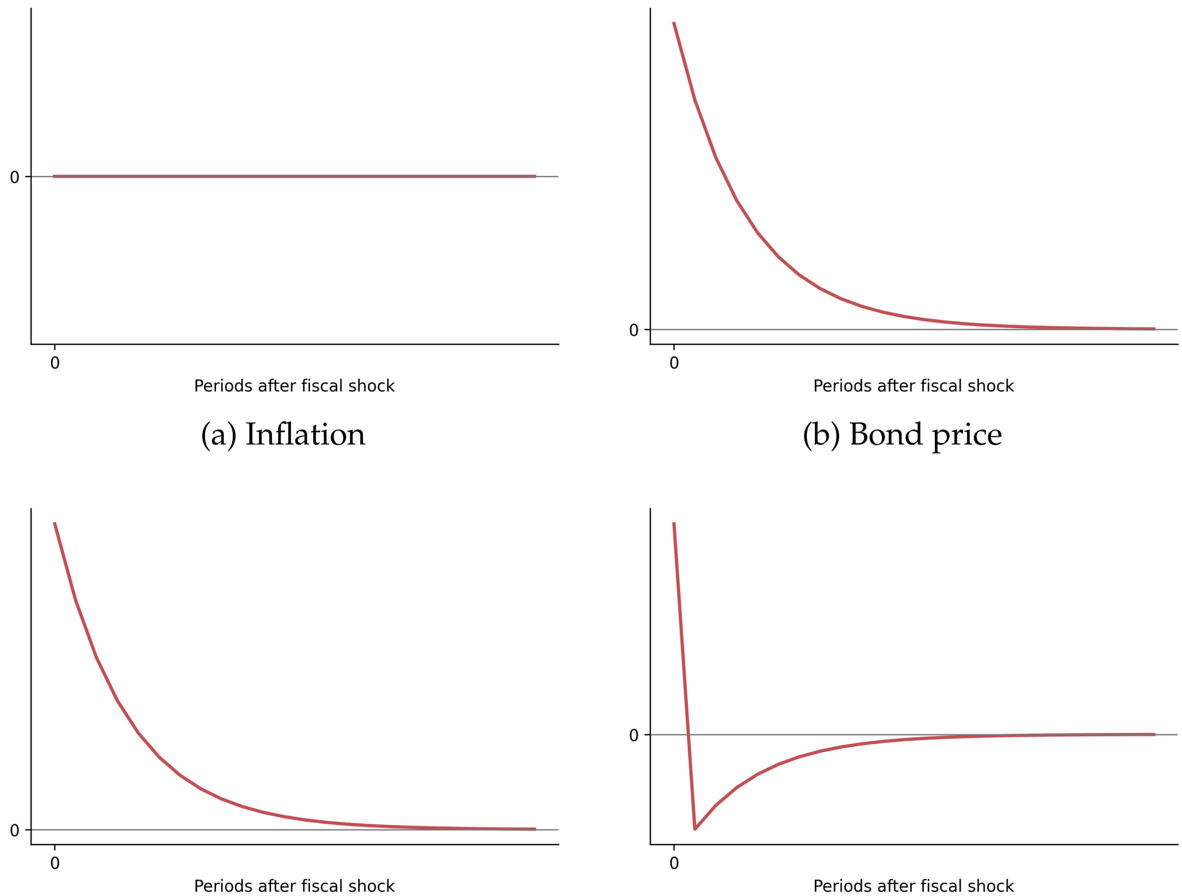
$$\omega_g^\star = \Psi \frac{1 - \rho_g \Theta}{\Phi - \Theta} \tag{39}$$

and b_g, q_g are given by equation (32).

This equilibrium exhibits the same debt dynamics as the fiscally-led equilibrium in section 3.2. However, inflation, bond prices, and bond returns follow the same dynamics as in a monetary-led equilibrium with a fully accommodating fiscal authority and a monetary authority that targets inflation (as outlined in section 4.1). Intuitively, fiscal policy is "active", and thus the real value of debt (and thus transfers) is determined by the fiscal stance. Monetary policy, which pins down inflation, bond prices, and bond returns, is also "active", and thus these variables are determined by the monetary stance. While neither monetary nor fiscal policy can ensure fiscal solvency, financial repression can, allowing the monetary authority to retain control of inflation. Figure 3 displays impulse responses to an expansionary fiscal shock.

Corollary 2.1 highlights how the amount of repression required for this equilibrium decreases with the fiscal backing of government expansions. Intuitively, the more tax revenue is generated during fiscal expansions, the less repression is required to ensure the government budget constraint holds.

Corollary 2.1. *If Assumption 2 holds, lower fiscal backing requires higher repression:* $\frac{\partial \omega_g^\star}{\partial \delta_b} < 0$



(a) Inflation (b) Bond price

(c) Real debt outstanding (d) Real bond returns

Fig. 3. Impulse Responses to Fiscal Shock in the Active/Active Region
Note: Impulse responses to an expansionary fiscal shock when monetary policy is active, $\rho_\pi > 1$, and fiscal policy is active, $\delta_b < S$. The repression loading is set to the value that restores equilibrium existence, $\omega_g = \Psi(1 - \rho_g \Theta)/(\Phi - \Theta)$. The no-repression active/active case is not shown because no such equilibrium exists.

3.3.2 Repression on the Hand-to-Mouth

Fiscal expansions entail redistribution from asset holders to the hand-to-mouth, as there are insufficient tax revenues to compensate bondholders. There is no inflation in this equilibrium; rather, bondholders face utility losses as repression on asset holders, in response to a fiscal expansion, depresses the expected returns on their bond holdings.

This level of repression is sufficient so that the amount of tax revenues can pay off the debt accrued by the fiscal expansion without requiring inflation, but results in lower primary surpluses and therefore a lower consumption claim or utility of asset holders. Corollary 2.2 formalizes this result, and notes that the magnitude of the redistribution is decreasing with respect to the repression policy on the hand-to-mouth (i.e., forced holdings).

Corollary 2.2. *If Assumption 2 holds*

a) Expansionary fiscal shocks decrease the utility of asset holders and increase the utility of the hand-to-mouth.

b) The magnitude of these utility effects is decreasing in the forced holdings of the hand-to-mouth ω_H.

The elasticity of utilities to a positive government spending shock for an asset holder and a hand-to-mouth agent are given by

$$\begin{aligned} u_{A\varepsilon} &= -\frac{(1-\omega_H)\,\frac{1-\zeta}{\zeta}}{\overline{Y}+S\,(1-\omega_H)\,\frac{1-\zeta}{\zeta}}\frac{\beta\delta}{\Phi-\Theta}\frac{1-\beta}{1-\beta\rho_g} \\ u_{H\varepsilon} &= \frac{1-\omega_H}{\overline{Y}+S\,(1-\omega_H)}\frac{\beta\delta}{\Phi-\Theta}\frac{1-\beta}{1-\beta\rho_g}. \end{aligned} \tag{40}$$

3.3.3 Asset Pricing

This equilibrium implies negative risk premium on government bonds, as they serve as a hedge against utility losses from fiscal expansions. Fiscal expansions entail redistribution away from bondholders, but repression on asset holders increase the initial response of government bond returns to an expansionary fiscal shock (but decrease returns thereafter):

$$r_t^{gr} = \frac{\Psi\Theta}{\Phi-\Theta}\varepsilon_t - \frac{\Psi\left(1-\rho_g\Theta\right)}{\Phi-\Theta}g_{t-1}. \tag{41}$$

Bondholders face no losses from inflation in this equilibrium. Upon an expansionary fiscal shock repression pushes up bond prices, increasing realized bond returns. Therefore government bonds are a hedge for the utility losses of asset holders, leading to a negative risk premium on government bonds according to:[10]

$$rp^{gr} \quad = \quad -\frac{\left(1-\omega_H\right)\frac{1-\zeta}{\zeta}}{\overline{Y}+S\left(1-\omega_H\right)\frac{1-\zeta}{\zeta}}\frac{\beta\delta\Psi\Theta}{\left(\Phi-\Theta\right)^2}\frac{1-\beta}{1-\beta\rho_g}\gamma\sigma_\varepsilon^2<0. \tag{42}$$

Corollary 2.3. *If Assumption 2 holds*

a) The risk premium on government bonds is negative.

b) This magnitude of the risk premium is decreasing in the forced holdings of the hand-to-mouth ω_H.

4 Additional Results

This section considers additional analysis. The first part examines how repression affects the remaining two policy regions from Lemma 1 in which government spending is fully funded. The second part analyzes an extension of the model where the repression policy has a stochastic duration.

4.1 *Fiscal Policy Accommodates*

We now explore regions in which fiscal policy accommodates government spending by raising sufficient future taxes to pay for it ($\delta_b > S$). We start with the equilibrium where monetary policy targets inflation by satisfying the Taylor principle ($\rho_\pi > 1$). Inflation in this region is insulated from fiscal risk, as active monetary policy stabilizes inflation. Taxes rise with fiscal expansions, increasing future revenue sufficiently to stabilize debt. Appendix B.1 provides a detailed solution of the dynamics for this regime.

Repression also affects bond prices and the government budget constraint in this equilibrium. Financial repression of asset holders lifts bond prices, increasing real bond returns on impact but depressing future bond returns, as higher prices imply

[10] Our formulation of the constraint assumes that current holdings of bonds do not affect the constraint faced by an asset holder the next period. If holdings more bonds this period affects the constraint faced by bondholders in the future, then risk premia would internalize the lower future expected returns and the sign of risk premia becomes indeterminate.

lower yields. The increase in bond prices increases real debt outstanding, but the lower interest rate implies that debt is paid off faster, and therefore real debt outstanding decreases faster with financial repression.

If there is no repression of asset holders, fiscal expansions are Ricardian and do not affect the utility of asset holders or the hand-to-mouth: higher current transfers to the hand-to-mouth are perfectly offset by higher taxes, increasing asset holders' future consumption (decreasing hand-to-mouth). However, with the repression of asset holders, this neutrality no longer holds. We show that fiscal expansions with asset holder repression ($\omega_g > 0$) reduce the utility of asset holders and increase the utility of the hand-to-mouth. Further, we show that government debt under asset holder repression becomes a hedge for fiscal risk, like the policy region with repression outlined in Section 3.3.

The final policy region is characterized by a passive monetary authority ($\rho_\pi < 1$) and accommodating fiscal authority ($\delta_b > S$). In this case, there is a continuum of possible equilibria. Appendix B.2 provides the details of the indeterminacy in this region even with repression.

4.2 Stochastic Duration of Repression

The baseline analysis assumes that financial repression policy is a permanent feature of the economy. However, in practice, governments face institutional, political, and economic constraints that limit their ability to sustain repression indefinitely. Historical episodes of financial repression—such as those documented in the post-World War II era—eventually ended as financial markets liberalized and regulatory constraints were relaxed.

We extend the baseline model to allow for repression of stochastic duration. In periods with repression, the government imposes $\omega_g^r > 0$ (e.g. forced bond holdings). In periods without repression, $\omega_g^n = 0$ (unconstrained markets). We continue to assume that repression of hand-to-mouth is not time-varying. If repression is active in period t, it persists into period $t+1$ with probability ρ_ω^r. With probability $1 - \rho_\omega^r$, repression ends and the economy transitions to unconstrained financial markets. Similarly, once liberalized, markets remain unconstrained with probability ρ^n_ω. This specification is meant to capture that repression has *uncertain duration*: Even during repression, agents assign positive probability to future liberalization. Lower probabilities of repression persisting ρ^r_ω can capture politically fragile or institutionally weak repression.

We focus on the region of the parameter space corresponding to assumption 1, where shocks are unfunded and monetary policy accommodates fiscal expansions ($\rho_\pi < 1, \delta_b < S$).[11]

In Appendix B.3, we derive and outline the following insights from this extension: First, while the results on the effects of repression in section 3.2 generalize to this case with stochastic duration of repression, the magnitude of the effects decline as repression becomes less persistent (fragile). Second, the end of financial repression generates losses for bondholders, an increase in inflation, and a fall in government bond returns (though future expected bond returns increase). Third, stochastic duration of repression not only reduces the effectiveness of repression in dampening risk premia on government bonds, it also introduces the risk of repression ending, which is priced if there is a fiscal response to financial repression $\delta_b \neq 0$.

5 Conclusion

We characterize how a broad set of repression policies affects government funding costs and determinacy in a tractable macro-asset pricing framework. Repression in the form of forced holdings and capital regulation on marginal investors and quantitative easing all map to an equilibrium wedge in the bondholder's Euler equation. Repression, as forced holdings on hand-to-mouth agents, impacts fiscal wealth redistribution across agents, thereby affecting the real pricing kernel. We specify a repression on intertemporal agents as a policy rule depending on government size alongside monetary and fiscal rules.

When monetary policy accommodates profligate fiscal policy, repression on both agent types reduces government funding costs. Repression through intertemporal

[11]Historical episodes of financial repression—including the postwar U.S. period—typically featured fiscal-dominant regimes where central banks accommodated fiscal needs.

agents' bond holdings via the feedback rule hedges unfunded deficit shocks to real bond values by offsetting movements in the bond pricing wedge, reducing fiscal inflation risk in government bonds. Repression through the hand-to-mouth dampens the negative impact of unfunded deficit shocks on the wealth of intertemporal agents, which reduces the price of fiscal risk, at the expense of the hand-to-mouth being exposed to the inflation tax. Both repression margins lower government bond risk premia, but the latter has distributional consequences.

When monetary policy does not accommodate profligate fiscal policy, funding costs and debt would be explosive without repression. We show how a repression policy rule on intertemporal agents can restore determinacy, allowing a hawkish central bank to retain full control of inflation in a distinct policy regime. The repression wedge lowers government discount rates to cover the shortfall in tax revenues to stabilize debt. Government bond returns in this setting hedge against unfunded deficit shocks, producing a negative bond risk premium that enhances the convenience yield.

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Appendix A Model Solution and Proofs

A.1 Nonlinear System of Equations

We solve for the following endogenous variables $[\Pi_t, B_t, R_{gt}, M_t, U_{At}, i_t, C_{At}, C_{Ht}, G_t, \tau_t, \Omega_t]$

- Asset holder's Euler equation for the nominal short rate

$$1 = \mathbb{E}_{t-1}\left[\frac{M_t}{\Pi_t} I_{t-1}\right]$$

- The Pricing of Government Bonds:

$$Q_{t-1} = \Omega_{t-1}\mathbb{E}_{t-1}\left[\frac{M_t}{\Pi_t}\left(Q_t\left(1-\delta\right)+\delta\right)\right]$$

- Asset holder's lifetime utility

$$U_{At} = (1-\beta)C_{At} + \beta\left(\mathbb{E}_t\left[U_{At+1}^{1-\gamma}\right]\right)^{\frac{1}{1-\gamma}}$$

- Real stochastic discount factor

$$M_{t+1} \equiv \beta\left(\frac{\hat{U}_{At+1}}{\mathbb{E}_t[\hat{U}_{At+1}^{1-\gamma}]^{\frac{1}{1-\gamma}}}\right)^{-\gamma}.$$

- Budget constraint of the hand-to-mouth agent and government + bond market clearing

$$C_{Ht} = \overline{Y} - S_t(1-\omega_H)$$

- Resource constraint

$$C_{At} = \overline{Y} + \left(\frac{(1-\zeta)}{\zeta}\right) S_t(1-\omega_H)$$

- Government budget equation

$$B_t - \frac{R_t^g}{\Pi_t} B_{t-1} \quad = \quad S_t$$

- Nominal Return on Government Bonds

$$R_t^g \quad = \quad \frac{(Q_t\,(1-\delta)+\delta)}{Q_{t-1}}$$

- Interest rate rule

$$i_t = i^\star + \rho_\pi(\pi_t - \pi^\star)$$

- Tax rule

$$\tau_t = \tau^\star + \delta_b(b_t - b^\star),$$

- Government spending process

$$G_t \quad = \quad G^\star + \rho\,(G_{t-1} - G^\star) + \epsilon_t$$

- Repression Rule

$$\log(\Omega_t) = \omega_* + \omega_g(G_t - G^*),$$

A.2 Model Linearization and Equilibria

Note that for convenience of interpretation, we have specified deviations of government spending g_t in levels rather than in logs, though this only affects the representation of our results. Log-linearizing the model equations yields (26), (27), and (28) in deviations from a steady-state with no inflation.

Equilibria As there is a single shock, we can write all solutions in deviations sequence space notation, e.g. $x_t = \sum_k x_{\varepsilon,k}\varepsilon_{t-s}$, e.g. using the elasticities of a variable to a shock k periods ago. Thus we can write the system as:

$$
\begin{aligned}
q_{\varepsilon,k} &= q_{\varepsilon,k+1}\Theta + \omega_g \rho_g^k - \pi_{\varepsilon,k+1} \\
b_{\varepsilon,0} &= \frac{\Psi}{\Phi} + \Theta\frac{1}{\Phi} q_{\varepsilon,0} - \frac{1}{\Phi}\pi_{\varepsilon,0} \\
b_{\varepsilon,k} &= \rho_g^k \frac{\Psi}{\Phi} - \frac{\omega_g}{\Phi}\rho_g^{k-1} + \frac{1}{\Phi} b_{\varepsilon,k-1} \\
\rho_\pi \pi_{\varepsilon,k} &= \pi_{\varepsilon,k+1}
\end{aligned}
$$

we can solve for these loadings $\pi_{\varepsilon,k}, q_{\varepsilon,k}, b_{\varepsilon,k}$ that satisfy the equilibrium system:

$$
\begin{aligned}
&\pi_{\varepsilon,k} = \rho_\pi^k \pi_\varepsilon \\
&q_{\varepsilon,k} = \frac{\omega_g \rho_g^k}{1-\rho_g\Theta} - \frac{\rho_\pi^{k+1}}{1-\rho_\pi\Theta}\pi_\varepsilon \\
&b_{\varepsilon,k} = \rho_g^k\left(\frac{\Psi}{\Phi} - \frac{\omega_g}{\Phi\rho_g}\right) + \frac{1}{\Phi} b_{\varepsilon,k-1} \\
&\quad = -\rho_g^k \frac{1}{\Phi}\left(\frac{\Psi\rho_g - \omega_g}{\frac{1}{\Phi}-\rho_g}\right) + \frac{1}{\Phi^k}\frac{1}{\Phi}\left(\Psi\frac{\frac{1}{\Phi}}{\frac{1}{\Phi}-\rho_g} - \frac{1}{\Phi}\frac{\Phi-\Theta}{(1-\rho_g\Theta)\left(\frac{1}{\Phi}-\rho_g\right)}\omega_g - \frac{\pi_\varepsilon}{1-\rho_\pi\Theta}\right)
\end{aligned}
$$

A.2.1 Regime 1 - sufficient fiscal backing ($\delta_b > S \Rightarrow \Phi > 1$), no monetary accommodation ($\rho_\pi > 1$)

If we have $\rho_\pi > 1$, then we must have $\pi_\varepsilon = 0$ to avoid explosive equilibrium. This implies solution:

$$
\begin{aligned}
\pi_{\varepsilon,k} &= 0 \\
q_{\varepsilon,k} &= \frac{\omega_g \rho_g^k}{1-\rho_g\Theta} \\
b_{\varepsilon,k} &= -\rho_g^k \frac{1}{\Phi}\left(\frac{\Psi\rho_g - \omega_g}{\frac{1}{\Phi}-\rho_g}\right) + \frac{1}{\Phi^k}\frac{1}{\Phi}\left(\Psi\frac{\frac{1}{\Phi}}{\frac{1}{\Phi}-\rho_g} - \frac{1}{\Phi}\frac{\Phi-\Theta}{(1-\rho_g\Theta)\left(\frac{1}{\Phi}-\rho_g\right)}\omega_g\right)
\end{aligned}
\tag{A1}
$$

A.2.2 Regime 2 - monetary accommodation $\rho_\pi < 1$, insufficient fiscal backing $\delta_b < S \Rightarrow \Phi < 1$)

if $\Phi < 1$, then we must have

$$
\begin{aligned}
0 &= \Psi\frac{\frac{1}{\Phi}}{\frac{1}{\Phi}-\rho_g} - \frac{1}{\Phi}\frac{\Phi-\Theta}{(1-\rho_g\Theta)\left(\frac{1}{\Phi}-\rho_g\right)}\omega_g - \frac{\pi_\varepsilon}{1-\rho_\pi\Theta} \\
\Rightarrow \pi_\varepsilon &= \Psi\frac{1-\rho_\pi\Theta}{1-\Phi\rho_g} - \omega_g\frac{\Phi-\Theta}{1-\Phi\rho_g}\frac{1-\rho_\pi\Theta}{1-\rho_g\Theta}
\end{aligned}
$$

Yielding:

$$\pi_{\varepsilon,k} = \rho_\pi^k \pi_\varepsilon, \qquad q_{\varepsilon,k} = \frac{\omega_g \rho_g^k}{1-\rho_g\Theta} - \frac{\rho_\pi^{k+1}}{1-\rho_\pi\Theta}\pi_\varepsilon, \qquad b_{\varepsilon,k} = -\rho_g^k \frac{\Psi\rho_g - \omega_g}{1-\Phi\rho_g}. \tag{A2}$$

A.2.3 *Regime 3 - (no monetary accommodation $\rho_\pi > 1$, insufficient fiscal backing $\delta_b < S \Rightarrow \Phi < 1$)*

Here both $\pi_\varepsilon = 0$, to prevent explosive inflation, and $\Psi \frac{\frac{1}{\Phi}}{\frac{1}{\Phi}-\rho_g} - \frac{1}{\Phi}\frac{\Phi-\Theta}{(1-\rho_g\Theta)\left(\frac{1}{\Phi}-\rho_g\right)}\omega_g - \frac{\pi_\varepsilon}{1-\rho_\pi\Theta} = 0$, to prevent explosive debt. This can be achieved with repression rule:

$$\omega_g = \frac{\Psi\frac{\frac{1}{\Phi}}{\frac{1}{\Phi}-\rho_g}}{\frac{1}{\Phi}\frac{\Phi-\Theta}{(1-\rho_g\Theta)\left(\frac{1}{\Phi}-\rho_g\right)}} = \frac{\Psi\left(1-\rho_g\Theta\right)}{\Phi-\Theta} > 0$$

note that this level of repression is purely a function of the fiscal policy coefficient δ_b, fiscal policy parameters S, δ, ρ_g, and the (determined in equilibrium by fiscal and repression policy) R^g. We therefore have solution to the system:

$$\pi_{\varepsilon,k} = 0, \qquad q_{\varepsilon,k} = \frac{\omega_g \rho_g^k}{1-\rho_g\Theta}, \qquad b_{\varepsilon,k} = -\rho_g^k \frac{\Psi\rho_g - \omega_g}{1-\Phi\rho_g}. \tag{A3}$$

A.2.4 *Regime 4 - monetary accommodation $\rho_\pi < 1$, fiscal accommodation $\delta_b > S$)*

The coefficient π_ε is now not pinned down so there are a continuum of possible equilibria indexed by the level of $\pi_\varepsilon \in \mathbf{R}$:

$$\begin{aligned} \pi_{\varepsilon,k} &= \rho_\pi^k \pi_\varepsilon, \qquad q_{\varepsilon,k} = \frac{\omega_g \rho_g^k}{1-\rho_g\Theta} - \frac{\rho_\pi^{k+1}}{1-\rho_\pi\Theta}\pi_\varepsilon \\ b_{\varepsilon,k} &= -\rho_g^k \frac{1}{\Phi}\left(\frac{\Psi\rho_g - \omega_g}{\frac{1}{\Phi}-\rho_g}\right) + \frac{1}{\Phi^k}\frac{1}{\Phi}\left(\Psi\frac{\frac{1}{\Phi}}{\frac{1}{\Phi}-\rho_g} - \frac{1}{\Phi}\frac{\Phi-\Theta}{(1-\rho_g\Theta)\left(\frac{1}{\Phi}-\rho_g\right)}\omega_g - \frac{\pi_\varepsilon}{1-\rho_\pi\Theta}\right) \end{aligned} \tag{A4}$$

A.3 *Utility*

Linearizing the Utility Function (1) and consumption allocations (24) yield deviations from the steady-state in asset holder and hand-to-mouth-utility:

$$\begin{aligned} u_{At} &= (1-\beta)\frac{(1-\omega_H)^{\frac{1-\zeta}{\zeta}}}{\overline{Y} + S\left(1-\omega_H\right)^{\frac{1-\zeta}{\zeta}}} \sum_{k=0}^{\infty} \beta^k \mathbb{E}_t\left[\delta_b b_{t+k} - g_{t+k}\right] \\ u_{Ht} &= -(1-\beta)\frac{(1-\omega_H)}{\overline{Y} + S\left(1-\omega_H\right)} \sum_{k=0}^{\infty} \beta^k \mathbb{E}_t\left[\delta_b b_{t+k} - g_{t+k}\right] \end{aligned} \tag{A5}$$

A.4 *Monetary Accommodation of Profligate Fiscal Policy*

(A2) immediately implies (31) and (32). Taking the derivative of the solutions in sequence space, (A2), yields:

$$\begin{aligned}\frac{\partial b_{\varepsilon,k}}{\partial \omega_g} &= \frac{1}{1-\rho_g\Phi}\rho_g^k > 0\\ \frac{\partial q_{\varepsilon,k}}{\partial \omega_g} &= \frac{1}{1-\Theta\rho_g}\rho_g^k + \frac{\rho_\pi\left(\Phi-\Theta\right)}{\left(1-\Theta\rho_\pi\right)\left(1-\rho_g\Phi\right)}\rho_\pi^k > 0\\ \frac{\partial \pi_{\varepsilon,k}}{\partial \omega_g} &= -\frac{\Phi-\Theta}{1-\Theta\rho_g}\frac{1-\Theta\rho_\pi}{1-\rho_g\Phi}\rho_\pi^k < 0\end{aligned} \tag{A6}$$

Note that our assumptions on parameters and Assumption 1 imply that $\Phi > \Theta$ and that $\Phi, \Theta, \rho_g, \rho_\pi \in (0,1)$. The signs the impulse response derivatives in (A6) follow immediately.

Government Bond Returns Plugging in the solution for bond prices and inflation yields solution for the real bond return IRF as:

$$\begin{aligned} r_{\varepsilon,0}^{gr} &= \frac{\omega_g\Phi - \Psi}{1-\rho_g\Phi}\\ r_{\varepsilon,k}^{gr} &= -\omega_g\rho_g^{k-1} \text{ for } k>0\end{aligned} \tag{A7}$$

Utility Plugging in solutions (31) and (32) into the linearized deviations in utility (A5) yield deviations in utility $u_{At} = u_{A\varepsilon}g_t$, $u_{Ht} = u_{H\varepsilon}g_t$, where $u_{A\varepsilon}, u_{H\varepsilon}$ are the elasticities of utility to an unexpected fiscal shock:

$$u_{A\varepsilon} = -\left(1-\beta\right)\frac{\left(1-\omega_H\right)\frac{1-\zeta}{\zeta}}{\overline{Y}+S\left(1-\omega_H\right)\frac{1-\zeta}{\zeta}}\frac{1-b_g\delta_b}{1-\rho_g\beta} \tag{A8}$$

$$u_{H\varepsilon} = \left(1-\beta\right)\frac{\left(1-\omega_H\right)}{\overline{Y}+S\left(1-\omega_H\right)}\frac{1-b_g\delta_b}{1-\rho_g\beta} \tag{A9}$$

Proof to Proposition 1 Proposition 1 parts (a), (b), and (c) follow immediately from (A6), while part (d) follows immediately from the derivative of (A7).

Proof to Corollary 1.1 The result follows from the derivatives of (24) and (A8) with respect to ω_H and the parameter assumptions.

Proof to Corollary 1.2 Plugging in for (32) into (A8) yields

$$\begin{aligned}\frac{\partial u_{A\varepsilon}}{\partial \omega_g} &= \delta_b\frac{1-\beta}{1-\rho_g\beta}\frac{\left(1-\omega_H\right)\frac{1-\zeta}{\zeta}}{\overline{Y}+S\left(1-\omega_H\right)\frac{1-\zeta}{\zeta}}\frac{1}{1-\rho_g\Phi}\\ \frac{\partial u_{H\varepsilon}}{\partial \omega_g} &= -\delta_b\frac{1-\beta}{1-\rho_g\beta}\frac{\left(1-\omega_H\right)}{\overline{Y}+S\left(1-\omega_H\right)}\frac{1}{1-\rho_g\Phi}\end{aligned}$$

Given the sign restrictions on parameters, the result immediately follows.

Proof to Corollary 1.3 The risk premia on government bonds can be written as $rp^{gr} = r^{gr}_{\varepsilon,0} u_{A,\varepsilon} \gamma \sigma^2_\varepsilon$. Plugging in (A7) and (A8) yields the expression for risk premia (36). This equation, together with the parameter assumptions and Assumption 1 immediately imply part (a) of the Corollary, while part (c) follows immediately from the derivative of (36) with respect to ω_H.

Evaluating the derivative of (36) with respect to ω_g yields:

$$\frac{\partial rp^{gr}}{\partial \omega_g} = -\frac{(1-\omega_H)\frac{1-\zeta}{\zeta}}{\overline{Y} + S(1-\omega_H)\frac{1-\zeta}{\zeta}} \frac{\delta_b(\Psi - \omega_g \Phi) + \Phi(1 - \rho_g \Phi + \delta_b(\Psi \rho_g - \omega_g))}{(1-\rho_g \Phi)^2} \frac{1-\beta}{1-\rho_g \beta} \gamma \sigma^2_\varepsilon \tag{A10}$$

Note that this is negative as long as $G(\delta_b) = \delta_b(\Psi - \omega_g \Phi) + \Phi(1 - \rho_g \Phi + \delta_b(\Psi \rho_g - \omega_g)) > 0$, and our parameter assumptions imply that $(\Psi - \omega_g \Phi) > 0$, $(\Psi \rho_g - \omega_g) > 0$, $1 - \rho_g \Phi > 0$. Therefore $\frac{\partial rp^{gr}}{\partial \omega_g} < 0$ if $\delta_b \geq 0$.

Plugging in for the definitions of Ψ, Φ yields a quadratic solution for $G(\delta_b)$ in δ_b

$$G(\delta_b) = \delta_b^2(-2\omega_g \Psi) + \delta_b(2(\Psi - \omega_g \beta) - \Psi \rho_g \beta) + \beta(1 - \rho_g \beta)$$

If $\omega_g = 0$ then $G(\delta_b) = \delta_b \Psi(2 - \rho_g \beta) + \beta(1 - \rho_g \beta) > 0$. For $\omega_g > 0$, this is quadratic with a negative loading on the δ_b^2, e.g. it is a downward-facing parabola. The higher root of $G(\delta_b)$ occurs at a point with $\delta_b > S$ that violates our assumptions. We define $\delta_b^\star$ as the lower root of $G(\delta_b)$, i.e. where $G(\delta_b) = 0$ for $\delta_b < S$.

A.5 *Monetary Policy Does Not Accommodate Profligate Fiscal Policy*

Proofs to Proposition 2 and Corollaries 2.1, 2.2, 2.3 Proposition 2 follows immediately from (A3). Corollary 2.1 follows directly from evaluating the derivatives of $\omega_g^\star$.

Plugging in the formula for $\omega_g^\star$ in (35) yields (40), from which Corollary 2.2 immediately follows.

Solving for government bond returns $r_t^{gr} = q_t \frac{1-\delta}{R^g} - q_{t-1} - \pi_t$ given the dynamics of q_t, π_t in Proposition 2 yields (41). Combining 2.2 and (41) yields (42), from which Corollary 2.3 follows.

Appendix B Additional Results

B.1 *Fiscal Policy Accommodates Active Monetary Policy*

This appendix describes the effects of repression in the equilibrium where monetary policy targets inflation by satisfying the Taylor principle ($\rho_\pi > 1$) and fiscal policy accommodates, as outlined in assumption 3.

Assumption 3. *Monetary and fiscal policy satisfy*

$$\rho_\pi > 1, \qquad \delta_b > S. \tag{A11}$$

Equilibria in this region feature no inflation response to fiscal expansions, as monetary policy does not accommodate the fiscal expansion and keeps inflation constant. Taxes rise with fiscal expansions, increasing the revenue and repaying debt.

Repression on asset holders affects bond prices and the government budget constraint in this equilibrium. Figure 4 displays impulse response functions to fiscal expansions in this equilibrium, both with and without financial repression. Financial repression of asset holders lifts bond prices, increasing real bond returns on impact but depressing future bond returns, as higher prices imply lower yields. The increase in bond prices increases real debt outstanding, but the lower interest rate implies that debt is paid off faster and therefore real debt outstanding decreases faster with financial repression. Proposition 3 formalizes these results.

$$b_t = b_\varepsilon \varepsilon_t + b_g^m g_{t-1} + \frac{1}{\Phi} b_{t-1}, \qquad q_t = q_g g_t, \qquad \pi_t = 0. \tag{A12}$$

where q_g is given by (32) and

$$b_\varepsilon \equiv \frac{\Psi}{\Phi} + \omega_g \frac{1}{\Phi} \frac{\Theta}{1 - \Theta \rho_g} > 0, \qquad b_g^m \equiv \frac{\rho_g \Psi - \omega_g}{\Phi} > 0, \tag{A13}$$

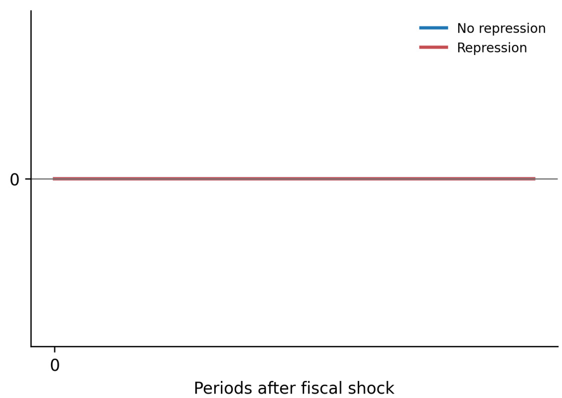
Proposition 3. *Under assumption 3, a larger financial repression of asset holders in response to fiscal expansions* (ω_g)

a) Increases the price of government bonds in response to an expansionary fiscal shock: $\frac{\partial q_{\varepsilon,k}}{\partial \omega_g} > 0$

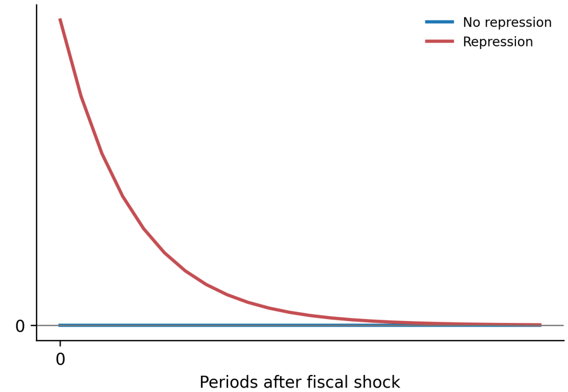
b) Increases the (real) value of total outstanding government debt caused by an expansionary fiscal shock upon impact: $\frac{\partial b_{\varepsilon,0}}{\partial \omega_g} > 0$*, but lowers the value of outstanding government debt past a certain horizon:* $\frac{\partial b_{\varepsilon,k}}{\partial \omega_g} < 0$ *for* k *large enough*

c) Increases real government bond returns on impact of an expansionary fiscal shock, but lowers future real government bond returns: $\frac{\partial r^{gr}_{\varepsilon,0}}{\partial \omega_g} > 0$, $\frac{\partial r^{gr}_{\varepsilon,k}}{\partial \omega_g} < 0$ *for* $k \geq 1$

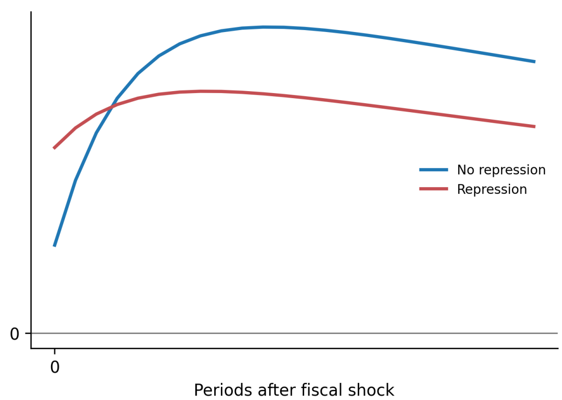
If there is no repression of asset holders, fiscal expansions are Ricardian and do not affect the utility of asset holders or the hand-to-mouth: higher current transfers to the hand-to-mouth are perfectly offset by higher taxes increasing the consumption of asset holders (decreasing hand-to-mouth) in the future. However, with repression of asset holders, this no longer holds. Financial repression leads to the real value of debt outstanding being paid off faster with a given level of taxes, and the interest rate on debt is depressed. This reduces the total amount of taxes raised following a fiscal expansion. As a



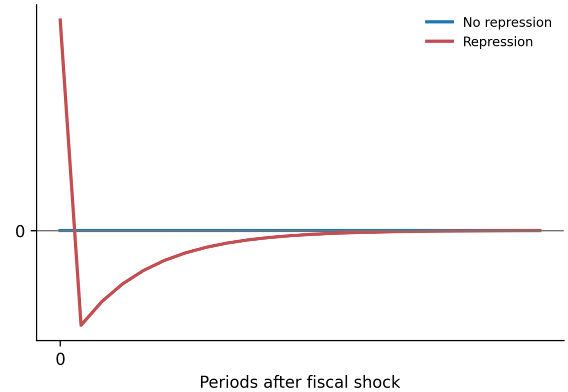
(a) Inflation



(b) Bond price



(c) Real debt outstanding



(d) Real bond returns

Fig. 4. Impulse Responses to a Funded Fiscal Shock without Monetary Accommodation

consequence, fiscal expansions with asset holder repression ($\omega_g > 0$) reduce the utility of asset holders and increase the utility of the hand-to-mouth. Corollary 3.1 formalizes this result:

Corollary 3.1. *Under assumption 3,*

a) If there is no repression of asset holders $\omega_g = 0$, fiscal shocks have no effect on the utility of bondholders or taxpayers

b) As repression of asset holders ω_g increases, fiscal shocks have an increasing negative impact on asset holder utility (and positive effect on hand-to-mouth utility).

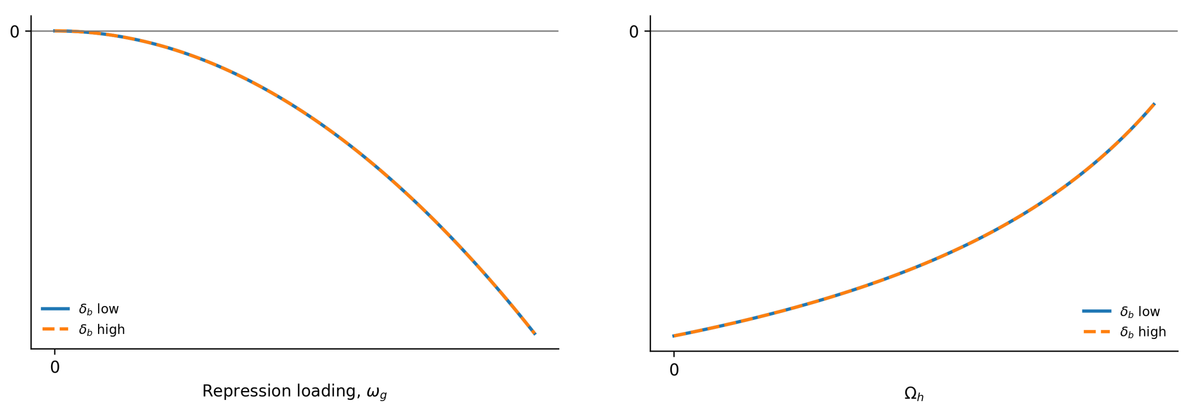
c) Higher repression of the hand-to-mouth ω_H reduces the magnitude of the effects of fiscal shocks on utility.

B.1.1 Asset Pricing

Solving for the risk premia on government bonds yields:

$$rp^{gr} = -\omega_g^2 \gamma \sigma_\varepsilon^2 \frac{(1-\omega_H)\frac{1-\zeta}{\zeta}}{\overline{Y} + S(1-\omega_H)\frac{1-\zeta}{\zeta}} \frac{S\beta\delta\Theta}{(1-\Theta\rho_g)^2 (1-\beta\rho_g)}. \tag{A14}$$

Corollary 3.2 and figure 5 summarize the effects of financial repression on risk premia. If there is no repression of asset holders, $\omega_g = 0$, then neither government bond prices nor the utility of asset holders respond to fiscal expansions. Consequently, we see from (A14) that this results in no risk premia on government bonds. However, if $\omega_g > 0$, then risk premia are negative, as fiscal expansions incur increases in bond prices due to repression and redistribution away from asset holders. This makes government bonds a hedge for these risks and results in a negative risk premium.



(a) Risk premium and ω_g (b) Risk premium and ω_h

Fig. 5. Risk Premia in the Monetary Regime

Corollary 3.2. *Under assumption 3,*

a) Absent repression of asset holders $\omega_g = 0$, government bonds are riskless and have no risk premia

b) *A larger financial repression of asset holders in response to fiscal expansions (ω_g) reduces the risk premia on government bonds ($\frac{\partial rp_t^{gr}}{\partial \omega_g} < 0$), making them negative*

c) *Forced holdings of government bonds by the hand-to-mouth reduce the magnitude of risk premia: $\frac{\partial |rp_t^{gr}|}{\partial \omega_{h,t}} \leq 0$*

B.2 Monetary and Fiscal Accommodation: Indeterminacy of Equilibria

If fiscal policy as well as monetary policy accommodate fiscal expansions, then there is indeterminacy, as there are a continuum of possible equilibria. Proposition 4 characterizes the form of these equilibria.

Assumption 4. *Monetary and fiscal policy satisfy*

$$0 < \rho_\pi < 1, \qquad \delta_b > S. \tag{A15}$$

Proposition 4. *Under assumption 4, the system has a continuum of equilibria. For each $\pi_\varepsilon^\star \in \mathbf{R}$, equilibria exist with the following form:*

$$b_t = \left(b_\varepsilon - \pi_\varepsilon^\star \frac{1}{1-\rho_\pi \Theta}\right)\varepsilon_t + b_g^m g_{t-1} + \frac{1}{\Phi} b_{t-1}, \qquad q_t = q_\pi \pi_t + q_g g_t, \qquad \pi_t = \pi_\varepsilon^\star \varepsilon_t + \rho_\pi \pi_{t-1}. \tag{A16}$$

where b_ε, b_g^m are given by (A13) and q_π, q_g by (32).

Note that the equilibrium with $\pi_\varepsilon^\star = 0$ is of the form outlined in (A12). However, with a positive loading of inflation $\pi_\varepsilon^\star > 0$, dynamics of bond pricing, inflation, and bond returns incorporate dynamics similar to that of the regime with monetary accommodation; the magnitude of the inflation response depends on the value of $\pi_\varepsilon^\star$.

B.3 Stochastic Duration of Repression

We assume that there is positive correlation between the current state of repression and future repression:

Assumption 5. $\frac{1}{2} < \rho_\omega^i \leq 1$ *for* $i \in \{r, n\}$

The model admits policy functions that are contingent on whether the economy is currently in a state of repression, which take the form:

$$\begin{aligned} b_t^i &= b_g^i g_t, \qquad q_t^i = q_\pi \pi_t + q_g^i g_t & \text{(A17)} \\ \pi_t^i &= \pi_\varepsilon^i \varepsilon_t + \rho_\pi \pi_{t-1} + \pi_g^i g_{t-1} + \mathbf{1}_{\text{switch}} \cdot \pi_g^{i^-,i} g_{t-1} & \text{(A18)} \end{aligned}$$

where superscripts denote the current policy state $i \in \{r, n\}$, and $\mathbf{1}_{\text{switch}}$ is an indicator function equal to one when the policy changes at time t. The coefficient $\pi_g^{i,j}$ represents the *jump coefficient*—the discontinuous change in inflation that occurs when transitioning from state i to state j. The coefficient ρ_π is the same as in the baseline monetary accommodation case (31); the definitions of the other coefficients are in (A19).

$$
\begin{aligned}
b_g^r &\equiv \frac{-\rho_g \Psi}{1-\rho_g \Phi} + \omega_g^r \frac{1-\rho_\omega^n \rho_g \Phi}{B_g}, & b_g^n &\equiv \frac{-\rho_g \Psi}{1-\rho_g \Phi} + \omega_g^r \frac{\left(1-\rho_\omega^n\right) \rho_g \Phi}{B_g}, \\
q_g^r &\equiv \frac{\left(1-\rho_\omega^n \Theta \rho_g\right) \omega_g^r}{Q_g}, & q_g^n &\equiv \frac{\left(1-\rho_\omega^n\right) \Theta \rho_g \omega_g^r}{Q_g}, \\
\pi_\varepsilon^r &\equiv \left(1-\Theta \rho_\pi\right) \left(\Psi + \Theta q_g^r - b_g^r \Phi\right), & \pi_\varepsilon^n &\equiv \left(1-\Theta \rho_\pi\right) \left(\Psi + \Theta q_g^n - b_g^n \Phi\right), \\
\pi_g^r &\equiv -\omega_g^r \left(1-\rho_\omega^r\right) \Pi_g, & \pi_g^n &\equiv \omega_g^r \left(1-\rho_\omega^n\right) \Pi_g, \\
\pi_g^{r,n} &\equiv \omega_g^r \left(\rho_\omega^r + \rho_\omega^n - 1\right) \Pi_g, & \pi_g^{n,r} &\equiv -\omega_g^r \left(\rho_\omega^r + \rho_\omega^n - 1\right) \Pi_g.
\end{aligned}
\tag{A19}
$$

where

$$
\begin{aligned}
B_g &= \left(1+\rho_g \Phi \left(1-\rho_\omega^r-\rho_\omega^n\right)\right) \left(1-\rho_g \Phi\right) \\
Q_g &= \left(1+\Theta \rho_g \left(1-\rho_\omega^r-\rho_\omega^n\right)\right) \left(1-\Theta \rho_g\right) \\
\Pi_g &= \frac{\rho_g \left(\Phi-\Theta\right) \left(1-\Theta \rho_\pi\right)}{\left(1+\Theta \rho_g \left(1-\rho_\omega^r-\rho_\omega^n\right)\right) \left(1+\rho_g \Phi \left(1-\rho_\omega^r-\rho_\omega^n\right)\right)}
\end{aligned}
$$

B.3.1 The Effectiveness of Fragile Repression

Figure 6 displays impulse response functions following an expansionary fiscal shock for varying levels of the persistence of repression, ρ_ω^r. The impulse response functions display the response of endogenous variables assuming a shock ε at time 0 and no other shocks or change in the repression state thereafter - i.e. policy remains in the repression state throughout the impulse response. The lower the persistence of repression, the more bond prices decrease upon a fiscal shock, as bond prices are forward-looking. This lower expected effect of repression makes government funding costs higher after a fiscal expansion, as compared to the case with fully persistent repression, and leads to a larger inflation response to fiscal expansions. Less persistent repression also leads to higher initial fall in real bond returns, due to higher expected inflation and lower expected future bond prices. Proposition 5 formalizes these results.

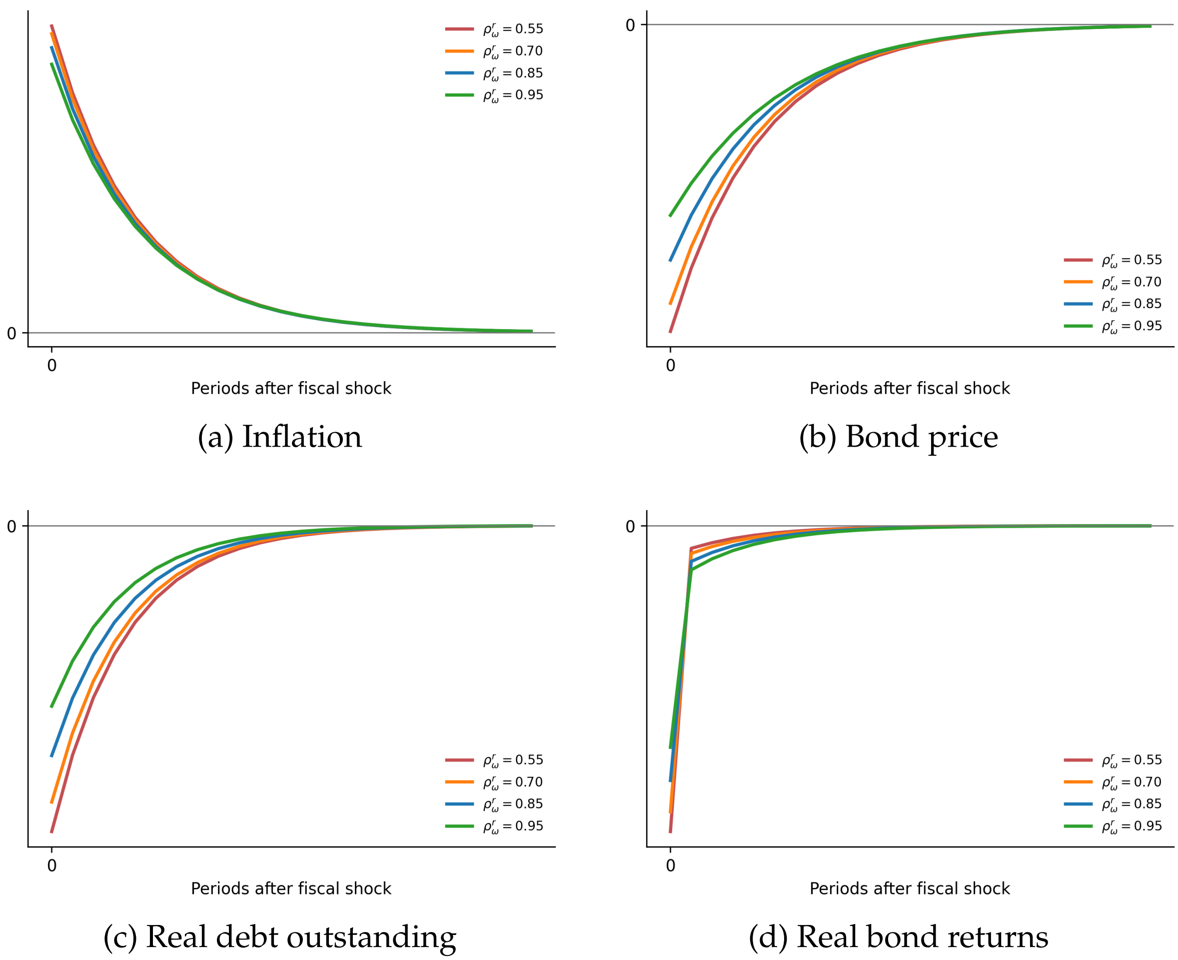
Proposition 5. *Under assumptions 1 and 5, the results of Proposition 1 hold. Further, as the persistence of repression ρ_ω^r decreases:*

a) *The response of inflation to fiscal expansions increases:* $\frac{\partial \pi_\varepsilon^r}{\partial \rho_\omega^r} < 0$

b) *Bond prices fall more in response to a fiscal expansion:* $\frac{\partial q_g^r}{\partial \rho_\omega^r} > 0$

c) *Real debt outstanding falls more in fiscal expansions:* $\frac{\partial b_g^r}{\partial \rho_\omega^r} > 0$

d) *Real government bond returns fall more in response to a fiscal expansion:* $\frac{\partial r_{\varepsilon,0}^{gr}}{\partial \rho_\omega^r} > 0$



(a) Inflation

(b) Bond price

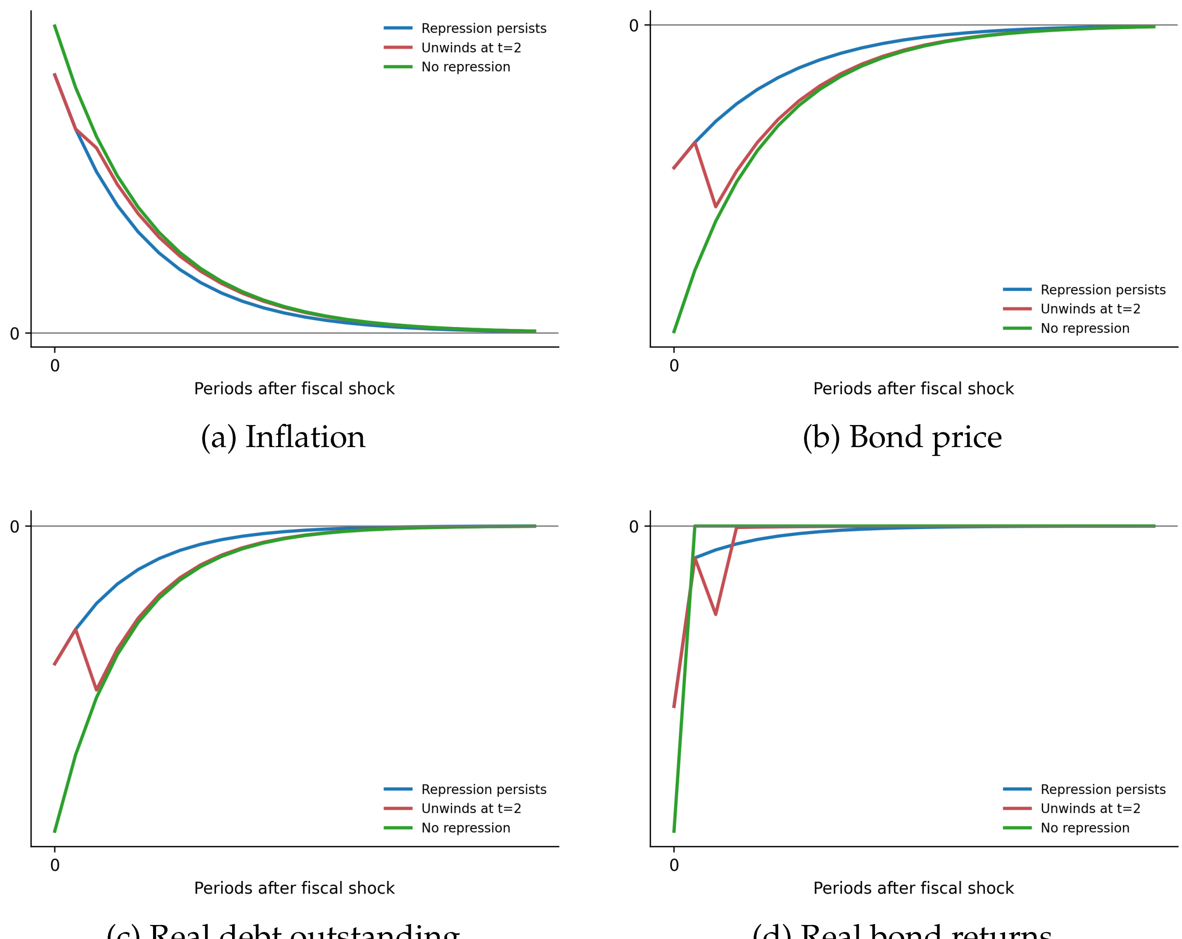
(c) Real debt outstanding

(d) Real bond returns

Fig. 6. Fiscal Switching: Repression Persistence

B.3.2 Ending of Repression

Figure 7 displays impulse responses to an expansionary fiscal shock with three counterfactual realizations of the state of the economy (repression vs. no repression). The blue line displays an impulse response in which the economy remains in repression throughout the entire impulse response function, while the green line is one in which the economy remains in "no repression" throughout the impulse response function. The red line displays one in which the economy transitions from repression to no repression two periods after the realization of the fiscal shock. The sudden end of repression leads to higher inflation and lower bond prices and real debt outstanding as compared to remaining in repression. Real returns on government bonds fall upon the ending of repression, though future expected bond returns rise as yields increase on the end of repression. Corollary 5.1 formalizes these results.



(a) Inflation (b) Bond price

(c) Real debt outstanding (d) Real bond returns

Fig. 7. Fiscal Switching: Unwinding Repression

Corollary 5.1. *If assumptions 1 and 5 hold and the economy is in a fiscal expansion going into the period ($g_{t-1} > 0$), the state stochastically switching from repression to non-repression implies:*

a) ***Inflation increases*** *When repression ends, inflation increases by* $(\pi_g^n + \pi_g^{r,n} - \pi_g^r)g_{t-1}$ *where*

$$(\pi_g^n + \pi_g^{r,n} - \pi_g^r) > 0 \tag{A20}$$

b) ***Bond prices fall:*** *When repression ends, bond prices fall by* $q_t^r - q_t^n = (q_g^r - q_g^n)g_{t-1}$ *where*

$$q_g^r - q_g^n > 0 \tag{A21}$$

c) ***Real value of outstanding debt falls:***

$$b_g^r - b_g^n > 0 \tag{A22}$$

Since $b_g^r < 0$ *and* $b_g^n < 0$*, this implies* $|b_g^n| > |b_g^r|$*.*

d) ***Bondholder returns decline:*** *Real returns on government bonds fall due to both capital losses (lower* Q_t*) and inflation erosion (higher* Π_t*).*

B.3.3 Asset Pricing

As in section 3.2, if fiscal policy does not decrease taxes too much in response to financial repression of asset holders, repression reduces the risk premia coming from expansionary fiscal shocks by reducing the fall in government bond prices, both directly with repression and indirectly by reducing inflationary finance. However, with stochastic repression, repression also introduces the risk of repression ending. We can express the risk premia on government bonds, assuming the economy is in repression state $i \in \{r, n\}$ as:

$$rp^{gr,i} = rp_{\varepsilon}^{gr,i} + rp_{switching}^{gr,i} \tag{A23}$$

where $rp_{\varepsilon}^{gr,i}$ is the risk premia from realizations of the fiscal shock ε, while $rp_{switching}^{gr,i}$ represents risk premia from switching risk. Corollary 5.2 summarizes the properties of risk premia as a function of repression. Both repression of asset holders and repression of the hand-to-mouth reduce risk premia coming from the risk of fiscal expansions, as before. However, risk premia from switching depend on the sign of δ_b. If $\delta_b = 0$, there is no fiscal response to repression and due to the utility neutrality result in Corollary 1.2, there is no utility loss to asset holders based on repression ending. Otherwise, when $g_{t-1}\omega_g^r \neq 0$, the sign of the switching-risk premium inherits the sign of δ_b.

Corollary 5.2. *Under assumptions 1 and 5,*

a) *Corollary 1.2 holds, and Corollary 1.3 applies to the component of risk premia due to fiscal shocks,* $rp_{\varepsilon}^{gr,i}$*.*

b) *The sign of* $rp_{switching}^{gr,i}$ *is equal to the sign of* $\delta_b \left(g_{t-1}\omega_g^r\right)^2$*.*

c) *The magnitude of* $rp_{switching}^{gr,i}$ *is decreasing in repression of the hand-to-mouth.*

Appendix C Microfoundations for Financial Repression

C.1 Quantitative Easing: Balance Sheet Channel

We now show that quantitative easing (QE) can generate the repression wedge Ω_t through financial intermediary balance sheet frictions. Following Gertler and Karadi (2011), we embed a financial intermediary sector between asset holders and government bond markets.

Financial Intermediary Structure. A continuum of competitive financial intermediaries purchase and hold real value of government bonds B_t^A, funding these positions through net worth N_t (equity held by asset holders) and deposits D_t. Asset holders own intermediary equity and supply deposits but do not directly hold government bonds—all bond holdings are intermediated through the financial sector. The intermediary balance sheet satisfies:

$$B_t^A = N_t + D_t \tag{A24}$$

This structure captures the reality that much government debt is held by leveraged financial intermediaries (banks, broker-dealers, money market funds) rather than directly by households. Following Gertler and Karadi (2011), we assume that each asset holder household is partitioned into a worker and banker which transition with a Markov state, which yields exogenous dividend payout share $1 - \sigma_{GK}$ and new equity issuance ν_{GK}. This limited equity issuance, together with the leverage constraint detailed below, affects the pricing of intermediary holdings (government bonds).

Leverage Constraint. Following Gertler and Karadi (2011), intermediaries face an agency problem: managers can divert a fraction of assets for personal gain, creating an incentive compatibility constraint that limits leverage. To prevent such diversion, the franchise value of the intermediary must exceed the benefit from diversion:

$$V_t(N_t) \geq \theta_t^{GK} B_t^A \tag{A25}$$

where $V_t(N_t)$ is the intermediary's continuation value and θ_t^{GK} parameterizes the severity of the agency friction. This constraint binds in equilibrium, limiting how much debt intermediaries can issue relative to their net worth and thus limiting their ability to expand balance sheets.

Maximization problem. The intermediaries solve the maximization problem:

$$\begin{aligned} V_{jt} \quad &= \quad \max_{B_t^A} \mathbb{E}_t \left[M_{t+1} \left(\left(1 - \sigma_{GK}\right) N_{jt+1} + \sigma_{GK} V_{jt+1} \right) \right] \\ s.t. \quad & V_{jt} \geq \theta^{GK} B_t^A, \; N_{jt+1} = B_t^A R_{gt+1} + R_t^D \left(N_{jt} - B_t^A \right) \end{aligned} \tag{A26}$$

Solving this maximization problem yields the following pricing condition for government bonds:

$$Q_t = \mathbb{E}_t \left[M_{t+1} \frac{\left((1-\sigma_{GK}) + \sigma_{GK}\frac{V_{t+1}}{N_{t+1}}\right)}{\mathbb{E}_t\left[M_{t+1}\left((1-\sigma_{GK}) + \sigma_{GK}\frac{V_{t+1}}{N_{t+1}}\right)R^D_{t+1}\right] + \frac{\mu^{GK}_t}{1-\mu^{GK}_t}} \frac{\delta + (1-\delta)Q_{t+1}}{\Pi_{t+1}} \right] \tag{A27}$$

where μ^{GK}_t is the Lagrangian multiplier on the leverage constraint, R^D_{t+1} is the real return on deposits, and V_{t+1}/N_{t+1} is the continuation value of intermediary net worth per unit of net worth.

Pricing Wedge A log-linearization of (A27) reveals deviations from steady-state:

$$\log(\Omega_t) - \log(\Omega^{ss}) = \chi_{\frac{V}{N}} \mathbb{E}_t \left[(v_{t+1} - n_{t+1})\right] - \chi_D \mathbb{E}_t \left[r^D_{t+1}\right] - \chi_\mu \left(\mu^{GK}_t - \bar{\mu}^{GK}\right) \tag{A28}$$

where $\chi_{\frac{V}{N}}, \chi_D, \chi_\mu > 0$ are composites of parameter and steady-state values. Ω_t is increasing in the shadow value of intermediary net worth next period, but decreasing in the expected return on deposits and in the current shadow value of the leverage constraint.

Quantitative Easing Policy. The central bank can affect this wedge through large-scale asset purchases (QE). When the central bank purchases a fraction $\psi_{g,t}$ of outstanding government debt, financed by borrowing from households, this relaxes intermediary balance sheet constraints. In particular, it lowers the Lagrangian multiplier μ^{GK}_t, which increases Ω_t. We can specify a QE policy rule for θ^{GK}_t that generates a desired movement in Ω_t.[12]

[12]QE also has other effects, notably by changing the composition of household assets. These are approximated away in our affine approximation, but have higher order effects of time-varying portfolio shares and composition of debt. In particular, since the central bank funds QE by borrowing from households, it changes the composition of government debt by reducing the amount of long-term financing and increasing the amount of deposit financing. If the capital gains/losses of the central bank portfolio are paid to the hand-to-mouth and are financed with deposits paying a fixed real interest rate, this portfolio channel can be modeled as time-varying repression of the hand-to-mouth Ω_H.