Public Debt and the Price of Fiscal Uncertainty: Attention and Inflation Passthrough

Oliver Pfäuti* Edson Wu†

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Abstract

How does public debt affect inflation dynamics when firms are imperfectly informed about fiscal conditions and macroeconomic shocks? We study this question in a model of rationally inattentive price setting in which firms' desired prices depend on fiscal policy. Public debt has two opposing effects on firms' incentives to pay attention: it reduces the profit losses from mispricing, but increases the sensitivity of desired prices to fiscal disturbances. This generates a U-shaped relationship between debt and attention. Embedding this mechanism in general equilibrium, we show that the effect of the speed of fiscal adjustment becomes state dependent: at low debt, faster adjustment lowers attention, while at high debt it raises it. A more hawkish monetary rule shifts this reversal to lower debt levels by compressing non-fiscal sources of pricing uncertainty. Quantitatively, endogenous attention amplifies the inflationary effects of fiscal shocks substantially more than those of negative productivity shocks.

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*The University of Texas at Austin, Department of Economics, 2225 Speedway, 78712 Austin TX, pfaeuti.oliver@gmail.com.

†Federal Reserve Board of Governors, Constitution Ave & 20th St NW, Washington, DC 20551 edson.ananwu@frb.gov.

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1 Introduction

Public debt has risen to historically high levels in many advanced economies over recent decades.[1] With these higher debt levels, uncertainty about the fiscal outlook has increased as well. At the same time, higher debt has made the interaction between monetary and fiscal policy more delicate. When inflation rises, central banks raise their policy rate to stabilize prices. But higher interest rates also raise debt-service costs and tighten the government's budget constraint, potentially increasing uncertainty about future fiscal adjustment. This raises the question whether fiscal uncertainty may itself become a source of inflation volatility when public debt is high?

In this paper, we study this question in a model in which firms are rationally inattentive and fiscal policy enters their pricing problem directly.[2] Firms choose how much information to acquire before setting prices. Their desired prices depend not only on marginal cost, but also on a fiscal wedge created by revenue taxation. Because that wedge depends on public debt, debt affects both the level of firms' desired prices and the uncertainty surrounding them. In this environment, the passthrough of shocks to inflation is not fixed. It depends on how much attention firms optimally choose to allocate to the pricing problem.

A higher government debt-to-GDP ratio has two opposing effects on firms' attention. First, a higher debt burden raises taxes, which, ceteris paribus, reduces firms' incentives to acquire information because a larger share of profits goes to the government. We call this the *stakes channel*. Second, a higher debt level raises the sensitivity of the firm's desired price with respect to the tax wedge. This sensitivity is increasing and convex in steady-state debt. Hence, higher debt amplifies the contribution of fiscal uncertainty to the total prior variance that firms face. We call this the *volatility channel*. The presence of these two forces implies a non-monotonic relationship between debt and attention: at low debt levels, the stakes channel dominates and attention falls as debt rises; at sufficiently high debt levels, the volatility channel dominates and attention rises with debt. Therefore, attention is U-shaped in the public debt-to-GDP ratio.

We first establish this result in a static pricing environment that isolates the firm's information problem. In that setting, desired prices depend on marginal cost shocks and revenue-tax shocks, and the firm chooses how much uncertainty to resolve subject to an information cost. The model delivers a closed-form expression for optimal attention and shows how debt enters through two objects: it lowers the curvature of the profit-loss function from mispricing and raises the sensitivity of desired prices to tax fluctuations.

[1] For instance, the United States federal debt held by the public as a percent of GDP increased from about 34% in 2000 to about 95% in 2025. (Source: St. Louis FRED series id: FYGFGDQ188S)

[2] Fernández-Villaverde et al. (2015) shows that fiscal uncertainty significantly impacts pricing behavior.

These forces generate a unique debt level at which attention is minimized. This threshold separates a low-debt region, where higher debt dampens passthrough, from a high-debt region, where higher debt amplifies it.

We embed this mechanism into a general equilibrium framework in which monetary policy sets the nominal interest rate following a Taylor rule and the fiscal authority sets revenue taxes by responding to lagged real public debt, as in Leeper (1991). In equilibrium, firms' attention affects inflation and output, which in turn affect debt dynamics, taxes, and the uncertainty firms face. Attention therefore becomes an equilibrium object shaped jointly by debt, fiscal adjustment, and the monetary stance.

We then show that this feedback loop shaped by endogenous attention renders the role of fiscal policy itself state dependent. A stronger tax response to debt has two opposing effects. On the one hand, it reduces debt persistence, which weakens the propagation of shocks through debt into future taxes and tends to lower firms' uncertainty. On the other hand, it makes taxes more sensitive to debt fluctuations, which increases the fiscal component of firms' desired-price uncertainty and tends to raise attention. At low debt levels, the first effect dominates, so faster fiscal adjustment lowers attention and passthrough. At high debt levels, the second effect dominates, so faster fiscal adjustment raises attention and passthrough instead. Thus, a policy that stabilizes debt more aggressively can nevertheless make inflation more sensitive to shocks when debt is already elevated.

Monetary policy changes this trade-off by altering the composition of firms' uncertainty. A more aggressive Taylor rule dampens the equilibrium response of inflation and consumption to productivity shocks, compressing the non-fiscal component of desired-price volatility. By contrast, it leaves the direct effect of fiscal shocks on desired prices comparatively less affected. As a result, tighter monetary policy lowers equilibrium attention on average, but also increases the relative importance of fiscal risk in firms' pricing decisions. This shifts downward the level of debt at which stronger fiscal adjustment begins to raise attention. Thus, the debt threshold at which fiscal policy becomes inflation-amplifying is lowered by more aggressive monetary policy.

These channels also matter for the transmission of shocks. We show that the endogenous increase in attention at higher debt levels amplifies the inflationary effects of productivity and tax shocks. This amplification is more pronounced for fiscal shocks than for productivity shocks. To make this distinction transparent, we compare three economies: a low-debt economy, a high-debt economy with endogenous attention, and a high-debt economy in which attention is held fixed at its low-debt level. Following a tax shock, inflation rises in all three economies, but much more so at high debt, and especially when firms optimally raise attention in response to that high debt environment. The difference between the two

high-debt economies shows that endogenous attention is quantitatively important even when the path of the tax wedge is nearly unchanged. By contrast, after a negative productivity shock, the three economies display much more similar responses. Endogenous attention still amplifies the shock, but less so because productivity shocks affect desired prices primarily through marginal cost rather than through the fiscal wedge that debt magnifies most directly.

Taken together, our results imply that the inflation consequences of public debt do not operate only through standard monetary-fiscal interactions or through the average level of taxes. High debt also changes how much information firms choose to process. By altering the incentives to pay attention to fiscal conditions, public debt changes the passthrough of shocks into prices and therefore the economy's inflation sensitivity. In this way, debt, fiscal policy, and monetary policy jointly determine the informational environment in which firms set prices, which in turn shapes the transmission and propagation of policy and aggregate shocks.

Related literature. This paper connects two literatures: rational inattention in firm price setting and monetary–fiscal interactions under high public debt. On the pricing side, we build on the rational inattention (RI) approach of Sims (2003) and its application to nominal rigidity and shock passthrough in Mackowiak and Wiederholt (2009). In RI pricing models, firms allocate costly attention across underlying shocks, so the sensitivity of prices to fundamentals is endogenous and varies with the information environment (see, e.g., Sims, 2010; Mackowiak and Wiederholt, 2015; Mackowiak et al., 2018, 2020; Afrouzi and Yang, 2021; Afrouzi, 2024; Afrouzi et al., 2024; Yang, 2022; Wu, 2024; Pfäuti, 2025a,b; Flynn and Sastry, 2024; Angeletos and Sastry, 2025; Huo et al., 2025). Relative to this literature, our contribution is to embed RI into a general equilibrium setup with rich monetary-fiscal interactions: firms optimally choose how much uncertainty about taxes to resolve, and the resulting attention choice becomes an equilibrium object that governs aggregate passthrough. We show that the *fiscal environment* endogenously determines firms' information acquisition incentives and hence the economy's inflation sensitivity.

A second strand studies the interaction between information frictions and fiscal policy. Angeletos and Bayas-Erazo (2026) analyze optimal taxation when agents are rationally inattentive, showing that RI fundamentally alters the design and welfare costs of tax policy. Relatedly, Farhi and Gabaix (2020) develop a general framework in which bounded rationality—including inattention—affects the transmission and optimal design of macroeconomic policies. Eichenbaum et al. (2025) provide survey evidence that households do not internalize the future tax implications of fiscal transfers, and show that this household-side inattention raises spending multipliers in a HANK model. We contribute to

this literature by focusing on firm-side channels: fiscal uncertainty and public debt shift firms' incentives to pay attention, thereby endogenizing the passthrough from marginal costs to prices. The level and uncertainty of public debt become first-order determinants of the economy's inflation sensitivity.

Finally, our analysis relates to work on monetary-fiscal interactions, policy uncertainty, and the constraints that debt can impose on stabilization policy. Classic contributions study how monetary and fiscal regimes jointly determine inflation (Sargent and Wallace, 1981; Leeper, 1991; Sims, 1994; Woodford, 1996, 2001; Cochrane, 1998; Bhattarai et al., 2014). More recent work shows that uncertainty about how debt will be stabilized can be an important driver of inflation dynamics and policy transmission (Bianchi and Melosi, 2017, 2019). Under imperfect knowledge and learning, Eusepi and Preston (2018) show that high and moderate duration debt generates wealth effects that require more aggressive monetary policy to anchor expectations. Eusepi et al. (2025) show that with learning and long-term debt, high public debt potentially renders inflation targeting infeasible. In a sovereign default framework, Wolf and Zessner-Spitzenberg (2021) show that high debt levels can trigger debt spirals when interest rates rise, making monetary policy normalization itself a source of fiscal instability. Angeletos et al. (2025) show that with non-Ricardian households, a central bank may prefer gradual fiscal adjustment because it stabilizes demand and reduces distortionary taxation, and Bayer et al. (2025) show that high public debt levels can make fast fiscal adjustment more costly and less politically feasible. Our focus and mechanism are different. We show that the speed of fiscal adjustment affects inflation not only through demand or fiscal backing, but also through firms' endogenous attention choices. In particular, when debt is high, faster adjustment can raise attention to fiscal conditions and increase inflation sensitivity, especially under a more aggressive monetary rule.

Outline. In Section 2, we present our model framework. Section 3 derives our main analytical result, namely, that attention is U-shaped in the debt-to-GDP ratio. In Section 4, we show how fiscal and monetary policy affect this relationship and we discuss the macroeconomic implications of it. Section 5 concludes. We relegate all proofs and derivations, as well as additional details, to the Appendix.

2 Model

Time is discrete, and denoted by $t = 0, 1, 2, \ldots$. The economy consists of a representative household, a continuum of monopolistically competitive firms indicated by $j \in [0, 1]$, a representative final good producer, a fiscal authority, and a monetary authority.

2.1 Households

The representative household has preferences over final good consumption C, and labor supply L, and chooses an allocation $\{C_t, L_t, B_t\}_{t\geq 0}$ to maximize

$$\max_{\{C_t, L_t, B_t\}_{t\geq 0}} \mathbb{E}_0^f \sum_{t=0}^{\infty} \beta^t \big[\log C_t - L_t\big] \tag{1}$$

$$\text{subject to} \quad P_t C_t + B_t = (1 + i_{t-1}) B_{t-1} + W_t L_t + P_t T_t + Profits_t \tag{2}$$

$$B_0 \text{ given}$$

where $\mathbb{E}_0^f$ is the full information expectations operator, C_t is consumption of the final good at price P_t, B_t is nominal government bond holdings at time t, i_{t-1} the nominal interest rate on the nominal government bonds B_{t-1}, L_t is labor supply at wages W_t, T_t real lump-sum transfers from the government in units of the final good, and $Profits_t$ are nominal profits from firms rebated to the household.

2.2 Fiscal Policy

The fiscal authority issues nominal bonds B that yield nominal interest i, sets revenue taxes $\mathcal{T}_r$ on monopolistically competitive firms, and sends lump-sum transfers T to the representative household. The fiscal authority's flow budget constraint is therefore given by

$$B_t = (1 + i_{t-1}) B_{t-1} + P_t T_t - \mathcal{T}_{r,t} \int_0^1 P_{j,t} Y_{j,t} \mathrm{d}j, \quad t \geq 0 \tag{3}$$

where the total nominal government bond outstanding B_t is given by total debt at $t-1$, B_{t-1} plus the nominal interest rate paid on them $i_{t-1} B_{t-1}$, total lump-sum transfers $P_t T_t$ minus tax revenues from the monopolistically competitive firms $\mathcal{T}_{r,t} \int_0^1 P_{j,t} Y_{j,t} \mathrm{d}j$. Revenue taxes responds to lagged real debt as in Leeper (1991):

$$\mathcal{T}_{r,t} = \mathcal{T}_r \Big(\frac{B_{t-1}}{P_{t-1}} \times \frac{P}{B} \Big)^{\phi_b} e^{\nu_t} \tag{4}$$

where $\mathcal{T}_r$, B and P are steady-state values for the revenue tax, nominal government debt, and the price level, ϕ_b captures the responsiveness of the revenue tax to real government debt relative to its steady-state value, and ν_t are revenue tax shocks, assumed to follow an AR(1):

$$\nu_t = \rho_\nu \nu_{t-1} + \epsilon_t^\nu, \qquad \epsilon_t^\nu \sim \mathcal{N}(0, \sigma_\nu^2). \tag{5}$$

We refer to ϕ_b as the stance of fiscal policy, or following Angeletos et al. (2025) also as the *speed of fiscal adjustment*. Finally, we denote the debt-to-GDP ratio as $\mathcal{B}_t \equiv {}^{B_t}/_{P_t C_t}$, using the fact that $C_t = Y_t$.

2.3 Monetary Policy

The monetary authority follows a standard Taylor rule

$$(1 + i_t) = (1 + i)\Big(\frac{P_t}{P_{t-1}}\Big)^{\phi_\pi} \tag{6}$$

where i_t is the nominal interest rate at time t, i is the steady-state value of the nominal interest rate, $\left({}^{P_t}/_{P_{t-1}}\right)$ is the gross inflation rate between periods $t-1$ and t, and ϕ_π captures how strongly monetary policy responds to inflation.

2.4 Final Good Producer

A competitive final good producer buys from the continuum of monopolistically competitive firms $j \in [0, 1]$, and produces a final good using a CES production function. The final good producer solves

$$\max_{\{Y_t, (Y^d_{j,t})_{j\in[0,1]}\}} P_t Y_t - \int_0^1 P_{j,t} Y^d_{j,t} \mathrm{d}j \quad \text{s.t.} \quad Y_t = \left(\int_0^1 (Y^d_{j,t})^{1-\eta^{-1}} \mathrm{d}j\right)^{\frac{1}{1-\eta^{-1}}} \tag{7}$$

where $Y^d_{j,t}$ is the producer's demand for variety j at price $P_{j,t}$, Y_t is its production at price P_t, and $\eta > 1$ is the elasticity of substitution across varieties. Therefore, the demand for variety j is given by

$$Y^d_{j,t} = \Big(\frac{P_{j,t}}{P_t}\Big)^{-\eta} Y_t \qquad \text{where} \qquad P_t = \left[\int_0^1 P^{1-\eta}_{j,t} \mathrm{d}j\right]^{\frac{1}{1-\eta}}. \tag{8}$$

2.5 Monopolistically competitive Firms

A monopolistically competitive firm $j \in [0, 1]$ produces its differentiated variety $Y_{j,t}$ using a linear production function in labor, $Y_{j,t} = Z_t L_{j,t}$, where $Z_t > 0$ is aggregate productivity. We assume that $Z_t = e^{z_t}$, $z_t = \rho_z\, z_{t-1} + \epsilon^z_t$, $\quad \epsilon^z_t \sim \mathcal{N}(0, \sigma^2_z)$. Given its production function, firm j's nominal marginal cost is given by $\mathrm{MC}_t \equiv {}^{W_t}/_{Z_t}$. Firms produce to meet demand specified in Equation (8). Under full information, a firm's problem is static, and it chooses

price $P_{j,t}$ to maximize

$$\max_{P_{j,t}} \left[(1-\mathcal{T}_{r,t})P_{j,t} - \text{MC}_t\right]\left(\frac{P_{j,t}}{P_t}\right)^{-\eta} Y_t \tag{9}$$

where $(1-\mathcal{T}_{r,t})P_{j,t}$ is the price of the good sold after revenue taxes $\mathcal{T}_{r,t}$. Equation (9) results in the following *ideal price*

$$P^{\diamond}_{j,t} = \frac{1}{(1-\mathcal{T}_{r,t})}\frac{\eta}{\eta-1}\text{MC}_t \tag{10}$$

where $\frac{\eta}{\eta-1}$ is the standard monopolistic competition markup over marginal costs, and $\frac{1}{(1-\mathcal{T}_{r,t})}$ is the tax wedge, which scales up the markup to compensate for the share of revenues lost to taxation.

2.5.1 Rational Inattention

Monopolistically competitive firms are rationally inattentive. That is, they do not perfectly observe the fundamental shocks, and must optimally choose prices conditional on signals that are endogenously chosen by them, subject to a capacity constraint. Given a capacity $\kappa_{j,t}$, the amount of information the firm can acquire is given by $\mathcal{I}(S^t_j;\vec{x}^t|S^{t-1}_j) \leq \kappa_{j,t}$, where $\mathcal{I}(S^t_j;\vec{x}^t|S^{t-1}_j)$ is the conditional Shannon mutual information between the history of signals S^t_j and the history of the fundamental shocks. Firms can expand their capacity subject to a linear cost, where ω is the marginal cost of information acquisition, so the cost of information acquisition is $\omega\kappa_{j,t}$. After firms make their information choices, shocks and signals are drawn, and each firm observes the realization of its signals. Then, firms set prices conditional on their information sets. Finally, demand is realized and firms produce to meet demand.

More specifically, firm j chooses an information processing capacity conditional on its initial information set $\kappa_{j,t} : S^{t-1}_j \to \mathbb{R}_+$, a set of signals to observe, $S_{jt} \subset \mathbb{S}^t$, and a pricing function that maps its information set to its optimal actions, $\vec{P}_{jt} : S^t_j \to \mathbb{R}$, where $S^t_j = \{S_{j\tau}\}^t_{\tau=-1}$ is the firm's information set at time t. The rationally inattentive firm solves:

$$\max_{\{\kappa_{j,t}(S^{t-1}_j),S_{j,t}\subset\mathbb{S}^t,P_{jt}(S^t_j)\}_{t\geq 0}} \mathbb{E}\left[\sum_{t=0}^{\infty} \underbrace{\beta^t \frac{1}{C_t P_t}}_{\substack{\text{discount}\\ \text{factor}}} \times \left\{ \underbrace{(1-\mathcal{T}_{r,t})P_{jt}Y_{jt}}_{\text{revenue}} - \underbrace{W_t L_{jt}}_{\substack{\text{production}\\ \text{cost}}} - \underbrace{\omega\kappa_{j,t}}_{\substack{\text{information}\\ \text{cost}}} \right\}\right] \tag{11}$$

subject to

$$Y_{jt} = Y^d_{jt} \qquad \text{(demand)} \tag{12}$$

$$\mathcal{I}(S^t_j;\vec{x}^t|S^{t-1}_j) \leq \kappa_{j,t} \qquad \text{(info. processing constraint)} \tag{13}$$

$$S^t_j = S^{t-1}_j \cup S_{jt}, \quad S^{-1}_j \text{ given} \qquad \text{(evolution of information set)} \tag{14}$$

where S_j^{-1} is an initial signal. Finally, S_j^t satisfies the no-forgetting condition, which states that firms do not forget information over time. This will put an upper bound on the amount of uncertainty the firm can choose (see Afrouzi and Yang, 2021, for details).

An Approximate Problem We consider a log-linearization of our model economy around a non-stochastic steady state, with a second-order approximation of the monopolistically competitive firm's profit loss function around this steady state. We use small letters to denote log deviations of the corresponding variables from their steady-state values. Steady state values are indicated without time subscripts. Appendix B presents the log-linear optimality conditions, Appendix C derives the steady state, and Appendix D the second-order approximation to the firm's profit function.

Once we perform a second-order approximation to the firm's profit function, the monopolistic competitive rational inattention problem becomes

$$\max_{\{\kappa_{j,t},S_{jt},p_{jt}(S_j^t)\}_{t\geq 0}} \mathbb{E}\Big[\sum_{t=0}^{\infty}\beta^t\big\{-\underbrace{\tfrac{1}{2}\mathcal{S}(p_{jt}(S_j^t)-p_{jt}^{\diamond})^2}_{\text{loss from mispricing}}-\underbrace{\omega\kappa_{j,t}}_{\text{info. cost}}\big\}\big|S_j^{-1}\Big] \tag{15}$$

$$\text{subject to} \quad \mathcal{I}(S_j^t;\{\vec{x}_\tau\}_{\tau\leq t}|S_j^{t-1})\leq\kappa_j \quad \text{(info. processing constraint)} \tag{16}$$

$$S_j^t = S_{jt}\cup S_j^{t-1}, \quad S_j^{-1} \text{ given} \quad \text{(evolution of information set)} \tag{17}$$

where $\vec{x}_t=(z_t,\nu_t)'\sim\mathcal{N}(\vec{0},\Sigma_{-1})$ is the vector of structural shocks, $p_{jt}^{\diamond}=w_t-z_t+\gamma\tau_{r,t}$ is the desired price that firm j would set at time t in the absence of information frictions. $\mathcal{S}$ is the curvature parameter of the profit function around the optimal price for firm j. We show in Appendix D that $\mathcal{S}=(1-i\mathcal{B})(\eta-1)$. We call $\mathcal{S}$ firm j's *stakes*. $\gamma\equiv\frac{i\mathcal{B}}{1-i\mathcal{B}}$ is the elasticity of the ideal price with respect to the tax. Both $\mathcal{S}(\mathcal{B})$ and $\gamma(\mathcal{B})$ depend on the debt-to-GDP ratio $\mathcal{B}$, and these terms will be key to understanding how fiscal policy shapes firms' attention decisions.

Since priors are normally distributed and the objective function is quadratic, if a given signal structure is a solution to the rational inattention problem with quadratic payoff, then its posterior distribution is also normal. Hence, we can write the problem in Equation (15)-Equation (17) as a linear-quadratic Gaussian problem where we choose the optimal posterior and solve for the steady-state information structure, where posterior, prior, and benefit matrix are time-invariant $(\bar{\Sigma}_{j,-1},\bar{\Sigma}_j,\bar{\Omega}_j)$ (see Afrouzi and Yang, 2021).

Before solving the fully fledged quantitative model, we proceed by examining the static information acquisition and pricing problem of a firm to understand how the *level* of steady-state debt-to-GDP ratio affects the passthrough of marginal cost shocks to prices.

3 Pricing with Fiscal Wedges and Rational Inattention

In this section, we analyze how the steady-state government debt-to-GDP ratio, $\mathcal{B}$, affects a firm's attention and pricing behavior. Throughout, we focus on $\mathcal{B} \in (0, 1/i)$.[3] We begin with a static framework to derive analytically the conditions under which a firm's attention can be non-monotonic in the level of public debt.

3.1 Environment

Consider an economy with a steady-state government debt-to-GDP ratio $\mathcal{B}$ in which firms set prices. There are two common fundamental shocks: a marginal cost shock, mc, and a revenue tax shock, τ_r. We assume that

$$\begin{pmatrix} \text{mc} \\ \tau_r \end{pmatrix} \sim \mathcal{N}\left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_{mc}^2 & 0 \\ 0 & \sigma_\tau^2 \end{pmatrix} \right)$$

Let $\pi(p_j; \text{mc}, \tau_r)$ be the profit function of firm j when it charges p_j. In the absence of frictions, if the firm were able to perfectly observe all shocks, it would choose the ideal price $p_j^\diamond \equiv \arg\max_y \pi(y; \text{mc}, \tau_r)$, given by:

$$p_j^\diamond = \text{mc} + \gamma(\mathcal{B})\tau_r \tag{18}$$

where $\gamma(\mathcal{B})$ captures the sensitivity of ideal prices to taxes.[4] Deviations from this ideal price result in quadratic profit losses:

$$L(p_j; mc, \tau_r) = \frac{\mathcal{S}(\mathcal{B})}{2}(p_j - p_j^\diamond)^2 \tag{19}$$

From our setup in Section 2, the concavity of the profit function is captured by $\mathcal{S}(\mathcal{B}) = (1 - i\mathcal{B})(\eta - 1)$, and the sensitivity of prices to taxes by $\gamma(\mathcal{B}) = \frac{i\mathcal{B}}{1-i\mathcal{B}}$. Importantly, $\frac{\partial \mathcal{S}}{\partial \mathcal{B}} < 0$, while $\frac{\partial \gamma}{\partial \mathcal{B}} > 0$, and $\gamma(\mathcal{B})$ is strictly convex in $\mathcal{B}$ whereas $\mathcal{S}(\mathcal{B})$ is linear in $\mathcal{B}$.

3.2 Optimal Information Acquisition

Given a capacity κ_j, the amount of information a firm can acquire is given by the conditional Shannon mutual information between the acquired signal history, S_j^0, and the vector of

[3] If $\mathcal{B} > 1/i$, $\mathcal{S}(\mathcal{B})$ becomes negative and firms would never pay attention. If $\mathcal{B} > 1/i$, the steady-state revenue tax rate would be larger than one, see Appendix C.

[4] Equation (18) comes out from the log-linearization of firm's maximization problem under full information, see Appendix B.

shocks: $\mathcal{I}(S_j^0;(\text{mc},\tau_r)'|S_j^{-1}) \leq \kappa_j$. Firms choose their information capacity subject to a linear cost $\omega\kappa_j$, where $\omega > 0$ represents the marginal cost of information acquisition. The firm's optimization problem is:

$$\begin{aligned} \max_{\{\kappa_j, p_j\}} \quad & \mathbb{E}\left[-\frac{\mathcal{S}(\mathcal{B})}{2}(p_j - p_j^\diamond)^2 - \omega\kappa_j \mid S_j^{-1}\right] \\ \text{s.t.} \quad & \mathcal{I}(S_j^0;(\text{mc},\tau_r)' \mid S_j^{-1}) \leq \kappa_j \\ & S_j^0 = S_{j0} \cup S_j^{-1}, \quad S_j^{-1} \text{ given} \end{aligned} \tag{20}$$

The problem can be written as choosing the posterior variance, σ^2_{post}, to maximize expected profits net of information costs:

$$\max_{\sigma^2_{post} \leq \sigma^2_{p^\diamond}} \quad -\frac{\mathcal{S}(\mathcal{B})}{2}\sigma^2_{post} - \frac{\omega}{2}\ln\left(\frac{\sigma^2_{p^\diamond}}{\sigma^2_{post}}\right) \tag{21}$$

where $\sigma^2_{p^\diamond} = \sigma^2_{mc} + \gamma(\mathcal{B})^2\sigma^2_\tau$ is the prior variance of the ideal price and $\sigma^2_{post} \equiv \mathbb{E}\big[(\mathbb{E}[p_j^\diamond|S_j^0] - p_j^\diamond)^2|S_j^0\big]$ represents the firm's posterior uncertainty. Solving this maximization problem yields the firm's optimal attention choice, characterized in the following Proposition.

Proposition 1. *A firm's optimal posterior variance* $\sigma^2_{post} \equiv \mathbb{E}[(\mathbb{E}[p_j^\diamond|S_j^0] - p_j^\diamond)^2|S_j^0]$ *and optimal price are given by*

$$\sigma^2_{post} = \min\left\{\frac{\omega}{\mathcal{S}}, \sigma^2_{p^\diamond}\right\}, \text{ and } p_j^* = \lambda(p_j^\diamond + \varepsilon_j) \tag{22}$$

where $\lambda = \max\left\{1 - \frac{\omega}{\mathcal{S}\sigma^2_{p^\diamond}}, 0\right\}$, $\sigma^2_{p^\diamond} = \sigma^2_{mc} + \gamma(\mathcal{B})^2\sigma^2_\tau$, *and* ε_j *is zero-mean noise introduced by imperfect information. The passthrough of marginal cost and revenue tax shocks to firm-level prices are given, respectively, by*

$$\frac{\partial p_j^*}{\partial \text{mc}} = \lambda, \qquad \frac{\partial p_j^*}{\partial \tau_r} = \lambda\gamma(\mathcal{B}). \tag{23}$$

The parameter $\lambda \in [0,1]$ is central in our analysis. It is the optimal Kalman gain and we refer to it as *attention* in the following, as it measures what fraction of uncertainty firms choose to resolve.

As $\mathcal{B}$ enters $\mathcal{S}$ and γ, debt affects firm's attention choices. Theorem 1 establishes our key analytical result characterizing how public debt affects firms' optimal attention choices and hence, passthrough of shocks to prices.

Theorem 1. *When* $\lambda > 0$, *the effect of the government debt-to-GDP ratio* $\mathcal{B}$ *on optimal*

attention λ *is*

$$\frac{\partial \lambda}{\partial \mathcal{B}} = \frac{\omega}{\mathcal{S}(\mathcal{B})\sigma^2_{p^\diamond}} \left[\underbrace{\frac{\partial \mathcal{S}}{\partial \mathcal{B}} \frac{1}{\mathcal{S}}}_{<0} + \underbrace{\frac{\partial \sigma^2_{p^\diamond}}{\partial \mathcal{B}} \frac{1}{\sigma^2_{p^\diamond}}}_{>0} \right] \tag{24}$$

Furthermore, for $\mathcal{B} \in (0, 1/i)$*, there exists a unique* $\mathcal{B}^* = \frac{1}{i}\left(1 - \sqrt{\frac{\sigma^2_{\tau_r}}{\sigma^2_{mc}+\sigma^2_{\tau_r}}}\right)$ *such that* $\frac{\partial \lambda}{\partial \mathcal{B}}\big|_{\mathcal{B}=\mathcal{B}^*} = 0$ *and for* $\mathcal{B} < \mathcal{B}^*$*,* $\frac{\partial \lambda}{\partial \mathcal{B}} < 0$ *and for* $\mathcal{B} > \mathcal{B}^*$*,* $\frac{\partial \lambda}{\partial \mathcal{B}} > 0$*.*

Theorem 1 shows the opposing forces through which the debt-to-GDP ratio $\mathcal{B}$ affects a firm's optimal attention allocation. On the one hand, a higher $\mathcal{B}$ decreases the stakes from mispricing. On the other hand, it increases the firm's prior uncertainty about the ideal price. Under the conditions stated in Theorem 1, attention λ is U-shaped in $\mathcal{B}$. Hence, higher debt decreases attention and passthrough at relatively low levels of debt, whereas it increases attention at higher debt levels.

Taking the exogenous processes for marginal costs and taxes as given, the static framework in this section allows us to characterize analytically the conditions under which this U-shape arises. In the full general equilibrium framework outlined in Section 2, marginal costs and taxes are endogenously determined in equilibrium and shaped by monetary and fiscal policies. Consequently, ideal prices become a function of equilibrium variables, which in turn shape the optimal allocation of attention, which itself affects equilibrium outcomes. In the next section, we solve for this fixed point numerically, following an iterative algorithm described in Appendix E.

4 Results

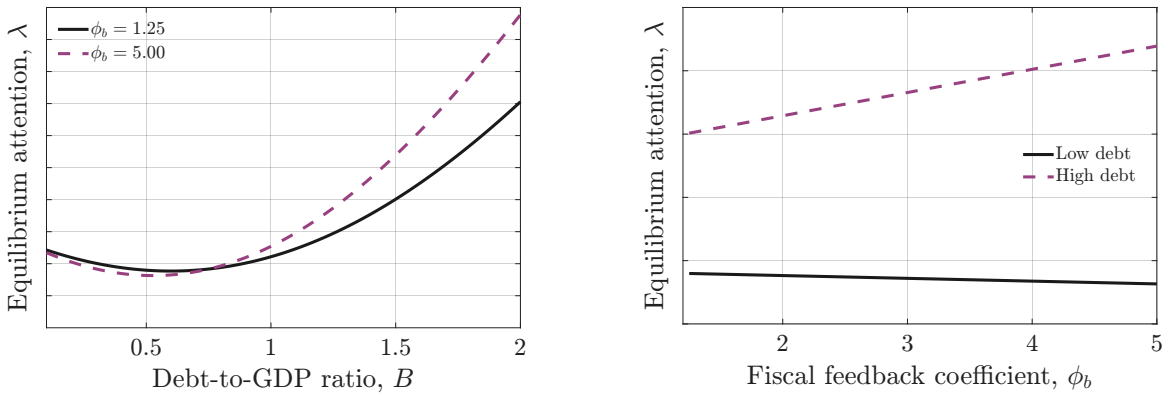
In this section, we discuss how higher debt-to-GDP ratios interact with fiscal and monetary policy in shaping firms' attention and hence, passthrough and inflation sensitivity. To keep the rational inattention problem tractable, we assume that in each period, a new cohort of intermediate firms is born, makes pricing and information decisions, and exits at the end of the period. This structure reduces the firm's optimization problem to a repeated static problem. Given that structure, attention λ is time invariant, but depends non-linearly on all fundamental parameters in equilibrium, including monetary and fiscal policy parameters, ϕ_π and ϕ_b.

4.1 The Speed of Fiscal Adjustment

We first examine how the speed of fiscal adjustment, ϕ_b, shapes firms' equilibrium attention, λ, and, hence, the passthrough of shocks into inflation. Figure 1a plots λ as a function of the debt-to-GDP ratio, $\mathcal{B}$, for two fiscal adjustment coefficients: a relatively slow adjustment, $\phi_b = 1.25$, and a more aggressive response, $\phi_b = 5$.

Figure 1: The Role of Fiscal Adjustment Speed ϕ_b

(a) Debt and Attention **(b)** Speed of Adjustment and Attention



Notes: Panel (a) plots equilibrium attention λ against the debt-to-GDP ratio $\mathcal{B}$ for $\phi_b = 1.25$ and $\phi_b = 5$. Panel (b) plots λ against ϕ_b holding $\mathcal{B}$ fixed at 0.5 (low debt) and 1.5 (high debt). In both panels, $\bar{i} = 0.06$, $\eta = 4$, $\omega = 2 \times 10^{-5}$, $\rho_z = \rho_\nu = 0.5$, $\sigma_z = 0.005$, $\sigma_\nu = 0.0175$, and $\phi_\pi = 1.5$.

Two results stand out. First, for both ϕ_b, attention is U-shaped in the debt-to-GDP ratio $\mathcal{B}$. Hence, endogenizing monetary and fiscal policy does not overturn the core relationship between $\mathcal{B}$ and firms' attention, derived in Theorem 1: at a low debt-to-GDP ratio, higher $\mathcal{B}$ lowers attention because pricing mistakes become less costly, whereas at a high debt-to-GDP ratio the amplified fiscal component of the desired price raises the value of information and attention increases.

Second, the effect of ϕ_b is itself state dependent. At a low debt-to-GDP ratio, a larger ϕ_b reduces attention, whereas at a high debt-to-GDP ratio, it increases attention. We can see this from the intersection of the two curves in Figure 1a. Figure 1b shows the same result more directly by plotting λ against ϕ_b on the horizontal axis at $\mathcal{B} = 0.5$ (black-solid line, denoted as "Low debt") and $\mathcal{B} = 1.5$ (purple-dashed line, "High debt"). Figure 1b shows that the sign of the relationship between λ and ϕ_b changes with the level of public debt-to-GDP.

To understand this result, consider equilibrium attention, which solves:[5]

$$\lambda = \max\left\{1 - \frac{\omega}{\mathcal{S}(\mathcal{B})\sigma^2_{p^\diamond|\mathcal{F}_{t-1}}(\lambda;\mathcal{B},\phi_\pi,\phi_b)},\, 0\right\}. \tag{25}$$

Fiscal adjustment ϕ_b does not enter the stakes term $\mathcal{S}(\mathcal{B})$. Its effect only operates through firms' prior uncertainty $\sigma^2_{p^\diamond|\mathcal{F}_{t-1}}(\lambda;\mathcal{B},\phi_\pi,\phi_b)$, where $\mathcal{F}_{t-1} = \{b_\tau, p_\tau, z_\tau, \nu_\tau\}_{\tau\leq t-1}$ is the history of endogenous and exogenous variables up to $t-1$. Because taxes respond to predetermined real debt, a higher ϕ_b does not directly dampen the contemporaneous fiscal innovation. Instead, it changes how current shocks map into future debt, future taxes, and ultimately firms' desired prices. As we show in Appendix E, the conditional prior variance is given by

$$\sigma^2_{p^\diamond|\mathcal{F}_{t-1}}(\lambda;\mathcal{B},\phi_\pi,\phi_b) = d_z(\lambda;\mathcal{B},\phi_\pi,\phi_b)^2\sigma_z^2 + d_\nu(\lambda;\mathcal{B},\phi_\pi,\phi_b)^2\sigma_\nu^2, \tag{26}$$

where d_z and d_ν are the equilibrium loadings of the desired price on each shock innovation, determined by attention, debt, as well as the monetary and fiscal stance. Equation (26) shows that firms' prior variance can be decomposed in a productivity and a fiscal component, reflecting the two fundamental shocks.

The speed of fiscal adjustment has two opposing effects on these loadings d_z and d_ν, and hence, on firms' attention decisions. To see this, consider the law of motion of real debt:

$$b_t^R = \big[1 + i(1-\phi_b)\big]b_{t-1}^R + (1+i)\phi_\pi\pi_{t-1} - (1+i)\pi_t - i\nu_t - ic_t. \tag{27}$$

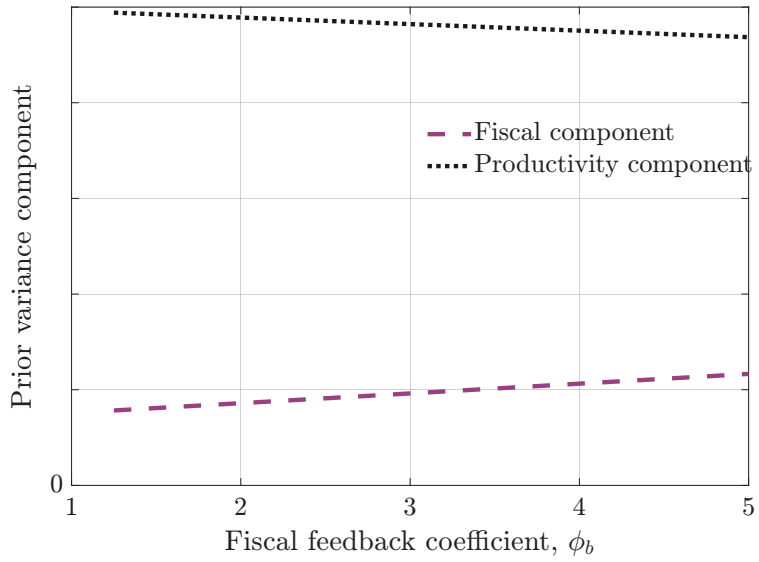
A higher ϕ_b lowers the persistence of real debt, as reflected in the coefficient $\big[1+i(1-\phi_b)\big]$, so shock-induced debt fluctuations are undone more quickly, weakening the propagation of shocks through debt into future taxes and back into firms' desired prices. At the same time, a higher ϕ_b makes taxes more sensitive to a given deviation of real debt from steady state, which follows directly from the definition of the tax rule Equation (4). A stronger tax response amplifies the fiscal component of firms' prior uncertainty. This second force becomes particularly important at high debt because the sensitivity to the tax wedge $\gamma(\mathcal{B}) = i\mathcal{B}/(1-i\mathcal{B})$ is increasing and convex in $\mathcal{B}$.

Figure 2 graphically shows this decomposition of prior uncertainty into the two components for the high-debt case. It plots the productivity and fiscal components of firms' prior variance separately as functions of ϕ_b. As ϕ_b increases, the fiscal component rises, reflecting the steeper mapping from debt into taxes, while the productivity component declines slightly, consistent with the dampened debt persistence. The fiscal

[5] See Appendix E.

component's increase dominates, which is why total prior variance rises and attention increases at high debt.

Figure 2: Decomposing the Role of Fiscal Adjustment Speed ϕ_b



Notes: This figure decomposes firms' prior uncertainty as a function of ϕ_b into its fiscal component (purple-dashed line) and its productivity component (black-dotted line). The figure focuses on the high debt case, $\mathcal{B} = 1.5$. Rest of the calibration: $\bar{i} = 0.06$, $\eta = 4$, $\omega = 2 \times 10^{-5}$, $\rho_z = \rho_\nu = 0.5$, $\sigma_z = 0.005$, $\sigma_\nu = 0.0175$, and $\phi_\pi = 1.5$.

A more aggressive fiscal rule thus has two opposing effects. It dampens debt persistence, which tends to lower attention as it reduces debt volatility, but it also steepens the mapping from debt fluctuations into taxes, which tends to raise attention as taxes affect firms' desired prices. Figure 1 shows that at a low debt-to-GDP ratio the first force dominates; at high debt the second one does. Faster fiscal adjustment therefore stabilizes debt while making firms' pricing problem more uncertain once public debt is sufficiently high, with the consequence of higher attention and stronger passthrough of shocks into inflation.

4.1.1 The Role of Monetary Policy

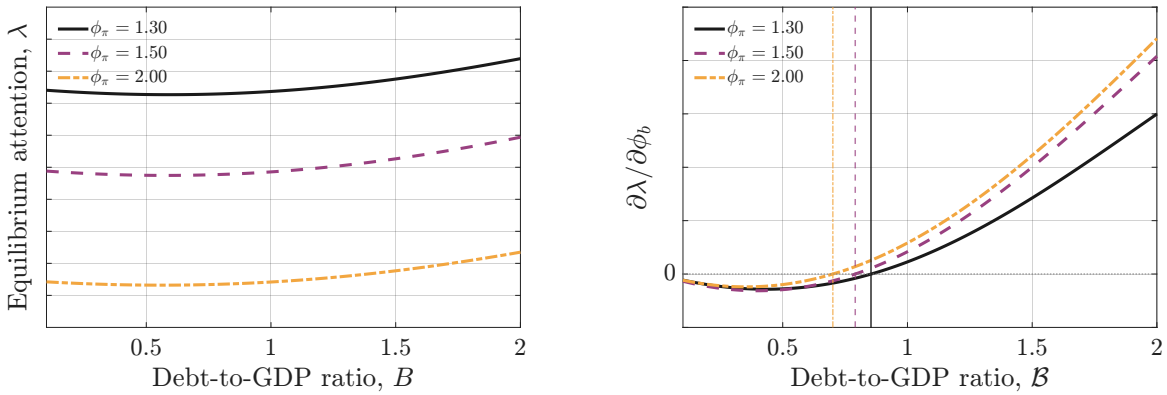
We now turn to the role of monetary policy. The stance of monetary policy, captured by ϕ_π, affects equilibrium attention mainly through two channels. First, the Taylor rule shapes aggregate demand and inflation dynamics, which affect the equilibrium responses of firms' desired prices to shocks. A more aggressive monetary policy counteracts inflationary pressures more strongly, thereby reduces aggregate demand and inflation, as well as inflation volatility. Second, monetary policy enters the government budget constraint through debt-service costs, thereby changing the link between inflation, debt, and taxes. As we discuss

below, the aggregate demand channel is quantitatively more important for the interaction of monetary and fiscal policy.

Figure 3 illustrates these effects. Figure 3a plots equilibrium attention λ as a function of the debt-to-GDP ratio $\mathcal{B}$ for three values of ϕ_π. The black solid line corresponds to a relatively dovish central bank, the purple dashed line to the baseline calibration with $\phi_\pi = 1.5$, and the yellow dashed-dotted line to a more hawkish monetary authority with $\phi_\pi = 2$. Under all three monetary rules, attention remains U-shaped in debt. A more aggressive monetary policy shifts the entire relationship downward: for any given level of debt, equilibrium attention is lower when ϕ_π is higher.

Figure 3: The Role of Monetary Policy ϕ_π

(a) Debt and Attention **(b)** Speed of Adjustment and Attention



Notes: Panel (a) plots equilibrium attention λ against the debt-to-GDP ratio $\mathcal{B}$ for different values of ϕ_π. Panel (b) plots $\partial\lambda/\partial\phi_b$ as a function of $\mathcal{B}$ for the same monetary policy coefficients. In both panels, $\bar{i} = 0.06$, $\eta = 4$, $\omega = 2 \times 10^{-5}$, $\rho_z = \rho_\nu = 0.5$, $\sigma_z = 0.005$, $\sigma_\nu = 0.0175$, and $\phi_b = 2$ unless otherwise stated.

This downward shift reflects the fact that a more hawkish Taylor rule reduces the equilibrium sensitivity of inflation and consumption to shocks. Since firms' attention is governed by the prior variance of the desired price, lower equilibrium volatility in the desired price reduces firms' optimal attention choice.

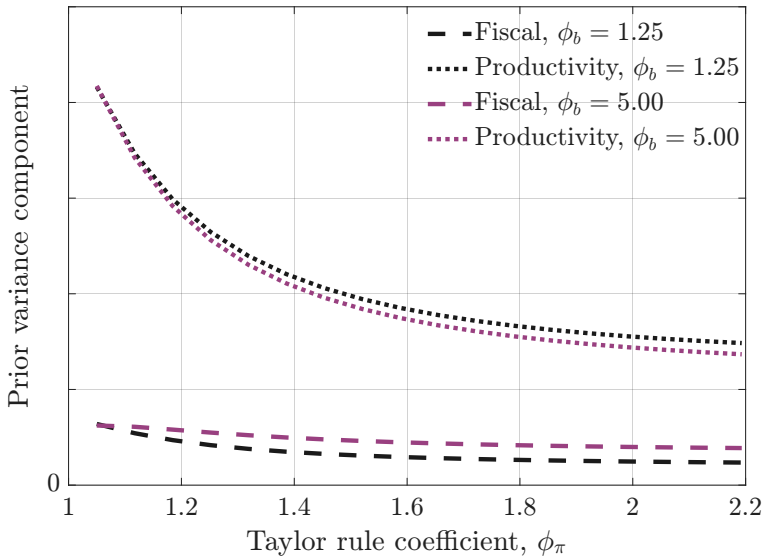
Figure 3b shows that monetary policy also changes the way fiscal policy affects attention. The figure plots the derivative of attention with respect to ϕ_b, $\partial\lambda/\partial\phi_b$, as a function of $\mathcal{B}$ for the three values of ϕ_π. For all monetary policy stances, the derivative is negative at low debt and positive at high debt, consistent with Figure 1. The key result is that the debt threshold at which this derivative changes sign shifts to the left as monetary policy becomes more hawkish. In other words, a tighter monetary stance increases the debt region in which faster fiscal adjustment *increases* firms' attention.

The reason is that a more aggressive Taylor rule compresses the equilibrium response

of firms' desired prices to productivity shocks. When monetary policy already stabilizes much of the productivity-driven uncertainty, the scope for faster fiscal adjustment to further reduce it is limited. In contrast, the fiscal component of the prior variance – driven by tax volatility and amplified through the wedge γ – is largely invariant to monetary policy. As a result, under a hawkish monetary regime, the positive fiscal effect of raising ϕ_b dominates at lower debt levels, because the offsetting negative productivity effect is already attenuated. The critical debt level at which fiscal adjustment begins to raise attention therefore shifts to the left as ϕ_π increases.

Figure 4 illustrates this graphically for the high-debt case. It plots the productivity and fiscal components of prior variance as functions of ϕ_π for two fiscal stances. The productivity component (dotted lines) falls steeply in ϕ_π and is the dominant source of prior variance, while the fiscal component (dashed lines) is comparatively small and much less sensitive to the monetary stance. Crucially, while both components are affected by the fiscal stance, the fiscal component is nearly invariant to ϕ_π, confirming that the interaction between monetary and fiscal policy documented in Figure 3b operates through monetary policy's compression of the productivity component rather than any amplification of the fiscal component.

Figure 4: Decomposing the Role of Monetary Policy



Notes: This figure decomposes firms' prior uncertainty as a function of ϕ_π into its fiscal component (purple-dashed line) and its productivity component (black-dotted line). The figure focuses on the high debt case, $\mathcal{B} = 1.5$, and considers two different fiscal stances, ϕ_b. Rest of the calibration: $\bar{i} = 0.06$, $\eta = 4$, $\omega = 2 \times 10^{-5}$, $\rho_z = \rho_\nu = 0.5$, $\sigma_z = 0.005$, $\sigma_\nu = 0.0175$.

The broader implication is that monetary and fiscal policy interact in a non-trivial way in firms' attention problem. A tighter monetary stance reduces attention by stabilizing the

pricing environment. At the same time, by compressing the productivity-driven component of the desired price uncertainty, it narrows the region in which faster fiscal adjustment lowers attention. The critical debt level at which fiscal policy begins to raise attention is therefore itself an equilibrium object that depends systematically on the monetary regime.

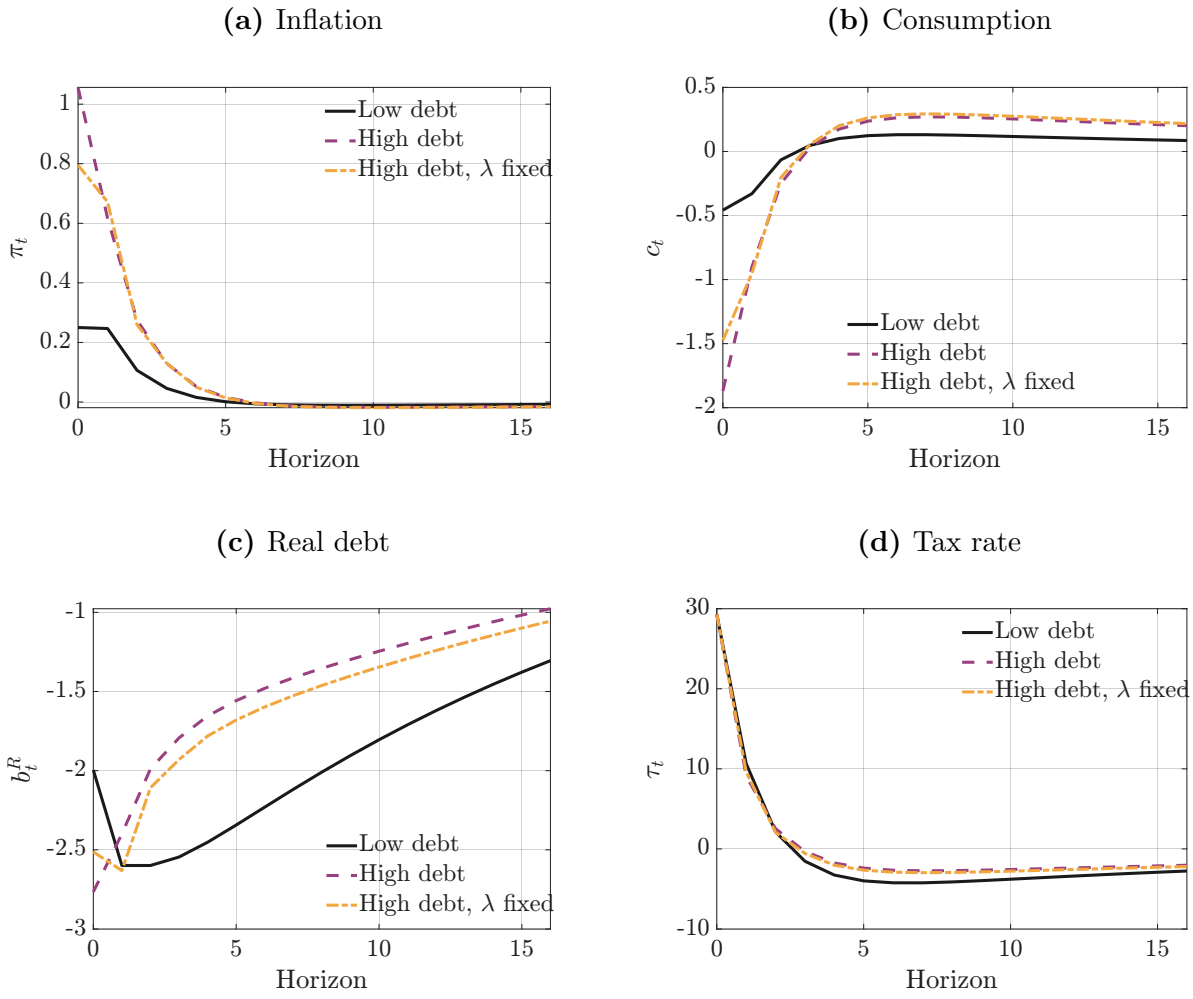
4.2 Impulse Responses

We now turn to the dynamic effects of tax and productivity shocks, and examine how they are shaped by debt and endogenous attention. We normalize the shock realization in both cases such that inflation in the low debt-to-GDP case responds by 0.25% on impact. Figure 5 plots the impulse responses to a tax shock. Each panel compares three cases. The solid black line shows the low debt-to-GDP economy ($\mathcal{B} = 0.5$), where attention is set at its low-debt equilibrium value. The dashed purple line shows the high debt-to-GDP economy ($\mathcal{B} = 1.5$), with attention adjusting endogenously to the higher debt-to-GDP level. Finally, the dashed-dotted yellow line shows the same high debt-to-GDP economy, but with attention kept fixed at its value obtained under low debt-to-GDP. This third case serves as a counterfactual: it holds the debt level fixed at its high value, and therefore preserves the direct effect of debt on the fiscal wedge, while shutting down the additional amplification that comes from higher equilibrium attention. Comparing the purple and yellow lines therefore isolates the role of endogenous attention in shaping the transmission of fiscal shocks.

Figure 5a shows that inflation responds positively on impact in all three cases, but the magnitude of the response differs markedly across them. The initial inflation increase is smallest in the low debt-to-GDP ratio economy, substantially larger in the high debt-to-GDP economy with fixed attention, and largest in the high debt-to-GDP economy with endogenous attention. Thus, high debt raises the inflationary effect of a tax shock even when attention is held fixed, but accounting for the endogenous attention response to the new steady state amplifies the response further. This is the central implication of the model's pricing block: when debt-to-GDP is high, firms' desired prices become more sensitive to fiscal disturbances through the loading $\gamma(\mathcal{B})$, and if high debt also induces firms to pay more attention, then more of that desired price movement passes through into actual inflation.

Figure 5b reports the response of consumption. Consumption falls on impact in all cases, consistent with the contractionary effect of a tax increase. The decline is modest at a low debt-to-GDP ratio, much larger at high debt-to-GDP, and especially pronounced when attention is allowed to adjust endogenously. Over time, consumption recovers, crosses into positive territory, and then slowly converges back to the steady state. The comparison between the two high-debt lines is again informative. Holding attention fixed at its low-

Figure 5: Impulse Response Functions to a Tax Shock



Notes: This figure plots impulse responses to a positive tax shock under three scenarios: a low-debt economy ($\mathcal{B} = 0.5$, solid black), a high-debt economy ($\mathcal{B} = 1.5$, dashed purple) with endogenous attention, and a high-debt economy with attention fixed at its low-debt equilibrium value (dash-dotted yellow). Calibration: $\bar{i} = 0.06$, $\eta = 4$, $\omega = 2 \cdot 10^{-5}$, $\rho_z = \rho_\nu = 0.5$, $\sigma_z = 0.005$, $\sigma_\nu = 0.035$, $\phi_\pi = 1.5$, $\phi_b = 2$.

debt value attenuates the initial contraction relative to the endogenous-attention case. This indicates that the stronger fall in consumption at high debt is not driven solely by the larger fiscal wedge itself. It also reflects the fact that higher attention produces a larger inflation response, which tightens monetary conditions through the Taylor rule and depresses demand more sharply.

Figure 5c shows the response of real debt. Real debt falls in all cases following the tax shock. The initial decline is largest in the high-debt economy with endogenous attention, somewhat smaller in the high-debt economy with fixed attention, and smallest in the low-debt economy. The tax shock raises revenues directly, but it also raises inflation, and higher

inflation reduces the real value of outstanding nominal liabilities. Since inflation responds most strongly in the high-debt economy with endogenous attention, real debt falls the most on impact in that case. The fixed-attention comparison is again useful: even at the same high debt level, shutting down the endogenous rise in attention weakens the inflation response and therefore mitigates the decline in real debt. The subsequent recovery of debt shows that debt rises back towards its steady state level most quickly in the high-debt case with endogenous attention, because real rates increase the most in this economy, which increases the debt service costs for the government.

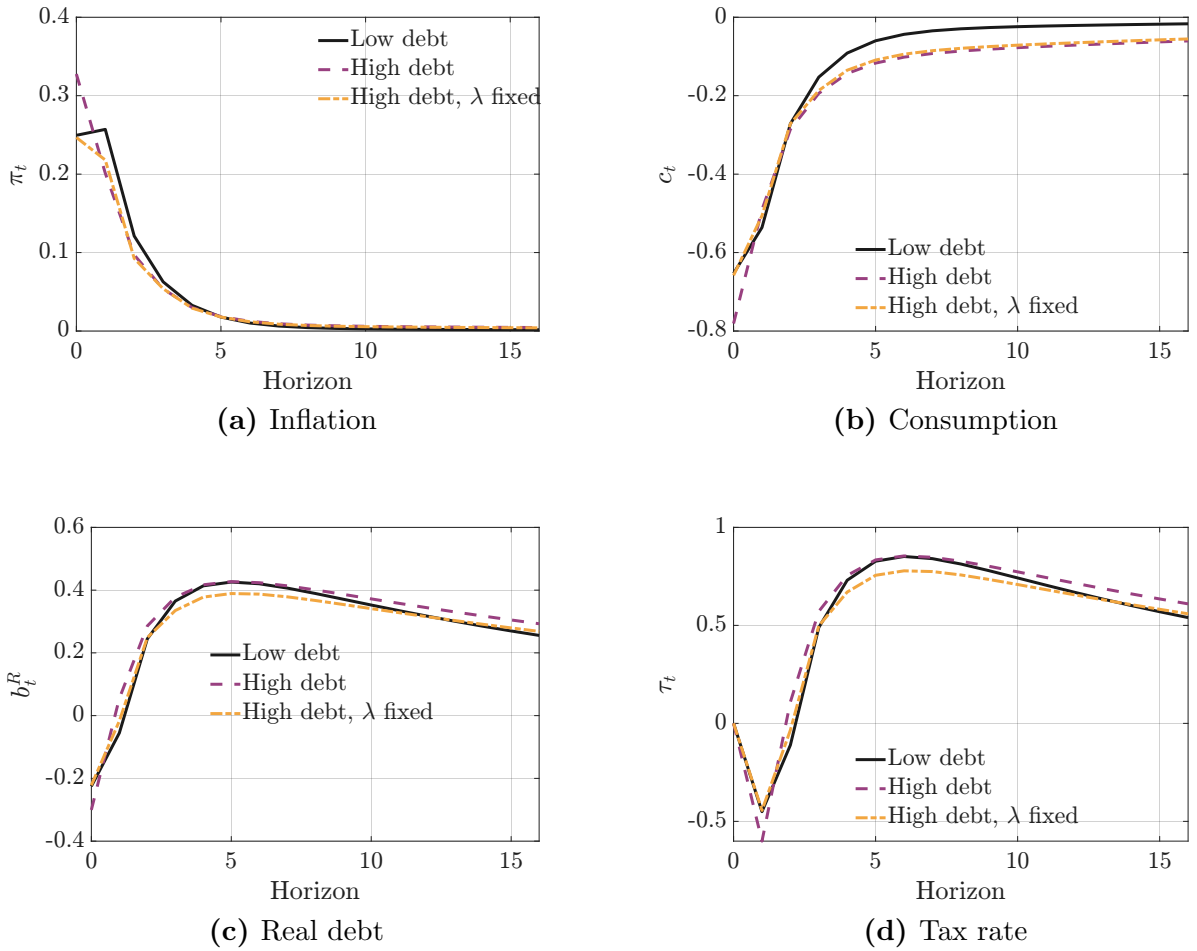
Figure 5d plots the tax rate itself. By construction, the tax shock raises the tax wedge sharply on impact, and the effect then decays over time. The three lines are very similar, especially for the two high-debt cases. Hence, the discussed differences in inflation, consumption, and real debt across the three economies are not primarily driven by differences in taxes. Rather, they arise because the same fiscal disturbance is transmitted differently through equilibrium pricing and aggregate demand. In particular, the gap between the purple and yellow lines shows that the endogenous attention channel matters quantitatively even when the path of the tax wedge itself is nearly unchanged.

Figure 6 reports impulse responses to a negative productivity shock. Qualitatively, the pattern across the three economies is similar to the tax-shock case: inflation and consumption respond most strongly at high debt with endogenous attention. The differences across models are smaller than for the tax shock, because the negative productivity shock raises firms' desired prices by increasing marginal cost, so inflation rises on impact in all three cases. Unlike the tax shock, the productivity shock does not directly enter firms' desired prices through the fiscal wedge multiplied by $\gamma(\mathcal{B})$. Its direct effect operates through current marginal cost. As a result, debt and attention still matter for inflation dynamics, but their role is more limited.

Figure 6c shows the response of real debt. Real debt falls on impact and then rises above steady state before slowly converging back. The initial decline is driven by the inflation spike, which erodes the real value of outstanding nominal liabilities. As inflation fades, however, the contraction in output reduces tax revenues, worsening the government's fiscal position and pushing real debt above baseline, where it remains for an extended period before gradually returning to steady state.

Figure 6d plots the tax rate. Following the negative productivity shock, the tax wedge falls initially, then turns positive and gradually decays. The initial decline is strongest in the high-debt economy with endogenous attention, while the low-debt and fixed-λ cases are quite similar. Over subsequent periods, the tax rate rises above steady state in all three cases, with the high-debt economy again displaying the largest response. The hump-shaped profile

Figure 6: Impulse Response Functions to a Negative Productivity Shock



Notes: This figure plots impulse responses to a one-percent negative productivity shock under three scenarios: a low-debt economy ($\mathcal{B} = 0.5$, solid black), a high-debt economy ($\mathcal{B} = 1.5$, dashed purple) with endogenous attention, and a high-debt economy with attention fixed at its low-debt equilibrium value (dash-dotted yellow). Calibration: $\bar{i} = 0.06$, $\eta = 4$, $\omega = 2 \cdot 10^{-5}$, $\rho_z = \rho_\nu = 0.5$, $\sigma_z = 0.005$, $\sigma_\nu = 0.035$, $\phi_\pi = 1.5$, $\phi_b = 2$.

reflects the interaction between the tax rule and debt dynamics: the shock first generates an inflation-driven reduction in the real debt burden, but as the economy adjusts and debt rises above baseline, the fiscal authority responds by increasing taxes.

Taken together, Figure 6 highlights a sharp asymmetry between fiscal and productivity disturbances. Higher debt still amplifies the effects of a negative productivity shock, and endogenous attention reinforces that amplification at the margin. However, the incremental role of attention is much smaller than in the fiscal-shock experiment. The reason is that productivity shocks affect desired prices primarily through marginal cost, not through the fiscal wedge. Since debt enters the pricing problem most strongly by scaling the fiscal component via $\gamma(\mathcal{B})$, high debt has less scope to magnify a productivity disturbance than a fiscal one. Put differently, endogenous attention is especially consequential when the shock

originates in the part of the pricing equation that debt amplifies most directly. For supply disturbances, the model still generates somewhat stronger pass-through at high debt, but the difference between endogenous and fixed attention is smaller.

5 Conclusion

In this paper, we show that government debt and fiscal uncertainty are first-order determinants of inflation dynamics through their effect on firms' endogenous attention choice. Firms' attention is U-shaped in the debt-to-GDP ratio: at low debt, higher debt reduces the stakes of mispricing and firms rationally choose to be inattentive. At high debt, the increasing sensitivity of desired prices to the fiscal wedge and increasing uncertainty dominates, raising attention and passthrough. Embedding this mechanism in a general equilibrium framework, we show that the role of the speed of fiscal adjustment becomes itself state dependent. A faster fiscal adjustment lowers attention at low levels of debt, but increases it at higher debt-to-GDP ratios. Monetary policy affects this trade-off by altering the composition of firms' uncertainty. A more aggressive monetary stance increases the relative importance of fiscal shocks for firms' prior uncertainty, which shifts downward the level of debt at which faster fiscal adjustment raises attention. Endogenous attention amplifies the effects of fiscal and productivity shocks, but more so for fiscal shocks.

Our framework abstracts from heterogeneity across firms in their exposure to fiscal uncertainty; allowing for sectoral variation in tax incidence or in information costs could generate rich cross-sectional predictions about which prices respond most to fiscal news. Finally, extending the dynamic model to incorporate long-term debt and sovereign risk premia would connect the attention channel studied here to the broader literature on debt sustainability, potentially uncovering amplification mechanisms in which rising risk premia, fiscal uncertainty, and firm inattention interact to generate fragile inflation dynamics in high-debt environments. We leave these considerations for future research.

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Appendix

A Optimality Conditions

A.1 Household Optimality Conditions

First-order conditions. The Lagrangian for the household problem is

$$\mathcal{L} = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \big[\log C_t - L_t \big] + \sum_{t=0}^{\infty} \mu_t \big[(1+i_{t-1}) B_{t-1} + W_t L_t + P_t T_t + \text{Profits}_t - P_t C_t - B_t \big]. \quad (28)$$

The FOCs with respect to C_t, L_t, and B_t are:

$$[C_t]: \quad \frac{\beta^t}{C_t} = \mu_t P_t, \quad (29)$$

$$[L_t]: \quad \beta^t = \mu_t W_t, \quad (30)$$

$$[B_t]: \quad \mathbb{E}_t[\mu_{t+1}(1+i_t)] - \mu_t = 0. \quad (31)$$

Intratemporal condition. Dividing (29) by (30):

$$\frac{1}{C_t} = \frac{P_t}{W_t} \qquad \Longrightarrow \qquad P_t C_t = W_t. \quad (32)$$

Nominal consumption expenditure equals the nominal wage.

Bond Euler equation. Substituting $\mu_t = \beta^t/(P_t C_t)$ from (29) into (31):

$$\beta(1+i_t)\, \mathbb{E}_t\left[\frac{P_t C_t}{P_{t+1} C_{t+1}} \right] = 1. \quad (33)$$

We define the debt-to-GDP ratio $\mathcal{B}_t \equiv B_t/(P_t C_t)$, which we will use below.

A.2 Monopolistic Competitive Firms

There is a continuum of firms $j \in [0,1]$. Each produces a differentiated variety using labor as the sole input:

$$Y_{j,t} = Z_t\, L_{j,t}, \quad (34)$$

where $Z_t > 0$ is aggregate productivity (common across firms).

Each firm takes the wage W_t as given and minimizes cost $W_t L_{j,t}$ subject to (34), yielding the nominal marginal cost:

$$\mathrm{MC}_t = \frac{W_t}{Z_t}. \tag{35}$$

Each firm faces the downward-sloping demand curve (8) and pays a proportional sales tax at rate $\mathcal{T}_{rt} \in (-\infty, 1)$ on its revenue. The per-period nominal profit of firm j is:

$$\Pi_{j,t} = (1 - \mathcal{T}_{rt})\, P_{j,t}\, Y_{j,t} - \mathrm{MC}_t\, Y_{j,t} = \left[(1 - \mathcal{T}_{rt})P_{j,t} - \frac{W_t}{Z_t}\right]\left(\frac{P_{j,t}}{P_t}\right)^{-\eta} C_t. \tag{36}$$

Full-information optimal price. Maximizing (36) with respect to $P_{j,t}$, the FOC yields:

$$P^{\diamond}_{j,t} = \frac{1}{1 - \mathcal{T}_{rt}}\, \frac{\eta}{\eta - 1}\, \frac{W_t}{Z_t} = \frac{1}{1 - \mathcal{T}_{rt}}\, \frac{\eta}{\eta - 1}\, \mathrm{MC}_t. \tag{37}$$

The optimal price is a constant markup $\eta/(\eta - 1) > 1$ over marginal cost, scaled by the tax wedge $1/(1 - \mathcal{T}_{rt})$.

A.3 Government

The government issues one-period nominal bonds, collects sales tax revenue, and makes lump-sum transfers. The nominal flow budget constraint is:

$$B_t = (1 + i_{t-1})B_{t-1} + P_t T_t - \mathcal{T}_{rt} \int_0^1 P_{j,t} Y_{j,t}\, dj. \tag{38}$$

In the symmetric equilibrium ($P_{j,t} = P_t$, $Y_{j,t} = C_t$ for all j), tax revenue simplifies to $\mathcal{T}_{rt} P_t C_t$:

$$B_t = (1 + i_{t-1})B_{t-1} + P_t T_t - \mathcal{T}_{rt} P_t C_t. \tag{39}$$

The monetary authority sets the nominal interest rate via a Taylor-type rule:

$$1 + i_t = (1 + i)\, \Pi_t^{\phi_\pi} \tag{40}$$

where $\Pi_t \equiv P_t / P_{t-1}$ is gross inflation, i is the steady-state interest rate, $\phi_\pi > 1$ is the Taylor coefficient.

A.4 Market Clearing

Goods market clearing requires $Y_{j,t} = C_{j,t}$ for all j. The bond market clears because the household is the sole holder of government debt. Aggregate output is $Y_t = C_t$ in the

symmetric equilibrium. Labor market clearing follows from Walras's law.

B Log-Linearization

We consider a log-linearization of our model economy around a non-stochastic steady state, with a second-order approximation of the monopolistically competitive firm's profit loss function around this steady state. We use small letters to denote log deviations of the corresponding variables from their steady-state values. Steady state values are indicated without time subscripts. Appendix C derives the steady state, and Appendix D the second-order approximation to the firm's profit function.

Household's optimality conditions. The household's optimal intratemporal condition is given by the labor-leisure equation: $w_t = p_t + c_t$, while the optimal intertemporal condition is given by the linearized Euler equation: $\mathbb{E}_t[c_{t+1} - c_t] = \iota_t - \mathbb{E}_t[(p_{t+1} - p_t)]$, where $\iota_t \equiv \log \frac{(1+i_t)}{(1+i)}$

Monopolistically competitive firms' optimality conditions. A firm's nominal marginal cost is given by $\text{mc}_t = w_t - z_t$, while its ideal price is given by $p^{\diamond}_{j,t} = w_t - z_t + \gamma\tau_{r,t}$, where $\gamma \equiv \frac{i\mathcal{B}}{1-i\mathcal{B}}$. The parameter γ is increasing and convex in the steady-state debt-to-GDP ratio $\mathcal{B}$. This convexity will be central for the volatility channel later. The coefficient γ measures the sensitivity of the firm's ideal price to the tax rate: a higher steady-state debt-to-GDP ratio $\mathcal{B}$ requires a higher steady-state tax rate to service the debt, which raises the share of revenue absorbed by taxation and makes the ideal price more responsive to tax fluctuations.

Under imperfect information, the firm's optimal price is given by $p^*_{j,t} = \arg\max_{p_{j,t}} \mathbb{E}[(p_{j,t} - p^{\diamond}_{j,t})^2 | S^t_j]$, resulting in $p^*_{j,t} = \mathbb{E}[p^{\diamond}_{j,t} | S^t_j]$, where S^t_j is the history of signals until time t. Under Rational Inattention, S^t_j is an optimal decision for firms. We characterize the optimal attention decision below.

Aggregate consumption and aggregate prices. Aggregate consumption is given by the market clearing condition $c_t = y_t$, while aggregate prices by the representative final good's firm optimal decision $p_t = \int_0^1 p_{j,t}\mathrm{d}j$, where $y_t = \int_0^1 y_{j,t}\mathrm{d}j$ is the output of the final good, and $y_{j,t}$ the output of variety j.

Fiscal policy. The fiscal authority budget constraint is given by $b_t = (1+i)(\iota_{t-1} + b_{t-1}) - i(\tau_{r,t} + p_t + c_t)$ and its revenue tax policy given by $\tau_{r,t} = \phi_b b_{t-1} - \phi_b p_{t-1} + \nu_t$

Monetary policy. The Taylor rule is given by $\iota_t = \phi_\pi(p_t - p_{t-1})$.

C Non-Stochastic Steady State

We solve for the non-stochastic steady state (SS) with zero inflation ($\Pi_t = 1$, $P_{j,t} = P_t = P$ for all j, t) and no transfers ($T = 0$). All variables without time subscripts denote SS values. Throughout, we assume $\mathcal{T}_r \in (0, 1/2)$ so that the government collects positive tax revenue in steady state and is on the efficient side of the Laffer curve.

From firm pricing (37) with symmetry ($P_j = P$):

$$\frac{P}{W} = \frac{1}{1-\mathcal{T}_r}\,\frac{\eta}{\eta-1}\,\frac{1}{Z}. \tag{41}$$

From the intratemporal condition (32): $C = W/P$. Combining:

$$C = \frac{W}{P} = (1-\mathcal{T}_r)\,\frac{\eta-1}{\eta}\,Z. \tag{42}$$

Consumption, which equals to real GDP, is decreasing in $\mathcal{T}_r$ and increasing in Z. The factor $(\eta-1)/\eta < 1$ reflects the monopolistic competition distortion. Higher $\mathcal{T}_r$ compresses after-tax revenue, inducing firms to charge higher prices, reducing the real wage and hence consumption. From the labor market clearing,

$$L = \int_0^1 L_j dj = \int_0^1 \frac{Y_j}{Z} dj = \int_0^1 \left(\frac{P_j}{P}\right)^{-\eta} \frac{Y}{Z} dj = \frac{C}{Z} = (1-\mathcal{T}_r)\frac{\eta-1}{\eta}$$

From the household's Euler equation, we have

$$\beta(1+i) = 1 \implies i = \frac{1}{\beta} - 1 \tag{43}$$

and finally from the government budget constraint

$$B = (1+i)B - \mathcal{T}_r PC \implies i\mathcal{B} = \mathcal{T}_r \tag{44}$$

where we define $\mathcal{B} \equiv \frac{B}{PC}$. Now using i, we get

$$\frac{\mathcal{T}_r}{\mathcal{B}} = \frac{1}{\beta} - 1 \tag{45}$$

D Second-Order Approximation of the Profit Function

The rational inattention problem requires a quadratic loss function. We obtain this by taking a second-order Taylor expansion of the firm's profit function around the non-stochastic steady state. Let lowercase letters denote log-deviations from SS: $x_t \equiv \log(X_t/X)$ for any variable X_t with X being the steady-state value. So $w_t = \log(W_t/W)$, $z_t = \log(Z_t/Z)$, and $\tau_{r,t} = \log(\mathcal{T}_{rt}/\mathcal{T}_r)$.

We work with the profit function rescaled by marginal utility and the price level, so that the RI problem is stated in "util" units per unit of GDP:

$$\pi(p_{j,t};\, w_t, z_t, \tau_{r,t}) = \underbrace{(1-\mathcal{T}_r e^{\tau_{r,t}})(P_j e^{p_{j,t}})^{1-\eta}(Pe^{p_t})^{\eta-1}}_{\text{after-tax revenue / GDP}} - \underbrace{\frac{We^{w_t}}{Ze^{z_t}}(P_j e^{p_{j,t}})^{-\eta}(Pe^{p_t})^{\eta-1}}_{\text{cost / GDP}} \tag{46}$$

In the steady state ($p_j = p = w = z = \tau = 0$, $P_j = P$):

$$\pi(0;\mathbf{0}) = (1-\mathcal{T}_r) - \frac{W}{ZP} = (1-\mathcal{T}_r) - (1-\mathcal{T}_r)\frac{\eta-1}{\eta} = \frac{1-\mathcal{T}_r}{\eta} > 0. \tag{47}$$

Expanding π to second order in $p_{j,t}$ around the SS (treating $(w_t, z_t, \tau_{r,t})$ as parameters):

$$\begin{aligned}\pi(p_{j,t};\, w_t, z_t, \tau_{r,t}) \approx \pi(0;\mathbf{0}) + \underbrace{\pi_1(0;\mathbf{0})}_{=0}\, p_{j,t} + \tfrac{1}{2}\,\pi_{11}(0;\mathbf{0})\, p_{j,t}^2 \\ + \pi_{1w}(0;\mathbf{0})\, p_{j,t}\, w_t + \pi_{1z}(0;\mathbf{0})\, p_{j,t}\, z_t + \pi_{1\tau}(0;\mathbf{0})\, p_{j,t}\, \tau_{r,t} + \text{t.i.p.},\end{aligned} \tag{48}$$

where "t.i.p." denotes terms independent of $p_{j,t}$ and we have used $\pi_1(0;\mathbf{0}) = 0$. Now, we compute these derivatives, using the equilibrium relationship $\frac{W}{ZP} = (1-\mathcal{T}_r)\frac{\eta-1}{\eta}$.

First derivative π_1 (verification of SS FOC). Differentiating (46) with respect to p_j:

$$\pi_1 = (1-\mathcal{T}_r e^{\hat{\tau}})(1-\eta)(P_j e^{p_j})^{1-\eta}(Pe^{p})^{\eta-1} + \eta\frac{We^{w}}{Ze^{z}}(P_j e^{p_j})^{-\eta}(Pe^{p})^{\eta-1}. \tag{49}$$

At the SS:

$$\pi_1(0;\mathbf{0}) = (1-\mathcal{T}_r)(1-\eta) + \eta\cdot(1-\mathcal{T}_r)\frac{\eta-1}{\eta} = (1-\mathcal{T}_r)(1-\eta) + (1-\mathcal{T}_r)(\eta-1) = 0 \tag{50}$$

Second derivative π_{11} (curvature). Differentiating (49) with respect to p_j:

$$\pi_{11} = (1-\mathcal{T}_r e^{\tau})(1-\eta)^2 (P_j e^{p_j})^{1-\eta}(Pe^{p})^{\eta-1} - \eta^2 \frac{We^{w}}{Ze^{z}}(P_j e^{p_j})^{-\eta}(Pe^{p})^{\eta-1}. \tag{51}$$

At the SS:

$$\begin{aligned}\pi_{11}(0;\mathbf{0}) &= (1-\mathcal{T}_r)(\eta-1)^2 - \eta^2 \cdot (1-\mathcal{T}_r)\frac{\eta-1}{\eta} \\ &= (1-\mathcal{T}_r)(\eta-1)\big[(\eta-1)-\eta\big] = -(1-\mathcal{T}_r)(\eta-1).\end{aligned} \tag{52}$$

Since $\eta > 1$ and $\mathcal{T}_r < 1$: $\pi_{11} < 0$.

We define the **stakes**:

$$\mathcal{S} \equiv |\pi_{11}| = (1-\mathcal{T}_r)(\eta-1). \tag{53}$$

$\mathcal{S}$ measures profit loss per unit of squared mispricing.

Cross-derivative π_{1w} (wage sensitivity). At the SS:

$$\pi_{1w}(0;\mathbf{0}) = \eta\frac{W}{ZP} = (1-\mathcal{T}_r)(\eta-1) = \mathcal{S}. \tag{54}$$

Cross-derivative π_{1z} (productivity sensitivity). Since productivity enters as $1/e^z$ in the cost term:

$$\pi_{1z}(0;\mathbf{0}) = -\mathcal{S}. \tag{55}$$

Cross-derivative $\pi_{1\tau}$ (tax sensitivity). Differentiating (49) with respect to τ: at the SS:

$$\pi_{1\tau}(0;\mathbf{0}) = -\mathcal{T}_r(1-\eta) = \mathcal{T}_r(\eta-1). \tag{56}$$

Ideal prices. From the FOC of the quadratic approximation ($\pi_{11}p_j + \pi_{1w}w + \pi_{1z}z + \pi_{1\tau}\tau = 0$):

$$p_j^{\diamond} = -\frac{\pi_{1w}}{\pi_{11}}w - \frac{\pi_{1z}}{\pi_{11}}z - \frac{\pi_{1\tau}}{\pi_{11}}\tau. \tag{57}$$

Computing each coefficient:

$$-\frac{\pi_{1w}}{\pi_{11}} = 1, \quad -\frac{\pi_{1z}}{\pi_{11}} = -1, \quad -\frac{\pi_{1\tau}}{\pi_{11}} = \frac{\mathcal{T}_r}{1-\mathcal{T}_r} \equiv \gamma$$

Therefore:

$$p_j^{\diamond} = w - z + \gamma\,\tau, \qquad \gamma \equiv \frac{\mathcal{T}_r}{1-\mathcal{T}_r}. \tag{58}$$

The coefficient $\gamma = \mathcal{T}_r/(1-\mathcal{T}_r)$ is increasing and **convex** in $\mathcal{T}_r$:

$$\frac{d\gamma}{d\mathcal{T}_r} = \frac{1}{(1-\mathcal{T}_r)^2} > 0, \qquad \frac{d^2\gamma}{d\mathcal{T}_r^2} = \frac{2}{(1-\mathcal{T}_r)^3} > 0. \tag{59}$$

This convexity is a key driver of our results: high-tax economies are disproportionately sensitive to fiscal shocks.

For the rational inattention problem, we work with a second-order approximation of the profit function around the non-stochastic steady state, shown in Lemma 1.

Lemma 1 (Quadratic profit loss)**.**

$$\pi(p_j;\cdot) - \pi(p_j^\diamond;\cdot) = -\frac{\mathcal{S}}{2}(p_j - p_j^\diamond)^2. \tag{60}$$

Proof. From the Taylor expansion, collecting terms in p_j:

$$\pi(p_j;\cdot) = -\frac{\mathcal{S}}{2}p_j^2 + \mathcal{S}p_j^\diamond \cdot p_j + \text{t.i.p.}$$

Similarly:

$$\pi(p_j^\diamond;\cdot) = -\frac{\mathcal{S}}{2}(p_j^\diamond)^2 + \mathcal{S}(p_j^\diamond)^2 + \text{t.i.p.} = \frac{\mathcal{S}}{2}(p_j^\diamond)^2 + \text{t.i.p.}$$

Subtracting: $\pi(p_j;\cdot) - \pi(p_j^\diamond;\cdot) = -\frac{\mathcal{S}}{2}(p_j - p_j^\diamond)^2$. ■

E Infinite Horizon Model with One-Period Firms

In this section, we describe the setup, fixed-point problem, and the algorithm used to solve the model. The only departure from the general framework in Section 2 is in the intermediate-goods sector. Specifically, we assume the supply side consists of a new continuum of monopolistically competitive firms that is born at the beginning of each period t. These firms observe the entire history of the economy up to $t-1$ and know the laws of motion for the state variables. However, they must endogenously choose their attention and prices for period t before producing to meet demand and exiting at the end of the period. The resulting log-linear optimality conditions follow directly from the derivations in Appendix B.

Using household's intratemporal optimality condition and the tax rule, we can express a

firm's ideal prices as

$$p_{j,t}^{\diamond} = w_t - z_t + \gamma\tau_{r,t} \tag{61}$$

$$p_{j,t}^{\diamond} = \underbrace{\gamma\phi_b b_{t-1} - \gamma\phi_b p_{t-1} - \rho_z z_{t-1} + \gamma\rho_\nu \nu_{t-1}}_{\text{known at } t} + \underbrace{p_t + c_t - \epsilon_t^z + \gamma\epsilon_t^\nu}_{\text{not known at } t} \tag{62}$$

Our assumptions regarding firms' information set imply that $(b_{t-1}, p_{t-1}, z_{t-1}, \nu_{t-1})$ are known to them when they make information and pricing decisions. Note from Equation (62) that while ϵ_t^z and ϵ_t^ν are exogenous processes, p_t and c_t are endogenous, and affected by monetary and fiscal policy. Furthermore, since $p_t = \int_0^1 p_{j,t}\mathrm{d}j$, it is also true that firm's information acquisition on the aggregate affects aggregate prices. We can contrast Equation (61)-Equation (62) with Equation (18), to show what arises when we consider Taylor rule and the tax rule in Section 2. If $w_t = 0$ and z_t and $\tau_{r,t}$ were exogenous white noise processes, then we would go back exactly to Equation (18), with mc $= -z$. That would be the case if monetary policy were to follow a nominal GDP target, setting the nominal GDP to its steady-state level, and the fiscal authority followed an exogenous white noise process for $\tau_{r,t}$. However, with a Taylor rule, $w_t = p_t + c_t \neq 0$ and is endogenous. Now, let $\mathcal{F}_{t-1} = \{b_\tau, p_\tau, z_\tau, \nu_\tau\}_{\tau \leq t-1}$ be the history of realizations of endogenous and exogenous variables up to $t-1$, $\sigma^2_{p_t^\diamond|\mathcal{F}_{t-1}} \equiv var(p_t^\diamond|\mathcal{F}_{t-1})$, and $\sigma^2_{post} \equiv var(p_t^\diamond|\mathcal{F}_{t-1} \cup \{S_{j,t}\})$, where $S_{j,t}$ is firm j's signal at time t. Then, a firm's problem can be written similarly to Equation (21), where $\sigma^2_{p^\diamond|\mathcal{F}_{t-1}} = var(p_t + c_t - \epsilon_t^z + \gamma\epsilon_t^\nu|\mathcal{F}_{t-1})$, yielding the following optimal posterior and attention:

$$\sigma^2_{post} = \min\left\{\frac{\omega}{\mathcal{S}}, \sigma^2_{p^\diamond|\mathcal{F}_{t-1}}\right\}, \tag{63}$$

$$p_{j,t}^* = \mathbb{E}[p_{j,t}^\diamond \mid \mathcal{F}_{t-1}] + \lambda\left(p_{j,t}^\diamond - \mathbb{E}[p_{j,t}^\diamond \mid \mathcal{F}_{t-1}]\right) + \lambda\varepsilon_{j,t} \tag{64}$$

where $\lambda = \max\left\{1 - \frac{\omega}{\mathcal{S}\sigma^2_{p^\diamond|\mathcal{F}_{t-1}}}, 0\right\}$, and $\varepsilon_{j,t}$ is noise introduced by imperfect information. Differently from Section 3, $\mathbb{E}[p_{j,t}^\diamond \mid \mathcal{F}_{t-1}] \neq 0$ and is an endogenous object. In a rational inattention equilibrium, the desired price can be decomposed as

$$p_{j,t}^{\diamond} = \mu_t(\mathcal{F}_{t-1}) + d_z(\lambda; \mathcal{B}, \phi_\pi, \phi_b)\,\epsilon_t^z + d_\nu(\lambda; \mathcal{B}, \phi_\pi, \phi_b)\,\epsilon_t^\nu \tag{65}$$

The coefficients d_z and d_ν summarize how current innovations enter the desired price in *equilibrium*. They are not primitive parameters. Under a Taylor rule, they depend on the equilibrium responses of (p_t, c_t, b_t^R) to the shocks, and those responses depend on λ because the degree of attention determines the innovation component of aggregate prices. Hence the

conditional prior variance of the ideal price is

$$\sigma^2_{p^\diamond|\mathcal{F}_{t-1}}(\lambda;\mathcal{B},\phi_\pi,\phi_b) = d_z(\lambda;\mathcal{B},\phi_\pi,\phi_b)^2\sigma_z^2 + d_\nu(\lambda;\mathcal{B},\phi_\pi,\phi_b)^2\sigma_\nu^2, \tag{66}$$

and equilibrium attention solves

$$\lambda = \max\left\{1 - \frac{\omega}{\mathcal{S}(\mathcal{B})\sigma^2_{p^\diamond|\mathcal{F}_{t-1}}(\lambda;\mathcal{B},\phi_\pi,\phi_b)},\, 0\right\}. \tag{67}$$

State-Space Representation Let $x_t = (b_t^R,\, p_t,\, \pi_t,\, z_t,\, \nu_t)'$. For a given value of λ, equilibrium can be represented as a linear state-space system,

$$x_t = M(\lambda;\mathcal{B},\phi_\pi,\phi_b)\, x_{t-1} + N(\lambda;\mathcal{B},\phi_\pi,\phi_b)\,\boldsymbol{\epsilon}_t, \qquad \boldsymbol{\epsilon}_t = (\epsilon_t^z, \epsilon_t^\nu)' \tag{68}$$

We conjecture linear decision rules,

$$p_t = A_p x_{t-1} + B_p\boldsymbol{\epsilon}_t, \qquad c_t = A_c x_{t-1} + B_c\boldsymbol{\epsilon}_t, \qquad b_t^R = A_b x_{t-1} + B_b\boldsymbol{\epsilon}_t \tag{69}$$

The RI aggregation condition implies that predictable desired-price movements are fully reflected in aggregate prices, while innovation loadings are scaled by λ. Solving the model for a fixed λ therefore reduces to a system of linear coefficient restrictions generated by the Euler equation, the debt law of motion, the exogenous shock processes, and the pricing block.

This representation serves two purposes. First, it makes transparent that the prior variance in Equation (66) depends on equilibrium objects. Second, it suggests a natural algorithm: guess λ, solve the linear system for the coefficient matrices, compute the implied prior variance, update λ from Equation (70), and iterate, as we detail in the following.

Solution Algorithm The predictable coefficients A_p, A_c, and A_b do not depend on λ. To see why, note that the RI aggregation condition implies that any movement in desired prices that is predictable given the previous period's state is fully incorporated into the aggregate price level. Formally, $p_t = \mathbb{E}[p_t^\diamond \mid x_{t-1}] + \lambda(p_t^\diamond - \mathbb{E}[p_t^\diamond \mid x_{t-1}])$, so the predictable component of p_t equals the predictable component of $p_t^\diamond$ regardless of λ. As a result, the predictable coefficient vectors A_p, A_c, and A_b are pinned down by a nonlinear system of equations generated by the Euler equation and the debt law of motion, independent of the attention parameter.

We exploit this structure in two steps. In the first step, we solve for the predictable coefficients. The consumption rule follows directly from the Euler equation and the Taylor rule. Substituting the resulting A_c and A_p into the linearized debt law of motion yields A_b.

Because the Euler equation involves A_p both directly (through expected inflation) and indirectly (through the transition matrix M, which itself depends on A_p and A_b), the predictable block is a nonlinear fixed-point problem in A_p. We solve this system using a damped Newton method with backtracking line search.

In the second step, we iterate on λ. Given a guess for λ, the innovation loadings B_p, B_c, and B_b can be solved in closed form. The innovation block is linear in these coefficients: λ determines how much of the desired-price innovation passes through to the aggregate price level, which in turn determines the contemporaneous responses of consumption (through the Euler equation) and real debt (through the budget constraint). The desired-price innovation loadings $B_d = B_p + B_c + u$, where u captures the direct effect of shocks on marginal cost and the tax wedge, then deliver the prior variance via Equation (66). Updating λ from the fixed-point condition

$$\lambda = \max\left\{1 - \frac{\omega}{\mathcal{S}(\mathcal{B})\,\sigma^2_{p^\diamond|\mathcal{F}_{t-1}}(\lambda;\mathcal{B},\phi_\pi,\phi_b)},\ 0\right\} \tag{70}$$

and iterating with damping until convergence completes the algorithm. We verify that the resulting state transition matrix M has all eigenvalues inside the unit circle, ensuring saddle-path stability.