The Role of Dispersed Information in Maintaining Low Interest Rates*

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Abstract

When public debt is issued in domestic currency, any sudden confidence crisis in the repayment ability of the government need not trigger a default, since it can be accommodated by temporary monetary financing, converting default risk into inflation risk. When the default risk premium is determined by well-informed financial intermediaries while inflation arises from the choices of less-informed workers and producers, this conversion masks adverse news, at least temporarily, and results in lower interest rates following adverse shocks. In this paper, we assess the importance of this channel, and the extent to which it is eroded when persistent fiscal shortfalls shift the prior held by all agents in the economy about the eventual resolution of the imbalance.

1 Introduction

Bassetto and Galli (2019) (BG henceforth) studied how the choice of the currency denomination of government debt affects its interest rate sensitivity to the incoming news. Domestic-currency debt is primarily subject to inflation risk, while foreign-currency debt is primarily exposed to

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default risk. This asymmetry changes the identity of the pivotal agent in times of distress: while bonds are subscribed by relatively well-informed investors, the general price level is determined by the actions of a much broader set of firms and households whose information about government finances and their link to inflation is coarser. As a consequence, when government debt is issued in domestic currency, even sophisticated bondholders are likely to react less to incoming news about government solvency because they can count on inflation only partially incorporating those news.

The goal of this paper is to go beyond a mere description of the sensitivity of debt prices to incoming news and study how different fundamentals affect the costs and benefits of issuing domestic vs. foreign-currency debt. In particular, we wish to evaluate quantitatively the extent to which issuing debt in domestic currency is cheaper for a government that starts from a prior reputation of fiscal responsibility, and how that changes as the prior worsens.

Our paper builds upon a large literature that has studied asset prices in environments with dispersed information. This literature is extensively covered in Brunnermeier (2001) and Veldkamp (2011). We build in particular on the model of Hellwig et al. (2006) and Albagli et al. (2024), who developed a framework to study the distortions that arise in environments where the payoff is a nonlinear function of the underlying (normally distributed) fundamental, and markets imperfectly aggregate heterogeneous information. Compared to their work, we build a multi-period environment in which agents with differential information interact over time, that we can then apply to inflation vs. default risk in the context of government debt.

Our research is also related to the literature on sovereign default. Work that dates back to the seminal contribution of Calvo (1988) analyzes time-consistent monetary and fiscal policy with sovereign default, considering the role of inflation and exchange rate devaluation as an implicit way to default on local-currency debt, and studying their interplay with explicit default. Recent theoretical and quantitative papers such as Aguiar et al. (2014), Hurtado et al. (2022), Roettger (2019), Sunder-Plassmann (2020), Espino et al. (2025), and Galli (2025) have addressed this issue by embedding a monetary side into real sovereign default models in the tradition of Eaton and Gersovitz (1981), Arellano (2008), Aguiar and Gopinath (2006) and a large body of subsequent work. Related papers such as Araujo et al. (2013), Aguiar et al. (2013, 2015), and Corsetti and Dedola (2016) analyze the role of inflation as partial default when debt is nominal and self-fulfilling runs on government debt are possible. Engel and Park (2018), Ottonello and Perez (2019), and Du et al. (2016) study the currency composition of debt when the government lacks commitment to repay and to inflate, to rationalize the recent surge in local-currency borrowing by emerging market issuers. Compared to their work, we consider a setting where the presence of information frictions creates a difference in the sensitivity of debt prices to shocks depending on whether default is explicit or implicit via inflation, and compare countries that have self-selected into issuing most of their debt in local currency with those that mostly issue foreign-currency debt.

2 The Setup

Our model follows BG. The economy lasts three periods. It is populated by a long-lived government and two overlapping generations of agents living for two periods each. There is a single consumption good in each period that can be stored. We normalize to zero the rate of return on storage for the theoretical section; in our quantitative exercise, we use an appropriate measure of excess returns as the empirical counterpart of the theoretical model.

The government auctions one unit of debt in period 1 and repays it in period 3. We follow Eaton and Gersovitz (1981) and fix the face value of the debt at the redemption, which is normalized to one, letting q_1 be the endogenous price at which the debt will be issued.[1] The repayment in period 3 depends on the realization of a fiscal capacity shock θ. Specifically, if $\theta \geq \bar{\theta}$, then the government has enough revenue to repay the debt in full. In contrast, when $\theta < \bar{\theta}$, a default occurs, in which case we assume a fixed haircut and the government only repays $\delta \in (0, 1)$. All agents share a common prior about θ, which is normal with mean μ_0 and variance $1/\alpha_0$.

Each generation of private agents is composed of a unit measure of informed traders and a random mass of noise traders. In their first period of life, informed agents have an endowment that they divide between storage and purchases of the asset. In the second period of their life, private agents liquidate any asset position and consume the proceeds of their investment. The first generation buys bonds from the government in the first period and resells them in the secondary market in the second period; the second generation of traders buys in the secondary market and keeps the asset until maturity in the final period. It follows that in both periods of trade, the supply is inelastic, and all the action occurs on the buyers' side. Informed traders are risk neutral and choose their portfolio to maximize expected consumption. Each informed

[1] The proceeds of the sale are consumed by the government in period 1.

trader i in period t receives a noisy private signal $x_{i,t} = \theta + \xi_{i,t}$, where $\xi_{i,t}$ is distributed according to a normal distribution $N(0, 1/\beta_t)$, and we assume that a law of large numbers across agents applies as in Judd (1985). Based on this signal, informed traders submit price-contingent demand schedules. In submitting their demand, they take into account that the price q_t of the asset in period t is affected by the demand of all other traders and is thus an endogenous public source of information. To preserve tractability, we assume that asset holdings are limited to $[0, 1]$.[2]

Noise traders generate a residual uncontingent demand $\Phi(\epsilon_t/\sqrt{\psi_t})$ for the asset, where Φ is the cumulative standard normal distribution function, $\psi_t > 0$, and ϵ_t is itself distributed according to a standard normal distribution. The mass of noise traders is independent of the fundamental and of informed traders' signals. As is standard in this class of models, the presence of noise traders ensures that equilibrium prices do not fully aggregate information, thereby revealing the fundamental.

We will contrast two economies, one in which government debt is denominated in local currency and one in which it is denominated in a foreign currency, in which the price level is normalized to one in each period.[3] The difference between the two economies lies in the way the government dilutes the value of its debt when tax revenues are insufficient. We assume that dilution takes place through outright default when debt is denominated in foreign currency, and through inflation when it is denominated in domestic currency. In the long run, we assume that inflation and default have a symmetric effect, that is, the haircut suffered by holders of government liabilities and the probability of the haircut are the same. Through this channel, bad news about fiscal solvency has the same negative effect on the price of government debt: in one case, bad news imply high interest rates because of inflation risk, and in the other because of default risk.

The asymmetry between inflation and default risk that we emphasize in this paper concerns differential information by secondary-market participants. The motivation for this asymmetry stems from a different interpretation of who is the relevant participant in the "secondary market" of period two. In the case of foreign-currency debt, the secondary-market price is dictated by the new generation of bond traders who will take over; short of an immediate fiscal adjustment, which we rule out, there is nothing that the government can do to dampen fluctuations in the price of its debt. When debt is issued in local currency, the ability to print money to intervene in the market can temporarily substitute for varying demand by bond traders. The extent to

[2] Since agents are risk neutral, they will choose a corner allocation in equilibrium.

[3] By studying appropriate excess returns, our quantitative section takes into account foreign inflation.

which these interventions are stabilizing depends on the beliefs about eventual fiscal solvency of a larger section of the population that uses domestic currency to trade but does not participate in bond markets; it is likely that they are less well informed about government finances. Since the original publication of BG, two real-world events occurred that fit well the potential monetization of debt that may happen in our "period 2:" in March 2020, the Federal Reserve intervened with large-scale purchases of government debt in response to technical difficulties in the U.S. Treasury market at the onset of the COVID epidemic; similarly, in the Fall of 2022 the Bank of England intervened to stabilize the market for UK gilts after the confidence crisis initiated by the mini-budget proposed by the government of Liz Truss. Appendix A in BG contains a microfounded model which features "workers" who use exclusively cash and "bond traders" who hold the government bonds, and shows formally how this can lead workers to be the pivotal agents in pricing inflation risk in the second period for the local-currency debt economy, while bond traders are pivotal in pricing default risk for the foreign-currency debt economy. Mechanically, a central bank can finance the purchase of local-currency debt with the issuance of money. This shifts the burden of future deficits away from the holders of the debt - sophisticated agents, say - to those who hold money.

From the perspective of the Bayesian trading game that we have described here, the key difference is that we assume that second-period agents are better informed in the case of the foreign-currency debt economy than in the case of the local-currency debt economy. Specifically:

- We assume that the precision of the private signal received by the pivotal agent in the second period (β_2) is lower when debt is issued in domestic currency.
- In period 2, agents learn some information from past prices. In the case of foreign-currency debt, when we interpret the pivotal agents in period 2 to be sophisticated bond traders, we assume that they observe perfectly the price q_1 that prevailed in the first period. In contrast, the pivotal "workers" in the case of domestic-currency debt only observe a public signal ρ of the first-period price, with a distribution that we will specify later on.[4]

2.1 Equilibrium

We provide here an overview of the key equilibrium conditions. The complete derivation of an equilibrium is presented in BG, which extends the one-shot analysis of AHT to our setup with

[4] To simplify the algebra, we assume that ρ is a public signal. This is not essential for our results.

two rounds of trading.

To characterize the equilibrium, we work backwards, starting from period 2. The derivation of the second-period equilibrium follows AHT. The expected payoff of buying the risky asset for agent i in period 2 is $\mathbb{E}(\pi(\theta) \mid x_{i,2}, q_2, \rho) - q_2$. BG prove that posterior beliefs over θ are strictly increasing in $x_{i,2}$ in the sense of first-order stochastic dominance whenever q_2 and ρ do not fully reveal the value of $\pi(\theta)$.[5] It follows that in equilibrium there is a threshold $\hat{x}_2(q_2, \rho)$ such that all agents whose signal is above the threshold buy government debt, and all agents below invest in storage.

Using the signal distribution of $x_{i,2}$, the market clearing condition in period 2 is

$$\text{Prob}\big(x_{i,2} \geq \hat{x}_2(q_2, \rho) \mid \theta\big) + \Phi\left(\epsilon_2 / \sqrt{\psi_2}\right) = 1 \tag{1}$$

We can simplify this expression to

$$z_2 := \theta + \frac{\epsilon_2}{\sqrt{\beta_2 \psi_2}} = \hat{x}_2(q_2, \rho). \tag{2}$$

As in AHT, we focus on equilibria where z_2 and q_2 convey the same information, given ρ, and in which ρ does not fully reveal θ. In this case, conditioning beliefs on the endogenous price is equivalent to conditioning them on the exogenous signal z_2.

An agent whose private signal is at the threshold $\hat{x}_2(q_2, \rho)$ must be indifferent in equilibrium between buying the risky asset or storing their endowment. Combining this with equation (2), the equilibrium price $q_2(z_2, \rho)$ must satisfy the indifference condition

$$q_2(z_2, \rho) = \mathbb{E}[\pi(\theta) \mid x_{i,2} = z_2, z_2, \rho]. \tag{3}$$

The analysis of equilibrium strategies in $t = 1$ follows that of period two quite closely. BG prove that the second-period price is strictly increasing in z_2, and that this is sufficient to ensure that the beliefs of first-period strategic traders are strictly increasing in their private signal $x_{i,1}$ in the sense of first-order stochastic dominance, as long as the first-period price is not fully revealing. Hence, the demand from strategic traders in period 1 is also characterized by a threshold $\hat{x}_1(q_1)$, with all traders whose signal exceeds the threshold buying debt and all other traders investing

[5] Equilibria in which prices reveal more than what is collectively known by the informed traders are ruled out by all the papers in this literature; as an example, a discussion of this point appears in Diamond and Verrecchia (1981), page 227.

in storage.

Repeating the steps that led to (2), the market clearing condition in the first period can be rewritten as

$$z_1 := \theta + \frac{\epsilon_1}{\sqrt{\beta_1 \psi_1}} = \hat{x}_1(q_1), \tag{4}$$

where z_1 is an unbiased public signal of θ, with precision $\tau_{q_1} := \beta_1 \psi_1$. As in period two, we focus on equilibria where q_1 and z_1 convey the same information.

We assume that the price signal ρ observed by second-period agents is given by

$$\rho = z_1 + \sigma_\eta \eta_1, \tag{5}$$

with $\sigma_\eta \geq 0$ and $\eta_1 \sim N(0,1)$.[6] ρ is therefore an unbiased public signal of θ, with conditional variance $1/\tau_\rho := \mathrm{Var}(\rho \,|\, \theta) = 1/\tau_{q_1} + \sigma_\eta^2$. τ_ρ represents the precision of the information on θ contained in ρ for $t = 2$ agents.

The equilibrium price in the first period is given by

$$q_1(z_1) = \mathbb{E}[q_2(z_2, \rho) | x_{i,1} = z_1, z_1]. \tag{6}$$

To solve explicitly for the price, we derive the beliefs about θ of a strategic trader in period two:

$$\theta \,|\, (x_{i,2}, z_2, \rho) \sim N\left(\frac{\alpha_0 \mu_0 + \beta_2 x_{i,2} + \tau_{q_2} z_2 + \tau_\rho \rho}{\alpha_0 + \beta_2 + \tau_{q_2} + \tau_\rho}, \frac{1}{\alpha_0 + \beta_2 + \tau_{q_2} + \tau_\rho} \right), \tag{7}$$

where $\tau_{q_2} := \beta_2 \psi_2$ represents the precision of the information revealed by the market price in the second period. For the marginal trader, for whom $x_{i,2} = z_2$, we thus get

$$\theta \,|\, (x_{i,2} = z_2, z_2, \rho) \sim N\left(\frac{\alpha_0 \mu_0 + (\beta_2 + \tau_{q_2}) z_2 + \tau_\rho \rho}{\alpha_0 + \beta_2 + \tau_{q_2} + \tau_\rho}, \frac{1}{\alpha_0 + \beta_2 + \tau_{q_2} + \tau_\rho} \right). \tag{8}$$

Using the beliefs of the marginal agent in equation (3), the equilibrium price is given by

$$q_2(z_2, \rho) = \delta + (1 - \delta) \Phi \left(\frac{(1 - w_\rho - w_2)\mu_0 + w_2 z_2 + w_\rho \rho - \bar{\theta}}{\sigma_2} \right) \tag{9}$$

[6] It is worth noting that, since the equilibrium price is a nonlinear function of z_1, the signal structure that we adopt implies that the noise in the observation of the price is higher in regions of the fundamentals in which the price itself is more volatile. This is a plausible assumption.

where $w_\rho := \frac{\tau_\rho}{\alpha_0+\beta_2+\tau_{q_2}+\tau_\rho}$ and $w_2 := \frac{\beta_2+\tau_{q_2}}{\alpha_0+\beta_2+\tau_{q_2}+\tau_\rho}$ are the Bayesian weights given by the second-period marginal trader to ρ and z_2 respectively, and $\sigma_2 := (\alpha_0+\beta_2+\tau_{q_2}+\tau_\rho)^{-1/2}$ is the standard deviation of her conditional beliefs.

We now repeat the procedure to derive an explicit expression for the first-period price, which is our main object of interest. First-period traders are not affected by θ directly, but rather they use these beliefs to forecast q_2, which in turn is a function of z_2 and ρ. First-period traders' posterior beliefs about θ and the marginal trader's posterior beliefs about z_2 and ρ are given by

$$\theta \,|\, (x_{i,1}, z_1) \sim N\left(\frac{\alpha_0\mu_0+\beta_1 x_{i,1}+\tau_{q_1} z_1}{\alpha_0+\beta_1+\tau_{q_1}}, \frac{1}{\alpha_0+\beta_1+\tau_{q_1}}\right) \tag{10}$$

$$z_2 \,|\, (x_{i,1}=z_1, z_1) \sim N\left((1-w_1)\mu_0 + w_1 z_1, \sigma^2_{2|1} := \frac{1}{\alpha_0+\beta_1+\tau_{q_1}} + \frac{1}{\tau_{q_2}}\right) \tag{11}$$

$$\rho \,|\, (x_{i,1}=z_1, z_1) \sim N\left(z_1, \sigma^2_\eta\right) \tag{12}$$

where $\sigma^2_{2|1}$ is the variance of *new* second-period information z_2 conditional on first-period information (x_1, z_1 and prior), and $w_1 := \frac{\beta_1+\tau_{q_1}}{\alpha_0+\beta_1+\tau_{q_1}}$ is the Bayesian weight given to z_1 by the marginal trader in the first period. Using these beliefs and equation (6), the first-period price is[7]

$$q_1(z_1) = \delta + (1-\delta)\Phi\left(\frac{\mu_0(1-w_\rho-w_2w_1)+z_1(w_\rho+w_2w_1)-\bar{\theta}}{\sqrt{w_2^2\sigma^2_{2|1}+w_\rho^2\sigma^2_\eta+\sigma_2^2}}\right). \tag{13}$$

The first-period price is a function of z_1, a combination of the true realization of the shock θ that drives repayment and the realization of the shock ϵ_1, which determines the fraction of bonds absorbed by noise traders.

In equilibrium, the first-period price is thus the expected payoff of debt according to a distorted measure that takes into account both that the marginal agent has a different information set from an outside econometrician who only observes the price, and that the marginal agent is in turn forecasting not the fundamentals but what the future marginal agent expects those fundamentals to be.

AHT and BG go in detail through the sources of distortion in the one-shot case (AHT) and the dynamic case (BG). What is most relevant for our analysis is that the anticipation that future traders may have coarser information makes the price less sensitive to the same incoming news

[7] Algebra details are provided in the online appendix of BG.

in the first period.[8] For our application, it implies that the interest rate required by first-period bond traders is less sensitive to incoming news when the main risk they face is inflation risk rather than outright default risk: inflation is driven by the actions of a less well-informed group of agents, while default risk is priced even in the future by a new generation of well-informed traders. Put differently, when a central bank responds to stress in the bond market by monetizing the debt, it can be successful at drowning bad news by shifting the risk onto a set of agents who have a less precise perception of the link between fiscal news and eventual solvency.

We are interested here in exploring what the different risks imply for both the expected revenue from debt issuance, as well as its variance. Defining $W := w_\rho + w_2 w_1$, we can write the ex ante expected price (i.e., before z_1 is realized) as

$$\mathbb{E}[q_1(z_1)] = \delta + (1-\delta)\Phi\left(\frac{\mu_0 - \bar{\theta}}{\sqrt{\tilde{\sigma}_1^2 + W^2\sigma_{z_1}^2}}\right) \tag{14}$$

where $\tilde{\sigma}_1$ denotes the denominator of the c.d.f. argument in (13), and $\sigma_{z_1}^2 := 1/\alpha_0 + 1/\tau_{q_1}$. The variance of the price is given by

$$\mathbb{V}(q_1(z_1)) = \int q_1(z_1)^2 \,\mathrm{d}\Phi\left(\frac{z_1 - \mu_0}{\sigma_{z_1}}\right) - \mathbb{E}[q_1(z_1)]^2 \tag{15}$$

and has no closed-form solution.

To study these moments, we explore the properties of the model numerically. We identify which parameters of the model are most relevant in driving this mean and variance. Although we rely on a stylized model, we can also provide some guidance on the magnitude of the effects that our model delivers; as an example, this allows us to assess how bond spreads would have behaved in the aftermath of the COVID shock if inflationary financing had been off the table and the only way to dilute repayment would occur through outright default.

3 Parameterization

The model consists of two groups of parameters: the first concerns the fiscal fundamentals $(\bar{\theta}, \mu_0, \alpha_0, \delta)$, and the second pertains to information $(\beta_1, \psi_1, \sigma_\eta, \beta_2, \psi_2)$.

[8] Propositions 2 and 3 in BG formalize this statement.

In our environment, the random variable θ is purely an index of fiscal capacity, so we can normalize $\mu_0 = 0$ and $\alpha_0 = 1$ without loss of generality. Formally, the equilibrium is invariant to changes in $\bar{\theta}$ and μ_0 that leave $\bar{\theta} - \mu_0$ unchanged. Similarly, the equilibrium is also invariant if we multiply $\bar{\theta}, 1/\sqrt{\alpha_0}, 1/\sqrt{\beta_1}, \sigma_\eta$, and $1/\sqrt{\beta_2}$ by a common constant.[9] This leaves us with seven parameters $\bar{\theta}, \beta_1, \beta_2, \psi_1, \psi_2, \sigma_\eta, \delta$ to choose.

The simple structure of our model does not allow for a full calibration. The one-off binary structure of the terminal fiscal shock constrains the relationship between the mean and standard deviation of interest rates, generating a tight connection that remains even after accounting for normal signal shocks. In the data, inflation is likely to be buffeted by other shocks beyond the fiscal component that we highlight. In addition, our purely Bayesian theory of information acquisition implies tight bounds on the amount of disagreement among people, which are lower than the disagreement that we observe in household expectations.[10] Nonetheless, to get a quantitative assessment of the forces in play, we choose a parameter configuration that captures important features of the data and is plausible.

We compare our model to data from an advanced economy that issues debt in domestic currency. We then explore an alternative choice of parameters based on a more turbulent economy in Section 5. We choose the United Kingdom because it has a deep market in inflation-protected securities. This allows us to purge the effect of movements in real risk-free rates and focus exclusively on the inflation channel as a source of potential devaluation of debt.

We set $\delta = 0.63$ to match the average recovery rate in sovereign defaults on external, foreign-currency debt from Cruces and Trebesch (2013). Implicit in this is our maintained assumption that inflation and default are used in a similar way to alleviate fiscal pressures. This implies that, in the event of a fiscal shortfall, inflation would wipe out 37% of the real value of nominal debt in the long run.

We use the following data:

- We take the 10 year inflation break-even rate on UK Inflation Protected Gilts from Bloomberg (the ID of this series is *UKGGBE10*). We use end of quarter measures from 2012 Quarter 1 until 2025 Quarter 2. We subtract 2% from the inflation compensation as this is the inflation target and should not reflect any surprise devaluation of public debt.

[9] If $\mu_0 \neq 0$, the statement would apply to multiplying $\bar{\theta} - \mu_0$ by the given constant.

[10] Reis (2021) performs a more flexible analysis of inflation expectations among professional forecasters vs. households, including not only imperfect information, but also allowing for overconfidence, learning, and sticky information.

- We use the time series of the Retail Price Index (RPI) to measure inflation. We choose this series over the Consumer Price Index (CPI) for two reasons. Firstly, Gilts are indexed to RPI and not to the CPI. Secondly, we view it as aligning more closely with the questions asked in the surveys of consumer expectations that we use. We calculate inflation as year-over-year changes in Quarter 1 of each year from 2012 to 2024.

- To proxy the expectations of better-informed agents (the agents that trade at q_1 in the first period), we use survey data from the UK Treasury publication "Forecasts for the UK Economy: A Comparison of Independent Forecasts." This publication is released monthly and PDF versions of the document are available back to January of 2012, each of which includes a collection of forecasts from professional forecasting organizations covering various macro variables. We use releases from 2012 to 2024. To ensure consistent information sets at the time of forecast, we use only forecasts that were received in January of the current year to generate a one-year measure of expected inflation growth.

- To recover the expectations of less well-informed agents (those that trade in period 2), we make use of the "Bank of England/Ipsos Inflation Attitudes" survey. This is a quarterly survey that is representative (after sample weighting) of the United Kingdom population and elicits information about inflation expectations at a one- and two-year horizon, as well as perceived inflation over the past year. The use of this survey comes with two complications. The first is that the survey is multiple choice and elicits information about whether individuals expect, for example, that inflation will be between 1 and 2 percentage points. We take the midpoint of all buckets, and for cases where individuals report inflation as greater than 5%, we set their expected inflation to be 5.5%. The second complication is that the survey questions elicit beliefs only about "prices in the shops." Accordingly, we interpret respondent's responses as forecasts about the RPI. To be consistent with our data for informed forecasters, we take only first quarter forecasts from 2012 to 2024.

We relate the following moments:

- The average and standard deviation of inflation compensation from the data. In the model, this corresponds to the average and the standard deviation of the yield to maturity of debt as of period 1 ($1/q_1 - 1$).

- The standard deviation of year-over-year first quarter RPI inflation from 2012 to 2024.

Normalizing the initial price level to 1, we interpret model inflation as being $1/q_2$: this is the price at which second-period agents are willing to trade money for goods.

- The average cross-sectional dispersion in the inflation forecast of professional forecasters and of the UK population at large. For both datasets, we compute dispersion directly in the data as the (square root of the) time average of the cross-sectional variance of individual forecasts at the 1-year horizon, normalized by the variance of RPI inflation.[11] In the model, we compare this to the dispersion of individual forecasts about θ;[12] this is given by

$$D_1 := \sqrt{\frac{\mathbb{V}(\mathbb{E}[\theta \mid x_{i,1}, z_1] \mid \theta, z_1)}{\mathbb{V}(\theta)}} = \frac{\sqrt{\alpha_0 \beta_1}}{\alpha_0 + \beta_1 + \tau_{q_1}} \tag{16}$$

and

$$D_2 := \sqrt{\frac{\mathbb{V}(\mathbb{E}[\theta \mid x_{i,2}, z_2, \rho] \mid \theta, z_2, \rho)}{\mathbb{V}(\theta)}} = \frac{\sqrt{\alpha_0 \beta_2}}{\alpha_0 + \beta_2 + \tau_{q_2} + \tau_\rho} \tag{17}$$

for the first and second period, respectively.

- As a measure of the degree of recall of the less-informed agents, we use the variance of the average error made when "predicting" past data. In the model, this prediction is about z_1, which yields

$$\mathrm{FEV}_\rho := \frac{\mathbb{V}(z_1 \mid \rho, x_{i,2}, z_2))}{\mathbb{V}(z_1)} = \frac{\tau_{z_1}}{\tau_\eta + \tau_{z_1} + \tau_{x_{i,2}|z_1} + \tau_{z_2|z_1}}. \tag{18}$$

where

$$\begin{aligned} \tau_{z_1} &:= (1/\alpha_0 + 1/\tau_{q_1})^{-1} \\ \tau_{x_{i,2}|z_1} &:= (1/\beta_2 + 1/\tau_{q_1})^{-1} \\ \tau_{z_2|z_1} &:= (1/\tau_{q_2} + 1/\tau_{q_1})^{-1} \end{aligned}$$

represent the unconditional precision of z_1, the precision of the second-period private signal conditional on z_1, and the precision of the market signal z_2 conditional on z_1 respectively.

In the data, we do not observe household awareness of inflation compensation embedded

[11] We compute all cross-sectional moments using the provided survey weights.

[12] In the data, forecasts and variance are about inflation, whereas in the model they are about the θ index. When high inflation is a tail event, as in our baseline parametrization, the relationship between the two can be approximated linearly so that the ratio of the cross-sectional variance of forecasts to unconditional variance of the variable is similar.

in Gilts, but we do observe household knowledge about the current level of inflation from the Bank of England/Ipsos Inflation Attitudes Survey. We use this metric as a proxy for the recollection of the past price q_1. Specifically, we relate FEV_ρ from equation (18) to the ratio of the variance of the average forecast error by the households to the variance of RPI.

Table 1 describes our parameter configuration and compares the moments that it implies in the model with those from the data.

Table 1: Parameter configuration.

Variable	Value	Target	Model	Data
$\bar{\theta}$	-2.33	Breakeven inflation spreads (mean)	1.00	1.07
ψ_1	1.80	Breakeven inflation spreads (st. dev.)	0.68	0.49
ψ_2	0.35	YoY CPI Inflation (st. dev.)	2.97	3.44
β_1	1.04	Informed forecast dispersion (mean)	0.26	0.20
β_2	0.24	Uninformed forecast dispersion (mean)	0.33	0.49
τ_η	0.15	Uninformed error on past inflation (mean)	0.59	0.24

Notes: All moments related to realized inflation or spreads are expressed in percentage points.

As expected, we obtain a low value for $\bar{\theta}$, reflecting that the prior probability that the United Kingdom will make good on its government debt rather than resorting to inflationary finance is high. The dispersion in the reported numbers by professional forecasters is much lower than in the population at large. In the model, this implies that the precision of the first-period signal is much higher than in the second signal. With ψ_1 higher than ψ_2, the bond market is more efficient at aggregating information than the goods market, which helps in accounting for the volatility of inflation and spreads. Our parametrization gives second-period agents very limited recall about the past, which helps in reconciling a high standard deviation of inflation with a low standard deviation of inflation spreads. The conclusions from our counterfactual experiments are similar if we increase recall (setting a higher value for τ_η) and, more in general, with many other plausible parameter configurations that yield a similar fit between model and data.[13]

[13] In the model, β and ψ play a similar role, so it is often possible to increase β (in either period) and decrease ψ to obtain a similar fit. When we allow the solver to pick an optimal fit, we frequently find that a solver would choose one parameter to be unreasonably high and the other unreasonably close to zero. This happens because extreme values of the learning parameters relax the straitjacket that binds average inflation spreads and measures of the standard deviation.

4 Results

We compare the spreads that we obtain with those that would arise under two alternative scenarios:

- In the first counterfactual ("more precision"), second-period agents have the same information precision as first-period agents (i.e. we set $\beta_2 = \beta_1$), the noise coming from noise traders is the same across periods ($\psi_2 = \psi_1$), and there is perfect recall of the past price ($\tau_\eta = \infty$). We regard this as a parameterization that would be appropriate if the United Kingdom issued all of its debt in inflation-linked gilts (or foreign currency) and all the fiscal risk took place through default. In this case, nominal repayment would not be guaranteed and the initial holders of bonds would need to find new comparatively sophisticated financial intermediaries willing to take the bonds to their eventual repayment.

- In the second counterfactual ("perfect information"), agents are endowed with perfect information, that is, $\beta_1 = \beta_2 = \infty$. In this case, the long run happens right away: debt is priced according to its eventual repayment. This counterfactual allows us to assess the role of dispersed information in determining the yield on government debt.

Table 2: Counterfactual exercise for the UK.

Statistic	Baseline	Counterfactuals	
		More precision	Perfect information
Bond spreads (mean)	1.00	0.65	0.58
Bond spreads (st. dev.)	0.68	2.72	5.83
Inflation (st. dev.)	2.97	3.47	5.83

Notes: All moments are expressed in percentage points.

Table 2 displays our findings. The different information scenarios have a modest impact on mean bond spreads, but an outsize effect on their volatility.

Concerning the mean spread, the baseline scenario implies that the government pays 42 basis points more than its expected repayment (which is captured by the case of perfect information). In the alternative scenario of real bonds and pure default risk, it would pay just 7 basis points more. As discussed in Albagli et al. (2024), this measure is affected by the nonlinearity of the payoff function, and the relative prevalence of downside and upside risk. BG contains a detailed description of all the countervailing forces that act on the mean price. Quantitatively, we find that

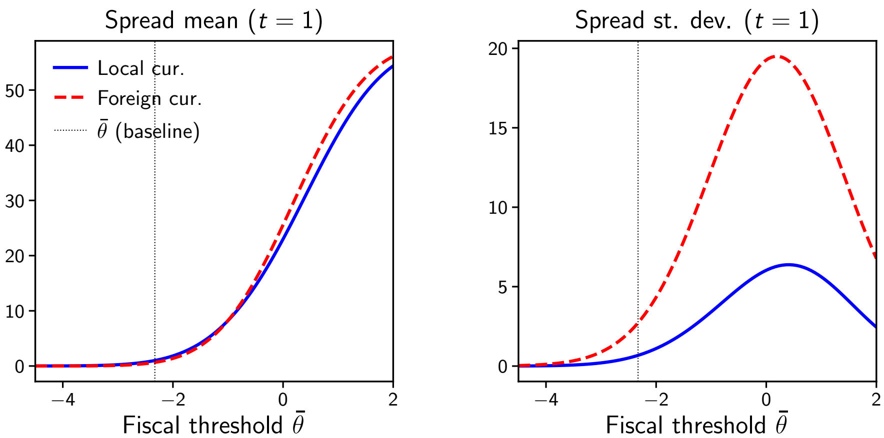

Figure 1: $\bar{\theta}$ comparative statics. All moments are expressed in percentage points.

the net effect of countervailing forces is small across many alternative parameter configurations, while the specific qualitative pattern may be slightly increasing or even non-monotone across the three cases.

We find that the volatility of bond prices is reduced by a factor of about 4 when default risk can be converted into inflation risk and passed on to less-well informed agents than when it must be retained by sophisticated bond holders. It is important to stress that this applies even though the bonds are purchased by sophisticated agents in the initial period under either scenario. This large difference is robust across many parameter configurations. Perfect information further increases the volatility of spreads.

The ability of the central bank to convert default risk into inflation risk by intervening in the bond market in times of distress is thus very valuable in ensuring stable interest rates not only when distress materializes, but also when bond investors contemplate the possibility that it might: by buying government bonds with newly created money, the central bank may drown a negative signal, potentially buying time to avoid the day of reckoning.[14]

Next, we compare the baseline economy and the higher-precision economy (the "foreign-currency debt" case) for different levels of the fiscal threshold $\bar{\theta}$. As a first step, Figure 1 shows what happens in the model if the government is always issuing debt, no matter what the spread

[14]Because the payoff in our model is exogenous, the day of reckoning comes regardless. In future work, it would be interesting to expand the model by endogenizing the government choice of long-run surplus. The direction in which results would be affected is ambiguous: drowning the signal may lead the government to underestimate the gravity of its predicament, but at the same time it may stave off a roll-over crisis that would otherwise doom a solvent government, as in Cole and Kehoe (2000).

turns out to be. In this case, issuing debt in local currency (the blue line) is more and more beneficial as we move the critical threshold for fiscal solvency to zero, the point of maximal uncertainty ex ante. Issuing local-currency debt always guards the government against extreme events: the less well informed households do not respond strongly to incoming news in period 2, and this in turn reassures first-period bondholders that their investment is not as risky as in the case in which second-period bondholders generate their own assessment of eventual default risk. Based on this picture, we would thus conclude that a worse prior about fiscal solvency would make local-currency debt an even more valuable insurance mechanism, at least until default becomes almost certain.

In practice, we think that the government always has the option not to issue debt in periods in which the spread becomes prohibitive (in our calibration, the spread reaches 60%). We thus consider what happens if the government adopts a rule not to issue debt when the spread exceeds 10%. This strategy effectively allows the government to treat debt issuance as an option; we would then expect extra volatility to bring additional value, as it always does to options.

In computing an equilibrium under this government strategy, the only difference occurs under local currency debt, in which households have imperfect recall of the first-period price. If we assume that they understand the cutoff rule, they would gather extra information from the existence of debt in period 2. For tractability, we shut down this channel of learning and assume that this strategy is not known to households.[15] Better informed bondholders observe the spread perfectly, hence the government strategy does not convey any extra information to them, and it does not matter whether they are aware of the government strategy. With this assumption, our equilibrium is the same as before whenever the first-period spread is below 10%, and there is no market otherwise.

Figure 2 shows two key features of the economy under this government strategy. The left panel shows the probability that the government will successfully issue debt (that is, the probability that the required spread is below 10%). The middle panel shows the average spread paid by the government, conditional on issuing debt, and the right panel shows the corresponding standard deviation. When $\bar{\theta}$ is low and the possibility of a default is remote, local-currency debt implies a greater likelihood of placing debt (at a spread below the cap). In this region, reaching the 10% threshold is a tail event, much less likely when bond prices are anchored by the stable (and favorable) expectations of less well-informed households. As $\bar{\theta}$ increases, initially we observe the

[15] According to the microfoundations in BG, households trade money for goods and have to set their price whether government debt has been issued or not.

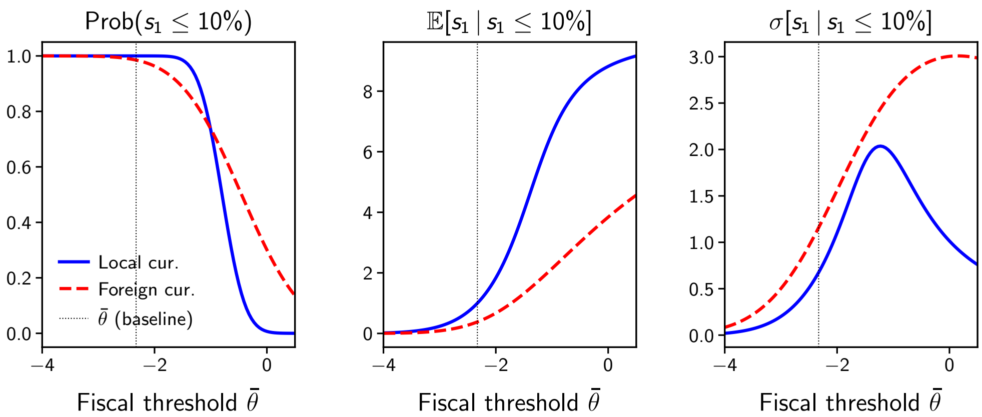

Figure 2: $\bar{\theta}$ comparative statics with a threshold issuance strategy: probability of issuing debt, mean and standard deviation of spread conditional on issuance. All moments are expressed in percentage points.

same force that was at work in Figure 1: the insurance aspect of local-currency debt becomes even more valuable. Compared to Figure 1, this advantage manifests itself more in the probability of successfully placing the debt (that was 100% by construction in Figure 1) and less in terms of reduced volatility (even though domestic-currency debt retains its volatility advantage in this case). When fiscal solvency becomes more questionable, less well-informed households become less and less willing to bear future inflation risk, and the 10% threshold is no longer such a tail event. At some point, the greater responsiveness of foreign-currency debt prices enables bondholders to better distinguish solvent governments ($\theta > \bar{\theta}$) from those that will default, increasing the probability that credit is extended. Moreover, conditional on obtaining credit, as $\bar{\theta}$ grows, local currency debt spreads will cluster closer and closer to the 10% threshold. In contrast, the greater volatility of foreign-currency debt implies that spreads will scatter across a wider range of values below 10%, and the average spread conditional on issuance is correspondingly improved.

This leads us to conclude with a cautionary note. As fiscal sustainability becomes more questionable, the ability of a central bank to intervene and stabilize the market for government bonds without triggering a bout of inflation is initially valuable, but a point comes at which this power is ineffective at keeping interest rates under control. We view this as a reason why countries that are usually associated with weak fiscal fundamentals, such as Argentina, find it preferable to issue debt in foreign currency.

5 A More Turbulent Economy: Argentina

In Section 4, we showed that issuing domestic-currency debt insulates the economy from fiscal-induced movements in interest rates. When default is perceived as a tail event, this comes at little to no cost in terms of average spreads. We consider here an alternative parameterization closer to the moments from Argentina, where default has been a recurring event. We then revisit the trade-off between average spreads and their volatility in this context.

Since most Argentine government debt is issued in foreign currency, we calibrate our baseline parameters under the assumption that debt is held by well-informed agents in both periods. We thus set $\beta_2 = \beta_1$, $\psi_2 = \psi_1$, and $\tau_\eta = \infty$ (perfect recall of past prices). We set $\delta = 0.25$, which is the standard assumption for recovery upon default in the distressed debt market.[16]

We use $\bar{\theta}$, β_1, and ψ_1 to match the following 3 moments of the data:

- The average end of month spread on 5-Year Argentinian credit-default swaps (CDSs) from April 2019 to September 2025;
- The standard deviation of spreads on the same;
- Finally, we need a moment that disciplines the relative importance of private and market signals. As in the case of the United Kingdom, we look for measures of disagreement of individual forecasts. We use the *Relevamiento de Expectativas de Mercado (REM)*, which is a monthly survey of professional forecasters run by the Argentinian central bank. Our sample runs from June of 2016 to August of 2025. We use the ratio of the average dispersion among forecasts in that survey relative to the average standard deviation of inflation as our metric. This is analogous to (16) in our model.[17] We assume that the ratio of private-to-market information for inflation is similar to that of the fiscal situation of the government.[18]

Table 3 displays the values that we use for Argentina.

[16]With $\delta = 0.63$ we would not be able to match a 47% average spread even if default occurred 100% of the time.

[17]We exclude periods in which annual inflation goes over 100%, as during high-inflation periods expectations become erratic and uninformative.

[18]In our model, debt devaluation occurs through default and not inflation when debt is in foreign currency, so there is no direct link between government finances and inflation. We can still assume that the ratio of private-to-market information is similar across the two variables. Moreover, a richer model would imply a link through the money-printing channel emphasized by Sargent and Wallace (1981).

Table 3: Parameter configuration.

Variable	Value	Target	Data	Model
$\bar{\theta}$	0.68	CDS upfront price (mean)	47.25	47.25
ψ_1	1.91	CDS upfront price (st. dev.)	19.79	19.79
β_1	0.44	Informed forecast dispersion (mean)	0.37	0.37

Notes: All moments related to realized inflation or spreads are expressed in percentage points.

We consider a counterfactual exercise in which Argentina issues debt in local currency and uses inflation instead of outright default. To do this, we need values for β_2, ψ_2, and τ_η. We assume that the ratio of the quality of private and market-information that households have in Argentina compared to professional forecasters is the same as it is in the United Kingdom: that is, we choose the same ratios β_2/β_1 and ψ_2/ψ_1 in the UK and Argentina. We also set the value of τ_η such that the variance of the average error in "predicting" past data is the same in the two economies.[19]

Table 4: Counterfactual exercise for Argentina.

Statistic	Baseline	Counterfactuals	
		Less precision	Perfect information
CDS upfront price (mean)	47.3	50.1	43.6
CDS upfront price (st. dev.)	19.8	11.2	32.4

Notes: All moments are expressed in percentage points.

Table 4 compares the benchmark economy (now featuring foreign-currency debt) to domestic-currency debt and to the case of perfect information. Local-currency debt would imply a smaller volatility, at the cost of locking in a prohibitive spread.

Figure 3 repeats the comparative-statics exercise of Figure 1 with the new parameterization. The Argentinian parameterization implies much larger dispersion in prices, hence the first-moment effects emphasized by AHT are more pronounced. Under a rule of unconditional issuance, local-currency debt would have an advantage in both mean spreads and their standard deviation, but issuing debt unconditionally would be associated with a mean spread of

[19]As discussed in footnote 6, the structure of the ρ signal implies less-precise information in the regions in which the price is more volatile.

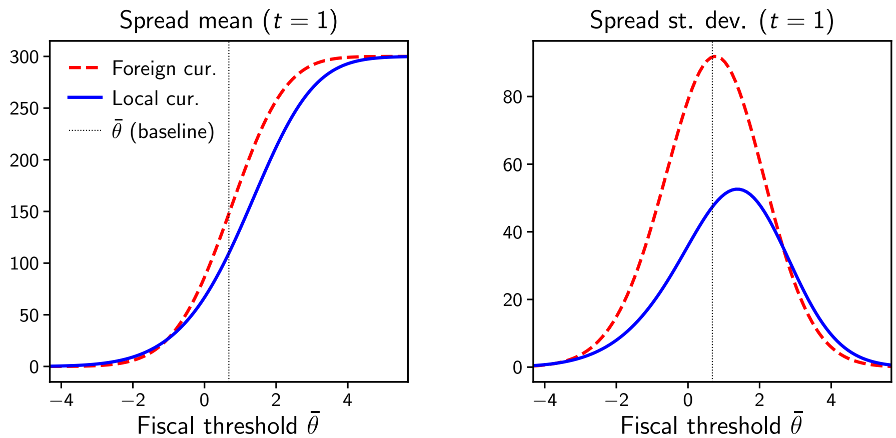

Figure 3: $\bar{\theta}$ comparative statics: Argentinian calibration. All moments are expressed in percentage points.

over 100%. The qualitative pattern is otherwise similar across Figures 3 and 1. In contrast, a conditional strategy in foreign currency debt allows the sovereign the capacity to borrow when their future fiscal state is perceived to be good. Figure 4 shows what happens if the government sets a threshold rule and does not issue debt whenever the spread exceeds 45%. In that case, the government is able to issue debt 17% of the time under a foreign-currency policy, but only 7% of the time under a domestic-currency policy.[20] The average spread conditional on issuance is about 24% with foreign-currency debt, but 35% with local-currency debt. As was the case for Figure 2, low volatility is bad if it means that the interest rate spread is always prohibitively high. This picture rationalizes the choice of issuing foreign currency debt for countries that start from a negative prior about their ability to repay.

[20]We do not consider a strategy in which the government chooses a different currency denomination ex post. The price is only determined at auction, where the demand from the noise traders is realized, and the assumption is that the government needs to decide the currency denomination before the auction takes place.

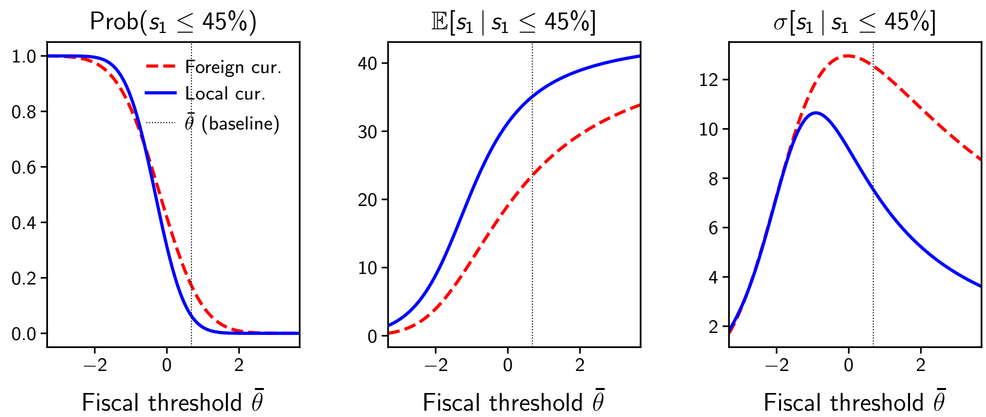

Figure 4: $\bar{\theta}$ comparative statics: Argentinian calibration, threshold issuance strategy. Spread moments are expressed in percentage points.

6 Conclusion

We have shown that information dispersion helps governments by insulating the price of debt from movements in the fiscal capacity of the economy. For governments that start with a good reputation for repayment, this insurance comes at little cost. In contrast, when confidence in the government's repayment ability is limited, only well-informed creditors will be willing to lend at reasonable terms, when fundamentals justify it.

This pattern rationalizes the presence of "original sin," whereby countries that are generally perceived as prone to default find it difficult to place debt denominated in domestic currency, whereas most advanced economies with a track record of debt repayment almost exclusively issue domestic-currency debt.

In our simple environment, debt is issued at a single point in time. An interesting extension would study what happens in a multi-period setting, in which a country's reputation for repayment may evolve. This extension could study the degree to which long periods of responsible fiscal finances may allow a country to graduate out of original sin and start issuing domestic-currency debt, as many emerging economies started to do in the last 20 years.

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