Monetary Communication and Credibility in a Multi-Sector Economy.

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Abstract

Central banks increasingly communicate sectoral narratives about inflation. We propose a theory of monetary communication in a multi-sector New Keynesian economy in which the central bank privately observes aggregate and sector-specific fundamentals and chooses both a policy instrument and a public message. Under commitment, the optimal disclosure rule has a sharp threshold structure: the central bank always discloses aggregate conditions and, depending on sectoral elasticities, sizes, and price rigidities, either fully discloses both components or pools them into a single message. Without commitment, this rule is time-inconsistent, yielding a multi-sector analogue of the Barro-Gordon credibility problem. In a dynamic extension with unobservable policymaker types, reputation partially disciplines communication, but does not restore the commitment outcome. In an application to the euro area, the post-pandemic rise in price-adjustment frequency raises the likelihood that full sectoral disclosure is optimal.

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1 Introduction

Recent episodes of economic distress have been characterized not only by large aggregate shocks but by sharp sectoral asymmetries. The pandemic shifted demand and supply unevenly across contact-intensive activities, supply-chain disruptions concentrated pressures on industrial goods, and energy and commodity shocks disproportionately affected energy-intensive production sectors. In such environments, inflation is inherently "compositional": relative-price movements and sectoral inflation differentials become central to aggregate dynamics.

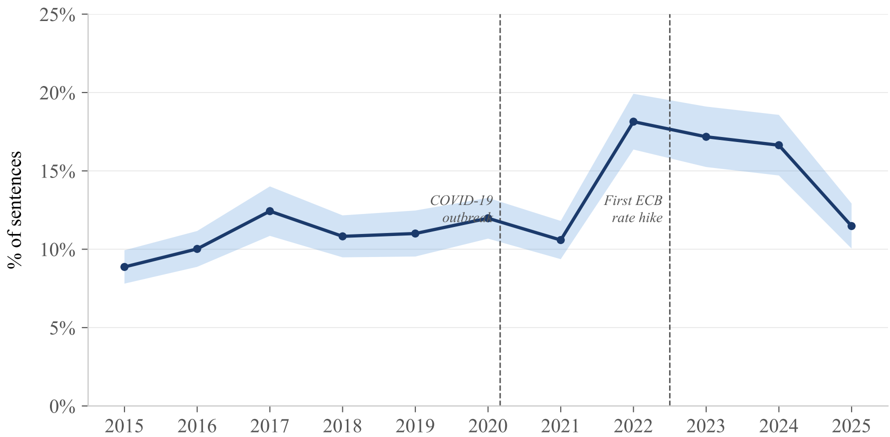
Sectoral heterogeneity matters for stabilization because monetary policy is a single instrument, while the relevant distortions become multi-dimensional once sectors differ in nominal rigidity and are hit by sector-specific shocks. In the one-sector New Keynesian benchmark, the "divine coincidence" result implies that stabilizing inflation can, under conditions, stabilize the output gap. In a genuinely multi-sector economy, this coincidence breaks down: sectoral shocks generate inefficient relative-price gaps and within-sector price dispersion that cannot generally be eliminated with one aggregate instrument, as La'O and Tahbaz-Salehi (2022) and Rubbo (2023) demonstrate.

Against this background, central-bank communication, through policy statements, press conferences, speeches and analytical publications, has become increasingly sectoral. Policy statements and speeches recently emphasize distinctions such as services versus goods inflation, or energy versus non-energy components. The euro area provides a salient illustration: while the European Central Bank (ECB) mandate is explicitly geared toward "price stability in the euro area as a whole", the inflation surge brought sectoral narratives to the foreground. As Lane (2025) notes, "the transmission of monetary policy . . . remains heterogeneous across different types of banks, firms and households, across different sectors and across countries." And in discussing underlying inflation, Schnabel (2025) singles out sectoral composition: "the most important [challenge] is services inflation," adding that "services inflation has been much stickier than expected." Figure 1 provides a quantitative counterpart to these qualitative observations. Using a dictionary-based, sentence-level measure on ECB monetary-policy communications, it documents a marked increase around the inflation surge in the *salience* of sectoral and heterogeneity-related framing.[1]

[1] The salience measure does not directly identify the model's disclosure rule. Rather, the calibration in Section 3 provides a structural rationale for the documented shift: higher price-adjustment frequencies and a pronounced services–industry asymmetry in nominal rigidities raise the expected gains from communicating sectoral inflation pressures.

These elements raise a natural question: what role can sectoral communication play in stabilization beyond what a single policy instrument can deliver?

Figure 1: Sectoral and Heterogeneity Language in ECB Communication



Notes. The figure plots, by year, the average share of sentences in ECB monetary-policy documents that contain at least one term from a pre-specified dictionary capturing sector-specific and heterogeneity-oriented framing (sectoral composition, sectoral heterogeneity, regional heterogeneity, and heterogeneous transmission). The analytical sample covers 2015–2025 and consists of monetary-policy-relevant ECB communications. Sentences are identified using standard sentence segmentation. The shaded band reports a 95% confidence interval around the annual mean computed across documents. Methodological details are in Online Appendix 2.1.

We propose a theory of monetary communication in a multi-sector New Keynesian economy, augmented with asymmetric information. The monetary authority privately observes a noisy signal about aggregate and sector-specific fundamentals. It then chooses both a policy instrument, e.g. the interest rate, and a public message observed by price-setting firms. Communication matters because it shapes firms' posterior beliefs and therefore the pattern of price adjustment, which in turn determines within-sector dispersion and cross-sector misallocation. Our analysis emphasizes how monetary communication is subject to a Barro and Gordon (1983)-like time-inconsistency problem in a multi-sector economy, where the object of time inconsistency is tied to the incentives of information disclosure, not to the setting of the policy instrument.

Formally, the paper delivers three results on monetary communication in a multi-sector economy: it characterizes optimal communication under commitment, then establishes its lack of credibility, and finally studies the role of reputational discipline under a lack of commitment.

The optimal disclosure rule under commitment has a sharp threshold structure. The communication problem is structured as an information-design problem (Bayesian persuasion): the central bank commits ex ante to an information disclosure rule mapping its private signals into public messages, taking into account how the induced posterior beliefs of firms shape price setting and welfare. The optimal rule is governed by a composite statistic Γ, a function of within- and across-sector elasticities, sector sizes, and sectoral price rigidities, that summarizes the trade-off between cross-sector relative-price alignment and within-sector price dispersion. The central bank always communicates aggregate conditions; the disclosure of the dispersion component depends on the sign of Γ. When $\Gamma \geq 0$, the authority fully discloses both the aggregate and the dispersion components. When $\Gamma < 0$, the within-sector dispersion cost dominates, and the optimal rule pools aggregate and dispersion components into a single message; with symmetric sector sizes, this single message discloses the aggregate shock alone, so the dispersion is effectively withheld. A central implication is that the communication regime is pinned down by observable features such as the frequency of price adjustment: when prices become more flexible, within-sector dispersion is less costly and sectoral disclosure becomes more attractive. We bring this mechanism to the ECB's recent shift toward sectoral narratives, disciplining nominal rigidities with micro evidence on price adjustment in services and industry from Gautier et al. (2025); the rise in adjustment frequency around the inflation surge raises the likelihood that $\Gamma \geq 0$, and therefore that full sectoral disclosure is the optimal communication rule during this economic episode.

Second, the commitment-optimal disclosure rule is generically time-inconsistent. Once the state is realized and firms are about to reset prices, a discretionary authority has an incentive to influence firms' posterior beliefs, improving within-sector price-dispersion outcomes at the cost of cross-sector relative-price alignment. This time-inconsistency is inherently multi-sector: in the one-sector limit, where within- and across-sector elasticities coincide, the incentives to deviate offset and full disclosure remains sequentially credible. When within- and across-sector elasticities differ ($\eta < \theta$), these forces no longer cancel and the full-disclosure rule fails to be sequentially incentive compatible.

Third, in an infinite-horizon extension with two unobservable policymaker types (a committed type that follows the optimal disclosure rule and a strategic type that can deviate), reputation partially disciplines communication but does not restore the commitment outcome. The structural feature of this credibility problem stands out already in the polar case without reputational dynamics: in this case, ex-ante welfare lies strictly below the symmetric-information benchmark whenever firms are uncertain about the central bank's type. Under common knowledge of the policymaker's type, firms would decode the strategic type's deviation and welfare would equal the full-disclosure commitment outcome. This insight inverts the classical reputational logic, e.g. Backus and Driffill (1985), in which the static no-reputation outcome is the strategic type's inflation bias and reputation partially restores commitment. In our setup with information asymmetry and communication, reputational dynamics then provide an additional channel: firms update beliefs about the type from observed messages and outcomes, the strategic authority's disclosure policy trades short-run stabilization gains against reputational losses, and communication becomes endogenously state-contingent. Accordingly, reputational forces can contain strategic disclosure and a strategic type can achieve welfare above the commitment benchmark, but long-run welfare remains strictly below it.

Literature. We contribute to work on multi-sector New Keynesian stabilization, monetary policy communication and transparency, and dynamic credibility and reputation.

Multi-sector stabilization. A large literature studies optimal stabilization when nominal rigidities are heterogeneous across sectors. Aoki (2001) initiates the analysis in multi-sector New Keynesian models and motivates policy rules that effectively stabilize a weighted inflation index placing greater weight on sectors with stickier prices; Mankiw and Reis (2003), Woodford (2003), Benigno (2004) and Eusepi, Hobijn, and Tambalotti (2011) generalize this insight to richer multi-sector environments, and La'O and Tahbaz-Salehi (2022) and Rubbo (2023) extend it to production networks. Relative to this literature, our focus is not on optimal inflation weights under full information, but on how sectoral disclosure complements instrument policy when firms set prices under imperfect information.

Communication, transparency, and information design. A maintained assumption in this study is that the monetary authority holds superior information about economic fundamentals and engages in communication, a position reminiscent of Bernanke (2015)'s famous quote: "monetary policy is 98 percent talk and only two percent action."[2] Starting from Morris and Shin (2002), a rich literature debates the welfare consequences of public-signal provision when agents hold idiosyncratic private information. We part from this literature by studying a distinct information structure: the central bank holds private information about fundamentals and designs the content of public messages. The closest precedents are Tamura (2016), who studies selective disclosure in a single-sector sticky-price economy, and Tamura (2018b), who extends the analysis with endogenous

[2] Gáti and Handlan (2022) document that central-bank communication follows systematic rules that vary with the economic environment, and a related literature documents that private expectations respond to policy announcements (e.g., Nakamura and Steinsson (2018), Andrade and Ferroni (2021)).

information acquisition. We focus on a multi-sector environment in which the critical disclosure object is a dispersion component that governs sectoral misallocation, yielding a threshold regime governed by sectoral rigidities and elasticities. Ou, Zhang, and Zhang (2022) shows in a related quantitative framework that increased transparency can be welfare-reducing under nominal rigidities.

Credibility and reputation. Following Barro and Gordon (1983), discretion outcomes differ from commitment outcomes because policymakers have incentives to deviate ex post. We bring this logic to a setting in which the object of time inconsistency is communication rather than the policy instrument. In classical Barro-Gordon, the strategic deviation is a level bias in the policy instrument that rational expectations cannot undo. In our setting, the deviation is a linear transformation of the central bank's signal which Bayesian agents can decode under common knowledge of type; type uncertainty is therefore the welfare-cost mechanism original to communication time-inconsistency. We develop an infinite-horizon reputational extension with hidden types, building on Kreps and Wilson (1982) and Backus and Driffill (1985): the strategic policymaker achieves sizable short-run stabilization gains by exploiting partial credibility, at the expense of the committed type and of long-run welfare.[3]

Plan of the paper. Section 2 presents the economic environment. Section 3 characterizes the optimal disclosure rule as the solution to a Bayesian-persuasion problem. Section 4 establishes the lack of credibility of this disclosure rule. Section 5 then presents a dynamic equilibrium under a lack of commitment with reputational incentives. Section 6 concludes; the appendix collects proofs and complementary material.

2 Economic Environment

This section presents the economic environment and information structure, defines the private-sector equilibrium, and characterizes optimal monetary policy under asymmetric information.

2.1 The Model

The model builds on a standard New Keynesian framework with monopolistic competition and staggered price adjustment. As in La'O and Tahbaz-Salehi (2022), the structure

[3]A complementary dynamic perspective is developed by Gáti (2022), who studies optimal dynamic central bank communication in a Bayesian persuasion framework; our dynamic extension instead emphasizes reputation as the discipline device.

is static, with within-period sequential decisions as made explicit in the timing block below.[4] The economy features a representative household, competitive retailers that aggregate differentiated varieties into sectoral and final goods, monopolistically competitive firms producing those varieties, and a monetary authority. The key departure from the canonical one-sector benchmark is that production is organized in multiple sectors subject to sector-specific productivity shocks that are imperfectly observed by price setters, while the central bank is better informed and can communicate about fundamentals.

Households. A representative household consumes the final good, Y, and supplies labor, L. The preferences are given by $U(Y, L) = \log Y - L$ (*cf.* Golosov and Lucas 2007). The household maximizes its utility subject to the budget constraint $PY = WL + \Pi + T$, where P is the price level of the final consumption good, W is the nominal wage, Π is firms' profit income, and T is a lump-sum transfer (or tax) from the fiscal authority. The optimal labor choice of the household is perfectly elastic at the point where nominal consumption demand, Q, equals the nominal wage:

$$Q \equiv PY = W. \tag{2.1}$$

The aggregate nominal consumption Q is under direct control of the monetary authority.[5] This allows us to focus on the optimal setting of policy without having to specify a particular monetary policy instrument and its transmission mechanism to nominal demand.

Aggregation of Individual Goods. The final consumption good Y is an aggregate bundle of individual goods produced in two sectors $j \in \{1, 2\}$ (*cf.* Woodford 2003). Each sector has a continuum of monopolistically competitive firms producing differentiated varieties of goods indexed with $i \in [0, n_j]$ with $n_1 + n_2 = 1$. The individual differentiated goods are aggregated by competitive retailers into the final good using nested bundles with constant elasticities of substitution. First, the individual goods in each sector, Y_{ij}, are aggregated into a sectoral good, Y_j, as follows:

$$Y_j = \left[(n_j)^{-\frac{1}{\theta}} \left(\int_0^{n_j} Y_{ij}^{\frac{\theta-1}{\theta}} di \right) \right]^{\frac{\theta}{\theta-1}}, \tag{2.2}$$

[4]Section 5 proposes an infinite-horizon dynamic extension with reputation.

[5]Equivalently, the monetary authority could set another nominal variable—see, e.g., the nominal-wage formulation in Baqaee, Farhi, and Sangani (2024). This policy representation is compatible with both money supply and interest rate control; see examples in Golosov and Lucas (2007), Afrouzi and Yang (2021), La'O and Tahbaz-Salehi (2022).

where $\theta > 1$ is the elasticity of substitution of goods within each sector. In turn, sectoral goods, Y_j, are aggregated into the final good, Y, as follows:

$$Y = \left[\left(n_1 Y_1^{\eta-1} \right)^{\frac{1}{\eta}} + \left(n_2 Y_2^{\eta-1} \right)^{\frac{1}{\eta}} \right]^{\frac{\eta}{\eta-1}}, \tag{2.3}$$

where $\eta > 0$ is the elasticity of substitution across sectors. We assume that goods are less (or equally) substitutable across sectors than within sectors, i.e., $\eta \leq \theta$. When $\eta = \theta$, the within- and across-sector elasticities coincide and the economy reduces to a single-sector model with firm-level heterogeneity in productivity and price rigidity.

Demand System and Price Indices. The solution of the profit-maximization problems of the retailers determines the allocation of total consumption demand across individual goods:

$$P_j Y_j = n_j \left[\frac{P_j}{P} \right]^{1-\eta} PY, \qquad P_{ij} Y_{ij} = \frac{1}{n_j} \left[\frac{P_{ij}}{P_j} \right]^{1-\theta} P_j Y_j, \tag{2.4}$$

where P_{ij} are prices of the individual differentiated goods, P_j and P are price indices characterizing the cost of purchasing the sectoral and the final goods respectively:

$$P = \left[n_1 P_1^{1-\eta} + n_2 P_2^{1-\eta} \right]^{\frac{1}{1-\eta}}, \qquad P_j = \left[\frac{1}{n_j} \int_0^{n_j} P_{ij}^{1-\theta} di \right]^{\frac{1}{1-\theta}}. \tag{2.5}$$

These demand curves (2.4) highlight a central property of the forthcoming analysis. They imply that relative demand for good i in sector j is pinned down by two relative prices: the price of the good relative to the sectoral price index, P_{ij}/P_j, and the sectoral price index relative to the aggregate one, P_j/P. Hence, relative prices both *within* and *across* sectors determine the overall composition of demand for individual goods.

Production of Individual Goods. Each individual good is produced by a single firm using production technology that is linear in labor:

$$Y_{ij} = A_j L_{ij}, \tag{2.6}$$

where A_j is an exogenous sector-specific level of productivity drawn independently from a distribution with the unconditional mean normalized to one, L_{ij} is labor hired by the firm in a perfectly competitive market. Each firm employs enough labor to satisfy the demand for its good.

Aggregate Production Functions. Aggregating labor demand across firms and imposing labor market clearing yields the following equilibrium relationships linking goods output and labor input at the aggregate and sectoral levels:

$$Y = \left[n_1 \left[\frac{P_1}{P}\right]^{-\eta} \left[\frac{A_1}{\Delta_1}\right]^{-1} + n_2 \left[\frac{P_2}{P}\right]^{-\eta} \left[\frac{A_2}{\Delta_2}\right]^{-1} \right]^{-1} L, \qquad Y_j = \frac{A_j}{\Delta_j} L_j, \tag{2.7}$$

where $L = L_1 + L_2$ is total labor supply, $L_j \equiv \int_0^{n_j} L_{ij} di$ is labor employed in sector j, and $\Delta_j \equiv \frac{1}{n_j} \int_0^{n_j} \left(\frac{P_{ij}}{P_j}\right)^{-\theta} di \geq 1$ measures within-sector price dispersion. Dispersion distorts labor demand across otherwise identical firms, creating a wedge between technological productivity A_j and effective sectoral productivity A_j/Δ_j. Aggregate productivity is therefore a weighted harmonic mean of sectoral productivities, with weights determined by relative sectoral prices through demand allocation across sectors.

Pricing of Individual Goods. Each firm producing an individual good sets its price P_{ij} to maximize expected profits while competing for demand (2.4) through sectoral and aggregate price indices. As detailed in the timing of the model, prices are set in a staggered manner: firms set prices at different points in time and do so under imperfect information. Conditional on its information set at the time of pricing, an individual firm optimally chooses P_{ij} according to

$$P_{ij} = \frac{\mathcal{M}}{1-\tau} \mathbb{E}_{ij} \left\{ \frac{\left[\frac{1}{P_j}\right]^{-\theta} \left[\frac{P_j}{P}\right]^{-\eta}}{\mathbb{E}_{ij}\left[\left[\frac{1}{P_j}\right]^{-\theta} \left[\frac{P_j}{P}\right]^{-\eta} \right]} \frac{W}{A_j} \right\}, \tag{2.8}$$

where $\mathbb{E}_{ij}$ denotes firm-specific beliefs about productivity shocks, τ is a linear sales tax (or subsidy) rebated lump-sum to households, and $\mathcal{M} \equiv \theta/(\theta - 1)$ is the monopolistic markup. Under incomplete information, (2.8) prescribes setting the price (net of tax) as a markup over a risk-adjusted expectation of marginal cost. Firms that have the opportunity to adjust prices update beliefs rationally based on public communication by the monetary authority.[6]

Information and Communication. The monetary authority receives a private signal about sectoral shocks, generating an ex-ante informational asymmetry vis-à-vis firms. Public communication therefore affects firms' posterior beliefs and, through staggered price setting, equilibrium outcomes. We first characterize equilibrium under an arbitrary disclosure rule and then study specific communication regimes.

[6]Under complete information, (2.8) reduces to the standard constant-markup rule $P_{ij} = \frac{\mathcal{M}}{1-\tau} \frac{W}{A_j}$. With incomplete information, uncertainty introduces a risk adjustment in expected marginal cost. While prices depend on beliefs, realized shocks ultimately determine equilibrium quantities.

2.2 Private-Sector Equilibria

Given monetary, communication, and fiscal policies, a private-sector equilibrium consists of prices $\{W, P, P_j, P_{ij}\}$ and quantities $\{Y, Y_j, Y_{ij}, L, L_j, L_{ij}\}$ that reflect the optimal choices of the household and firms, as well as the clearing of the goods and labor markets. The private-sector equilibrium must satisfy equations (2.1) and (2.4)–(2.8).

Log-linearization. We characterize private-sector equilibria as log-linear deviations from the deterministic equilibrium with $A_1 = A_2 = 1$, and denote log deviations of a generic variable X by $\hat{x}$. As is standard in the New Keynesian literature, e.g., Woodford (2003) and Galí (2015), we fix the sales tax τ at a constant level that eliminates the inefficiency arising from monopolistic competition in the deterministic equilibrium. This specification ensures that monetary policy is consistent with the first-best allocation chosen by a social planner, and eliminates the inflation bias of a monetary authority.

Flexible-price efficient equilibrium. Because the sales tax τ eliminates the steady-state distortion from monopolistic competition, the allocation under flexible prices and full information is efficient. We therefore use the flexible-price, symmetric-information equilibrium as our benchmark and measure inefficiencies in the sticky-price, asymmetric-information economy by gaps relative to this allocation.[7]

We refer to variables in this efficient benchmark as *natural* and denote them with a superscript n. All the firms in a given sector set their prices at the following common sectoral level:

$$\hat{p}_j^n = \hat{q} - \hat{a}_j, \tag{2.9}$$

In turn, the natural aggregate price level is a weighted average of the sectoral prices, given by $\hat{p}^n = n_1\hat{p}_1^n + n_2\hat{p}_2^n$. Using this aggregate price level to deflate nominal demand yields the natural real output:

$$\hat{y}^n = n_1\hat{a}_1 + n_2\hat{a}_2. \tag{2.10}$$

Finally, note $\hat{p}_R^n = \hat{p}_2^n - \hat{p}_1^n = \hat{a}_1 - \hat{a}_2$ the natural relative price that reflects productivity differentials across sectors. Natural real output and relative price form the state vector of natural variables $\hat{v}^n = (\hat{y}^n, \hat{p}_R^n)$, interpreted respectively as aggregate and sectoral dispersion shocks.

Specifically, with $\hat{a}_j \sim \mathcal{N}(0, \sigma^2)$ distributed independently across sectors, the state is

[7] For comparability, we characterize the benchmark under the same average nominal demand Q as in the sticky-price economy. This normalization affects only the nominal level of prices and does not alter real allocations or welfare gaps.

therefore distributed according to $\hat{v}^n \sim \mathcal{N}(0, \tilde{\Sigma})$, where the variance–covariance matrix

$$\tilde{\Sigma} = \sigma^2 \begin{pmatrix} n_1^2 + n_2^2 & n_1 - n_2 \\ n_1 - n_2 & 2 \end{pmatrix} \tag{2.11}$$

inherits a non-zero covariance $(n_1 - n_2)\sigma^2$ whenever sectors are unequal: a positive shock to the larger sector raises both the aggregate and the dispersion components.

Timing and Information. We are interested in the design and economic implications of monetary communication on firms' price decisions and economic outcomes. This problem is structured as a game.

There are three players: nature, a monetary authority, and firms. The timing of their interaction is as follows:

- Given prior beliefs μ about the distribution of exogenous shocks $\hat{v}^n \sim \mathcal{N}(0, \tilde{\Sigma})$, all firms *preset* prices $\hat{p}_j^p = 0$.[8]
- Nature draws $\hat{v}^n = (\hat{y}^n, \hat{p}_R^n)$. The monetary authority observes a noisy signal $s = \hat{v}^n + \varepsilon$ and infers the conditional mean $\bar{v}^n = \mathbb{E}(\hat{v}^n \mid s)$.
- The monetary authority sends a public message m and sets the instrument $\hat{q}$.
- A share $1 - \alpha_j$ of firms in sector $j \in \{1, 2\}$ *resets* prices $\hat{p}_j^r$, given posterior beliefs $\tilde{\mu} = \mu | m, \hat{q}$.
- Production occurs and output $\hat{y}$ is realized.

The asynchronous timing of price setting introduces nominal rigidity: a share $\alpha_j \in (0, 1)$ of prices in sector j remains unchanged at the preset level.[9] The remaining $(1 - \alpha_j)$ are reset, but not fully flexibly — under imperfect information, reset prices change only to the extent that monetary policy and communication are informative about economic conditions.

The central bank's information about sectoral fundamentals is imperfect: it receives a noisy signal $s = \hat{v}^n + \varepsilon$ with ε Gaussian and independent of $\hat{v}^n$, and forms the conditional mean $\bar{v}^n \equiv \mathbb{E}(\hat{v}^n \mid s)$ as its information-relevant statistic.[10]

[8] The normalization $\hat{p}_j^p = \mathbb{E}_\mu(\hat{q}) = 0$ is without loss of generality because any change in the prior expectation of policy $\hat{q}$ reflected in preset prices generates only a nominal scaling of the price level, which is not reflected in real variables or welfare, where only differences in relative prices matter.

[9] The model is presented with traditional Calvo (1983) type of sticky prices. It could equivalently be described in terms of sticky information, imperfect diffusion of information or rationally inattentive firms, as in Adam (2007), Tamura (2018b) and La'O and Tahbaz-Salehi (2022).

[10] Formally, the central bank observes noisy signals on the primitive shocks, $s_i = \hat{a}_i + \varepsilon_i$ with $\varepsilon_i \sim \mathcal{N}(0, \sigma_\varepsilon^2)$ i.i.d. and independent of $\hat{a}$. The same linear aggregation that maps $\hat{a}$ to $\hat{v}^n$ yields $s = \hat{v}^n + \varepsilon$ with $\text{Var}(\varepsilon) = \sigma_\varepsilon^2 \Sigma$, where Σ is the structural matrix in (2.11) (so $\tilde{\Sigma} = \sigma^2 \Sigma$). The shape of the noise mirrors the prior; results below are invariant to σ_ε, with the perfect-information limit $\sigma_\varepsilon \to 0$ giving $\bar{v}^n = \hat{v}^n$. Appendix A.1 characterizes the distributions.

The timing above is the *primitive* timing: both the policy instrument $\hat{q}$ and the message m can convey information about the state, and firms form posterior beliefs $\tilde{\mu} = \mu \mid m, \hat{q}$. Section 2.3 adopts an equivalent representation in which any on-path informational content of the instrument is folded into the message, isolating communication as the object of study without affecting equilibrium allocations or welfare.[11]

Welfare. To study the conduct of monetary policy in this multi-sector economy, we derive a second-order approximation of the utility function of the representative household for a generic set of prices set by producers of individual goods and obtain the following welfare function:

$$U \approx -\frac{1}{2}\left[(\hat{y} - \hat{y}^n)^2 + \eta n_1 n_2 (\hat{p}_R - \hat{p}_R^n)^2 + \theta \sum_j n_j \mathrm{Var}_i^j(\hat{p}_{ij})\right] + \text{t.i.p.}, \tag{2.12}$$

where t.i.p. denotes terms that are independent of policy.[12] There are three sources of welfare losses, each corresponding to a different level of aggregation. The first term is the *aggregate output gap*, defined as the deviation of output from the natural level $\hat{y}^n$. The second term is the *sectoral relative price gap*, defined as the deviation of the relative price from its natural level $\hat{p}_R^n$. The third term is the *within-sector price dispersion.* Note that welfare depends explicitly on prices because the composition of consumption, which affects welfare, is determined by the relative prices of differentiated and sectoral goods.

2.3 The Conduct of Monetary Policy

Policy Representation of a Competitive Equilibrium. The monetary authority affects equilibrium allocations through two channels: by choosing nominal aggregate demand $\hat{q}$ and by shaping firms' posterior beliefs about the state through a public message m. The next lemma provides a reduced-form representation of equilibrium (and welfare-relevant) prices and quantities as functions of instrument $\hat{q}$ and firms' posterior beliefs.[13]

Lemma 1. *Given monetary instrument, $\hat{q}$ and a public message m, firms form posterior beliefs, $\tilde{\mu} = \mu | m, \hat{q}$. Equilibrium reset prices are:*

$$\hat{p}_1^r = (\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) - n_2 \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n \qquad \hat{p}_2^r = (\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) + n_1 \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{2.13}$$

[11]Under that representation, firms' posterior beliefs simplify to $\tilde{\mu} = \mu \mid m$, while the instrument is chosen as the central bank's optimal best response to those beliefs.

[12]Detailed derivations are provided in Online Appendix 1.

[13]This approach is closely related to the "primal" approach to policy design, which characterizes allocations directly subject to implementability constraints; see, e.g., Angeletos and La'O (2020) for an application to New Keynesian environments with informational frictions.

Sectoral prices are $\hat{p}_j = (1-\alpha_j)\hat{p}_j^r$, *and aggregate and relative prices are*

$$\hat{p} = (1 - n_1\alpha_1 - n_2\alpha_2)\,(\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) + n_1 n_2\,(\alpha_1 - \alpha_2)\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{2.14}$$

$$\hat{p}_R = (\alpha_1 - \alpha_2)\,(\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) + (1 - n_1\alpha_2 - n_2\alpha_1)\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n. \tag{2.15}$$

Finally, aggregate output is given by $\hat{y} = \hat{q} - \hat{p}$.

Proof. See Appendix A.2.1. ∎

In the one-sector New Keynesian benchmark, closing the aggregate output gap is sufficient to replicate the efficient allocation (the *divine coincidence*). Here, sector-specific shocks generate a natural relative price $\hat{p}_R^n$ that a policymaker would like to implement, while price setting is constrained by staggered adjustment and a single aggregate instrument.

Even under symmetric rigidities $\alpha_1 = \alpha_2 = \alpha$, the reset prices in (2.13) satisfy $\hat{p}_2^r - \hat{p}_1^r = \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n$ — firms that can reset their prices align them with their beliefs about the natural relative price. But because a fraction α of prices remains preset, the equilibrium relative price is $\hat{p}_R = (1-\alpha)\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n$, falling short of $\hat{p}_R^n$ whenever $\alpha > 0$. A single aggregate instrument cannot deliver the sectoral adjustment required for efficiency. Asymmetric rigidities tighten this constraint: (2.15) shows that the same policy stance used to close the aggregate gap also moves the equilibrium relative price away from its natural level, creating a trade-off between aggregate and relative-price stabilization.

Substituting the equilibrium prices into (2.12) yields the welfare criterion as a function of the state, instrument, and posterior beliefs:

$$U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n) \approx -\frac{1}{2}\left[\Big(\hat{q} - \hat{p} - \hat{y}^n\Big)^2 + \eta n_1 n_2\Big(\hat{p}_R - \hat{p}_R^n\Big)^2 + \theta\sum_j n_j\alpha_j(1-\alpha_j)\big(\hat{p}_j^r\big)^2\right] + \text{t.i.p.} \tag{2.16}$$

Belief-Consistent Monetary Policy. By Lemma 1, equilibrium prices, quantities, and welfare depend on the monetary authority's private information only through firms' posterior beliefs $\tilde{\mu}$. For any on-path policy–communication pair, there is therefore an outcome-equivalent representation in which the message m alone induces $\tilde{\mu} = \mu \mid m$ and the instrument is chosen as a function of those beliefs. We adopt this canonical representation throughout: $\hat{q}$ is the belief-consistent best response to $\tilde{\mu} = \mu \mid m$.

Lemma 2. *Given posterior beliefs* $\tilde{\mu}$, *optimal belief-consistent monetary policy is set* *according to*

$$\hat{q}(\tilde{\mu}) = \mathbb{E}_{\tilde{\mu}}\hat{y}^n + \gamma_q \cdot \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{2.17}$$

where γ_q *is a composite parameter that satisfies:*

$$\gamma_q \equiv \frac{n_1 n_2(\alpha_1 - \alpha_2)\Big[\big(n_1\alpha_1 + n_2\alpha_2\big) + \eta\big(n_1\alpha_2 + n_2\alpha_1\big) + \theta\big(1 - \alpha_1 - \alpha_2\big)\Big]}{\big(n_1\alpha_1 + n_2\alpha_2\big)^2 + \eta n_1 n_2(\alpha_1 - \alpha_2)^2 + \theta\Big[n_1\alpha_1(1 - \alpha_1) + n_2\alpha_2(1 - \alpha_2)\Big]}. \tag{2.18}$$

Proof. See Appendix A.2.2. ∎

Lemma 2 implies that the instrument depends on beliefs only through the posterior means $\mathbb{E}_{\tilde{\mu}}\hat{y}^n$ and $\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n$. Under symmetric rigidities $\alpha_1 = \alpha_2$, $\gamma_q = 0$ and the rule reduces to $\hat{q}(\tilde{\mu}) = \mathbb{E}_{\tilde{\mu}}\hat{y}^n$; under asymmetric rigidities ($\gamma_q \neq 0$), nominal demand also adjusts to the perceived natural relative price.

The fiscal intervention τ removes the steady-state distortion from monopolistic competition and the standard inflation bias is absent: the instrument choice in (2.17) is time-consistent once beliefs are given. Any credibility concerns therefore arise from informational frictions and the incentives to shape beliefs through communication.

3 The Optimal Disclosure of Information

In this section, we characterize the central bank's optimal communication about aggregate and sectoral economic conditions. We formulate the problem as a Bayesian persuasion problem; see, e.g., Kamenica (2019) for a review. A benevolent monetary authority (the sender) commits ex ante to a disclosure rule φ that maps the central bank's information statistic $\bar{v}^n$ into a public message. Given the induced information structure, firms (the receivers) update beliefs by Bayes' rule and set prices optimally.

A Bayesian Persuasion Problem. The monetary authority chooses a disclosure rule, i.e., a conditional distribution $\varphi(\cdot \mid \bar{v}^n) \in \Delta(M)$ over public messages m, given the signal $\bar{v}^n = (\bar{y}^n, \bar{p}_R^n)$, to solve:[14]

$$\max_{\varphi} \; \mathbb{E}\left[U\big(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n\big)\right], \tag{3.1}$$

subject to

$$\hat{q} = \hat{q}(\mathbb{E}_{\tilde{\mu}}\hat{v}^n)\,, \tag{3.2}$$

$$\mathbb{E}_{\tilde{\mu}}\hat{v}^n = \mathbb{E}(\hat{v}^n|m)\,. \tag{3.3}$$

[14] Equivalently, the sender chooses a joint distribution over $(\bar{v}^n, m)$ or over posterior beliefs $\tilde{\mu}$ subject to Bayesian plausibility.

The first constraint stipulates that the monetary instrument is set optimally according to posterior beliefs, as specified by (2.17). The second constraint is the Bayes' rule requirement, which indicates that firms rationally update their posterior beliefs upon receiving a message m under the disclosure rule φ. The expectation in (3.1) is taken over the joint distribution of the state $\hat{v}^n$, the signal $\bar{v}^n$, and the message m. Given Lemmas 1 and 2, equilibrium allocations and welfare depend on beliefs only through the posterior means $\mathbb{E}_{\tilde{\mu}}\hat{v}^n$. Therefore, the sender's choice of $\varphi(\cdot)$ is equivalently a choice over the distribution of posterior means subject to Bayesian plausibility. Importantly, the monetary authority commits to the disclosure rule φ prior to observing a signal $\bar{v}^n$.[15]

Bayes' rule restricts feasible disclosure rules through Bayesian plausibility: the distribution of posterior beliefs induced by the disclosure rule φ averages to the prior mean, $\mathbb{E}_\varphi[\mathbb{E}(\hat{v}^n \mid m)] = \mathbb{E}(\hat{v}^n) = 0$, by the law of iterated expectations. By the law of total variance, the variance of the posterior mean is bounded by the prior variance, $\text{Var}(\mathbb{E}(\hat{v}^n \mid m)) \leq \text{Var}(\hat{v}^n)$: it attains $\text{Var}(\hat{v}^n)$ under full disclosure (the posterior mean equals the state) and zero under no disclosure (the posterior mean is constant in m).

Proposition 1. *There exists a composite parameter $\Gamma \in \mathbb{R}$—a function of the elasticities (η, θ), sector sizes (n_1, n_2), and price rigidities (α_1, α_2)—such that the optimal disclosure rule $\varphi(\cdot \mid \bar{v}^n) \in \Delta(M)$ takes one of two forms:*

(i) Full-disclosure regime $(\Gamma \geq 0)$: the central bank reveals its signal,

$$m = \bar{v}^n,$$

with posterior means coinciding with the signal: $\mathbb{E}(\hat{v}^n \mid m) = \bar{v}^n$.

(ii) Partial-disclosure regime $(\Gamma < 0)$: the rule discloses a linear combination of the aggregate and dispersion components,

$$m = \bar{y}^n + \zeta\, \bar{p}_R^n,$$

and firms form posterior beliefs through the loadings $(\beta_{\hat{y}^n}, \beta_{\hat{p}_R^n})$:

$$\mathbb{E}(\hat{y}^n \mid m) = \beta_{\hat{y}^n}\, m, \qquad \mathbb{E}(\hat{p}_R^n \mid m) = \beta_{\hat{p}_R^n}\, m.$$

At $n_1 = n_2 = 1/2$: $\zeta = 0$, so $m = \bar{y}^n$, $\mathbb{E}(\hat{y}^n \mid m) = m$, and $\mathbb{E}(\hat{p}_R^n \mid m) = 0$.

[15]The timing follows the canonical representation introduced in Section 2: the sender selects φ, known to receivers; nature draws the state $\hat{v}^n$, a signal s and a message m according to φ; the monetary instrument is set as the belief-consistent best response $\hat{q}(\tilde{\mu})$; the receivers update beliefs from the prior μ to the posterior $\tilde{\mu}|m$ using Bayes' rule and take optimal action.

(iii) Under $n_1 = n_2 = \frac{1}{2}$ and $\alpha_1 = \alpha_2 \equiv \alpha$, the full-disclosure regime obtains iff

$$\frac{\theta}{\eta} \leq \frac{1+\alpha}{\alpha}.$$

Proof. See Appendix B. ∎

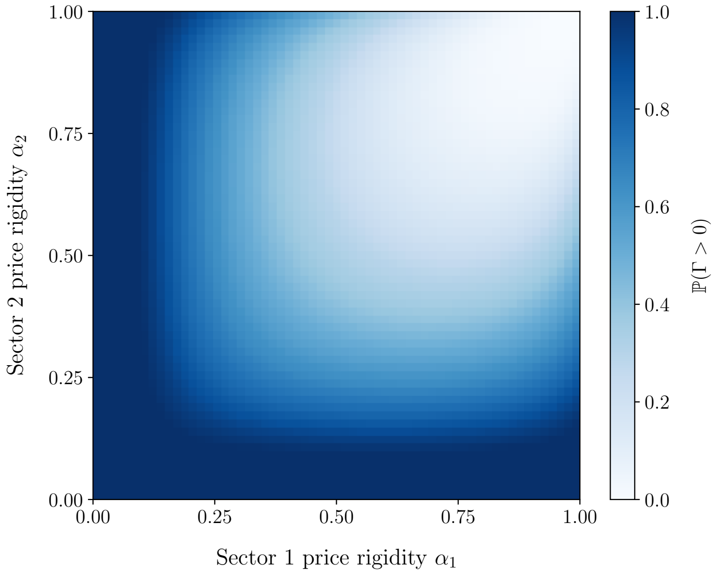
Two regimes obtain, separated by the sign of Γ: a *full-disclosure* regime in which the central bank reveals the entire signal $\bar{v}^n$, and a *partial-disclosure* regime in which it discloses a single linear combination of the aggregate and dispersion components.

Optimal communication is shaped by a welfare trade-off between two forces. Disclosing the relative-price component $\bar{p}_R^n$ allows firms to align relative prices with the natural relative price, reducing cross-sector misallocation—an effect with welfare weight η. But under staggered price adjustment, the same information-induced response generates within-sector price dispersion across varieties, with welfare cost weighted by θ. The sign of Γ summarizes which force dominates: a higher within-sector elasticity θ tilts the optimum toward withholding $\bar{p}_R^n$, while a higher across-sector elasticity η tilts it toward disclosure. In the symmetric economy ($n_1 = n_2 = 1/2$, $\alpha_1 = \alpha_2$), the full-disclosure regime obtains when $\theta/\eta \leq (1+\alpha)/\alpha$. At $\eta = \theta$, the trade-off vanishes: the economy collapses to a single-sector model and $\Gamma > 0$ holds unconditionally. The regime split is therefore a multi-sector phenomenon.

Communication and Sectoral Price Rigidities. Price rigidities operate through the same trade-off as elasticities but via a different channel: they govern how strongly information translates into within-sector dispersion. Figure 2 reports the probability that the economy lies in the full-disclosure regime, $\mathbb{P}(\Gamma \geq 0)$, as a function of sectoral price rigidities (α_1, α_2), integrating over plausible ranges of (η, θ). When rigidities are low, more firms can incorporate the disclosed signal into prices, within-sector dispersion is small, and full disclosure is more likely to obtain. When rigidities are higher, disclosure generates substantial within-sector dispersion while delivering limited relative-price alignment, favoring partial disclosure. Asymmetric rigidities favor full disclosure: when one sector is sufficiently flexible, it absorbs the relative-price correction while the dispersion cost is contained in the rigid sector. The figure illustrates these elements: the full-disclosure region is largest along the axes (one sector flexible) and smallest in the high-rigidity corner.

The Full-Disclosure Regime ($\Gamma \geq 0$). With $m = \bar{v}^n$, firms learn the central bank's signal and the monetary instrument is set toward closing the output gap. Welfare losses come principally from two residual sources: the relative-price gap, which the economy

Figure 2: Communication Regime and Sectoral Price Rigidities



Notes. The figure reports, for each pair of sectoral rigidities $(\alpha_1, \alpha_2) \in (0,1)^2$, the Monte Carlo estimate of $\mathbb{P}(\Gamma \geq 0)$, where Γ is the composite coefficient governing whether the full-disclosure regime obtains (Proposition 1). Sector sizes are fixed at $n_1 = n_2 = \frac{1}{2}$. For each grid point (α_1, α_2), we draw (η, θ) independently from uniform distributions $\eta \sim U[1,3]$ and $\theta \sim U[6,8]$ and compute the fraction of draws for which $\Gamma \geq 0$.

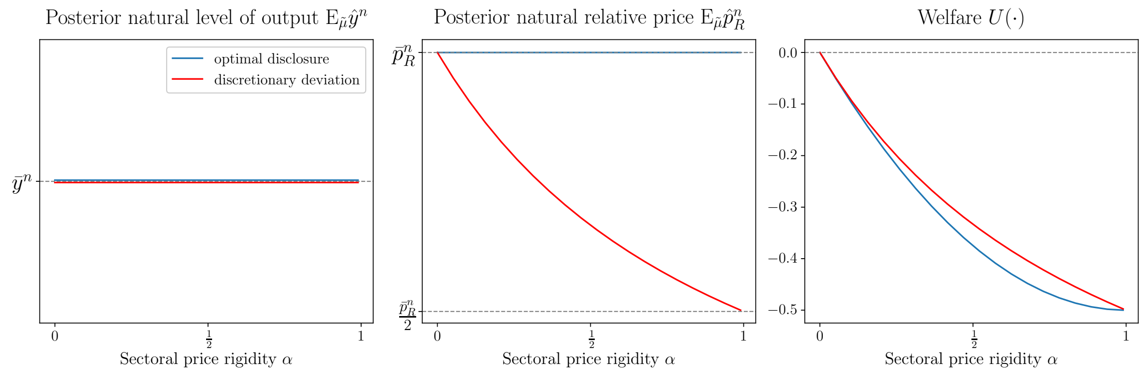
cannot fully correct under nominal rigidities, and within-sector price dispersion, which arises mechanically from staggered price adjustment. Figure 3 reports posterior beliefs and welfare under the full-disclosure regime ($\Gamma > 0$), as functions of symmetric sectoral price rigidity $\alpha_1 = \alpha_2 = \alpha$. In this economy, the monetary instrument fully closes the output gap. As rigidity rises, aggregate stabilization remains effective, but the economy is increasingly unable to track the relative-price response, as illustrated in panel (b), so welfare losses increase. Figure 1 in Online Appendix 2.2 reports the asymmetric-rigidity case: optimal policy now follows the Aoki (2001) principle that stabilization focuses on the stickier sector—the output gap is not generally closed, and its sign depends on the interplay of productivity distribution and nominal flexibility across sectors.

The Partial-Disclosure Regime ($\Gamma < 0$). Under $\Gamma < 0$, the optimal rule discloses primarily the aggregate component, adjusted for its correlation with the dispersion. At symmetric sectors $n_1 = n_2 = 1/2$, this reduces to $m = \bar{y}^n$: the central bank withholds dispersion entirely. Firms' posterior belief about dispersion is zero, so reset prices coincide with preset prices and there is no welfare loss from within-sector dispersion. The cost is an uncorrected relative-price gap — cross-sector misallocation reflects the full underlying productivity differential.

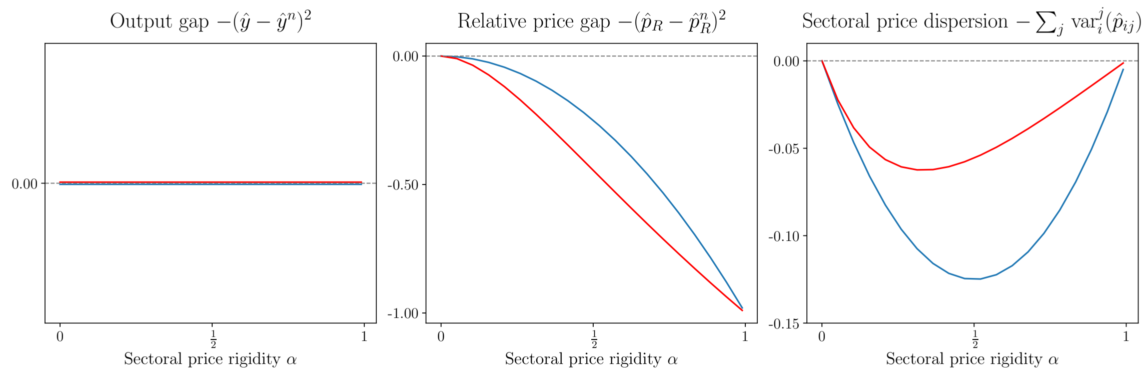
At asymmetric sectors $n_1 \neq n_2$, the aggregate and dispersion components are correlated under the prior: a productivity shock to the larger sector moves both. Disclosing

Figure 3: Full-Disclosure Regime with Symmetric Price Rigidity ($\Gamma > 0$)

(a) Communication and Welfare



(b) Welfare Loss Decomposition



Notes. Given $\hat{y}^n = 0$ and $\hat{p}_R^n = \hat{a}_1 - \hat{a}_2 > 0$, this figure reports posterior beliefs and welfare under the **optimal disclosure rule** (Proposition 1) and the **discretionary deviation** (Proposition 2), as functions of symmetric sectoral price rigidity $\alpha_1 = \alpha_2 = \alpha$. Illustrative parameter values: $\eta < \theta$, chosen so that $\Gamma > 0$ applies.

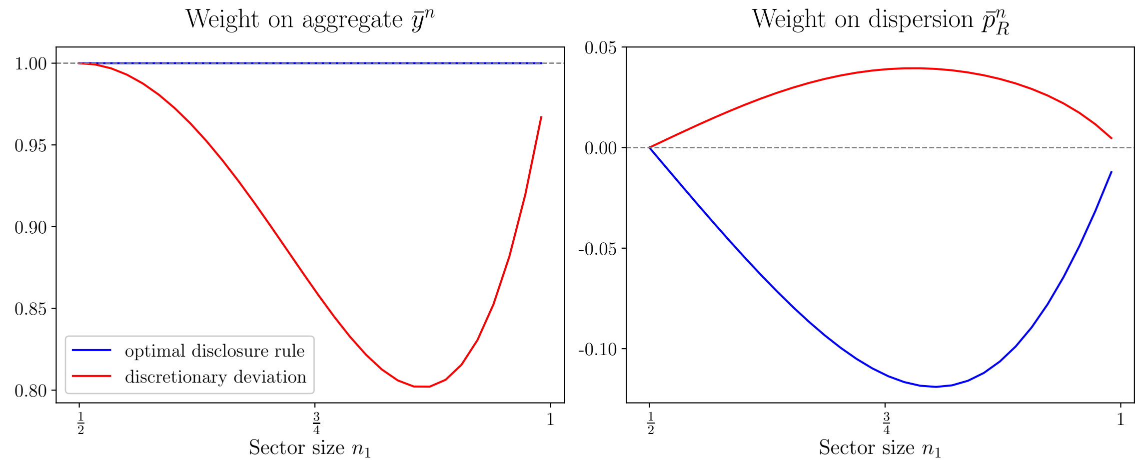
only the aggregate would then induce a non-zero posterior belief about dispersion through this correlation, generating within-sector dispersion costs. The central bank corrects for this with a small tilt in the disclosure rule: $m = \bar{y}^n + \zeta\,\bar{p}_R^n$ with $\zeta < 0$ when $n_1 > n_2$ (Figure 4, panel (a)). Firms decode the message through the posterior loadings of Proposition 1; at a pure-dispersion realization, the induced beliefs about both components are small (panel (b)), confirming that the rule still discloses primarily the aggregate. The asymmetric-sector rule is therefore close to the symmetric case, with only a small directional adjustment.[16]

Application to the Euro-Area Inflation Surge. We use Proposition 1 to interpret the shift in ECB communication, documented in Figure 1, toward greater emphasis on sectoral price dynamics following the inflation surge. The exercise maps empirically observed monthly price-change frequencies from Gautier et al. (2025) into sector-specific Calvo

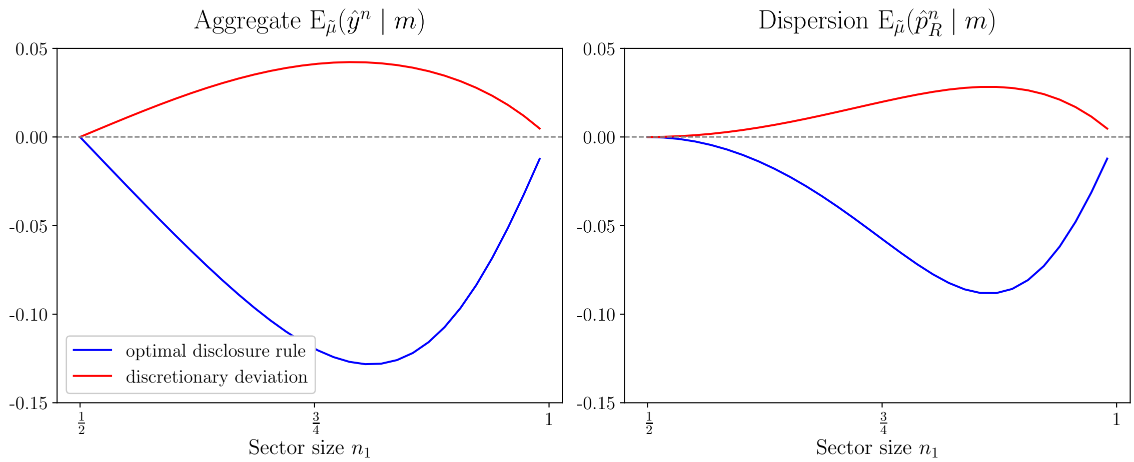
[16] The figure also reports the static deviation $\tilde{m} = \nu_{\bar{y}^n}\,\bar{y}^n + \nu_{\bar{p}_R^n}\,\bar{p}_R^n$ of Proposition 2 (red lines), discussed in Section 4.

Figure 4: Partial-Disclosure Regime as a function of Sector Sizes ($\Gamma < 0$)

(a) Communication Rule and Deviation



(b) Induced Posterior Beliefs



Notes. The figure plots, as functions of sector size $n_1 \in [1/2, 1)$ in the partial-disclosure regime ($\Gamma < 0$), the central bank's communication choice and the induced posterior beliefs under the **optimal disclosure rule** (Proposition 1) and the **discretionary deviation** (Proposition 2). Panel (a) reports the rule's coefficients on the two components of the natural state: under commitment, $m = \bar{y}^n + \zeta\, \bar{p}_R^n$; under deviation, $\tilde{m} = \nu_{\bar{y}^n}\, \bar{y}^n + \nu_{\bar{p}_R^n}\, \bar{p}_R^n$. Panel (b) reports the induced posterior beliefs $\mathbb{E}_{\tilde{\mu}}(\hat{y}^n \mid m)$ and $\mathbb{E}_{\tilde{\mu}}(\hat{p}_R^n \mid m)$ at realization $\bar{y}^n = 0$, $\bar{p}_R^n = 1$. At $n_1 = 1/2$ the commitment rule and the deviation coincide; as n_1 rises, rule and deviation are distinct. Illustrative parameter values: $\eta < \theta$ and $\alpha_1 = \alpha_2 = \alpha$ chosen so that $\Gamma < 0$.

rigidities, combines them with uncertainty over substitution elasticities, and computes the implied probability that the full-disclosure regime applies, $\mathbb{P}(\Gamma \geq 0)$.

We aggregate price-change frequencies into services and goods sectors (food and non-energy industrial goods, NEIG) using HICP consumption-expenditure weights, which yield a services-sector share $n_1 \approx 0.49$. Mapping monthly frequencies into Calvo no-reset probabilities requires a choice of model period; we report quarterly and annual interpretations as alternative conventions. Under symmetric sector sizes $n_1 = n_2 = 1/2$, Proposition 1 admits a straightforward interpretation: a transition from the partial-disclosure regime ($\Gamma < 0$) to the full-disclosure regime ($\Gamma \geq 0$) corresponds to a shift in optimal communication from withholding sectoral dispersion to revealing it.

Table 1: An Application to the Euro Area.

(a) Monthly frequency of price changes, Gautier et al. (2025)

	Services		Goods	
Product sample	Pre	Surge	Pre	Surge
Harmonized sample, incl. sales	0.064	0.083	0.153	0.187
Harmonized sample, excl. sales	0.062	0.082	0.091	0.125
Country-specific sample, incl. sales	0.063	0.093	0.146	0.179
Country-specific sample, excl. sales	0.061	0.092	0.092	0.124

(b) Probability of the full-disclosure regime, $\mathbb{P}(\Gamma \geq 0)$

	Quarterly interpretation			Annual interpretation		
Product sample	Pre	Surge	Δ	Pre	Surge	Δ
Harmonized sample, incl. sales	0.120	0.185	0.065	0.901	1.000	0.099
Harmonized sample, excl. sales	0.040	0.078	0.038	0.544	0.783	0.239
Country-specific sample, incl. sales	0.106	0.167	0.060	0.861	1.000	0.139
Country-specific sample, excl. sales	0.040	0.081	0.041	0.545	0.805	0.260

Notes. Panel (a) reports monthly frequencies of price changes by sector and sub-period from Gautier et al. (2025), where "Pre" is the 2010–2019 average and "Surge" is the average over the inflation-surge period (2022–2023). The goods sector aggregates food and non-energy industrial goods using HICP weights. Panel (b) reports Monte Carlo estimates of $\mathbb{P}(\Gamma \geq 0)$, the probability that the economy lies in the full-disclosure regime under Proposition 1. Monthly frequencies are mapped into Calvo no-reset probabilities under two timing conventions: $\alpha_{i,q} = (1-f_{m,i})^3$ (quarterly) and $\alpha_{i,a} = (1-f_{m,i})^{12}$ (annual). The services-sector share $n_1 \approx 0.49$ is the HICP weight of services within services and goods (food plus non-energy industrial goods). Elasticities are drawn from $\eta \sim U[1,3]$ and $\theta \sim U[6,8]$.

The main object of interest is the change in disclosure incentives from the pre-surge period (2010–2019) to the inflation-surge period (2022–2023). Across all specifications, the inflation surge is associated with a systematic increase in $\mathbb{P}(\Gamma \geq 0)$, i.e., a shift toward the full-disclosure regime.[17] The qualitative pattern is robust to whether frequencies are computed on a harmonized euro-area product sample or on country-specific product samples, and to whether sales prices are included.

Interpreted through the lens of the model, the post-pandemic increase in the frequency of price adjustment, together with the pronounced services–goods asymmetry in nominal rigidities, raises the expected welfare gains from communicating sectoral inflation pressures. The same period saw the documented shift in ECB communication toward sectoral framing. Table 1 thus provides a structural rationale for the ECB's emphasis on sectoral heterogeneity: the contemporaneous change in nominal rigidities moves the optimal communication regime in the same direction as the change in actual communication observed

[17] The increase is particularly meaningful under the annual interpretation, and remains positive under the quarterly interpretation, which provides a conservative lower bound. The annual interpretation maps a given monthly frequency into a lower model-period no-reset probability, which mechanically reduces the within-sector dispersion cost and shifts the model toward full disclosure.

in the data.

4 Credibility of the Optimal Disclosure Rule

Section 3 characterized the optimal disclosure rule under commitment. We now assess whether this rule is sequentially incentive compatible: after observing the signal $\bar{v}^n$, does a monetary authority have an incentive to deviate from the commitment-optimal rule under the belief system induced by the rule?

Specifically, suppose private agents expect the monetary authority to follow the optimal disclosure rule $\varphi(\cdot)$ characterized in Proposition 1, and interpret messages accordingly. Under this maintained belief system, firms map the observed message into posterior means exactly as under the optimal rule. After observing the signal $\bar{v}^n$, does a discretionary authority prefer to deviate from that communication rule?

Formally, after observing $\bar{v}^n$, a discretionary monetary authority chooses a message $m = (m_1, m_2)$ to solve

$$\max_{m} \mathbb{E}\left[U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n) \;\middle|\; \bar{v}^n\right], \tag{4.1}$$

subject to

$$\hat{q} = \hat{q}(\mathbb{E}_{\tilde{\mu}}\hat{v}^n), \tag{4.2}$$

$$\mathbb{E}_{\tilde{\mu}}\hat{v}^n = m, \tag{4.3}$$

The first constraint requires that the monetary instrument is set in the benevolent, belief-consistent way defined in (2.17). The second constraint applies the following rule-consistent belief mapping to this deviation exercise: under $\Gamma \geq 0$, the on-path message space is two-dimensional and firms read the message at face value, $\mathbb{E}_{\tilde{\mu}}\hat{v}^n = m$; under $\Gamma < 0$, the on-path message space is one-dimensional and firms decode any disclosed scalar through the posterior loadings $(\beta_{\hat{y}^n}, \beta_{\hat{p}_R^n})$ of Proposition 1, $\mathbb{E}_{\tilde{\mu}}\hat{y}^n = \beta_{\hat{y}^n}\, m$ and $\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n = \beta_{\hat{p}_R^n}\, m$.

Proposition 2. *Consider the deviation problem* (4.1)–(4.3) *under the belief system induced by the commitment-optimal disclosure rule of Proposition 1.*

i. In a one-sector economy ($\eta = \theta$), the optimal full disclosure rule is sequentially incentive compatible: the rule is credible.

ii. In a multi-sector economy with $\eta < \theta$:

- *if $\Gamma \geq 0$, the full-disclosure rule is time-inconsistent: after observing the signal $\bar{v}^n$,* *a discretionary monetary authority has an incentive to deviate to the message*

$$m = \begin{pmatrix} m_1 \\ m_2 \end{pmatrix} = \begin{pmatrix} 1 & \kappa_1 \\ 0 & \kappa_2 \end{pmatrix} \begin{pmatrix} \bar{y}^n \\ \bar{p}_R^n \end{pmatrix} = \kappa \, \bar{v}^n, \tag{4.4}$$

where κ_1 and κ_2 are composite parameters of elasticities, price rigidities and sector sizes. In particular, if $\alpha_1 = \alpha_2 = \alpha$, then $\kappa_1 = 0$ and

$$\kappa_2 = \frac{\eta}{\eta(1-\alpha) + \theta\alpha},$$

independently of sector sizes (n_1, n_2).

- *if $\Gamma < 0$, the partial-disclosure rule $m = \bar{y}^n + \zeta \, \bar{p}_R^n$ is sequentially incentive compatible at symmetric sectors $n_1 = n_2 = 1/2$. With asymmetric sectors $n_1 \neq n_2$, a discretionary monetary authority has an incentive to deviate to the scalar message*

$$\tilde{m} = \nu_{\bar{y}^n} \, \bar{y}^n + \nu_{\bar{p}_R^n} \, \bar{p}_R^n, \tag{4.5}$$

where $\nu_{\bar{y}^n}$ and $\nu_{\bar{p}_R^n}$ are composite parameters of elasticities, price rigidities, and sector sizes.

Proof. See Appendix C. ∎

The commitment disclosure rule is vulnerable to a Barro–Gordon-type time inconsistency problem in a multi-sector economy ($\eta < \theta$). After observing the signal, the central bank has incentives to deviate from the optimal disclosure rule by sending a different message. The form of this deviation differs across disclosure regimes.

The Full-Disclosure Regime ($\Gamma \geq 0$). Under $\Gamma \geq 0$, the commitment rule discloses the full signal, and firms set reset prices that track the relative-price differential. However, truthful disclosure of the dispersion component generates substantial within-sector price dispersion. Hence, upon observing the signal, the central bank has incentives to send a message that attenuates the extent of sector-specific shocks—so that reset prices do not fully reflect productivity within each sector. The cost is that the relative-price gap does not reflect the productivity differential. The deviation matrix κ encodes this trade-off: the dispersion attenuation $|\kappa_2| < 1$ buys lower within-sector dispersion at the price of a worse relative-price gap, as is transparent from the closed form $\kappa_2 = \eta/[\eta(1-\alpha) + \theta\alpha]$ at symmetric rigidity. Figure 3 reports the resulting outcomes (red lines) as a function of symmetric price rigidity: under deviation, firms' posterior on the relative price is attenuated relative to truth (panel (a)), the within-sector dispersion welfare loss is smaller than under commitment, and the relative-price-gap welfare loss is larger (panel (b)).[18]

The Partial-Disclosure Regime ($\Gamma < 0$). Under $\Gamma < 0$, the commitment rule reveals a single scalar that discloses primarily the aggregate component of the state. At symmetric sectors $n_1 = n_2 = 1/2$, the disclosure of the aggregate state is exact—and firms form a zero posterior on dispersion, so that the central bank has no within-sector price dispersion to manage. Accordingly, the disclosure rule is credible. At asymmetric sectors $n_1 \neq n_2$, the commitment scalar incorporates a small downward adjustment $\zeta < 0$ that corrects, ex ante, for the prior coupling between aggregate and relative-price components, as shown in Proposition 1. Under commitment, this adjustment is ex-ante optimal: the $\zeta < 0$ tilt neutralizes the prior-induced spillover from aggregate to dispersion. At any specific realized signal, however, the same tilt leaves firms' posterior belief about dispersion attenuated relative to the realized $\bar{p}_R^n$ — and gives the central bank an incentive to deviate. The deviation $\tilde{m} = \nu_{\bar{y}^n} \bar{y}^n + \nu_{\bar{p}_R^n} \bar{p}_R^n$ reverses the direction of the dispersion adjustment ($\nu_{\bar{p}_R^n} > 0$ where $\zeta < 0$), as reported in Figure 4 (red lines). At the realized signal, this delivers welfare gains on every component—output gap, relative-price gap, and within-sector dispersion alike (see Figure 2 in the Online Appendix for the detailed economic outcome).

Overall, the optimal communication rule is time-inconsistent because of the divergence between ex ante and ex post management of within-sector price dispersion and the relative-price gap. Importantly, both forms of credibility failure are genuinely multi-sector phenomena: at $\eta = \theta$, the optimal regime is full disclosure and the rule is credible.

5 Discretionary Communication with(out) Reputation

Section 4 established that the commitment-optimal disclosure rule is, generically, not credible: a discretionary monetary authority has incentive to deviate from it once its signal is observed. We now turn to the equilibrium consequences of this lack of commitment, and study an infinite-horizon extension in which the monetary authority's communication is observed and shapes future beliefs, so that reputational concerns can partially substitute for commitment.

We restrict the dynamic analysis to $\Gamma > 0$ with symmetric sectors $n_1 = n_2 = 1/2$. This is the case in which communication is genuinely multi-sector — the commitment rule prescribes full disclosure of both the aggregate and the dispersion components (Proposi-

[18] Figure 1 in the Online Appendix reports the case of asymmetric price rigidity with similar interpretations.

tion 1), yet is not sequentially incentive compatible (Proposition 2). We present the key economic elements here and defer the full dynamic-game specification to Appendix D.

5.1 Setting

We consider an infinite-horizon extension in which the monetary authority's communication is observed and shapes future beliefs, following the framework of Kreps and Wilson (1982) applied to monetary policy in Backus and Driffill (1985). The monetary authority has an unobserved type $\delta \in \{C, S\}$, with stochastic turnover. The *committed* type (C) follows the optimal disclosure rule of Proposition 1, $m = \bar{v}^n$. The *strategic* type (S) randomizes: given a signal $\bar{v}^n$, with probability p it follows the same rule, and with the complementary probability $1 - p$ it pursues the discretionary deviation characterized in Proposition 2, $m = \kappa \bar{v}^n$. Firms do not observe the type δ; they hold a belief $\xi \equiv \mathbb{P}(\delta = C)$, which we refer to as the authority's *reputation.* In each period, nature draws the state $\hat{v}^n$, the authority observes a noisy signal $s = \hat{v}^n + \varepsilon$ and forms its informational statistic $\bar{v}^n \equiv \mathbb{E}(\hat{v}^n \mid s)$, and firms interpret messages according to reputation ξ. The asymmetry between the central bank and firms is one-sided: the central bank conditions on its private signal $\bar{v}^n$, while firms see only the realized aggregate outcome $\hat{v}^n$ ex post. Consequently, observed $\hat{v}^n$ does not perfectly reveal which action a strategic authority took — and this imperfect detection is what gives reputation its dynamic content.

A strategic authority trades off short-run stabilization gains from deviating against the loss in future credibility, captured by a decline in ξ that reduces the effectiveness of subsequent communication. Formally, given reputation ξ and signal $\bar{v}^n$, the strategic authority chooses the mixing probability p to solve

$$V_S(\xi, \bar{v}^n) = \max_{p \in [0,1]} \mathbb{E}_{m, \hat{v}^n} \Big\{ U\left(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}} \hat{v}^n | m\right) + \beta \mathbf{V}_S\big(\xi'\big) \Big\}, \tag{5.1}$$

subject to

$$\hat{q} = \hat{q}(\tilde{\mu}) \qquad \text{instrument policy} \tag{5.2}$$

$$\mathbb{E}_{\tilde{\mu}} \hat{v}^n = \mathbb{E}(\hat{v}^n | \xi, m) \qquad \text{interpretation of } m \tag{5.3}$$

$$\xi' = \xi'(\xi, m, \hat{v}^n). \qquad \text{law of motion of reputation} \tag{5.4}$$

The first constraint requires that the monetary instrument is set optimally in a belief-consistent way, as defined in (2.17). The next two constraints capture firms' Bayesian interpretation of the message m and the dynamic evolution of reputation, both formally characterized in Lemmas 3 and 4 of Appendix D, which also gives the formal definition of the Markov Perfect Bayesian Equilibrium concept.

The continuation value $\mathbf{V}_S(\xi')$ of a strategic authority reflects stochastic turnover between types. The incumbent remains in office next period with *persistence* λ. Otherwise a replacement is drawn from a population in which committed types occur with *prevalence* ρ. Hence, the continuation utility satisfies:

$$\mathbf{V}_S(\xi) = (1-(1-\lambda)\rho)\cdot \mathbb{E}_{\bar{v}^n} V_S(\xi,\bar{v}^n) + (1-\lambda)\rho \cdot \mathbb{E}_{\bar{v}^n} V_C(\xi,\bar{v}^n). \tag{5.5}$$

Firms understand this turnover and incorporate it in their updating of ξ: the next-period reputation ξ' reflects both Bayesian updating about the incumbent's type, given observed message $m \in \{\bar{v}^n, \kappa\bar{v}^n\}$ and realized $\hat{v}^n$, and the possibility that the incumbent is replaced. The committed-type value functions $V_C(\xi,\bar{v}^n)$ and $\mathbf{V}_C(\xi)$ are defined analogously, with the additional constraint $p = 1$.

We measure the stabilization performance of a type-δ authority by the stationary average flow utility,

$$\mathbf{W}_\delta = \int_\xi W_\delta(\xi) dG(\xi) = \int_\xi \mathbb{E}_{\bar{v}^n}\mathbb{E}_{m,\hat{v}^n} U\left(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n | m\right) dG(\xi), \tag{5.6}$$

where $G(\xi)$ is the endogenous stationary distribution of reputation induced by equilibrium updating and $\hat{q}$ satisfies (2.17).

5.2 Constant-Reputation Benchmark

To isolate the welfare consequences of type uncertainty from those of dynamic reputational discipline, we begin with the polar case $\lambda = 0$, in which the monetary authority is redrawn every period. Reputation is then time-invariant and equal to the population prevalence of committed types, $\xi = \rho$, and current communication carries no informational value for the future. The strategic authority therefore faces a purely static problem each period. Under $\lambda = 0$, the stationary welfare objects of (5.6) reduce to $W_\delta(\rho) = \mathbf{W}_\delta$ for each type δ, since reputation does not depart from ρ.

Proposition 3. *Let $\lambda = 0$. A strategic authority always deviates: $p(\xi,\bar{v}^n) = 0$ for all $\bar{v}^n$. Type-contingent welfare under discretion is ordered as*

$$W_C(\rho) \;\le\; W^{SI} \;\le\; W_S(\rho),$$

and ex-ante welfare lies weakly below the symmetric-information benchmark,

$$W(\rho) \;\equiv\; \rho\, W_C(\rho) + (1-\rho)\, W_S(\rho) \;\le\; W^{SI},$$

with strict inequalities when $0 < \rho < 1$.

Proof. See Appendix D.2.3. ∎

The welfare ordering reflects the consequences of type uncertainty for both types, absent any reputational discipline. The strategic authority gains by exploiting partial trust: when $\rho > 0$, firms assign positive probability that any message came from a committed type and read m as informative about $\bar{v}^n$. The strategic central bank exploits this by sending $m = \kappa\bar{v}^n$, influencing firms' posterior beliefs toward the deviation's preferred allocation while firms only partially decode it. The committed authority, in contrast, loses by truth-telling: firms adjust beliefs against the possibility that m came from a strategic type, inducing additional within-sector dispersion. Aggregating across types, the gains to the strategic authority do not offset the losses to the committed authority, and average welfare falls strictly below the symmetric-information benchmark, $W(\rho) < W^{SI}$.

The welfare cost arises only at interior ρ. When firms are certain about the central bank's type — either $\rho = 0$ or $\rho = 1$ — they fully decode any message and welfare equals the symmetric-information benchmark; in particular, at $\rho = 0$ firms know the monetary authority is a strategic type and decode the deviation as $\bar{v}^n = \kappa^{-1}m$, so $W_S(0) = W^{SI}$. The welfare cost is therefore informational rather than behavioral: it does not arise from the strategic central bank's actions per se but from firms' uncertainty about who is acting. The deviation $m = \kappa\bar{v}^n$ is a linear transformation of the signal — a signaling map — which Bayesian agents decode whenever they know the central bank's type.[19]

5.3 Dynamic Reputation

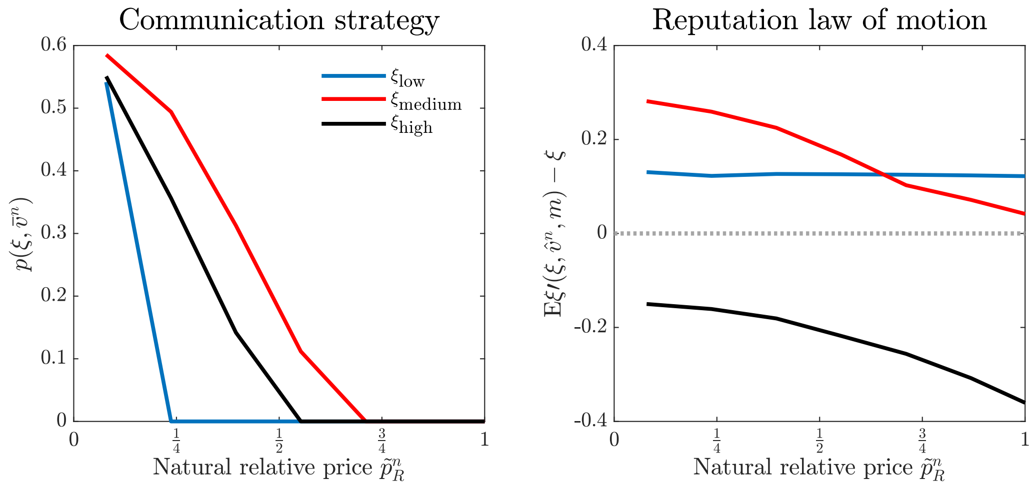
When $\lambda > 0$, reputation becomes informative about the central bank's type and disciplines the strategic authority's choice of p. We characterize this case numerically under a baseline calibration (Table 2, Appendix D.1.1) and emphasize three results.

State-contingent Incentives for Rule-based Disclosure. Whereas Proposition 3 has $p = 0$ uniformly under $\lambda = 0$, dynamic reputational incentives ($\lambda > 0$) make p depend non-trivially on $(\xi, \bar{v}^n)$. Figure 5 illustrates this element: the propensity to deviate increases with the magnitude of the dispersion shock $\bar{p}^n_R$, reflecting the contemporaneous gains of the deviation from dampening within-sector dispersion (Proposition 2). The dependence on reputation is non-monotonic. Deviations are frequent both at low ξ, where the marginal reputational cost of deviating is small, and at high ξ, where reputational capital can be

[19] This contrasts with the classical credibility cost in Barro and Gordon (1983) and its reputational extension by Backus and Driffill (1985), where the strategic policymaker's deviation is a level-bias in the policy instrument (an inflation surprise) that rational expectations cannot undo; the welfare loss is present even under common knowledge of type.

drawn down to improve stabilization. Rule-based disclosure is therefore most prevalent at intermediate reputation ξ and moderate dispersion shocks, where reputation matters most for the value of future communication.

Figure 5: Reputation and strategic communication



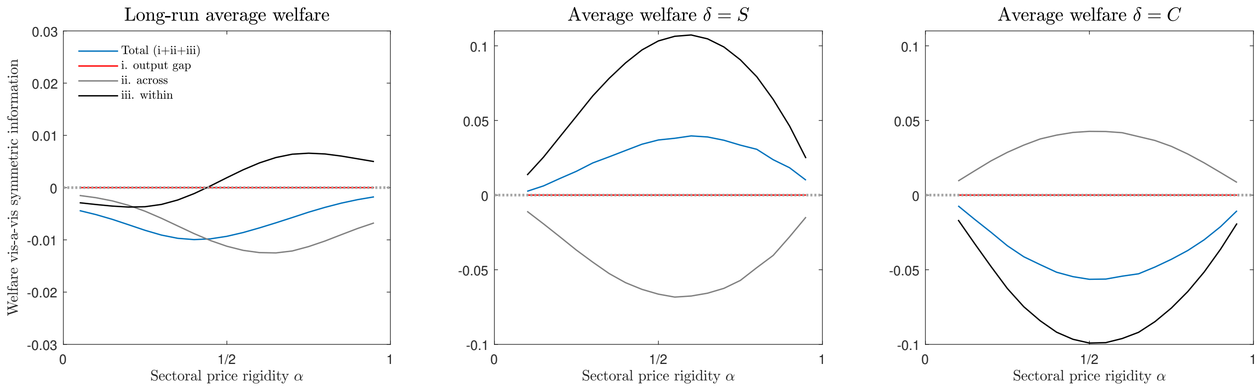
Notes. The left panel reports the communication policy $p(\xi, \bar{v}^n)$ of a strategic monetary authority ($\delta = S$), with different lines corresponding to different levels of reputation ξ; $p = 1$ denotes rule-based disclosure and $p = 0$ denotes the discretionary deviation. The right panel presents the associated law of motion of reputation. The x-axis is indexed as multiples of the standard deviation of dispersion $\sigma_{\tilde{p}_R^n}$. Calibration is reported in Table 2, Appendix D.1.1.

Short-run Versus Long-run Welfare Trade-offs. The dynamic equilibrium generates a tension between short-run stabilization gains and long-run welfare losses. Figure 6 reports the decomposition of stationary welfare. A strategic monetary authority (middle panel) achieves welfare gains relative to the symmetric-information benchmark by influencing firms' beliefs through selective discretionary reporting, reducing within-sector price dispersion. A committed authority (right panel), in contrast, faces a private sector that rationally anticipates possible strategic distortions, leading to higher within-sector dispersion and lower welfare. Aggregating across types (left panel), stationary welfare remains strictly below W^{SI}: the type-uncertainty welfare loss of Proposition 3 persists at $\lambda > 0$. Reputation provides partial discipline to communication but does not promote commitment outcomes.

Sensitivity to Structural Parameters. Table 3 in Appendix D.1.1 reports a sensitivity analysis of policy and welfare losses along three axes: price rigidities, substitution elasticities, and the characteristics of the monetary authority.

Price rigidities. Lower symmetric rigidities reduce the welfare cost of within-sector dispersion, and thereby the value of manipulating disclosure: the strategic type reports

Figure 6: Reputation and welfare



Notes. The figure decomposes stationary welfare into three components: **output gap**, **relative price gap**, and **price dispersion within sectors**, with **total welfare** as their sum. The left panel reports the unconditional welfare aggregated across types; the middle panel reports welfare conditional on the strategic type ($\delta = S$); the right panel reports welfare conditional on the committed type ($\delta = C$). All quantities are plotted against reputation ξ. Calibration is reported in Table 2, Appendix D.1.1.

truthfully more often, and its conditional welfare gain contracts. Asymmetric rigidities amplify the gains from misreporting most strongly, as a sufficiently flexible sector absorbs the relative-price correction while the dispersion cost is borne by the rigid one.

Elasticities. Lower across-sector substitutability η raises the relative importance of within-sector dispersion stabilization, increasing the strategic-disclosure incentive, lowering the strategic type's equilibrium reputation, and generating larger conditional welfare gains. This is the same trade-off that determines the optimal commitment rule (Section 3).

Monetary authority. A more precise signal (smaller σ_ε), a higher prevalence ρ of committed types, and a higher persistence λ each dampen misreporting, through distinct channels: precision sharpens firms' detection of deviations, prevalence raises the prior reputation $\xi = \rho$, and persistence raises the future value of credibility. Yet these same forces raise the conditional welfare gain the strategic type secures when it does deviate. The reason is that reputation is the asset the strategic type exploits: when committed types are more prevalent, more persistent, or harder to distinguish through a sharper signal, the trust embedded in any given message is more valuable, so a rare deviation yields a larger short-run gain. Reputation thus disciplines the frequency of strategic disclosure without neutralizing its payoff.

Overall, reputation operates as an imperfect substitute for commitment. It disciplines how often the strategic type departs from the rule, but does not neutralize the gains from doing so, and in every case discretionary distortions imply persistent credibility losses and lower long-run stabilization performance.

6 Conclusion

This paper develops a theory of monetary communication in a multi-sector New Keynesian economy. The unifying mechanism is that, when the central bank holds superior information, communication is an information-design problem; and once messages affect price setting under nominal rigidities, disclosure is subject to a Barro-Gordon-like time-inconsistency problem. In a genuinely multi-sector economy, both the commitment-optimal disclosure rule and the credibility wedge are pinned down by price rigidities, sector sizes and sectoral elasticities. In a dynamic extension with unobservable policy-maker types, reputational incentives partially discipline communication but do not restore the commitment outcome.

The framework provides a structural lens on the post-pandemic shift toward sectoral inflation narratives: environments with stronger sectoral asymmetries and more frequent price adjustments raise the value of dispersion disclosure. A natural direction for future work is to study institutional designs that strengthen commitment in communication, including delegation schemes and verifiable disclosure technologies.

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Appendix

A Economic Environment

A.1 Distributions and Signals

Productivity and natural variables. Let $\hat{a} = (\hat{a}_1, \hat{a}_2)^\top$ with $\hat{a}_j \sim \mathcal{N}(0, \sigma^2)$ independent across sectors. The state vector $\hat{v}^n = (\hat{y}^n, \hat{p}^n_R)^\top$ aggregates the primitive shocks through

$$\hat{v}^n = M\hat{a}, \qquad M = \begin{pmatrix} n_1 & n_2 \\ 1 & -1 \end{pmatrix}, \tag{A.1}$$

reflecting $\hat{y}^n = n_1\hat{a}_1 + n_2\hat{a}_2$ and $\hat{p}^n_R = \hat{a}_1 - \hat{a}_2$. The prior covariance is

$$\tilde{\Sigma} \;\equiv\; \mathrm{Var}(\hat{v}^n) \;=\; \sigma^2\, MM^\top \;=\; \sigma^2 \begin{pmatrix} n_1^2 + n_2^2 & n_1 - n_2 \\ n_1 - n_2 & 2 \end{pmatrix} \;\equiv\; \sigma^2\,\Sigma, \tag{A.2}$$

where $\Sigma \equiv MM^\top$ is the structural aggregation matrix.

Noisy signals and Bayesian update. The central bank does not observe $\hat{a}$ directly; it receives noisy signals on the primitives,

$$s_i = \hat{a}_i + \varepsilon_i, \qquad \varepsilon_i \sim \mathcal{N}(0, \sigma_\varepsilon^2) \text{ iid}, \quad \varepsilon \perp \hat{a}. \tag{A.3}$$

The same linear aggregation that maps $\hat{a} \mapsto \hat{v}^n$ maps the noisy primitives into a signal on the state:

$$s \equiv M(\hat{a} + \varepsilon) = \hat{v}^n + M\varepsilon, \qquad \mathrm{Var}(M\varepsilon) = \sigma_\varepsilon^2\,\Sigma. \tag{A.4}$$

Prior covariance and noise covariance are both proportional to the structural matrix Σ. The pair $(\hat{v}^n, s)$ is jointly Gaussian with $\mathrm{Var}(\hat{v}^n) = \sigma^2\Sigma$, $\mathrm{Var}(s) = (\sigma^2 + \sigma_\varepsilon^2)\Sigma$, and $\mathrm{Cov}(\hat{v}^n, s) = \sigma^2\Sigma$, so the Bayesian update is:

$$\hat{v}^n \mid s \sim \mathcal{N}\left(\frac{\sigma^2}{\sigma^2 + \sigma_\varepsilon^2}\, s,\; \Sigma\frac{\sigma^2\sigma_\varepsilon^2}{\sigma^2 + \sigma_\varepsilon^2}\right). \tag{A.5}$$

Define $\bar{v}^n \equiv \mathbb{E}(\hat{v}^n \mid s) = \frac{\sigma^2}{\sigma^2+\sigma_\varepsilon^2} s$ as the central bank's information-relevant statistic. Its prior distribution is

$$\bar{v}^n \sim \mathcal{N}\left(0, \Sigma \frac{\sigma^4}{\sigma^2 + \sigma_\varepsilon^2}\right), \tag{A.6}$$

and

$$\hat{v}^n \mid \bar{v}^n \sim \mathcal{N}\left(\bar{v}^n, \Sigma \frac{\sigma^2 \sigma_\varepsilon^2}{\sigma^2 + \sigma_\varepsilon^2}\right). \tag{A.7}$$

The perfect-observation limit $\sigma_\varepsilon \to 0$ recovers $\bar{v}^n = s = \hat{v}^n$.

A.2 Policy Representation of a Competitive Equilibrium

A.2.1 Proof of Lemma 1

Under the efficient subsidy and log utility, real marginal cost equals $\hat{q} - \hat{a}_j$ in log deviations, hence the reset price equals its posterior mean: $\hat{p}_j^r = \mathbb{E}_{\tilde{\mu}}(\hat{q} - \hat{a}_j) = \mathbb{E}_{\tilde{\mu}}\left(\hat{q} - \hat{y}^n + n_{-j}(\hat{a}_{-j} - \hat{a}_j)\right)$. Insert $\hat{p}_R^n = \hat{a}_1 - \hat{a}_2$ and get:

$$\hat{p}_1^r = (\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) - n_2 \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \qquad \hat{p}_2^r = (\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) + n_1 \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{A.8}$$

$$\hat{p} = (1 - n_1\alpha_1 - n_2\alpha_2)(\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) + n_1 n_2 (\alpha_1 - \alpha_2)\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{A.9}$$

$$\hat{p}_R = (\alpha_1 - \alpha_2)(\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n) + (1 - n_1\alpha_2 - n_2\alpha_1)\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n. \tag{A.10}$$

The welfare function then writes:

$$U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n) \approx -\frac{1}{2}\left[\left(\hat{q} - \hat{p} - \hat{y}^n\right)^2 + \eta n_1 n_2 \left(\hat{p}_R - \hat{p}_R^n\right)^2 + \theta \sum_j n_j \alpha_j (1 - \alpha_j)\left(\hat{p}_j^r\right)^2\right] + \text{t.i.p.} \tag{A.11}$$

A.2.2 Proof of Lemma 2

The benevolent welfare criterion given posterior beliefs $\tilde{\mu}$ is $\mathbb{E}_{\tilde{\mu}} U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n)$, i.e.,

$$\begin{aligned}\mathbb{E}_{\tilde{\mu}} U \approx -\frac{1}{2}\Bigg[&\left(\hat{q} - \hat{p} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n\right)^2 + \text{Var}_{\tilde{\mu}}\hat{y}^n + \eta n_1 n_2 \left(\hat{p}_R - \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\right)^2 \\ &+ \eta n_1 n_2 \text{Var}_{\tilde{\mu}}\hat{p}_R^n + \theta \sum_j n_j \alpha_j (1 - \alpha_j)\left(\hat{p}_j^r\right)^2\Bigg] + \text{t.i.p.}\end{aligned} \tag{A.12}$$

where the $\text{Var}(\cdot)$ terms are independent of $\hat{q}$. The first order conditions w.r.t. $\hat{q}$:

$$(n_1\alpha_1 + n_2\alpha_2)\left(\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n - \hat{p}\right) + (\alpha_1 - \alpha_2)\eta n_1 n_2 \left(\hat{p}_R - \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\right) + \theta \sum_j n_j \alpha_j (1 - \alpha_j)\left(\hat{p}_j^r\right) = 0. \tag{A.13}$$

The coefficient associated to $\hat{q} - \mathbb{E}_{\tilde{\mu}}\hat{y}^n$ is:

$$\left(n_1\alpha_1 + n_2\alpha_2\right)^2 + \eta\, n_1 n_2 (\alpha_1 - \alpha_2)^2 + \theta\left[n_1\alpha_1(1 - \alpha_1) + n_2\alpha_2(1 - \alpha_2)\right]. \tag{A.14}$$

The coefficient associated to $\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n$ is:

$$-n_1 n_2(\alpha_1 - \alpha_2)\left[\left(n_1\alpha_1 + n_2\alpha_2\right) + \eta\left(n_1\alpha_2 + n_2\alpha_1\right) + \theta\left(1 - \alpha_1 - \alpha_2\right)\right]. \tag{A.15}$$

Reorganizing these terms, the optimal monetary rule writes:

$$\hat{q} = \mathbb{E}_{\tilde{\mu}}\hat{y}^n + \gamma_q \cdot \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{A.16}$$

with

$$\gamma_q = \frac{n_1 n_2(\alpha_1-\alpha_2)\Big[\big(n_1\alpha_1+n_2\alpha_2\big)+\eta\big(n_1\alpha_2+n_2\alpha_1\big)+\theta\big(1-\alpha_1-\alpha_2\big)\Big]}{\big(n_1\alpha_1+n_2\alpha_2\big)^2+\eta\, n_1 n_2\,(\alpha_1-\alpha_2)^2+\theta\Big[n_1\alpha_1(1-\alpha_1)+n_2\alpha_2(1-\alpha_2)\Big]}. \tag{A.17}$$

Equilibrium Outcome under Belief-Consistent Monetary Policy. It is useful to characterize equilibrium prices and output when monetary policy is set optimally. Reset prices satisfy:

$$\hat{p}_1^r = (\gamma_q - n_2)\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \qquad \hat{p}_2^r = (\gamma_q + n_1)\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{A.18}$$

aggregate and relative prices

$$\hat{p} = [\gamma_q - n_1\alpha_1\,(\gamma_q - n_2) - n_2\alpha_2\,(\gamma_q + n_1)]\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n = \gamma_p \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{A.19}$$

$$\hat{p}_R = [1 + \alpha_1\,(\gamma_q - n_2) - \alpha_2\,(\gamma_q + n_1)]\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n = \gamma_{p_R}\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{A.20}$$

where γ_p and γ_{p_R} collect coefficients, and output

$$\hat{y} = \mathbb{E}_{\tilde{\mu}}\hat{y}^n + [n_1\alpha_1\,(\gamma_q - n_2) + n_2\alpha_2\,(\gamma_q + n_1)]\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n. \tag{A.21}$$

B The Optimal Disclosure of Information

To characterize the optimal disclosure rule (Proposition 1), first derive the ex-ante welfare criterion $\mathbb{E}U(\cdot)$ as a function of posterior beliefs $\mathbb{E}_{\tilde{\mu}}\hat{y}^n$ and $\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n$. Start from the welfare expression (A.11), and substitute the monetary rule (A.16) and prices (A.18)-(A.20). Specifically, using (A.16) and (A.19), get

$$\hat{q} - \hat{p} - \hat{y}^n = \big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n - \hat{y}^n\big) + \gamma_y\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{B.1}$$

where $\gamma_y \equiv n_1\alpha_1(\gamma_q - n_2) + n_2\alpha_2(\gamma_q + n_1)$. Define

$$\Omega \equiv n_1\alpha_1(1-\alpha_1)(\gamma_q - n_2)^2 + n_2\alpha_2(1-\alpha_2)(\gamma_q + n_1)^2. \tag{B.2}$$

Then substituting these expressions into (A.11) yields

$$U \approx -\frac{1}{2}\left[\Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n + \gamma_y\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n - \hat{y}^n\Big)^2 + \eta n_1 n_2\Big(\gamma_{p_R}\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n - \hat{p}_R^n\Big)^2 + \theta\,\Omega\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2\right] + \text{t.i.p.} \tag{B.3}$$

Next, by rational expectations, posterior beliefs equal the true conditional expectations given the message: $\mathbb{E}_{\tilde{\mu}}\hat{y}^n = \mathbb{E}[\hat{y}^n \mid m]$ and $\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n = \mathbb{E}[\hat{p}_R^n \mid m]$. The projection residual $\hat{y}^n - \mathbb{E}[\hat{y}^n \mid m]$ is then orthogonal to any function of m, including $\mathbb{E}[\hat{p}_R^n \mid m]$ itself. Hence, the associated projection residuals satisfy

$$\mathbb{E}\Big[\big(\hat{y}^n - \mathbb{E}_{\tilde{\mu}}\hat{y}^n\big)\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big] = 0, \qquad \mathbb{E}\Big[\big(\hat{p}_R^n - \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\big)\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big] = 0. \tag{B.4}$$

Using (B.4), expanding squares in (B.3), and applying the law of total variance,

$$\begin{aligned}\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n + \gamma_y \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n - \hat{y}^n\Big)^2 &= \mathbb{E}(\hat{y}^n - \mathbb{E}_{\tilde{\mu}}\hat{y}^n)^2 + \gamma_y^2\,\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2 \\ &= \mathbb{E}(\hat{y}^n)^2 - \mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n\Big)^2 + \gamma_y^2\,\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2, \qquad \text{(B.5)}\\ \mathbb{E}\Big(\gamma_{p_R}\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n - \hat{p}_R^n\Big)^2 &= \mathbb{E}(\hat{p}_R^n - \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n)^2 + (\gamma_{p_R}-1)^2\,\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2 \\ &= \mathbb{E}(\hat{p}_R^n)^2 - \mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2 + (\gamma_{p_R}-1)^2\,\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2. \qquad \text{(B.6)}\end{aligned}$$

Substituting (B.5)–(B.6) into the ex-ante expectation of (B.3) yields

$$\begin{aligned}\mathbb{E}U = -\frac{1}{2}\Bigg[&\mathbb{E}(\hat{y}^n)^2 + \eta n_1 n_2\,\mathbb{E}(\hat{p}_R^n)^2 - \mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n\Big)^2 \\ &+ \Big(\gamma_y^2 + \eta n_1 n_2\big[(\gamma_{p_R}-1)^2 - 1\big] + \theta\Omega\Big)\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2\Bigg] + \text{t.i.p.}\end{aligned} \qquad \text{(B.7)}$$

where the first two terms are simply the unconditional variance of $\hat{y}^n$ and $\hat{p}_R^n$, two terms that are independent of policy. Equivalently, collecting communication-relevant terms only,

$$\mathbb{E}U = \frac{1}{2}\,\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n\Big)^2 + \frac{1}{2}\,\Gamma\;\mathbb{E}\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2 + \text{t.i.p.}, \qquad \text{(B.8)}$$

where the coefficient Γ satisfies

$$\Gamma \equiv -\Big[\gamma_y^2 + \eta n_1 n_2\big((\gamma_{p_R}-1)^2 - 1\big) + \theta\Omega\Big], \qquad \text{(B.9)}$$

with γ_q given by (A.17) and

$$\gamma_{p_R} = 1 + \alpha_1(\gamma_q - n_2) - \alpha_2(\gamma_q + n_1), \qquad \text{(B.10)}$$

$$\gamma_y = n_1\alpha_1(\gamma_q - n_2) + n_2\alpha_2(\gamma_q + n_1), \qquad \text{(B.11)}$$

$$\Omega = n_1\alpha_1(1-\alpha_1)(\gamma_q - n_2)^2 + n_2\alpha_2(1-\alpha_2)(\gamma_q + n_1)^2. \qquad \text{(B.12)}$$

The $\theta\Omega$ term captures within-sector dispersion costs; the η-term captures the allocative gain from moving p_R toward p_R^n. An equivalent representation of the composite parameter Γ is:

$$\begin{aligned}\Gamma = -\Bigg\{&\Big[\big(n_1\alpha_1 + n_2\alpha_2\big)\gamma_q + n_1 n_2(\alpha_2 - \alpha_1)\Big]^2 \\ &+ \eta n_1 n_2\Big(\Big[(\alpha_1 - \alpha_2)\gamma_q - (\alpha_1 n_2 + \alpha_2 n_1)\Big]^2 - 1\Big) \\ &+ \theta\Big[n_1\alpha_1(1-\alpha_1)(\gamma_q - n_2)^2 + n_2\alpha_2(1-\alpha_2)(\gamma_q + n_1)^2\Big]\Bigg\}.\end{aligned} \qquad \text{(B.13)}$$

Optimal disclosure rule program. *Persuasion objective.* Let φ denote an (ex ante) disclosure rule that maps $\bar{v}^n$ into a public message m. Under commitment, the authority chooses φ to maximize

$$\max_{\varphi}\;\mathbb{E}\,U(\mathbb{E}[\hat{v}^n \mid m]) = \frac{1}{2}\,\mathbb{E}\Big[(\mathbb{E}[\hat{y}^n \mid m])^2 + \Gamma\,(\mathbb{E}[\hat{p}_R^n \mid m])^2\Big]. \qquad \text{(B.14)}$$

By the law of iterated expectations, $\mathbb{E}[\hat{v}^n \mid m] = \mathbb{E}[\bar{v}^n \mid m]$, so the persuasion problem can be cast directly in terms of $\bar{v}^n$. The prior covariance of $\bar{v}^n$ inherits the same shape as the prior covariance of $\hat{v}^n$, scaled by the Bayesian-update factor from (A.5):

$$\mathrm{Var}(\bar{v}^n) = \frac{\sigma^2}{\sigma^2 + \sigma_\varepsilon^2}\,\tilde{\Sigma}. \tag{B.15}$$

Feasibility constraint. By the law of total variance, for each component $x \in \{\bar{y}^n, \bar{p}_R^n\}$,

$$\mathrm{Var}(x) = \mathrm{Var}(\mathbb{E}[x \mid m]) + \mathbb{E}[V(x \mid m)] \;\;\Rightarrow\;\; 0 \le \mathrm{Var}(\mathbb{E}[x \mid m]) \le \mathrm{Var}(x). \tag{B.16}$$

In matrix form, writing $S \equiv \mathrm{Var}(\mathbb{E}[\hat{v}^n \mid m]) = \mathrm{Var}(\mathbb{E}[\bar{v}^n \mid m])$, this yields the persuasion feasibility constraint

$$0 \preceq S \preceq \frac{\sigma^2}{\sigma^2 + \sigma_\varepsilon^2}\,\tilde{\Sigma}, \tag{B.17}$$

with equality on the right at full disclosure ($m = \bar{v}^n$). Any S satisfying (B.17) is implementable by a linear signal m.

Trace formulation. The objective in (B.14) is linear in S. With $V \equiv \mathrm{diag}(1, \Gamma)$,

$$\mathbb{E}\,U = \frac{1}{2}\,\mathrm{tr}(VS) + \text{t.i.p.}, \tag{B.18}$$

so the persuasion program becomes

$$\max_S \;\mathrm{tr}(VS) \quad \text{s.t.} \quad 0 \preceq S \preceq \frac{\sigma^2}{\sigma^2 + \sigma_\varepsilon^2}\,\tilde{\Sigma}. \tag{B.19}$$

Change of variables. Set $\tilde{S} \equiv \tilde{\Sigma}^{-1/2} S\, \tilde{\Sigma}^{-1/2}$ and define

$$W \equiv \tilde{\Sigma}^{1/2}\, V\, \tilde{\Sigma}^{1/2}. \tag{B.20}$$

The property of the trace gives $\mathrm{tr}(VS) = \mathrm{tr}(W\tilde{S})$. The scalar in the right bound of (B.17) is absorbed into $\tilde{S}$: $0 \preceq S \preceq [\sigma^2/(\sigma^2+\sigma_\varepsilon^2)]\,\tilde{\Sigma}$ rewrites as $0 \preceq \tilde{S} \preceq [\sigma^2/(\sigma^2+\sigma_\varepsilon^2)]\,I$, which is the same problem (up to a positive rescaling of the constraint set) as $0 \preceq \tilde{S} \preceq I$. Since the objective $\mathrm{tr}(W\tilde{S})$ is linear in $\tilde{S}$, the optimal disclosure direction is unchanged. Program (B.19) is thus equivalent to

$$\max_{\tilde{S}} \;\mathrm{tr}(W\tilde{S}) \quad \text{s.t.} \quad 0 \preceq \tilde{S} \preceq I, \tag{B.21}$$

the canonical form of Tamura (2018a)'s persuasion problem under quadratic preferences and Gaussian state. The change of variables makes the constraint set symmetric (bounded by the identity equally in every direction), so the optimum can be read off the eigenvectors of W.

Trace, determinant, and eigenvalues of W. Recall M from (A.1) and $\Sigma \equiv MM^\top$, so $\tilde{\Sigma} = \sigma^2\Sigma$ and $\tilde{\Sigma}^{1/2} = \sigma\,\Sigma^{1/2}$. The symmetric square root $\Sigma^{1/2} = \begin{pmatrix} a & c \\ c & b \end{pmatrix}$ has entries satisfying $a^2 + c^2 = n_1^2 + n_2^2$, $b^2 + c^2 = 2$, and $c(a + b) = n_1 - n_2$. Then

$$W = \sigma^2 \begin{pmatrix} a^2 + c^2\Gamma & c(a + b\Gamma) \\ c(a + b\Gamma) & c^2 + b^2\Gamma \end{pmatrix}, \tag{B.22}$$

$$\operatorname{tr}(W) = \sigma^2 \left[(n_1^2 + n_2^2) + 2\Gamma\right]. \tag{B.23}$$

For the determinant, $ab - c^2 = \sqrt{\det \Sigma} = 1$ (using $\det \Sigma = 2(n_1^2 + n_2^2) - (n_1 - n_2)^2 = (n_1 + n_2)^2 = 1$), so

$$\det(W) = \sigma^4\, \Gamma. \tag{B.24}$$

The eigenvalues (ω_+, ω_-) of W satisfy

$$\omega_+ + \omega_- = \sigma^2 \left[(n_1^2 + n_2^2) + 2\Gamma\right], \qquad \omega_+\omega_- = \sigma^4\, \Gamma. \tag{B.25}$$

Full versus partial disclosure. The sign of $\det(W) = \sigma^4\Gamma$ pins down the eigenvalue structure:

- If $\Gamma \geq 0$, then $\det(W) \geq 0$ and $\operatorname{tr}(W) = \sigma^2[(n_1^2 + n_2^2) + 2\Gamma] > 0$, so both eigenvalues are non-negative. The maximizer of (B.21) is $\tilde{S} = I$, equivalently $S = \tilde{\Sigma}$, and the optimal disclosure rule is full disclosure: $m = \bar{v}^n$.
- If $\Gamma < 0$, then $\det(W) < 0$ alone suffices for opposite-sign eigenvalues, with one positive eigenvalue ω_+ and one negative. The maximizer is $\tilde{S} = q_+q_+^\top$, where q_+ is the eigenvector of W at ω_+.

Symmetric Economy. In the symmetric case with $n_1 = n_2 = \frac{1}{2}$ and $\alpha_1 = \alpha_2$, one has $\gamma_q = 0$, $\gamma_y = 0$, $\gamma_{p_R} = 1 - \alpha$, and $\Omega = \frac{1}{4}\alpha(1 - \alpha)$, so that (B.9) simplifies to

$$\Gamma = -\frac{1 - \alpha}{4}\left[\theta\alpha - \eta(1 + \alpha)\right]. \tag{B.26}$$

Hence, the full disclosure condition $\Gamma \geq 0$ is equivalent to

$$\frac{\theta}{\eta} \leq \frac{1 + \alpha}{\alpha}. \tag{B.27}$$

The remainder of the proof characterizes the partial-disclosure regime ($\Gamma < 0$).

Disclosing a single linear combination ($\Gamma < 0$). Under $\Gamma < 0$, the maximizer $\tilde{S} = q_+q_+^\top$ corresponds to $S = \tilde{\Sigma}^{1/2}q_+q_+^\top\tilde{\Sigma}^{1/2}$. A linear signal $m = b^\top\bar{v}^n$ induces posterior covariance $S = [\sigma^2/(\sigma^2 + \sigma_\varepsilon^2)]\,\tilde{\Sigma}\,bb^\top\tilde{\Sigma}/(b^\top\tilde{\Sigma}b)$ by Gaussian projection; the shrinkage scalar cancels in matching S to S^*, which requires $b = \tilde{\Sigma}^{-1/2}q_+$. The optimal disclosure rule takes the form $m = b^\top\bar{v}^n$. The first row of the eigenvalue equation $(W - \omega_+I)q_+ = 0$ gives

$$\frac{q_{+,2}}{q_{+,1}} = \frac{\omega_+ - W_{11}}{W_{12}} \equiv r, \tag{B.28}$$

where $W_{11} = a^2 + c^2\Gamma$, $W_{12} = c(a + b\Gamma)$, and ω_+ is the larger root of $\omega^2 - \mathrm{tr}(W)\,\omega + \det(W) = 0$:

$$\omega_+ = \tfrac{1}{2}\Big(\mathrm{tr}(W) + \sqrt{\mathrm{tr}(W)^2 - 4\det(W)}\Big). \tag{B.29}$$

With $q_+ = (1, r)^\top$ and $\tilde{\Sigma}^{-1/2} = \sigma^{-1}\begin{pmatrix} b & -c \\ -c & a \end{pmatrix}$,

$$\begin{pmatrix} b_1 \\ b_2 \end{pmatrix} = \begin{pmatrix} b - cr \\ -c + ar \end{pmatrix}. \tag{B.30}$$

Normalizing $b_1 = 1$, the optimal disclosure rule is

$$m = \bar{y}^n + b_2\,\bar{p}_R^n, \qquad b_2 = \frac{-c + ar}{b - cr}. \tag{B.31}$$

The body uses notation $\zeta \equiv b_2$ for the partial-disclosure tilt.

Posterior beliefs ($\Gamma < 0$). Firms observe $m = s^\top \bar{v}^n$ with $s = (1, b_2)^\top$ and form Gaussian posterior beliefs about the components of the state. The conditional-mean formula gives

$$\mathbb{E}[\hat{v}^n \mid m] = \beta\, m, \qquad \beta \equiv \frac{\tilde{\Sigma} s}{s^\top \tilde{\Sigma} s}. \tag{B.32}$$

Substituting (2.11),

$$\beta_{\hat{y}^n} = \frac{(n_1^2 + n_2^2) + (n_1 - n_2)\, b_2}{(n_1^2 + n_2^2) + 2(n_1 - n_2)\, b_2 + 2b_2^2}, \tag{B.33}$$

$$\beta_{\hat{p}_R^n} = \frac{(n_1 - n_2) + 2b_2}{(n_1^2 + n_2^2) + 2(n_1 - n_2)\, b_2 + 2b_2^2}. \tag{B.34}$$

Posterior beliefs are $\mathbb{E}[\hat{y}^n \mid m] = \beta_{\hat{y}^n}\, m$ and $\mathbb{E}[\hat{p}_R^n \mid m] = \beta_{\hat{p}_R^n}\, m$. Under noisy central-bank information, the prior covariance rescales uniformly to $[\sigma^2/(\sigma^2 + \sigma_\varepsilon^2)]\,\tilde{\Sigma}$, and the rescaling cancels in (B.32): the closed forms (B.33)–(B.34) are invariant to σ_ε, consistent with the σ_ε-invariance noted in Section 2.

Symmetric sector sizes ($\Gamma < 0$). At $n_1 = n_2 = \frac{1}{2}$, the constraint $c(a + b) = 0$ forces $c = 0$. Then W is diagonal with $W_{11} = \sigma^2/2$ and $W_{22} = 2\sigma^2\Gamma$; the positive eigenvalue is $\omega_+ = W_{11}$, and (B.28) gives $r = 0$. Substituting into (B.31), $b_2 = 0$, so $m = \bar{y}^n$. Substituting $b_2 = 0$ and $n_1 - n_2 = 0$ into (B.33)–(B.34), $\beta_{\hat{y}^n} = 1$ and $\beta_{\hat{p}_R^n} = 0$.

C Discretionary Deviation

This section presents the elements of the proof of Proposition 2.

1. Welfare as a Function of Posterior Beliefs. Substitute the monetary rule (A.16) into (A.8), (A.9) and (A.10) and get:

$$\hat{p}_1^r = (\gamma_q - n_2)\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \qquad \hat{p}_2^r = (\gamma_q + n_1)\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n. \tag{C.1}$$

$$\hat{p} = \Big[(1 - n_1\alpha_1 - n_2\alpha_2)\gamma_q + n_1 n_2(\alpha_1 - \alpha_2)\Big]\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{C.2}$$

$$\hat{p}_R = \Big[(\alpha_1 - \alpha_2)\gamma_q + (1 - n_1\alpha_2 - n_2\alpha_1)\Big]\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n. \tag{C.3}$$

Now consider the utility flow (A.11) and derive each quadratic term, starting with the output gap:

$$\begin{aligned}\hat{q} - \hat{p} - \hat{y}^n &= \Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n - \hat{y}^n\Big) + \gamma_q\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n - \hat{p}\\ &= \Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n - \hat{y}^n\Big) + \Big[(n_1\alpha_1 + n_2\alpha_2)\gamma_q - n_1 n_2(\alpha_1 - \alpha_2)\Big]\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n,\end{aligned} \tag{C.4}$$

Second, the relative-price gap is

$$\hat{p}_R - \hat{p}_R^n = -\hat{p}_R^n + \Big[(\alpha_1 - \alpha_2)\gamma_q + (1 - n_1\alpha_2 - n_2\alpha_1)\Big]\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n, \tag{C.5}$$

using (C.3). Third, the within-sector price dispersion term reads:

$$\theta\sum_{j=1}^{2} n_j\alpha_j(1-\alpha_j)(\hat{p}_j^r)^2 = \theta\Big[n_1\alpha_1(1-\alpha_1)(\gamma_q - n_2)^2 + n_2\alpha_2(1-\alpha_2)(\gamma_q + n_1)^2\Big]\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2. \tag{C.6}$$

Collecting (C.4), (C.5), and (C.6) into (A.11), the flow welfare can be written as a function of the realized state $\hat{v}^n = (\hat{y}^n, \hat{p}_R^n)$ and posterior means $\mathbb{E}_{\tilde{\mu}}\hat{v}^n = \big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n, \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\big)$:

$$\begin{aligned}U\Big(\hat{v}^n; \mathbb{E}_{\tilde{\mu}}\hat{v}^n\Big) \approx -\frac{1}{2}\Bigg\{&\Bigg[\Big(\mathbb{E}_{\tilde{\mu}}\hat{y}^n - \hat{y}^n\Big) + \Big((n_1\alpha_1 + n_2\alpha_2)\gamma_q - n_1 n_2(\alpha_1 - \alpha_2)\Big)\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Bigg]^2\\ &+ \eta n_1 n_2\Bigg[-\hat{p}_R^n + \Big((\alpha_1 - \alpha_2)\gamma_q + (1 - n_1\alpha_2 - n_2\alpha_1)\Big)\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Bigg]^2\\ &+ \theta\Big[n_1\alpha_1(1-\alpha_1)(\gamma_q - n_2)^2 + n_2\alpha_2(1-\alpha_2)(\gamma_q + n_1)^2\Big]\Big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\Big)^2\Bigg\} + \text{t.i.p.}\end{aligned} \tag{C.7}$$

2. Discretionary Deviation when Full Disclosure is Optimal, $\Gamma \geq 0$**.** We characterize the optimal message $m = (m_1, m_2)$ that maximizes the conditional expectation $\mathbb{E}\big[U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n) \,\big|\, \bar{v}^n\big]$ under firms' belief $\mathbb{E}_{\tilde{\mu}}\hat{v}^n = m$. Using the composites γ_y, γ_{p_R}, and Ω defined in (B.11), (B.12), expression (C.7) reads

$$U\Big(\hat{v}^n; \mathbb{E}_{\tilde{\mu}}\hat{v}^n\Big) \approx -\frac{1}{2}\Big\{\big[(\mathbb{E}_{\tilde{\mu}}\hat{y}^n - \hat{y}^n) + \gamma_y\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\big]^2 + \eta n_1 n_2\big[\gamma_{p_R}\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n - \hat{p}_R^n\big]^2 + \theta\Omega\big(\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\big)^2\Big\} + \text{t.i.p.} \tag{C.8}$$

The first-order condition w.r.t. $m_1 = \mathbb{E}_{\tilde{\mu}}\hat{y}^n$ is

$$-\big[(\mathbb{E}_{\tilde{\mu}}\hat{y}^n - \bar{y}^n) + \gamma_y\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\big] = 0 \qquad \Rightarrow \qquad \mathbb{E}_{\tilde{\mu}}\hat{y}^n = \bar{y}^n - \gamma_y\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n. \tag{C.9}$$

The first-order condition w.r.t. $m_2 = \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n$ is

$$\gamma_y\big[(\mathbb{E}_{\tilde{\mu}}\hat{y}^n - \bar{y}^n) + \gamma_y\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n\big] + \eta n_1 n_2\,\gamma_{p_R}\big[\gamma_{p_R}\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n - \bar{p}_R^n\big] + \theta\Omega\,\mathbb{E}_{\tilde{\mu}}\hat{p}_R^n = 0. \tag{C.10}$$

Using (C.9), the first term in (C.10) vanishes, yielding

$$\eta n_1 n_2\, \gamma_{p_R} \big[\gamma_{p_R}\, \mathbb{E}_{\tilde{\mu}} \hat{p}_R^n - \bar{p}_R^n\big] + \theta\Omega\, \mathbb{E}_{\tilde{\mu}} \hat{p}_R^n = 0 \qquad \Rightarrow \qquad \mathbb{E}_{\tilde{\mu}} \hat{p}_R^n = \kappa_2\, \bar{p}_R^n, \tag{C.11}$$

where

$$\kappa_2 \equiv \frac{\eta n_1 n_2\, \gamma_{p_R}}{\eta n_1 n_2\, \gamma_{p_R}^2 + \theta\Omega}. \tag{C.12}$$

Substituting (C.11) into (C.9) gives

$$\mathbb{E}_{\tilde{\mu}} \hat{y}^n = \bar{y}^n + \kappa_1\, \bar{p}_R^n, \qquad \kappa_1 \equiv -\gamma_y\, \kappa_2. \tag{C.13}$$

The optimal discretionary deviation from truth-telling satisfies

$$m = \begin{pmatrix} m_1 \\ m_2 \end{pmatrix} = \underbrace{\begin{pmatrix} 1 & \kappa_1 \\ 0 & \kappa_2 \end{pmatrix}}_{\equiv \kappa} \begin{pmatrix} \bar{y}^n \\ \bar{p}_R^n \end{pmatrix} = \kappa\, \bar{v}^n. \tag{C.14}$$

Symmetric price rigidity: closed-form κ_1 and κ_2. Assume $\alpha_1 = \alpha_2 \equiv \alpha$. Then $\gamma_q = 0$ in (A.16), and the composites reduce to

$$\gamma_y = 0, \tag{C.15}$$

$$\gamma_{p_R} = 1 - \alpha, \tag{C.16}$$

$$\Omega = \alpha(1-\alpha)\, n_1 n_2. \tag{C.17}$$

It follows from (C.12) that

$$\kappa_2 = \frac{\eta n_1 n_2 (1-\alpha)}{\eta n_1 n_2 (1-\alpha)^2 + \theta\, \alpha(1-\alpha)\, n_1 n_2} = \frac{\eta}{\eta(1-\alpha) + \theta\alpha}, \tag{C.18}$$

and from (C.13) that $\kappa_1 = -\gamma_y\, \kappa_2 = 0$.

One-sector economy: $\eta = \theta$. Substituting the closed-form γ_q from (A.17) into (C.12)–(C.13) and simplifying at $\eta = \theta$ delivers $\kappa_2 = 1$ and $\kappa_1 = 0$ for all $(n_1, n_2, \alpha_1, \alpha_2)$. The deviation wedge collapses to the identity, and the deviation message coincides with the commitment rule $m = \bar{v}^n$: the rule is sequentially incentive compatible.

Asymmetric rigidity with $\eta < \theta$. In the remaining sub-case — asymmetric rigidity $\alpha_1 \neq \alpha_2$ with $\eta < \theta$ and $\Gamma \geq 0$ — the deviation wedge κ in (C.13)–(C.12) differs from the identity. Since $\kappa_1 = -\gamma_y\, \kappa_2$ and $\kappa_2 \neq 0$ generically, $(\kappa_1, \kappa_2) = (0, 1)$ would require both $\gamma_y = 0$ and $\kappa_2 = 1$ simultaneously. We show that the first condition already fails at $\eta < \theta$.

Recall $\gamma_y \equiv n_1\alpha_1(\gamma_q - n_2) + n_2\alpha_2(\gamma_q + n_1) = A\, \gamma_q - n_1 n_2(\alpha_1 - \alpha_2)$ with $A \equiv n_1\alpha_1 + n_2\alpha_2$. Setting $\gamma_y = 0$ and substituting the closed form of γ_q from (A.17) gives, after using the identity $B - A^2 = n_1 n_2(\alpha_1 - \alpha_2)^2$ with $B \equiv n_1\alpha_1^2 + n_2\alpha_2^2$:

$$\gamma_y = 0 \text{ with } \alpha_1 \neq \alpha_2 \iff \eta\, \alpha_1\alpha_2 = \theta\, \alpha_1\alpha_2 \iff \eta = \theta. \tag{C.19}$$

Hence at $\alpha_1 \neq \alpha_2$ and $\eta < \theta$, $\gamma_y \neq 0$, so $\kappa_1 = -\gamma_y\, \kappa_2 \neq 0$ and $(\kappa_1, \kappa_2) \neq (0, 1)$. The deviation wedge departs from the identity and the commitment rule of full disclosure is not sequentially incentive compatible. Together with the symmetric-rigidity case above, this completes Proposition 2(ii) for $\Gamma \geq 0$.

3. Discretionary Deviation when Partial Disclosure is Optimal, $\Gamma < 0$. Under $\Gamma < 0$, the commitment rule of Proposition 1 discloses the scalar $m = \bar{y}^n + \zeta\, \bar{p}_R^n$, with ζ defined in (B.31). On the equilibrium path firms decode any disclosed scalar m through the posterior loadings $(\beta_{\hat{y}^n}, \beta_{\hat{p}_R^n})$ defined in (B.33)–(B.34):

$$\mathbb{E}_{\tilde{\mu}}\hat{y}^n = \beta_{\hat{y}^n}\, m, \qquad \mathbb{E}_{\tilde{\mu}}\hat{p}_R^n = \beta_{\hat{p}_R^n}\, m. \tag{C.20}$$

A discretionary monetary authority therefore chooses the scalar $m \in \mathbb{R}$ to maximize $\mathbb{E}\big[U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n) \;\big|\; \bar{v}^n\big]$ with the belief mapping (C.20). The belief-consistent instrument follows Lemma 2 as $\hat{q} = (\beta_{\hat{y}^n} + \gamma_q\, \beta_{\hat{p}_R^n})\, m$.

Substituting (C.20) into (C.8), the objective is the quadratic scalar

$$U(m; \bar{v}^n) \approx -\frac{1}{2}\Big\{\big[(\beta_{\hat{y}^n} + \gamma_y\, \beta_{\hat{p}_R^n})\, m - \bar{y}^n\big]^2 + \eta n_1 n_2 \big[\gamma_{p_R}\, \beta_{\hat{p}_R^n}\, m - \bar{p}_R^n\big]^2 + \theta\Omega\, \beta_{\hat{p}_R^n}^2\, m^2\Big\} + \text{t.i.p.} \tag{C.21}$$

The first-order condition with respect to m is

$$(\beta_{\hat{y}^n} + \gamma_y\, \beta_{\hat{p}_R^n})\big[(\beta_{\hat{y}^n} + \gamma_y\, \beta_{\hat{p}_R^n})\, m - \bar{y}^n\big] + \eta n_1 n_2\, \gamma_{p_R}\, \beta_{\hat{p}_R^n}\big[\gamma_{p_R}\, \beta_{\hat{p}_R^n}\, m - \bar{p}_R^n\big] + \theta\Omega\, \beta_{\hat{p}_R^n}^2\, m = 0, \tag{C.22}$$

which rewrites as

$$m = \nu_{\bar{y}^n}\, \bar{y}^n + \nu_{\bar{p}_R^n}\, \bar{p}_R^n, \tag{C.23}$$

with

$$\nu_{\bar{y}^n} = \frac{\beta_{\hat{y}^n} + \gamma_y\, \beta_{\hat{p}_R^n}}{D\nu}, \tag{C.24}$$

$$\nu_{\bar{p}_R^n} = \frac{\eta n_1 n_2\, \gamma_{p_R}\, \beta_{\hat{p}_R^n}}{D\nu}, \tag{C.25}$$

$$D\nu = (\beta_{\hat{y}^n} + \gamma_y\, \beta_{\hat{p}_R^n})^2 + \eta n_1 n_2\, (\gamma_{p_R}\, \beta_{\hat{p}_R^n})^2 + \theta\Omega\, \beta_{\hat{p}_R^n}^2. \tag{C.26}$$

Symmetric sector sizes: $n_1 = n_2 = 1/2$. At $n_1 = n_2 = 1/2$, the posterior loadings reduce to $(\beta_{\hat{y}^n}, \beta_{\hat{p}_R^n}) = (1, 0)$ and the partial-disclosure tilt satisfies $\zeta = 0$. Substituting $\beta_{\hat{p}_R^n} = 0$ into (C.24)–(C.26):

$$D\nu = 1, \qquad \nu_{\bar{y}^n} = 1, \qquad \nu_{\bar{p}_R^n} = 0. \tag{C.27}$$

The deviation coincides with the commitment message $m = \bar{y}^n$: the commitment rule is sequentially incentive compatible at symmetric sectors.

D Reputation and Credible Communication

This Appendix is composed of two parts: first a detailed presentation of the dynamic version of the game outlined in Section 5, and second the proofs of the associated Lemmas and Propositions.

D.1 A Dynamic Communication Game with Reputation

Throughout, we maintain the scope of Section 5: $\Gamma > 0$ and $n_1 = n_2 = 1/2$.

Monetary authorities' types and information. The monetary authority has an unobserved type $\delta \in \{C, S\}$: committed (C) or strategic (S). Each period, nature draws $\hat{v}^n = (\hat{y}^n, \hat{p}_R^n)$ and the authority observes a noisy signal $s = \hat{v}^n + \varepsilon$. It forms the posterior mean $\bar{v}^n = \mathbb{E}(\hat{v}^n \mid s) = \frac{\sigma^2}{\sigma^2+\sigma_\varepsilon^2}\, s$, where σ_ε^2 measures (inverse) *competence* as in Moscarini (2007).

Communication and reputation. The committed type always reports truthfully, $m = \bar{v}^n$. The strategic type mixes: with probability p it reports $m = \bar{v}^n$, and with probability $1-p$ it reports $m = \kappa \bar{v}^n$, where κ is the discretionary wedge from Proposition 2. Firms do not observe δ and hold a belief $\xi \in (0,1)$ that the acting policymaker is committed, $\xi = \mathbb{P}(\delta = C)$. We refer to ξ as *reputation.*

Timing. Time is discrete and infinite. In each period: (i) firms enter with reputation ξ and preset prices $\hat{p}_j^p = 0$; (ii) nature draws $\hat{v}^n$, the authority observes s, sends m, and sets $\hat{q}$; (iii) a fraction $1-\alpha_j$ of firms reset prices using posteriors $\tilde{\mu} = \mu \mid (\xi, m, \hat{q})$; (iv) outcomes realize; firms observe $\hat{v}^n$ and update reputation to $\bar{\xi}$; (v) the incumbent remains in office with probability λ (*persistence*) and is replaced with probability $1-\lambda$; a replacement is committed with probability ρ (*prevalence*). Hence, $\xi' = \lambda\bar{\xi} + (1-\lambda)\rho$.

Bayesian updating. Firms update beliefs about fundamentals upon receiving m and beliefs about the policymaker's type upon observing $(m, \hat{v}^n)$.

Lemma 3. *Given reputation ξ, message m, and strategic policy $p(\cdot)$, firms' posterior mean satisfies*

$$\mathbb{E}_{\tilde{\mu}}\hat{v}^n = \frac{m\, f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi,m)\big] + \kappa^{-1}m\, f_{\kappa\bar{v}^n}(m)(1-\xi)\big[1 - p(\xi,\kappa^{-1}m)\big]}{f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi,m)\big] + f_{\kappa\bar{v}^n}(m)(1-\xi)\big[1 - p(\xi,\kappa^{-1}m)\big]}. \tag{D.1}$$

where $f_{\bar{v}^n}(\cdot)$ is the probability distribution function of $\bar{v}^n \sim \mathcal{N}\left(0, \Sigma\frac{\sigma^4}{\sigma^2+\sigma_\varepsilon^2}\right)$ and $f_{\kappa\bar{v}^n}(\cdot)$ is *the probability distribution function of* $\kappa\bar{v}^n \sim \mathcal{N}\left(0, \Sigma_\kappa \frac{\sigma^4}{\sigma^2+\sigma_\varepsilon^2}\right)$*, where*

$$\Sigma_\kappa = \kappa\Sigma\kappa^\top = \begin{pmatrix} \frac{1}{2} + 2\kappa_1^2 & 2\kappa_1\kappa_2 \\ 2\kappa_1\kappa_2 & 2\kappa_2^2 \end{pmatrix}. \tag{D.2}$$

Lemma 4. *Given prior reputation* ξ*, message* m*, and realized shocks* $\hat{v}^n$*, firms update the incumbent's reputation to*

$$\bar{\xi} = \frac{f_m(\hat{v}^n)\, f_{\bar{v}^n}(m)\, \xi}{f_m(\hat{v}^n)\, f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi, m)\big] + f_{\kappa^{-1}m}(\hat{v}^n)\, f_{\kappa\bar{v}^n}(m)(1-\xi)\big[1 - p(\xi, \kappa^{-1}m)\big]}, \tag{D.3}$$

where $f_m(\hat{v}^n)$ *denotes the probability distribution function of the productivity* $\hat{v}^n$ *conditional on a message* m*, i.e.,* $\hat{v}^n | m \sim \mathcal{N}\left(m, \Sigma \frac{\sigma^2\sigma_\varepsilon^2}{\sigma^2+\sigma_\varepsilon^2}\right)$.

Equilibrium. A Markov Perfect Bayesian Equilibrium consists of value functions, the belief-consistent instrument rule (2.17), a communication policy $p(\xi, \bar{v}^n) \in [0, 1]$ for type S (with type C following $m = \bar{v}^n$ deterministically), and Bayesian belief updating $\xi'(\xi, m, \hat{v}^n)$ satisfying (D.1)–(D.3). The equilibrium message distribution has full support on $\mathbb{R}^2$ for every $\xi \in (0, 1)$: any m is consistent with type C and signal $\bar{v}^n = m$, or with type S and signal $\bar{v}^n \in \{m, \kappa^{-1}m\}$. Off-path beliefs are therefore unconstrained, and the equilibrium concept does not require a refinement of off-path play.

Benchmark welfare. We benchmark outcomes against imperfect but symmetric information, where firms observe the same signal s as the authority and hence share the posterior mean $\bar{v}^n$. Under $\Gamma > 0$, this benchmark attains the commitment optimum. Define

$$W^{SI} = \frac{1}{1-\beta}\, \mathbb{E}_{\bar{v}^n}\, \mathbb{E}_{\hat{v}^n|\bar{v}^n}\, U(\hat{v}^n, \hat{q}, \bar{v}^n), \tag{D.4}$$

where $\hat{q} = \hat{q}(\bar{v}^n)$.

D.1.1 Calibration and Sensitivity

The dynamic analysis of Section 5 relies on a numerical solution of the model under a standard calibration (Table 2). The sensitivity analysis is reported in Table 3.

D.2 Proofs of Lemmas 3 and 4 and Proposition 3

D.2.1 Proof of Lemma 3

Throughout, $\delta \in \{C, S\}$ denotes the monetary authority's type (committed vs. strategic). Since $\bar{v}^n$ and m are continuously distributed, we work with densities. Let $f_X(\cdot)$ denote the density of a continuous random vector X.

Conditional on being *committed* ($\delta = C$), the authority always reports truthfully:

$$m = \bar{v}^n. \tag{D.5}$$

Table 2: Numerical Values

Parameter	Symbol	Value
Discount factor	β	0.96
Elasticity across sectors	η	4
Elasticity within sector	θ	8
Price rigidity 1	α_1	0.5
Price rigidity 2	α_2	0.5
Dispersion of technology shocks	σ_a	1
Competence of monetary authorities	σ_ε	1/5
Prevalence of truth-telling type	ρ	0.5
Persistence of CB type	λ	0.2

Notes. This table provides the baseline calibration used in numerical exercises reported in Appendix D.1.1.

Table 3: Sensitivity Analysis

	Average propensity to report truthfully			Average reputation			Average welfare $(.10^{-2})$		
	$\delta = C$	$\delta = S$	$\mathbb{E}_\delta$	$\delta = C$	$\delta = S$	$\mathbb{E}_\delta$	$\delta = C$	$\delta = S$	$\mathbb{E}_\delta$
Baseline	1.00	0.112	0.556	0.72	0.23	0.48	−5.61	3.63	−0.99
Price rigidities									
$\alpha_1 = \alpha_2 = 0.25$	1.00	0.131	0.566	0.60	0.30	0.45	−3.35	1.65	−0.85
$\alpha_1 = \alpha_2 = 0.75$	1.00	0.103	0.552	0.77	0.20	0.49	−4.31	3.40	−0.46
$\alpha_1 = 0.25 < \alpha_2 = 0.75$	1.00	0.091	0.546	0.82	0.18	0.50	−11.49	11.40	−0.06
Elasticities									
$\eta = 3$; $\theta = 8$	1.00	0.103	0.551	0.78	0.20	0.49	−7.24	6.00	−0.62
$\eta = 5$; $\theta = 8$	1.00	0.126	0.563	0.63	0.28	0.45	−3.60	1.93	−0.83
Monetary Authorities									
competence $\sigma_\varepsilon = 1/3$	1.00	0.108	0.554	0.60	0.26	0.43	−6.23	2.90	−1.67
$\sigma_\varepsilon = 1/7$	1.00	0.125	0.563	0.77	0.21	0.49	−4.96	3.75	−0.61
prevalence $\rho = 0.4$	1.00	0.101	0.460	0.67	0.18	0.38	−7.16	3.16	−0.97
$\rho = 0.6$	1.00	0.124	0.649	0.77	0.28	0.57	−4.20	4.09	−0.88
persistence $\lambda = 0.1$	1.00	0.101	0.550	0.80	0.15	0.48	−4.05	2.53	−0.76
$\lambda = 0.3$	1.00	0.110	0.555	0.67	0.29	0.48	−6.40	4.38	−1.01

Notes. The baseline calibration presented in Table 2 assumes standard parameters and symmetric price rigidities across sectors. Average welfare is reported relative to an economy with symmetric information. The $\mathbb{E}_\delta$ columns report the type-weighted average of the column statistic, $\rho \times (\delta{=}C$ column$) + (1-\rho) \times (\delta{=}S$ column$)$, with ρ taken from Table 2 except in the prevalence rows where ρ is the row-specific value.

Conditional on being *strategic* ($\delta = S$), the authority uses the state-dependent mixing rule $p(\xi, \cdot)$:

$$m = \bar{v}^n \quad \text{with prob. } p(\xi, \bar{v}^n), \qquad m = \kappa\bar{v}^n \quad \text{with prob. } 1 - p(\xi, \bar{v}^n). \tag{D.6}$$

It is convenient to introduce a latent indicator $r \in \{T, D\}$, where $r = T$ (truthful) corresponds to $m = \bar{v}^n$ and $r = D$ (deviation) corresponds to $m = \kappa\bar{v}^n$. The mixing rule

$p(\xi, \cdot)$ is evaluated at the central bank's signal $\bar{v}^n$, which equals m under truthful and $\kappa^{-1}m$ under distortion.

Because $\bar{v}^n = \mathbb{E}(\hat{v}^n \mid s)$ and m is a deterministic function of $\bar{v}^n$ given (δ, r), we have:

$$\mathbb{E}(\hat{v}^n \mid m, \delta = C) = \mathbb{E}(\hat{v}^n \mid \bar{v}^n = m) = m, \tag{D.7}$$

$$\mathbb{E}(\hat{v}^n \mid m, \delta = S, r = T) = \mathbb{E}(\hat{v}^n \mid \bar{v}^n = m) = m, \tag{D.8}$$

$$\mathbb{E}(\hat{v}^n \mid m, \delta = S, r = D) = \mathbb{E}(\hat{v}^n \mid \bar{v}^n = \kappa^{-1}m) = \kappa^{-1}m. \tag{D.9}$$

Conditional on r, the posterior is the same for either type. Therefore, by the law of iterated expectations over the latent event "m was generated via the truthful message" vs. "the distortion message",

$$\mathbb{E}(\hat{v}^n \mid m) = m \cdot \mathbb{P}(T \mid m) + \kappa^{-1}m \cdot \mathbb{P}(D \mid m), \tag{D.10}$$

where T (resp. D) denotes the event that the message m was generated through the truthful (resp. distortion) channel.

Let $\xi \in (0, 1)$ denote the prior reputation, i.e., $\xi = \mathbb{P}(\delta = C)$. The unconditional density of m under the truthful message is the density of $\bar{v}^n$ evaluated at m, denoted $f_{\bar{v}^n}(m)$. Under the distortion message, the density of m is the density of the transformed random variable $\kappa\bar{v}^n$ evaluated at m, denoted $f_{\kappa\bar{v}^n}(m)$.

The (unconditional) density contribution associated with the truthful channel is:

$$\underbrace{f_{\bar{v}^n}(m)\,\xi}_{\text{committed always truthful}} \quad + \quad \underbrace{f_{\bar{v}^n}(m)\,(1-\xi)\,p(\xi, m)}_{\text{strategic truthful with prob. } p(\xi,\bar{v}^n),\, \bar{v}^n = m} \quad . \tag{D.11}$$

The density contribution associated with the distortion channel is:

$$\underbrace{f_{\kappa\bar{v}^n}(m)\,(1-\xi)\,\big(1 - p(\xi, \kappa^{-1}m)\big)}_{\text{strategic distortion with prob. } 1-p(\xi,\bar{v}^n),\, \bar{v}^n = \kappa^{-1}m} \quad . \tag{D.12}$$

Hence the total density of m is

$$f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi, m)\big] + f_{\kappa\bar{v}^n}(m)(1-\xi)\big[1 - p(\xi, \kappa^{-1}m)\big]. \tag{D.13}$$

Applying Bayes' rule (in density form) gives the posterior probability that the message was generated through the truthful channel:

$$\mathbb{P}(T \mid m) = \frac{f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi, m)\big]}{f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi, m)\big] + f_{\kappa\bar{v}^n}(m)(1-\xi)\big[1 - p(\xi, \kappa^{-1}m)\big]}, \tag{D.14}$$

and $\mathbb{P}(D \mid m) = 1 - \mathbb{P}(T \mid m)$.

Substituting (D.14) into (D.10) yields the statement of Lemma 3:

$$\mathbb{E}(\hat{v}^n \mid m) = \frac{m \cdot f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi, m)\big] + \kappa^{-1}m \cdot f_{\kappa\bar{v}^n}(m)(1-\xi)\big[1 - p(\xi, \kappa^{-1}m)\big]}{f_{\bar{v}^n}(m)\big[\xi + (1-\xi)p(\xi, m)\big] + f_{\kappa\bar{v}^n}(m)(1-\xi)\big[1 - p(\xi, \kappa^{-1}m)\big]}.$$

Finally, using (A.6), $f_{\bar{v}^n}(\cdot)$ is the pdf of $\bar{v}^n \sim \mathcal{N}\Big(0, \Sigma\frac{\sigma^4}{\sigma^2+\sigma_\varepsilon^2}\Big)$, and $f_{\kappa\bar{v}^n}(\cdot)$ is the pdf of

$\kappa\bar{v}^n \sim \mathcal{N}\Big(0, \Sigma_\kappa \frac{\sigma^4}{\sigma^2+\sigma_\varepsilon^2}\Big)$, where $\Sigma_\kappa = \kappa\Sigma\kappa^\top$

D.2.2 Proof of Lemma 4

Let $\xi = \mathbb{P}(\delta = C)$ denote prior reputation. Given $(m, \hat{v}^n)$, firms update

$$\bar{\xi} \equiv \mathbb{P}(\delta = C \mid m, \hat{v}^n) = \frac{f_{m,\hat{v}^n|\delta=C}(m, \hat{v}^n)\,\xi}{f_{m,\hat{v}^n|\delta=C}(m, \hat{v}^n)\,\xi + f_{m,\hat{v}^n|\delta=S}(m, \hat{v}^n)\,(1-\xi)}. \tag{D.15}$$

We compute the two likelihood terms.

Committed type. If $\delta = C$, the authority reports truthfully $m = \bar{v}^n$. Hence

$$f_{m,\hat{v}^n|\delta=C}(m, \hat{v}^n) = f_{\hat{v}^n|\bar{v}^n}(\hat{v}^n \mid \bar{v}^n = m)\, f_{\bar{v}^n}(m). \tag{D.16}$$

By Gaussian updating (see (A.5)), one has

$$\hat{v}^n \mid \bar{v}^n \sim \mathcal{N}\left(\bar{v}^n,\ \Sigma\frac{\sigma^2\sigma_\varepsilon^2}{\sigma^2+\sigma_\varepsilon^2}\right), \tag{D.17}$$

so define

$$f_m(\hat{v}^n) \equiv f_{\hat{v}^n|\bar{v}^n}(\hat{v}^n \mid \bar{v}^n = m). \tag{D.18}$$

Therefore

$$f_{m,\hat{v}^n|\delta=C}(m, \hat{v}^n) = f_m(\hat{v}^n)\, f_{\bar{v}^n}(m). \tag{D.19}$$

Strategic type. If $\delta = S$, conditional on $\bar{v}^n$ the authority uses the mixing rule: with probability $p(\xi, \bar{v}^n)$ it sends $m = \bar{v}^n$ (truthful), and with probability $1 - p(\xi, \bar{v}^n)$ it sends $m = \kappa\bar{v}^n$ (distortion). Thus, for a given realized message m, the message could have been generated by: (i) the truthful channel with $\bar{v}^n = m$, or (ii) the distortion channel with $\bar{v}^n = \kappa^{-1}m$. Therefore the joint likelihood is the sum of the two likelihoods:

$$\begin{aligned} f_{m,\hat{v}^n|\delta=S}(m, \hat{v}^n) &= \underbrace{f_{\hat{v}^n|\bar{v}^n}(\hat{v}^n \mid \bar{v}^n = m)\, f_{\bar{v}^n}(m)\, p(\xi, m)}_{\text{truthful}} \\ &\quad + \underbrace{f_{\hat{v}^n|\bar{v}^n}(\hat{v}^n \mid \bar{v}^n = \kappa^{-1}m)\, f_{\kappa\bar{v}^n}(m)\,\big(1 - p(\xi, \kappa^{-1}m)\big)}_{\text{distortion}}. \end{aligned} \tag{D.20}$$

Using the same conditional Gaussian law as above, define

$$f_{\kappa^{-1}m}(\hat{v}^n) \equiv f_{\hat{v}^n|\bar{v}^n}(\hat{v}^n \mid \bar{v}^n = \kappa^{-1}m), \qquad \hat{v}^n \mid \bar{v}^n = \kappa^{-1}m \sim \mathcal{N}\left(\kappa^{-1}m,\ \Sigma\frac{\sigma^2\sigma_\varepsilon^2}{\sigma^2+\sigma_\varepsilon^2}\right). \tag{D.21}$$

Then (D.20) becomes

$$f_{m,\hat{v}^n|\delta=S}(m, \hat{v}^n) = f_m(\hat{v}^n)\, f_{\bar{v}^n}(m)\, p(\xi, m) + f_{\kappa^{-1}m}(\hat{v}^n)\, f_{\kappa\bar{v}^n}(m)\,\big(1 - p(\xi, \kappa^{-1}m)\big). \tag{D.22}$$

Posterior reputation. Substituting (D.19)–(D.22) into Bayes' rule yields

$$\bar{\xi} = \frac{f_m(\hat{v}^n) f_{\bar{v}^n}(m)\cdot\xi}{f_m(\hat{v}^n) f_{\bar{v}^n}(m)\,[\xi + (1-\xi)p(\xi, m)] + f_{\kappa^{-1}m}(\hat{v}^n) f_{\kappa\bar{v}^n}(m)\,(1 - p(\xi, \kappa^{-1}m))\,(1-\xi)}, \tag{D.23}$$

which is (D.3).

D.2.3 Proof of Proposition 3

From the law of motion $\xi' = \lambda\bar{\xi} + (1-\lambda)\rho$, setting $\lambda = 0$ gives $\xi' = \rho$: reputation is constant and equal to the prevalence, $\xi = \rho$ in every period.

i. A strategic type always deviates (truthful probability $p = 0$). Fix a period and condition on the strategic authority's information $\bar{v}^n$. Given the equilibrium belief-formation rule of firms (Lemma 3) and the instrument rule (2.17), the strategic authority chooses the mixing probability $p \in [0,1]$ between the two pure actions $m = \bar{v}^n$ and $m = \kappa\bar{v}^n$ to maximize expected contemporaneous welfare

$$\max_{p\in[0,1]} \mathbb{E}\left[U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n \mid m) \,\middle|\, \bar{v}^n \right]. \tag{D.24}$$

By the same algebra as Proposition 2, the flow payoff is concave quadratic in the posterior mean $\mathbb{E}_{\tilde{\mu}}\hat{v}^n$, with unique maximizer at the "opportunistic" target $\mathbb{E}_{\tilde{\mu}}\hat{v}^n = \kappa\hat{v}^n$. Taking conditional expectations given $\bar{v}^n$ preserves concavity and yields that the maximizer of the conditional objective is $\mathbb{E}_{\tilde{\mu}}\hat{v}^n = \kappa\bar{v}^n$.

Now compare the two pure actions available to the strategic type:

$$m = \bar{v}^n \qquad \text{(rule-based report)} \qquad \text{vs.} \qquad m = \kappa\bar{v}^n \qquad \text{(strategic report)}. \tag{D.25}$$

Under Lemma 3, the induced posterior mean $\mathbb{E}_{\tilde{\mu}}\hat{v}^n$ is a deterministic function of (ξ, m). Since $\kappa\bar{v}^n$ is the conditional maximizer, sending the strategic report weakly dominates sending the truthful report:

$$\mathbb{E}\left[U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n \mid m = \kappa\bar{v}^n) \,\middle|\, \bar{v}^n \right] \;\geq\; \mathbb{E}\left[U(\hat{v}^n, \hat{q}, \mathbb{E}_{\tilde{\mu}}\hat{v}^n \mid m = \bar{v}^n) \,\middle|\, \bar{v}^n \right], \tag{D.26}$$

with strict inequality whenever $\bar{v}^n$ implies a non-zero dispersion component and the mapping in Lemma 3 does not already deliver $\mathbb{E}_{\tilde{\mu}}\hat{v}^n = \kappa\bar{v}^n$ under $m = \bar{v}^n$. In equilibrium, an individual authority takes firms' belief-updating rule (Lemma 3) as given, so the welfare from each pure action is fixed and the expected welfare under mixing is affine in p — a convex combination of the two pure-action welfares — whose optimum lies at a corner. Therefore, when $\lambda = 0$ (so $\xi = \rho$ is constant and there is no dynamic value of reputation), a strategic authority optimally chooses the strategic report in every period:

$$p(\xi, \bar{v}^n) = 0 \quad \text{for all } (\xi, \bar{v}^n). \tag{D.27}$$

ii. Type-by-type welfare ranking: $W_C(\rho) \leq W^{SI} \leq W_S(\rho)$. Recall that W^{SI} is the benchmark with symmetric information: firms and the authority share the same signal (and under $\Gamma > 0$ this benchmark attains the ex-ante optimum by Proposition 1).

Two upstream conditions deliver the *strict* inequalities below. First, $\kappa \neq I$ at $\Gamma > 0$ (equivalently, $\kappa_2 = \eta/[\eta(1-\alpha) + \theta\alpha] < 1$ when $\eta < \theta$, by Appendix C): the deviation wedge departs strictly from the identity, so both types' equilibrium posteriors are strictly displaced from $\bar{v}^n$ at any interior reputation. Second, the welfare function in (2.12) is strictly concave in the posterior mean, by strict positivity of the dispersion coefficients $\eta n_1 n_2$ and $\theta\, n_j \alpha_j(1-\alpha_j)$.

Strategic type. Under (ii), the strategic authority always sends $m = \kappa\bar{v}^n$. By Lemma 3 with $p = 0$, the induced equilibrium posterior is a weighted average of $m = \kappa\bar{v}^n$ (truthful interpretation) and $\kappa^{-1}m = \bar{v}^n$ (distortion interpretation), with weights determined by reputation $\xi = \rho$ and the density ratio. At any $\rho > 0$, this posterior is shifted toward $\kappa\bar{v}^n$ — the opportunistic target identified in (ii) — and therefore yields weakly higher contemporaneous welfare than the symmetric-information benchmark, conditional on $\bar{v}^n$. Integrating over $\bar{v}^n$ gives

$$W_S(\rho) \;\geq\; W^{SI}, \tag{D.28}$$

with strict inequality whenever the opportunistic distortion is non-degenerate (i.e. $\kappa \neq I$ and dispersion states occur).

Committed type. A committed authority always sends $m = \bar{v}^n$. When $0 < \rho < 1$, firms rationally attach positive probability to strategic distortion even after observing m, so the posterior $\mathbb{E}_{\tilde{\mu}}\hat{v}^n$ differs from the symmetric-information posterior $\bar{v}^n$ (Lemma 3). Since under $\Gamma > 0$ the symmetric-information posterior is ex-ante optimal (Prop. 1), any such distortion weakly reduces welfare relative to W^{SI}:

$$W_C(\rho) \;\leq\; W^{SI}, \tag{D.29}$$

with strict inequality for $0 < \rho < 1$ under non-degenerate distortion.

iii. Average welfare is below W^{SI} when $0 < \rho < 1$. With $\lambda = 0$, each period's type is an i.i.d. draw with $\mathbb{P}(\delta = C) = \rho$, so unconditional welfare is the mixture

$$W(\rho) = \rho\, W_C(\rho) + (1-\rho)\, W_S(\rho). \tag{D.30}$$

By Proposition 1, under $\Gamma > 0$ full disclosure is the welfare-maximizing disclosure rule, attaining W^{SI}. From the planner's ex-ante perspective, the equilibrium under $\lambda = 0$ discretion is itself a disclosure rule: with probability ρ, the rule is truthful ($m = \bar{v}^n$); with probability $1-\rho$, it is the deviation ($m = \kappa\bar{v}^n$). Hence

$$W(\rho) \leq W^{SI}, \tag{D.31}$$

with equality only when this mixture coincides with full disclosure — which occurs at the boundary cases $\rho = 1$ (only the committed type, $m = \bar{v}^n$ always) and $\rho = 0$ (only the strategic type, which firms fully decode via κ^{-1} to recover $\bar{v}^n$). At interior $\rho \in (0,1)$ the equilibrium-induced rule is a non-degenerate mixture distinct from full disclosure, and Proposition 1's welfare bound is strict: $W(\rho) < W^{SI}$ for $0 < \rho < 1$.

Online Appendix to

Monetary Communication and Credibility in a Multi-Sector Economy

by Antoine Camous and Dmitry Matveev

1 Households' Welfare

This appendix presents the key steps in deriving the quadratic welfare criterion (2.12) and (2.16).

Rewrite the utility function using good $C = Y$ and labor market clearing conditions, and the production function as follows:

$$U \equiv \log C - L_1 - L_2 = \log Y - \int_{N_1} \frac{Y(i)}{A_1} di - \int_{N_2} \frac{Y(i)}{A_2} di. \tag{1.1}$$

Second-order approximation of the individual components in log-deviations

$$\log Y \approx \log \bar{Y} + \hat{y}, \tag{1.2}$$

$$\frac{Y(i)}{A_j} \approx \bar{Y}\left[1 + \hat{y}(i) + \frac{1}{2}\hat{y}(i)^2 - \hat{a}_j\hat{y}(i) - \frac{1}{2}\hat{a}_j^2\right]. \tag{1.3}$$

Aggregating up disutility from labor, and denoting within-sector cross-sectional variance by $\mathrm{Var}_i^j(\cdot)$, get:

$$\int_{n_j} \frac{Y(i)}{A_j} di \approx n_j\bar{Y}\left[\hat{y}_j + \frac{1}{2}\hat{y}_j^2 - \hat{a}_j\hat{y}_j + \frac{1}{2}\frac{1}{\theta}\mathrm{Var}_i^j\hat{y}(i)\right] + \text{t.i.p.} \tag{1.4}$$

$$\sum_j \int_{n_j} \frac{Y(i)}{A_j} di \approx \bar{Y}\left[\hat{y} + \frac{1}{2}\hat{y}^2 - \sum_j n_j\hat{a}_j\hat{y}_j + \frac{1}{2}\frac{n_1 n_2}{\eta}(\hat{y}_2 - \hat{y}_1)^2 + \frac{1}{2}\frac{1}{\theta}\sum_j n_j \mathrm{Var}_i^j\hat{y}(i)\right] + \text{t.i.p.} \tag{1.5}$$

Bringing elements together

$$U \approx (1 - \bar{Y})\hat{y} - \frac{1}{2}\left[\hat{y}^2 - 2\sum_j n_j\hat{a}_j\hat{y}_j + \frac{n_1 n_2}{\eta}(\hat{y}_2 - \hat{y}_1)^2 + \frac{1}{\theta}\sum_j n_j \mathrm{Var}_i^j\hat{y}(i)\right] + \text{t.i.p.} \tag{1.6}$$

Using $\hat{y}^n = n_1\hat{a}_1 + n_2\hat{a}_2$ and $\hat{p}_R^n = \hat{a}_1 - \hat{a}_2$, we can write

$$\hat{a}_1 = \hat{y}^n + n_2\hat{p}_R^n, \qquad \hat{a}_2 = \hat{y}^n - n_1\hat{p}_R^n, \tag{1.7}$$

so that

$$\sum_j n_j\hat{a}_j\hat{y}_j = \hat{y}^n\hat{y} - n_1 n_2\hat{p}_R^n(\hat{y}_2 - \hat{y}_1). \tag{1.8}$$

Moreover, under CES aggregation,

$$(\hat{y}_2 - \hat{y}_1) - (\hat{y}_2^n - \hat{y}_1^n) = -\eta(\hat{p}_R - \hat{p}_R^n), \qquad \hat{y}_2^n - \hat{y}_1^n = -\eta\hat{p}_R^n. \tag{1.9}$$

Under the efficient steady-state normalization ($\bar{Y} = 1$), the first three terms in (1.6) can then be rearranged as

$$(\hat{y} - \hat{y}^n)^2 + \frac{n_1 n_2}{\eta}\left[(\hat{y}_2 - \hat{y}_1) - (\hat{y}_2^n - \hat{y}_1^n)\right]^2 \tag{1.10}$$

up to terms independent of policy. Using also

$$\mathrm{Var}_i^j(\hat{y}(i)) = \theta^2\,\mathrm{Var}_i^j(\hat{p}(i)), \tag{1.11}$$

welfare writes:

$$U \approx -\frac{1}{2}\left[(\hat{y}-\hat{y}^n)^2 + n_1 n_2 \eta(\hat{p}_R - \hat{p}_R^n)^2 + \theta\sum_j n_j \mathrm{Var}_i^j \hat{p}(i)\right] + \text{t.i.p.} \tag{1.12}$$

With dichotomous price-setting, the variance of sectoral prices in sector j becomes

$$\mathrm{Var}_i^j(\hat{p}_{ij}) = \alpha_j(1-\alpha_j)\big(\hat{p}_j^r - \hat{p}_j^p\big)^2. \tag{1.13}$$

Then the welfare criterion becomes (2.16):

$$U \approx -\frac{1}{2}\left[(\hat{y}-\hat{y}^n)^2 + \eta n_1 n_2(\hat{p}_R - \hat{p}_R^n)^2 + \theta\sum_j n_j\alpha_j(1-\alpha_j)\big(\hat{p}_j^r - \hat{p}_j^p\big)^2\right] + \text{t.i.p.} \tag{1.14}$$

with the normalization $\hat{p}_j^p = 0$.

2 Empirical and Numerical Material

2.1 Natural Language Analysis

This appendix documents the construction of the quantitative text-based measure used in Figure 1, a measure for the prevalence of sector-specific and heterogeneity-oriented language in ECB monetary-policy communication.

Corpus and analytical sample. We begin from a corpus of ECB communications collected from public ECB sources. The analytical sample used for Figure 1 consists of 1,650 documents over 2015–2025. We retain document types commonly used for monetary-policy communication, namely: (i) speeches, (ii) interviews, (iii) press conference introductory statements and Q&A transcripts, (iv) Monetary Policy Accounts, and (v) blog posts. To restrict attention to monetary-policy-relevant content within this set, we apply an inclusion filter: a document is kept if it contains at least one of the following terms: *inflation*, *price stability*, *monetary policy*, *interest rate*, or *economic outlook*.[20]

Preprocessing and sentence segmentation. Each document is converted to plain text and processed using standard NLP tools. We segment documents into sentences using spaCy's sentence boundary detection. Let S_d denote the set of sentences in document d and $|S_d|$ its sentence count. We lemmatize tokens using spaCy to improve recall across morphological variants (e.g., *heterogeneous*/*heterogeneity*, *transmit*/*transmission*). All matching is performed on lemmatized text; multi-word expressions are matched at the

[20]This relevance filter is intended to remove communications with limited monetary-policy content while preserving a broad set of policy-facing documents.

sentence level.

Dictionary construction. We construct a pre-specified dictionary of sector-specific and heterogeneity-related terms, organized into five thematic categories: (i) *Sectoral composition* (e.g., energy, goods, services, food; "underlying" components of inflation), (ii) *Sectoral heterogeneity* (uneven price dynamics and price adjustment across sectors), (iii) *Regional heterogeneity* (cross-country or cross-region differences within the euro area), (iv) *Monetary-policy transmission* (pass-through and transmission channels), and (v) *Transmission heterogeneity* (heterogeneous transmission across agents, sectors, or countries). The dictionaries contain single-word terms and multi-word expressions. The union of the five categories defines the set of dictionary matches used to compute the headline measure in Figure 1.

Document-level metric (sentence-level intensive margin). For each sentence $s \in S_d$, define an indicator $\mathbb{1}\{s \in \mathcal{D}\}$ equal to one if the sentence contains at least one match from the dictionary (across any of the five categories), and zero otherwise. The document-level measure is the share of sentences with at least one match:

$$x_d = \frac{1}{|S_d|} \sum_{s \in S_d} \mathbb{1}\{s \in \mathcal{D}\}. \tag{2.1}$$

This sentence-level metric reduces sensitivity to repeated mentions of the same term within a sentence and yields an interpretable unit: the fraction of sentences in a document that invoke sector-specific or heterogeneity-related framing.

Aggregation over time and confidence intervals. We aggregate document-level measures to the annual frequency. Let $\mathcal{D}_t$ denote the set of documents dated in year t and $N_t = \operatorname{card} \mathcal{D}_t$. The annual series is the unweighted mean across documents:

$$\bar{x}_t = \frac{1}{N_t} \sum_{d \in \mathcal{D}_t} x_d. \tag{2.2}$$

The shaded band reports a 95% confidence interval around $\bar{x}_t$ computed from the cross-document dispersion within year:

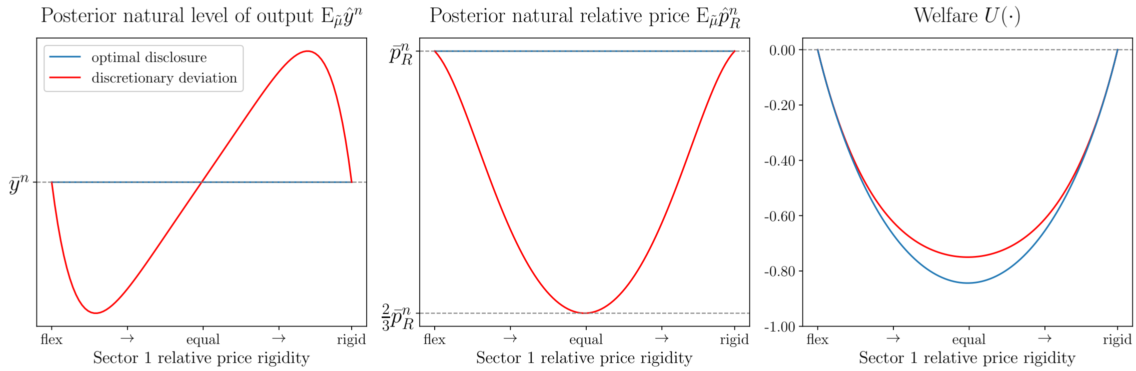
$$\bar{x}_t \pm 1.96 \cdot \frac{s_t}{\sqrt{N_t}}, \qquad s_t^2 = \frac{1}{N_t - 1} \sum_{d \in \mathcal{D}_t} (x_d - \bar{x}_t)^2. \tag{2.3}$$

This uncertainty measure reflects within-year heterogeneity across documents.

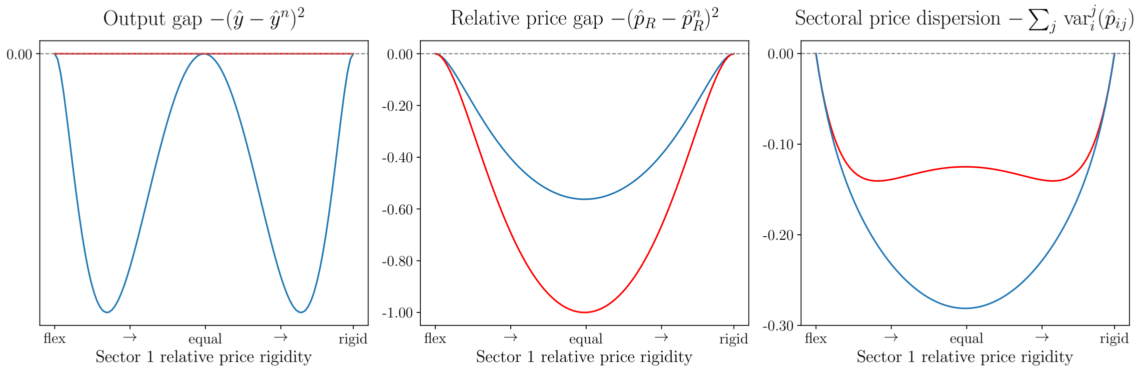
2.2 Additional Figures

Figure 1: Full-Disclosure Regime with Asymmetric Price Rigidity ($\Gamma > 0$)

(a) Communication and Welfare



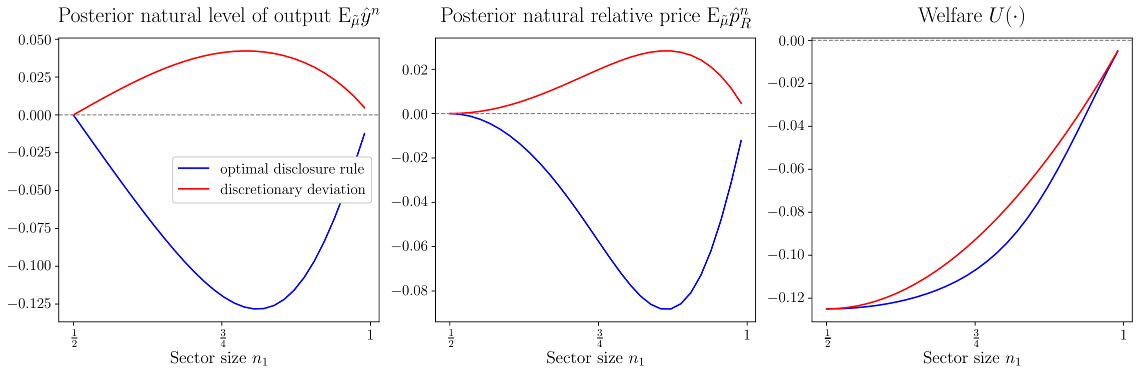
(b) Welfare Loss Decomposition



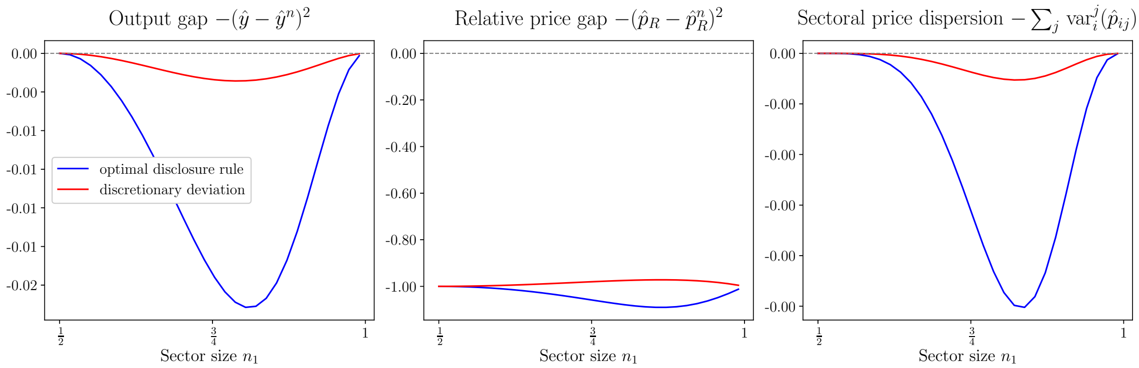
Notes. Given $\hat{y}^n > 0$ and $\hat{p}^n_R = \hat{a}_1 - \hat{a}_2 > 0$, this figure reports posterior beliefs and welfare under the **optimal disclosure rule** (Proposition 1) and the **discretionary deviation** (Proposition 2), as functions of asymmetric sectoral price rigidities (α_1, α_2). Illustrative parameter values: average price rigidity $\bar{\alpha} = \frac{1}{2}$, sector sizes $n_1 = n_2 = \frac{1}{2}$, and $\eta < \theta$ chosen so that $\Gamma > 0$ throughout.

Figure 2: Partial-Disclosure Regime: Economic Outcomes under Asymmetric Sector Sizes ($\Gamma < 0$)

(a) Communication and Welfare



(b) Welfare Loss Decomposition



Notes. Given a pure-dispersion realized state $\hat{y}^n = 0$ and $\hat{p}_R^n = 1$ at every $n_1 \in [1/2, 1)$, this figure compares economic outcomes under the **optimal disclosure rule** (Proposition 1) and the **discretionary deviation** (Proposition 2) in the partial-disclosure regime as sector size becomes asymmetric. Top row: firms' posterior beliefs $\mathbb{E}_{\tilde{\mu}}(\hat{y}^n \mid m)$, $\mathbb{E}_{\tilde{\mu}}(\hat{p}_R^n \mid m)$, and total welfare $U(\cdot)$. Bottom row: welfare loss decomposition into output gap, relative-price gap, and within-sector price dispersion. Illustrative parameter values: $\eta < \theta$ and $\alpha_1 = \alpha_2 = \alpha$ chosen so that $\Gamma < 0$.