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A GENERIC MODEL OF MONETARY POLICY, INFLATION, AND REPUTATION

Herschel I. Grossman

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ABSTRACT

This paper analyzes a reputational equilibrium for inflation under the generic assumption that monetary policy reflects proximate preferences for low expected inflation and positive unexpected inflation. The paper stresses the qualitative implication that in a reputational equilibrium the policymaker behaves as if it is concerned about controlling inflation, even though it does not have a direct preference for a low actual inflation rate. The analysis also shows how the sovereign's prospects for survival and the private agents' memory process play critical roles in determining whether the reputational equilibrium approximates a hypothetical equilibrium with binding commitments.

Herschel I. Grossman
Department of Economics
Brown University
Providence, RI 02912

Recent contributions to the theory of monetary policy, building on the ideas in Kydland & Prescott (1977) and in Calvo (1978), have analyzed the inflationary implications of including in the proximate objective function for policy a preference for positive unexpected inflation. This preference could reflect various underlying real objectives of monetary policy, such as high aggregate economic activity, low real cost of servicing nominally denominated debts, or high revenue from seigniorage. Other plausible assumptions about the underlying objectives of monetary policy imply that the policymaker is also proximately concerned about the demand for real money balances and, accordingly, prefers low expected inflation. This preference could derive from interest in, for example, allocative efficiency or enhancement of the sovereign's revenue prospects, especially potential seigniorage. Importantly, although the preferences for low expected inflation and positive unexpected inflation are generic, if the underlying objectives of monetary policy involve real economic outcomes, then the policymaker has no reason to be separately concerned about actual inflation. A generic specification of the proximate objective function of monetary policy involves actual inflation only as a component of unexpected inflation.

The analysis of Kydland & Prescott and of Calvo assumes that the expectations of private agents are rational in the extended sense that they reflect the objectives and strategic considerations that determine policy choices. This analysis also recognizes that, because the policymaker exercises the powers of sovereignty, announcements about intended policy actions are not binding commitments. Accordingly, the theory restricts private agents to form an inflationary expectation that the policymaker voluntarily would choose to validate. The literature denotes such a self-confirming expected inflation rate as "time consistent".

The set of time-consistent expectations depends not only on how private agents form expectations, but also on the strategy used by the policymaker to choose policy actions. The analysis of Kydland & Prescott and of Calvo, as well as the elaboration of this analysis in Barro & Gordon (August 1983) and in Barro (1983), assumed that the policymaker takes the expectations of private agents about future policy actions as given. Other authors--for example, Taylor (1983) and Grossman & Van Huyck (1986, 1987)--have emphasized that this assumption can have grossly unrealistic implications. Specifically, if policymakers actually ignored any effect that their current actions have on expectations of future policy actions, then debt repudiation, expropriation of capital, and, in the present context, hyper-inflation would be common policies. For example, in Calvo's analysis, the unique time-consistent expectation equals the maximum feasible inflation rate. [Kydland & Prescott, Barro, and Barro & Gordon avoided this result only by arbitrarily assuming that, in addition to preferring positive unexpected inflation, the policymaker is averse to high actual inflation rather than to high expected inflation.]

A more interesting specification of policymaker strategy, utilizing the concept of reputation developed in Barro & Gordon (July 1983), emphasizes a linkage between current policy actions and expected future policy actions. Reputation enables the policymaker, who cannot make binding commitments, nevertheless to influence expectations about future policy through its decision either to validate or to invalidate expectations about current policy.

The present paper analyzes a reputational equilibrium for inflation under the generic assumption that monetary policy reflects proximate preferences for low expected inflation and positive unexpected inflation, but is not separately concerned with actual inflation. This analysis confirms that a reputational model generally yields an enlarged set of time-consistent expectations, but it emphasizes that reputational considerations also can alter the qualitative properties of equilibrium behavior. Specifically, reputational considerations can cause the policymaker in the present context to behave as if it is concerned about controlling inflation, even though it does not have a direct preference for low actual inflation.

This result, which was already implicit in the analysis of seigniorage maximization by Grossman & Van Huyck (1986), creates a strong presumption that reputation plays an essential role in the actual formulation of monetary policy. [Barro & Gordon did not see this result because, even after introducing reputation, they continued to specify aversion to high actual inflation as a separate element of the policymaker's proximate objective function.] An analogous result, derived in the reputational model of sovereign debt analyzed in Grossman & Van Huyck (1987), is that the sovereign faithfully meets its debt servicing obligations even though it has no moral compulsion not to repudiate its debts.

In addition to focusing on a generic objective function of expected and unexpected inflation, the present paper extends the analysis of monetary policy and reputation by treating the sovereign's survival in power and, perhaps more importantly, the memory of private agents as stochastic processes. In this context, the analysis stresses the association of reputation with the sovereign, rather than with the individual policymakers who act as agents of the sovereign, to emphasize that the preference for positive unexpected inflation derives from the underlying objectives of the sovereign as the principal and not from the relation of the policymaker to the sovereign. [The model implicitly assumes that the process by which the sovereign appoints and removes the individuals who make monetary policy causes policy to reflect the sovereign's underlying objectives.]

The analysis that follows shows explicitly how the policymaker's concern for the sovereign's reputation expands the set of time-consistent expectations, which otherwise would include only the pathological outcome of hyperinflation, to include patterns of monetary policy that are both realistic and relatively benign. In addition, the analysis derives conditions under which reputational considerations can produce even the same outcomes that would obtain if the policymaker could commit its future policies. More generally, the analysis shows how the sovereign's prospects for survival and the private agents' memory process play critical roles in determining the characteristics of the reputational equilibrium and whether this equilibrium approximates a hypothetical equilibrium with binding commitments.

1. Policy Objective

Assume, as motivated above, that monetary policy in period τ maximizes the expectation of the present value of a periodic function of expected inflation and unexpected inflation. This expectation, U_τ, is given by

$$(1) \quad U_\tau = E_\tau \sum_{t=\tau}^{\tau+h} \exp\,[-r\lambda(t-\tau)]\; u(e_t,\, p_t - e_t),$$

with $r > 0$, $\lambda > 0$,

$u_1 \gtrless 0$ as $e_t \lessgtr \hat{e}$, $u_{11} < 0$,

$u_2 \gtrless 0$ as $p_t - e_t \lessgtr \Pi > 0$, $u_{22} < 0$,

and $p_t \leq \bar{p} \leq \infty$,

where E_τ is an operator that denotes an expectation conditional on information valuable in period τ, h is an horizon that corresponds to the prospective longevity of the sovereign's survival in power, r is the discount rate per unit of calendar time that embodies the sovereign's pure time preference, λ measures the interval between points in time at which private agents adjust their expectation of inflation, this interval being the relevant length of a period in units of calendar time, e_t is the private agents' expectation of the inflation rate during period t, and p_t is the actual inflation rate during period t.

The function $u(\cdot)$ has a maximum with respect to e_t at e_t equal to $\hat{e}$, and a maximum with respect to $p_t - e_t$ at $p_t - e_t$ equal to Π. An important assumption is that Π is strictly positive--that is, whatever the expected inflation rate, the policymaker prefers a positive amount of unexpected inflation. For simplicity, the analysis treats $\hat{e}$ and Π as constants. The maximum possible inflation rate is $\bar{p}$, which we could assume to be infinite. Finally, it is convenient to scale the objective function such that $u(\bar{p},0)$ equals zero.

The analysis assumes that the sovereign's longevity, h periods, is a random variable defined over the non-negative integers, and, for simplicity, assumes that in any unit of calendar time the probability that the current sovereignty will terminate is $1-\gamma$, where $0 \leq \gamma \leq 1$. Thus, the probability that h will turn out to be less than $n+1$ periods is $1-\gamma^{n\lambda}$. Because h is unbounded, evaluating U_τ requires a calculation of expected utility over an infinite horizon, with utility during period t discounted to reflect the probability that h would turn out to be less than t. Specifically, equation (1) implies

$$(2) \quad U_\tau = \sum_{t=\tau}^{\infty} (\beta\gamma)^{\lambda(t-\tau)} u(e_t, p_t - e_t), \quad \text{where} \quad \beta \equiv \exp(-r).$$

The analysis assumes that private agents know β, γ, and the function $u(\cdot)$, as well as all other aspects of the structure of the model. Note that, if the probability per period of termination, $1-\gamma^{\lambda}$, is positive, then U_{τ} is defined even if r equals zero and β equals unity. The analysis also assumes that the policymaker can control the actual inflation rate exactly.

2. A Committed Monetary Policy

Suppose that the policymaker could irrevocably commit monetary policy to be consistent with an announced path of future inflation rates. Such an irrevocable commitment would determine inflationary expectations. In this case, the policymaker's problem would amount to choosing the program $\{e_t, p_t\}_{t=\tau}^{\infty}$ to maximize U_{τ} as given by equation (2) subject to the constraint that p_t must equal e_t for all t. The first-order condition for this problem would be

$$(3) \quad u_1(e_t,0) = 0 \quad \text{for all} \quad t.$$

The value of e_t that would satisfy equation (3) is $\hat{e}$. Thus, with a hypothetically committed monetary policy, the inflation rate would be

$$(4) \quad p_t = e_t = \hat{e} \quad \text{for all} \quad t.$$

Substituting equation (4) into equation (2) gives

$$(5) \quad U_{\tau} = [1-(\beta\gamma)^{\lambda}]^{-1}\, u(\hat{e},0) > 0.$$

Equation (5) says that, if the policymaker could make an irrevocable commitment, it would be able to achieve the positive expected value for its objective function associated with the best expected inflation rate and zero unexpected inflation.

3. An Opportunistic Monetary Policy

In reality, monetary policy is not subject to irrevocable commitments. Accordingly, although providing a useful benchmark, the preceding case does not provide an empirically relevant analysis of monetary policy.

To consider another useful benchmark case, suppose that the policymaker in addition to being incapable of making irrevocable commitments, sets monetary policy without regard either for its own announcements about policy intentions or for any effect that the actual inflation rate has on inflationary expectations. Instead, the policymaker opportunistically chooses the program $\{p_t\}_{t=\tau}^{\infty}$ to maximize U_τ, taking the private agents' expectation about future inflation rates as given. The first-order condition for this problem would be

$$(6) \quad \text{either } \; u_2(e_t, p_t - e_t) = 0 \;\text{ with }\; p_t < \bar{p} \quad \text{for all } t$$

$$\text{or } \; u_2(e_t, p_t - e_t) > 0 \;\text{ with }\; p_t = \bar{p} \quad \text{for all } t.$$

Condition (6) implies that, with a hypothetically opportunistic monetary policy, the inflation rate would satisfy

$$(7) \quad p_t = \min\,(e_t + \Pi, \bar{p}) \quad \text{for all } t.$$

Assuming that private agents correctly perceive the policymaker's opportunistic strategy, expected inflation would be consistent with equation (7)--that is, expected inflation would satisfy

$$(8) \quad e_t = \min\,(e_t + \Pi, \bar{p}) \quad \text{for all } t.$$

Equation (8) says that private agents would know that, if expected inflation were less than the maximum inflation rate, the opportunistic policymaker would create actual inflation higher than expected inflation. The key to this result is the assumption that Π is strictly positive, which implies that $u_2(e_t,0)$ is strictly positive.

Combining equations (7) and (8) yields a unique equilibrium in which

$$(9) \quad e_t = p_t = \bar{p} \quad \text{for all} \quad t.$$

Equation (9) says that, as in Calvo's analysis, an opportunistic monetary policy would result in expected and actual inflation equal to the maximum inflation rate. In other words, an opportunistic monetary policy would imply hyperinflation.

[As noted above, Kydland & Prescott, Barro and Barro & Gordon avoided this conclusion by the contrivance of assuming that the policymaker is averse to high actual inflation rather than to high expected inflation. For example, if we changed the first argument of the $u(\cdot)$ function from e_t to p_t, without changing any other properties of this function, then the first order condition for opportunistic maximization of U_τ could be $u_1 + u_2 = 0$ with $\hat{e} < e_t = p_t < \bar{p}$.]

Substituting equation (9) into equation (2) gives

$$(10) \quad U_\tau = [1-(\beta\gamma)^\lambda]^{-1} u(\bar{p},0) = 0.$$

Equation (10) confirms the general result that an opportunistic monetary policy would yield an expected present value for the objective function unambiguously smaller than would a committed monetary policy.

4. A Reputational Equilibrium

The analysis in the preceding sections assumed either that the policymaker irrevocably commits itself to a path of future inflation rates, in which case actual and expected inflation would equal the best expected inflation rate, or that the policymaker behaves opportunistically, in which case actual and expected inflation would equal the maximum possible inflation rate. To develop a more realistic analysis, suppose that, although the policymaker cannot make irrevocably commitments, it can influence expectations about future monetary policy by its choice of current monetary policy.

The linkage between actual monetary policy and inflationary expectations is the sovereign's reputation for validating expectations. Given this linkage, a rational policymaker would consider how its current monetary policy will affect the sovereign's reputation and how the sovereign's reputation affects inflationary expectations. Only a policymaker that irrationally ignored the sovereign's reputation would behave opportunistically.

To analyze the determination of the sovereign's reputation, assume that policymakers acting as agents of a sovereign always behave rationally, except for an infinitesimal fraction, ε, of cases in which policymakers inexplicably fail to exercise the rational ability to resist the temptation to behave opportunistically. Private agents might attribute such a loss of rational restraint either to the idiosyncratic irrationality of the sovereign or to a breakdown in the process by which the sovereign translates its preferences into policy. In any event, private agents view a loss of rational restraint, however uncommonly it occurs, to be an intrinsic and irreversible attribute of the sovereign.

Given this pattern, private agents attach probability $1-\varepsilon$, which equals approximately unity, to rational and, hence, non-opportunistic behavior as long as private agents do not recollect any instance of opportunistic behavior by the policymaking agents of the existing sovereign. In this case, private agents expect an inflation rate, denoted by p^*, that has two essential properties. First, p^* is self-confirming--that is, given that private agents expect p^*, if the policymaker plans to validate inflationary expectations by setting p_t, for all $t > \tau$, equal to p^*, the expected present value of the objective function is at least as large as it would be if the policymaker were to set p_τ opportunistically. Second, p^* is the member of the set of expected inflation rates that have this self-confirming property that produces the largest value of U_τ. [Given the fixed non-stochastic structure of the model, p^* is constant.] An announcement by the policymaker that the inflation rate will be p^* would be credible and by focusing expectations could insure that p^* equals the best self-confirming expected inflation rate.

If, alternatively, the private agents were to remember that policymaking agents of the existing sovereign had behaved opportunistically, then they would expect opportunistic behavior in the future. In this case, the expected inflation rate would be $\bar{p}$.

Note that this analysis is concerned only with the expectations of atomistic private agents and does not require or involve collusive strategic behavior by private agents. Although the assumed reaction of inflationary expectations to opportunistic behavior and the punishment strategy assumed by Friedman (1971, 1977) in his analysis of supergames impose similar constraints on the policymaker's choice problem, we must be careful not to press this formal similarity too far. Specifically, we cannot appeal to strategic or game-theoretic considerations to provide a priori rationale for assumptions about the expectations of atomistic private agents. Rather, the only relevant a priori consideration is that these assumptions generate self-confirming expectations. [In some situations, of course, either the relevant private agents are large like labor unions or consortia of creditors or the relevant interactions involve a few large participants in the policymaking process like different political parties, different branches of government, or even different governments. In these cases, a theory of punishment strategies rather than a theory of expectations and reputation would be relevant.]

Let k denote the number of periods for which private agents would remember an instance of opportunistic behavior, where $0 \leq k \leq \infty$. The analysis assumes that k is a random variable and, for simplicity, assumes that in any period the probability that private agents would permanently forget a past instance of opportunistic behavior is a constant $1-\delta^{\lambda}$, where $0 \leq \delta \leq 1$. Thus, the probability that k would turn out to be less than $n+1$ periods is $1 - \delta^{n\lambda}$. If δ equals unity, then k is infinite and a sovereign would never recover a trustworthy reputation once it had been lost.

Given that in period τ the sovereign has a reputation for validating expectations, these assumptions about expectations imply that

(11) for $t = \tau$, $e_t = p^*$, and

for $\tau+h \geq t > \tau$, either $e_t = p^*$

if $p_{t-j} = e_{t-j}$ for all $j = 1, \ldots, k$

or $e_t = \bar{p}$ otherwise.

Taking account of reputation, the policymaker's problem in period τ is to choose a program $\{p_t\}_{t=\tau}^{\infty}$ to maximize U_t, as given by equation (2), subject to condition (11). The best self-confirming expected inflation rate, p^*, is the solution to this problem. The analytical problem of characterizing the reputational equilibrium simply involves the determination of p^*.

To derive p^*, define V_τ to be the expected value of the sovereign's utility over an horizon that corresponds to either the prospective longevity of the sovereign's survival in power or the prospective longevity of private agents' memories of opportunistic behavior, whichever is shorter--that is

$$(12)\quad V_\tau = E_\tau \sum_{t=\tau}^{\tau+\min(h,k)} \beta^{\lambda(t-\tau)} u(e_t, p_t - e_t).$$

Only at most the next k periods are relevant to the policy choice, because the sovereign's utility after period $\tau+k$ is independent of the inflation rate chosen in period τ. Given the stochastic processes that generate h and k, equation (12) implies

$$(13)\quad V_\tau = \sum_{t=\tau}^{\infty} (\beta\gamma\delta)^{\lambda(t-\tau)} u(e_t, p_t - e_t).$$

According to equation (13), the contribution of expected utility in period t to V_τ is smaller the larger is t, the larger is the sovereign's rate of pure time preference, the larger is probability that in any period the current sovereignty will terminate, and the larger is the probability that in any period lenders would forget a past instance of opportunistic behavior.

As a member of the set of self-confirming inflation rates, p^* satisfies

$$(14)\quad V_\tau^* > V_\tau^o,$$

where V_τ^* is the value of V_τ that results from setting p_t for all $t > \tau$ equal to p^* and V_τ^o is the value of V_τ that would result from setting p_τ equal to min $(p^* + \Pi, \bar{p})$. To calculate V_τ^*, substitute p^* for e_t and p_t in equation (13), to obtain

(15) $V_\tau^* = (1-\alpha^\lambda)^{-1}\, u(p^*,0)$, where $0 \leq \alpha \equiv \beta\gamma\delta \leq 1$.

To calculate V_τ^o, observe that by setting p_τ equal to min $(p^* + \Pi, \bar{p})$, the policymaker would obtain a value for its objective in period τ equal to $u[p^*, \min(\Pi, \bar{p}-p^*)]$. At the same time, by condition (11), such opportunistic behavior would cause the sovereign to lose its reputation for validating expectations. Consequently, in the next h or k periods, the equilibrium with an opportunistic monetary policy would obtain. In such an equilibrium, as indicated by equation (10), the policymaker would obtain a value of zero for its objective. Thus, we have

(16) $V_\tau^o = u[p^*, \min(\Pi, \bar{p}-p^*)]$.

Given equations (15) and (16), condition (14) implies that $\bar{p}$ is a self-confirming inflation rate for any value of α^λ. Notice also that $u[p^*, \min[\Pi, \bar{p}-p^*)]$ is larger than $u(p^*,0)$ for any value of p^* less than $\bar{p}$. Thus, if α were zero--that is, if the policymaker completely discounted future realizations of its objective--or if λ were infinite--that is, if the private agents waited forever to adjust their expectations in response to opportunistic behavior--then, because the policymaker prefers positive unexpected inflation, the set of self-confirming inflation rates would consist only of $\bar{p}$. In this case, p^* would equal $\bar{p}$.

More generally, if α is positive and λ is finite, then inflation rates less than $\bar{p}$ also can be self-confirming. A positive value of α implies less than infinite pure time preference, i.e., β larger than zero, a positive probability that the sovereign will survive in power, i.e., γ larger than zero, and a positive probability that private agents would remember an instance of opportunistic behavior, i.e., δ larger than zero. A finite value of λ implies that private agents periodically adjust their expectation of inflation in accord with the policymaker's behavior.

More exactly, given equations (15) and (16), condition (14) implies that for p^* to be lower than $\bar{p}$, α^λ must be large enough and the increment to the periodic value of the objective associated with opportunistic behavior must be small enough that there exist values of p less than $\bar{p}$ that satisfy

$$(17) \quad \alpha^\lambda > 1 - \frac{u(p,0)}{u[p, \min(\Pi, \bar{p}-p)]}.$$

If such self-confirming values of p exist, then p^* is the member of this set that maximizes V^*_τ.

In the hypothetical case of a committed monetary policy, analyzed in equations (3) - (5), the optimal value of p_t, given p_t equal to e_t for all $t > \tau$, was $\hat{e}$. Given that the reputational equilibrium also implies p_t equal to e_t for all $t > \tau$, if the set of self-confirming inflation rates contains an inflation rate as low as $\hat{e}$, then p^* also equals $\hat{e}$--that is, the reputational equilibrium would be the same as the outcome of a hypothetically committed monetary policy.

To determine the conditions under which $\hat{e}$ is a self-confirming inflation rate, it is necessary to evaluate condition (14) under the hypothesis that p^* equals $\hat{e}$. Making the appropriate substitutions in equations (15) and (16) shows that, for p^* to be equal to $\hat{e}$,

$$V_\tau^*\Big|_{p^*=\hat{e}} = (1-\alpha^\lambda)^{-1}\, u(\hat{e},0)$$

must be at least as large as

$$V_\tau^o\Big|_{p^*=\hat{e}} = u[\hat{e},\ \min\ (\Pi,\ \overline{p}-\hat{e})].$$

This condition implies that α^λ must be large enough and the increment in the current value of the objective associated with opportunistic behavior, given that expected inflation equals $\hat{e}$, must be small enough to satisfy

$$(18)\quad \alpha^\lambda \geqslant 1 - \frac{u(\hat{e},0)}{u[\hat{e},\ \min\ (\Pi,\ \overline{p}-\hat{e})]}.$$

If condition (18) is not satisfied, then $\hat{e}$ is not in the set of self-confirming inflation rates. In that case, note that the value of V_τ^* decreases monotonically as p^* diverges from $\hat{e}$--that is, from equation (15),

$$\frac{\partial V^*}{\partial p^*}\Big|_{p_t=e_t \text{ for all } t} = (1-\alpha^\lambda)^{-1}\, u_1(p^*,0) \gtrless 0 \quad \text{as} \quad p^* \lessgtr \hat{e}.$$

Consequently, if p^* does not equal $\hat{e}$, then p^* is higher than $\hat{e}$ and is the member of the set of self-confirming inflation rates that is closest to $\hat{e}$.

5. Extensions

The concept of reputation developed in this paper focuses on the expectations of private agents about the strategy employed by the policymaker. The analysis abstracts from other sources of uncertainty about the behavior of the policymaker. Specifically, the analysis assumes that private agents know the objectives of the policymaker and that the information that the policymaker uses in making policy choices is publicly available.

For many, if not most, situations, these assumptions seem to provide a useful simplifying approximation to reality. The assumption that the policymaker's objectives are known is consistent with the observation that in many cases informed observers can predict future policy actions as well as the policymaker itself. This observation suggests that the main source of uncertainty involved in forecasting future policy concerns the realizations of exogenous random variables that constrain policy choices and not the objectives of the policymaker. The assumption that relevant current information is publicly available seems appropriate to the extent that this information involves published data on economic aggregates and observations on current events like weather and war.

An important extension of the analysis, however, would be to model the parameters of the proximate objective function as truly variable. Such modelling would seem essential to the generation of hypotheses that are testable with time series data. The essential econometric point, emphasized by Cooley, LeRoy & Raymon (1983, 1984) and developed further by Grossman (1984), is that models, like the above example, that admit counterfactual questions about the effects of parameters having different constant values are in general inappropriate for formulating conditional forecasts of the effects of hypothetical realizations of exogenous variables.

A closely related extension of the analysis to a stochastic environment involves the formulation of actual monetary policy as state contingent together with the associated generalization of the analysis of reputation. Grossman & Van Huyck (1987) developed the theoretical form for this generalization in the course of analyzing explicit default and potential repudiation of sovereign debts.

6. Summary

This paper has considered a generic model in which monetary policy attempts to maximize the expectation of the present value of an objective function that reflects preferences for low expected inflation and positive unexpected inflation. Importantly, this objective function does not involve actual inflation other than as a component of unexpected inflation.

In this model, if, hypothetically, the policymaker, as the agent of the sovereign, could irrevocably commit monetary policy to be consistent with an announced path of future inflation rates, then the equilibrium would be the best expected inflation rate and zero unexpected inflation. Such a commitment, however, would not be time consistent, and, hence, would be neither credible nor feasible. If, at the other extreme, the policymaker opportunistically attempted to create positive unexpected inflation, taking expected inflation as given, then in equilibrium the actual and expected inflation rates would equal the maximum possible inflation rate.

To develop a more realistic framework, the analysis focused on a reputational equilibrium in which the actual and expected inflation rates are equal to the best self-confirming expected inflation rate. A self-confirming expected inflation rate has the property that, if private agents expect this inflation rate, the policymaker chooses to validate this expectation rather than to behave opportunistically. In other words, if the expected inflation rate is self-confirming, then the associated value to the policymaker of maintaining the sovereign's reputation for validating expectations is greater than the value of creating temporarily high unexpected inflation. The equilibrium inflation rate is the self-confirming expected inflation rate that yields the highest expected present value for the policymaker's objective.

If the set of self-confirming expected inflation rates contains the inflation rate that would be the equilibrium with a hypothetically committed monetary policy, then that inflation rate is also the reputational equilibrium. For such a low expected inflation rate to be self-confirming, the policymaker cannot discount the future too heavily--that is, the probabilities per period that the sovereign will survive in power and that the private agents would remember an instance of opportunistic behavior both must be large--and the increment in periodic value of the objective that would result from opportunistic behavior cannot be too big. If these conditions are not satisfied, then the reputational equilibrium would be the lowest inflation rate in the set of self-confirming expected inflation rates. If the sovereign discounts the future very heavily and gets great benefit from positive unexpected inflation, then the reputational equilibrium might not support any outcome that is better than the opportunistic equilibrium. Importantly, except in this extreme case, reputational considerations cause the policymaker to behave as if it is concerned about controlling inflation--that is, it sets policy to keep the inflation rate below the fastest possible rate and perhaps as low as the best expected inflation rate--even though it does not have a direct preference for a low actual inflation rate.

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