



The choice of flexibility in targeting inflation during normal times and during disinflations



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ABSTRACT

This paper investigates the relationship between the return path to price stability and the extent of flexibility in targeting inflation under perfect reputation as well as under imperfectly anchored inflation targeting systems characterized by imperfect reputation. The first part of the paper shows that the mapping from the flexibility parameter to the return path to price stability is generally non-unique. It discusses reasons and consequences of this non-uniqueness, and proposes several ways to address the communication and related problems that this fact creates for the conduct of monetary policy. The second part investigates the impact of reputation (defined as the weight given by the public to preannounced interim targets in forming inflationary expectations) on the speed of inflation stabilization. The main result is that higher reputation is associated with faster stabilizations at all levels of the flexibility parameter.

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1. Introduction

It is widely accepted that, by raising inflation and reducing output, cost shocks create a trade-off between the stabilization of inflation and the stabilization of output for the central bank (CB). Under strict inflation targeting the CB is supposed to use its policy instrument to move the economy back to the inflation target, π^* immediately. By contrast, under flexible inflation targeting the CB is expected to steer the economy back to target *only gradually* in order to avoid excessive fluctuations in output and the output gap. The speed with which the CB plans to steer the economy back to the inflation target following a cost shock depends on the relative importance attributed to stabilization of output relative to stabilization of inflation. If it cares relatively much about the stabilization of output, the CB will allow a longer time interval between the realization of the shock and the planned return to the inflation target. If the opposite is true, it will plan to steer the economy back to the inflation target relatively quickly. A standard formulation of this view is embedded in the following loss function:

$$L_t = \frac{1}{2} \mathbb{E}_0 \sum_{t=0}^{\infty} \delta^t [\alpha x_t^2 + (\pi_t - \pi^*)^2] \quad (1)$$

where x_t and π_t are the output gap and inflation respectively, δ is a discount factor, \mathbb{E}_0 is the expected value operator conditioned on the information available to the CB in period 0, and α is the relative importance attributed to the stabilization of output. Rogoff (1985) refers to $1/\alpha$ as the level of central bank conservativeness (CBC). Since this parameter

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determines the speed with which the CB plans to steer the economy back to the inflation target following a shock, advocates of flexible inflation targeting also refer to it as the flexibility parameter in targeting inflation. Note that the flexibility parameter and CBC are inversely related.

Even highly transparent central banks like the Bank of England have been remarkably silent about the flexibility parameter, α . While acting as Executive Director and Chief Economist of the Bank of England, John Vickers candidly admitted that this parameter has not been put in the public domain and argued that it is infeasible to do so (Vickers, 1998, p. 370). There are at least two feasibility constraints on publishing a meaningful figure for the flexibility parameter (FP). First, since in most central banks, policy is made by a committee it is normally the case that not all committee members share the same α . Agreeing *once and for all* on a value of α to represent the median or average position of the committee is likely to be a more controversial process than agreeing on the setting of the interest rate at each particular point of time. The greater risk of lack of consensus tends to discourage attempts to reach a once and for all agreement.

But even in the case of a unitary policymaker (either because all the authority is vested in one individual or because all committee members share the same views) policymakers may shy away from formulating a precise value for α due to the formidable task involved in precise measurement of potential output and the output gap that enters the loss function. Even a unitary policymaker may hesitate to make a long term commitment to a relative output gap weight that is attached to a highly unreliable output gap measure.¹ On the other hand, flexible inflation targeters like the Bank of England, the Bank of Israel and other inflation targeters have been at ease to represent their objectives in terms of the path of the inflation gap they are willing to tolerate following a cost shock until the economy goes back to the inflation target. For practical central bankers as well as for communicating with the general public this is a natural and intuitive way of formulating the normative trade-off between inflation and output variability.² Obviously, economists with some minimal training in the solution of quadratic dynamic optimization problems may argue that, provided a value of α implies a unique desired path back to the target, and provided such a path uniquely maps back into a value of α , the two formulations are essentially equivalent. Framing the problem in terms of the tolerable return path or in terms of the FP should lead to identical decisions by the CB and is therefore immaterial. But when those conditions are not satisfied it is necessary to take a position on whether the desired trade-off between inflation variability and output variability should be formulated in terms of the FP or in terms of the inflation gap path that society is willing to tolerate on the way back to the inflation target when inflation is off target.

This paper opens by showing that, generally, the mapping between a given desired return path to the inflation target and the flexibility parameter, α is non-unique. This non-uniqueness creates a tension between a clean formulation of the CB subjective trade-off between the variabilities of the inflation and the output gaps, on one hand, and transparent communications with the public on the other. Preannouncing a given horizon for price stability is easily comprehensible to the general public and therefore transparent and verifiable. By contrast, although it can be derived from micro-foundations the formulation in terms of the flexibility parameter, α , requires a theoretical apparatus and level of abstraction that most of the public and even some policymakers do not possess.³ Tvesky and Kahenman (1981) have convincingly shown that framing of the same problem in different ways often affects decisions. This problem is compounded by the fact, demonstrated in this paper, that there generally is no one to one relationship between the flexibility parameter and the preannounced horizon to price stability.

In addition, given the FP, the choice of return path is likely to differ between a situation in which the inflation target (IT) system itself is well anchored and between a situation in which it is used as a disinflation device.⁴ Given α the first part of the paper discusses the choice of return path in the case in which the IT system is already well anchored so that deviations between actual and target inflation occur only because of persistent but temporary cost shocks. The second part focuses on the case in which the credibility of the IT system is not fully established yet implying that reputational considerations play a central role. It highlights the crucial role of credibility considerations for the choice of horizon for price stability when the IT system is not fully credible. Smets (2003) and Freedman and Otker-Robe (2009) stress the importance of credibility for the efficient functioning of the IT system but do not discuss its implications for the choice of horizon to price stability.

The paper's organization follows. Sections 2 and 3 investigate the case in which the IT system is already well anchored. Section 2 shows that the mapping between the FP and the desired return path is generally non-unique but that this problem can be bypassed by using a particularization of the return path that is tailored to the stochastic structure of the cost shock. For the general case Section 3 proposes a method for mapping any given desired return to target path into a unique "equivalent" value of α that is "nearest" in the least squares sense to the desirable path (denoted α^*). The section shows that α^* depends on the parameters of the underlying economic structure including the average magnitude of the cost shock implying that the presence of model uncertainty exacerbates the problem of non-uniqueness of the equivalent FP. Section 4

¹ Cukierman (2009, Section 3) reviews the difficulties this creates for implementation of full transparency in monetary policy. Orphanides (2003) advocates taking the output gap completely out of the loss function because of those measurement problems.

² See Rotemberg (2015) for a historical examination of the case of the Federal Reserve.

³ Woodford (2003) and Gali (2008) show that the loss function in Eq. (1) is well grounded theoretically as a quadratic approximation of more basic micro-foundations.

⁴ The works of Cukierman and Liviatan (1991) and Cukierman (2000) suggest that, when the IT system is not well anchored yet, reputational considerations play an essential role in the determination of the return path.

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