



# Inflation forecast contracts

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## ABSTRACT

We introduce a new type of incentive contract for central bankers: inflation forecast contracts, which make central bankers' remunerations contingent on the precision of their inflation forecasts. We show that such contracts enable central bankers to influence inflation expectations more effectively, thus facilitating more successful stabilization of current inflation. Inflation forecast contracts improve the accuracy of inflation forecasts, but have adverse consequences for output. On balance, paying central bankers according to their forecasting performance improves welfare. Optimal inflation forecast contracts stipulate high rewards for accurate forecasts.

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## 1. Introduction

There is general consensus that central banks should publish forecasts about economic variables, and inflation in particular, but that these forecasts should not be viewed as commitments.<sup>1</sup> In this paper we argue that the first part of this consensus is justified but that the second part is not. In particular, we propose making central bankers accountable for the accuracy of their inflation forecasts by introducing incentive contracts that reward central bankers for forecasting precision. We call these contracts inflation forecast contracts.

To assess our proposal, we make use of the standard New Keynesian framework (see Clarida et al., 1999 or Woodford, 2003a). In each period, the central banker issues an inflation forecast for the next period. In the absence of inflation forecast contracts, the central banker's loss function equals the social loss function. If inflation forecast contracts are introduced, the central banker will also take into account the rewards he receives for precise forecasts.

We show that paying central bankers for the accuracy of their forecasts enhances welfare.<sup>2</sup> Intuitively, inflation forecast contracts would lend credibility to the central bankers' inflation forecasts by making it costly for central bankers to deviate from their forecasts. As a result, central bankers can use inflation forecasts to influence the public's inflation expectations.

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<sup>1</sup> Currently, all major central banks release forecasts about key economic variables. For an overview of how transparent central banks are, see Eijffinger and Geraats (2006). Svensson (2009), among others, stresses that interest-rate forecasts should not be viewed as commitments.

<sup>2</sup> While we use the term "pay of central bankers," we stress that the same effects can be achieved if other components of the utility such as the chances to be re-elected or the public's perception of central bankers' competence depend on the accuracy of forecasts.

This facilitates better stabilization of cost-push shocks because, in the New Keynesian Phillips curve, inflation also depends on expectations about future inflation.

Imagine, for example, a situation where a cost-push shock would drive up inflation. The conventional reaction by central banks would be to increase interest rates, thereby lowering output and hence also inflation. If central bankers are rewarded for the precision of their forecasts, they can use an additional channel to stabilize inflation by promising to ensure a low inflation rate in the future. The public knows that the central banker has a financial interest in fulfilling his promise, so the central banker can use inflation forecasts to steer the public's inflation expectations and thus, in turn, inflation.

Our paper is organized as follows. In the next section, we discuss the related literature. We present the model in [Section 3](#). For the polar cases where inflation forecast contracts have only a small or a very strong effect on central banker's losses, we derive analytical results in [Section 4](#). Numerical results for the general case are presented in [Section 5](#). [Section 6](#) examines whether our findings extend to a set-up where the central bank cannot control inflation perfectly. In [Section 7](#), we compare inflation forecast contracts to incentive contracts that grant bonus payments to central bankers for achieving inflation rates close to the socially optimal level. [Section 8](#) concludes.

## 2. Related literature

### 2.1. Literature on inflation targeting

Our paper contributes to the large literature on inflation targeting. An early exposition of the experiences made by central banks adopting this monetary policy strategy can be found in [Bernanke et al. \(1999\)](#). The main advantages of inflation targeting are associated with anchoring inflation expectations and the furtherance of credibility and transparency.<sup>3</sup>

More particularly, our paper is related to [Svensson \(1997a\)](#), who introduced the notion of inflation forecast targeting. He shows that, in the presence of lags in monetary transmission, monetary policy is bound to be welfare-maximizing if the central bank's optimal forecast corresponds to the inflation target. He argues that it is accordingly advantageous to use the inflation forecast as an intermediate target because it has the advantage of being easier to monitor by the public than inflation itself. Our paper differs from [Svensson \(1997a\)](#) in two ways. First, in our model the central banker sets his forecasts strategically to influence the public's inflation expectations. Second, we consider the optimal design of contracts that make central bankers accountable for the accuracy of their forecasts.

[Bernanke and Woodford \(1997\)](#) examine whether central banks should choose their policies so as to align private sector forecasts with the inflation target. They conclude that this approach may lead to indeterminacy and that central banks should use their own structural model to forecast inflation. In our paper, inflation forecast contracts create explicit incentives for choosing monetary policy in line with forecasts previously made.

### 2.2. Papers that examine changes to central bank objectives

Our contribution is also related to papers that study changes to the central banker's objective function. First, [Woodford and Svensson \(2005\)](#) explore how the central bank's loss function should be modified in order to minimize social losses from a timeless perspective. This procedure requires that the central bank change its own future loss function in each period, which may be difficult to implement in practice. Moreover, it does not guarantee uniqueness of equilibrium and thus may result in alternative, inferior equilibria involving fluctuations in response to sunspot variables (see the discussion in [Woodford and Svensson, 2005](#), pp. 60–61).<sup>4</sup> In our approach, the central bank's loss function is constant across periods, and the equilibrium is unique. While our approach does not achieve the commitment solution like [Woodford and Svensson's \(2005\)](#) proposal, we will demonstrate that a large fraction of the potential welfare gains can be attained in general. Our approach has the additional advantage of conditioning central bankers' pay only on the inflation rate and the central bankers' forecasts, which can be observed accurately compared to other variables like the output gap or the size of shocks to the economy. Moreover, it requires only moderate changes to current monetary policy-making. Most central banks publish inflation forecasts anyway. The only required change is to make the pay of the central banks' chief executives dependent on the accuracy of these forecasts.

Second, [Vestin \(2006\)](#) demonstrates that assigning the central bank a loss function that contains a stabilization objective for the price level rather than the inflation rate may implement the commitment solution under discretion. However, his proposal only achieves the commitment solution if the markup shocks are not persistent.

Third, inflation forecast contracts are related to [Woodford \(2003b\)](#). He shows that, even when interest-rate smoothing is not socially desirable per se, it is socially advantageous to assign an interest-smoothing objective to central banks. In our paper it is beneficial to make the central banker responsible for minimizing the deviations between his inflation forecasts and actual inflation, although accurate inflation forecasts have no direct implications for welfare.

<sup>3</sup> Articles assessing the advantages of inflation targeting include [Gürkaynak et al. \(2010\)](#), [Laubach \(2003\)](#), [Leiderman and Svensson \(1995\)](#), [McCallum \(1999\)](#), [Mishkin \(1999\)](#), and [Svensson \(1997a, 1999\)](#).

<sup>4</sup> In their Section 2.3.6, [Woodford and Svensson \(2005\)](#) discuss how determinacy could be ensured by a hybrid rule, i.e. a rule that combines their approach and the commitment to an instrument rule.

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