



# Central Banks' preferences in Japan, the UK, and the US

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## Abstract

From the relative weight on output and inflation fluctuations in the Central Bank's loss function, we can see which goal the monetary authority dislikes. I propose the method to estimate this weight, which is different from Cecchetti and Ehrmann [Does Inflation Targeting Increase Output Volatility? An International Comparison of Policymakers' Preferences and Outcomes. NBER Working Paper 7426], and examine monetary policies in Japan, the UK, and the US after the first oil shock. It is found that the UK has the most aversion to output variability among the three in the full sample and that all of the three countries have disliked inflation variability from about 1980.

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## 1. Introduction

In the literature about the monetary policy, it is standard to assume that Central Bank's loss function depends on output and inflation fluctuations. Thus, the loss function can be specified as the weighted sum of squared deviations of output and inflation from their desired levels. From the relative weight on output and inflation fluctuations in the loss function, we can see which goal the Central Bank dislikes. For example, more weight on inflation fluctuations in a loss function implies that the Central Bank becomes to dislike inflation variability relative to output variability.

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Cecchetti and Ehrmann (1999) proposed the method to estimate this relative weight on output and inflation fluctuations.<sup>1</sup> Their approach is a combination of the optimization problem of the monetary authority with the same structural vector autoregression (VAR) techniques as King et al. (1991).

The optimization problem used in their method, however, is too simple. It is the one-period problem and its economic structure does not have microfoundations.<sup>2</sup> This simplification of the model may lead us to gain the incorrect estimate of the relative weight in the loss function.

In this paper, I propose an alternative method to estimate the weight using Svensson's inflation forecast targeting model (Svensson, 1997, 1999 and the appendix in Svensson, 1998). This model is an infinite horizon optimization problem and its economic structure is the form of having microfoundations although it is backward-looking version.

Using this more refined model, I examine monetary policies in Japan, the UK, and the US after the first oil shock.<sup>3</sup> The results show that the UK has the most aversion to output variability among the three in the full sample. From the stability test, it is also found that these three countries have increased aversion to inflation volatility after 1979 or 1980.

Section 2 introduces Svensson's inflation forecast targeting model. Section 3 explains the method of the estimation and reports the results. Section 4 compares the method and the estimates in this paper with ones in Cecchetti and Ehrmann (1999). Section 5 presents conclusions. Appendices A and B contain some technical details.

## 2. Inflation forecast targeting model

First, Svensson's inflation forecast targeting model (Svensson, 1997, 1999 and the appendix in Svensson, 1998) is introduced. Monetary authority's loss function in period  $t$  is specified as

$$L(\pi_t, y_t) = \frac{1}{2} [(\pi_t - \pi^*)^2 + \lambda y_t^2], \quad (1)$$

where  $\pi_t$  is the inflation rate in period  $t$ ,  $\pi^*$  the monetary authority's target level of inflation rate,  $y_t$  the output-gap in period  $t$ ,  $\lambda$  is the relative weight on output-gap stabilization which I estimate in this paper. The assumption is that the Central Bank desires to stabilize inflation and output, inflation around the target and output around the potential (or natural) output level.

Monetary authority's intertemporal loss function can be written as

$$E_0 \sum_{t=0}^{\infty} \delta^t L(\pi_t, y_t), \quad (2)$$

<sup>1</sup>They estimated it in 23 industrialized and developing countries, including nine inflation targeting regimes, and found that inflation targeting and non-targeting European Union countries increased their aversion to inflation variability from the 1990s.

<sup>2</sup>For example, in the model of Cecchetti and Ehrmann (1999), the aggregate demand depends on nominal interest rate, not on real rate.

<sup>3</sup>McCallum (2000) conducted the historical analysis of several monetary policy rules in Japan, the UK, and the US.

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