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Monetary policy rules and their application in Russia

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Abstract

This paper examines the behaviour of the Bank of Russia in post-crisis period (1999–2003). Special attention is devoted to econometric modelling of monetary policy rules of various types. Our empirical results support our preliminary assumptions: despite the officially declared priority of anti-inflation policy, the major efforts of the Bank of Russia were aimed at affecting the exchange rate's smoothness and the level. For that the Bank of Russia relied mainly on monetary targeting, which is the consequence of underdevelopment and low efficiency of the Russian financial sector and banking system.

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1. Introduction

The upsurge in research aimed at analysing monetary policy observed in the past decade was encouraged by the seminal work conducted by Taylor in 1993 (Taylor, 1993). His simple monetary policy rule offered a surprisingly good description of the actual behaviour of the US's federal funds rate. In subsequent years numerous researches conducted for different countries showed that in practice central banks do follow some sort of pre-set rules in response to macroeconomic shocks.

Such rules are not applied mechanically by central banks. A "rule-like behaviour", as it is specified in McCallum (1997), simply suggests the implementation of a contingency formula for instrument settings that has been selected to be generally applicable for an indefinitely large number of decision periods, as oppose to period-by-period dynamic optimisation on the part of

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the monetary policy. To say it another way, the policy rule is thought as a formula that specifies instrument settings that are designed to keep a target variable close to it specified target path.

The most usual target variable for the monetary authority is the inflation rate. Other leading target-variable choices are macro variables such as GDP. As to the instruments used, some short-term interest rate is usually chosen.

The simple Taylor Rule specifies the central bank's policy rate as a linear function of actual or expected inflation and of the actual or expected output gap (that is, a measure of the deviation of output from capacity or trend output).

$$R_t = \bar{r} + \Delta p_t^a + \alpha_1(\Delta p_t^a - \pi^*) + \alpha_2 \tilde{y}_t \tag{1}$$

Here, R_t is the short-term nominal interest rate that the central bank in question uses as its instrument or "operating target", i.e. the interest rate over which it exerts control at a daily or weekly frequency. Next, $\bar{r}$ is the long-run average real rate of interest, Δp_t^a is an average of recent inflation rates (or a forecast value), and π^* is the central bank's target inflation rate. Finally, $\tilde{y}_t$ is a measure of the output gap, the percentage difference between actual and capacity output values.

Subsequent applications of the Taylor rule have modified or extended formula (1) in several ways. Some have used proxies for expected future inflation in place of Δp_t^a while others have done something similar for $\tilde{y}_t$ or used $\tilde{y}_{t-1}$ instead. A special case of the Taylor rule, where the weight on the output gap is zero, is 'inflation targeting', in which the policy rate responds only to expected inflation.

One widely adopted modification of the Taylor rule is to permit partial adjustment of the central bank's rate, i.e. to include R_{t-1} on the right-hand side as a determinant of R_t; this adjustment is intended to reflect the practice of interest rate smoothing, which is widely believed to be prevalent in the behaviour of many central banks.

An important line of investigation has been pioneered by Orphanides (1998), who has attempted to base rule calculations on values of Δp_t (inflation) and $\tilde{y}_t$ that were actually available to central bank policymakers at the time that historical instrument settings were chosen. Orphanides recognises that current-period values for $\tilde{y}_t$ could not be known until after the end of period t, and also emphasises the fact that macroeconomic data is often substantially revised after its initial reporting.

The rule proposed by McCallum (1993) used base money instead of interest rate as the instrument and nominal income growth target.

$$\Delta b_t = \Delta x^* - \Delta v_t^a + \beta(\Delta x^* - \Delta x_{t-1}) \tag{2}$$

Here, Δb_t is the change in the log of the adjusted monetary base, i.e. the growth rate of the base between $t-1$ and t periods. The term Δx^* is a target growth rate for nominal GDP, Δx_t being the change in the log of nominal GDP. This target value Δx^* is specified as $\pi^* + \Delta y^*$, where Δy^* is the long-run average rate of growth of real GDP. The second term on the right-hand side of (2), Δv_t^a is the average growth of base velocity. This term is intended to reflect long-lasting changes in the demand for the monetary base that occur because of technological developments or regulatory changes (presumed to be permanent); it is not intended to reflect cyclical conditions. These conditions are represented by the final term, which prescribes that base growth is adjusted upward (i.e. policy is loosened) when Δx_{t-1} falls short of Δx^*.

The main open economy alternative to the simple, closed economy Taylor rule was introduced by Ball (1999). It uses a Monetary Conditions Index (MCI) as an instrument—a weighted average