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H. SONMEZ ATESOGLU

Monetary policy rules and U.S. monetary policy

Abstract: *An inflation-augmented Atesoglu monetary policy rule is introduced. The Atesoglu rule is based on an estimate of the neutral rate of interest of Keynes. Actual Fed monetary policy and policy implied by Atesoglu rules are compared. During the 1994:2–2006:4 period, monetary policy suggested by the inflation-augmented Atesoglu rule is closer to that indicated by the Atesoglu rule rather than the actual Fed monetary policy. Findings reveal that the monetary policy implied by the Atesoglu rules has been less restrictive and less volatile than the actual Fed monetary policy.*

Key words: *monetary policy, monetary policy rule, neutral rate of interest.*

In a recent paper published in this *Journal*, Atesoglu (2007) introduced a new monetary policy rule. Atesoglu's rule is based on an estimate of Keynes's neutral rate of interest concept (Keynes, 1936, p. 243) and is designed primarily for maintaining full employment of the economy. By stabilizing the economy at its full-employment level, the rule is able to stabilize inflationary and deflationary developments associated with fluctuations in aggregate demand. However, it does not respond to the effects of inflation shocks originating from the supply side, such as a sharp rise in the price of oil. The Atesoglu rule is not designed to cope with inflation shocks. These occasional shocks can be stabilized by institutional arrangements such as oil reserves (see Davidson, 2006).

In this paper, an inflation-augmented Atesoglu rule is introduced. This rule augments the Atesoglu rule with an inflation shock variable. The empirical analysis presented below is for the 1994:2–2006:4 period, during which the federal funds rate has been the policy instrument of the Fed. Fed monetary policy, which is reportedly consistent with the Taylor rule (see Taylor 1993, 1999; and Mishkin, 2007), and monetary policy

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implied by the Atesoglu rule and the inflation-augmented Atesoglu rule are compared.

Findings discussed in detail below reveal that during the 1994:2–2006:4 period, the stance of monetary policy suggested by the inflation-augmented Atesoglu rule is closer to that indicated by the Atesoglu rule rather than the actual Fed monetary policy. Findings also reveal that the monetary policy implied by the Atesoglu rule and the inflation-augmented Atesoglu rule has been less restrictive and less volatile than the actual Fed monetary policy. Results also show that the inflation-augmented Atesoglu rule yields a monetary policy stance a little more restrictive than the Atesoglu rule.

New monetary policy rules

The original Atesoglu rule is represented with the following equation:

$$F = 4 + (R - 5.5), \quad (1)$$

where F is the federal funds rate; R is the yield on 10-year Treasury, constant maturity U.S. government securities; and 5.5 percent is the estimated value of the neutral rate of interest. The intercept of the equation can be interpreted as the estimated value of the neutral federal funds rate. For a discussion of the estimation of the neutral rate of interest and the derivation of Equation (1), see Atesoglu (2007).

In order to maintain aggregate output at its full-employment level, the Fed should set F according to Equation (1). For example, if R is equal to 5.5 percent, F should be set at 4 percent, the neutral level of federal funds rate. Alternatively, if R is equal to 7 percent, F should be set at 5.5 percent. The theoretical rationale for the Atesoglu rule is discussed within a Keynesian framework by Atesoglu (2008).

The inflation-augmented Atesoglu rule introduced in this paper is given by

$$F = 4 + (R - 5.5) + 0.5 (P - 2), \quad (2)$$

where P is the annual rate of inflation, measured by means of the quarterly consumer price index. Other variables and coefficients are the same as defined earlier. The term $(P - 2)$ is the inflation-shock variable, where 2 percent annual rate of inflation is assumed to be the benchmark. When inflation deviates from this benchmark, the Fed is expected to react by changing F . An alternative value for the benchmark, such as 4 percent or even a higher value, can be considered, however, 2 percent appears to be a representative number in light of the Fed's behavior in recent years.

The determination Equation (2) and the coefficient of $(P - 2)$, 0.5, is discussed below. Note that the inflation-augmented Atesoglu rule differs from the original Atesoglu rule only by the addition of the $0.5(P - 2)$ term. And, when the coefficient of $(P - 2)$ is assumed to be zero, Equation (2) reverts to Equation (1).

The empirical basis of the inflation-augmented rule

As a guide for selecting the coefficients of Equation (2), the following regression equation was estimated:

$$F = \sigma + \lambda(R - 5.5) + \pi(P - 2), \quad (3)$$

where the variables are the same as defined above. Results obtained by using ordinary least squares (OLS) are

$$F = 3.961 + 1.158 (R - 5.5) + 0.518 (P - 2) \quad (4)$$

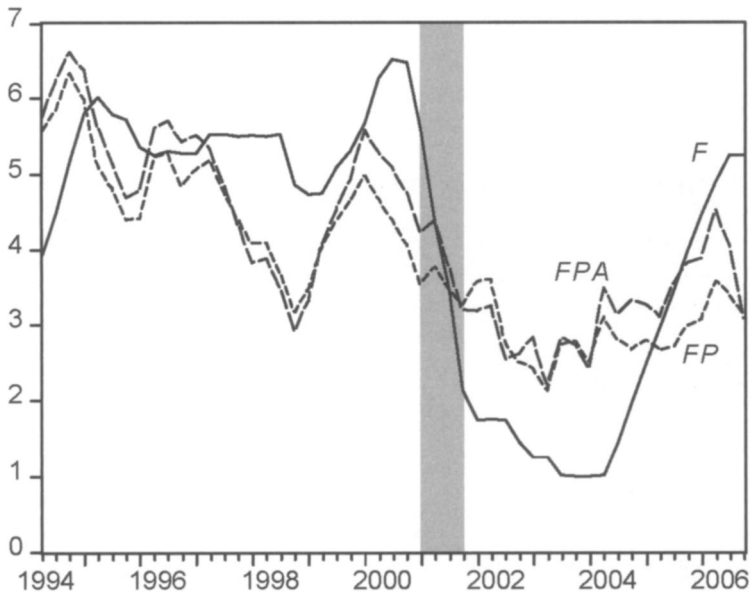
(17.56) (6.97) (2.05)

sample period: 1994:2–2006:4; $R^2 = 0.541$; values in parentheses are the t -statistics. Data for all variables are from FRED (Federal Reserve Bank of St. Louis), and estimations were made by using EViews (s.v. 4.1 Quantitative Micro Software).

Estimated coefficients of Equation (4) are all positive as expected and they are significant. The equation also has a fairly high explanatory power measured by the coefficient of determination, R^2 . An examination of the residuals indicates the presence of serial correlation. Serial correlation raises doubts about the reliability of the t -statistics reported above. However, it is unlikely that Equation (4) is afflicted with an omitted variable problem; therefore, the estimated coefficients are likely to be unbiased and consistent. The coefficient estimates of Equation (4) suggest an inflation-augmented policy rule as depicted in Equation (2).

Monetary policy and monetary policy rules

In Figure 1, monetary policy followed by the Fed during the 1994:2–2006:4 period is represented by the federal funds rate (F). In addition, monetary policy implied by the Atesoglu rule (FP) and inflation-augmented Atesoglu rule (FPA) are represented in Figure 1. Predicted FP and FPA are obtained from Equations (1) and (2), respectively, and represent the monetary policy stance implied by the Atesoglu rules. Predicted FP and FPA are calculated by using historical values for the

Figure 1 Actual and predicted federal funds rates

explanatory variables in Equations (1) and (2). In Figure 1, the shaded area is the 2001 recession.

In Figure 1, it is readily seen that during the 1994:2–2006:4 period, the stance of monetary policy suggested by the inflation-augmented Atesoglu rule is closer to that indicated by the Atesoglu rule rather than the actual Fed monetary policy. Also observe that actual monetary policy has been more volatile than policy indicated by either Atesoglu rule.

Figure 1 suggests that, in general, the actual monetary policy of the Fed has been more restrictive than the policy indicated by either Atesoglu rule. Policy suggested by the inflation-augmented Atesoglu rule was more restrictive than the Atesoglu rule, though the difference is not appreciable. Observations concerning F , FP , and FPA discussed above with respect to Figure 1 become more obvious and are supported by the statistics presented for the 1994:2–2006:4 period in Table 1.

A closer look at various subperiods in Figure 1 reveals interesting observations. In 1994, both Atesoglu rules indicate a more restrictive and, in 1998, a more expansionary monetary policy compared to the actual policy represented by F . During these earlier periods, in general, the difference between FP and FPA is very small.

Table 1
Actual and predicted federal funds rate, 1994:2–2006:4

	Descriptive statistics		
	<i>F</i>	<i>FP</i>	<i>FPA</i>
Median	4.907	3.703	4.047
Standard deviation	1.786	1.057	1.149
Skewness	-0.651	0.354	0.255
Simple correlation			
$r_{F,FP} = 0.708$; $r_{F,FPA} = 0.736$; $r_{FP,FPA} = 0.954$			

During 1999, and especially during 2000 before the onset of the 2001 recession, *F* is substantially higher, more restrictive, compared to both *FP* and *FPA*. During 2000, the monetary policy indicated by *FPA* is more restrictive compared to *FP*. Nevertheless, the 2001 recession may have been avoided or less severe if actual monetary policy were less restrictive as recommended by both Atesoglu rules. In 2002–4, the Atesoglu rules require a less expansionary policy relative to the actual Fed policy.

In 2006, the Fed monetary policy was more restrictive compared to those suggested by the Atesoglu rules. In particular, in 2006:4, *F* was about a full 2 percent higher than required by the Atesoglu rules. Although neither *F* nor *FP* and *FPA* have reached levels as high as those before the onset of the 2001 recession, the restrictive monetary policy followed by the Fed could trigger a recession.

Conclusion

Various monetary policy rules were proposed in the past. However, monetary policy rules became accepted after the demonstrated success of the Taylor rule in describing the Fed policy in recent years (see Mishkin, 2007). Evidence discussed above revealed that the monetary policy followed by the Fed in recent years is more restrictive and volatile compared to the Atesoglu rules. These rules are based on an idea of Keynes—the neutral rate of interest, an interest rate that would prevail when the economy is at full employment. Economists who consider the *General Theory* and Keynes's idea of the neutral rate of interest a useful one can consider one of the Atesoglu rules and the monetary policy implied by these rules as an alternative to the Taylor rule and associated Fed monetary policy.

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