The Link between Monetary Policy and the Growth of Repos

To test the relationship between monetary policy and the growth of repurchase agreements, we estimate the following Taylor rule:

$$\textit{Federal funds target} = 1.3 + 0.8 \times \textit{output gap} + 1.3 \times \textit{inflation rate} + \textit{Taylor rule residual.}$$

We calculate the output gap as the percentage difference between real (inflation-adjusted) GDP and real potential GDP, and the inflation rate as the annual percentage growth of the core consumer price index (core CPI). Summary statistics for these variables, as well as the Taylor rule residual from the equation, are given in Table A1. All coefficients in the equation are statistically significant at the 1 percent level.

Following Taylor (1993), we can interpret the predicted value from the equation as "rule-based" monetary policy, and the Taylor rule residual as "discretionary" monetary policy. A positive residual indicates tight monetary policy relative to the rule, while a negative residual indicates relatively loose policy. The R^2 of the equation is 75 percent, indicating that three quarters of the variation in monetary policy is attributable to the Taylor rule, while one quarter of the variation is discretionary.

As a measure of aggregate growth of repurchase agreement liabilities, we use the comprehensive figures for the so-called primary dealers that have a trading relationship with the Federal Reserve Bank of New York (see Adrian and Fleming [2005] and Kambhu [2006] for earlier analysis of the primary dealer repo data). One advantage of these data is that they include the marked-to-market repo financing of investment banks, commercial banks with large investment banking operations, and nonbank security brokers and dealers. The primary dealer data can thus be interpreted as an aggregate measure of the financial system's repo financing. Our key results relating repo growth to the stance of monetary policy are contained in Table A2.

When the residuals of the Taylor rule regression are negative (that is, when the federal funds rate is lower than that predicted by the Taylor rule), repo growth is higher than average. Conversely, when the residuals of the Taylor rule regression are positive (that is, when the fed funds rate is higher than that predicted by the Taylor rule), repo growth is lower than average, sometimes even becoming negative.

Interestingly, the behavior of repos is quite different from that of commercial paper. Although both repos and commercial paper are forms of short-term borrowing, the evidence suggests that financial intermediaries take on more of one when the other is less available. The coefficients on the liquidity regression using commercial paper growth instead of repo growth (reported in columns 3 and 4 of Table A2) show signs exactly opposite to those for repo growth. One possible explanation for the reverse in signs could be that financial intermediaries turn to commercial paper when repos are difficult to obtain (for example, during the hedge fund crisis of 1998). Conversely, when repos are increasing rapidly so that balance sheet capacity is low, there is less spare capacity for the issuance of commercial paper. The credit crisis of 2007 conforms to the latter scenario.

Table A1
Summary Statistics for Taylor Rule Regressions
1991:Q3 to 2007:Q1

	Mean	Standard Deviation	Minimum	Maximum
Primary dealer repo growth	14.32	11.03	-17.69	34.92
Outstanding financial commercial paper growth	10.07	10.38	-5.49	29.24
Federal funds target rate	4.07	1.67	1.00	6.50
Output gap	-0.72	1.60	-3.18	2.91
Core CPI inflation	2.56	0.65	1.15	4.60
Taylor rule residuals	0.00	0.95	-1.81	2.40

Sources: Board of Governors of the Federal Reserve System, H.15 statistical releases, for data on growth in outstanding commercial paper; Federal Reserve Bank of New York, for primary dealer statistics and the federal funds target rate; U.S. Congressional Budget Office, for the output gap; U.S. Department of Labor, for core CPI inflation; authors' calculations.

Notes: All growth rates are annual percentages. Primary dealer repo growth is the annual growth rate of the repurchase agreement liabilities of the Federal Reserve's primary dealers. The output gap is the percentage difference between current real GDP and potential real GDP. Taylor rule residuals are the residuals of an ordinary least squares regression of the federal funds target rate on core CPI inflation and the output gap.

Table A2
Taylor Rule Regressions
1991:Q3 to 2007:Q1

	Primary Dealer Repo Growth		Financial Commercial Paper Growth	
	(1)	(2)	(3)	(4)
Fed funds target	-2.29**		4.77***	
Taylor rule residuals		-4.68***		5.61***
Taylor rule fed funds prediction		-1.11		5.49***
Constant	23.64***	18.85***	-9.35***	-7.89***
R^2 (percent)	12	18	59	59

Source: Authors' calculations.

Note: This table reports regressions of primary dealer repo growth rates and outstanding commercial paper growth rates on the federal funds target rate and Taylor rule residuals.

** Significant at the 5 percent level.
*** Significant at the 1 percent level.