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WOULD MONETARY POLICY BE EFFECTIVE IF THE  
OASDI TRUST FUNDS HELD MOST TREASURY DEBT?

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## Abstract

As a result of the buildup of the Old Age, Survivors, and Disability Insurance (OASDI) trust funds, the supply of U.S securities to the public by the second and third decades of the next century might become extremely limited. While this increase in Federal savings would lower real interest rates and stimulate investment, the buildup would create a difficulty: it would force Federal Reserve open market operations to be conducted in assets other than Treasury securities. It is important to know whether monetary policy would continue to be effective under this new modus operandi. To answer this question it is necessary to have evidence concerning the transmission mechanism through which monetary policy affects the economy. Obtaining such evidence is especially important now since many economists argue that monetary policy works through a black box which we do not understand. Evidence demonstrating one channel through which monetary policy works is presented here. It is demonstrated that news of increases (decreases) in the Federal Reserve's target for the federal funds rate during the 1974-1979 period lowered (raised) stock prices. This period was unique because the Federal Reserve controlled its operating instrument, the federal funds rate, so closely that market participants were able to discern a change in the target on the day the target changed. This evidence supports the arguments of Tobin and Brunner and Meltzer that the stock market is an important link in the monetary transmission mechanism. The results indicate that if the OASDI trust funds purchased most or all Treasury securities, open market operations conducted using other assets would still be efficacious through this channel. By affecting bank reserves and thus the federal funds rate, these operations would influence stock prices and economic activity.

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## 1. Introduction

The coming buildup of the Old Age, Survivors, and Disability Insurance (OASDI) trust funds should have some positive effects on the economy. If not offset by increases in the non-OASDI federal deficit, the buildup would lower real interest rates, stimulate investment in capital, and raise productivity. This increase in productivity would help finance the retirement expenses of the baby-boom generation, decreasing the burden on future workers. One difficulty with the buildup, however, concerns its effect on monetary policy. As Anderson et al. (1988) have discussed, the fund could accumulate most or all outstanding Treasury securities. In this case open market operations would have to be conducted in assets such as federal agency securities or bankers' acceptances.

Since many economists consider monetary policy to be the economy's most powerful stabilization policy instrument, it is important that the trust fund buildup not hinder the Fed's effectiveness. The potency of monetary policy was demonstrated by the facts that the monetary contraction in 1979 sparked a recession and the monetary loosening in 1982 a subsequent expansion.

While many observers concur that monetary policy is essential, they disagree concerning the channels linking money and economic activity.<sup>1</sup> Two frequently discussed mechanisms are the "money" view, under which monetary policy works through the liability side of banks' balance sheets, and the "lending" view, under which monetary policy works through the asset side of banks' balance sheets.<sup>2</sup> The money view is the traditional textbook view that a decrease in banks' reserves lowers the transactions balances which businesses and individuals hold at banks. Assuming sticky prices this decrease in money supply relative to money demand

raises real interest rates and lowers spending on business plant and equipment, housing, and consumption goods. The lending view emphasizes that informational asymmetries cause bank loans to be important for the economy.<sup>3</sup> This view holds that banks possess information about customers that other potential lenders do not have. A decrease in reserves, according to this scenario, forces banks to ration out the amount they lend to each customer. Those unable to obtain all the funds that they desire from banks will be unable to obtain loans on similar terms from other lenders, since other lenders are less informed about the borrowers' creditworthiness. So a decrease in reserves will cause total credit in the economy to decline. Reduced credit will lower aggregate demand for goods and services regardless of whether interest rates change. Thus, the money view emphasizes policy working through a liability of banks, demand deposits, and influencing a price variable, the interest rate. The lending view emphasizes policy working through an asset of banks, loans, and influencing a quantity variable, credit. Unfortunately, as Friedman (1988), Plosser (1990), and Reichenstein (1987) have discussed, the empirical evidence supporting either of these channels is tenuous.<sup>4</sup>

The fact that the 1979-82 experience has demonstrated the efficacy of monetary policy while empirical evidence has failed to illuminate how it has these effects presents a quandary. Perhaps it is better not to tinker with a process that so evidently works but works through a process we do not understand.<sup>5</sup> Thus, maybe the trust fund should not purchase so many Treasury securities that open market operations must be conducted in a new way.<sup>6</sup>

Here evidence is presented which helps to resolve this dilemma. It is

documented that monetary policy affects real variables through a channel different from the two discussed above. It is shown that news of a monetary expansion stimulates the stock market, thus lowering the cost of capital. As Mauskopf's (1990) recent empirical evidence indicates, this decrease in the cost of capital will then exert a large effect on investment and output. It is argued here that monetary policy would continue to affect output through this channel even if open market operations were conducted in assets such as federal agency securities or bankers' acceptances.

Thoughtful macroeconomists and financial market experts have long viewed the stock market as important in the transmission process. Tobin (1978) argued that the ratio  $q$  of the stock and bond market valuation of capital divided by the replacement cost of capital is the nexus between monetary policy and real activity. He argued that a monetary expansion which increases stock prices and thus the market valuation of capital will provide firms with an incentive to invest, since the expansion would increase the differential between the marginal revenue product of capital and the market determined discount rate. Brunner and Meltzer (1988) also contended for similar reasons that the price of existing capital on the stock market is an important link in the chain connecting monetary policy and real activity. Many financial market experts have agreed, believing that the five-year boom in the stock market from 1982 to 1987 and concurrent economic expansion were sparked by the easing of monetary policy in 1982 (see the Wall Street Journal, 10 August 1987, p. 6).<sup>7</sup>

Previous empirical evidence concerning the effects of monetary policy on stock prices has been mixed.<sup>8</sup> Early research suggested that increases in the money supply raised stock prices, and that investors

could use this correlation to earn extra-normal rates of return (see, for example, Hamburger and Kochin, 1972, Homa and Jaffee, 1971, and Sprinkel, 1964). However, as Pearce and Roley (1983) have argued, this finding runs contrary to the efficient markets hypothesis (EMH). They demonstrated empirically, consistent with EMH, that stock prices reacted only to the unanticipated information about monetary policy. They and several other authors have demonstrated that unexpected increases in the Federal Reserve's weekly money supply announcements lowered stock prices.<sup>9</sup> (See, for example, Cornell, 1983, Hardouvelis, 1987, or Pearce and Roley, 1985). Two models have been presented to explain this finding. First, financial markets might have interpreted an unanticipated increase in the money supply as news that Fed policy was becoming inflationary.<sup>10</sup> Markets then might have expected inflation to lower after-tax real dividends and thus lower stock prices (The Expected Inflation hypothesis).<sup>11</sup> Second, the market might have interpreted the unexpected increase in money as information that the Fed would have to lower future money growth to stay on target. Financial markets then might have expected this tightening to raise real interest rates and lower stock prices (the Expected Real Interest Rate hypothesis).<sup>12</sup> While studies in other markets have indicated that financial markets were using the Expected Real Interest Rate hypothesis, there is no direct evidence from the stock market that market participants were using this hypothesis.<sup>13</sup> Rather, as Hardouvelis (1987, p. 138) has argued with regard to the stock market, "there is no overwhelming evidence against the Expected Inflation Hypothesis."

Here evidence is presented which helps in choosing between these hypotheses. In doing this, a valuable new data series constructed by Cook



and Hahn (1989) is used. They assembled a list of changes in the Fed's target for the federal funds rate over the period from September, 1974 to September, 1979.<sup>14</sup> The Fed influences the funds rate by engaging in open market operations which affect the amount of excess reserves that banks have to lend out. A monetary loosening which increases the amount of reserves will lower the funds rate; a monetary tightening which lowers the amount of reserves will raise the funds rate. The 1974-1979 period was unique because the Account Manager at the Federal Reserve Bank of New York (the 'Trading Desk') controlled the funds rate so closely that markets could usually perceive a change in the funds rate target on the day that the Fed implemented it. In contrast, during the 1979-84 period that Hardouvelis investigated, the Fed focused on money supply targets. As Hardouvelis discussed, during 1979-84 it was not clear whether an observed change in the money supply represented a change in the Fed's target or a transitory change. Cook and Hahn culled a record of 76 changes in the funds rate target during the 1974-79 period from stories in the Wall Street Journal. Using these data it is shown in this paper that news of an increase (decrease) in the funds rate target depressed (raised) stock prices. The fact that news of a deliberate monetary tightening lowered stock prices is consistent with the Expected Real Interest Hypothesis, but not with the Expected Inflation Hypothesis.

This evidence sheds light on how monetary policy would work if the OASDI trust fund purchased most or all Treasury securities. Open market operations conducted in assets such as federal agency securities or bankers' acceptances, by affecting bank reserves and thus the funds rate, would affect stock prices and economic activity. Thus the evidence here

is consistent with the conclusion of Aaron, Bosworth, and Burtless (1988, p. 15) that "if social security absorbed most of the outstanding debt, ...the ability of the Federal Reserve System to carry out monetary policy would be unaffected."

Section 2 discusses the data and methodology. Section 3 presents our empirical results. Section 4 contains concluding comments.

## 2. Data and Methodology

The event study methodology is utilized here. This methodology involves regressing the change in stock prices on the change in the federal funds target rate. The regression equations take the form:

$$\Delta P_t = a + b(\Delta FF_t) \quad (1)$$

where  $\Delta P_t$  is the percentage change in the stock price over the twenty four hours bracketing the policy change and  $\Delta FF_t$  is the basis point change in the funds rate target or in the midpoint of this target. If the stock market used the Expected Inflation hypothesis and expected a monetary tightening to lower inflation and thus raise stock prices,  $b$  will be positive. If the market used the Expected Real Interest Rate hypothesis and expected a monetary tightening to raise real rates and thus lower stock prices,  $b$  will be negative.

Cook and Hahn's data on changes in the funds rate target (or in the midpoint of the target) are used. These data were taken from Wall Street Journal articles on the business days following the policy changes. Cook and Hahn compared these estimated changes in the target with the actual

changes (contained in the Federal Reserve Bank of New York's 'Report of Open Market Operations.')

 They found the estimates to be very accurate.

The stock price data are percentage changes in the daily closing price of the Dow Jones Industrial Average (DJIA), Dow Jones Composite Average (DJCA), and Standard & Poor's Composite Average (SPCA) over the 24-hour period bracketing news of the change in the federal funds target. They were obtained from the Wall Street Journal Index and the Standard and Poor's Statistical Index. Table 1 presents the changes in the federal funds rate target and in stock prices.

### 3. Results

The results of estimating equation (1) with ordinary least squares are presented in Table 2. The coefficient  $b$  on the federal funds rate in all three regressions is negative. The coefficient is significant at the 5% level for the DJIA, at the 2% level for the SPCA, and at the 1% level for the DJCA.<sup>15</sup> These results indicate that on days when the Fed was tightening monetary policy, stock prices declined.

As Cook and Hahn have argued, the causality in these regressions is uni-directional from the change in the federal funds rate to the change in stock prices. This is true both for the cases where the Federal Open Market Committee (FOMC) ordered the Trading Desk to change the target and for the cases where the Trading Desk changed the funds rate based on an interpretation of a previous FOMC directive. In all but five of the former cases the decision had been made at least a day before the Fed changed the funds rate. Thus in these cases the change in stock prices could not have caused the Fed to change the funds rate. Similarly

in half of the latter cases the decision was made at least a day before the Wall Street Journal reported the decision. In the remaining twenty cases the decision to change the target was made on the day the Journal reported the change to have occurred. However, Cook and Hahn found no evidence in the Report of Open Market Operations that the Trading Desk was responding to overnight changes in stock prices when readjusting the funds rate target. Further, most of these adjustments by the Trading Desk occurred on Friday. As Cook and Hahn note, there is no reason to expect that the Desk would respond to daily stock price changes only on Fridays. Thus, it is fair to assume that the causality in these regressions is from changes in the funds rate to changes in stock prices.

The results indicate that changes in the funds rate target had a substantial impact on stock prices. A 100 basis point increase (decrease) in the funds rate lowered (raised) the DJIA by an average of 1.2%, the SPCA by an average of 1.3%, and the DJCA by an average of 1.3%. Since the mean absolute change in the funds target was 20 basis points, a typical increase (decrease) in the target caused the DJIA to decrease (increase) by 0.24%, the SPCA to decrease (increase) by 0.28%, and the DJCA to decrease (increase) by 0.26%.

The important implication of these results is that news of a monetary tightening lowered stock prices. This finding is consistent with the hypothesis that the stock market expected a monetary tightening to raise real rates and lower stock prices (the Expected Real Interest Rate hypothesis). This evidence is inconsistent with the hypothesis that the market expected a monetary tightening to lower inflation and raise stock prices (the Expected Inflation hypothesis).

#### 4. Conclusion

This note provides clear evidence linking monetary policy and stock prices. On days when the Federal Reserve raised (lowered) the federal funds rate target, stock prices decreased (increased). This evidence is consistent with the hypothesis that the stock market expected a monetary tightening to raise real interest rates, depress earnings, and lower stock prices. This finding, when combined with Mauskopf's evidence that changes in the cost of capital affects investment, supports the views of Tobin, Brunner and Meltzer, and financial market experts that stock prices are an important link in the monetary transmission mechanism.

This finding sheds light on how monetary policy would work if the OASDI trust funds held most or all outstanding Treasury securities. In this case the Federal Reserve would have to conduct open market operations in assets such as federal agency securities or bankers' acceptances. The results here indicate that, by affecting bank reserves and thus the funds rate, open market operations would influence stock prices. Thus, monetary policy would continue to be effective through this channel in the event that Social Security held most or all outstanding debt.

Notes

1. An influential minority within the economics profession, the real business cycle theorists, downplay any effect of monetary policy on real variables. The evidence in this paper is consistent with the notion that monetary policy does affect real activity.
2. These views are discussed by Romer and Romer (1990).
3. See Gertler (1988) for a survey of work in this area.
4. Since this paper was written, a working paper presenting evidence that monetary policy works through the Federal funds rate has begun circulating. This paper, written by Bernanke and Blinder (1990), used Granger causality tests to demonstrate that unexpected changes in the funds rate forecasted industrial production, unemployment, and other real variables well. Their results complement the results here because, while their evidence supports the general proposition that increases in the funds rate lower output, the evidence presented here elucidates one channel (the stock market) through which increases in the funds rate have this effect.
5. The trust fund could be invested in Federal agency securities or in private securities. This change in investment policy from Treasury bonds to these other securities would increase the yield on the trust fund, although at the expense of greater risk (See Nordhaus, 1988).

6. It is even possible, as Cass and Shell (1983) have argued, that monetary policy only has an effect because agents expect it to (it acts through a self-fulfilling prophecy). If open market operations work through such a fragile mechanism, then disturbing their modus operandi would not be wise.

7. One prominent "Fed Watcher," David Jones (1989, p. 114), has presented informal evidence that increases in the funds rate lowered stock prices.

8. The discussion here differs from the discussion on page 1 concerning empirical evidence about the lending and money views. There the issue was how money affects output through those two channels. Here the discussion concerns the narrower question of how monetary policy affects stock prices.

9. The data on previously expected money supply figures were the median values from a survey of sixty market participants undertaken by Money Market Services, Inc.

10. The stock market in this paper is treated as an individual agent - it thinks, expects, believes. In reality, of course, the market does not hold a single expectation but aggregates the expectations of many actors. Often, however, there is a single model which explains why prices move in a certain direction in response to a specific news item. To simplify exposition, this model will be called the model that the market uses.

11. Feldstein (1980) has argued that non-neutralities in the tax treatment of inventory and depreciation charges cause an increase in the expected future rate of inflation to lower real after-tax profits and thus stock prices.

12. Hardouvelis (1987) has discussed how a higher real interest rate would lower stock prices both because it would curtail real activity and thus earnings and because it would raise the rate at which those earnings were discounted.

13. Many authors (e.g. Cornell, 1983) have demonstrated that announcements of unexpected increases in the money supply increased nominal interest rates during the 1979-1984 period. By definition this increase was either in the real interest rate or in the inflationary premium. According to the Expected Real Interest Rate hypothesis, the real interest rate would increase because agents believed the monetary increase would cause the Fed to tighten policy. According to the Expected Inflation hypothesis, the inflationary premium would increase because agents interpreted the monetary increase as a sign that Fed policy was becoming inflationary. Engel and Frankel (1984) argued that if the news caused higher real interest rates it would induce a capital inflow and appreciate the dollar whereas if the news caused a higher inflationary premium it would elicit a capital outflow and depreciate the dollar. They found that the news appreciated the dollar/German mark exchange rate, implying that markets used the Expected Real Interest Rate hypothesis. Hardouvelis (1988) found corroborating evidence from six other exchange rates.



14. The federal funds rate is the rate that banks charge on overnight loans to each other. The federal funds rate target is the level at which the Federal Reserve seeks to maintain the federal funds rate through open market operations.

15. The sensitivity of these results was investigated in various ways. The sensitivity to changes in the sample period was investigated by deleting first the first year and then the last year. The sensitivity to the specification of the federal funds rate was investigated by measuring the funds rate change in percentage form rather than in percentage point form. In both cases the results became more significant when re-estimated in these new ways.

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Table 1

Changes in the Federal Funds Rate Target and in Stock Prices

Date	Change in funds target	Percentage change in stock prices		
		Dow Jones Industrial Avg.	Dow Jones Composite Avg.	Standard & Poor's Composite Avg.
9/13/74	-0.5	-2.16	-2.35	-1.59
9/23/74	-0.25	-1.05	-0.56	-1.03
10/4/74	-0.25	-0.52	0.22	0.10
10/18/74	-0.5	-0.53	0.83	1.55
12/3/74	-0.25	-1.06	-1.21	-1.39
12/16/74	-0.25	-1.00	-0.92	-0.91
1/2/75	-0.25	2.56	2.79	2.41
1/3/75	-0.25	0.39	0.82	0.68
1/6/75	-0.25	0.42	0.97	0.51
1/7/75	-0.25	0.63	0.33	-0.07
1/14/75	-0.25	-0.84	-0.80	-0.88
1/31/75	-0.5	1.04	0.91	1.00
2/13/75	-0.25	1.66	1.27	1.35
2/14/75	-0.25	1.00	0.59	0.60
2/21/75	-0.25	0.59	0.44	0.50
3/26/75	-0.25	2.45	2.14	1.85
5/8/75	-0.25	0.49	0.44	0.54
6/20/75	0.5	1.19	0.76	0.64
7/16/75	0.125	-1.1	-1.01	-1.05
7/21/75	0.125	-0.89	-0.67	-0.82
7/22/75	0.125	-0.93	-1.13	-1.08
10/3/75	-0.125	2.35	1.99	2.51
10/21/75	-0.375	0.54	0.66	0.82
11/7/75	-0.125	-0.61	-0.34	-0.25
11/12/75	-0.125	1.63	1.54	1.46
1/6/76	-0.125	1.48	1.43	1.02
2/27/76	0.25	-0.64	-0.56	-0.40
3/30/76	-0.125	-0.53	-0.56	-0.30
4/23/76	0.125	-0.70	-0.55	-0.67
5/5/76	0.125	-0.72	-0.52	-0.53
5/12/76	0.125	-0.09	-0.11	-0.17
5/14/76	0.125	-0.85	-0.52	-0.81
5/19/76	0.125	-0.06	0.10	-0.08
7/9/76	-0.25	1.12	1.06	0.96
10/8/76	-0.25	-1.21	-0.99	-0.95
11/19/76	-0.25	-0.14	-0.12	0.03
12/14/76	-0.125	0.66	0.68	0.42
4/25/77	0.125	-1.34	-1.03	-1.31
4/27/77	0.125	0.89	0.91	0.87
5/10/77	0.125	0.33	0.39	0.29
5/19/77	0.125	-0.58	-0.49	-0.42
7/28/77	0.25	0.18	-0.12	0.15

Table 1

Changes in the Federal Funds Rate Target and in Stock Prices

Date	Change in funds target	Percentage change in stock prices		
		Dow Jones Industrial Avq.	Dow Jones Composite Avq.	Standard & Poor's Composite Avq.
8/9/77	0.125	0.00	-0.15	0.06
8/12/77	0.125	-0.72	-0.64	-0.29
9/9/77	0.125	-1.28	-1.08	-0.94
9/22/77	0.125	-0.22	-0.08	-0.01
9/30/77	0.125	0.84	0.65	0.71
10/7/77	0.125	-0.21	-0.15	-0.08
10/31/77	0.25	-0.53	-0.32	-0.29
4/19/78	0.25	-1.13	-1.36	-1.08
4/27/78	0.25	0.59	-0.94	-1.00
6/21/78	0.25	-0.87	-0.52	-0.99
7/20/78	0.125	-0.62	-0.62	-0.52
8/16/78	0.125	-0.25	-0.18	-0.09
8/18/78	0.125	0.84	0.79	0.77
8/28/78	0.125	-0.37	-0.32	-0.33
9/8/78	0.125	-1.19	-1.07	-0.90
9/20/78	0.125	1.57	1.22	1.29
9/25/78	0.125	-0.51	-0.61	-0.78
9/25/78	0.125	-0.01	0.09	0.02
9/28/78	0.125	0.13	0.08	0.30
10/18/78	0.125	-0.77	-1.07	-0.76
10/20/78	0.125	-0.99	-1.30	-1.40
10/26/78	0.125	-1.10	-1.38	-1.32
10/31/78	0.375	-2.39	-2.01	-2.03
11/1/78	0.25	4.46	4.02	3.89
11/28/78	0.125	-1.19	-1.02	-0.88
12/19/78	0.125	0.29	-2.16	0.85
1/15/79	0.125	1.48	0.98	0.76
4/27/79	0.188	-0.50	-0.48	-0.20
7/20/79	0.375	0.09	0.20	0.21
8/15/79	0.375	1.04	0.81	0.68
8/24/79	0.250	-0.02	-0.22	-0.03
9/4/79	0.125	-1.69	-1.54	-1.73
9/19/79	0.125	0.26	-0.03	0.26

Source: Columns 1 and 2, Cook and Hahn, 1989, Columns 3 and 4, the Wall Street Journal Index, column 5, Standard and Poor's Statistical Index.

Table 2

The Effect of Changes in the Federal Funds Rate Target on Stock Prices <sup>a</sup>

Dependent Variable	Coefficient on Funds Target	t-statistic	p- <sup>b</sup> value	Durbin-Watson Statistic	R-Squared
Dow Jones Industrial Avg.	-1.2	-2.01	0.05	2.30	0.05
Dow Jones Composite Avg.	-1.4	-2.61	0.01	2.26	0.09
Standard & Poor's Composite Avg.	-1.31	-2.47	0.02	2.24	0.08

Notes: <sup>a</sup>Sample period is 9/13/74 to 9/19/79. Sample includes 75 changes in the federal funds target rate over this period.  
<sup>b</sup>The two-tailed probability of a t-statistic at least as large as the one in column 3.