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Money Market Funds, Money Supply, and Monetary Control: A Note

CARL M. HUBBARD*

MONEY MARKET FUNDS HAVE grown dramatically, increasing from \$4.6 billion in January 1978 to over \$184 billion in December 1981.¹ Investors are attracted to money market funds (MMFs) by their safety of principal, high yields, liquidity, and limited check-writing privileges.² The Board of Governors of the Federal Reserve System at one time requested the authority to extend reserve requirements to checkable MMFs to avoid further erosion of monetary control; the argument for reserve requirements is based on the potential use of checkable MMFs as transactions balances. As suggested by Goodfriend, et al. [8], and Hester [10], the movement of funds from reservable deposits in depository institutions to MMFs to be used as transactions balances outside the reserve requirement system further loosens the link between reserves and money. This note discusses the effect of the substitution of MMF deposits for transaction balances at depository institutions on monetary control and tests the hypothesis that MMF deposits are a substitute for money in traditional money demand models, and thus should be considered part of M1 and subject to the regulations imposed on other transactions accounts.

I. Reserves and Money Market Funds

Money is any financial asset that is generally acceptable in exchange for goods and services and for the payment of debts. MMF demand liabilities would be money if MMF checks were readily acceptable by merchants, banks, and other creditors. With checkable MMF deposits included, the money supply would be the sum of currency in circulation outside banks and the U.S. Treasury (C), transaction accounts in depository institutions, including demand deposits (D), other checkable deposits (N), plus checkable MMF deposits (F) or

$$M = C + D + N + F \quad (1)$$

A model of the supply process for money as described above can easily be derived using Burger's [1] model of the old M1 as a point of departure. The

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¹ The source of deposit data on money market funds for this research was the Investment Company Institute and the Federal Reserve System.

² See Cook and Duffield [2] for a discussion of the factors contributing to the growth of money market funds.

resulting model of the money supply is

$$M = \frac{1 + n + c + f}{r(1 + n + t) + c} B = mB \quad (2)$$

in which r is the weighted-average reserve ratio on transaction deposits and nonpersonal time deposits at depository institutions including excess reserves. The letters, n , c , t , and f represent respectively the demand for other checkable deposits in M1, the demand for currency, the demand for nonpersonal time deposits, and the demand for checkable MMF deposits each relative to demand deposits. The monetary base (B) in Equation (2) is the sum of legal reserves held by depository institutions and currency outside banks and the U.S. Treasury. If MMF deposits were included in the narrow definition of the money supply, the multiplier m would be an increasing function of f . Unpredictable changes in the value of f caused by net transfers to or from demand deposits, NOW/ATS accounts, or other financial assets would destabilize the process of monetary control based on controllable reserves. As MMFs grew as money outside the reserve requirement system, the transmission of monetary policy conducted via Federal-Reserve open market operations would become more uncertain and tenuous with a further loosening of the link between reserves and the targeted monetary aggregate.

It is not clear, however, that F should be included in Equation (1) and f in Equation (2). If F and components of M1 were substitutes, then the inclusion of F in the narrow definition of money would be logical, as would be the extension of reserve requirements. If F and components of M1 are not substitutes, the variables representing MMF deposits (F and f) would not appear in Equations (1) and (2) and should not be subject to the reserve requirements on transaction accounts. Whether checkable MMFs are actually used as substitutes for demand deposits and NOW/ATS accounts is an empirical question that this note addresses. If holders of checkable MMF accounts use them for transaction purposes in substitution for components of M1, the destabilization of the money multiplier likely would occur as described above.

II. Statistical Analysis

Dotsey, Englander, and Partlan [5] have examined the use of money market funds as transactions deposits.³ Although 95 percent of the funds surveyed offered checking service, the turnover rate of MMFs in January through June 1981 was only 2.7 times compared to 173.5 times for demand deposits, 14.3 times for other checkable deposits, and 6.3 times for savings deposits. The turnover rates suggest that MMFs are used in the same manner as savings accounts. Regression analyses of the growth of institutional and noninstitutional MMFs found yields of MMFs and interest rates earned on large certificates of deposit to be important explanatory variables. In regression estimates of the demand for M1B, the yields of MMFs were usually significant with negative coefficients.

³ Other empirical work published on money market funds but unrelated to the issues addressed here include articles by Cook and Duffield [3] and Ferri and Oberhelman [6, 7].

The substitution of MMF accounts for transaction balances, if significant, would affect the estimation of the demand for such balances. In conventional money demand estimation, money is usually specified as a log-linear function of one or more interest rates, real gross national product, and real money balances lagged one period.⁴ If MMF balances have become a significant substitute for narrower concepts of money, M1 for example, then the growing MMF balances in recent years would be a significant inverse determinant for the demand for M1 or for the transaction accounts component of M1 during that period.

To test the hypothesis that MMF balances act as substitutes for money, the following functional relationships were specified:

$$\ln \frac{M1}{GNP_t} = \beta_0 + \beta_1 \ln CDR_t + \beta_2 \ln SLR_t + \beta_3 \ln MMF + \beta_4 \ln \frac{GNP}{P_t} + \beta_5 \ln \frac{M1}{GNP_{t-1}} + \epsilon_t \quad (4)$$

and

$$\ln \frac{TRN}{GNP_t} = \beta_0 + \beta_1 \ln CDR_t + \beta_2 \ln SLR_t + \beta_3 \ln MMF + \beta_4 \ln \frac{GNP}{P_t} + \beta_5 \ln \frac{TRN}{GNP_{t-1}} + \epsilon_t \quad (5)$$

in which

M1 = transaction balances in depository institutions plus non-bank currency in circulation;

CDR = secondary market interest rates on large 90-day certificates of deposit;

SLR = maximum allowable interest rate payable on passbook savings accounts at savings and loan associations;

MMF = net assets of money market funds;

GNP = gross national product;

TRN = transaction balances in depository institutions (M1 less currency in circulation);

P = the GNP deflator;

β_i = estimated constant and regression coefficients; and

ϵ_t = random error term.

Economic theory and previous research suggest that the demand for money relative to real GNP is a negative function of both CDR and SLR interest rates, a negative function of real GNP and, in this case, inversely related to MMFs, which may be substitutes for M1 or TRN. In both cases, the lagged dependent variable should be a positive determinant. Thus, β_1 , β_2 , β_3 , β_4 should be negative, and β_5 should be positive.

Using seasonally adjusted quarterly data from 1975-II through 1981-IV, Equations

⁴ Hafer and Hein [9] present a review of alternative money demand equations, and Cooley and LeRoy [4] discuss the methodological and econometric problems in estimating demand for money equations.

Table I
Multiple Regression Analysis of the
Effect of Money Market Funds on the
Demand for Money

Independent variables	Dependent Variable:		
	$\ln \frac{M1}{GNP_t}$		
$\ln CDR_t$	-.026 (2.112)*	-.013 (1.277)	-.024 (2.362)*
$\ln SLR_t$	-.155 (.900)	-.075 (.569)	.0005 (.004)
$\ln MMF_t$	.009 (1.520)	—	—
$\ln \frac{MMF}{GNP_t}$	—	-.001 (.843)	—
$\ln MFR_t^\dagger$	—	—	.013 (.617)
$\ln \frac{GNP}{P_t}$	-.193 (3.136)*	-.220 (3.462)*	-.241 (3.631)*
$\ln \frac{M1}{GNP_{t-1}}$	.418 (2.539)*	.276 (1.791)	.125 (.733)
Constant	.712	.269	.314
$\bar{R}^2$	.992	.990	.990
Durbin h	.397	.794	.810

Note: Absolute t values are in parenthesis.

* Significant at the 95 percent confidence level or higher.

$\dagger n = 25$ due to lack of 1975-II and III data on money fund yields.

tions (3) and (4) were estimated using ordinary least squares regression.⁵ In conformity with previous research on the demand for money, the data were transformed to natural logarithms to yield estimates of elasticities of money with respect to the independent variables. Equations (3) and (4) were also estimated with $\ln \frac{MMF}{GNP_t}$ and then $\ln MFR_t$, the natural log of average money fund yields divided by rates on certificates of deposit (CDR), substituting for $\ln MMF_t$.⁶

The regression results presented in Tables I and II do not support the hypothesis that money market funds are a significant negative determinant of the demand for money. The elasticities of M1 and TRN with respect to the MMF variables generally were not negative nor were they significantly different from zero at a 5 percent level of significance. Thus, the data do not support the position that MMFs are used as substitutes for transaction balances. The other variables,

⁵ The data for all monetary variables except MMF was provided by the Research Department at the Federal Reserve Bank of Dallas. The data for CDR, SLR, GNP, and P were taken from issues of the *Federal Reserve Bulletin*, Volumes 62 through 67.

⁶ Average money market fund yields were provided by Donoghue's Money Fund Report.

Table II
Multiple Regression Analysis of the
Effect of Money Market Funds on the
Demand for Demand and Other
Checkable Deposits

Independent variables	Dependent variable:		
	$\ln \frac{\text{TRN}}{\text{GNP}_t}$		
$\ln \text{CDR}_t$	-.038 (2.320)*	-.016 (1.157)	-.028 (2.148)*
$\ln \text{SLR}_t$	-.280 (1.340)	.052 (.321)	-.020 (.141)
$\ln \text{MMF}_t$	.015 (1.946)	—	—
$\ln \frac{\text{MMF}}{\text{GNP}_t}$	—	.001 (.508)	—
$\ln \text{MFR}_t^\dagger$	—	—	-.021 (.835)
$\ln \frac{\text{GNP}}{\text{P}_t}$	-.183 (2.182)	-.243 (2.804)*	-.275 (3.034)*
$\ln \frac{\text{TRN}}{\text{GNP}_{t-1}}$	.544 (2.924)*	.327 (3.768)*	.163 (.891)
Constant	.938	.374	.417
$\bar{R}^2$	.992	.990	.990
Durbin h	-.911	.682	.856

Note: Absolute t values are in parentheses.

* Significant at the 95 percent confidence level or higher.

† $n = 25$ due to lack of 1975-II and III data on money fund yields.

secondary market interest rates on large certificates of deposits (CDR), real gross national product (GNP/P), and the lagged dependent variables usually were significant with the expected signs.

It is important at this point to recognize the weakness of the statistical findings. The use of linear regression assumes equilibrium in the markets affecting the independent and dependent variables. In fact, the time period from which the data were taken is characterized by financial innovation and institutional deregulation, casting doubt on the reliability of the regression estimates. Therefore, the statistical findings and conclusions drawn from them must be considered tentative.

Monetary control also could be affected by MMFs where the sources of funds are liquidations of non-money assets. However, the turnover rates reported by Dotsey, et al. [5] discourage such a conclusion. MMF turnover rates have averaged about 2.9 times per year with a range of 2.6 to 3.0 since 1975. Thus, judging by the turnover rates, MMFs on average are employed by investors as savings rather than transaction balances.

III. Conclusions

The substitution of checkable MMF accounts for transactions accounts at depository institutions is technically feasible, but there is no evidence that checkable MMFs significantly affect the demand for money as a substitute for demand deposits and NOW/ATS accounts. The low turnover rate of MMF accounts supports those findings. Therefore, an extension of the Monetary Control Act to include money market funds appears unwarranted at this time.

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