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Commentary

FINANCIAL INNOVATION CONTINUES to obscure traditional measures of monetary policy and efforts to find an improvement are now underway. A new, potentially superior monetary aggregate, M2+, is carefully analyzed in the complementary papers by Sean Collins and Cheryl Edwards, and Athanasios Orphanides, Brian Reid and David Small. The Collins-Edwards (CE) paper provides a thoughtful discussion of issues dealing with the construction of M2+, while the Orphanides, Reid and Small (ORS) paper considers the empirical qualities of this new aggregate. I wish to complement both sets of authors for their work. Given their research objectives, these papers are professionally executed and insightful.

As CE notes, M2 became uncoupled from nominal income beginning in 1990. During this period of slow M2 growth, funds invested in bond and stock mutual funds increased dramatically. However, before simply assuming that M2 can be resurrected by adding in bond and stock mutual fund balances, CE sensibly investigate whether flows from M2 into these mutual funds were the only problems occurring with M2. Bearing in mind CE's warning that it is "tricky business" to explain the weakness in M2 based on an analysis of its components, I would like to further discuss movements in the components of M2. I believe that a great deal of information is

present in the individual components of monetary aggregates. Table 1 presents a very simple description of recent changes in these components.

The table confirms CE's observation that the small time deposit component of M2 declined substantially during this period. Where did these funds go? Based on the negative correlation between small time deposits and liquid bank deposits, CE believe it is likely that funds moved into liquid liabilities such as demand deposits, other checkable deposits (OCDs), savings deposits and money market demand accounts (MMDAs). The deposit turnover rates that I give in the table provide additional evidence of this movement. Deposit turnover in OCDs declined substantially from 1990 to 1993, suggesting that these accounts were increasingly being used for savings rather than for transaction purposes. I believe that the cause of this intrabank shift was the reduction in the opportunity cost between small time deposits (for example, CDs) and OCDs (for example, NOWs). For instance, the average spread between six-month consumer CDs and NOW accounts was approximately 208 basis points in 1990. By November of 1993, that margin was reduced to approximately 103 basis points.¹ Changes in intrabank opportunity costs that lead to flows from non-reservable to reservable deposits will increase the demand for high-powered money and thereby lead to monetary tightening, even

¹ Interest rates are averages of a Federal Reserve Board survey of approximately 460 commercial banks. This lowering of spreads between more competitive retail deposits (CDs) and less competitive retail deposits (NOWs) typically occurs

when market rates fall. See Hutchison and Pennacchi (1992) for more discussion and empirical evidence.

Table 1
Selected Components of Monetary Aggregates (in billions, seasonally adjusted)

Component	Quantity 1989.12	Change 1989.12- 1993.11	% Change	Turnover 1990	Turnover 1993 ¹
Currency†	222.7	97.2	44.6%		
Traveler's checks†	6.9	1.1	15.9%		
Demand deposits†	279.9	105.4	37.7%	797.8	824.6
Other checkable deposits†	285.3	127.4	44.7%	16.5	11.7
Savings and MMDAs‡	891.0	323.6	36.3%	6.2	4.8
Money market funds (GP-BD)‡	317.4	19	6.0%	3.0 ²	
Money market funds (IO)††	108.8	87.9	80.8%	3.0 ²	
Overnight repos & Euro\$‡	77.5	7.8	10.1%		
Term repos & Euro\$††	178.4	-32.9	-18.4%		
Small time deposits‡	1152.7	-364.5	-31.6%	1.0-1.5 ³	1.0-1.5 ³
Large time deposits††	548.8	-216.1	-39.4%		

† Component of M1, M2, and M3

‡ Component of M2 and M3

†† Component of M3

¹ Turnover rates are seasonally adjusted. Figure for 1993 is for month of September.

² Turnover figure is an average for all MMMFs. See Gorton and Pennacchi (1993).

³ Reported in Collins and Edwards (1994), based on Federal Reserve Board Staff estimate.

though the level of reported M2 (or M2+) may not change. Hence, these intrabank opportunity costs, in addition to the opportunity cost of holding M2 measured by the spread between the Treasury bill rate and the average rate on M2's components (see Figure 1 in CE), need to be considered.

As the table points out, the components of current monetary aggregates have displayed very different movements over the last few years. However, a general observation that is consistent with each of the component changes in the table is that, on net, funds have flowed from non-demandable/redeemable assets into demandable/redeemable assets. This observation is also consistent with the net flow of funds into (open-ended) bond and stock mutual funds whose shares are redeemable as well. Perhaps this represents a permanent shift in investment behavior that is unrelated to the current slope of the term structure. Investments in money market and bond mutual funds can provide investors with rates of return that are nearly identical to investments in term CDs (the funds can hold these CDs themselves), but with the added convenience of mutual fund

redeemability. One might argue that bond mutual funds now dominate a CD investment.

A caveat to the redemption feature of bond and stock mutual funds is that liquidating shares may not always be costless. As ORS points out, redeeming bond and stock mutual fund shares can have capital gains tax implications (in addition to possible back-end loads). There are a number of somewhat complicated methods for calculating a mutual fund capital gain, each having possibly different tax implications. This could be a significant deterrent to frequent mutual fund withdrawals. Of course, this is not a problem affecting money market mutual funds, since they are permitted to use an "amortized cost" method of security valuation and the "penny rounding" method of share pricing that enables them to maintain a fixed share price.

Therefore, I would predict that withdrawals from bond and stock funds would tend to be significantly less volatile than those of money market funds. For example, money market fund assets declined by over 30 percent during the 13-month period from December of 1982 to

January of 1984, a time when bank deposit interest rate ceilings were lifted. I doubt that redemptions of that magnitude are likely for bond and stock funds. However, as the empirical work of ORS suggests, the share price volatility of bond and stock funds, leading to capital gains and losses, will undoubtedly add volatility to M2+, especially since these funds' current 15 percent share of M2+ is likely to grow.

ORS examine the demand for balances in stock and bond mutual funds, as well as the demand for M2+ as a whole. Following previous money demand formulations that include proxies for the opportunity cost of various monetary components, they experiment with various quarterly measures of the "ex ante perceptions of returns" on stock and bond mutual funds. In my opinion, this is an exceedingly difficult empirical exercise and theoretically suspect as well. The empirical difficulty is that, unlike other components of M2+ which have nearly risk-free returns, stock and bond funds have high rate-of-return volatility. Even if one assumed that the expected rates of return on these funds were constant, rather than varying on a quarterly basis, it could take decades of data before a reasonably accurate estimate of their expected returns could be found. These assets' rates of return variances overwhelm their expected rates of return; that is, there is too much "noise" (variance) to be able to infer these assets' desired "signal" (expected rate of return).²

Economic theory may also suggest that the opportunity costs of stock and bond investments will always be approximately zero. Unlike other bank liabilities that are not necessarily competitively priced (for example, demand deposits, NOWs, MMDAs, small CDs), there is likely to be little "opportunity cost" of holding stock and bond investments, even via mutual funds. Demands for these assets should not depend on expected rates of return but risk-adjusted expected rates of return. A number of general equilibrium models predict that the best measure of this risk-adjusted return is the current short-term, risk-free rate, for example, the current Treasury bill rate. But, of course, this then implies that the opportunity cost for competitively priced assets will be zero. In the context of bonds, it is well known that a steeper yield curve will not necessarily indicate that (long-term) bond funds are more attractive than when the yield curve is flat or inverted. A higher

slope may simply reflect the expectation of rising short-term interest rates or a risk premium on more volatile long-maturity bonds. To justify their proxies, I believe the authors would need to argue that their measures reflect the actual "perceptions" of relatively unsophisticated mutual fund investors. But even if this were the case, these "misperceptions" are likely to be temporary. Following a significant correction in stock and bond markets, investors are apt to quickly learn that recent stock performance or the steepness of the yield curve have little predictive power for future investment returns.

Given the above difficulties in modeling and estimating risky asset demands, it is not surprising that ORS find evidence of instability in their estimated demand curve for M2+. I would not be surprised, however, if M2+ turns out to better predict nominal GDP than other monetary aggregates. The reason for this is that changes in M2+ may not proxy for changes in "money" but for changes in nominal "wealth" due to the capital gains on its stock and bond components. If one views wealth as the capitalized value of future income, then changes in wealth may indeed be a good forecast of changes in nominal GDP. Hence, M2+ may be a good indicator, but for the wrong reasons.

My last comment concerns the general approach that is used to revise monetary aggregates in response to financial innovation. CE is explicit in desiring a relatively simple aggregate that is constructed in a parallel fashion to previously existing aggregates. They imply that more complicated monetary indicators are problematic, because they make adjustments using a "model-based procedure that the public (Congress in particular) might have trouble understanding [quote from previous draft—Editor]." If this is the case, perhaps the Federal Reserve should (already does?) report an easily understood aggregate to the public, but then use a more complicated monetary measure for internal decision-making.

In my opinion, if we truly wish to understand the inherently complex effects that financial innovation have on the conduct of monetary policy, we need to abandon the simple approach of merely adding new asset categories to old aggregates. As indicated by the turnover rates in the table and ORS' estimated turnover rate of

² See Merton (1980) on this point.

bond and stock funds of 0.3, these new asset categories are very distant substitutes for high powered money, the economy's numeraire for pricing goods and services.³ As noted by ORS, the justification for adding bond and stock funds to M2 should not be based on these "balances having become a better transaction medium, but rather will be based on their substitutability for small time deposits or other M2 balances as savings vehicles." But, if small time deposits are held for savings, rather than transaction purposes (as indicated by the turnover rate of 1.0-1.5), would it not make more sense to lessen the effects of small time deposits in a monetary measure rather than adding another, even less money-like asset? The approach represented by M2+, which simply adds new non-monetary assets to correct problems with old non-monetary assets, is not unlike curing a hangover by having another drink. It may appear to be a good solution in the short run, but (as financial innovation continues) the ultimate consequence is a much larger hangover—or the need for an even larger drink.

Developing aggregates based on their (historical) empirical fit is unlikely to be a successful endeavor in an environment in which new financial instruments continue to be developed. A more Bayesian or "model-based" approach, such as the work of Barnett (1980) and Spindt (1985)

would seem to be more appropriate. A general modeling of the demand for high-powered money could also potentially consider the effect of non-monetary transaction technologies, such as credit cards, or the effect of dollar-currency demand by foreigners. In other areas of economics, we do not insist that multi-good demand relations be a function of a linear combination of those goods, each having a coefficient of unity. Why do we continue this practice in monetary economics?

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³ Fama (1980) provides an insightful discussion of issues involving monetary policy and price-level control.