
FRBSF WEEKLY LETTER

June 7, 1985

Monetary Policy and Velocity

During the first quarter of 1985, total spending on goods and services—Gross National Product or GNP—ran at an annual rate of \$3,817 billion. At the same time, the stock of money (M1, which consists of currency and checkable deposits) averaged \$568 billion. Thus, the *income velocity* of money—the number of times each dollar was used in buying the nation's output—was 6.7 at an annual rate in the first quarter. This was a slightly slower rate of turnover than that recorded in the last quarter of 1984.

The Federal Reserve System uses its control over the total amount of money circulating in the economy to influence the overall level of spending, or *aggregate demand*, in the economy. This influence on spending in turn allows the Fed indirectly to affect the level of economic activity and the rate of inflation. However, as the numbers in the first paragraph show, money's influence on the level of aggregate demand depends not only on the amount of money circulating in the economy but also on the speed with which it circulates—in other words, its velocity.

Thus, in setting its monetary targets, the Fed must take into account how velocity is likely to behave. Failure to do so might make monetary policy inadvertently looser or tighter than intended if velocity increases more or less rapidly than expected.

Velocity and money demand

Obviously, the easier it is to predict changes in velocity, the easier it is to set monetary targets that are consistent with the Fed's ultimate goals of stable prices, high employment and steady growth. To economists, this issue of predictability or "stability" of velocity, as it is often called, resolves itself into an issue of how stable is the behavior of the public with respect to the amount of cash balances it wants to keep on hand for transactions and other purposes. Or in economists' jargon, the issue is one of the stability of money demand.

The reason for this is that the velocity of money is inversely related to the demand for money. A velocity of six, for example, means that each dollar is spent six times a year so that the public's holdings of money, on average, are equal to two months (or

one sixth of a year) of total spending. Thus, if the public chooses to hold a larger quantity of money relative to its expenditures, the velocity of money declines; conversely, a reduction in money demand relative to spending or GNP means an increase in velocity.

Statistical investigation of the public's money demand behavior absorbed a substantial share of economists' research efforts in the period after World War II. By the early 70s, it was widely, if not universally, agreed that the parameters of this relationship were relatively stable over time, allowing them to be estimated with a fair degree of precision, which in turn provided the basis for reasonably accurate predictions of money demand. Thus, money demand—and by implication velocity—appeared stable enough to make monetary targeting a viable strategy for Federal Reserve policy.

The great decline of '82

As Chart 1 shows, the finding that the public's average behavior with regard to its money holdings was relatively stable did not mean that velocity growth did not vary from quarter to quarter. This short-run variability of velocity is one reason why the Fed establishes its targets on an *annual* basis. However, over longer periods of time, as Chart 2 indicates, velocity during most of the post-war period grew at a relatively stable rate of growth of between 3.0 to 3.5 percent. This secular upswing was widely attributed to the ability of households and businesses to exploit economies of scale in managing their cash balances. As a result, the public's demand for money increased less rapidly than overall economic activity, causing velocity on average to rise. In 1982, however, this long-run upswing was abruptly reversed; over the six quarters from the last quarter of 1981 to the first quarter of 1983 velocity declined at an average annual rate of 4.8 percent, a phenomenon unprecedented since the Great Depression.

By the third quarter of 1982, after several quarters of declining velocity, it appeared more and more certain that the declines were not temporary aberrations that would soon reverse themselves. Consequently, it appeared more and more likely that monetary policy was running the risk of being

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inadvertently too tight as the continuing declines in velocity translated into anemic growth in GNP. Finally, with increased uncertainty about the link between money and GNP posed by velocity's unusual behavior, and in the face of persistent weakness in both the domestic and international economies, the Fed in October 1982 de-emphasized its targets for M1.

Financial deregulation and money demand

Although velocity growth has resumed since mid-1983, this entire episode raises the more fundamental issue of whether velocity has become *permanently* more unstable. Permanent instability would reopen the whole question of whether targeting growth in a monetary aggregate is a viable way of conducting monetary policy.

In the eyes of some economists, the 1982 velocity decline is symptomatic of an increased volatility of money demand whose roots may be traced to the deregulation of depository institutions which, it is argued, has blurred the distinction between checking account balances and other highly-liquid assets. In particular, allowing banks and other depository institutions to pay interest on checkable deposits has given these deposits some of the characteristics of traditional savings accounts. As a result, both saving and transaction motives now determine the public's decisions about their cash holdings, raising the possibility that these balances will fluctuate more than they have in the past.

According to these economists, the 1982 episode represents a specific instance of this more general point. The 1981-82 recession caused both businesses and households to build up their liquidity, a typical response during periods of heightened economic uncertainty. Prior to deregulation, not much of such a buildup in precautionary balances would have shown up in M1 because neither currency nor traditional checking accounts (demand deposits) paid interest. The nationwide introduction of NOW accounts in 1981, however, offered a transaction account that paid interest. Consequently, the unexpected rise in the demand for M1 in 1982 occurred because the public for the first time used NOW accounts as a vehicle for building up their liquidity. The mirror image of this unexpected increase in money demand was the sharp decline in velocity in 1982.

This explanation for the velocity decline has important implications for the conduct of monetary policy. If deregulation really has reduced the distinction between money and other highly-liquid assets, the public may move its liquid funds in and out of M1 balances more often and for reasons that may be harder to anticipate than before. In addition, it is suggested that M1 demand may have become more sensitive to short-run changes in market rates of interest which also might lead to larger swings in velocity, swings that would be as difficult to predict as the fluctuations in rates that produced them. If severe enough, these heightened uncertainties about velocity's behavior would make a policy of targeting money growth too risky.

An alternative explanation

An alternative explanation of the 1982 experience traces the large and unexpected decrease in velocity to the sharp decline in interest rates that followed in the wake of the unexpected and steep decline in the rate of inflation that began in 1981. Declining interest rates reduce the cost of holding money, thereby increasing the demand for money relative to GNP and thus lowering velocity. Normally, this direct effect of lower interest rates on velocity is offset by their indirect effect of stimulating GNP, which, temporarily at least, causes velocity to rise. However, this indirect effect occurs because a decline in nominal interest rates normally represents a decrease in *real*, or inflation-adjusted, interest rates. In 1982 this was not the case because the rate of inflation fell by roughly the same amount as interest rates. Thus, declining nominal interest rates boosted money demand, but not GNP, causing velocity to fall.

The two explanations for the 1982 decline in velocity are not mutually exclusive. Some economists, for example, believe that *both* factors operated to lower velocity during the 1982 episode. However, the explanations do have different implications for the future of monetary targeting. The inflation-decline explanation is more reassuring for the future of monetary targeting because it does not imply the behavioral link between money and GNP has become less stable or predictable. The source of the unexpected decline in velocity was the unexpectedly sharp drop in inflation, rather than instability in money demand. Although in prin-

multiple episodes of sudden declines in the rate of inflation could recur, in practice they appear to be quite rare under normal circumstances.

The decline in inflation in 1975 was the only other example in the post-war period of a sudden decrease in the inflation rate. But it had been preceded by the sharp run-up in inflation caused by the tripling of oil prices in 1973-74, and it was widely understood that inflation would retreat significantly after the effect of higher oil prices had worked their way through the economy. Aside from it and the 1982 episode, one has to go back to the 1930s to find comparable instances of sharp and substantial declines in the inflation rate.

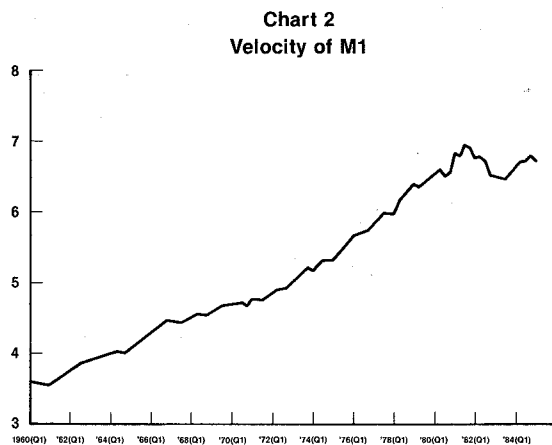
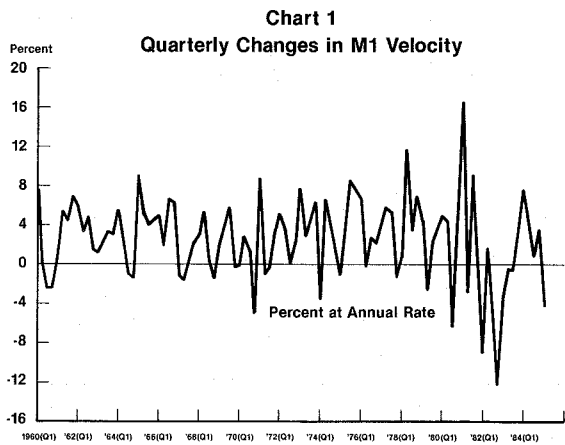
The road ahead

From mid 1983 until the end of 1984, the velocity of money resumed its upward trend. However, much of this snap-back probably reflects a normal tendency of velocity to rise more quickly than average during the expansion phase of a business cycle. Whether the long-run, secular trend in velocity is still around 3 percent remains an open question at this point. Some economists believe much of this secular rise in velocity in the thirty years after 1950 resulted from the ratcheting up of interest rates from business cycle to business cycle, as inflation rates similarly moved upward.

As the cost of holding money rose, households and businesses sought out ways to economize on their money holdings relative to their transactions needs, which in turn caused the accelerating trend in velocity. In contrast, velocity on average declined in the fifty years before 1930, during which interest rates were generally stable or falling.

If this explanation is correct, and if the economy has finally broken out of the nearly twenty-year-old pattern of spiralling inflation, velocity may on average increase less rapidly in the future than in the past. Indeed, some economists conjecture that velocity growth would be flat in a world in which inflation and interest rates were relatively level over time. This change in velocity's underlying trend would have to be taken into account by the Fed in setting its monetary targets. For example, a seven percent target growth for M1 translates into a ten percent growth in GNP when velocity grows at three percent a year. If velocity growth were close to zero, on the other hand, the same target would produce only seven percent growth in total spending. The three percentage point differential is not trivial; it represents the difference between a stagnant no-growth economy and one that grows at its long run full employment potential

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities	Amount Outstanding 05/22/85	Change from 05/15/85	Change from 05/23/84	
			Dollar	Percent ⁷
Large Commercial Banks				
Loans, Leases and Investments ^{1 2}	191,794	397	12,135	6.7
Loans and Leases ^{1 6}	173,270	383	12,761	7.9
Commercial and Industrial	52,298	112	2,826	5.7
Real estate	62,994	31	2,824	4.6
Loans to Individuals	34,041	74	6,184	22.1
Leases	5,360	- 17	372	7.4
U.S. Treasury and Agency Securities ²	11,549	- 13	- 324	- 2.7
Other Securities ²	6,976	28	- 300	- 4.1
Total Deposits	192,477	-3,443	6,310	3.3
Demand Deposits	43,682	-3,688	644	1.4
Demand Deposits Adjusted ³	28,899	-1,145	897	3.2
Other Transaction Balances ⁴	13,091	- 137	1,093	9.1
Total Non-Transaction Balances ⁶	135,704	381	4,572	3.4
Money Market Deposit Accounts—Total	43,377	88	4,074	10.3
Time Deposits in Amounts of \$100,000 or more	38,348	118	- 1,259	- 3.1
Other Liabilities for Borrowed Money ⁵	24,102	937	4,416	22.4
Two Week Averages of Daily Figures	Period ended 05/20/85	Period ended 05/06/85		
Reserve Position, All Reporting Banks				
Excess Reserves (+)/Deficiency (-)	65	6		
Borrowings	52	49		
Net free reserves (+)/Net borrowed(-)	13	- 42		

¹ Includes loss reserves, unearned income, excludes interbank loans

² Excludes trading account securities

³ Excludes U.S. government and depository institution deposits and cash items

⁴ ATS, NOW, Super NOW and savings accounts with telephone transfers

⁵ Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources

⁶ Includes items not shown separately

⁷ Annualized percent change