FRBSF Weekly Letter

February 7, 1986

Base Drift

The narrow measure of the money supply, M1, consisting of coin and currency in the public's hands and deposits with unlimited checking privileges, grew rapidly in 1985. By June, M1 had greatly exceeded the 4-7 percent 1985 target range set in February, having grown at an 11 percent annual rate to that point. In July, the Federal Reserve's Federal Open Market Committee, or FOMC, announced a new target range of 3-8 percent growth for the second half of 1985 and a new base — the actual level of M1 in the second quarter — from which to calculate growth. Since second quarter M1 was well above the original target range, the decision to use *actual* M1 as the new base in essence impounded the overshoot into the level of M1.

As shown in Chart 1, the practice of using the actual level of M1 as the base from which new target ranges are calcuated shifts the *level* of the target path. For example, if M1 had grown at 5½ percent (the midpoint of the 3-8 percent range) after July, it would have remained permanently above the path implied by a 5½ percent growth rate starting from the base at the fourth quarter of 1984.

In this *Letter*, the factors that determine the appropriate adjustment in the base from which to calculate target ranges are discussed. It is argued that eliminating all base adjustments is likely to lead to inappropriate monetary policy, and that, even if M1 always grew at the midpoint of its target range, adjustments in the target base would often be necessary.

Definition and criticism

The difference between the base used to calculate a new monetary target range and the value of the monetary aggregate M1 implied by the midpoint of the old target is commonly called "base drift." If the midpoint were always used as the new base no matter what actual M1 turned out to be, no base drift would occur. In the past, however, the FOMC has used the actual level of M1 as its base — a procedure that results in complete base drift. From 1975 through 1978, the FOMC rebased its target ranges every quarter using actual M1. Since 1979, rebasing has occurred only at the start of each year with two exceptions: in both 1983 and 1985 the target ranges for M1 were rebased in July.

Monetarists have long criticized the FOMC for allowing base drift to occur. Milton Friedman has likened the Fed's practice to that of a marksman who always hits the bulls-eye by painting the target after taking his shot (*Wall Street Journal*, August 20, 1985). Base drift has been called a major impediment to achieving price stability since it essentially ratifies, and makes permanent, deviations of money growth from target.

Federal Reserve officials have taken the view that frequent shifts in the demand for money often have required adjustments in the base of target ranges. In this view, deviations from the target growth path due to money demand shifts in any one year should be accommodated in order to prevent monetary policy from automatically becoming "too tight" or "too easy."

If deviations from the midpoint of the Fed's M1 target growth path were small and as likely to be positive as negative, average drift would be close to zero even under a policy that allowed complete base drift. However, as shown in Chart 2, base drift was positive in every year between 1976 and 1985 except two. Furthermore, it ranged from negative $8.8 billion in 1981 to a high of $20.9 billion in 1982.

The respective roles of base drift and the target growth ranges can be seen in Chart 3. The solid lines plot successive actual fourth quarter to fourth quarter target ranges as established by the FOMC. These target cones originate from the actual level of M1 (M1-A prior to 1980) at the start of each target period under the FOMC's policy of allowing complete base drift. The dashed set of target cones are drawn under a hypothetical policy of zero base drift — each cone originates from the midpoint of the previous cone. As Chart 3 shows, the cumulative effect of base drift accounts for a substantial part of the total rise in M1 over the period plotted. In

fact, base drift accounts for almost 25 percent of the total increase in M1 since 1975.

Base drift and price stability

The effect of base drift on price stability can be understood by using the simple quantity equation of exchange. In this equation, GNP, a measure of total final spending by households, businesses and government, is equal to the volume of money available for spending (M) times the average number of times in the period each dollar is spent (its velocity, or V). At the same time, GNP reflects the total volume of goods and services purchased (Q) times its average price (P). Thus, $MV = PQ$.

Since this "equation of exchange" holds by definition at each point in time, a change in M must result in changes in V, P, or Q. Most economists agree that the effect of an autonomous change in the money supply (M) eventually falls almost entirely on the price level (P). Hence, the practice of complete base drift would appear eventually to lead to a parallel drift in the price level if V and Q are unaffected. If price stability is a goal of monetary policy, it would seem that all base drift should be eliminated.

This conclusion is valid, however, only if velocity and real GNP are not subject to persistent shifts. For example, suppose innovation in the financial market leads to a permanent increase in velocity as individuals and businesses find they can manage the same volume of transactions while holding, on average, smaller M1 balances. This appears to have happened in the mid-1970s as corporations developed more efficient methods for managing their money balances. If, in these circumstances, the velocity of money rises above trend and the growth path of M1 is kept fixed, either P or Q must also rise above trend. A policy that aims for price and output stability should, in this case, reduce the level of the growth path of M enough to counteract the upward shift in velocity.

Similarly, a technological innovation that permanently affected the long-run, or full employment, path of real GNP would lead to price level adjustments if the growth path of M remained unchanged. Price stability will therefore require that the base of the target range for M be adjusted in response to *some* output and velocity movements. However, such adjustments would not be appropriate in response to *all* velocity and output disturbances. An important distinction must be made between *permanent* and *temporary* movements in output and velocity.

Permanent and temporary disturbances

When output temporarily rises above trend during the upswing of a business cycle, the appropriate monetary policy would be to avoid base drift — that is, to prevent a rise in the growth path of M. Such a policy would result in a rise in interest rates which, in turn, would moderate spending and help to stabilize real output. Temporary fluctuations in real GNP should not be completely accommodated by adjusting the level of the money supply's growth path since this would eventually affect prices. Similarly, if M1 rose during the year in response to a temporary velocity decline, or if technical factors prevented the Fed from controlling M1 exactly and caused a target to be missed, any base drift would be inappropriate.

There is an increasing body of empirical evidence suggesting that disturbances to velocity and real output on an annual basis are predominately permanent in nature. For example, the work of Charles Nelson of the University of Washington and Charles Plosser of the University of Rochester has shown that both real GNP and velocity can be thought of as growing at an average, or trend rate, while subject to unpredictable shifts up or down in their levels — shifts that, in the absence of further shocks, are permanent. Thus, if M1 velocity rises 4 percent during a year, rather than its average rate of 3 percent, the extra 1 percent growth is likely to represent a shift upward in its level that in itself is permanent. Similar results have been found to apply to deviations from the trend growth of real GNP. This suggests that, more often than not, the monetary target base should be adjusted to offset velocity or output disturbance almost completely.

For example, in late 1982, velocity declined relative to its trend, and M1 was allowed to overshoot its target range. In setting the new base for the 1983 target range, the FOMC explicitly allowed base drift to occur by using the above-target actual value of M1 as the new base, since

Chart 1
M1

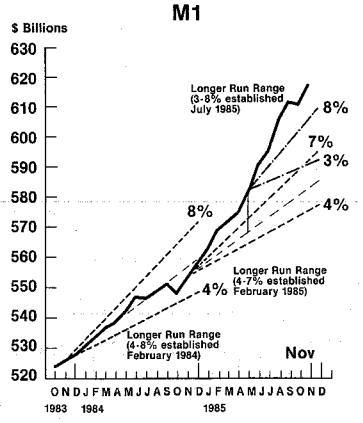


Chart 2
Base Drift 1976-1985

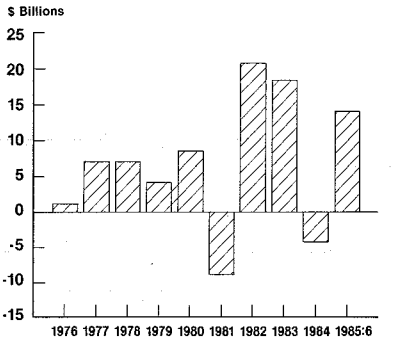
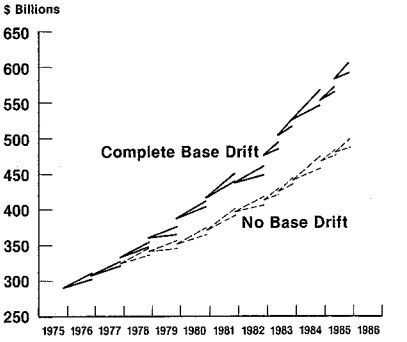


Chart 3
Actual Target Ranges and Alternative Zero-Base-Drift Ranges



the decline in velocity appeared to be permanent. The subsequent behavior of the economy, which showed no acceleration of inflation, confirmed the appropriateness of base drift in this case.

More recently, the rebasing of the M1 target ranges in July 1985 followed the approximately 5 percent decline in M1 velocity during the first six months of 1985. In its July meeting, the FOMC reviewed whether the fall in velocity was a one-time shift or was likely to reverse itself. By rebasing the target path, the FOMC chose a policy that was consistent with a belief that the velocity decline was permanent. If M1 had not been allowed to rise sufficiently in the face of a permanent velocity decline, monetary policy would have become overly tight, and the new base for subsequent target ranges would need to be above the actual value of M1 to offset the lack of policy response.

Conclusion

Because the nature of velocity and output movements can differ in different episodes, neither a rule of zero drift nor one of complete drift will always provide a superior guideline for policy. However, because both velocity and output disturbances tend to persist, price level stability will generally require some year-to-year adjustment in the base from which target ranges are calculated.

The policy records of the FOMC reveal that the Committee has attempted to distinguish between shifts in velocity that are viewed to be permanent and those viewed as transitory. However, by automatically using actual M1 as the base for new target ranges, it is likely that some temporary disturbances have led to permanent changes in the price level. The most appropriate adjustment of the target base in any particular period can only be determined by analyzing the sources of velocity and output movements in that period.

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Alaska Arizona California Hawaii Idaho
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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 1/15/86	Change from 1/8/86	Change from 1/16/85 Dollar	Change from 1/16/85 Percent[7]
Loans, Leases and Investments[1 2]	202,908	676	14,913	7.9
Loans and Leases[1 6]	183,591	1,043	13,555	7.9
Commercial and Industrial	52,574	− 141	325	.6
Real estate	65,987	7	4,081	6.5
Loans to Individuals	38,618	− 95	6,260	19.3
Leases	5,694	151	428	8.1
U.S. Treasury and Agency Securities[2]	10,761	− 400	− 266	− 2.4
Other Securities[2]	8,555	31	1,623	23.4
Total Deposits	203,987	223	8,615	4.4
Demand Deposits	50,934	790	4,837	10.4
Demand Deposits Adjusted[3]	33,072	−1,177	4,178	14.4
Other Transaction Balances[4]	15,239	− 249	2,173	16.6
Total Non-Transaction Balances[6]	137,813	− 319	1,604	1.1
Money Market Deposit Accounts—Total	46,013	− 33	3,062	7.1
Time Deposits in Amounts of $100,000 or more	38,134	− 143	− 1,900	− 4.7
Other Liabilities for Borrowed Money[5]	26,086	1,403	5,486	26.6

Two Week Averages of Daily Figures	Period ended 1/13/86	Period ended 12/30/85
Reserve Position, All Reporting Banks		
Excess Reserves (+)/Deficiency (−)	107	97
Borrowings	3	84
Net free reserves (+)/Net borrowed(−)	104	14

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