FRBSF WEEKLY LETTER

November 21, 1986

Interest Checking and M1

Over the past two years, the M1 monetary aggregate has grown at a historically high annual rate of about 12 percent, yet there has not been a resurgence of the inflation that would normally be associated with such rapid money growth. Many economists argue that this signifies that the traditional relationship between M1 and the economy no longer holds. One theory posits that the deregulation of deposit rates on personal checking accounts, which came about through the authorization of NOW (Negotiable Order of Withdrawal) and Super NOW accounts at banks and thrifts, has altered the behavior of M1.

In last week's *Letter,* we showed how the deregulation of deposit rates on personal checking accounts resulted in interest being paid on over 70 percent of personal checking account deposits — or over 30 percent of M1. We also argued that, although the new NOW and Super NOW accounts attracted a large fraction of their deposits from pre-existing checking accounts, they also attracted funds from nontransaction, savings-type, accounts.

The shift of nontransaction balances into NOWs and Super NOWs and the payment of interest on balances in the two accounts raise the possibility that deregulated deposits will behave less like transactions money and more like other financial assets, and thereby change the behavior of M1. In this *Letter,* we examine the behavior of the NOW and Super NOW components of M1 along with that of M1 to see whether deregulation can explain the aggregate's recent unusual behavior.

Deregulation of personal checking

The deregulation of personal checking accounts began in earnest with the nationwide authorization of NOW accounts on December 31, 1980. NOW accounts could pay interest up to a maximum of 5¼ percent. The Super NOW account was authorized about two years later on January 5, 1983 and was ceiling-free, although it was subject to regulatory minimum balance requirements. On January 1, 1986, both the minimum balance requirement on Super NOWs and the ceiling on NOWs were eliminated. Thus, there are now no regulatory deposit rate or minimum balance restrictions on interest-bearing personal checking accounts, although institutions are free to impose their own minimum balance requirements.

Even though all demand deposit accounts are still prohibited from paying interest, individuals can easily avoid this restriction by choosing a NOW or Super NOW account. Businesses, however, are still limited to holding non-interest bearing demand deposits.

Behavior of deregulated accounts

Some economists expected balances in these new deregulated accounts to respond much differently to economic changes than balances in regulated accounts and thereby change M1's behavior. In fact, the behavior of NOWs and Super NOWs has differed markedly from that of the other components of M1 (mainly currency and demand deposits).

As shown in Chart 1, in each year since 1982 (well after the initial large shift into NOWs was completed in early 1981), NOWs plus Super NOWs have grown much faster than the regulated components of M1. If the new accounts had behaved more like traditional checking accounts (demand deposits) before deregulation, M1's growth would have been much lower over the same period. Thus, on the surface, it appears that deregulation has increased M1's rate of growth.

Lowered opportunity costs

One explanation for the interest-bearing accounts' different behaviors is the higher effective yields they offer depositors. Deposit rate deregulation had the effect of increasing this effective yield by eliminating the inefficiencies of nonprice competition. Even though depositors received some implicit interest in the form of free or underpriced services on their demand deposits (which were and still are prohibited from paying explicit interest), the implicit plus explicit interest on NOW accounts was significantly higher.

Similarly, since Super NOWs, unlike NOWs, were completely free of interest ceilings, they offered even higher total yields than NOWs. Indeed, it is the higher yields that explain the massive shifts of funds, first from demand

deposits to NOWs, and then from NOWs to Super NOWs when the latter were introduced.

With a much higher yield, the foregone interest, or opportunity cost, of holding funds in the new accounts (instead of in higher-yielding nontransaction assets) was much smaller than that of holding funds in traditional demand deposits, which paid no explicit interest at all.

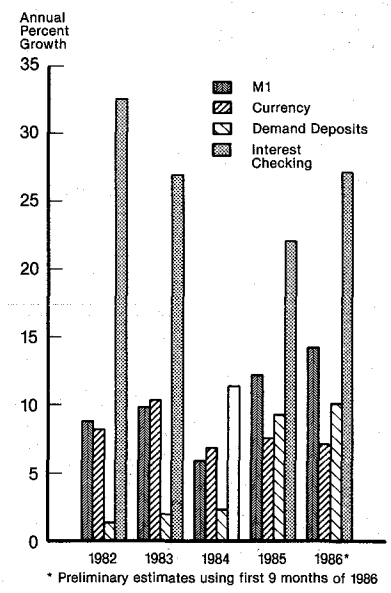
Moreover, even though the deposit rate on the fully deregulated Super NOW was free to move, it did not vary closely with the open market interest rate, at least in the short run. As a result, a given percentage change in the open market rate would cause a much larger percentage change in the opportunity cost of these new accounts than that of traditional zero-interest checking accounts. For example, if the Super NOW rate were constant at 9 percent, a 10 percent increase in the open-market rate from 10 to 11 percent would translate into a 100 percent increase in the opportunity cost (from 1 to 2 percent) of holding a Super NOW but only a 10 percent increase in the opportunity cost of holding a zero-interest account (from 10 to 11 percent).

To illustrate this point, the monthly percentage changes in opportunity costs for the Super NOW and demand deposits are plotted in Chart 2. The opportunity cost is defined as the difference between the 3-month Treasury bill yield and the explicit yield on the deposit account (as reported in the Bank Rate Monitor). This chart shows that the typical monthly percentage change in the opportunity cost of holding Super NOWs was several times as large as that of demand deposits. Although not shown in the chart, the percentage change in the opportunity costs of NOW accounts was between that of demand deposits and Super NOWs because the total yield on NOWs was between that on demand deposits and Super NOWs.

According to the inventory theory of money demand, percentage changes in account balances are inversely related to percentage changes in the opportunity cost of holding them. Thus, one might expect deposit balances in deregulated accounts to be much more variable than balances in regulated accounts.

In fact, we found that balances in deregulated accounts were several times more sensitive to changes in open-market interest rates than balances in regulated accounts. Specifically, we found that the percentage change in Super NOW deposits to a given percentage change in the 3-month Treasury bill rate was several times larger than the response of demand deposits prior to the nationwide authorization of NOW accounts. That is, when short-term interest rates fell, deposits in Super NOWs increased proportionately several times more than funds in demand deposits. NOW deposits were less sensitive than Super NOWs but still more sensitive than demand deposits. And, as other researchers have found, currency was the least sensitive.

Chart 1
Growth Rates of M1 and Its Components



* Preliminary estimates using first 9 months of 1986

Implications for M1

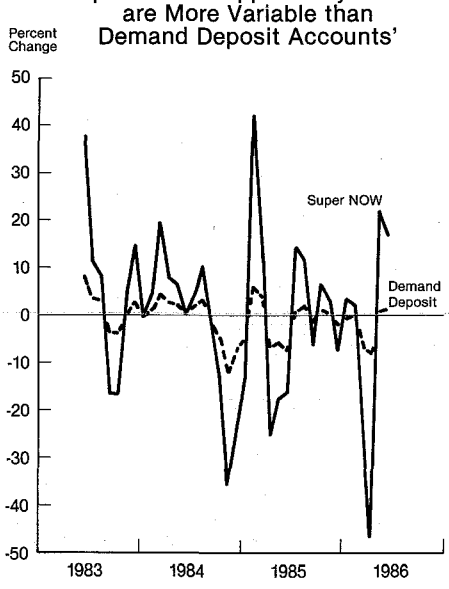
It appears that as one moves across the spectrum of transactions media from the most regulated (currency) to the least regulated (Super NOWs), one finds an increasing sensitivity to changes in the open market rate. This pattern has several implications for the behavior of M1. First, during periods when open market interest rates are declining (and for some time thereafter because of lags in depositors' responses), the growth rates of NOWs and Super NOWs should exceed those of either demand deposits or currency. This partly explains the more rapid growth of NOWs plus Super NOWs depicted in Chart 1.

Second, as deregulated accounts grow in popularity over time, we would expect the M1 aggregate to behave more like them and less like its traditional components (mainly currency and demand deposits) simply because deregulated accounts would constitute a greater share of M1.

A simulation

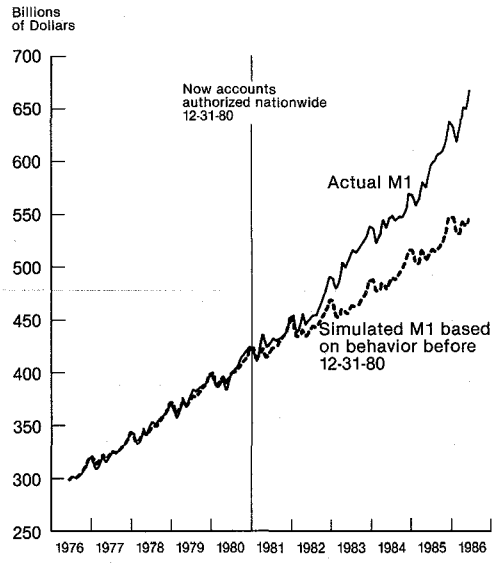
One way to see just how much the behavior of M1 has been altered by deposit rate deregula-

Chart 2
Super NOWs' Opportunity Costs* are More Variable than Demand Deposit Accounts'



* Three-month Treasury bill yield minus explicit yield on deposit account.

Chart 3
Actual vs. Simulated M1*



*Not seasonally adjusted.

tion is to compare how M1 would have been predicted to behave based on its relationship to economic factors before the nationwide authorization of NOWs with how it has actually behaved since then.

In Chart 3, we compare M1's actual behavior with its predicted (simulated) behavior for the period January 1975 through June 1986. The simulation of M1, based on its historical relationship to economic factors prior to the introduction of NOWs, seriously underpredicts M1's actual behavior beginning in early 1982. This underprediction coincides with the dramatic drop in interest rates that began in November 1981, and is thus consistent with the notion that the interest-sensitivity of M1 began to increase after NOWs were authorized nationwide.

Moreover, estimates based on M1's historical relationship to economic factors between January 1981 and June 1986 — after NOWs were introduced — indicated that M1 had become three times more sensitive to interest rates (in the short run).

Together, these results suggest that deregulation increased the interest-sensitivity of M1. They also suggest that, beginning in early 1982, deregulation caused M1 to grow much faster than it otherwise would have, largely in response to the decline in interest rates that began in late 1981.

Conclusions

The payment of interest has reduced the cost of holding checking accounts and simultaneously increased the percentage variation in their opportunity costs. The latter has, in turn, increased the responsiveness of balances in interest-paying checking accounts to changes in the open-market interest rate.

Because interest-bearing accounts now comprise over 30 percent of M1, deposit rate deregulation has changed the behavior of M1 by making it more sensitive to interest rate changes. Moreover, the continuing shift of funds into deregulated accounts may continue to increase the interest-sensitivity of M1.

These changes raise questions for monetary policy under virtually any view of what money is and how money is related to the economy. In particular, they raise the question of whether a monetary aggregate comprised of both interest-bearing and noninterest-bearing components with different behaviors and changing returns is useful for policy purposes.

Michael C. Keeley and Gary C. Zimmerman

Research Department
Federal Reserve
Bank of
San Francisco

Alaska Arizona California Hawaii Idaho
Nevada Oregon Utah Washington

BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 10/29/86	Change from 10/22/86	Change from 10/39/85 Dollar	Change from 10/39/85 Percent[7]
Loans, Leases and Investments[1] [2]	201,558	− 1,070	4,506	2.2
Loans and Leases[1] [6]	181,027	− 1,005	2,920	1.6
Commercial and Industrial	49,312	− 759	− 1,557	− 3.0
Real estate	66,842	− 189	1,351	2.0
Loans to Individuals	39,636	172	1,731	4.5
Leases	5,588	4	185	3.4
U.S. Treasury and Agency Securities[2]	12,639	− 13	926	7.9
Other Securities[2]	7,892	− 53	660	9.1
Total Deposits	202,830	− 566	3,311	1.6
Demand Deposits	50,682	− 466	3,089	6.4
Demand Deposits Adjusted[3]	35,473	− 510	− 8,158	− 18.6
Other Transaction Balances[4]	17,448	− 182	3,503	25.1
Total Non-Transaction Balances[6]	134,699	81	− 3,281	− 2.3
Money Market Deposit Accounts—Total	46,344	144	947	2.0
Time Deposits in Amounts of $100,000 or more	33,153	36	− 5,359	− 13.9
Other Liabilities for Borrowed Money[5]	25,944	− 491	2,433	10.3

Two Week Averages of Daily Figures	Period ended 10/20/86	Period ended 10/06/86
Reserve Position, All Reporting Banks		
Excess Reserves (+)/Deficiency (−)	59	36
Borrowings	12	24
Net free reserves (+)/Net borrowed(−)	48	12

[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