

The Breakdown of M2

Money “vanished” from M2 during the early 1990s, when interest rates were decreasing and investors found certificates of deposit (CDs) less attractive than alternatives, such as mutual funds. Higher interest rates have drawn some funds into CDs, but this growth seems to have come out of savings accounts rather than a reversal of the earlier flows. A severe “correction” on Wall Street, could send investors back to the relative safety of CDs, but the usefulness of M2 as an economic indicator remains questionable.

The relationship between money and economic activity typically is expressed in Irving Fisher’s “equation of exchange,” $MV=PT$. The notion is that the stock of money times its velocity of circulation is always equal to the price level times the output of goods and services (transactions). Attempts to apply the equation of exchange involve severe problems of definition and measurement, however. In particular, many analysts have been forced to conclude that V (velocity) fluctuates with the business cycle and/or with interest rates. AIER has long maintained that payment cycles relating to production and consumption are nearly constant and change little over time (*e.g.*, as an increasing proportion of salaried employees are paid twice a month instead of once a month). If so, then any observed changes in V simply reflect a mismeasurement of M .

In other words, we believe that the notion of fluctuations in velocity is simply a means of explaining away situations in which the data do not conform to the equation of exchange. On the practical level, actual measures of velocity invariably are made after the fact.

Velocity often is taken to be the ratio of GDP to whatever measure of M is favored by the analyst. This ignores the fact that a large proportion of transactions involve intermediate products that are netted out in the GDP estimates. Less commonly, the ratio of bank debits to bank deposits is cited in analyses of velocity changes, but this means that purely financial transactions, which have little to do with T , are included in the measure. More to the point, because velocity estimates are made after the fact (in effect, as bal-

ancing factors of the equation of exchange), they would seem to have little value as a forecasting tool.

In any event, the fundamental problem of measuring the amount of purchasing media in use is that all money supply measurements are derived from the *liabilities* of financial intermediaries. But it is the *use* by the holders of these claims that is of interest to economists. Some portion of the liabilities is used for day-to-day, week-to-week, or month-to-month transactions, with the remainder held as savings.

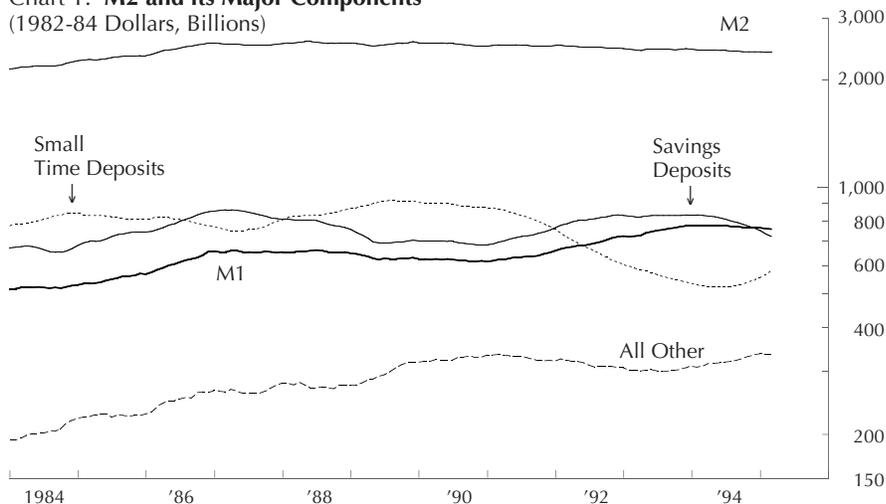
At one time, the distinctions between savings accounts and checking accounts appeared quite clear. To make a payment using funds in a saving account, one had to withdraw currency or make a transfer to a checking account. More significantly, such withdrawals had a minimal effect on

the totals of currency and checking accounts. Withdrawals from a thrift institution simply would reduce the cash balance of that institution, leaving the totals of all checking accounts and currency outside banks unchanged (the vault cash of thrift institutions was considered to be “outside banks”). Withdrawals from a savings account at a commercial bank would increase that bank’s required reserves (thereby constraining its ability to create deposits by lending). The opposite applied to increases in savings deposits.

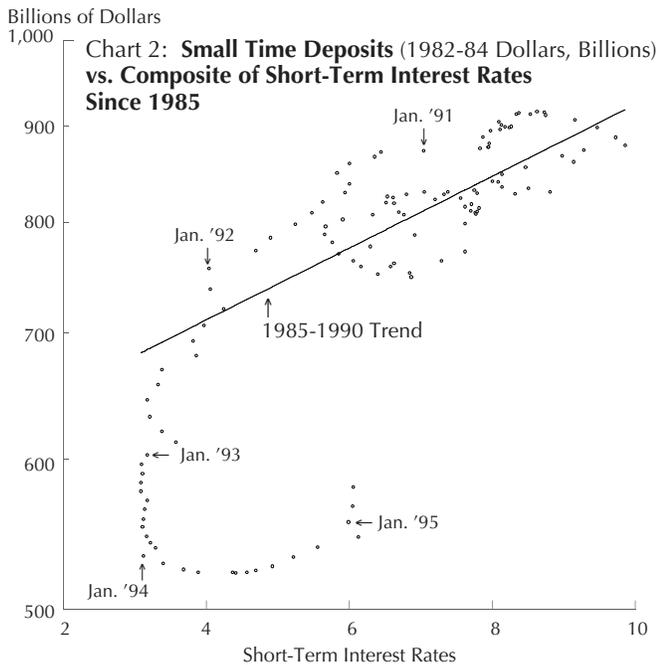
During recent decades, however, the relationship between the various types of liabilities of financial intermediaries and what their holders do with them has become less and less clear. Interest-bearing checking accounts and money-market mutual funds offering check-writing privileges have blurred the distinction between savings and transactions balances on the books of financial intermediaries (and between banks and nonbanks). We simply do not have a reliable measure of how these balances are used or regarded by their holders.

Even the most straightforward item of purchasing media, currency outside banks, has become problematical. A substantial and rapidly increasing (but indeterminate) portion of it now is held as savings or used in transactions outside the United States. Currency that is held abroad should

Chart 1: **M2 and its Major Components**
(1982-84 Dollars, Billions)



Sources: Federal Reserve Bank of St. Louis and Bureau of Labor Statistics.



have little impact on the PT portion of the equation of exchange for the U.S. economy.

The definitions of the most widely followed monetary aggregates, M1 and M2, have been revised from time to time, but such changes have lagged far behind financial innovations. Nevertheless, and despite their deficiencies as the M in the equation of exchange, both M1 and M2 (deflated for price level changes) have tracked business-cycle changes as would be expected, *i.e.*, with V held constant or nearly so, MV/P has been closely correlated with T . These series have been reliable leading indicators of business-cycle changes. The question of why they lead rather than coincide with general business conditions is best left to the theorists. That they are leaders has been well established empirically.

We use both constant-dollar M1 and M2 in our analysis of the statistical indicators of business-cycle changes. Most analysts focus only on M2. For example, the Bureau of Economic Analysis of the Department of Commerce includes only the deflated M2 in its composite index of leading indicators, which is the most widely followed series in appraisals of the business outlook. During the current business cycle, M1 has followed the usual pattern, it decreased before the 1990-91 recession, bottomed out during the recession, and increased to new highs during the subsequent expansion. On the other hand, M2 has steadily decreased since reaching its all-time high in 1988.

The breakdown of the usual cyclical behavior of M2 over the past 5 years has thrown a wrench into many of the models

forecasters use to predict economic activity. The continued decrease of M2 during a period of rapidly expanding M1 (as well as marked increases in the monetary base, Federal Reserve Credit, and other direct measures of monetary policy as conducted by the Federal Reserve Board) has led many analysts to conclude that there is money "missing" from the economy.

M2 is intended to measure holdings of liquid assets that either can be spent immediately or can be quickly converted into spendable media

in the near future. As now defined, M2 is the sum of all the components of M1 (which is designed to measure funds that can be spent immediately) plus: savings deposits, small time deposits (under \$100,000), money market mutual funds, and a few other relatively minor bank liabilities. The liabilities of financial intermediaries must be in one of these categories to be included in M2. These are shown, in constant dollars, in Chart 1.

This chart shows the divergence between M2 and M1, and it also indicates the interplay between the two largest non-M1 components of M2, savings deposits, and small (less than \$100,000) certificates of deposit.

In *Research Reports* for January 3, 1994, we described how investors with maturing CDs, which typically had been paying rates well in excess of what the banks were offering at the time, were deserting the banks in favor of bond and equity funds. As matured CDs became checking deposits the funds were added to M1, but the current-dollar level of M2 was unchanged, and its constant-dollar level decreased with continuing price inflation. When investors used their matured CDs to purchase mutual funds, the funds did not disappear, but remained as demand deposits that were transferred to fund managers and subsequent holders.

Short-term rates have rebounded from their lows and banks have been offering more attractive rates to depositors during recent months. This has helped attract some funds back into small time deposits; however, the increase in small time deposits has been much less vigorous than might have been expected.

This is evident in Chart 2, which shows the constant-dollar totals of small time deposits plotted against interest rates for each month since 1985. Prior to 1991, the level of small time deposits fluctuated with interest rates, and a regression line for the observations for the years 1985-1991 is plotted in the chart. As interest rates decreased after 1991, the total of small time deposits decreased in amounts that were suggested by this prior relationship. However, once interest rates stabilized (at levels not seen in nearly 30 years), small time deposits continued to decrease as older CDs matured. After rates bottomed out in 1992, small CDs began to increase, and the slope of that increase is similar to the 1985-91 trend, but that increase is from a much lower base.

Moreover, much of the growth in small time deposits during the past 2 years or so has come from deposit savings accounts. An increased spread between the return on savings accounts and the returns on CDs has encouraged investors to sacrifice a bit of liquidity in order to earn a bit more interest on their money. Thus, little, if any, of the "missing" money seems to have returned to M2.

Because bond and equity funds have been the chief benefactors of the flight from CDs, some monetary economists feel it may be appropriate to include bond and equity funds as a component of M2. This proposal rests mainly on empirical grounds as M2 plus bond and equity funds (sometimes called M2+) have recently been a better indicator than M2 as now estimated. However, including bond and equity mutual funds in what is supposed to be a measure of liquidity, is difficult to justify. If bond and equity mutual funds are included, why not all bonds and equities, Treasury bills, commercial paper and other easily traded financial claims held by nonfinancial investors?

What may restore M2 is a "correction" on Wall Street. A large drop in the stock market could send investors back to the relative safety of CDs. But even if this happens there is no guarantee that M2 will again be a useful economic indicator. In the final analysis, it has never been entirely clear what M2 is *supposed* to measure in the way that M1 attempts to measure purely transactions balances. (Whether either aggregate is accurate is another question.) Tinkering with M2 to improve its performance as an economic indicator is based on the notion that financial innovation has increased the variety of ways that consumers and producers can hold liquid assets, but this process will always be after the fact, which suggests that M2's usefulness as an indicator will remain questionable.

Business-Cycle Conditions: The Amber Light Is Flashing

The primary leading indicators deteriorated sharply this month. The coincident series also weakened, and the lagging series continue to suggest that bottlenecks may be developing. Although it is premature to assert that a recession is imminent, the prospects for continued economic expansion are diminishing.

In our most recent review of business conditions, only two primary leading indicators reached new cyclical highs, *contracts and orders for plant and equipment* and the *index of common stock prices*. (These and all other dollar-denominated series are reported in constant dollars.) There were few hopeful signs among the other 10 leaders, as nine of their moving averages decreased.

Due to further declines in their base data and their moving averages, all four leading indicators that were appraised as probably expanding last month were downgraded this month to cyclically indeterminate: *new orders for consumer goods*, the *ratio of manufacturing and trade sales to inventories*, *initial claims for unemployment insurance* (inverted), and the *average workweek in the manufacturing sector*. Despite its recent decrease, the average workweek remains high by historical standards: 41.5 hours in May, compared with 42.2 hours in January, which was a postwar peak.

The *change in sensitive materials prices*, the *index of new housing permits*, and the *change in consumer installment debt* series remain appraised as probably contracting. The moving average of *vendor performance* (the percentage of purchasing managers reporting slower deliveries from their suppliers) decreased for the fifth consecutive month, which was judged sufficient to downgrade the series' status from indeterminate to probably contracting.

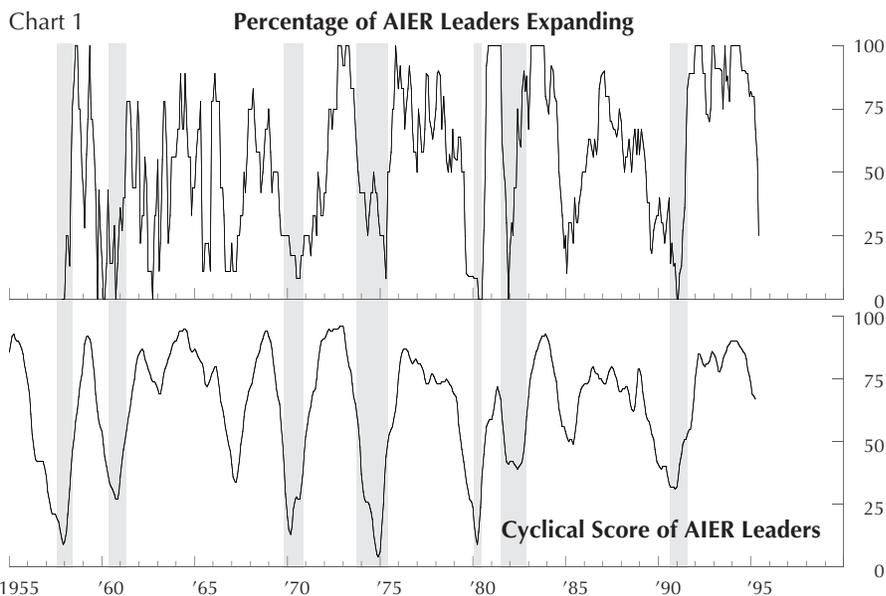
The monetary series continue to contract. The *M1 money supply* and the broader *M2 money supply* both decreased in April and remain appraised as clearly contracting. The downturn in M1 began 9 months ago, but M2 has decreased almost continuously during the current economic expansion (see the preceding article).

As a result of the downgrades in our appraisals of five series, the percent of leaders appraised as expanding fell dramatically this month. The percent expanding now stands at 25 (2 out of 8), compared with 55 (6 out of 11) last month. Statistically, when less than 50 percent of the leaders are appraised as cyclically expanding, a contraction in business activity is probable. The last time the percent of leaders expanding fell below 50 was June 1989, and a recession followed roughly 1 year later. However, as shown

in Chart 1, the percentage expanding has sometimes warned of recessions that never occurred, in the 1950s, 1960s, and most

recently in 1984-86. These signals were followed by "soft landings," *i.e.*, periods when the pace of economic activity slowed but the slowdown was insufficient in its duration, magnitude, and scope to be classified as a recession.

In an effort to reduce the incidence of such false signals, AIER developed the cyclical score (also shown in Chart 1). As discussed in last month's report on business conditions, the cyclical score is based



Statistical Indicators of Business-Cycle Changes

Change in Base Data				Primary Leading Indicators	Cyclical Status		
Feb.	Mar.	Apr.	May		Apr.	May	Jun.
-	-	-		M1 money supply	-	-	-
-	r	-		M2 money supply	-	-	-
-	-	-		Change in sensitive materials prices	?	?-?	?-?
-	-	-		New orders for consumer goods	+	?+?	?
+	+	-		Contracts and orders for plant and equipment	+	+	+
-	-	+		Index of new housing permits	?	?-?	?-?
-	-	-		Ratio of manufacturing and trade sales to inventories	+	?+?	?
-	-	-	-	Vendor performance	?	?	?-?
+	+	+	+	Index of common stock prices (constant purchasing power)	+	+	+
-	-	-	nc	Average workweek in manufacturing	+	?+?	?
-	nc	-		Initial claims for unemployment insurance (inverted)	?+?	?+?	?
-	+	+		Change in consumer installment debt	?-?	?-?	?-?
				Percentage expanding cyclically	67	55	25
				Primary Roughly Coincident Indicators			
+	+	-	-	Nonagricultural employment	+	+	?+?
r	nc	-	-	Index of industrial production	+	+	+
+	-	-	-	Personal income in manufacturing	+	+	?+?
-	-	-		Manufacturing and trade sales	+	+	+
+	+	-	-	Civilian employment to population ratio	+	+	?+?
+	+			Gross domestic product (quarterly)	+	+	+
				Percentage expanding cyclically	100	100	100
				Primary Lagging Indicators			
-	-	-	+	Average duration of unemployment (inverted)	+	?+?	?+?
+	+			Manufacturing and trade inventories	+	+	+
+	+	+		Commercial and industrial loans	+	+	+
+	+	+		Ratio of consumer installment debt to personal income	+	+	+
+	+	-		Change in labor cost per unit of output, manufacturing	?	?	?+?
+	+	-	-	Composite of short-term interest rates	+	?+?	?
nc				Percentage expanding cyclically	100	100	100

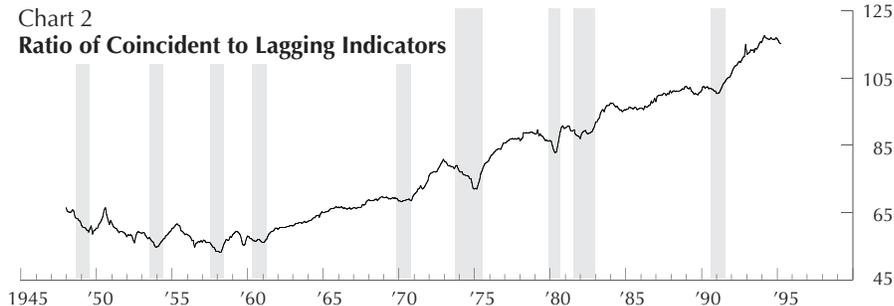
Under "Change in Base Data," plus and minus signs indicate increases and decreases from the previous month or quarter and blank spaces indicate data not yet available. Under "Cyclical Status," plus and minus signs indicate expansions or contractions of each series as currently appraised; question marks indicate doubtful status when shown with another sign and indeterminate status when standing alone.

on the same economic series as the percent expanding series but differs from it in several respects. Among other things, the calculation of the score (which is a purely arithmetical calculation that does not reflect the judgment of AIER's staff in any way) provides for a heavier weighting of increases than decreases in the individual series that comprise it. As with the percent expanding series, the score can range from 0 to 100, and a decrease below 50 indicates that recession is more probable than expansion. This month the score decreased to 67 from the score of 72 reported last month. Given that the score remains above 50, we are hesitant to assert that a recession is likely. However, the rapid and sharp decreases in both the score and the percent expanding in the past few months strongly suggest that economic conditions will deteriorate further in coming months.

Some weakness already is evident in the primary roughly coincident indicators. *Nonagricultural employment*, *personal income in manufacturing*, and the *ratio of civilian employment to population* decreased and their appraisals were downgraded to probably expanding. Employment decreased by 101,000, the second consecutive monthly decline and the largest since 1991. The *index of industrial production* and *manufacturing and trade sales* also decreased, but the decreases were judged insufficient to alter their appraisals. According to revised data, *gross domestic product* (a quarterly series) increased at an annual rate of 2.7 percent in the first quarter rather than 2.8 percent as initially reported. In our past two monthly reviews of business activity, none of the monthly coinciders has posted any gain in its base data. The decreases have been relatively modest, however, and despite new doubts about the trends of three series, 100 percent (6 out of 6) of the coinciders remain appraised as expanding. The coinciders warrant close watching in the months ahead. Not until the percentage of coinciders expanding decreases to less than 50 would the assertion that a business contraction probably has begun be warranted.

Among the primary lagging indicators, only the *composite of short-term interest rates* deteriorated this month. The decrease, from 6.03 to 5.98 percent, was sufficient to downgrade the series' cyclical status from probably expanding to indeterminate. *Manufacturing and trade inventories*, *commercial and industrial loans*, and the *ratio of consumer installment debt to personal income* reached new cyclical highs. The *change in labor cost per unit of manufacturing output* posted a third consecutive increase, which removed

Chart 2
Ratio of Coincident to Lagging Indicators



doubt about the series' cyclical trend. It is now appraised as probably expanding. This series, which measures the percentage change in labor costs over 12 months, remains below zero; its recent upturn indicates not that costs are increasing but that they are decreasing at a slower rate. In contrast, prior to every previous postwar recession unit labor costs have increased. The increase prior to the 1990-91 recession was not apparent, however, until revised data became available many months "after the fact." This experience raises doubts about the usefulness of the current data. The *average duration of unemployment* (inverted) remains appraised as probably expanding. Overall, 100 percent (6 out of 6) of the lagggers with an apparent cyclical trend are expanding.

Bottlenecks and imbalances usually become evident before a recession begins. The lagggers are beginning to show indications of such, in the increasing ratio of debt to income, the pileup of inventories, and the apparent upturn in the labor cost series. One composite measure of imbalances in the economy is the Commerce Department's ratio of its coincident index to its lagging index. The two indexes included in this ratio are themselves composite series that are based on many of the same series tracked by AIER. In the past, this ratio has performed well as a leading indicator — it reached a peak in April 1990, 3 months before the 1990-91 recession began — and although it has given a few false signals, it has never failed to signal a recession.

This ratio is plotted in Chart 2. The series reached its most recent peak in March 1994 and fluctuated in a narrow band until December. Since then, it has decreased. Similar declines in the past have not always been followed by recession,

but in the light of all the other negative data this recent decline raises concern. It is one more indication that the pace of business activity is likely to slow, and could become negative, in the near future.

Recession 95?

It is still premature to declare the next recession is just around the corner. Clearly, the deterioration among the leaders is of sufficient duration, magnitude, and breadth to warrant concern. Other economic data are not encouraging. Nonetheless, it is important not to give too much weight to monthly (not to mention weekly and even daily) changes in economic data. Such changes often contain a lot of random fluctuations or "noise," and even large decreases often prove to be temporary interruptions of upward trends. This is one reason we focus on moving averages of time series, which help us distinguish cyclical trends from irregular fluctuations. Cyclical contractions in these smoother moving averages historically have signaled business contractions while giving few false signals.

Federal Reserve Chairman Alan Greenspan remains optimistic, in his public comments, that the economy is only slowing to an "acceptable" rate of growth. With his term as chairman up for reappointment in March 1996, an election year, the Republican-appointed chairman surely is aware he would make an excellent target if the economy tips into recession. Greenspan's personal interest may play a role in his apparent optimism. The current "conventional wisdom" coincides with Greenspan's view that the economy is only slowing and will continue to grow moderately into 1996. Although this outcome is not out of the question, we at AIER are not quite as optimistic.

PRICE OF GOLD

	1993	1994	— 1995 —	
	Jun. 17	Jun. 16	Jun. 8	Jun. 15
Final fixing in London	\$369.45	\$386.85	\$385.05	\$388.50

Research Reports (ISSN 0034-5407) (USPS 311-190) is published twice a month at Great Barrington, Massachusetts 01230 by American Institute for Economic Research, a nonprofit, scientific, educational, and charitable organization. Second class postage paid at Great Barrington, Massachusetts 01230. Sustaining memberships: \$16 per quarter or \$59 per year. POSTMASTER: Send address changes to **Research Reports**, American Institute for Economic Research, Great Barrington, Massachusetts 01230.