

# Real Money Balances: A Good Forecasting Device and A Good Policy Target?

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FOR the past two hundred years, economists have debated the issue of the proper goals of monetary policy. In times of strict adherence to the gold standard, the policy aspect of national money management was of secondary importance. With fiat money and loose or nonexistent ties to a commodity standard, monetary policy became the ultimate determinant of the quantity and quality of money stock. In a broad sense, the goal that has emerged is to provide an amount of money consistent with sustainable economic growth and the avoidance of such undesirable economic conditions as inflation or recession.

Conducting monetary policy in such a noninflationary and nonrecessionary manner, however, is somewhat more difficult than a casual investigation might reveal. It is not simply the absolute quantity of money in circulation that affects economic conditions; rather, it is the relationship between the quantity of money supplied and the quantity of money demanded.

The quantity of money supplied is controlled by the Federal Reserve and can be measured, but an acceptable measure of desired money balances is not yet in the economist's tool box. Money balances deflated by some index of the general price level are often used because they are supposed to reflect influences of both money demand and supply. As a result, the concept of *real* money balances has been advocated by some analysts as a leading indicator of economic activity and as an intermediate target of monetary policy. In other words, it has been suggested that a decline in observed real money balances leads to a decline in economic activity and that monetary policy should therefore be conducted so as to prevent such declines in real balances.

Changes in observed real money balances, however, do not necessarily indicate forthcoming changes in the level of economic activity and, even if they frequently have in the past, do not necessarily call for offsetting changes in monetary policy. As a matter of fact, changes in the nominal money stock designed to offset changes in real money balances can easily produce procyclical effects and compound the very economic

problems which are supposedly being combatted. In order to illustrate this point, a simplified theoretical construct is described which utilizes real money balances in the decisionmaking process. Issues are raised which pertain to the use of these balances as a target of monetary policy and some evidence is presented for the 1947-74 period.

## *What are Changes in Observed Real Money Balances Supposed to Indicate?*

All decisionmaking units in society hold their wealth in inventories of various assets. Businesses have stocks of raw materials, finished goods, buildings, and machinery. Banks hold inventories of loans, bonds, and real estate. Individual households keep their wealth in the form of land, homes, automobiles, stocks of food, clothing, labor skills, and financial instruments. All of these economic units have inventories of money — cash and/or demand deposits.

Some of these inventories are held because they provide current services (homes, automobiles, food, raw materials), some because they are expected to provide future services (stocks, bonds), but most provide a combination of the two. Since at any given time these inventories are viewed as an investment portfolio, the value of each item depends upon its convertibility into other goods and services, that is, upon its *generalized* purchasing power. Consequently, the value of each asset is perceived as its *nominal* value (its current price multiplied by quantity) divided by a *general* price index. This is the foundation of the assertion that economic decisions are made on the basis of *real* balances.

The size of an individual's portfolio is a measure of an individual's wealth. The distribution among various assets is determined by subjective tastes and preferences, existing relative prices, and expectations as to future relative prices and the *price level*. At any point in time an individual attempts to arrange this portfolio in such a way as to maximize the satisfaction derived from wealth. Any change in wealth, tastes, relative prices, or expectations will pro-

duce a discrepancy between the desired and actual portfolio and a reshuffling of assets will result so as to achieve a new equilibrium.

For example, an unexpectedly bountiful wheat crop would increase the actual wheat balances of some individuals above the desired level. With everything else remaining constant, this would increase the wealth of owners of wheat, and thereby total wealth, and increase their desired balances of most other items. In order to reduce wheat stocks to the desired level and increase other balances to their equilibrium size, economic units will attempt to exchange wheat for money and money for other assets. In the process, both the relative price of wheat and the general price level will fall (increased aggregate wealth has caused an increase in desired real money balances and since actual money balances cannot be increased by the private sector, the general price level must fall in order for real money balances to reach their desired level). Changes in the relative prices of existing assets will then induce changes in the rates of production of new assets and corresponding changes in the prices of new output.

Although this analysis applies to any asset in the portfolio, real money balances are especially crucial. Autonomous changes in all sorts of assets *can* affect economic activity, but the nominal stock of money is controlled by monetary authorities. In a money economy any portfolio shuffling will disturb the inventory of money (people seldom barter) and until desired and actual real money balances are equated, changes will continue. Thus, policy tools can be used to control or induce these portfolio changes.

For instance, suppose that an increase in the nominal money stock causes actual real money balances to be larger than desired. In attempting to reduce their balances (relative to other assets in the portfolio), people will try to acquire other assets, whose prices will then be bid up. Exchanges of money for assets will continue until the increase in the general price level reduces real money balances to their desired level.

A crude interpretation of this theory suggests that *any* decline in observed real money balances implies a fall below some desired level. In the process of attempting to restore real money balances to the desired level, economic units sell other assets bidding down their prices. This induces a reduction in output, employment and prices of current output. If the goal of monetary policy is to stabilize output, employment, and prices, a correct policy prescription would be to

increase the stock of money in order to reverse the process. Thus, in this situation *observed* real money balances become both a predictor of changes in economic activity and a target of monetary policy.

Such an interpretation, however, is an example of the crudest form of monetarist thought; it assumes that changes in economic activity emanate *solely* from changes in the money stock. Only under such an assumption can decreases in observed real money balances be invariably interpreted as indicative of the process described in the paragraph above. But, as shown in the wheat example, changes in observed real money balances can easily occur when there are unexpected changes in output or changes in expectations, each of which can be a result of many causes.

### *What Do Changes in Real Money Balances Actually Indicate?*

Again, real money balances are defined as the ratio of nominal money balances to some generalized price level. As Illustration I demonstrates, there can be several causes for the decline in this ratio, indicating different forecasts and different policy implications.

Let us start with case I where nominal money balances decline and desired real money balances remain constant. This is a case in which, clearly, an observed reduction in real money balances implies an economic contraction; the correct countercyclical policy would be an expansion in the money stock.

In case II, nominal money balances remain constant while a rising price level causes real money balances to decline. Here, these events would follow from a decline in *desired* real money balances due to an autonomous decline in wealth, the result, perhaps, of a natural catastrophe. Since such a fall in wealth must encompass a reduction in output, the observed decrease in real money balances would correctly predict a recessionary tendency but would *not* call for an expansionary monetary policy. With exogenous events causing the contraction in wealth and output, an increased money stock would only contribute to the rising price level without countering the real market contractive forces.

The third case is identical to II in terms of the cause of falling real money balances except that here *desired* real money balances decline because of an expectation of accelerating inflation. Individual decisionmakers would attempt to protect their real wealth by reducing their holdings of monetary assets, including real money balances, by buying other assets and thus increasing the demand for output. In these cir-

Illustration I

SOURCES AND CONSEQUENCES OF DECLINING REAL MONEY BALANCES

	CASE I Current Decline in Nominal Money Stock Growth	CASE II Current Autonomous Decline in Wealth	CASE III Current Increase in Expectations of Inflation	CASE IV Past Autonomous Decline in Wealth	CASE V Past Increase in Expectations of Inflation	CASE VI Past Increase in Nominal Money Stock Growth
Current Observations						
Nominal Money Stock Growth	Declines	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
Price Level	Unchanged	Increases	Increases	Increases	Increases	Increases
Desired Real Money Balances	Unchanged	Declines	Declines	Unchanged	Unchanged	Unchanged
Output Growth	Declines	Declines	Increases	Unchanged	Unchanged or Increases	Unchanged or Increases

cumstances a decline in real money balances is associated with an increase rather than a decrease in output; again, an increase in money stock would only serve to reinforce anticipations of inflation and strengthen the inflationary push.

Of these three cases, a decline in observed real money balances gives a "correct" signal of an impending decline in output in two cases and an "incorrect" signal in the other. In addition, only in case I is an offsetting increase in the money supply appropriate. These are not the only possible situations; consideration of additional cases shows observed real money balances to be an even more unreliable indicator and target for monetary policy.

Empirical evidence strongly suggests that changes in aggregate demand produce changes in output and prices with a lag. Thus there are at least three additional ways in which falling real balances can produce erroneous forecasts and damaging policy prescriptions. Case IV shows a decrease in currently observed real balances resulting from an increase in the price level which, in turn, results not from a *current* decrease in desired real money balances (as in II and III) but from a *past* decrease. This could be caused by an autonomous wealth decrease in previous periods and would not indicate a decrease in output now or in the future. In this case output would fall at the time of the wealth decrease, but observed real money balances would be unchanged initially. Real money balances would fall only later. This case would be expected in a situation where prices are relatively inflexible in the short run—a situation not far from reality. Thus, although this case is analogous to case II, it would produce both a faulty forecast (in that the prior decrease in output was missed) and a faulty policy recommendation.

Case V is similar to IV except that a past decline in desired real balances is caused by a past change

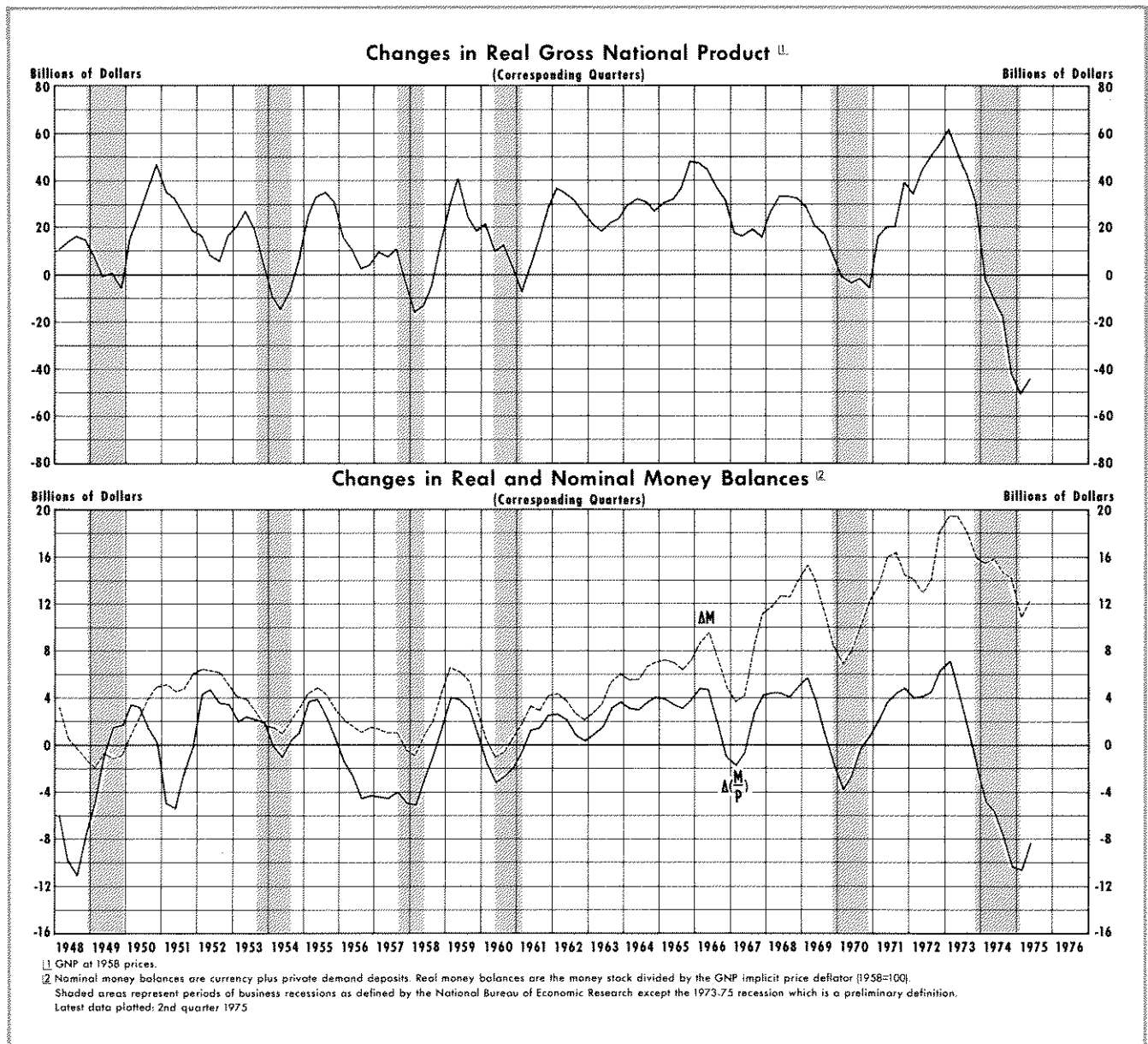
in expectations regarding the future level of prices. The current price level is rising because of a lagged adjustment to a past disequilibrium and *observed* real money balances are falling. This again does not indicate current or future reductions in output. On the contrary, growth of aggregate demand actually has accelerated. The decline in observed real money balances again emits incorrect signals with respect to forecasts and stabilization policy.

The final alternative VI is one in which the current price level is rising due to a past expansion in the nominal money stock, with current and past desired real money balances remaining constant. The current decrease in real balances represents an adjustment to a past increase in those balances. The implication of this observation is that output has risen already in response to the initial discrepancy between desired and actual real money balances and the current price level is rising with a lag. There is no reason to expect current or future contractions in output. Again, misleading information is provided by the real money measure.

In addition to the above described alternatives, there are numerous situations where different *rates* of change may produce similar results. Their effects are analogous.

In summary, there are three basic causes of declining observed real money balances, each with distinct implications:<sup>1</sup> case I, for which the forecast of declining output and the recommendation for expansive monetary policy would be correct; case II, for which the forecast for declining output would be correct but an expansive monetary policy would only create or intensify inflationary pressures; and cases

<sup>1</sup>There is also the lingering problem of measurement. Observed real money balances are dependent on price indexes and thus suffer all of the problems peculiar to index numbers. Care must be taken lest the price *index* replace actual prices in the analysis.



III-VI, for which the forecast would be incorrect and expansion of the money stock would be the wrong policy action.

*Historical Evaluation*

The experience of the past gives several examples of the inherent dangers of using observed real money balances as both a forecasting device and as a target for monetary policy. In most situations real money balances have performed reasonably well as a precursor of declines in economic activity. The exceptions are notable, however, and offer persuasive evidence against the use of observed real money balances in policy discussions.

The accompanying chart depicts corresponding quarterly changes in real GNP, the nominal money stock ( $M_1$ ), and real money balances ( $M_1$ /GNP price deflator).<sup>2</sup> Simple visual inspection clearly indicates that most of the recessions since 1947 have been preceded by declines in real money balances and corresponding decreases in the rate of growth of nominal money stock. These episodes would fall into our case I, where decreases in real money balances resulted from a restriction in the rate of monetary expansion. This observation ostensibly supports changes in real

<sup>2</sup>The chart reports the dollar change in each magnitude from the corresponding quarter one year earlier. This procedure is used in order to smooth the data and thus present a clearer picture of the relationships.

money balances as both a good forecasting device and a good target for stabilization policy.

The 1950-51 period stands out as an exception, and is more like case III. Although real money balances fell precipitously, the growth of nominal money balances remained relatively constant and a recession did not develop. The sudden outbreak of war in Korea in 1950 apparently induced expectations of commodity shortages resulting from anticipated price controls and rationing programs. This mood of speculation caused a shift in the desired portfolio of assets that people held.<sup>3</sup> *Desired* real money balances were reduced, as an attempt was made to shift out of money and into inventories of other assets. The result was a rapid rise in the price level. Thus, while observed real money balances fell sharply, aggregate demand increased rapidly. The decline in real balances incorrectly forecast a recession and increased growth of nominal money to offset the reduction in real money balances would have served only to aggravate the situation.

A second period in which real-balance-watching yields faulty policy prescriptions encompasses 1973 and the first part of 1974, when the behavior of real and nominal balances diverge sharply. It appears that this period illustrates a combination of cases II and VI. Although the decline in real money balances correctly indicated the reduction of output in early 1974, expansionary monetary policy during that period would have been powerless to stem it. The rate of growth of nominal money did slow in 1973; but since most, if not all, of the decline in output in the first three quarters of 1974 was due to the wealth-reducing effects of the energy situation, bad agricultural harvests, and new government regulations, the effect of slower money growth on economic activity is uncertain. This wealth loss would serve to reduce the *domestic* demand for real money balances. The latter part of 1974, of course, exhibited all the attributes of case I.<sup>4</sup>

<sup>3</sup>The mood was, "we had better get it now while we still can." Thus purchases of goods and services that, in normal times, would have taken place over a period of several years were attempted all at once. The sharp rise in the price level in 1950-51 was followed by several years of price controls and price level stability, and there is evidence that the level of prices in 1955 was approximately the same as what would have been achieved without the shock of the Korean war. Instead of rising smoothly through the 1950-55 period, prices rose very rapidly early in the period and then remained stable. See Michael K. Evans, *Macroeconomic Activity* (New York: Harper & Row, 1969), p. 301.

<sup>4</sup>Advocates of the analytical power of real money balances also point to the rate of growth of output in 1973 as

### *Summary and Conclusion*

There is a significant number of economists and policymakers who assert that all changes in observed real money balances precede corresponding changes in economic activity and that monetary policy should be geared to counter these changes. This article attempts to explain that such a view assumes that all changes in economic activity emanate *solely* from changes in the nominal money stock — an assumption which is warranted by neither existing monetary theory nor empirical observations.

Although it is agreed that real money balances play a crucial role in the determination and prediction of economic activity, the assertion that *observed* real money balances provide us with sufficient information to make accurate predictions and policy decisions is unwarranted. We have enumerated several instances where changes in observed real money balances would produce incorrect predictions and several where, even if predictions were correct, wrong policy proposals would result. Empirical observations indicate that since 1947, blind reliance on observed real money balances would have compounded cyclical fluctuations on at least two occasions.

Examination of logical constructs and economic history over the past 30 years implies that changes in *nominal* money balances would be a preferable predictor and target of monetary policy. This should not surprise even those who advocate the use of observed real money balances since it limits the changes in these balances to a set where the causal determinant of the change is indeed a change in the nominal money stock. Again, the use of real balances as a pivotal variable in economic decisionmaking is not rejected, but it is suggested that *observed* real money balances have a lower probability of correct prediction of changes in economic activity and correct policy suggestions than nominal money balances.

offering supporting evidence. Observed real money balances began to decline early in the year, just as the rate of growth of real GNP slowed markedly. There is danger here, however, in that the initial decline in real balances resulted from the not unexpected burst of price increases which followed the removal of most price controls. This was a case where behavior of the price index may have been very different from movements in the actual level of prices. Both theory and evidence suggest that price controls are effective in controlling only the price index but not actual inflation, which is then only suppressed in the data. The *actual* rate of inflation during the period of controls in 1971-72 was probably higher than reported in the indexes and was somewhat lower in 1973. Thus actual real money balances were probably somewhat lower than reported in 1971-72 and somewhat higher in 1973. The decline in *observed* real money balances in 1973 was, therefore, probably overstated.