Money Supply, Portfolio Adjustments and Stock Prices

by MICHAEL PALMER

THE search for an understanding of the stock market has long attracted both the academician and the stock trader. As a result, this area has produced a number of explanatory stock market models ranging from those based upon rigorous analytic frameworks to questionable intuitive reasoning.

This study explored the relationship of movements in the nation's money supply to fluctuations in common stock prices. The analytic framework employed in this investigation rests upon the classical quantity theory of money. Basically, this theory regards changes in the stock of money as the major causal factor producing immediate changes in aggregate monetary demand and eventual fluctuations in total output and/or price levels. According to the quantity theory of money, fluctuations in the money supply will influence the willingness of individuals to exchange money for goods, services and assets. This exchange leads to changes in total spending, which in turn, will exert important influences on the trend of the economy.

Specifically, this investigation suggests that primary changes (defined as a trend occurring over a period of months) in the nation's money stock may motivate the private sector to adjust its wealth portfolios in such a manner as to yield predictable movements in the prices of corporate securities. The model focuses on primary changes in the money supply and common stocks. Thus, the investigation makes no attempt to incorporate short-run (daily or weekly) fluctuations into the model.

1. Footnotes appear at end of article.

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The Model

This investigation utilized the following assumptions and definitions:

(1) Changes in the rate of growth of the nation's money supply (defined as demand deposits plus currency in circulation) are determined independently of private control. The responsibility for establishing the nominal amount of the nation's money stock rests with the Federal Reserve System. The private sector, of course, can influence the real amount of the money supply by bidding price levels up or down. Once the nominal supply has been established, however, individuals cannot materially influence that amount.[1] This nominal amount, determined by the Federal Reserve System, is referred to as the nation's actual money supply.

(2) Desired (as opposed to actual) money balances relate to the total wealth and the transactions needs of the individual. The desire to hold money balances as part of one's total wealth relates to the individual's desires for liquidity balances.[2] Liquidity considerations correspond to the individual's attitudes regarding risk. Risk attitudes, in turn, will determine the individual's demand for precautionary-liquid balances. Generally speaking, as the size of an individual's portfolio increases, the smaller will be the proportion of money balances (and highly liquid assets) held.

Transactions money balances of the individual relate to the consumer's level of disposable income. As disposable incomes increase, money balances held for transactions purposes would also rise.

(3) Changes in the rates of growth of the money

supply will place the private sector in a state of liquidity disequilibrium (measured by the ratio of money balance to total wealth[3]). This disequilibrium results from the fact that changes in the rates of growth in the money supply, over the short run, (1) will probably not produce immediate changes in real disposable income but (2) will initially influence money balances held relative to total wealth. Therefore, given a change in the growth of the money stock, initiated by Federal Reserve policy, actual money balances held by the private sector will depart from desired balances.

(4) As actual money balances depart from desired balances, the private sector's portfolio will either contain excess or deficient cash balances. Although the private sector as a whole cannot increase or decrease the money supply, individual spending units will attempt to return to equilibrium by adjusting the money balance of their wealth portfolios. The extent to which one individual succeeds, however, will be at the expense of another. For example, in the case of excess money balances, the individual units initially affected by money supply changes will adjust their portfolios by substituting money balances for financial assets. As these individuals purchase existing financial assets, however, the individuals selling their assets will now incur liquidity disequilibrium.[4] Thus, the initial liquidity imbalance will be transmitted throughout the economy, or at least to those individuals involved in the buying and selling of assets.

The Money-Stock Price Relationship

This investigation suggests that changes in the rates of growth of the private sector's stock of money may influence that sector's desire to substitute money balances for other financial assets. This substitution, in turn, may generate pressures leading to changes in the prices of these financial assets.

Given this relationship, two general situations can be explored:

(1) An increase in the rate of growth of the money stock may generate excess liquidity. This disequilibrium may motivate the private sector to substitute excess money balances for less liquid financial assets such as corporate stocks. This substitution may lead to increased buying pressures on these less liquid financial assets. Intensified buying pressures, in turn, may engender price level increases with respect to these particular assets.

(2) A decrease in the rate of growth of the money stock may create a deficit liquidity situation. This disequilibrium may encourage a shift from less liquid financial assets into money. The result of the private sector's attempt to achieve liquidity equilibrium may generate selling pressures on these less liquid financial assets which may produce general price decreases.[5]

The Data

This study investigated the relationship between money supply changes and stock prices for the period January 1959 through August 1969. The money supply was defined as demand deposits plus currency in circulation, seasonally adjusted. Stock prices were measured by the Standard and Poor's 425 Industrial Stock Index. Data were compiled on a monthly basis and gathered from Federal Reserve Bulletins and Standard and Poor's Security Price Indexes.

Both monthly time series were first converted to percentage changes in an attempt to minimize secular growth factors. Second, the monthly percentage changes were transformed to annual rates. Third, in an effort to smooth out the time series, the annual rates of monthly change were converted to a six-month moving average.

The Findings

The findings of this investigation support a distinct relationship between changes in the nation's money supply and movements of common stock prices. This relationship from January 1959 through August 1969 is illustrated in Chart 1. The observed relationship between the two series is close except from the first quarter of 1964 through the last quarter of 1965. Generally, the relationship becomes better the longer the trend in the money supply continues. This observation may explain the poor fit during the shorter period mentioned. From the first quarter of 1964 through the last quarter of 1965 trends in the nation's money supply were not as long as in other years. Thus, the influence of liquidity changes during this period may have been minimized by relatively short run variations in the direction of the money supply.[6]

The second observation noted from Chart 1 is the close relationship between the turning points of the two series. For the most part, where a lead relationship exists, the money supply leads by a few months at most.[7] The obvious discrepancy to this lead-lag relationship occurred in the first quarter of 1967 when a change in the stock market lead a downturn in the money supply by a couple of months.

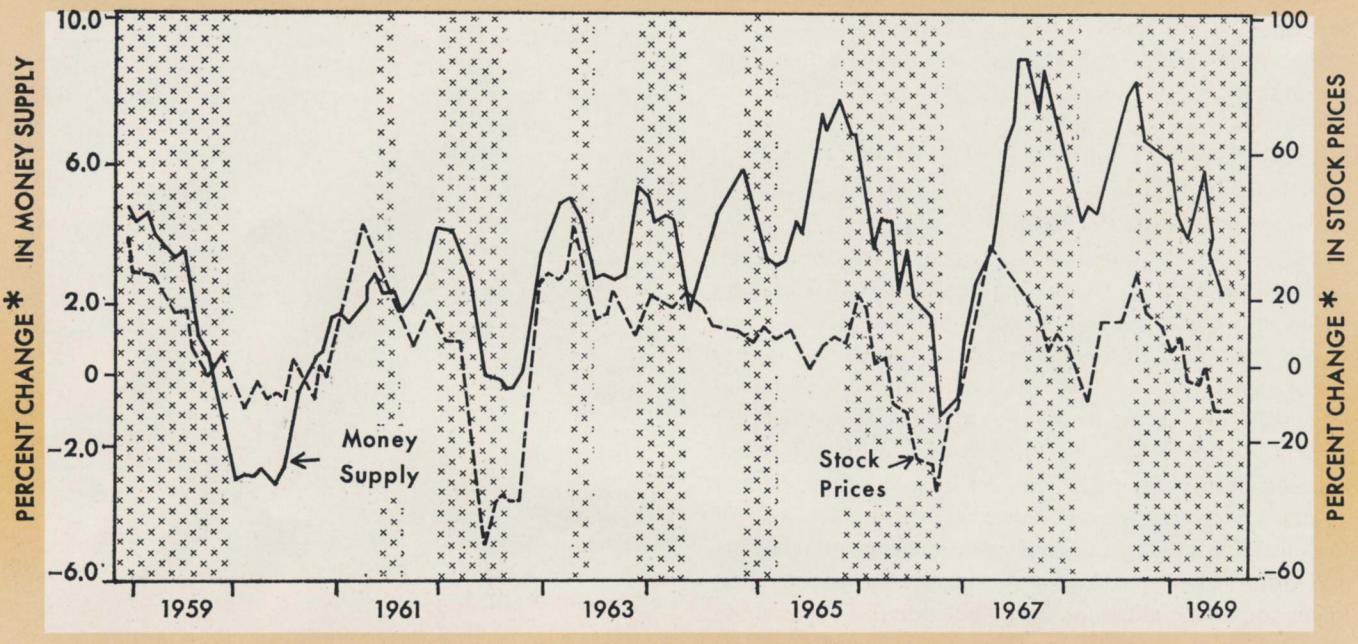
The third observation is the degree of change associated with the two time series. Generally, a one per cent change in the rate of growth of the nation's money supply is associated with a change of approximately 2 per cent in stock prices.

Refinements

A Priori, it appears that there may be a difference in the influence of liquidity disequilibrium on stock prices depending upon the scope of open market operations employed by the Federal Reserve System. For example, if the Federal Reserve System bought short-term Gov-

CHART 1

MONEY SUPPLY AND STOCK PRICES, 1959-1969



Liquidity Favorable for Stocks

Liquidity Unfavorable for Stocks

Source: Federal Reserve Bulletin and Standard & Poor's Security Price Index.

*Annual rate of monthly change, six-month moving average.

ernment securities (Treasury bills), the private sector's liquidity disequilibrium may not be as serious as if the Federal Reserve System had purchased long-term Governments. When Treasury bills are involved, the private sector's wealth portfolio has shifted from a highly liquid financial asset to money.[8] Thus, in terms of liquidity distribution, the private sector's wealth portfolio has not undergone a drastic change as a result of Federal Reserve policy. More important, there may be little desire, initially, to shift from money balances into less liquid types of financial assets. Instead individuals may hold their new money balances or may convert them back into highly liquid assets. However, if investors do convert excess money balances into highly liquid assets and in doing so bid up the prices on these highly liquid assets, future investors might eventually move down the spectrum of liquid assets and purchase the less liquid financial assets. Thus, the rank of financial assets affected may widen due to relative price changes.

When the Federal Reserve purchases long-term Government securities, the liquidity imbalance of the private sector may be more acute. In this situation, the distribution of the private sector's wealth portfolio has shifted from a longer term financial asset to cash. More important, these long-term Government securities are generally regarded as being less liquid than Treasury bills. Therefore, in the case of long-term Government securities, the liquidity distribution of the private sector's wealth portfolio has probably experienced a relatively greater change than if Treasury bills had been involved. In an attempt to correct the liquidity disequilibrium, individuals may initially turn to less liquid financial assets.

In summary, liquidity imbalances may eventually influence less liquid financial assets through a filtering process with investors initially converting new money balances into financial assets similar (in terms of liquidity) to those released. As prices are bid up on existing financial assets investors may move along the liquidity spectrum of assets to less liquid assets. Therefore, assuming that investors first turn to financial assets similar to those they sold, the closer the degree of liquidity of the initial asset purchased by the Federal Reserve to

corporate stocks, the shorter the time period between a change in the rate of growth of the money supply and fluctuations in stock prices. Thus, while the eventual outcome under either Federal Reserve policy may be an influence on the price of less liquid financial assets, the effect may be quicker if long-term Government securities are the target of Federal Reserve policy.

Summary and Conclusions

Data from January 1959 through August 1969 support a close relationship between changes in the nation's money supply and common stock prices. The framework used to explain the observed relationship was suggested by the classical quantity theory of money. Basically, this theory regards money supply variations as the causal factor producing eventual changes in asset prices.[9]

The predictive value of this explanatory model with respect to general market activity appears to be good. For the most part, where the lead-lag relationship was long enough to show on Chart 1, the lead is in favor of the money supply. In addition, where the turning points are extremely close there still appears to be sufficient time for the investor to gauge the future course of the market.

The implications of this investigation with respect to future stock market activity rests, of course, with the future monetary policy directives of the Federal Reserve Board. 1969 was a year of tight monetary policy and the stock market reflected the slow down in the rate of growth of the nation's money supply in terms of depressed prices. The outlook for 1970 is unclear. Monetary policy, it appears, will still be called upon to fight our continuing inflation. Unless a reversal of inflationary pressures (or an unacceptable increase in unemployment) occurs in 1970, monetary policy can be expected to continue as throughout 1969. This, of course, would translate to a continued slow rate of growth of the money supply and a depressed stock market similar to 1969. On the other hand, if inflationary pressures are brought under control or if tight monetary policy generates an unacceptable level of unemployment, the Board of Governors of the Federal Reserve System may move in a direction of monetary ease which, according to this research, could have a bolstering effect on the stock market. ♦

Footnotes

1. For example, conversion from money into near money holdings will not change the private sector's money stock. Movements of funds into such nonbank financial intermediaries as Savings and Loan Associations merely shift the holdings of money balances . . . i.e., from individuals to nonbank institutions—but do not alter the dollar amount outstanding.

   It should be noted, however, that currency withdrawals (shifting from demand deposits into currency) by individuals will reduce the reserve base of commercial banks and thus curtail their lending ability. If no counter policy is undertaken by the Federal Reserve System, the ability of commercial banks to make loans and, in turn, expand the nation's money supply, will be reduced.
2. Money balances are just one of a number of highly liquid assets which the individual may hold as part of his liquidity portfolio.
3. Measured by the total of financial and real assets.
4. Unless, of course, the individual selling the financial asset had been in an initial state of deficient liquidity disequilibrium.
5. A third situation can be noted. In theory, a constant rate of growth in the money stock compatible with real growth in economic output, should produce no serious longer-run liquidity. One would expect the demand for liquidity balances to increase as real output and, in turn, incomes increase. Under this third situation, one may ponder as to the forces producing general asset price changes. Probably such changes would be related to the economic outlook, emotional pressures, and changing preferences among investors for financial assets. Moreover, these forces would be unrelated to money stock (and thus liquidity) changes.
6. This observation was confirmed by the use of regression analysis. The analysis resulted in the following R's:
   1) January 1959 - December 1963 = .6560
   2) January 1964 - December 1965 = .0043
   3) January 1966 - August 1969 = .6105
   4) January 1959 - August 1969 = .4430
7. Unfortunately, due to the shift in the lead period, statistical methods did not determine a specific lead period.
8. Money, of course, being the most liquid of all assets.
9. For a similar discussion of this approach to the money supply—stock market relationship, readers should examine: Beryl W. Sprinkel, *Money and Stock Prices.* (New York: Richard D. Irwin, Inc., 1964).