

## The Changing Structure of the Money Market\*

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Perhaps the most striking characteristic of the performance of the money market during the past few years has been the unusual stability of interest rates on a day-to-day and week-to-week basis. During the past two years, in particular, there have been stretches of many weeks in which three-month Treasury bills, for example, moved within as narrow a band as 2 or 3 basis points. A broad view of the market reduction in short-run rate fluctuations in recent years may be obtained by noting the average issuing rates emerging from the weekly auction of three-month Treasury bills over the past several years. As shown in the upper panel of the accompanying chart, the average issuing rate on these bills in successive weekly auctions has gradually but consistently recorded smaller changes since 1960. The average absolute week-to-week change was only 3 and 2 basis points in 1963 and 1964, respectively, compared with average changes of 18 basis points in 1958 and 23 basis points in 1960.

What is the explanation for the extraordinary short-run stability of rates in recent years? The most fundamental part of the explanation, I believe, is to be found in the stable behavior of the economy itself. But also of great importance in this connection are certain changes that have emerged in the money market mechanism, and the response of the monetary and debt management authorities to our persisting balance-of-payments problem in a context of interdependent national money markets. I shall deal with these factors in turn.

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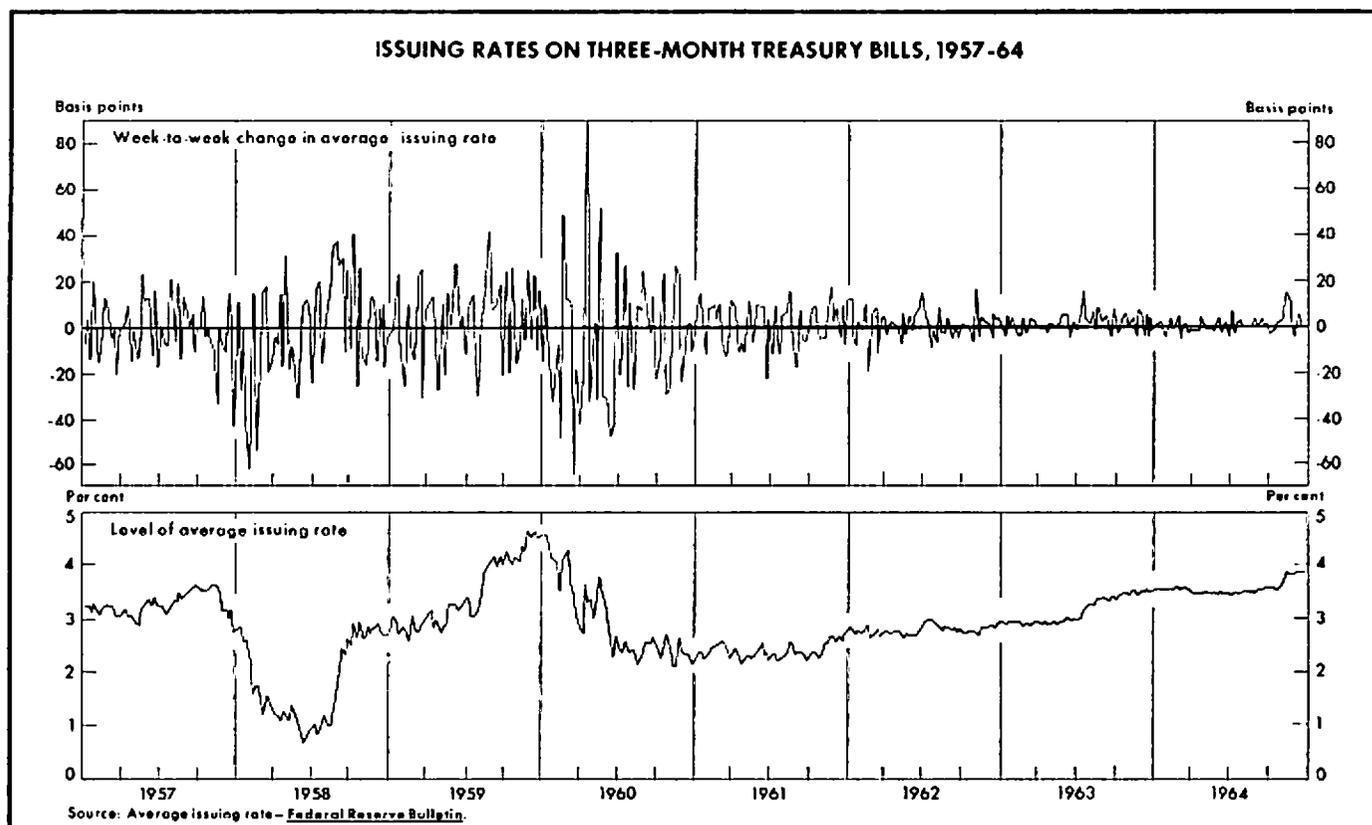
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### RATE FLUCTUATIONS AND THE BEHAVIOR OF THE ECONOMY

We have experienced, in the nearly four years since early 1961, a generally steady, orderly, and noninflationary rise in economic activity. Business forecasts have alternated from moderately bullish to mildly bearish to more of the same, but no matter how forecasters have behaved, the economy has worked its way more or less steadily upward, generating credit demands that by and large appear to have been attuned to current needs and generating simultaneously a substantial flow of savings. At the same time, monetary policy, both responding to and reinforcing the stable character of the economic advance, has been generally stimulative and has remained unchanged for extended periods during the last four years. Moreover, abstracting from the two discount rate increases over the past eighteen months, the few changes in monetary policy that have occurred have generally taken the form of subtle, delicate shadings that have avoided the setting-off of sharp expectational reactions—and subsequent corrections—in financial markets.

The steady economic advance since early 1961 is in sharp contrast to the path of the economy during the preceding four years. After reaching a peak in 1957, the economy entered upon the short but sharp recession of 1957-58; that recession, in turn, evolved into the economic spurt of 1958-59; and in 1960 the economy underwent another recession, the low point of which was reached in early 1961. Monetary policy changed with the economy during those years, moving to a more stimulative posture in several steps in late 1957 and the first part of 1958, then moving in stages toward restraint in late 1958 and 1959 before turning once again toward a stimulative posture early in 1960.

The broad pattern of interest rate behavior in the two periods 1957-60 and 1961-64—quite apart from short-



run, day-to-day, and week-to-week fluctuations—was significantly different, reflecting in large part the marked differences in the behavior of the economy and the associated differences in the course of monetary policy. Thus during 1957-60, three-month Treasury bill rates—to use that rate again as a proxy for short-term rates generally—moved between a low of 0.64 per cent and a high of 4.67 per cent, a range of 403 basis points. (See the lower panel of the chart.) Intermediate- and long-term rates also moved within rather wide limits. In contrast, during the period 1961-64, three-month bills moved between a low of 2.19 per cent and a high of 3.89 per cent, or a range of only 170 basis points;<sup>1</sup> and intermediate- and long-term rates also moved within a considerably narrower band than in the earlier period.

Given the broad pattern of rate stability during the past few years and the generally stable economic conditions that produced it, there has been considerably less scope

for significant short-run fluctuations in rates than formerly, when rapid cyclical change in the economy produced considerable volatility in rate expectations and in demand-supply conditions affecting rates. But while the broad pattern of rate stability associated with the generally stable performance of the economy in recent years is a highly important reason for the relative absence of significant short-run fluctuations in rates, it is by no means a sufficient reason. Fairly wide short-run fluctuations around a generally stable rate level are easily conceivable, and have occurred in the past. But they have not occurred this time. Why? As suggested earlier, an important part of the answer to this question may be found in some significant structural changes that have occurred, and are still occurring, in the money market mechanism itself.

#### STRUCTURAL CHANGES IN THE MONEY MARKET

What I refer to as structural changes in the money market consist essentially of a growth in the kinds of money market instruments and the volume of each, and an associated growth in the number and the degree of

<sup>1</sup> Until the discount rate increase of late November 1964, the range had been only 140 basis points.

aggressiveness and sophistication of money market participants. This combination has tended to damp short-run movements in rates on individual money market instruments relative to changes in rates on other money market paper and also, within the framework of the broad pattern of rate stability associated with the stable performance of the economy, to damp such fluctuations in all money market rates together as might nevertheless have occurred. I should add that, while some of the market changes discussed below are new, most of them consist of refinements and extensions of earlier practices. What are these changes?

**THE GROWTH AND DEVELOPMENT OF THE FEDERAL FUNDS MARKET.** The Federal funds market has undergone in recent years a rapid process of growth that as yet shows little sign of abatement. Currently published data on the transactions of 46 major banks across the country which tend to be the largest participants in the Federal funds market offer a partial glimpse of the volume of funds that passes through that market. Gross purchases and sales of Federal funds by those 46 banks during the eighteen statement weeks ended in July through October of 1964, for example, averaged about \$3.0 billion per day.<sup>2</sup> The staggering sums that move through the market daily reflect not only the more active, aggressive use of it by large banks, but also the participation of a growing number of medium-sized banks and even some relatively small ones. Indeed, several large regional money market banks across the nation have developed arrangements with their "country" correspondent banks under which they acquire and pool the excess reserves of the latter and keep them employed in the Federal funds market.<sup>3</sup>

The size and efficiency of the funds market have helped make possible some of the highly aggressive and flexible market practices that in turn have tended to damp short-term fluctuations in rates on individual money market instruments. One of the more significant of these practices is the use by many bank money position managers of Federal funds and Treasury bills as virtual substitutes in the employment of money at short term. It is not new, of course, for banks with a margin of liquid resources available for investment to put those resources into bills when that rate is attractive relative to the funds rate and

into Federal funds when the reverse is true. But the number of banks engaging in this "arbitraging" practice has increased markedly in recent years; and, in particular, there has been a sharp narrowing of the rate differentials that activate such switches of money between bills and Federal funds. To illustrate, a few months ago, when three-month Treasury bill rates were moving closely above and below the 3.50 per cent level at which the Federal funds rate was almost always to be found, officials of several large banks informed me that it was their practice to move sizable amounts of money out of Treasury bills into sales of Federal funds when the three-month bill rate declined to 3.47 or 3.48 per cent and to pull their money out of the Federal funds market and put it back into the bill market when the latter reached 3.52 or 3.53 per cent.<sup>4</sup> Furthermore, any particular bank's use of the Federal funds and Treasury bill markets in this way is not limited by the amount of its own resources that it may have available. A great many banks will buy Federal funds and immediately reinvest those funds in bills (and in other outlets, including loans to Government securities dealers) when worthwhile rate differentials appear. This kind of active money management tends to damp short-term fluctuations in Treasury bill rates.

The interaction that has developed between the Federal funds and Treasury bill markets is, of course, closest when the funds rate is generally stable—as it is when bank credit demand in relation to reserve availability is such as to put it at the discount rate most of the time. But it should be noted that the relationship between the Federal funds rate and the Treasury bill rate tends to be relatively close even when the funds rate is somewhat below the discount rate, as evidenced particularly by the experience of 1962 and early 1963, when the two rates seldom diverged by much, or for long, despite the fact that the funds rate was most often below the discount rate. While the Treasury bill and Federal funds rates tend to move closely together when the latter is at or somewhat below the discount rate, they have diverged for extended periods when the bill rate was above the discount rate. Under the reserve conditions that tend to prevail at such times, Federal funds are not a reliable source of supply of resources to carry a bill position—as they generally are under easier reserve conditions. Moreover, the discipline exercised at the "discount window" insures that Federal

<sup>2</sup> *Federal Reserve Bulletin*, September 1964, p. 1150, and November 1964, p. 1430.

<sup>3</sup> This practice has probably been an important factor in producing the generally lower levels of country bank excess reserves that have emerged in the past year or so.

<sup>4</sup> Costs involved in paper work, deliveries, etc., are such that transactions within the narrow limits indicated here must be of large size to be profitable. Smaller banks engaging in such "arbitrage" activity have somewhat wider limits in mind.

Reserve advances are also not a source of supply that is on call repeatedly. Very recently, some banks have begun to bid for Federal funds at rates above the discount rate, primarily for the purpose of acquiring a larger volume of resources for lending and investing. It is likely that such additional funds as are obtained by individual banks in this way will, in part, be re-loaned to Government securities dealers, who must, of course, borrow to carry their inventories of securities. If the banks willing to pay above the discount rate for Federal funds should develop fairly reliable sources of supply at that higher rate, it is likely that they will also use such funds to reinvest in bills if the spread in favor of the latter is attractive. This would tend to damp rate fluctuations in bills even when they are trading at levels above the discount rate.

**THE GROWTH AND DEVELOPMENT OF OTHER MARKET INSTRUMENTS.** Banks and other money market participants have long undertaken "arbitrage" operations in which they have switched money back and forth among the various short-term instruments, and rates on those instruments have therefore been linked and the markets for them interconnected. In recent years, however, the links have become stronger and the interconnections tighter. The strong urge of a growing list of economic units—banks, corporations, states, and municipalities, to name only the more prominent of them—to keep cash balances fully employed at the maximum return compatible with risk and liquidity considerations has, under the economic conditions that have obtained in recent years, produced an active demand for a large volume of short-term instruments and for efficient markets in which they can be traded. And those same economic conditions—and policy efforts to deal with our persisting balance-of-payments problem—have resulted in a larger and larger supply of liquid debt instruments to meet that demand. Thus the aggregate volume of Treasury bills has expanded by 39 per cent to \$55 billion since the end of 1960 (the volume held by the public increased by 32 per cent to \$47 billion). The volume of commercial paper outstanding has grown by 87 per cent to \$8.4 billion;<sup>5</sup> bankers' acceptances have grown by 57 per cent to \$3.2 billion; short-term (within one year) paper of Government agencies has risen by 62 per cent to \$7.1 billion; and time certificates of deposit, which were relatively small at the end of 1960, have burgeoned to the point where the

weekly reporting banks alone now have nearly \$13 billion outstanding.

This impressive growth in the volume of money market instruments outstanding, and the rise in the number and level of sophistication of the economic units investing in them, have been accompanied by an increase in the efficiency of the markets in which the instruments are bought and sold—and, in the case of certificates of deposit, by the development of a broad new market. There are, of course, great differences in efficiency among the various markets, but each is more efficient than formerly. Hence, a given volume of any short-term instrument can now move through the market for that instrument with a lesser change in prices and rates than was formerly the case; or, to state the proposition inversely, for a given change in prices and rates, the amount of securities that can be traded is now larger than formerly.<sup>6</sup> The growth of market efficiency, in the sense just indicated, has made it possible for market participants who wish to move funds back and forth among the various short-term instruments in response to shifting rate differentials to do so without encountering the kinds of frictions that would produce unacceptable price changes or undue delays. The result is an increasing volume of such "arbitrage" operations among the various market instruments and, of course, a concomitant tendency for short-term rate fluctuations in each of those instruments to be damped.<sup>7</sup>

**THE SPECIAL CASE OF NEGOTIABLE CERTIFICATES OF DEPOSIT.** Since early 1962, banks have had leeway under Regulation Q interest rate ceilings to post rates on time deposits that are more fully competitive with other money market rates than formerly. Given that greater leeway, acceptance of time deposits from virtually all sources, including nonfinancial corporations, and the issuance of negotiable certificates evidencing such deposits have been major factors in producing the accelerated growth in

<sup>6</sup> It may be noted in this connection that there has occurred a general narrowing of spreads between bid and asked prices in recent years, partly because investors, having become more sophisticated and aggressive, do more "shopping around" in the market, and partly because competition has become intensified with the increase, in the past few years, in the number of dealers in money market instruments.

<sup>7</sup> Directly placed commercial paper generally does not move through the market from one holder to another in any direct way. But it does so indirectly. It is common for many finance companies to take their paper back from a buyer before maturity if the buyer so desires. Unless the finance company had excess cash balances at the time, it would likely issue new paper to another buyer, thus in effect transferring the paper from the first holder to the second. Here the issuer is an intermediary as well.

<sup>5</sup> Paper placed through dealers has risen by 63 per cent to \$2.2 billion, while paper placed directly has increased by 98 per cent to \$6.2 billion.

commercial bank time deposits since the end of 1961;<sup>9</sup> in particular, they have been major influences underlying the fact that a significant part of the recent time deposit growth has been in negotiable form. The rapid rate of growth of time deposits, and the development of a substantial margin of such deposits that is negotiable, have been accompanied by an increase in the interest sensitivity of such deposits. This is evidenced not only in the fact that ownership of existing deposits is actively transferred through the market from one owner to another as small shifts in rate differentials with other instruments appear; it is also evidenced by the ability of a bank to increase or decrease its volume of time deposits by very small adjustments in the rate it will pay to acquire such deposits. There have been several cases, for example, in which banks have attracted tens of millions of dollars of time deposits in less than a day merely by shortening by two or three months the maturity of deposits for which they were willing to pay a given nominal rate. Similarly, banks have been able to reduce their time deposits by making very slight downward adjustments in the rates they were willing to pay to renew maturing deposits.

The development of the time certificate of deposit, and the fact that banks can increase and decrease their time deposits with small shadings in rate, have significantly increased the flexibility with which the aggregate stock of money market instruments can expand and contract. The impact on rate fluctuations of this increased flexibility, however, depends on the nature of the factors that motivate banks to increase or decrease the supply of negotiable certificates of deposit. Let us assume, for example, that there occurs a given increase in the demand for money market instruments, perhaps in response to an increase in corporate cash flow. Other things being equal, this increase in demand would exert downward pressure on money market rates. At the lower rate level, there would presumably be some banks willing to issue negotiable certificates of deposit that would not have been prepared to issue such certificates at higher rates. The increased demand for money market instruments would thus elicit an increase in the stock of them; and the rate decline involved in the satisfaction of the increased demand would be less than if that demand converged upon the existing stock of money market instruments (or a less readily expansible stock). In cases of this kind, therefore, the time certificate of deposit has tended to reduce short-

run fluctuations in rates in response to changes in demand for money market instruments.

The question may be raised whether there is any different impact on short-run rates when banks undertake to change the level of their negotiable time deposits in response to upward and downward movements in seasonal loan demand—as many banks do—as an alternative to changing their portfolios of money market instruments. If banks were to rely exclusively on changes in holdings of money market instruments as a response to seasonal changes in loan demand, they would, when faced with a rise in such demand, redistribute short-term instruments through the market to the nonbank sector. The desire of the banks to sell such instruments may be viewed as a reduction in demand for them; and other things being equal, some price decline, and rate increase, would be necessary to effect the redistribution.<sup>9</sup> To the extent that banks choose to increase their negotiable time deposits in response to a seasonal rise in loan demand, they increase the supply of money market instruments, and this too involves some decline in their prices and increase in their rates. But the reduction in demand for such instruments that would have occurred had banks chosen the alternative of reducing their short-term portfolios does not, in this case, occur. Therefore, unless one is prepared to make asymmetrical assumptions with respect to the elasticities of supply and demand for money market instruments, one may conclude that whether banks choose to meet a seasonal rise in loan demand through liquidating short-term investments or through issuing new time certificates of deposit makes little difference in respect of the extent of the rate change associated with the rise in loan demand. To put the point another way, there seems to be no a priori reason for expecting an important difference in rate impact whether the rise in loan demand elicits an increase in the supply of money market instruments or a decrease in the demand for them.

To sum up the points made concerning negotiable certificates of deposit, the growth and development of these instruments have added an extra dimension of flexibility to the size of the stock of money market paper; and on balance it appears that the negotiable time certificate has tended, in some degree that cannot be quantified, to reduce short-run fluctuations in money market rates.<sup>10</sup>

<sup>9</sup> Such deposits (excluding interbank deposits) have risen by 50 per cent over the past three years, compared with 27 per cent over the preceding three years. *Federal Reserve Bulletin*, November 1964, p. 1438.

<sup>9</sup> This, of course, assumes that the central bank does not step in and simply take at going rates all the paper that banks wish to sell.

<sup>10</sup> All the observations made here in connection with certificates of deposit apply equally to the recently introduced short-term unsecured bank notes.

**THE MONEY MARKET  
AND THE BALANCE OF PAYMENTS**

There is no need to review here this country's balance-of-payments problem, nor is it necessary to detail the rapidly developing interconnections between national money markets in a world of convertible currencies. Nor indeed is it necessary to restate the proposition that in such a world differentials in interest rates, and particularly in short-term rates, have an impact on the size and direction of international capital movements. This has for some years been the conclusion of the monetary and debt management policy makers, and they have taken account of that conclusion in framing and executing their policies. The Treasury has increased the supply of Treasury bills on occasions when bill rates seemed to be moving downward to levels that would open up significant spreads in favor of money rates abroad. The Federal Reserve, on similar occasions, has sold Treasury bills into the market or, in periods in which reserves were being supplied, has at times provided the reserves through purchases of securities other than bills. The 1962 reduction in reserve requirements was undertaken in good part to make reserves available to the banks without buying short-term securities in the open market and exerting direct downward pressure on short rates.

The market, observing these developments, quickly came to try to anticipate the points at which official resistance would be offered to rate declines. In consequence, the market came increasingly to generate its own resistance to rate fluctuations in the sense that dealers and other market participants would become more reluctant buyers and would begin to offer their holdings into the market as rates moved downward toward the expected official resistance point; and such offerings of course tended to slow down, and sometimes even reverse, the rate decline that activated them. As rates moved back up, a number of market participants, feeling that the authorities had no wish to see the rise continue substantially beyond the point at which the decline started, would undertake to rebuild their holdings. This pattern of market behavior, based on assumed official attitudes and anticipated actions, has been another major factor in damping short-run fluctuations in rates on money market instruments.

It is, of course, true that the concern of policy makers over the balance of payments has caused them to watch the level of short-term rates closely. But it does not follow from this that the concern over short rates has taken or should take the form of holding such rates within the exceedingly narrow range in which they have moved. There are at least three reasons why any rate limits the authori-

ties may have in mind at any point of time should be relatively wide and flexible. The first is that what matters with respect to international capital flows is not the absolute level of rates in this country but their level relative to rates abroad—and ultimately, whether any given set of relationships between domestic and foreign money rates seems to be producing actual, adverse flows of funds. Secondly, fluctuations of some reasonable magnitude are desirable in a market that is performing an important economic function—as the money market does in facilitating the policy actions of the authorities and the immense volume of transfers of money and debt instruments from one holder to another that is generated by the economy daily. Given an awareness of the extent to which short-term fluctuations in money market rates have been damped by the factors outlined earlier, policy makers have had no desire to suppress within even narrower limits such short-term fluctuations as might naturally occur. The third reason why any rate limits that policy makers may have in mind should be rather wide and flexible is that the behavior of rates has been a helpful, although by no means an infallible, indicator of developing cyclical economic change. It would obviously be possible for a sharp expansion or contraction of bank reserves and the money supply to occur while rates were being officially pinned to some rigid upper or lower limit. Given the authorities' awareness of this fact, there has been no desire to put up fences that would prevent a movement in short rates associated with an emerging cyclical change in the economy from showing through.

**CONCLUDING COMMENTS**

Three major factors have been cited as limiting the amplitude of short-run fluctuations in money market rates during recent years: the remarkably stable character of the economic expansion and the concomitant moderate growth of credit demands and persisting large flows of savings, the further growth and development of the market mechanism itself, and the response of policy makers to the problem of short-term capital flows (and of the market to the policy makers) in a context of interdependent national money markets. It would be quite futile to attempt to assign any precise weights to these factors according to their order of importance in the damping of short-run rate fluctuations. I think it is clear, however, as I indicated at the outset, that the first—the stability of the economy itself—is fundamental. As for the second and third, it is hard to say which has had the greater influence in damping short-run rate fluctuations. Suffice it to say that both are important.

However one may judge the question of relative im-

portance among the factors discussed earlier—and judgments will differ widely—I think it can be said that the changes that have occurred in the money market in recent years have made the performance of that market an increasingly useful indicator of developing cyclical change in the economy. Broadly construed, the money market's essential role is to provide the machinery through which those seeking to acquire cash balances can obtain them in exchange for short-term obligations and through which those seeking to employ cash balances can do so in return for such obligations. Demands for cash balances by many thousands of economic units emerge from the economic process daily; supplies of cash balances temporarily in excess of the needs of thousands of other economic units also develop daily. The machinery of the money market passes enormous amounts—measuring several billions each day—of these cash balances from those who have them to those who want them, and it does so with extraordinary efficiency. That machinery is now used by a very large number and variety of important economic units; and this large and growing list of market participants is actively engaged not only in keeping cash balances fully employed but, consistent with risk and liquidity considerations, in keeping each dollar employed at maximum yield by streams of “arbitrage” operations. With the market's reach now extending broadly and deeply into every sector of the economy, any cyclical change in the economy's demand for cash balances would be reflected in the market in a stubborn tendency for short-term rates to move; and this tendency would, I think, show through more quickly than formerly, when the market was less well developed in the sense that it was used by a lesser number and variety of economic units, who were employing their cash balances in a less active and sophisticated way. It is of course recognized that any movement in short-term rates, whether stemming from cyclical, sea-

sonal, or purely random causes, would tend to be damped by the market mechanism itself, which obviously has no way of distinguishing among such causes. Moreover, if the rate movement nevertheless proceeded further, it might be damped by official action. But this does not vitiate the point that the performance of the money market has become an increasingly useful indicator of emerging cyclical change in the economy. If the rate movement in question were a response to purely random or seasonal changes in demand for cash balances, the movement would soon be reversed without official action, or in response to some modest dose of such action. A rate movement associated with a cyclical change in demand for cash balances, however, would not be quickly reversed. Rates would stubbornly persist in pressing against, or perhaps break out of, the upper or lower limit of the band that the market had regarded as acceptable to policy makers. And, if the authorities themselves then offered resistance, the cyclical pressure being exerted on rates would be reflected elsewhere—in more-than-seasonal changes in nonborrowed reserves and the central bank's portfolio, or in quick changes in the aggregate of Treasury bills outstanding as the Treasury moved, perhaps in the weekly bill auctions, to increase or decrease the supply of bills. Thus the tendency for short-term rate fluctuations to be substantially damped would not prevent cyclical rate pressures from rather quickly exerting visible effects, which could be taken into account in framing subsequent policy actions. Indeed, it can be argued that, with the market mechanism itself largely damping short-run rate fluctuations, a tendency for rates to move for cyclical reasons would show through more clearly than ever, since it would not, in nearly the same degree or for such extended periods as earlier, be entangled with and obscured by the wide fluctuations that formerly occurred in response to purely seasonal and random influences.