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MUCH ADO ABOUT INTERNATIONAL MONETARY REFORM

Remarks By
J. Dewey Daane
Member
Board of Governors of the
Federal Reserve System

Before
The Cleveland Business Economists Club
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In French author Jules Romain's famous play, *Dr. Knock,* the central theme concerns a new doctor who convinces an entire, and hitherto healthy, community that each inhabitant is sick. Dr Knock's basic credo is *"Tout homme bien portant est un malade qui s'ignore"* which translates, roughly, as "Every well man is really a sick man who doesn't know he's ill." By the end of the play, Dr. Knock has succeeded in being so convincing in implanting this credo that all income earners (to whom he caters) are at home in bed in a darkened room with only a small light on and medicines at hand!

Like Romain's fictional community of St. Maurice, the health of the international monetary system has, it seems to me, often been far too susceptible to the Dr. Knocks of the world with their unnecessary and sometimes even harmful prescriptions. At one point in the play, Dr. Knock frightens a prospective patient into believing himself to be a germ carrier by citing evidence that "makes it plain as day, proves by instance upon instance, that a man can go about looking the picture of health, clear tongue, eye bright, appetite excellent, and be carrying in every nook and cranny of his system trillions of

germs—poisonous enough to infect a whole county. I have a right to suspect any man I see of being a germ carrier. You now! What is there to prove to me that you are not?"

Just so in the case of the international monetary system. "Instance after instance" or, more recently, "crisis after crisis" is adduced in evidence that the entire system is malfunctioning and about to collapse. The same doctors often, perhaps sometimes even deliberately, obfuscate what are the evidences of health and strength, and very real accomplishments, of the system—a system far from perfect but surely not in need of amputative surgery, nor of transplants, nor of quack medicines. What I mean is—not in need of freely fluctuating exchange rates, nor of a wholesale revision of established exchange rates, nor capable of benefiting from a gold price change.

The first question of the Dr. Knocks, however, regarding the health of the international monetary system is, I suppose, the query "What is there to prove that you are not (ill)?" This query has been amplified by the seeming succession of crises in 1967 and 1968. But are those crises symptomatic of the kind of germs in the system that are incapable of eradication without destroying the organism itself? Or are we being victimized, instead, by a repetition of dire prophecies, causing many to assume that deadly germs have taken over the system? Is the system, perhaps, much healthier than generally realized and on its way to even greater strength after overcoming the various strains of 1967 and 1968, and particularly after the new drawing rights in the IMF will have begun to appear?

Here, I think, that some analysis of the contributions over time of the Bretton Woods system, and an appraisal of the nature of the so-called monetary crises of 1967-1968, shed not a small but a large light on the sustainable health of the system. In fact, as one reviews the accomplishments of the international monetary system, which has evolved since Bretton Woods, and looks forward to its further strengthening, now so clearly in process and prospect through the creation of Special Drawing Rights, one can find a firm basis for rejecting the idea that the system should be treated as a chronically ill patient. For it can be argued that the several crises in 1967-1968 were basically crises of confidence in the system rather than organic difficulties of the system.

But while one can reject out of hand the notion that the international monetary system needs either dangerous surgery or quack prescriptions, it is clear that further gradual improvement would make the system less vulnerable to the actions of the speculators and to the imperfections (which some might call inactions) of the adjustment process. And it is certainly clear that the adjustment process itself—as each individual country adapts the changes occurring in its internal economy to the necessity for harmonious and viable relations with the economies of the rest of the world—is capable of improvement.

Taking a look back at the usefulness, post-Bretton Woods, of the so-called fixed exchange rate system (or more accurately, perhaps, the adjustable peg system), it is significant that we have had an unparalleled and uninterrupted growth in world income, trade, and payments since its establishment. As the outgoing Council of Economic Advisers

pointed out in its most recent *Annual Report:*

> ". . . Remarkable growth in the volume of international commerce has gone hand in hand with sustained world prosperity; each has contributed to the other. At times, deep and obvious strains in the international monetary system have imperiled this progress, but these financial difficulties have been weathered without a serious setback in economic growth or world trade.
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> ". . . In the years since the Second World War growth has come to be accepted as a normal feature of the world economy. It is easy to forget that this was not the case in earlier periods. The depression years of the 1930's present a particularly sharp contrast. But by any historical comparison, the economic progress of the last 20 years is unprecedented.
>
> "World income has more than doubled since 1950. In the fifties, growth was especially rapid in the western European countries, while in recent years the United States has grown more vigorously. Japan has experienced rapid and sustained growth throughout the period."

To accommodate this dynamic growth the international monetary system itself has not been static but has undergone flexible adaptation. The resources of the International Monetary Fund have been increased from an initial $8 billion to $21 billion presently, with an additional $6 billion of resources available, if necessary, from a number of industrial countries entering into an agreement to lend these resources (through the General Arrangements to Borrow or GAB). A network of reciprocal currency agreements has been established by the central banks of a number of countries for swaps of each other's currency; the United States now has such swap arrangements, that is mutual credit facilities, totaling $10.5 billion, with some 14 central banks and the Bank for International Settlements.

This growth of reserves and international credit facilities has enabled the international monetary system to function effectively and to accommodate the growth of world trade, payments, and income. Even more importantly, agreement enabling creation, for the first time by deliberate decision, of a new reserve asset (the Special Drawing Rights or SDRs) to supplement gold and dollars ensures that the present monetary system can be fully responsive to the reserve needs of a dynamic and growing world economy.

Then one asks, legitimately, why the seeming succession of crises? One could, I suppose, begin with the sterling crisis of November 1967 and debate whether or not a credible package of internal and external measures assembled earlier on might have dissipated the crisis of confidence that finally made sterling devaluation unavoidable. One could also, I suppose, ask whether—both in itself, and in the way in which it was handled and contained in terms of immediate impact on other parities—the sterling devaluation did not demonstrate that the international monetary system is indeed quite able to cope with an unusually difficult problem primarily reflecting loss of confidence in a major currency. Again one could give an optimistic reading of the Canadian crisis in February 1968—a crisis which was purely speculative in nature, and was calmed by public pronouncements

of the Canadian and United States authorities, reinforced by the conspicuous availability of substantial resources.

The gold crisis of March 1968 perhaps merits somewhat more elaboration but again, in essence, it was a massive wave of speculation—fed in part by our own successive failures to control the American balance of payments deficits—that forced us all to recognize the need to separate the supply (and the price) of gold in the London and other private markets from the official gold reserves of the monetary system. As I have pointed out before, the policy of maintaining the market price of gold in London had been undertaken originally for the purpose of keeping commercial and private transactions in gold close to the official price, thereby averting or minimizing possible runs on the gold stock. But it had become perfectly clear that this was becoming a one way street for speculators and that the gold pool operations, rather than reinforcing the credibility of the official price of gold, had, in fact, created a fear that official reserves might be drawn down faster than any acceptable replacement could be found for them. The private speculators had provoked a demand for gold that was feeding upon itself and menacing the continuity of official reserves for the monetary system as a whole.

From this crisis of confidence, however, the system has emerged stronger rather than weaker. For the establishment of the two-tier system for gold was linked directly to the prospective creation of new reserve assets within the International Monetary Fund. As the system continues and is supplemented by SDR creation, gold will be called upon to play a diminishing role, and speculative price movements in the private markets for gold, if they occur, will have less and less relevance to the official price and less and less significance for the monetary system.

The most recent "crisis" in November 1968—leading to what in retrospect appears to have been an unnecessary and largely unrewarding international monetary conference at Bonn—was again not a reflection of a structural defect or organic malaise of the international monetary system, unless one assumes that official unwillingness to change rates is now a permanently fixed doctrine. In the first instance, it was once more a reflection of the power of market expectations that must be met and absorbed by any system which serves the changing needs of a dynamic world economy. In this case the expectation was that the German mark would soon have to be revalued and that, in turn, this might provoke a devaluation in France or the United Kingdom and set off a chain reaction affecting other countries as well. As my colleague and adviser to the Board, Mr. Robert Solomon, has well stated:

> "The first observation we can make about this crisis is that it was not in any direct way attributable to the nature of the present international monetary structure. The fact that the dollar is widely held as a reserve currency was in no way responsible for the difficulties. (It is notable that the market price of gold barely rose during the eventful week of November 18.) One could imagine a similar crisis—involving expectations of exchange rate changes and the danger of competitive depreciation—in a Jacques Rueff gold stan-

dard world or in a Robert Triffin conversion account world in which there is only one reserve asset. In other words, the so-called confidence problem—involving the interconvertibility of two or more reserve assets—had nothing to do with the cause or severity of this crisis. It is one of the many ironies of the events of the last two weeks of November that this international monetary crisis which embroiled France should not reflect the alleged weaknesses in the monetary system that French officials have been pointing to for years."[1]

This bare bones recital of the international monetary system's accomplishments and adaptations—a recital with which you are all too familiar, I am sure—is intended mainly as a reminder of the positive aspects of the present system. The troublesome episodes I have touched on reflected the power of shifting expectations concerning individual countries, when individual countries have differences among them in their policies, their purposes and their performance. Such differences will always occur so long as the world is dynamic and countries differ. I do not, repeat not, conclude that *the system* is perfect, but I do continue to believe that it is perfectible in the sense that, through further international cooperation, it is capable of being improved and can provide a foundation for sustainable growth in the future. As the CEA noted in its *Annual Report:*

"To be sure, the international monetary system has had its problems. Crises have occurred all too frequently. Yet the system has consistently been able to meet the needs of the day, it has evolved and adapted, and it can be strengthened further to meet the remaining strains."

Looking to the future—what can be done to strengthen further the system? An obvious but extremely important first step is to press forward to the realization of the SDRs, to bring them from the world of theory into the world of fact. In the process of ratification, the latest count shows 34 member countries, representing just over 50 percent of the voting power, ratifying the agreement (as compared with the required 67 member countries representing 80 percent of the voting power). Full ratification in the near future, of course, is expected.

An equally important corollary step in improving the functioning of the international monetary system—and vital to the bringing of SDRs into being—is the strengthening of the adjustment process through appropriate internal as well as external policies. For most, if not all, of the confidence crises that I have described reflect insufficient willingness or effort to make the adjustment process effective through either demand policies or exchange rates.

Here the United States responsibility, as pointed out by Secretary of the Treasury, David Kennedy, is plain. We must contain an inflation that is so damaging to our international position as well as to our domestic objectives. And our own Federal Reserve role in this effort is clear. The evidence now surfacing in the monetary aggregates, and even in bits and pieces of economic data such as the sales and inventory figures, of the

[1] See R. Solomon "Reflections on the International Monetary Crisis," *Review*, Federal Reserve Bank of St. Louis, December 1968.

cumulative impact of the gradual but persistent pressure of monetary policy, alongside fiscal policy, should serve as an adequate rejoinder to any possible misinterpretation or skepticism as to our ability and willingness to stay on course.

Before leaving the matter of the adjustment process, I should hasten to point out—as has, I think, been increasingly recognized in our mutually constructive discussions with our counterparts abroad—that improvement of the adjustment process by appropriate policies of individual countries requires not only efforts by deficit countries, but by surplus countries as well.

Related to this, some—mainly academicians—have suggested that another potential source of improvement in the system may conceivably be found in a lessening of the degree of rigidity with respect to the present exchange rate system—both the rigidity of the rates themselves and the rigidity of attitudes concerning the appropriateness of some change in these rates. A variety of suggestions have been put forward for possible further study. One is to explore techniques for introducing greater but still limited flexibility in exchange rates. Another is to explore the technique used in the recent crisis by France and Germany, of adjustment of border taxes and export rebates as an alternative method of improving the adjustment process.[2] Some of the technical and other problems of a more flexible exchange rate system have recently been outlined effectively by both Dr. Otmar Emminger of the German Bundesbank and by Dr. Edward M. Bernstein, the former Chief Economist of the International Monetary Fund. Nevertheless, we should remain open-minded and willing to engage in study, objectively and cooperatively, when and where it seems appropriate, of suggestions for improving the adjustment process.

This brings me full circle in my remarks here today. I began by stressing the exposure of the system to the attacks of its critics which have engendered expectations and attitudes inimical to the system itself. Official policies, or lack thereof, cannot escape responsibility for fostering such expectations and attitudes. I remain convinced that the present system can be best improved by gradual change, without abrupt, or dramatic, moves that might in themselves make impossible the continued contributions of the system to continued growth of world trade and payments. As Secretary Kennedy has said:

> "Calm study in cooperation with our friends—not unilateral actions or disruptive changes in the vital role of the dollar and gold—must remain the foundation of real reform and progress in the international financial system."

Appropriate policies contributing to, rather than detracting from, the adjustment process are an integral part of any improvement. Here it is essential to recognize, and to find ways to reconcile, the aims and objectives of the various countries concerned. It is heartening that the OECD is engaged currently in just such an analysis.

Recently someone from the press asked me whether I foresaw in 1969 a repetition of the monetary crises of 1968. In the tumultuous world in which we live conjecture of this sort would be foolish. But in reply I said there

[2] *Ibid.*

need not be, and that I was reminded that in his memoirs Winston Churchill records an historic conversation with Franklin D. Roosevelt, in which they discussed what to label World War II. Churchill said that at the time, and for a variety of reasons, he responded immediately, "the unnecessary war."

My own hope, and sincere belief, is that with the continuance of the Bretton Woods system, strengthened by the added dimension of SDRs, supplemented by expanded credit facilities, validated by an improved adjustment process in which the United States role is vital, and amended gradually and only after careful explorations in close and calm cooperation with our friends, any international crisis that might develop could only merit the label "the unnecessary crisis."

MONEY MARKET INSTRUMENTS: CHARACTERISTICS AND INTEREST RATE PATTERNS IN THE CURRENT ECONOMIC EXPANSION

The nation's money market serves a broad spectrum of borrowers and lenders dealing in a wide range of negotiable short-term debt obligations. For example, importers and exporters make extensive use of bankers' acceptances to finance foreign trade, and the U. S. Treasury uses short-term bills to satisfy a large part of its borrowing needs. Similarly, nonfinancial corporations and finance companies frequently rely on commercial paper to satisfy their borrowing needs and as a short-term investment outlet. At the same time, the money market is the focal point for Federal Reserve open market operations used in conducting monetary policy. In short, the money market channels short-term funds into appropriate credit or debt instruments and is a key link in implementing monetary policy.

The money market continuously adapts to changes in borrowing and lending patterns and to the introduction of new short-term debt instruments. A few years ago, for example, sizable and sustained growth in the demand for bank credit prompted commercial banks to develop alternative sources of funds to supplement the growth of reserves; as a result, in 1961, commercial banks began to issue negotiable certificates of deposit (CDs).[1] More recently, large commercial banks turned to the Eurodollar market as a major alternative source of short-term funds.

Innovations in procedures and instruments are not confined to the banking "sector" of the money market. For example, the U. S. Treasury introduced the advance refunding technique of debt management early in the 1960's, and since April 1960, the Federal National Mortgage Association has placed increased reliance on short-term discount notes to finance secondary market operations. On

[1] Two developments contributed to the sharp growth of CDs: (1) the evolution of a secondary market for negotiable CDs; and (2) the decision of larger banks to issue CDs on a more "liberal" basis, which, in turn, contributed to the recognition and wide acceptance of CDs as a short-term investment medium.

For a more complete discussion of the CD market, see Parker B. Willis, "The Secondary Market for Negotiable Certificates of Deposit," (paper prepared in connection with the Fundamental Reappraisal of the Discount Mechanism, Board of Governors of the Federal Reserve System).

the other hand, after Treasury bills with one-year maturities became available on a regular basis, Treasury certificates of indebtedness were used less frequently and in 1967 disappeared from the money market, at least temporarily.

Although not the primary concern of this article, several money market instruments—Federal funds, call loans, and clearinghouse funds, among others—are essentially "one-day" loans or investments. Market yields on such instruments are important in at least two respects: (1) they serve, at times, as indicators of developing and transitory pressure in the money market; and (2) they influence yields on other instruments in nearby maturities, such as longer term Treasury bills, and eventually even capital market yields. This article discusses and analyzes developments in selected money market instruments with emphasis on the maturity area from three to six months.[2] Although the data cover the years 1960 through 1968, the discussion and analysis are confined to the current economic expansion starting in 1961. The year 1960 has been excluded from the discussion in order to avoid any possible bias resulting from cyclical effects of the most recent recession.

GROWTH IN THE 1960'S

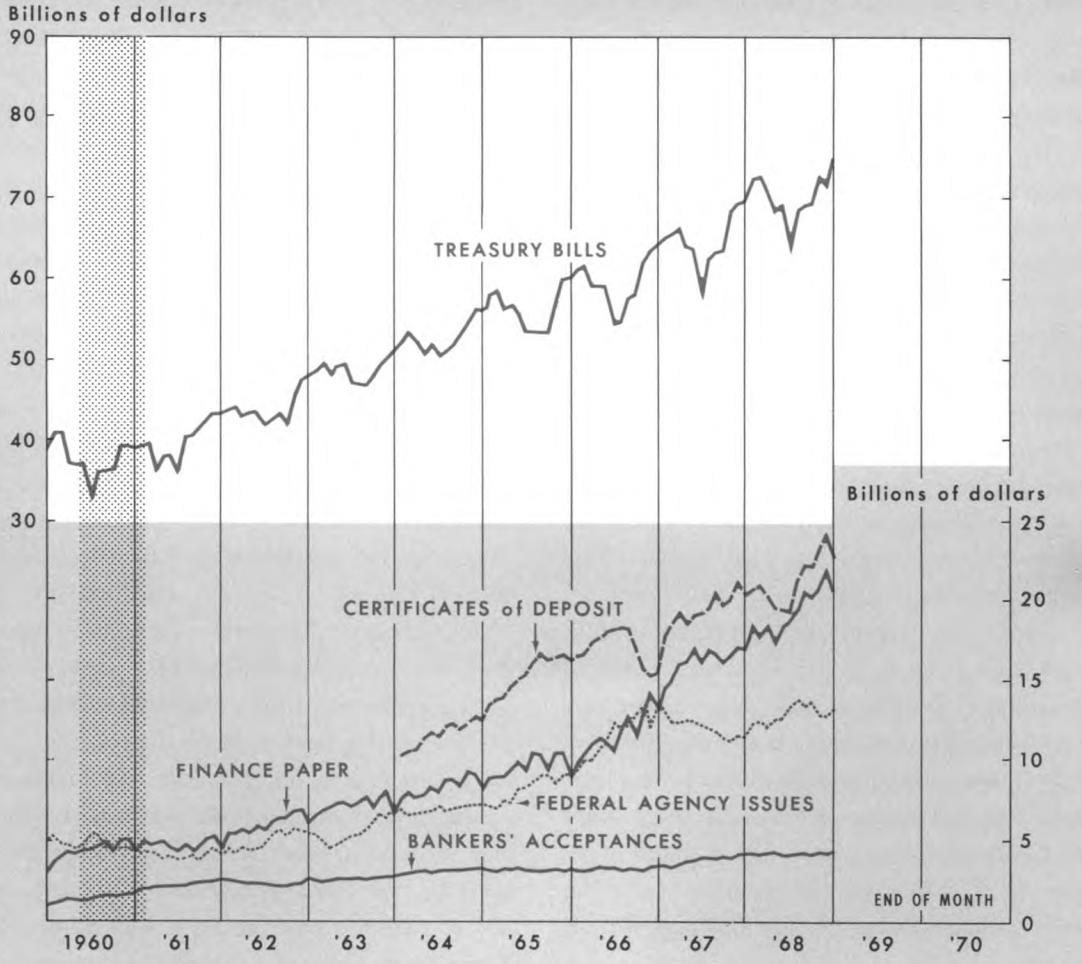
Periods of economic expansion are characterized by increases in credit demands and in the more or less comparable growth of credit instruments. Not suprisingly, during the current expansion, the outstanding dollar volume of money market instruments has increased markedly, particularly large denomination CDs (see Chart 1). The volume of outstanding CDs ($100,000 or over) is estimated to have increased more than twenty-fold—from well below $1 billion at year-end 1960 to nearly $23 billion at the end of 1968 (see Table I). During the same period, the volume of outstanding commercial paper grew from $4.4 billion to $20.5 billion. The dollar volume of Treasury bills and issues of Federal agencies (maturing in one year or less) also registered a sizable increase in the 1960's, mainly due to the increase in the Federal deficit, while outstanding bankers' acceptances more than doubled—from $2 billion to $4.4 billion.

A number of institutional and economic developments contributed to these large-scale increases in the volume of outstanding money market instruments. Since 1961, sustained economic expansion has increased business borrowing needs, while a persistent rise in interest rates has made it more costly for business firms, financial institutions, and individuals to allow funds to remain idle. Not surprisingly, therefore, the various participants in the money market have heightened their activity both as suppliers and users of short-term funds. In addition, during the 1960's, business firms again began to rely more heavily on external sources of funds. This greater dependence on external sources of funds partly explains the increased use of commercial paper. For example, commercial paper placed through dealers (issued mostly by nonfinancial business firms) increased at

[2] Nonfinancial business firms and individuals do not usually invest funds for one day, relying primarily on somewhat longer maturities when using idle funds.

Chart 1.

OUTSTANDING AMOUNTS of SELECTED MONEY MARKET INSTRUMENTS



Last entry: December 1968
Source of data: Board of Governors of the Federal Reserve System

a faster rate than did directly placed paper issued by finance companies.[3]

The rising level of economic activity in the 1960's also contributed to the growth of foreign trade, which, in turn, is an important factor in the steady growth of bankers' acceptances. Interestingly, much of the increase in the volume of bankers' acceptances reflects borrowing to finance international trade by foreign rather than United States firms,

[3] Dealer-placed commercial paper increased from $664 million in 1960 to $7.2 billion at the end of 1968, while directly placed finance company paper rose from $3.2 billion to $13.3 billion.

with Japanese firms accounting for much of the increase since 1960.[4]

At the close of 1968, Treasury bills accounted for slightly more than 34 percent of the United States marketable public debt, up from 22 percent at the end of 1961. The volume of outstanding Treasury bills rose during this period from $43.4 billion to $75.0 billion. Federal budget deficits were of course responsible for the rise in the dollar volume of the public debt; however, legal limitations of 4¼ percent on interest rates payable on Treasury bonds has since mid-1965 made it necessary to finance new debt and refinance maturing debt at the shorter term end of the maturity spectrum.

INTEREST RATE RELATIONSHIPS

During the 1960's, money market yields have risen substantially both in absolute terms and in relation to long-term yields. The differential between short- and long-term yields diminished rather steadily in the early 1960's, and in 1966 and 1968, short-term yields were at times higher than long-term yields (see Table II). Specifically, during the 1961-1968 period, yields on long-term U. S. Government securities increased by 1.34 percentage points, from an average of 3.90 percent in 1961 to 5.24 percent in 1968, while yields on three-month Treasury bills increased from 2.43 percent to 5.43 percent—a gain of 3 percentage points (see Table II). Similarly, yields on three-month Federal agency issues, three-month finance paper, and three-month bankers' acceptances rose more than 3 percentage points during the period under review.

Against the background of expanding economic activity during the 1961-1968 period, a secular rise in interest rates in general is understandable. The narrowing of the spread between short- and long-term yields, on the other hand, is a phenomenon that reflects expectational, institutional, and public policy factors. Historically, in the early stages of economic expansions, short-term rates have been below long-term yields, which is to say, yield curves have an upward or positive slope. There are two reasons for such rate relationships.[5] On the supply side, lenders believe that, as the economic expansion moves ahead, interest rates are likely to increase, which means that prices of long-term bonds are likely to decline. Lenders may decide, therefore, to hold—or even add to—their funds in short-term issues until bond prices fall or at least until they no longer expect any further price declines. These investment decisions of course tend to increase the demand for short-term issues at the expense of longer term issues—a force that at the same time tends to lower short-term yields and raise yields on bonds.

The view from the supply side is the exact opposite. Since borrowers also expect rates to go up in the months ahead, they are anxious to sell their bonds before they are forced to pay higher interest rates, which, in turn, tends to drive bond prices downward and rates upward. When the economic expansion

[4] See Robert L. Cooper, "Bankers' Acceptances," *Monthly Review*, Federal Reserve Bank of New York, June 1966, pp. 127-135.

[5] See "Trends and Recent Relationships in Yields on U. S. Government Securities," *Economic Review*, Federal Reserve Bank of Cleveland, October 1967, pp. 18-27.

TABLE I

Outstanding Volume of Selected Money Market Instruments

1960-1968

Yearend	Treasury Bills		Commercial Paper		Bankers' Acceptances		CDs ($100,000 or over)		Federal Agencies (maturing in one year or less)	
	Amount (mil. of $)	Annual Percent Change	Amount (mil. of $)	Annual Percent Change	Amount (mil. of $)	Annual Percent Change	Amount (mil. of $)	Annual Percent Change	Amount (mil. of $)	Annual Percent Change
1960	$39,446		$ 4,418		$2,027		$ 796		$ 4,414	
1961	43,444	10.1%	4,686	6.1%	2,683	32.4%	2,782	249.5%	4,399	— 0.3%
1962	48,250	11.1	6,000	28.1	2,650	— 1.2	5,442	95.6	5,787	31.6
1963	51,539	6.8	6,747	12.5	2,890	9.1	9,579	76.0	7,324	26.6
1964	56,476	9.6	8,361	23.9	3,385	17.1	12,585	31.4	7,361	0.5
1965	60,177	6.6	9,017	7.8	3,392	0.2	16,251	29.1	9,065	23.2
1966	64,684	7.5	13,279	47.3	3,603	6.2	15,659	— 3.6	13,393	47.7
1967	69,870	8.0	17,084	28.7	4,317	19.8	20,330	29.8	11,460	—14.4
1968	75,010	7.4	20,497	20.0	4,428	2.6	22,822	12.2	13,226	15.4
Average Annual Change 1960-1968		8.4%		21.8%		10.8%		65.0%		16.3%

Sources: Board of Governors of the Federal Reserve System and Federal Reserve Bank of Cleveland

TABLE II

Selected Money Market Yields Compared with Yields on U.S. Government Bonds

Annual Average

1961-1968

Year or Period	Three-Month Treasury Bills	Three-Month Federal Agency Issues	Three-Month Finance Paper	Three-Month Bankers' Acceptances	Three-Month CDs	U. S. Government Bonds	Spreads: Money Market yield less yield on U. S. Government Bonds (in basis points)				
							Three-Month Treasury Bills	Three-Month Federal Agency Issues	Three-Month Finance Paper	Three-Month Bankers' Acceptances	Three-Month CDs
1961	2.43%	2.47%	2.72%	2.88%	n.a.	3.90%	—147	—143	—118	—102	n.a.
1962	2.86	2.84	3.16	3.06	n.a.	3.95	—109	—111	— 79	— 89	n.a.
1963	3.24	3.30	3.49	3.44	n.a.	4.00	— 76	— 70	— 51	— 56	n.a.
1964	3.62	3.73	3.94	3.85	3.87%	4.15	— 53	— 42	— 21	— 30	—28
1965	4.02	4.14	4.35	4.29	4.31	4.21	— 19	— 7	14	8	10
1966	4.94	5.22	5.54	5.52	5.43	4.66	28	56	88	86	77
1967	4.41	4.60	5.06	4.94	4.99	4.85	— 44	— 25	21	9	14
1968	5.43	5.55	5.88	5.91	5.79	5.24	19	31	64	67	55
Average 1961-1968	3.87	3.98	4.27	4.24	4.88*	4.37	— 50	— 39	— 10	— 13	51
Increase 1961-1968	3.00	3.08	3.16	3.03	1.92†	1.34					

NOTE: Data on Treasury bills, bankers' acceptances, and finance paper are adjusted to a "bond yield" basis. Annual averages of money market rates are based on monthly observations; long term rates are averages of daily figures.

n.a. Not available.

* Average 1964-1968.

† Increase 1964-1968.

Sources: Salomon Brothers & Hutzler and Board of Governors of the Federal Reserve System

is well under way and the expectation of higher future interest rates weakens, funds tend to move from the short- to the long-term sectors of the market, and the short-term segment of the yield curve tends to move up to be more in line with the longer term portion. Thus, there are *a priori* reasons from both the demand and supply sides of the market to explain why short-term interest rates at the beginning of economic expansions are usually lower than long-term yields and also why, in later stages of economic expansions, short-term rates tend to approach long-term rates.

Not all market observers place the same degree of importance on expectations in determining the shape of the yield curve. Indeed, there are those who believe that the role of expectations in the term-structure of interest rates is less influential than changes in relative supplies of issues among various maturity categories. Thus, large increases in the supplies of short-term issues, rather than changes in expectations, have been used to explain the flattening of the yield curve during the 1960's.

Public policy decisions have also had an important influence on the yield curve over the past decade, however. For example, during this time, somewhat higher short-term interest rates were considered a desirable objective of monetary policy, mainly because of balance of payments considerations. It was believed that higher short-term yields would tend to reduce United States balance of payments deficits by encouraging domestic short-term funds to remain in this country and by attracting additional funds from abroad. Because of these and other considerations, the Federal Reserve System in effect decided in early 1961 that monetary policy should influence the levels of interest rates in general (as it had done during most of the 1950's) as well as the term-structure of interest rates (as it had not attempted to do).[6]

The operational aspects of this decision were apparent in the nature of open market operations. Before 1961, open market operations were, under normal conditions, confined to Treasury bills; however, as a result of the policy change, the Federal Reserve System began to conduct open market operations in any maturity sector of the U. S. Government securities market.[7] If open market purchases had remained confined to the short-term sector, long-term yields might have been higher, particularly in the early 1960's. Furthermore, short-term yields might not have risen as much as they actually did, because additional purchases in the short-term area would have been necessary to supply the bank reserves provided by System purchases of long-term issues.

According to money market observers, Regulation Q, which sets the maximum rates payable on certain time and savings deposits,

[6] See *Annual Report*, Board of Governors of the Federal Reserve System, 1961, pp. 39-43.

[7] In actual practice, the open market operations that took place outside the short-term sector (1-year maturities or less) during and after 1961 were in the form of purchases. Nearly 30 percent — amounting to about $2.8 billion of securities — of open market purchases in 1961 was beyond the one-year-or-less maturity range. Although such purchases declined substantially in subsequent years, they remained an important influence in the market not only for their quantitative impact but also for their effects on expectations.

is a policy factor that was even more influential on yield patterns than the change in System open market policy. After 1961, the rate ceiling on time and savings deposits was increased in every year except 1966 and 1967.[8] Without adjustments in Regulation Q, sizable increases in the dollar volume of outstanding CDs would not have occurred, since CDs would have been unable to compete with other money market issues.

Interest rates and supplies of money market issues are interdependent, in that changes in rates would be expected to influence supplies, and vice versa. Because a potential borrower's needs can often be met in either the money market or the capital market, interest rate expectations, in the short run, are likely to influence relative supplies of issues in both markets. For example, a corporate treasurer, who expects long-term rates to fall in the near future, may postpone contemplated capital market financing and attempt to raise the necessary funds in the money market (for example, by issuing commercial paper).

Because money market instruments are "temporary" in nature, they must be designed to be sold when short-term funds are needed by borrowers and when such funds are available from investors. This is the prime factor behind seasonal fluctuations in the volume of outstanding money market instruments. As shown in Chart 1, the volume of outstanding Treasury bills tends to decline after corporate tax payment dates—especially in June— reflecting repayments of tax anticipation bills. On the other hand, the upswings in the volume of commercial paper in January, July, and October generally coincide with the need to finance inventories in manufacturing and retailing.

INTEREST RATE FLUCTUATIONS

Perhaps the most striking characteristic of any chart on the behavior of money market yields during the 1960's is the absence of wide fluctuations during 1961-1965. Before 1966, it was unusual to observe a yield change, up or down, of more than 25 basis points from one month to the next. In fact, there were instances during 1962-1965 when yields on three-month maturities of bankers' acceptances and finance paper did not vary for several months. Beginning in 1966, however, monthly yield changes of 50 or more basis points became common for the money market instruments under review (see Chart 2).

Reasons for the behavior of money market yields after 1965 are more apparent than for the behavior in the earlier period. The 1961-1965 period is generally recognized as a period of steady economic expansion with reasonably stable prices. Short-term money market yields moved steadily upward during 1961-1965, but a stable economic environment as well as expectations about future interest rates provided little cause for sudden or wide yield changes in the short run. Moreover, balance of payments considerations suggested that short-term yields in the United States should be kept at levels competitive

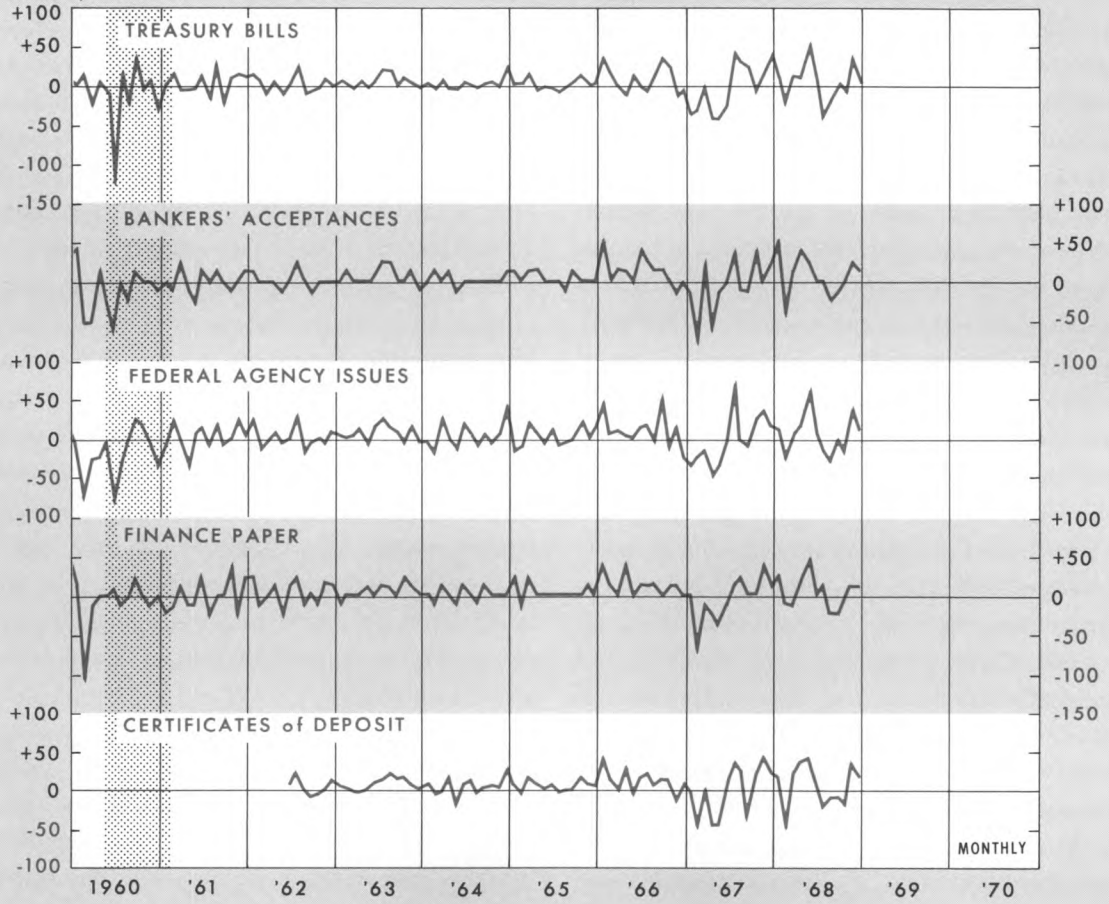
[8] The maximum rate, for example, on 90-day-6-month CDs permissable under Regulation Q was increased from 2.5 percent in 1961 to 4.0 percent in 1963, 4.5 percent in 1964, 5.5 percent in 1965, and to 6.0 percent (for large denomination CDs) in April 1968. Upward adjustments in Regulation Q ceilings were also made on other types of time and savings deposits.

Chart 2.

MONTHLY CHANGES in YIELDS: SELECTED MONEY MARKET INSTRUMENTS

Three-Month Maturities

Basis points



Note: All rates are expressed on "bond-equivalent" basis.

Last entry: December 1968

Source of data: Salomon Brothers & Hutzler

with rates abroad and that wide and erratic short-run changes in yields should be minimized. Federal Reserve policy, therefore, attempted to prevent wide fluctuations in yields during 1961-1965. It has also been argued that the emergence of CDs as an important source of bank funds contributed to interest rate stability during 1961-1965.[9] The validity of this argument is open to question in light of developments such as those that occurred in 1966, when, for a brief

[9] Robert W. Stone, "The Changing Structure of the Money Market," *Journal of Finance*, May 1965, pp. 229-238.

period of time, commercial banks were unable to roll-over outstanding CDs. That is to say, in periods such as 1966, when banks are forced to sell some of their securities holdings, thereby adding further upward pressure on yields, the result may be less rate stability.

With the step-up of the war in Vietnam in mid-1965, increasing uncertainty in financial markets and changes in market expectations were more important influences on interest rates in the 1966-1968 period than in the previous five years. For example, there were uncertainties regarding the level of Federal expenditures and the effects of such expenditures on prices and Treasury financing requirements, uncertainties about the approval of a tax increase to reduce Federal budget deficits, and uncertainties about the international position of the dollar and other leading currencies such as the pound sterling. Indeed, there were occasions in 1967 and 1968 when the changing outlook for the proposed income tax surcharge apparently had more impact on the money market than did changes in such measures of economic activity as the industrial production index or the unemployment rate. Major uncertainties and sharp changes in expectations, coupled with unusually large credit demands from businesses, clearly contributed to the wider swings in interest rates that appeared after 1965.

Chart 2 also shows the extent to which changes in the yield on a particular money market instrument tend to move together with changes in yields on other comparable instruments. Theoretically, there should be a great deal of parallel movement in yields on comparable money market instruments. Such instruments are easily substituted for one another in the portfolios of professional securities traders as well as the portfolios of many investors. Changes in yields on individual issues would be expected to cause readjustments that would, in turn, tend to favor those issues with increasing or higher yields. Such readjustments would also tend to keep yields from falling out of line with each other. Although the data shown in Chart 2 tend to support these observations, behavior of yield spreads on comparable instruments during the period under review varies according to the individual instrument and to the time period under consideration. For example, overall monthly changes in yields on Treasury bills coincide "best" with changes in yields on Federal agency issues and CDs and "poorly" with changes in yields on finance paper. On the other hand, changes in yields on CDs correspond quite well with changes in yields on all other issues.

Although monthly fluctuations in yields were noticeably larger during the past three years than during 1961-1965, the degree of parallel movement in yields during the recent period was, perhaps surprisingly, considerably greater than in the earlier period. Credit markets were under the pressure of restrictive monetary policy for much of the 1966-1968 period, and interest rates reached record levels in 1966 and again in 1968. As a result, borrowers became more sensitive to financing costs and lenders became more sensitive to profitable investment alternatives—both reactions may have enhanced, after 1965, the transfer of yield changes from one money

market issue to another.[10]

INTEREST RATE DIFFERENTIALS

From the previous discussion, it is apparent that there are at least two distinct concepts of interest rate differentials: (1) interest rate spreads among different maturities of the *same* issue, and (2) interest rate spreads among *different* issues of the same maturities. In the money market, the yield differential between three- and six-month maturities is usually considered as the prime indicator of the term structure relationship in the short-term area. As Chart 3 indicates, the differentials for the selected money market instruments vary in terms of both absolute magnitude and monthly variation. During 1961-1968, yield spreads between three- and six-month maturities were generally positive and usually in a range of 0 to 30 basis points in favor of six-month maturities. Up to mid-1966, such spreads remained relatively free of wide fluctuations, reflecting general interest rate stability in the money market. As a case in point, yield spreads between three- and six-month maturities of bankers' acceptances remained virtually unchanged from 1961 to early 1966 (see Chart 3).

However, as the money market became more turbulent in 1966, spreads between three- and six-month maturities of the same instrument changed more frequently. As a general matter, spreads were largest (over 50 basis points) during the fall of 1967—a period characterized by heavy credit demands from both the private sector and the Treasury, as well as by somewhat easier monetary policy. Chart 3 also reveals that, on a month-to-month basis, yield spreads between three- and six-month maturities tended to vary more widely for Treasury bills than for most other instruments.

A number of factors give rise to yield spreads among different issues with the same maturity. The relative degree of default risk would seemingly be an important consideration in this regard. In the case of the money market instruments under review, however, the risk factor is minimal, indeed, nonexistent for Treasury issues. Consequently, other factors, such as the outstanding volume of a particular issue, the minimum denomination in which an issue is available, how widely an issue is held, and the liquidity of an issue (that is, how readily it can be bought or sold) are more relevant in explaining yield spreads among money market instruments. Treasury bills,

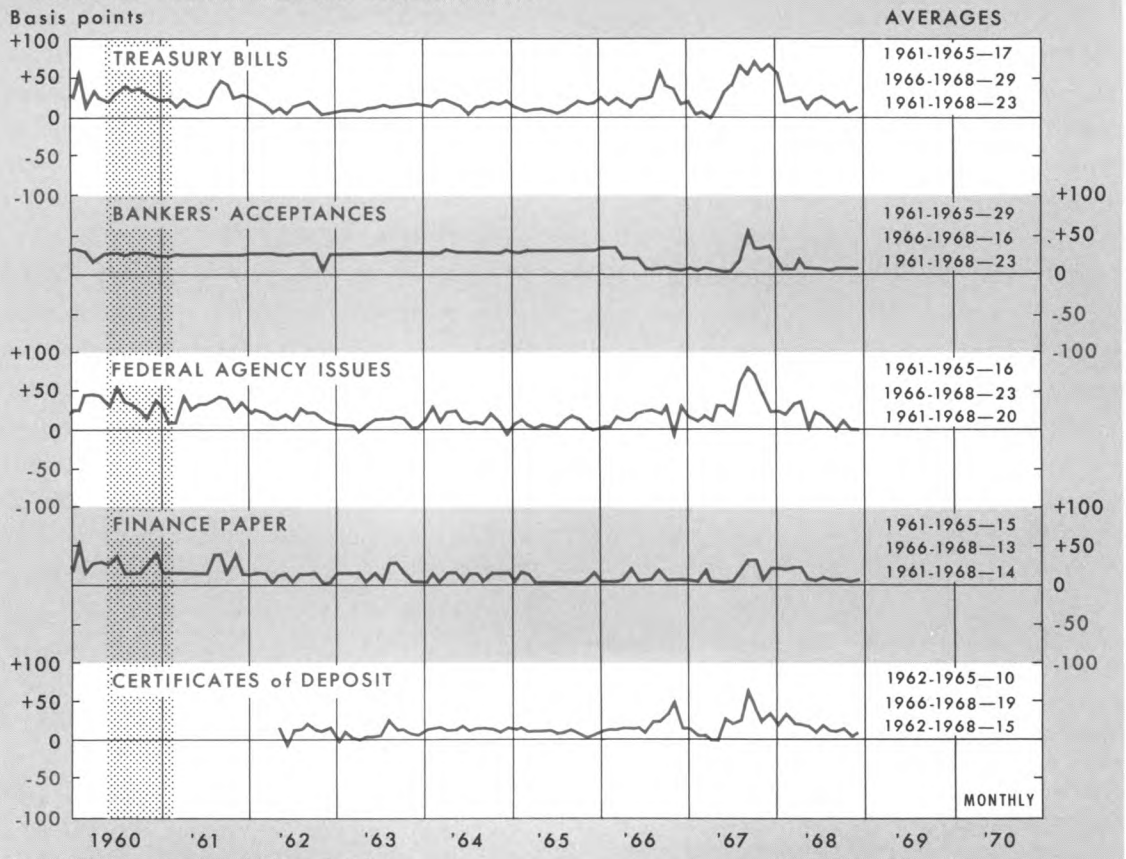
[10] Another measure of how closely yield changes in a given issue correspond with yield changes in a different issue is provided by the coefficient of determination, or r^2. The following sample coefficients of determination were computed on the basis of monthly yield changes for three-month maturities (first differences) and for two separate time periods: 1963-1965 and 1966-September 1968.

	Treasury Bills		Bankers' Acceptances		Federal Agencies		Commercial Paper	
	1963-1965	1966-1968	1963-1965	1966-1968	1963-1965	1966-1968	1963-1965	1966-1968
Bankers' Acceptances	.223	.319						
Federal Agencies	.476	.560	.084	.452				
Commercial Paper	.130	.128	.041	.325	.067	.107		
CDs	.414	.439	.235	.613	.408	.555	.200	.343

Briefly, these coefficients suggest that: (a) the degree of association in monthly yield changes in the above issues was generally higher for the 1966-1968 period; (b) of all the issues, CDs appear to exhibit the highest degree of association in yield changes, with Treasury bills the second highest; and (c) the degree of association varies for the rest of the issues; for example, yield changes in Federal agencies correlate better with yield changes in bills than with yield changes in bankers' acceptances.

Chart 3.

MONTHLY YIELD SPREADS: THREE-and SIX-MONTH MATURITIES of SELECTED MONEY MARKET INSTRUMENTS



Note: All spreads measured on "bond-equivalent" basis.
Last entry: December 1968
Source of data: Salomon Brothers & Hutzler

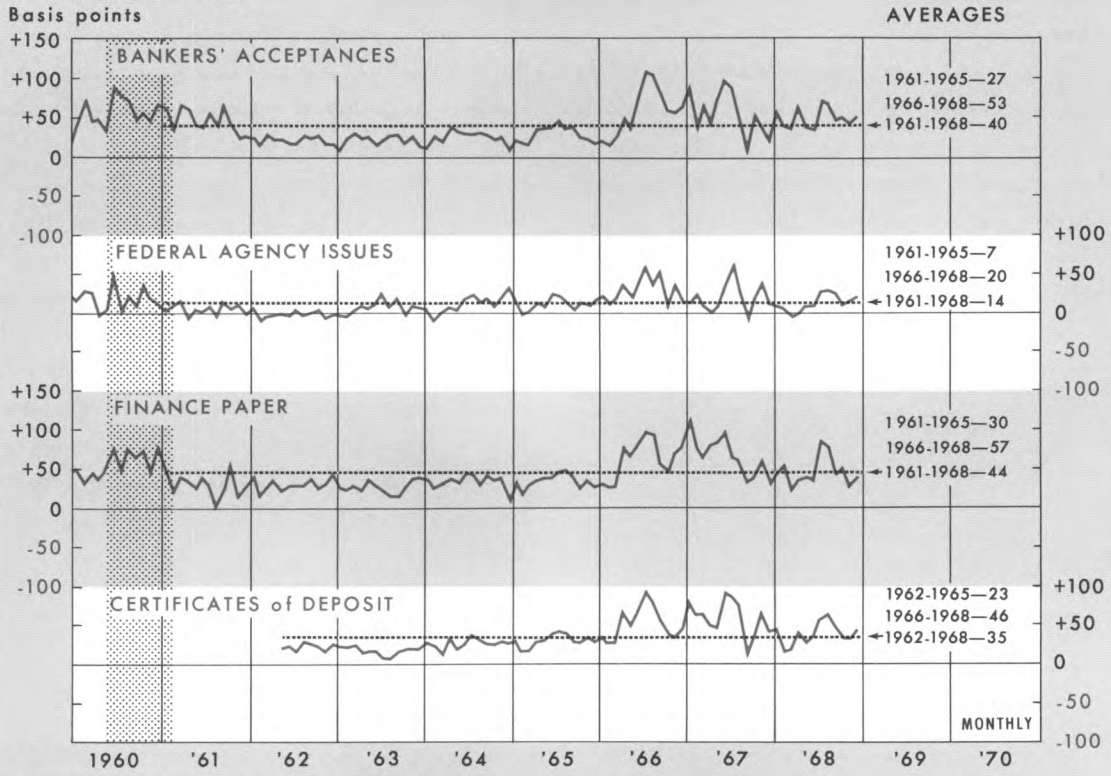
which are issued in large volume and are widely held, occupy a position of central importance in the money market because of low risk, easy marketability, small minimum denominations, etc.—such terms make Treasury bills the best known and most widely used short-term investment medium. For these reasons, yields on Treasury bills are generally lower than those on other money market instruments of comparable maturity.

Chart 4 shows the extent to which yields on other money market instruments with three-month maturities exceeded yields on Treasury bills with comparable maturity during 1961-1968. As would be expected, yields on Federal agencies—issues that in several respects are quite similar to Treasury bills—were the closest to yields on bills, averaging

Chart 4.

MONTHLY YIELD SPREADS: SELECTED MONEY MARKET INSTRUMENTS over TREASURY BILLS

Three-Month Maturities



Note: All spreads measured on "bond-equivalent" basis.
Last entry: December 1968
Source of data: Salomon Brothers & Hutzler

only 14 basis points higher during the 1961-1968 period. In contrast, the average spreads above bills for CDs, bankers' acceptances, and finance paper were 35, 40, and 44 basis points respectively.

Yield spreads for three-month maturities widened substantially after 1965. The average spread between bills and Federal agencies during 1966-1968, for example, was 20 basis points, nearly three times the 7-point average spread during the 1961-1965 period. For the other three issues shown in Chart 4, average yield spreads after 1965 were about twice the respective averages for the previous five years.

Two factors associated with the wider spreads after 1965 should be mentioned. One stems from the notion that yield differentials can emerge when differences in risk, marketability, and investor preferences exist among short-term issues. All money market rates of course rose sharply after 1965. However, because Treasury bills are generally better known and more widely preferred

than other issues, bill yields did not rise as fast as other short-term yields. Suppliers of other "less-known" issues had to pay a greater differential in order to find ready buyers.

The second factor associated with wider yield spreads can be linked with public policy. As previously mentioned, the volume of outstanding Treasury bills nearly doubled between 1961 and 1968. In addition, as the following data show, Treasury bill ownership also changed—particularly after 1965.

Date	Total Treasury Bills Outstanding	Held by Federal Reserve Banks and U. S. Government Accounts	Held by Private Institutions and State and Local Governments
	(bil. of $)	(bil. of $)	(bil. of $)
Mid-1961	$37.1	$ 3.6	$33.5
Mid-1963	47.8	4.5	43.3
Mid-1965	54.2	9.0	45.2
Mid-1966	54.9	11.0	43.9
Mid-1967	58.9	17.9	41.0
Mid-1968	64.4	20.6	43.9

Clearly, the volume of Treasury bills held by Federal Reserve banks and official U. S. Government accounts increased in absolute amounts and in relation to the amounts held by private investors. In fact, after mid-1965, the supply of Treasury bills in the hands of the public declined slightly—from $45.2 billion in mid-1965 to $43.9 billion in mid-1968. If the Federal Reserve banks and the U. S. Government accounts had not purchased a large amount of outstanding bills during this period, the burden of absorption of net new issues of bills would have fallen on the private sector. Conceivably, the additional bills would have been absorbed only at lower prices, which would have meant higher yields on bills and narrower yield spreads between bills and other money market instruments.

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