

Treasury-Federal Reserve Study of the
U.S. Government Securities Market

FEDERAL AGENCY DEBT AND ITS SECONDARY MARKET

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I. INTRODUCTION AND SUMMARY OF FINDINGS

Federal Agency debt is not a new market instrument. Federal Agencies have been selling their securities to the public since before World War II. But the size of Agency debt outstanding was only \$1-1/2 billion as late as 1950, and its secondary market virtually nonexistent. The growth in Agency debt during the fifties, and particularly in the sixties, has been enormous. By mid-1967, Agency debt totaled just under \$24 billion, larger than commercial paper, finance company paper and bankers' acceptances combined. Accompanying the growth in Agency securities has been the development of an active secondary market. Trading in Agency issues during the last year has been averaging \$200 million or more each day. Compared to trading in U. S. Government securities, which averages over \$2 billion a day, the Agency market appears small, but its secondary market is more developed than that for any private asset.

With the growing activity and breadth of its secondary market, and thus the enhanced marketability of the securities, Agency debt is becoming an increasingly important substitute for U. S. Government securities in investor portfolios. And thus developments in the Agency market should increasingly be felt in the Government securities market as well. This has already been borne out by the 1966 experience. The sharp increase in Agency debt during early and mid-1966, absorbed by investors only at successive new highs in interest rates, was an important element in the ensuing

near financial crisis. Not only were the rising Agency yields directly translated into higher yields on Treasury and private securities, but the Agency supply situation contributed to the market feeling of potential crisis.

This paper describes and analyses the secondary market in Agency securities. The remaining chapters include (1) The Characteristics of Federal Agency Debt (including size, risk, maturity, yields, and ownership); (2) The Homogeneity of Agency Securities; and (3) Indicators of Market Performance. For purposes of analysis, considerable data were drawn together from a wide variety of sources, some less reliable than others. Where possible, the analyses included the fifties to permit temporal comparisons; often, however, data were available only for the sixties.

A few words on the nature of Agency debt will help to define and limit the focus of this study. Debt of all Federal Agencies can be subdivided into three general types: direct guaranteed, direct non-guaranteed, and guaranteed participation certificates. Agency securities that are guaranteed as to principal and interest by the U. S. Government are not considered in this study. While such direct guaranteed debt has grown gradually in size, it still totals only around \$500 million; and because single issues are so small it is by and large not readily tradeable.^{1/}

^{1/} As of June 30, 1967, only three individual guaranteed issues exceeded \$25 million in size.

Of the two remaining types, direct non-guaranteed issues comprise the bulk of Agency debt outstanding--some \$18 billion in mid-1967. Non-guaranteed securities^{1/} are the liabilities of six Federal Agencies. The Agencies are either supervised, partially-owned, or entirely-owned by the U. S. Government.^{2/} These six Agencies include the Federal Land Banks, the Federal Intermediate Credit Banks, the Banks for Cooperatives, the Federal Home Loan Banks, the Federal National Mortgage Association (secondary market operations function), and the Tennessee Valley Authority.

The expenditures of these Agencies, with the single exception of TVA, are intimately related to the extension of credit directly or indirectly to the selected sectors of housing and farming. The Banks for Cooperatives, FICB, and FLB provide loans of varying maturities to private farm groups. The Federal Home Loan Banks lend to savings and loan associations and to other miscellaneous savings institutions. Finally, FNMA provides supplementary assistance to the mortgage market through secondary market purchases and sales.

Their net debt issuance (or repayment) is, in turn, directly related over the long-run to the net expenditures (or receipts) of the Agencies. By and large, net loan extension by the Agencies will result in a growth in Agency debt outstanding of roughly the same amount. Over the short-run, let us say several months, the

1/ While not guaranteed by the U. S. Government, they are of course guaranteed by the Agencies themselves.

2/ The net expenditures of these Agencies are included as part of U. S. Government expenditures on a cash budget basis.

Agencies have available some alternative sources of lendable funds. The Banks for Cooperatives and FICB at times borrow relatively small amounts from commercial banks. The Federal Home Loan Banks have a sizable portfolio of U. S. Government securities on which they often draw to supplement financings or to tide them over periods between financings. And FNMA may borrow directly from the Treasury, and often does on an interim basis prior to a debt sale.^{1/}

The second type of Agency debt instrument considered in this study is the participation certificate. This is a quite new instrument, first offered in late 1964. Its growth has been rapid, however, and at mid-1967, some \$5.7 billion of fully marketable PC's were outstanding. These instruments are participations in pools of assets, such as VA- and FHA-guaranteed mortgages and Export-Import Bank, Commodity Credit Corporation or Small Business Administration loans. Except for Export-Import Bank and CCC certificates, PC's are generally called FNMA PC's since FNMA acts as the trustee for the sales. PC's are now considered to be fully guaranteed by the U. S. Government.

By their nature, sales of PC's are at the discretion of the Federal authorities; their size is not determined by the operating expenditures of the Agencies involved. They are in effect a substitute means of financing the Government's deficit. While their

^{1/} This is meant to be only a cursory look at the functions, expenditures, and financing of these Agencies. A detailed examination would show considerably more complicated balance sheets than indicated here. Such detail is presented in D. Hunter, "U. S. Government Agency Financing", a memo from the Federal Reserve Bank of New York. Also see "Federal Agency Securities," in Monthly Review, Federal Reserve Bank of San Francisco (September, October, and November, 1963).

interest cost is higher than that of direct Federal debt, they have been attractive to the authorities at least partly because they enter the Federal budget accounts as negative expenditures, thus reducing the size of the budget deficit (or increasing the budget surplus).^{1/}

The major findings of this study of Agency debt and its secondary market follow.

(1) The steady growth in Agency debt already noted has, over the long-run, been accompanied by declining spreads between yields on Agency and Treasury securities. This would indicate an improvement in the Agency market.

(2) The demand for Agency debt has risen with, if not ahead of, the supply. From the fifties, there has been a dramatic improvement in the breadth of the market, as evidenced by the wide variety of investors who have fairly recently acquired Agency issues, often while simultaneously selling U. S. Government securities. The larger nonfinancial corporations and state and local governments appear to participate in the Agency market in the same degree as in the U. S. Government securities market. Commercial banks (particularly reserve city banks) and the larger nonbank financial institutions (particularly life insurance companies), however, account for lesser shares of non-guaranteed Agency debt than

^{1/} For greater detail on PC's see Lawrence Banyas, "New Techniques in Debt Management Since the Late 1950's," Treasury-Federal Reserve Study of the U. S. Government Securities Market, 1967.

of U. S. Government issues and for still lesser shares of PC's. The difference is especially evident in the longer-term maturities. Apparently, these two investor groups view at least long-term Agency securities as less marketable than Treasury issues. But again, the difference has diminished during the sixties, indicating relative improvement in the Agency market.

(3) It is clear that the supply of Agency debt rose too rapidly during 1966 to enable absorption by investors without considerable congestion in the Agency, and indeed in other, markets. The \$5 billion rise in Agency debt over the first two quarters of the year was accompanied by drastic rises in yield spreads between Agency and Treasury securities, and the spreads had not yet returned to normal levels by mid-1967. Thus, while a steady rise in the supply of Agency debt is a prerequisite for improvement in the Agency market over the long-run, an excessive rise in debt can lead to short-run market deterioration.

(4) There appears to be a single market for all of the diverse non-guaranteed Agency securities and participation certificates. That is, investors apparently view the securities as homogeneous. This study found no consistent or significant differences in market yields or in ownership of the various Agency securities, including PC's.

(5) Some evidence was found, however, indicating that the size of separate Agency issues is an important factor in their marketability. Agency issues in 1967 ranged widely in size, from \$20 million to \$535 million (publicly-held amounts). The evidence gathered in this study, albeit limited, showed that quoted yields on the smaller issues varied quite widely off the yield curve and that they are to a greater degree than the large issues lodged in the portfolios of comparatively inactive investors. The small size of many issues, particularly long-term maturities, is probably a major reason for larger commercial banks and nonbank financial institutions to participate less actively in the Agency than in the U. S. Government securities market. Moreover, the sharply increased participation of financial institutions in the new, larger PC's from their meager participation in the small, serial PC's is a further indication of the importance of issue size in the market's development.

(6) The volume of trading in the Agency secondary market has risen sharply from the early sixties in both short- and long-term maturities, indicating increased ease for investors to effect buy and sell orders with speed and at market prices. The increase in activity resulted from the rise in Agency debt and the rising volume of gross new issues. Activity in the Agency market is still only 10 per cent of

trading in the U. S. Government securities market, though over the sixties activity in Agencies has grown relative to Governments. In the short-term sectors of the markets, however, Agency trading and turnover ($\frac{\text{transactions}}{\text{debt}}$) are at least the equivalent of trading and turnover in Treasury coupon issues due within 1 year.

(7) It has sometimes been asserted that trades, and particularly purchases, of Agency securities are effectuated primarily during Agency financings, and that the supply of Agency debt available for trading apart from financings is limited. This study found that while activity of course was higher during financing periods, market activity remained relatively high at other times. In particular, excluding trading during financing periods does not alter the conclusion that the short-term Agency market is at least the equivalent of the short-term Treasury coupon market. However, there did seem to be a greater spread between all trading and trading outside of financing periods in the longer-term sectors of the Agency market.

(8) Dealers have become more willing to position Agency securities from early in the sixties. There has, in fact, been a three-fold rise in dealers' positions. The higher positions have resulted from the greater supply of debt and market activity and from the rise in gross new issues.

(9) Spreads between dealers' bid and asked prices in the short-term Agency market are as low as in the U. S. Government

securities market. Quoted spreads on intermediate- and long-term Agency securities, however, have been around 1 point. While such issues certainly trade at lower spreads than the often nominal quotes, it is clear that the spreads are larger than in the Treasury bond market.

II. CHARACTERISTICS OF FEDERAL AGENCY DEBT

As a preface to an analysis of the secondary market in Federal Agency securities this chapter describes the characteristics of Agency debt. Such characteristics include supply, maturity structure, risk, market yields, and ownership. These supply and demand factors are integrally related to Agency market performance; they in part influence and in part reflect the condition of the market.

A. Supply

In mid-1967 Agency debt outstanding totaled \$24 billion.^{1/} Compared to marketable U. S. Government debt, which stood at \$211 billion, Agency debt was small. But the growth in Agency debt during the fifties and sixties has been extremely rapid. At the beginning of the fifties there was only \$1-1/2 billion of Agency debt outstanding. Starting from such a low level, the rise in Agency debt takes on added significance. It has, in fact, signaled the institution and development of a new securities market.

The growth in Agency debt has been virtually continuous, as the accompanying table illustrates. Agency debt has, since 1950, roughly doubled every 5 years. Its increase has been especially rapid since the end of 1965, with the supply up \$8-1/2 billion.

^{1/} Unless otherwise noted, Agency debt is defined to include non-guaranteed Agency issues, FNMA participation certificates and fully marketable Export-Import Bank participation certificates. The \$500 million CCC participation certificate issue in April, 1966 and retired in August, 1966 is also included.

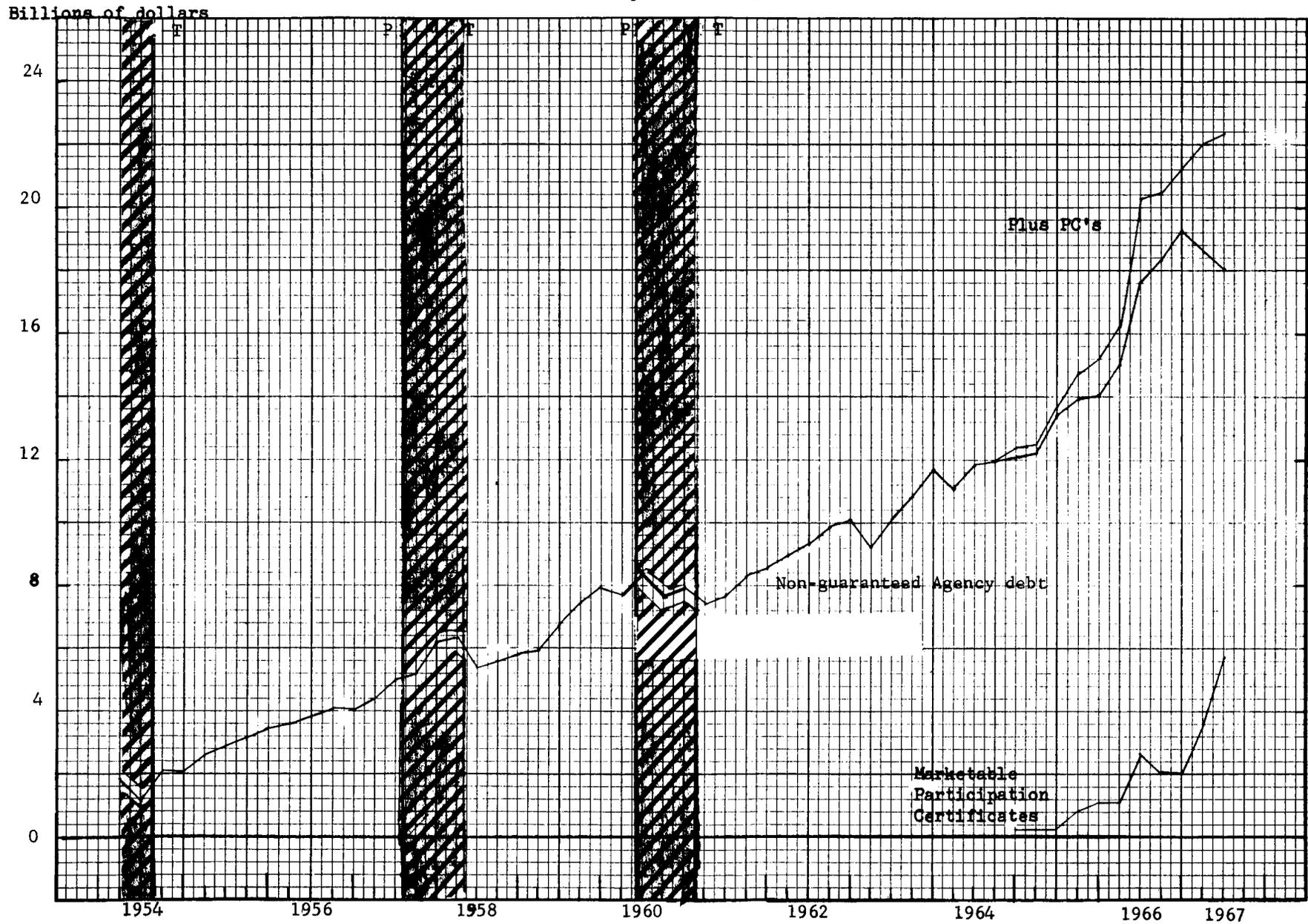
Profile Chart 1 shows non-guaranteed Agency debt outstanding and participation certificates for the 1954-1967 period. These data are presented in Appendix Table 1.

Federal Agency Debt Outstanding
(Billions of dollars)

Dec. 31, 1950	1.8
1955	3.6
1960	7.9
1965	15.3
1966	21.3
June 30, 1967	23.8

The rise in Agency debt during this period has in part derived from the introduction of several new types of Agency securities. The Federal National Mortgage Association did not issue securities until 1955, nor did the Tennessee Valley Authority until 1960. Finally, the introduction and growth of marketable participation certificates during and after 1964 has accounted for roughly one-half of the rise in Agency debt in recent years. But the upward trend in Agency debt has not resulted solely from the introduction of these new types of issues. The already established issues of the Farm Credit Agencies and of the Federal Home Loan Banks have also trended upward as the demand for their credit has grown along with the nation's GNP.

CHART 1
 PROFILE OF TOTAL AGENCY DEBT OUTSTANDING
 (End of quarter data, 1954-67)



SOURCE: Appendix Table 1

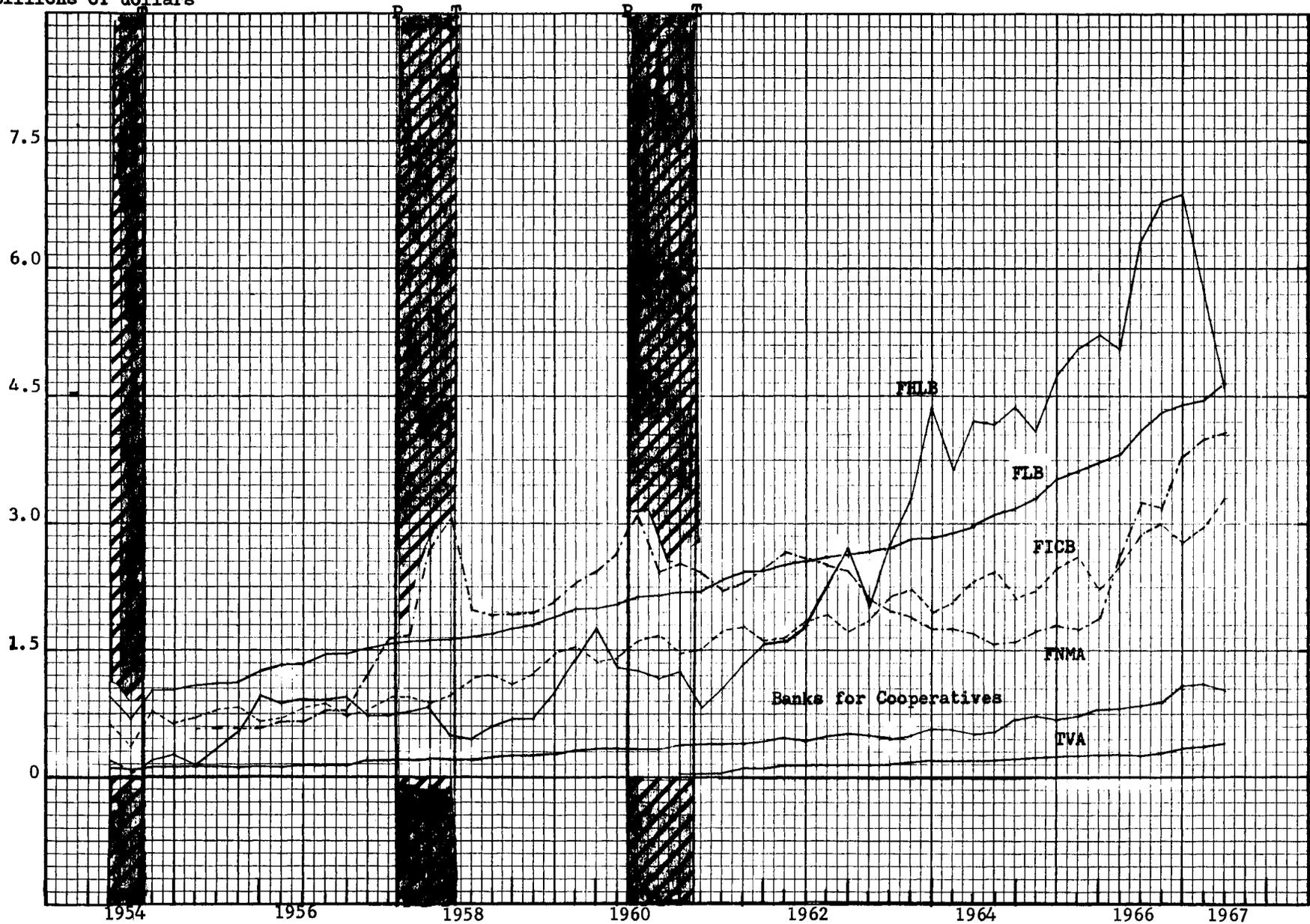
In Profile Chart 2 and Appendix Table 2 non-guaranteed Agency debt is shown by type of issue, and the upward trend is evident for all types. Growth in the debt of FNMA and FHLB has been most rapid, so that their issues now total roughly as much as the issues of the Federal Land Banks.

Changes in the supply of Agency debt show cyclical and seasonal variations that to some degree are obscured by the pronounced trend. These variations are particularly evident when the types of Agency issues are considered separately. All five types of non-guaranteed Agency debt can be seen to have some cyclical component, though it is most evident for FNMA and FHLB debt. In general, the rise in Agency issues is correlated with the degree of monetary ease or tightness. When money is tight, Agency debt rises rapidly; when money is easy, Agency debt rises more slowly or, in some cases, declines. These shifts reflect, of course, increased demands for the credit of the five Agencies when alternative credit availability is diminished and when market interest rates are high.

The direct interest rate pressures resulting from a rising or falling supply of Agency debt thus generally reinforce rate pressures over the cycle resulting from shifts in monetary policy and in private credit demands. To some degree offsetting, of course, is the concurrent provision of credit by these Agencies to the selected sectors of housing and farming. But even with no net change in credit flows, a rapid shift in the supply of Agency debt can have a marked impact on securities market, as borne out by the experience of 1966. Severe credit restraint did, and can in the

CHART 2
 PROFILE OF NON-GUARANTEED AGENCY DEBT BY TYPE
 (End of quarter data, 1954-67)

Billions of dollars



SOURCE: Appendix Table 2

future given the present institutional framework, cause a sharp rise in demands on all of the Agencies simultaneously and result in an increase in Agency debt sizable enough to have far-reaching effects on public and private securities markets generally. In fact, continuing growth of all types of Agency debt increases the potential for even greater swings in Agency debt in the future.

Non-guaranteed Agency debt also fluctuates seasonally, reflecting the seasonal nature of credit demands on the Agencies. The seasonal variation in the debt issuance (or repayment) of the Agencies can be seen in Profile Chart 2 and in addition Appendix Table 3 shows their quarterly net expenditures or receipts. At least during the sixties, the Federal Home Loan Banks have repaid debt during the first quarter with the repayment of borrowings by savings and loan associations; FHLB borrowing has tended to be heaviest during the second quarter of the year. Debt issuance by FNMA does not appear to have any seasonal pattern.

Borrowing by the Farm Credit Agencies taken together is seasonally high during the first half of the year, though the separate Agencies have partially offsetting borrowing patterns. The Federal Intermediate Credit Banks, founded in order to help farm organizations meet seasonal production and marketing costs, repay their debt during the fourth quarter and borrow during the remainder of the year, particularly in the second quarter. The Federal Land Banks, whose loans are long-term, show little seasonal variation in their borrowing but it does appear to usually be largest during the second quarter. The Banks for Cooperatives, on the other hand, repay debt during the

first half of the year and borrow in the market during the second half, mainly in the fourth quarter.

When aggregated, the seasonal variation in expenditures and borrowing of these Agencies is quite sharp, as the accompanying table indicates. Agency borrowing is concentrated during the second and third quarters of the year and is highest during the second quarter. It was no accident, then, that congestion in the Agency market in 1966 peaked during the summer months, when the cyclically heavy borrowing needs of the Agencies were superimposed on needs already at their seasonal peak.

Net Expenditures or Receipts (-) of Federal Agencies^{1/}
(Quarterly; Millions of dollars)

	I	II	III	IV
1961	- 645	604	496	309
1962	- 401	844	599	130
1963	-1,013	1,131	1,168	512
1964	- 376	738	459	168
1965	- 259	1,191	645	23
1966	111	1,633	955	-547
1967	-1,878	- 885		

^{1/} Includes FHLB, FICB, Bks. Coops, and FLB.
Source: Appendix Table 3.

Export-Import Bank participation certificates have usually been issued during the first half of the year, specifically in February and May. PC issues by FNMA have not followed a set pattern, and indeed need not. Once authorized by Congress, sales of PC's

might be timed to satisfy any number of goals, such as to aid in meeting Treasury financing requirements, to mesh smoothly with other Agency financings, or to take advantage of a receptive market.

B. Maturity Structure and Other Characteristics

The comparative marketability, liquidity and yields of securities reflect a variety of factors that differ from one market to another and that differ even within given markets. Of major importance is the breadth and depth of the secondary market. But of some significance as well are factors such as length to maturity and risk of default, which are considered briefly in this section.

Maturity structure. The bulk of non-guaranteed Agency debt is short-term. In mid-1967, about two-thirds of such debt matured within 1 year. Of the remainder, 22 per cent matured in 1-5 years and 10 per cent after 5 years. There is a greater concentration of Agency debt in the short maturities than is the case in the U. S. Government securities market. In mid-1967, fewer than half of all Treasury issues outstanding were due within 1 year while almost 25 per cent were due after 5 years.^{1/}

The growth in Agency debt in the recent past has embraced all maturities. Non-guaranteed Agency debt due within 1 year totaled \$12.2 billion in mid-1967 as compared with \$5.3 billion in mid-1960. Over the same period, debt due in 1-5 years rose from \$1.7 billion to

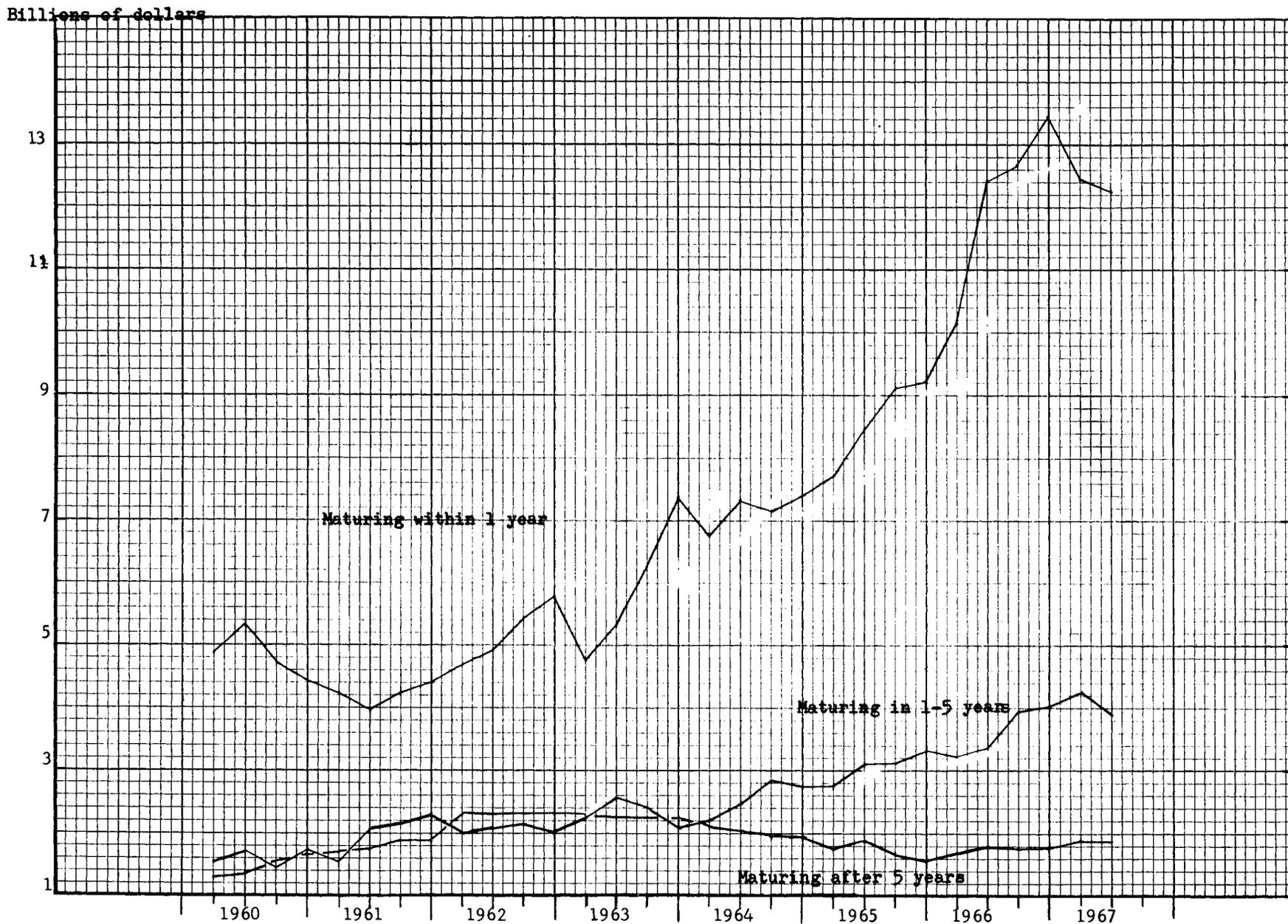
^{1/} The proportion due after 5 years was an even larger 31 per cent in mid-1965, about the time the Treasury had to stop issuing bonds because yields had risen above the 4-1/4 per cent interest rate ceiling.

\$3.9 billion and debt due after 5 years from \$1.4 billion to \$1.9 billion. The longer-term issues, however, grew at a slower pace and the proportion of non-guaranteed Agency debt in long maturities has declined to its 10 per cent level from 16 per cent in mid-1960 and from 25 per cent in early 1962. Data on Agency debt by maturity are shown in Profile Chart 3 and in Appendix Table 4.

The maturity composition of Agency debt differs widely among the issuing Agencies. These differences in general reflect the structure of the Agency's assets. The loans and discounts of the Federal Intermediate Credit Banks are, as a rule, short-term and are restricted to maturities of 7 years or less. As a result, FICB debt cannot exceed 5 years and in practice in recent years their debentures have all been issued with a final maturity of 9 months. The Banks for Cooperatives also generally make short-term loans, and all of their debt has recently been issued with a 6-month maturity. Loans of the Federal Home Loan Banks may be relatively long-term as well as short-term and FHLB debt has sometimes been issued in the 1-5 year maturity area. Over the last few years the longest-term new issue by FHLB carried a 2 year 10 month maturity while most of the issues had original maturities of about 1 year.

Non-guaranteed Agency debt due in more than 5 years is issued exclusively by FLE, FNMA and TVA. The Federal Land Banks make loans of from 5-40 years. In mid-1967, FLB bonds were about evenly divided between within 1 year, 1-5 year, and after 5 year maturities. On the same date, their longest-term issue carried an 11-1/2 year final maturity.

CHART 3
 PROFILE OF MATURITY STRUCTURE OF NON-GUARANTEED AGENCY DEBT
 (End of quarter data, 1960-67)



SOURCE: Appendix Table 4

The secondary market operations function of FNMA of course holds assets that consist mostly of VA- and FHA-backed mortgages. Market obligations of FNMA thus also encompass long-term as well as short-term maturities. As of mid-1967, most of the FNMA debentures outstanding were to mature in 1-5 years, with a relatively few number of issues due in less than 1 or in more than 5 years. In addition to the debentures, FNMA issues short-term discount notes due in 30 to 270 days.

The Tennessee Valley Authority is the sole Agency issuing non-guaranteed debt whose function is not intimately related to credit extension, and the bulk of its assets are real as opposed to financial. TVA debt presently includes several bonds due after 10 years and short-term discount notes sold at auction.

Participation certificates have a considerably longer average maturity than do the non-guaranteed Agency issues. The maturity of PC's derives from the characteristically long-term nature of the pooled assets backing the PC's. In mid-1967, of the \$5.7 billion of marketable PC's outstanding, all but \$0.2 billion were due in more than 1 year and some \$2.5 billion were due after 5 years. The longest-term PC outstanding carried a final maturity of just under 20 years.

Virtually all of the outstanding balance of PC's has been issued in the period since early 1965 at a time when the Treasury has been unable to issue any debt due in more than 5 years because market yields rose above the 4-1/4 per cent interest rate ceiling set

by Congress on Treasury bonds.^{1/} The exclusion of Agency debt from the rate ceiling permits the issuance of some long-term debt by the Federal authorities during expansionary periods in support of a counter-cyclical debt management policy.

Risk of default. Debt of the U. S. Government is as free from risk of default, as to either principal or interest, as any debt obligation. In fact, it is probably viewed by most investors as being a completely riskless investment. Agency debt, as obligations of wholly-owned, partially-owned, or Government-supervised Agencies, shares in the risk-free nature of direct U. S. debt in varying degrees.

Participation certificates are fully guaranteed by the U. S. Government. In the September, 1966 ruling of the Attorney General it was stated that PC's, which are issued by branches and dependent Agencies of the Federal Government, "constitute general obligations of the United States backed by its full faith and credit." In addition, of course, PC's are backed by pools of financial assets.

Other Agency debt, which is by and large issued by Agencies with only partial Government ownership, is not guaranteed by the U. S. Government, though it is of course guaranteed by the issuing Agency. The fact that the Agencies were created by Congress, are supervised and in some cases partially owned by the U. S. Government, and in some cases may borrow directly from the Treasury makes their

^{1/} At the end of fiscal year 1967, Congress authorized a redefinition of Treasury notes that extends their maturities out to 7 years from the previously-defined 5 years. Treasury notes are not subject to the interest rate ceiling.

debt in practice almost Government-guaranteed. Of the six Agencies that issue non-guaranteed debt, in only two cases--FHLB and FLB--have the Agencies completely retired stock held by the U. S. Government. The remainder are partially Government-owned. Three of the six--FNMA, FHLB and TVA--have the authority to borrow directly from the Treasury; FNMA may borrow up to \$2-1/4 billion and FHLB \$1 billion.

Furthermore, the debt of these Agencies, with the exception of TVA, is backed by financial assets of at least a comparable amount. The assets of course vary in liquidity, ranging from cash reserves and U. S. Government security holdings to long-term loans and mortgages (VA- and FHA-guaranteed).

Other characteristics. Securities may be in either bearer or registered form. Bearer form securities have greater marketability as they are more quickly and easily traded. Registered securities require signatures by owners and other registration procedures that are time-consuming; in addition, they cannot be transferred over the Federal Reserve wires. Non-guaranteed Agency issues may all be obtained in bearer form.^{1/} The same is now true of FNMA participation certificates, though this has been the case only since January, 1967. This represents a significant improvement in the PC's marketability, and thus attractiveness to investors.

Also beginning in January, 1967, FNMA participation certificates were marketed as term issues, with relatively sizable amounts in each maturity.^{2/} Prior to 1967, the FNMA PC's were marketed as serial issues,

^{1/} In some cases, especially on the shorter-term issues, they are available only in bearer form.

^{2/} In the period since then there have been 8 separate FNMA PC issues marketed, ranging in size from \$200-550 million (\$150-400 million offered to public investors).

with small amounts in a number of issues ranging over a variety of maturities. The serial issues ranged in size from only \$20-70 million, and were thus not readily tradeable in the secondary market.

At the same time, Export-Import Bank PC's were made fully marketable. In prior offerings, Export-Import PC's were sold only to restricted groups of investors, primarily commercial banks. These PC's are available in bearer as well as registered form.

Another recent development enhancing the attractiveness of Agency debt has been the institution of repurchase agreements against Agency issues by the Federal Reserve. Repurchase agreements against Agency issues were first made in December, 1966 and have, since that time, formed a regular part of System Rp operations. The immediate impact of the Rp's is to make Agency securities more attractive to dealers. But as dealers become more willing to hold Agency debt the entire market benefits through greater marketability, resulting in lower spreads between Agency yields and yields on other securities.

C. Yields and Yield Spreads

Agency yields are subject to the same general forces that determine other market rates. As Chart 4 shows, Agency yields move over the cycle in line with other yields. In 1966, yields in all of these markets reached post-War record highs, rising to--and in some cases above--6 per cent. By mid-1967, yields had declined, though a glance at the Chart shows that they still remain at high levels.

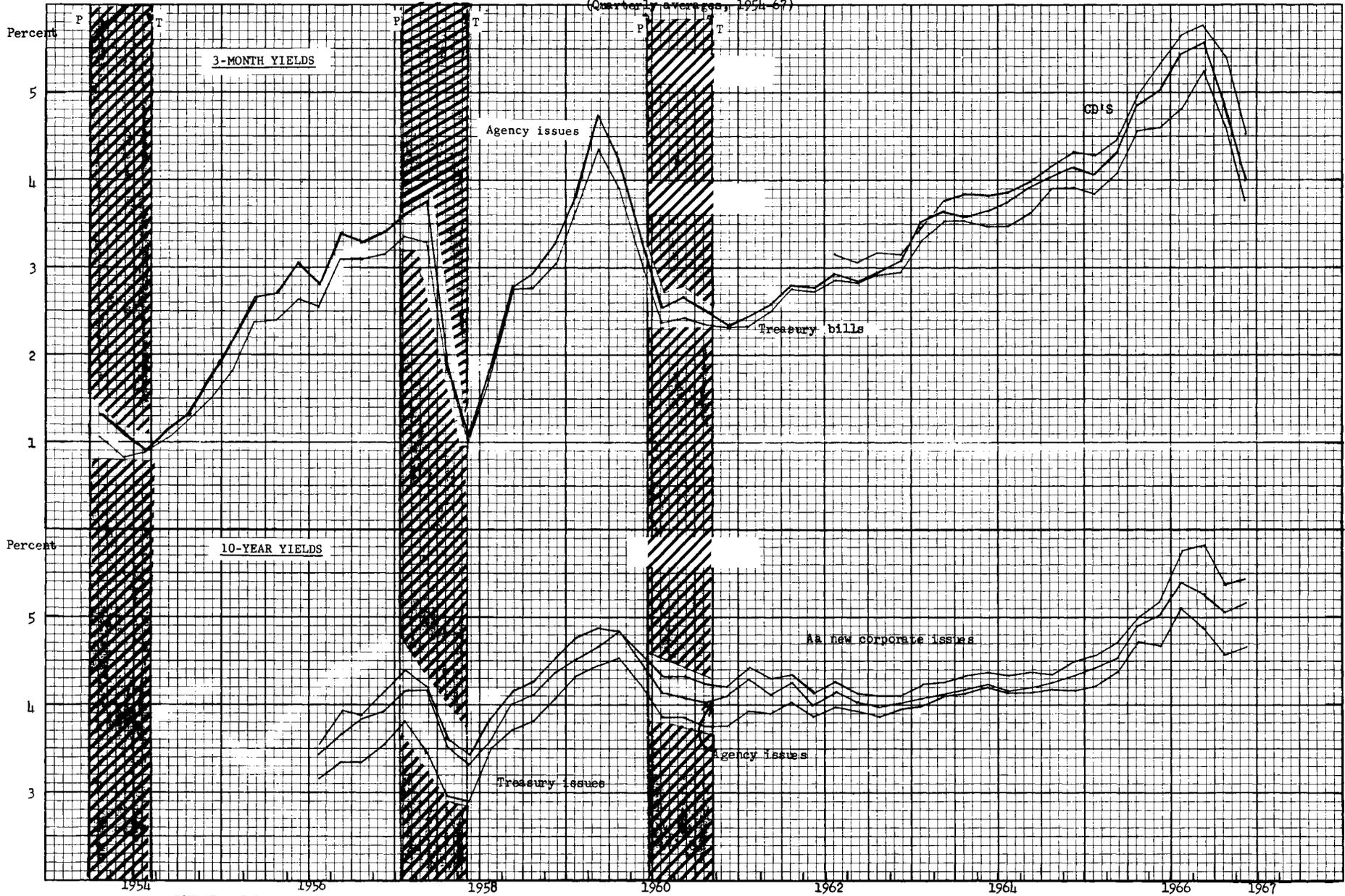
In comparing yields in the various markets, it can be seen that Agency yields are generally higher than Treasury yields but lower than yields on private investments, such as corporate securities or CD's. The spread between yields on the various instruments itself varies within a fairly wide range, since yield levels at any point in time may reflect supply and demand factors peculiar to a specific market as well as factors general to all markets. That yield spreads can change radically is clear from the 1966 experience. As shown in the Profile Chart 5 of Yield Spreads,^{1/} in 1966 there was a sharp increase in the spread between Agency and Treasury yields and between private and Agency yields (and thus between private and Treasury yields). Yield spreads between Agencies and other issues rose to around 50 basis points.

During 1966, the supply of Agency securities rose rapidly, as did supplies of private issues, particularly corporates. On the other hand, the supply of long-term Treasury issues was declining^{2/} and the supply of Treasury bills also declined seasonally over the

^{1/} These spread data are in Appendix Table 5.

^{2/} No Treasury debt due in more than 5 years has been issued since early 1965, and the supply has declined with the passage of time. In 1966 alone, it declined by \$7.2 billion.

CHART 1
 PROFILE OF MARKET YIELDS
 (Quarterly averages, 1954-67)



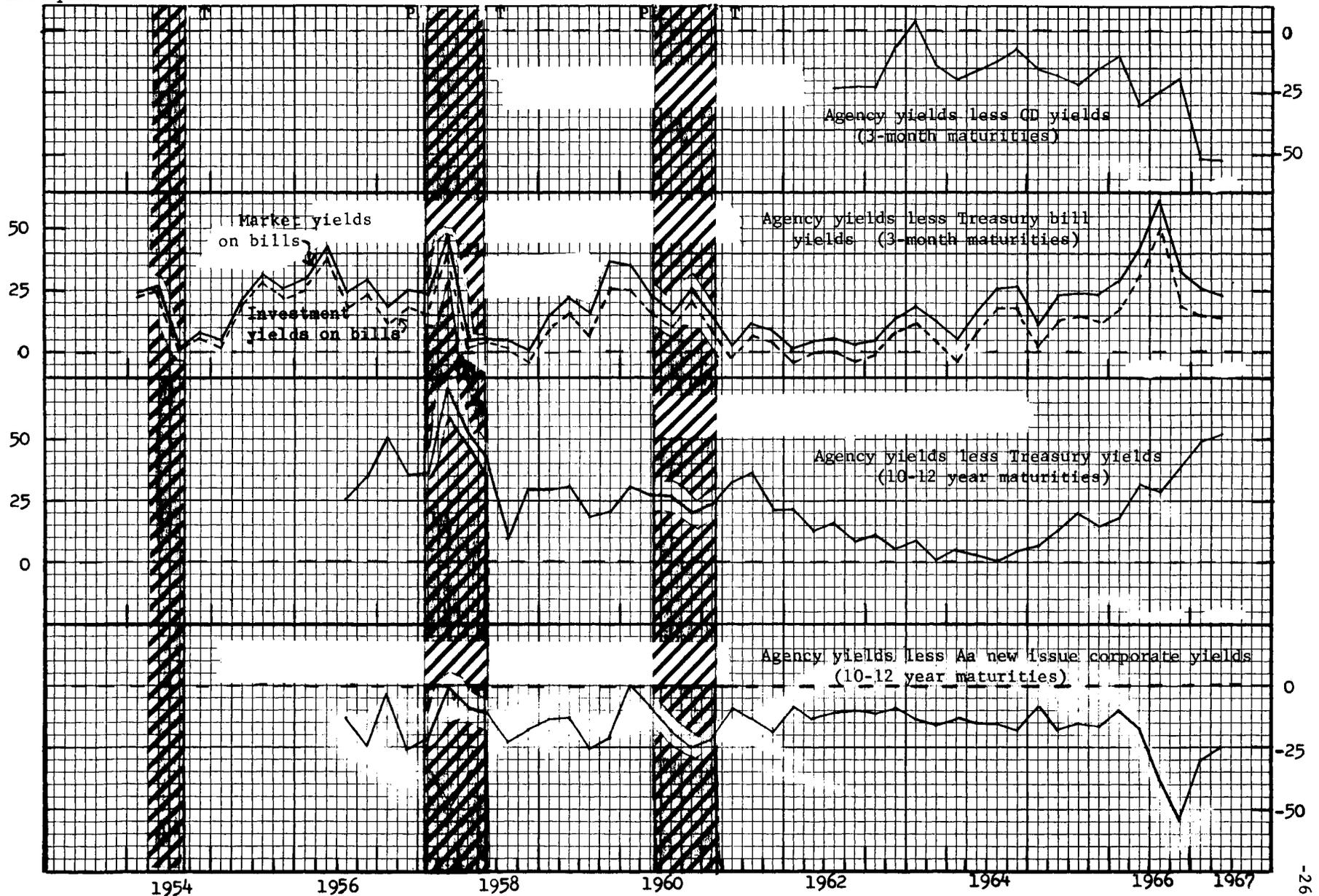
SOURCE: Salomon Brothers and Hutzler, An Analytical Record of Yields and Yield Spreads. Quarterly averages computed from monthly data.

CHART 5

PROFILE OF YIELD SPREADS
(Quarterly averages, 1954-67)

Basis points

Basis points



SOURCE: Appendix Table 5

first three quarters of 1966 when the yield spread with Agencies was increasing. Thus far in 1967, some yield spreads have returned to more normal levels, although there has been no decline in the spread between Agency and Treasury long-term yields, where comparative supply shifts remain unchanged.

Looking back over a longer period one can see a marked secular decline in spreads between long-term Agency and Treasury yields. Panel 3 of Profile Chart 5 shows yield spreads of around 50 basis points during 1956-1957 and spreads of around 25 basis points throughout the 1958-1961 period. Beginning in 1962 there was a steady decline in the spread until it was no more than 5 basis points during 1964. Thereafter, the spread increased. The decline in the spread is certainly in part related to an improvement in the breadth of the Agency market; larger investors were increasing their share of the market considerably even at the declining spreads. However, the spread decline may also be attributed partly to differing supply shifts. During the early sixties, advance refundings were adding to the supply of long-term Treasury debt while long-term Agency debt outstanding was declining slightly. When the supply situation was reversed in 1965, with the introduction of PC's and the cessation of long-term Treasury issues, the spread began to increase.

In Panel 4, the spread between Agency and corporate yields shows virtually no change, apart from its marked rise in 1966. It fluctuated widely in a 25 basis point range in the fifties, on several occasions decreasing to zero. In the early to mid-sixties it remained in a narrower 10-15 basis point range.

In long-term markets in general, the quarter-to-quarter fluctuation in yield spreads diminished considerably during the early sixties, as the Profile Chart makes evident. While it is certainly possible that the diminished spread fluctuations might represent a growing degree of investor arbitrage among various investments, it may also simply reflect the greater day-to-day stability in yields in all markets during the period.

Yield spreads between short-term Agency issues and Treasury bills, shown in panel 2 of Chart 5, fluctuate widely over the cycle and to a lesser degree seasonally.^{1/} Spreads between Agency and Treasury yields have, throughout the period under consideration, declined to very low levels during periods of easy money and have risen during periods of cyclical expansion. Thus, the spread was around zero near the troughs of the 1954, 1957-58, and 1960-61 recessions, while it ranged up to around 50 basis points during the subsequent expansions. It would appear that the superior liquidity and marketability of Treasury bills commands a greater premium during periods of high and rising rates and lessened credit availability than during periods of easy money.^{2/}

^{1/} The reader will note two curves drawn on the chart, one utilizing market yields on bills and the other investment yields. Investment yields reflect the true return on the invested funds. They differ from market yields by giving the return on the amount invested rather than on the face amount of the bill at maturity for a 365-day rather than a 360-day year. Agency, and other, yields are always on an investment yield basis.

^{2/} To a minor degree, the cyclical movement of spreads, at least early in the fifties, might be related to varying supplies of bills as versus Agency issues over the cycle. Agency debt, as shown in an earlier section, rises more quickly when money is tight, i.e., during expansions. Treasury debt, on the other hand, during the fifties often rose more quickly during and just after recessions when the deficit was enlarged by a drop in receipts with declining GNP.

Following the 1960-61 recession, the spread remained at very low levels for several years. In fact, using investment yields on Treasury bills the spread was often slightly negative, i.e., Agency yields were less than Treasury bill yields. This sustained period of low spreads probably reflected in part the maintenance of upward pressures on bill yields by official operations of the debt management and monetary authorities.

With the wide cyclical fluctuation in spreads between short-term yields, it is virtually impossible to isolate any secular trends. But clearly improvement in the market for short-term Agency debt would by itself have been expected to diminish the yield spread.

During the sixties, the spread between Agency and Treasury bill yields also shows a consistent seasonal pattern. The spread rises in the second and third quarters and generally drops back in the fourth and first quarters. It will be recalled that new Agency debt issues are concentrated in the second and third quarters, and these quarters have often involved a redemption of Treasury bills. The sharp increase in the spread during the second and third quarters of 1966, to a level of 50-60 basis points, thus partly reflected a normal seasonal rise.

As shown in panel 1 of the Profile Chart, the yield on 3-month CD's has, except for one instance, been above the Agency yield. Generally, the spread has fluctuated in a 5-25 basis point range, although it was much larger through mid-1967. The sharp decline in yields on short-term market securities with an easing of monetary policy in late 1966 did not carry through to CD yields to as great a degree, leaving a 50 basis point spread in the yield differential.

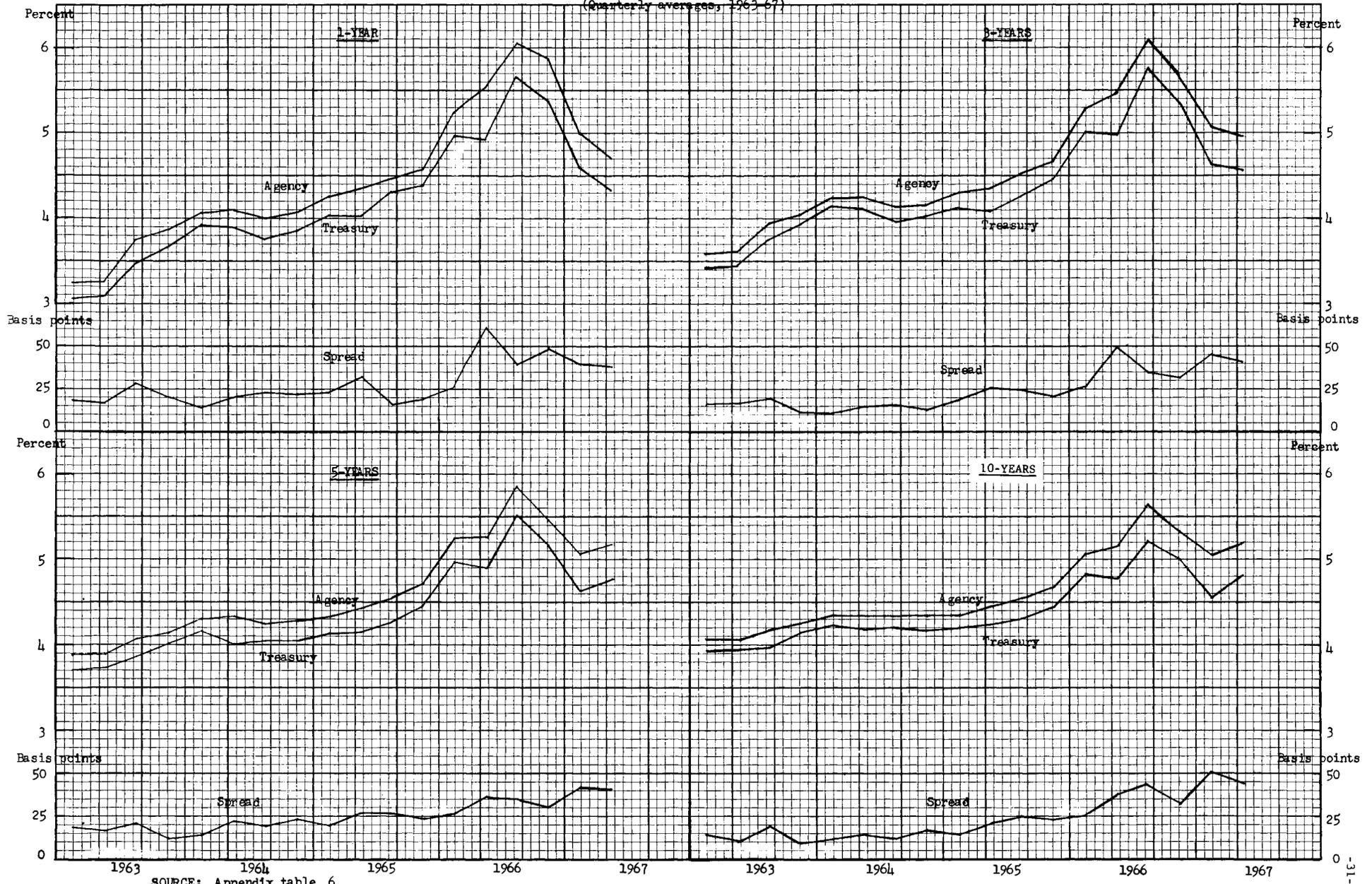
Available data on Agency yields are not always as comprehensive or accurate as would be desirable. Thus an alternative set of data on Agency and Treasury yields is included in the paper. The Treasury Department, for its own use, on specified dates collects yields at constant maturities, i.e., yields derived from points on the yield curve. These data are shown in Chart 6 and Appendix Table 6 for 1-year, 3-year, 5-year and 10-year maturities, from 1963 to mid-1967.

They show essentially the same spread movements, including a sharp rise in the spread during 1966 to around 50 basis points on most maturities. Prior to 1966, the spread on every maturity fluctuated in a 10-25 basis point range. The spread was generally lowest for long-term issues and highest for 1-year maturities. The levels of spreads shown in these data, however, do not always coincide with the Salomon Brothers data. For instance, these data do not show a virtual elimination of the yield differential on 10-year maturities during the 1963-64 period, as do the earlier data.^{1/}

Special market conditions might for a time virtually eliminate the differential between Agency and Treasury yields, but it is unlikely that this condition would be sustained over a long period of time. While Agency issues might be considered in practice as risk-free as Treasury debt, the more developed market for and greater tradeability of Treasury debt relative to Agency debt in most sectors should require

^{1/} Yields used in the two sets of data differ, at least in part because Salomon Brothers yield data are based on offered quotations (except for bills) and Treasury data on bid quotations.

CHART 6
 YIELDS AND YIELD SPREADS FOR VARIOUS MATURITIES
 (Quarterly averages, 1963-67)



SOURCE: Appendix table 6

some yield spread. But a return to a slower but steady growth in Agency debt, accompanied by continued development of the secondary market, should result in a downward drift of the spread.

D. Demand

The growth in Federal Agency debt outstanding since the early fifties has been accompanied by a considerable broadening in its ownership. At the end of 1950, commercial banks held more than 80 per cent of the \$1.8 billion of Agency debt outstanding. The bank share had dropped to 50 per cent by 1955 and to a low of 20 per cent by 1960.

Meanwhile, a host of investor groups added Agency debt to their portfolios. At the end of 1955, Agency holdings of most large nonbank investor groups were only nominal. In the five years after 1955, there was a sharp growth in the Agency holdings of nonfinancial corporations and of nonbank financial institutions. Then, after 1960, state and local governments and individual investors acquired Agency issues at a rapid pace, as did the smaller commercial banks. During the sixties, in fact, many large investor groups increased Agency debt held in portfolio while selling U. S. Government securities.

The entrance of new investors into the Agency market has not been related solely to the increased supply of debt, which led to greater availability of issues as well as widened knowledge of the market. It has surely been dependent as well on the development of the secondary market, and thus improved marketability of Agency debt, and on the attractive yields on Agency issues relative to other securities.

But despite the sharply increased Agency holdings of most of the larger and more active investors, the supply of Agency debt has been increasing so rapidly in the last few years that the share of Agency debt held by these investors has declined from 1962-63 levels. Moreover, comparisons of ownership of Agency and U. S. Government debt show that two investor groups--commercial banks and nonbank financial institutions--account for a smaller share of the Agency market, particularly in the longer-term maturities. Commercial banks in late 1966 accounted for roughly 10 per cent less of all non-guaranteed Agency securities publicly-held than of Governments and this disparity was even more important for reserve city banks alone. Larger nonbank financial institutions accounted for 10 per cent less of over 5-year Agency securities than of Governments. This same disparity was even more true of FNMA PC ownership relative to Governments.

It seems clear that larger (and probably more active) investors in general account for a smaller share of Agency than of U. S. Government debt. Their smaller participation in the Agency market reflects in part, but causes as well, a poorer secondary market. The larger the share of debt held in the portfolios of relatively small investors, the greater is the likelihood that Agency issues will be locked into investor portfolios until maturity rather than traded actively in the secondary market.

Larger investors have increased their share of the Agency market since the end of 1966, however. In PC ownership, in particular,

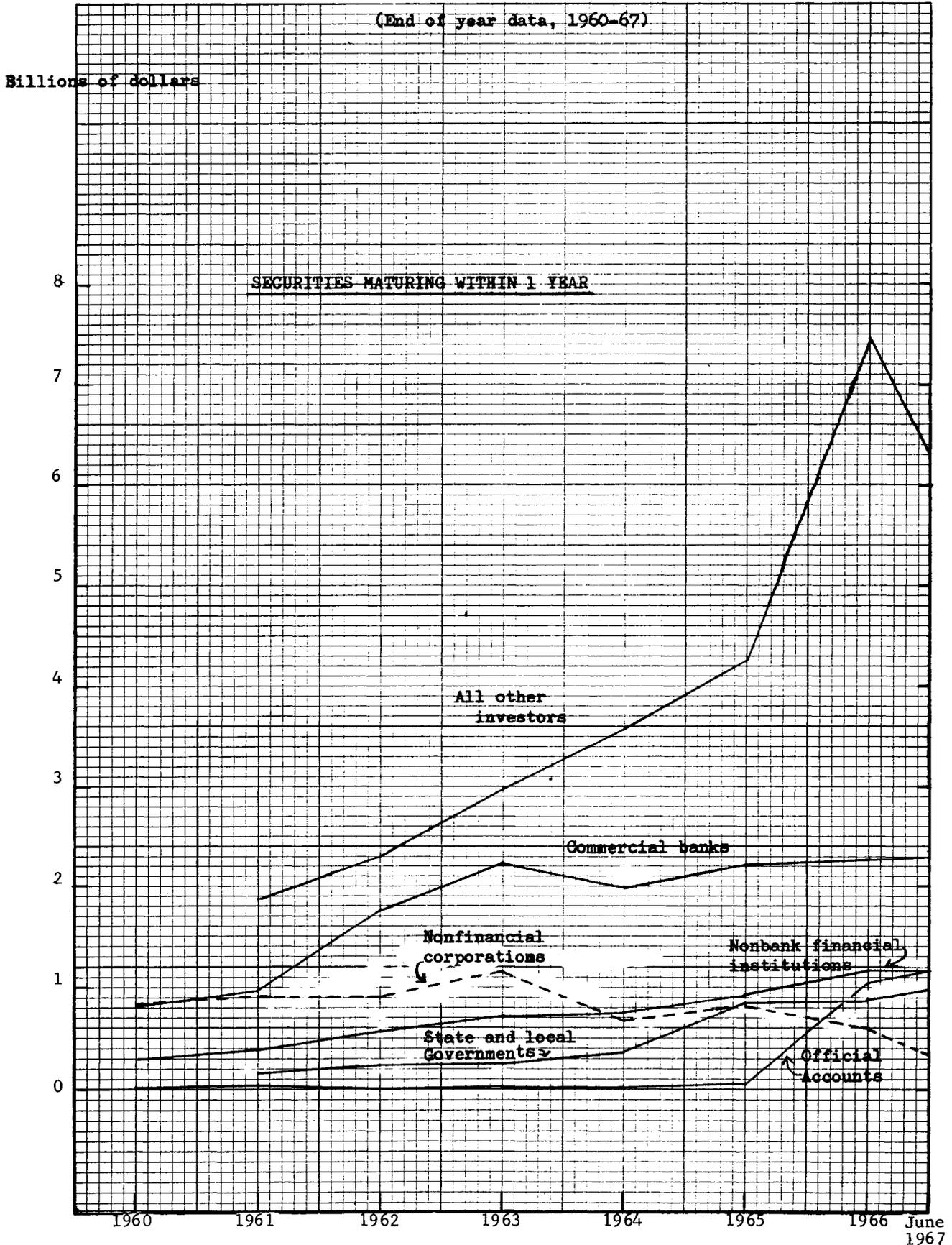
larger commercial banks and nonbank financial institutions together increased their share of PC holdings from 10 per cent to 37 per cent. It would appear that these two investor groups view at least long-term Agency securities as considerably less marketable, due at least partly to the small size of individual issues. It is likely that at least some part of the sharp rise in their share of the PC market during 1967 relates to the previous-noted improvement in the PC's marketability.

The remainder of this section will examine the ownership structure in more detail. Ownership data are presented in Tables 1-10 and are shown in Profile Charts 7 and 7a. The data on non-guaranteed Agency ownership are confined to the period beginning in 1960-1961 as it is only for recent years that the Treasury Survey has included all of the major investor groups. Securities are classified by maturity date since assets held by many investor groups are highly concentrated in particular maturity areas. The Tables also include data on ownership of U. S. Government securities for purposes of comparison. Ownership of PC's is considered separately due to data incomparability.

The reader must be warned that the available data do not present a clear picture of Agency ownership. The Treasury Survey does not cover all holders, but only the larger holders in any one investor class. The coverage in the Survey for any particular class of investors ranges from an estimated 90 per cent of all Agency securities held by the particular group to less than 50 per cent in some cases.^{1/} Therefore, the category called "all other investors,"

^{1/} The estimated coverage for each group is shown in footnotes to Tables 2-5. It also appears that the coverage for any investor group can vary greatly as between Agency and U. S. Government holdings. In all cases, reporting investors appear to account for a lower percentage of holdings of Agencies, implying that small institutional investors hold a larger share of Agency securities than of U. S. Government issues. This divergence makes comparisons of ownership in the two markets somewhat tenuous.

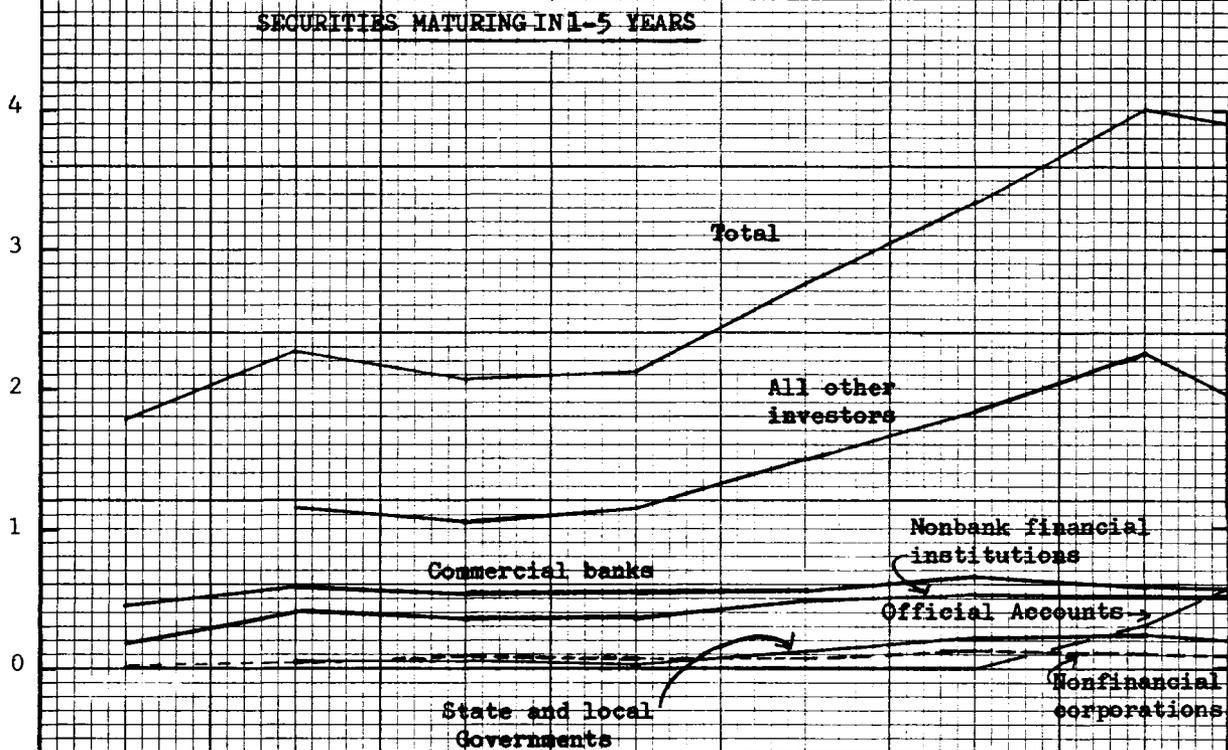
CHART 7
 PROFILE OF OWNERSHIP STRUCTURE OF NON-GUARANTEED AGENCY DEBT



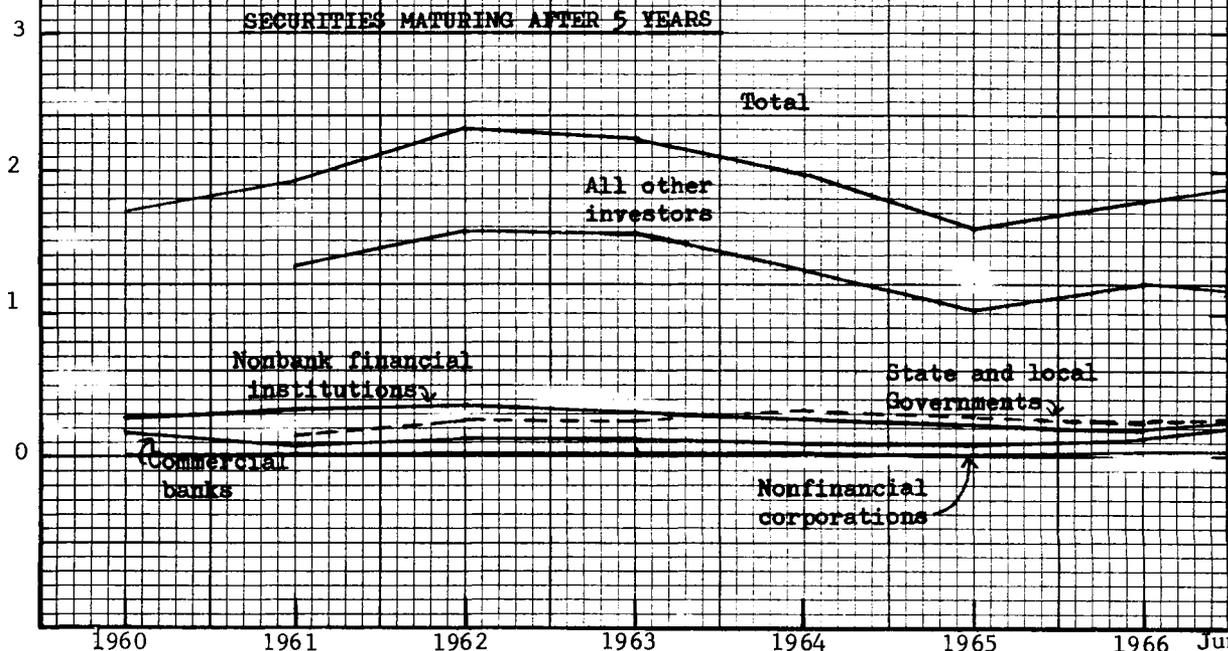
PROFILE OF OWNERSHIP STRUCTURE OF NON-GUARANTEED AGENCY DEBT

(End of year data, 1960-67)

Billions of dollars



Billions of dollars



Source: Treasury Survey of Ownership

besides including individuals and other non-reporting groups such as nonbank Government security dealers and investment companies, includes non-reporting banks, corporations etc. If allowance could be made for these non-reporting investors, holdings of individuals would probably appear relatively small. They would certainly not dominate the market as appears to be the case in the accompanying Profile Charts.

For example, for 1965 and 1966 some data are available for adjusting the Survey information to give a clearer--though still far from perfect--picture of the ownership profile of non-guaranteed Agency debt. If Survey-reported commercial bank holdings are raised to include Agency holdings of all commercial banks^{1/} and corporate pension trust fund holdings are removed from the all other category, relative ownership shares are altered dramatically. As the table shows, at the end of 1965 bank holdings of short-term Agency issues were slightly larger than "all other investor" holdings, though this was not the case in 1966. These data inadequacies should be borne in mind in the following discussion.

	Holdings of Agency Debt due:*		
	Within 1 year	In 1 - 5 years	After 5 years
Dec. 31, 1965			
All commercial banks	3.2	.9	.1
"All other investors" category	3.1	1.5	.8
Dec. 31, 1966			
All commercial banks	3.6	.8	.1
"All other investors" category	6.0	1.9	1.1

* In billions of dollars.

^{1/} Available for recent years from Call Reports.

Non-guaranteed Agency Debt

As should be clear from the preceding paragraph, commercial banks play a more dominant role in the Agency market than the Profile Charts indicate. The share of Agency debt held by all commercial banks is considerably below what it was in the early to mid-1950's, but it is not small. In the last few years banks have held roughly 1/4 to 1/3 of all short-term non-guaranteed Agency issues in public hands. They are less important participants in the intermediate- and long-term sectors of the Agency market, as is also true of their participation in the U. S. Government securities market.

In dollar terms, bank holdings of Agency securities appear minute next to U. S. Government securities held in portfolio. At the end of 1966, non-guaranteed Agency securities at all commercial banks totaled just over \$4-1/2 billion while marketable U. S. Government securities totaled over \$57 billion. Banks account for a larger share of publicly-owned U. S. debt as well. Using Call Report data for the end of 1966,^{1/} all commercial banks held 22 per cent of publicly-owned Treasury bills, just over 1/2 of coupon issues due in less than 5 years, and 27 per cent of long-term Treasury bonds. In the Agency market, on the other hand, banks held 30 per cent of short-term issues, only 22 per cent of issues due in 1-5 years, and not even 10 per cent of over 5-year Agency securities. In both markets, the bank share was reduced by several years of monetary restraint and would appear somewhat higher in another stage of the cycle.

^{1/} Treasury Survey data, excluding some of the smaller banks, shows the same comparative pattern (see the lower panel of Table 2).

There is also a difference between the Agency and U. S. Government securities markets in the degree of participation of reserve city as versus other classes of banks. As shown in Table 1, in 1966 reserve city banks accounted for a greater proportion of all bank holdings in the U. S. Government securities market while relative participation of country and insured non-member banks was greater in the Agency market. Country and insured non-member banks accounted for 85 per cent of bank holdings of Agencies but only 65 per cent of U. S. Governments held by banks.

The growth in bank holdings of Agency debt during the sixties has in fact been primarily at country and non-member banks. For years before the mid-1960's, Treasury Survey data must be used, and they are shown in Table 2. Bank holdings of Agency issues have increased thus far during the sixties at an even more rapid pace than during the fifties. At the same time, however, banks' share of Agency debt outstanding has declined due to the rapid growth in Agency debt (see the lower panel of Table 2).

Bank holdings of Agency issues even rose slightly during 1966, when credit restraint was extreme.^{1/} This absence of selling of Agencies by banks during the recent tight money period contrasts with sizable bank sales of U. S. Government securities (also shown on Table 2). It contrasts as well with bank sales of Agency issues

^{1/} Though through November of 1966, the commercial banks reporting in the Treasury Survey showed a small decline in non-guaranteed Agency holdings.

Table 1

OWNERSHIP OF AGENCY AND U. S. DEBT BY TYPE OF COMMERCIAL BANK
(Millions of dollars and per cent of all commercial bank holdings)

	Nonguaranteed Agency Debt due:			U. S. Marketable Debt due:			
	Within 1 year	1 - 5 years	After 5 years	Within 1 year		1 - 5 years	After 5 years
				Bills	Other		
<u>June 30, 1966</u>							
New York City	182	23	5	1,229	569	1,330	1,514
%	5	3	3	15	7	6	11
Chicago	58	17	5	411	188	595	473
%	2	2	3	5	2	3	3
Other Reserve City	371	97	43	1,453	1,745	5,649	3,696
%	10	11	27	18	22	23	27
Country	1,673	401	68	2,431	3,372	10,606	5,515
%	46	46	43	30	43	44	40
Insured Non-member	1,341	338	37	2,588	2,062	5,937	2,721
%	37	39	23	32	26	25	20
Total ^{1/}	3,625	876	158	8,113	7,936	24,118	13,918
<u>December 31, 1966</u>							
New York City	133	27	4	1,797	588	1,253	1,450
%	4	3	3	16	7	5	12
Chicago	33	12	3	350	181	663	420
%	1	2	2	3	2	3	4
Other Reserve City	355	87	30	2,384	2,012	5,860	3,170
%	10	11	21	21	24	23	27
Country	1,630	384	68	3,544	3,538	11,181	4,430
%	45	46	47	31	42	44	38
Insured Non-member	1,447	318	40	3,299	2,082	6,466	2,193
%	40	39	28	29	25	25	19
Total ^{1/}	3,599	827	145	11,373	8,400	25,423	11,663

^{1/} Does not include uninsured banks for which data are not comparable. Uninsured bank holdings of all Agency securities total about \$100 million and of U. S. securities about \$350-400 million.

SOURCE: Board of Governors of the Federal Reserve System, Assets and Liabilities of Member Banks.

Table 2
OWNERSHIP OF AGENCY AND U. S. DEBT BY COMMERCIAL BANKS^{1/}

	Nonguaranteed Agency Debt due:				U. S. Marketable Debt due:				
	Within 1 year	1 - 5 years	After 5 years	Total	Within 1 year		1 - 5 years	After 5 years	Total
					Bills	Other			
<u>Millions of dollars</u>									
Dec. 31, 1961	995	592	84	1,671	9,962	11,187	30,751	7,174	59,074
1962	1,769	518	122	2,409	9,838	10,047	26,348	11,772	58,005
1963	2,221	525	119	2,865	9,290	7,413	26,107	12,070	54,880
1964	1,990	557	97	2,644	10,969	7,540	23,507	11,737	53,753
1965	2,231	652	91	2,974	10,156	7,847	19,676	12,645	50,324
1966	2,282	597	118	2,997	8,771	7,067	21,113	10,232	47,183
June 30, 1967	2,299	570	198	3,068	5,844	5,403	24,919	9,359	45,525
<u>Per cent of publicly-held debt</u>									
Dec. 31, 1961	23	26	4	20	25	41	57	19	37
1962	31	25	5	24	22	43	53	26	36
1963	30	25	5	25	20	39	55	25	34
1964	27	20	5	22	23	45	49	24	33
1965	25	20	6	21	20	45	45	25	31
1966	18	16	7	17	17	44	44	23	30
June 30, 1967	21	17	11	19	14	43	47	23	31

^{1/} Banks included in the Survey in 1966 accounted for about 64 per cent of all Agency securities held by banks and about 83 per cent of all U. S. securities held by banks.

SOURCE: Treasury Survey of Ownership.

during earlier cyclical expansions, as shown in Chart 8. The fact that such sales did not materialize during 1965-66 might be due to any number of factors, including the unprecedented rise in Agency debt outstanding, the rapid decline in Agency security prices locking investors into the issues and a sharp increase in the spread between Agency and U. S. Government yields. But in addition it appears to be due to the continued acquisition of Agencies by the smaller commercial banks, since reserve city banks as a group did sell Agencies during 1966. These smaller banks, on the one hand, tend to be less affected by monetary tightness and, on the other, were probably responding to a new awareness of the Agency market coupled with the extremely favorable spreads between Agency and other yields.^{1/} Whatever the cause, without the absence of sizable commercial bank selling of Agencies during 1966 the rise in Agency yields would have been even more spectacular.

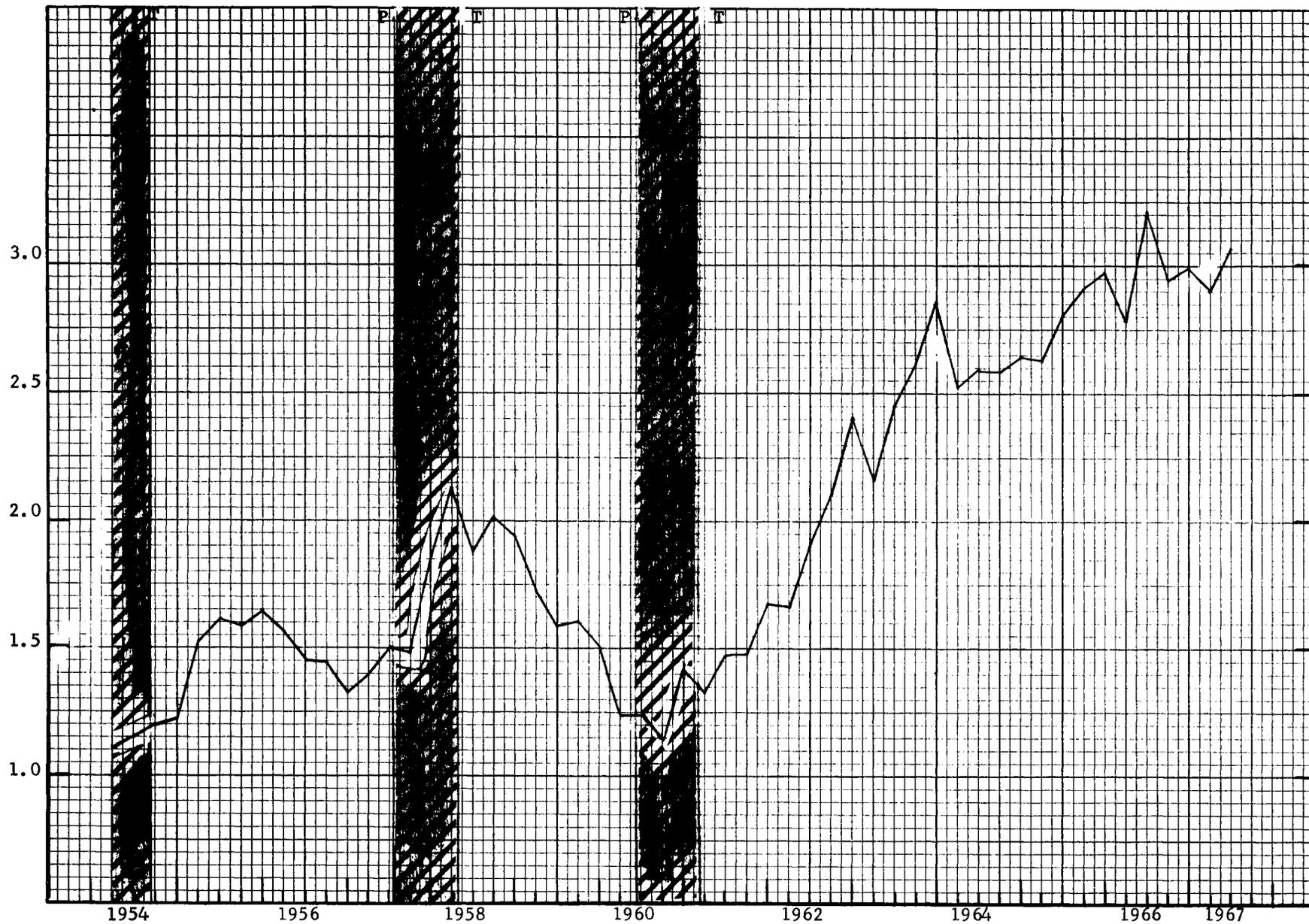
Next in importance to commercial banks as participants in the Federal Agency market are the nonbank financial institutions. These institutions include mutual savings banks, insurance companies (life, fire, casualty, and marine), and savings and loan associations. As of the end of 1966, non-guaranteed Agency holdings of such institutions reporting on the Treasury Survey totaled \$1.9 billion,

^{1/} Agency securities, except for FICB issues, cannot be used as collateral for borrowing from the Federal Reserve. And many of the major banks were short of collateral during 1966.

CHART 8
COMMERCIAL BANK HOLDINGS OF NON-GUARANTEED AGENCY DEBT, 1954-67

Billions of dollars

(End of quarter data)



Source: Treasury Survey of Ownership

accounting for just over 10 per cent of Agency debt outstanding in public hands. Conversely to commercial banks, with liabilities of longer maturity and greater predictability, they play a more important role in the intermediate- and long-term sectors of the market.

During the early to mid-fifties these institutions held virtually no Agency securities. Beginning in 1956, however, they began to add Agency issues to their portfolios in some size; in the five years ending with 1960 they added roughly \$1 billion of such issues to their portfolios and they had added another \$1 billion by mid-1967.

While Agency holdings of these financial institutions are considerably smaller in dollar amounts than U. S. Government holdings, as shown in Table 3, they account for roughly the same proportion of debt outstanding in both markets. It can be seen, however, that the maturity distribution of their holdings varies considerably between the two markets. In the Agency market, holdings are concentrated in the short-term maturities while in the Treasury market holdings are overwhelmingly intermediate- and long-term. To some degree this is a reflection of a variance in the type of financial institution most important in each market. In the Agency market mutual savings banks account for 1/2 of nonbank financial institutions' debt holdings and life insurance companies for less than 1 per cent. But in the Treasury market insurance companies account for roughly 1/2 of institutions' holdings and life insurance companies alone for 1/4 of the group's holdings. Among the types of nonbank financial institutions,

Table 3
OWNERSHIP OF AGENCY AND U.S. DEBT BY NONBANK FINANCIAL INSTITUTIONS^{1/}

	Nonguaranteed Agency Debt due:				U. S. Marketable Debt due:				
	Within 1 year	1 - 5 years	After 5 years	Total	Within 1 year		1 - 5 years	After 5 years	Total
					Bills	Other			
<u>Millions of dollars</u>									
Dec. 31, 1961	394	414	323	1,131	778	1,582	4,631	10,656	17,647
1962	571	341	345	1,257	1,058	1,273	4,329	11,262	17,922
1963	719	364	283	1,366	1,053	1,196	4,174	11,586	18,009
1964	756	491	257	1,504	1,167	933	4,636	11,277	18,013
1965	920	534	203	1,657	1,387	970	4,273	11,081	17,711
1966	1,175	527	190	1,892	1,490	784	4,711	9,588	16,573
June 30, 1967	1,167	527	227	1,920	886	656	5,062	8,813	15,417
<u>Percent of publicly-held debt</u>									
Dec. 31, 1961	9	18	17	13	2	6	9	29	11
1962	10	17	15	12	2	6	9	25	11
1963	10	17	13	12	2	6	9	24	11
1964	10	18	13	12	2	6	10	23	11
1965	10	16	13	12	3	6	10	22	11
1966	10	14	11	11	3	5	10	22	10
June 30, 1967	11	16	12	12	2	5	10	22	11

^{1/} Includes mutual savings banks, insurance companies and savings and loan associations. Reporting mutual savings banks and insurance companies account for no more than 90 per cent of all such securities held by these institutions, while reporting savings and loan associations account for only 50 per cent.

SOURCE: Treasury Survey of Ownership.

life insurance companies of course hold the longest-term assets. For these institutions it seems apparent that yield spreads in favor of long-term Agency issues have not been large enough to offset their lesser marketability.

Savings and loan associations account for roughly the same share of debt in both markets, though again they account for fewer of the long-term maturities in the Agency market. Savings and loan associations hold Agency securities despite the fact that they do not help to meet legal liquidity requirements.

During 1966, despite declines in savings inflows, nonbank financial institutions added Agency securities to their portfolios. In fact, the \$235 million rise in their non-guaranteed Agency holdings during 1966 was larger than in any other year of the sixties. Simultaneously, these institutions decreased their holdings of U.S. Government securities by more than \$1 billion. The yield spread in favor of Agencies rose sharply at this time. During the first half of 1967, the same portfolio shifts were in evidence. Treasury debt was reduced, again by more than \$1 billion, and Agency issues were acquired, though in only nominal amounts.

Nonfinancial corporations were important holders of short-term Agency issues early in the sixties, but their participation in the Agency market, as in the U. S. Government securities market, has declined since about 1964. The decline in corporate holdings of short-term Agencies is clearly shown in the Profile Charts and in Table 4.

Table 4
OWNERSHIP OF AGENCY AND U. S. DEBT BY NONFINANCIAL CORPORATIONS^{1/}

	Nonguaranteed Agency Debt due:				U. S. Marketable Debt due:				
	Within 1 year	1 - 5 years	After 5 years	Total	Within 1 year		1 - 5 years	After 5 years	Total
					Bills	Other			
<u>Millions of dollars</u>									
Dec. 31, 1961	904	54	11	969	5,466	3,232	1,747	102	10,547
1962	902	73	11	986	6,551	2,512	1,524	163	10,750
1963	1,155	49	4	1,208	6,178	1,493	2,397	359	10,427
1964	677	87	4	768	5,043	1,705	2,001	387	9,136
1965	825	117	11	953	4,657	1,254	1,754	349	8,014
1966	597	103	15	715	3,396	1,334	1,339	254	6,323
June 30, 1967	318	90	17	424	1,900	736	1,194	191	4,021
<u>Per cent of publicly-held debt</u>									
Dec. 31, 1961	21	2	1	11	14	12	3	*	7
1962	16	4	1	10	15	11	3	*	7
1963	16	2	*	10	13	8	5	1	6
1964	9	3	*	6	10	10	4	1	6
1965	9	4	1	7	9	7	4	1	5
1966	5	3	1	4	7	8	3	1	4
June 30, 1967	3	3	1	3	5	6	2	1	3

^{1/} Includes only general funds. Reporting corporations account for about 50 per cent of all such securities held by nonfinancial corporations.

* Less than .5 per cent.

SOURCE: Treasury Survey of Ownership.

In 1961-62, corporate short-term Agency holdings were about \$1.0 billion, accounting for 15-20 per cent of the debt outstanding, but by 1966-67 their holdings had fallen to a \$300-600 range, only 3-5 per cent of Agency debt. Corporate holdings of Agency issues due in more than 1 year have never been large.

Over the sixties U. S. Government securities held in corporate portfolios have also declined, from \$10-1/2 billion early in the sixties to a \$4-6 billion range currently. Declines in nonfinancial corporate holdings of both Agency and U. S. Government securities are in general related to a shift of corporate liquid assets into time deposits with the development of the negotiable CD after 1962 and into other higher yielding short-term assets. To a lesser degree it probably relates to the usual decline in corporate holdings in advanced stages of cyclical expansion and to a reduction in accrued tax liabilities with the speed-up in corporate tax payments. Corporations account for roughly the same share of debt outstanding in both markets.

State and local governments have become increasingly important investors in the Agency market, particularly in the short-term maturity sector. They are especially active in FNMA discount notes which may be tailored to specific maturity dates. But state and local government holdings of securities cover all maturity sectors. While general fund holdings are primarily in short-term liquid issues, pension fund holdings are concentrated in long-term issues. Thus, in mid-1967, these governments reporting in the Treasury Survey held about \$1 billion of short-term Agency debt and almost \$.5 billion of debt due after 1 year (see Table 5). While U. S. Government security

Table 5
OWNERSHIP OF AGENCY AND U. S. DEBT BY STATE AND LOCAL GOVERNMENTS^{1/}

	Nonguaranteed Agency Debt due:				U. S. Marketable Debt due:				
	Within 1 year	1 - 5 years	After 5 years	Total	Within 1 year		1 - 5 years	After 5 years	Total
					Bills	Other			
Millions of dollars									
Dec. 31, 1961	179	67	167	413	2,710	1,264	1,320	5,599	10,893
1962	243	48	259	550	3,282	1,165	1,059	6,210	11,716
1963	246	29	264	539	4,260	1,149	1,618	7,577	14,605
1964	385	104	328	817	3,961	902	2,014	8,144	15,021
1965	854	205	279	1,338	4,574	997	1,862	8,274	15,707
1966	887	223	269	1,379	4,512	1,032	2,166	7,674	15,384
June 30, 1967	985	200	273	1,459	4,700	923	2,262	6,949	14,834
Per cent of publicly-held debt									
Dec. 31, 1961	4	3	9	5	7	5	2	15	7
1962	4	2	11	5	7	5	2	14	7
1963	3	1	12	5	9	6	3	15	9
1964	5	4	17	7	8	5	4	16	9
1965	9	6	18	10	9	6	4	17	10
1966	7	6	15	8	9	6	5	18	10
June 30, 1967	9	6	15	9	12	7	4	17	10

^{1/} Reporting governments account for about 70 per cent of such securities held by all state and local governments for the years 1964-67, and 60 per cent for the years 1961-1963.

SOURCE: Treasury Survey of Ownership.

holdings were a much larger \$15 billion, in both markets these governments account for roughly the same share of debt outstanding.

Investments by state and local governments in both the Agency and U. S. securities markets have increased considerably over the sixties, but the relative growth has been greatest in Agencies. Whereas at the end of 1961 Agency holdings were only 4 per cent of U. S. debt holdings, by mid-1967 they had risen to 10 per cent^{1/}; and for issues due in 1 year alone, the increase was from 5 to 18 per cent. Some portion of the growth in Agency holdings results from only recent legal permission in the case of some state and local governments to invest in Agencies, and a further freeing of governments' choices should give impetus to future growth in their Agency holdings.

The "all other investors" category accounts for 50-60 per cent of non-guaranteed Agency debt outstanding. This category includes investor groups not specified in the Treasury Survey, such as individuals, foreign investors, nonbank Government security dealers^{2/}, and nonprofit organizations. Corporate pension trust fund holdings are also not included in data shown here; at the end of 1966 they held \$432 million of non-guaranteed Agency debt, spread over the full maturity range. Finally, this category includes holdings of investors belonging to groups specified in the Survey but not reporting to the Treasury. At the end of 1966, non-reporting commercial banks alone held \$1.6 billion of non-guaranteed Agency debt.

^{1/} If holdings of participation certificates are added to non-guaranteed Agency debt, the percentage is 14 per cent rather than 10 per cent.

^{2/} Bank dealer holdings are included in commercial bank data.

This amalgam of investors has absorbed over one-half of the rise in non-guaranteed Agency debt since the end of 1961. The group accounts for a larger share of outstanding Agency debt than earlier in the sixties, except in the over 5 year maturity area. Other investor holdings have also risen sharply in the U. S. Government securities market during the sixties, as shown in Table 6. Such a rise is typical of periods of tight money.

"All other investors" account for roughly the same share of short-term Agency issues outstanding as they do of Treasury bills. They account for a significantly higher share of Agencies than of Treasury coupon issues, however, particularly in the long-term maturities (62 per cent as versus 37 per cent). It would appear that the larger institutional investors reporting in the Survey find long-term Agency issues less desirable investments than Treasury issues, though this difference is diminishing. It undoubtedly relates to lesser marketability, in part due to the small size of individual Agency issues.

The sharp rise in non-guaranteed Agency debt issued to the public during 1966 was absorbed entirely by "all other investors", whose holdings rose by almost \$4 billion. This represented a more than 50 per cent rise in the group's holdings. "All other investors" absorbed a large volume of U. S. securities during 1966 as well. The rise in Governments held by them was a sizable \$5 billion, although this represented only a 7 per cent rise in their holdings. One result of this was a sharp jump in Agency yields relative to Governments.

Table 6
OWNERSHIP OF AGENCY AND U. S. DEBT BY ALL OTHER INVESTORS^{1/}

	Nonguaranteed Agency Debt due:				U. S. Marketable Debt due:				
	Within 1 year	1 - 5 years	After 5 years	Total	Within 1 year		1 - 5 years	After 5 years	Total
					Bills	Other			
<u>Millions of dollars</u>									
Dec. 31, 1961	1,890	1,147	1,315	4,353	20,596	10,234	15,827	13,780	60,438
1962	2,302	1,062	1,565	4,931	23,933	8,292	16,121	15,813	64,159
1963	2,990	1,146	1,561	5,698	25,246	7,700	13,623	17,599	64,167
1964	3,585	1,505	1,291	6,382	27,541	5,570	15,863	18,367	67,341
1965	4,286	1,827	1,007	7,121	29,088	6,268	15,784	17,534	68,674
1966	7,461	2,245	1,202	10,909	32,647	6,038	18,895	16,109	73,689
June 30, 1967	6,298	1,957	1,164	9,418	27,339	4,824	19,929	14,617	66,709
<u>Per cent of publicly-held debt</u>									
Dec. 31, 1961	43	51	69	51	52	37	29	37	38
1962	40	52	68	49	54	36	33	35	40
1963	41	54	70	49	55	41	28	36	40
1964	49	55	65	53	57	34	33	37	41
1965	47	55	63	51	58	36	36	35	43
1966	60	61	67	61	64	37	39	37	46
June 30, 1967	57	59	62	58	67	39	37	37	46

^{1/} Not including Official Accounts.

SOURCE: Treasury Survey of Ownership.

It is interesting to note that the need for "all other investors" to absorb such a large volume of securities derived from different factors in the two markets. In the Agency market, all investor groups reporting in the Treasury Survey with the sole exception of nonfinancial corporations purchased Agency issues on balance during 1966; the cause of the large rise in "all other investors" holdings was the sharp increase in Agency debt issued to the public. In the Treasury market, on the other hand, official purchases more than absorbed the rise in Treasury debt. But every reporting investor group sold Governments during the year which--at higher yields--were absorbed into "all other investors" portfolios, presumably for the most part those of individuals. So far in 1967, with the easing of credit stringency, "all other investors" holdings of Agency issues, as well as of U. S. Government securities, have been reduced well below end of 1966 levels.

Prior to late 1966, only a nominal amount of Agency debt was held outside of the public's hands. The Federal Reserve currently does not own Agency debt outright though it is legally authorized to do so. Since late 1966 it has bought Agency issues from security dealers under repurchase agreements. Treasury trust fund and agency acquisitions of Agency issues were undertaken on a large scale beginning in August, 1966, as a means of alleviating the congestion in that market. Since then, Treasury accounts have acquired some \$1.7 billion of non-guaranteed issues, almost entirely through direct allotments at the time of Agency financings. These data are shown in Table 7.

Table 7
OWNERSHIP OF AGENCY AND U. S. DEBT BY OFFICIAL ACCOUNTS^{1/}

	Nonguaranteed Agency Debt due:				U. S. Marketable Debt due:				
	Within 1 year	1 - 5 years	After 5 years	Total	Within 1 year		1 - 5 years	After 5 years	Total
					Bills	Other			
<u>Millions of dollars</u>									
Dec. 31, 1961	35	--	--	35	3,932	14,970	10,597	7,866	37,365
1962	--	--	--	--	3,588	15,744	12,259	8,867	40,458
1963	29	--	--	29	5,512	18,912	10,568	10,490	45,482
1964	11	--	1	12	7,795	15,325	15,986	10,084	49,190
1965	45	--	--	45	10,314	15,884	17,253	10,723	54,174
1966	1,043	313	--	1,356	13,869	24,277	11,224	9,503	58,873
June 30, 1967	1,169	568	--	1,738	17,866	18,571	18,058	9,672	64,167

^{1/} Includes Federal Reserve and Treasury trust fund and agency holdings.

SOURCE: Treasury Survey of Ownership.

Participation Certificates

Participation certificates issued by FNMA as trustee were first offered to the public in late 1964. During 1964-1966, since all PC's were in registered form, FNMA collected ownership data which were presumably complete as to coverage of specified investor groups. These data, as of the end of each quarter, are presented in Table 8. It can be seen that during the past few years commercial banks accounted for some 10-20 per cent of FNMA PC's outstanding. At the end of 1966, their holdings totaled \$224 million. Both nonbank financial institutions and state and local governments accounted for a larger share of the PC's outstanding, not surprisingly since PC's are concentrated in intermediate- and long-term maturities. PC holdings of nonfinancial corporations are quite small, aggregating only about \$50 million. Registered individual holdings are also quite small, as the Table shows, but a large part of the "all other investors" category is undoubtedly accounted for by individual trust funds managed by banks.

These FNMA ownership data cease with the institution of bearer-form PC's in 1967. But beginning in December, 1966, the Treasury Survey of Ownership includes PC's by issuer--FNMA, Export-Import Bank, and CCC. Unfortunately the Survey carries no maturity breakdown on the PC's nor a separate listing of each issue, limiting the usefulness of the data. There is, for example, no way of isolating ownership of only the recent large (non-serial) issues of FNMA or the fully marketable Export-Import issues. Table 9 presents the Treasury Survey data on PC's.

Table 8
OWNERSHIP OF FNMA PARTICIPATION CERTIFICATES^{1/}
(End of quarter data)

	Commercial Banks	Nonbank Financial Institutions	Nonfinancial Corps.		State & Local Governments	Individuals	All other investors ^{2/}	Total
			General Funds	Pension Funds				
<u>Millions of dollars</u>								
1964 - 4	66	67	8	5	17	2	135	300
1965 - 1	57	66	7	2	23	2	142	300
2	61	62	7	2	25	2	142	300
3	152	165	7	10	83	4	405	825
4	176	212	8	10	154	7	607	1,170
1966 - 1	144	220	10	11	177	8	601	1,170
2	234	328	28	9	321	37	1,156	2,110
3	226	312	35	17	329	45	1,110	2,075
4	224	291	29	21	338	47	1,070	2,020
<u>Per cent of publicly-held PC's</u>								
1964 - 4	22	22	3	2	6	1	45	100
1965 - 1	19	22	2	1	8	1	48	100
2	21	21	2	1	8	1	47	100
3	18	20	1	1	10	1	49	100
4	15	18	1	1	13	1	52	100
1966 - 1	12	19	1	1	15	1	51	100
2	11	16	1	1	15	2	55	100
3	11	15	2	1	16	2	54	100
4	11	14	1	1	17	2	53	100

^{1/} Includes all PC's issued by FNMA as trustee.

^{2/} Includes partnerships such as investment funds, dealers, and brokers; a major share is held by bank nominees, including some corporate pension funds.

SOURCE: Federal National Mortgage Association, Office of Secretary-Treasurer.

Table 9
OWNERSHIP OF PARTICIPATION CERTIFICATES
(End of quarter data)

	Commercial Banks	Nonbank Financial Institutions	Nonfinancial Corps.		State & Local Governments	Official Accounts	All Other investors	Total
			General Funds	Pension Funds				
<u>FNMA PC's</u>								
<u>Millions of dollars</u>								
1966 - 4	92	103	26	79	227	--	1,493	2,020
1967 - 1	469	292	56	102	304	500	1,397	3,120
2	924	505	39	112	456	900	1,894	4,830
<u>Per cent of publicly-held PC's</u>								
1966 - 4	5	5	1	4	11		74	100
1967 - 1	18	11	2	4	12		53	100
2	24	13	1	3	12		48	100
<u>EXPORT-IMPORT PC's</u>								
<u>Millions of dollars</u>								
1966 - 4	271	32	--	14	1	--	815	1,135
1967 - 1	613	91	60	18	56	--	747	1,583
2	686	133	69	18	93	--	743	1,742

SOURCE: Treasury Survey of Ownership.

For the end of 1966, all specified investor groups show smaller holdings than in Table 8, and account for a lesser market share.^{1/} Focusing on changes in ownership since the end of 1966, the Table shows a considerable rise in PC portfolios of all investor groups with the \$2.8 billion rise in FNMA PC's outstanding. To some degree this rise in holdings of the larger institutional investors related to the improved marketability of the new FNMA PC's issued in 1967.

The increases in holdings were largest for the two investor groups that experienced marked improvements in liquidity over the period, namely commercial banks and nonbank financial institutions. As a result, the share of FNMA PC's in public hands held by reporting commercial banks increased from 5 per cent at the end of 1966 to 24 per cent in mid-1967 while the nonbank financial institutions' share rose from 5 per cent to 13 per cent. Shares of nonfinancial corporations and state and local governments remained virtually constant, so that the share of "all other investors" dropped from 75 per cent to just under 50 per cent.

Comparisons of FNMA PC ownership with the ownership structure of non-guaranteed Agency issues and also Treasury issues can be made, but not with any degree of precision. Comparative

^{1/} The single exception is corporate pension trust funds which show larger holdings on the Survey than on FNMA data. This is because banks manage some of the pension funds and they are to this degree included in the all other category of the FNMA data.

ownership data as of December 31, 1966 are shown in Table 10 but differences among the markets in the percentages of debt held by the various investor groups may not be meaningful. In the first place, the percentages will vary with the average maturity of debt in each market. Secondly, the share of debt accounted for by non-reporting institutions differs among the markets. Allowing for these complications however, there do appear to be some significant differences in the degree to which some investors participate in the various markets.

Table 10 shows the relative ownership of reporting commercial banks to be less in PC's than in non-guaranteed Agency issues and sharply less than in U. S. debt (lines 1-3). To a small degree this reflects the longer average maturity of PC's. Utilizing data for all commercial banks does not alter the general pattern. Holdings of all commercial banks at the end of 1966^{1/} accounted for 36 per cent of publicly-held U. S. marketable debt, about 25 per cent of Agency debt, and only 11 per cent of FNMA PC's. It is clear, however, that banks hold a larger share of the new, more readily tradeable PC's.

It is not clear whether all nonbank financial institutions hold relatively fewer PC's than Agencies or Governments. It is apparent from the Table, however, that the larger, reporting institutions hold considerably fewer PC's. They account for 5 per cent of the PC's outstanding, as versus about 10 per cent in the other

^{1/} Call Report data.

Table 10

COMPARATIVE OWNERSHIP STRUCTURE, DECEMBER 31, 1966

Item	Commercial Banks	Nonbank Financial Institutions	Nonfinancial Corporations (general funds)	State & Local Govts.	All Others	Total Held by Public
(1) U. S. Marketable <u>1/</u>						
Mil \$	47,183	16,573	6,323	15,384	73,689	159,152
%	30	10	4	10	46	100
(2) Non-guaranteed <u>1/</u>						
Mil \$	2,997	1,892	715	1,379	10,909	17,893
%	17	11	4	8	61	100
(3) FNMA PC's <u>1/</u>						
Mil \$	92	103	26	227	1,572	2,020
%	5	5	1	11	78	100
(4) FNMA PC's <u>2/</u>						
Mil \$	224	291	29	338	1,138	2,020
%	11	14	1	17	56	100

1/ Treasury Survey Data.2/ FNMA Data

markets; and given the longer maturities of the PC issues one would have expected them to account for a greater market share. As noted earlier, these institutions increased their PC holdings sharply during the first half of 1967 and they accounted for 13 per cent of outstanding PC's by June, 1967. It would appear that the small size of the serial PC's issued before 1967, and perhaps their registered form, detracted considerably from their appeal to the large institutions.

Nonfinancial corporate and state and local government investors hold roughly the same relative share of each debt instrument, allowing for maturity differences. It is interesting to note, however, that the smaller, non-reporting corporations appear to hold virtually no FNMA PC's, as indicated by the similarity of their holdings in lines 3 and 4 on the Table, whereas such corporations apparently account for 1/2 of U. S. debt holdings of corporations.

Finally, because banks and nonbank financial institutions account for a smaller share of the market for PC's, the "all other investors" category is considerably larger. Using all commercial banks, "all other investors" accounted for some 72 per cent of PC's outstanding at the end of 1966, compared with 52 per cent of non-guaranteed Agencies and 40 per cent of U. S. Governments.

Treasury trust funds and agencies acquired FNMA PC's for the first time during January-June 1967. At mid-1967, they held \$900 million of the PC's. As with their non-guaranteed Agency debt holdings, the issues were acquired through direct allotments at the times of financings rather than through market purchases.

Treasury Survey data on the ownership of Export-Import Bank PC's (see Table 9), as noted earlier, include all PC's outstanding, of which only \$900 million are fully marketable. Prior to 1967, Export-Import PC's were sold to commercial banks, who in turn could distribute them to specified institutional investors. As a result, the bulk of these PC's are held by banks and some investors held none of the issues, such as nonfinancial corporations and state and local governments. The \$900 million of Export-Import PC's offered since February 1967 are fully marketable. It is probably not far wrong to assume that the rise in holdings of nonfinancial corporations (general funds), state and local governments and nonbank financial institutions since the end of 1966 has been in these fully marketable issues. If so, at mid-1967 these groups, respectively, accounted for 8 per cent, 10 per cent and 11 per cent of the new Export-Import PC's. These market shares are very close to FNMA PC shares, except for nonfinancial corporations who hold a relatively greater amount of the Export-Import PC's.

III. HOMOGENEITY OF AGENCY SECURITIES

A question of particular importance to participants in the Agency market--lenders and borrowers alike--is whether there is a single homogeneous market for all Agency securities or whether, conversely, the securities of each Agency form smaller, distinct markets. A related question is whether single Agency issues with small amounts outstanding differ from larger Agency issues in a manner that might imply less marketability.

To answer these questions data were assembled on comparative yields and ownership, by issuing Agency and by issue size. These data show the Agency market to be homogeneous from the standpoint of securities of individual Agencies, that is, no consistent and significant differences were found in market yields or in ownership of the separate Agency securities. With respect to Agency issues of small size, it would appear--on the basis of limited data--that their quoted yields often vary quite widely off the yield curve and that they are to a greater degree than the large issues lodged in the portfolios of comparatively inactive investors.

A. Homogeneity by Issuing Agency

Even within a homogeneous market differences in yield and ownership will exist among various issues, depending on their maturity and on less important attributes such as their coupon rate. As pointed out earlier, the maturity characteristics of Agency debt differ widely by issuing Agency: all debt of the Banks for Cooperatives and of the Federal Intermediate Credit Banks matures within 1 year, the Federal

Home Loan Banks issue some debt with maturities of more than 1 year, and debt of the Federal National Mortgage Association and Federal Land Banks is more heavily weighted in the intermediate- and long-term maturity sectors. To abstract from these maturity differences, ownership data are classified by maturity category and curves relating the yield of every Agency issue outstanding to its maturity date are plotted for selected periods.

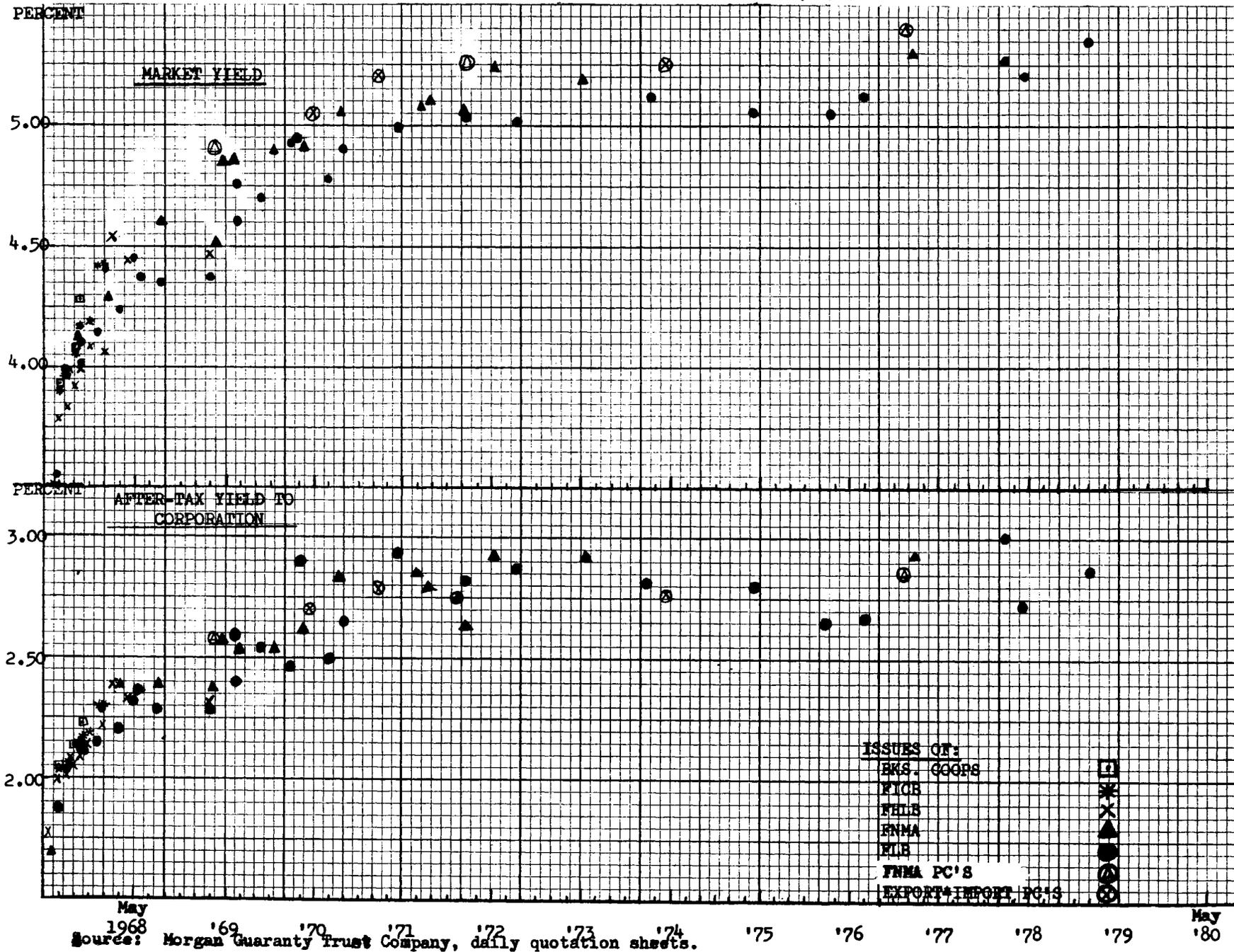
Yields. The accompanying Charts 9-13 show plots for Agency yield curves in which the securities of the separate Agencies are differentiated. The curves include all outstanding Agency issues, shown as of the end of May for the years 1961 through 1967. The market yields that were utilized are those published in the daily quote sheets of the Morgan Guaranty Trust Company.^{1/} For the 1966 and 1967 dates, curves were also drawn showing after-tax yields to corporations in order to adjust for relative coupon size.^{2/}

Inspection of the Charts yields several general impressions: (1) the yield curves are relatively smooth, although less so than the yield curves for U. S. Government securities; (2) the degree of smoothness varies considerably over time and by maturity area; (3) the yield differences among issues of comparable maturity are, as often as not, among issues of the same Agency and there are not consistent differences

^{1/} Differences among dealers in published Agency yield quotations on specific issues are quite sizable. On one observation date they ranged up to 40 basis points (see Appendix Chart 1).

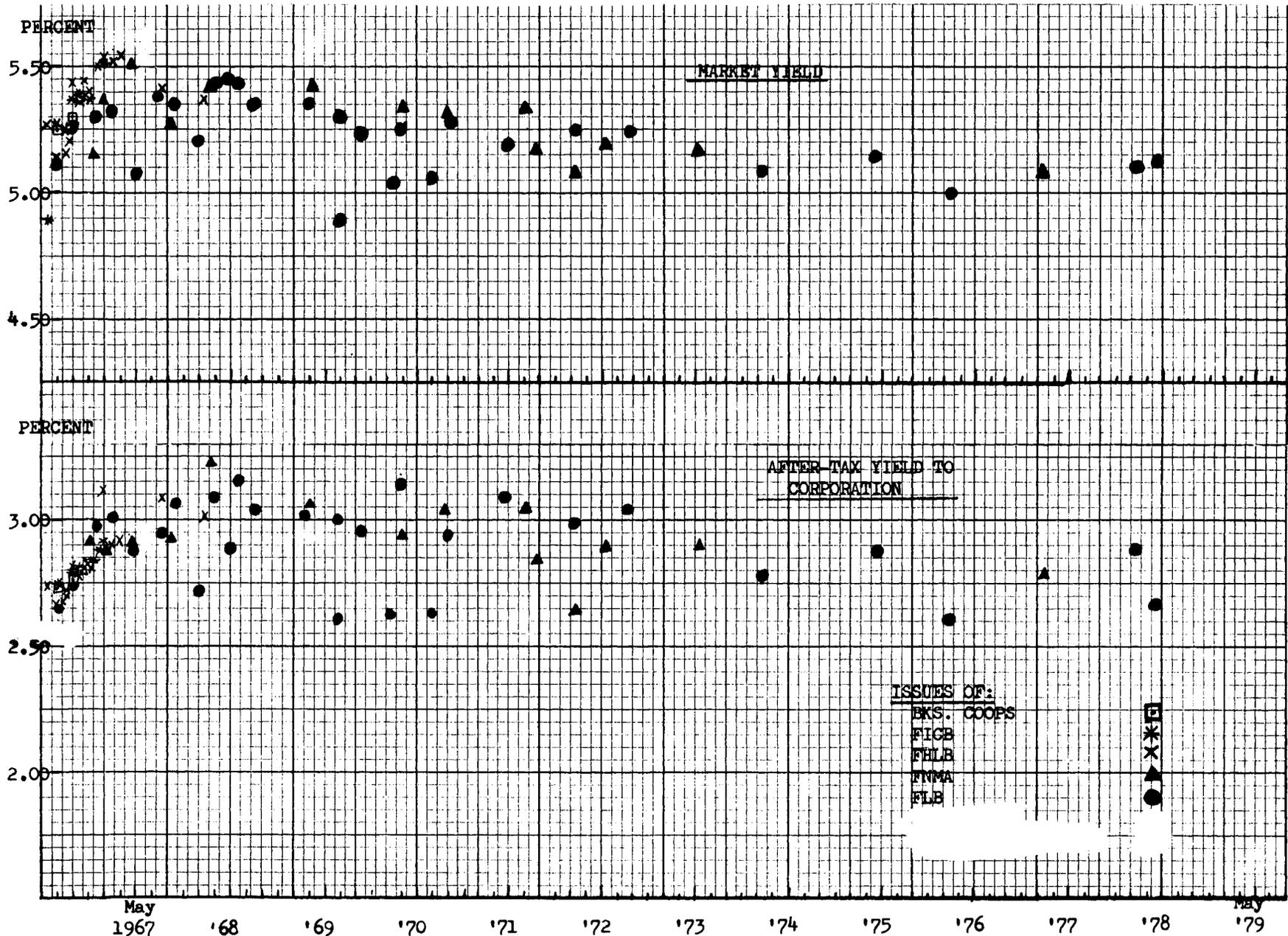
^{2/} When market security prices are below par, given the same market yield and maturity issues with high coupons are less attractive to investors than those with low coupons because capital gains are taxed at a lower rate than interest income. Issues with relatively low coupons thus generally carry lower before-tax market yields.

CHART 9
 YIELDS OF AGENCY SECURITIES MAY 31, 1967



May 1968
 Source: Morgan Guaranty Trust Company, daily quotation sheets.

CHART 10
 YIELDS OF AGENCY SECURITIES, MAY 31, 1966



Source: Morgan Guaranty Trust Company, daily quotation sheets.

CHART 11

YIELDS OF AGENCY SECURITIES, MAY 1963, 1964 and 1965

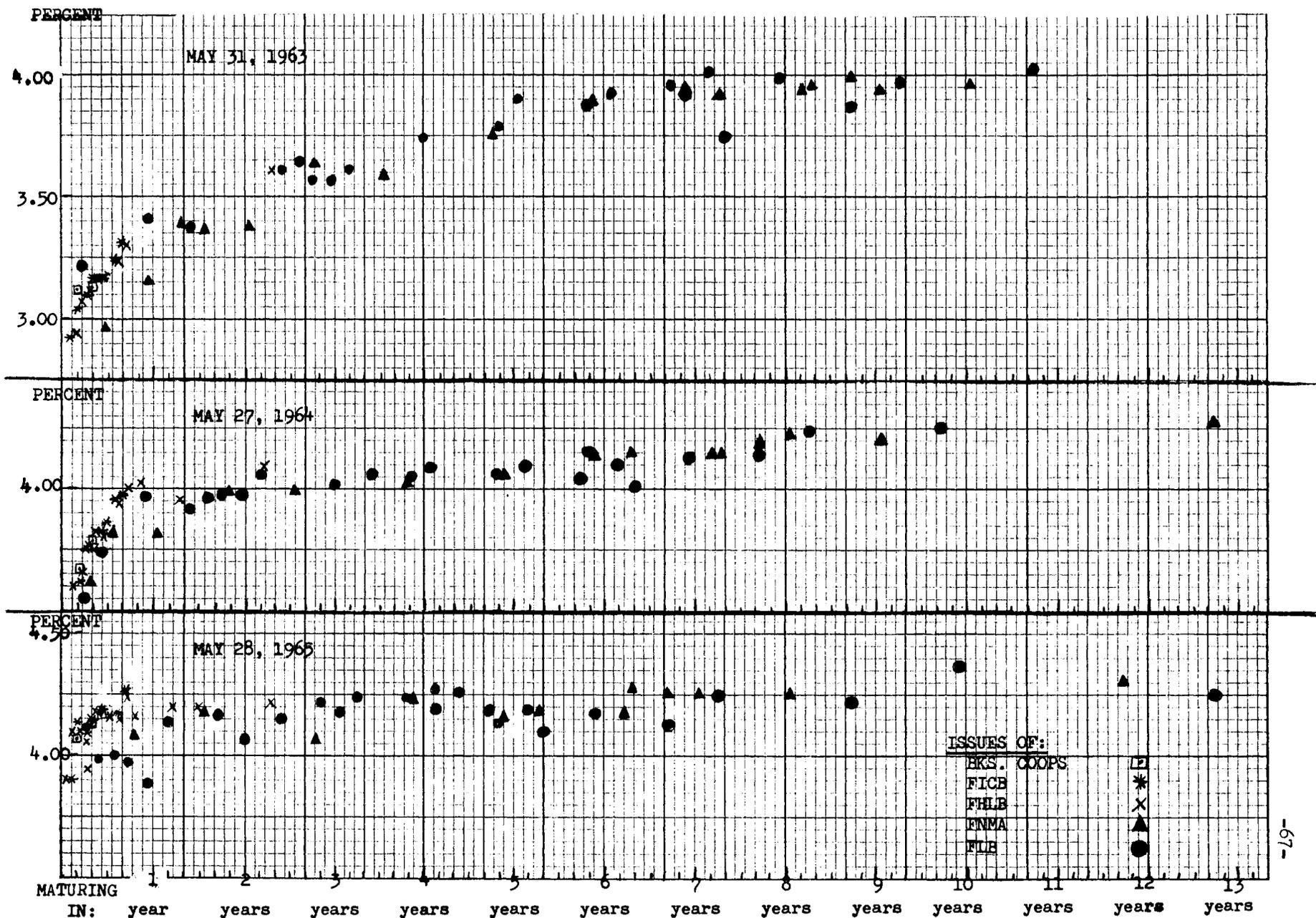
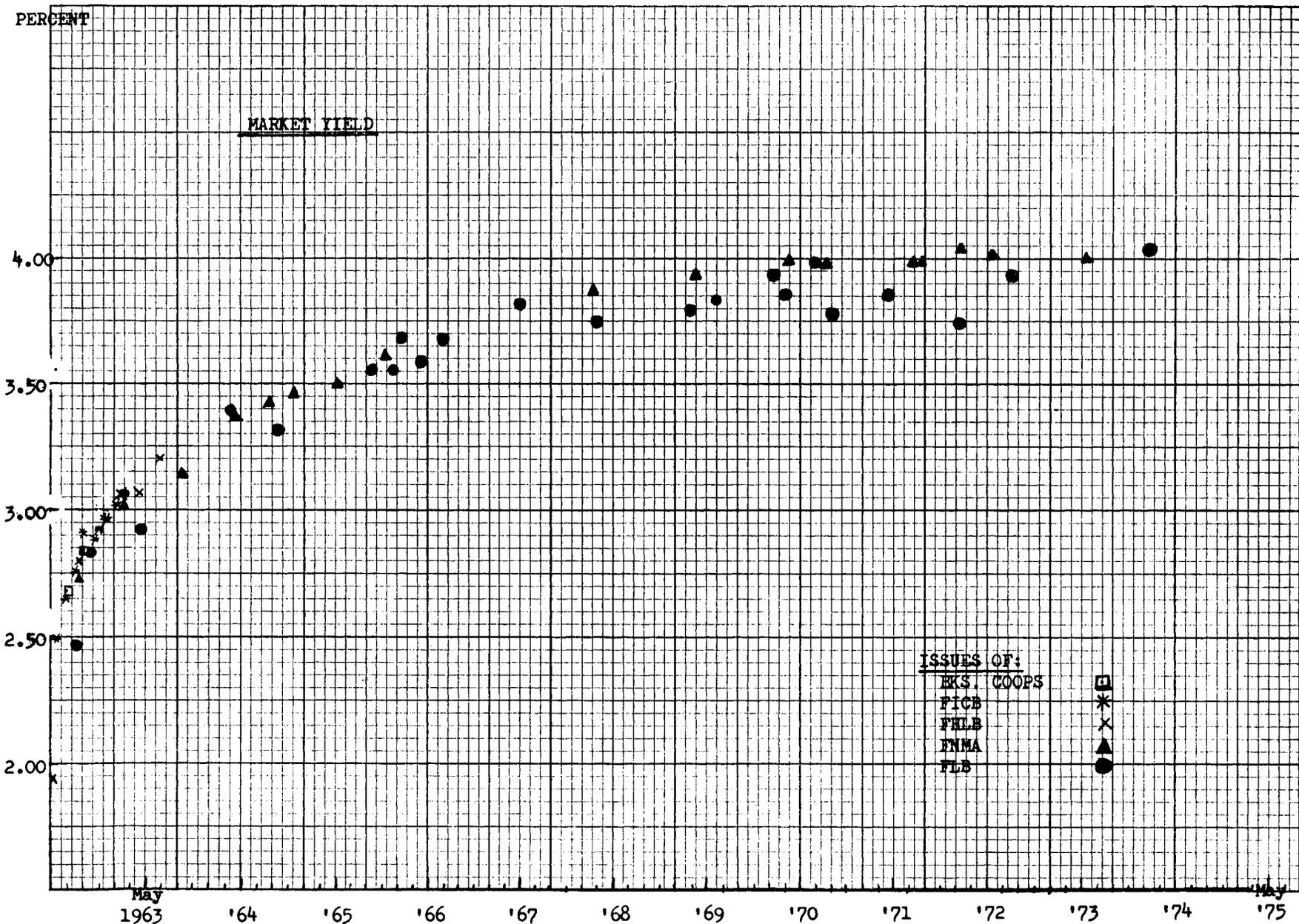
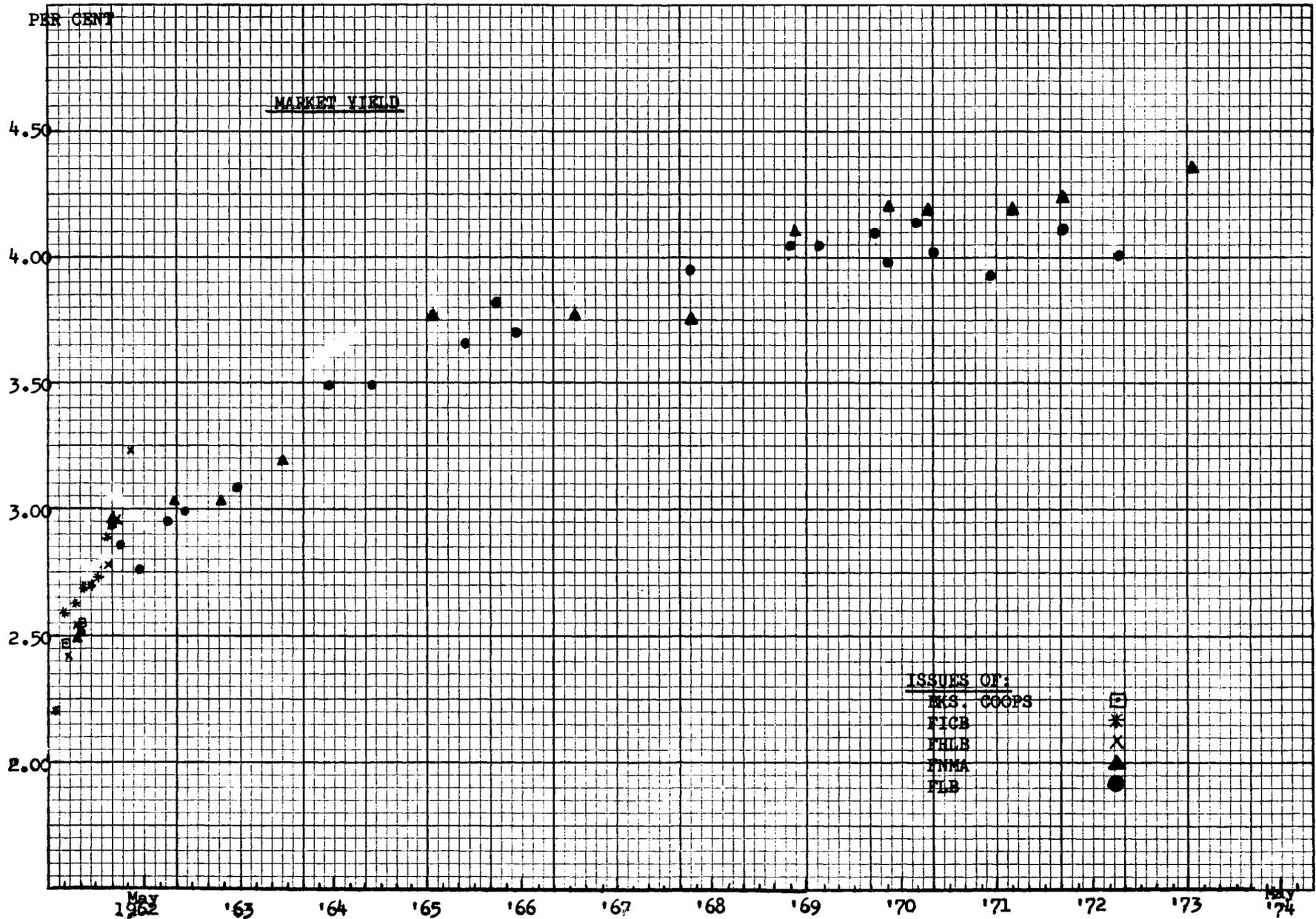


CHART 12
 YIELDS OF AGENCY SECURITIES, MAY 31, 1962



Source: Morgan Guaranty Trust Company, daily quotation sheets.

CHART 13
 YIELDS OF AGENCY SECURITIES, MAY 31, 1961



Source: Morgan Guaranty Trust Company, daily quotation sheets.

over time in the yields on the securities of one Agency as versus those of another Agency.

The divergence among yields on Agency issues of similar maturity has on several of the observed dates been as large as 50 basis points, and has not uncommonly been around 25 basis points. Such a divergence persists, and to an even greater degree on longer-term issues, when after-tax yields to corporations are utilized.

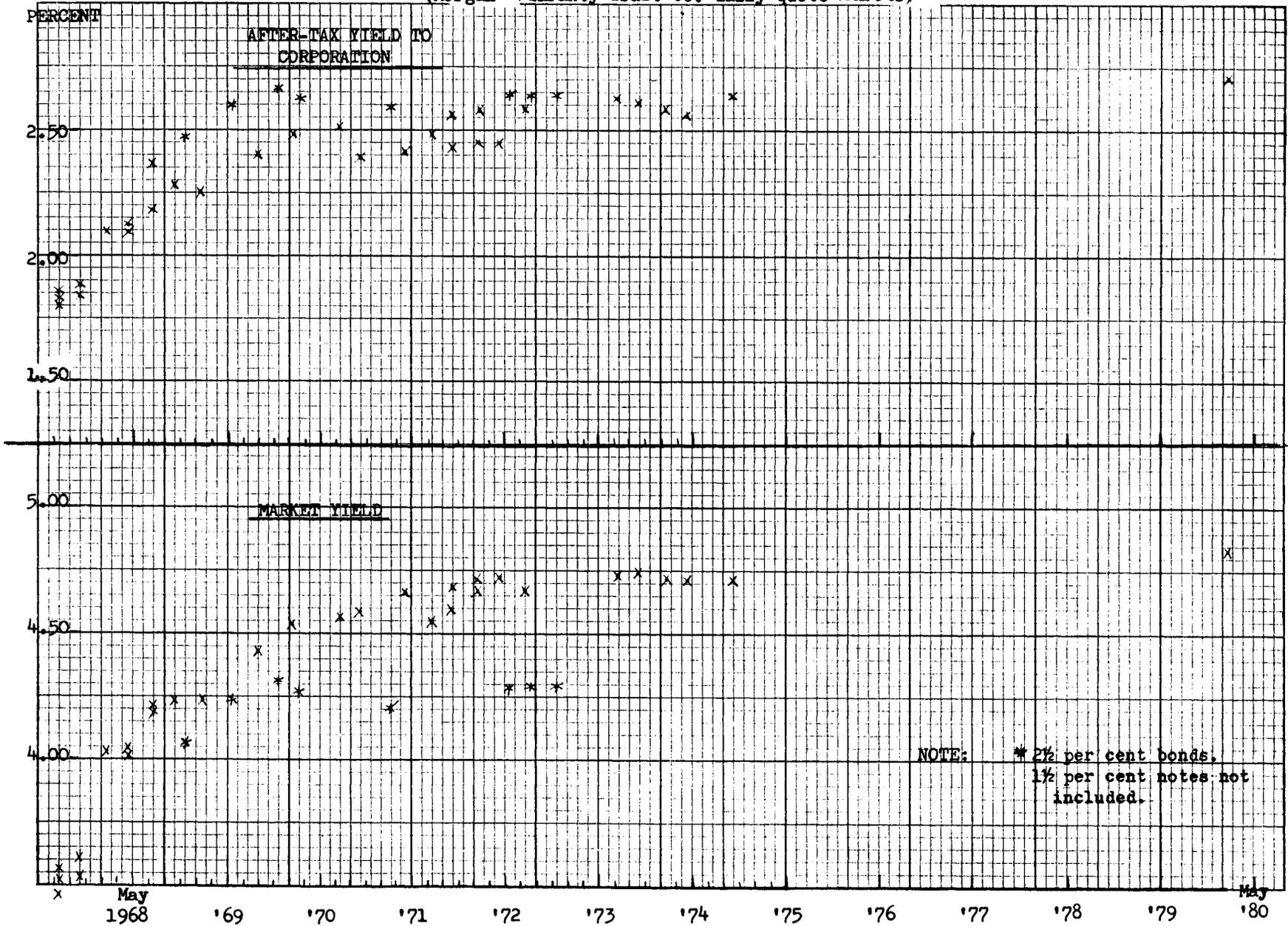
The dispersion of Agency yields around the yield curve is clearly greater than in the U. S. Government securities market. In Chart 14, before- and after-tax yield curves for U. S. Government securities are plotted for the end of May, 1967, utilizing Morgan Guaranty quote sheets.^{1/} When the low coupon issues are excluded, the yield curve for Governments is smoother than for Agencies. The maximum divergence of any specific issue from the curve is no more than 15 basis points and is usually considerably less. Inclusion of the low coupon issues (the 2-1/2 per cent bonds) increases the dispersion of yields around the curve--before-tax yields of such issues are below the curve and after-tax yields above it.

The smoothness of the Agency yield curve has varied rather widely over the 1961-1967 period. During 1961-64 it was comparatively smooth. As Agency yields began to rise more rapidly in 1965 the dispersion of yields around the curve increased, particularly in the short-term maturity range. By May of 1966, when congestion in

^{1/} It appears that the yield curve for U. S. Government securities is less smooth using the yields quoted by one dealer than when composite yield quotations from all dealers are utilized.

CHART 14
 YIELDS OF TREASURY SECURITIES, MAY 29, 1967

(Morgan Guaranty Trust Co. daily quote sheets)



the Agency market was nearing a peak, the dispersion of yields was marked. With the improvement in the Agency market in late 1966- early 1967 the yield curve was, by May of 1967, again relatively smooth.

In general the Agency yield curve has been smoothest for issues due within 1 year, particularly after allowance is made for differences in coupons. This is despite the fact that it is only in the within 1 year maturity range where all the Agencies issue securities.

Differences in yields on Agency issues of comparable maturity, as often as not, arose among securities of the same issuing Agency. No consistent differences among yields on securities of the separate Agencies were evident during the sixties. And in 1967 there was no divergence between after-tax yields on participation certificates (FNMA or fully marketable Export-Import Bank PC's) and on regular Agency issues of comparable maturity.^{1/}

At any one point in time there have been differences among yields on the various Agency securities. Such deviations can be related primarily to differences in coupons. Particularly in the shorter-term maturity area, coupons on the various Agency securities can diverge widely when current interest rate levels are high or low relative to past interest rates, since short-term issues of some Agencies (FNMA, FLB and to some degree FHLB) often originated as long-term issues that have approached maturity with the passage of time while other Agency debt issues (primarily FICB and Banks for Cooperatives) are always marketed close to current interest rates.

^{1/} The participation certificate yields studied were only those of the large and fully marketable PC's, first issued in early 1967.

The comparative yield differences that stand out in the accompanying Charts can usually be traced to such a movement in interest rates and coupons. The shorter-term portion of the yield curve was relatively smooth in the early sixties. But as Agency yields rose to fairly high levels relative to earlier periods, the yields on FNMA and FLB issues, carrying comparatively low coupons, moved below other short-term Agency yields. Such a divergence first appeared in the yield curve for 1964 and it became more pronounced in 1965 and 1966. Using after-tax yields for 1966, of course, the divergence was erased. And by May, 1967, when yields and coupons on newly-issued Agencies were considerably reduced, the yield curve was again relatively smooth even on a before-tax basis.

The yield curve for 1967, before tax adjustments, shows market yields of regular FNMA debt to be generally above comparable FLB debt and yields of participation certificates to be consistently above regular Agency debt of similar maturity. Both of these seeming divergences represent, at least in part, coupon differences, however, and after-tax yields of these issues are equalized.^{1/}

Ownership. In a homogeneous market one would expect to find the different ownership groups holding roughly the same proportion of the various securities outstanding, abstracting from maturity differences. Were this not the case, securities of some Agencies would at times be subject to interest rate pressures that differed or were absent for other Agency issues. Table 11 presents the percentage of publicly-owned debt of the various Agencies held by the large investors in the

1/ The after-tax yields shown overstate the true impact of coupon rates on yields since they utilize the corporate tax rate which is higher than the marginal tax paid by many investors.

Table 11
OWNERSHIP BY ISSUING AGENCY
(Per cent of Publicly-held Debt)

	Issues Due in 1 Year				Issues Due in 1-5 Years			Issues Due After 5 Years		
	Bks. for Coops	FICB	FHLB	FNMA ^{1/}	FLB	FHLB	FNMA	FLB	FNMA	FLB
Commercial Banks										
Dec. 31, 1961	26.9	22.4	27.7	10.5(17.1)	21.4	32.0	22.8	27.1	5.3	3.9
1962	39.0	30.7	31.4	12.2(23.2)	35.6	35.4	24.4	24.4	5.9	5.4
1963	30.1	29.5	31.2	23.3(23.3)	27.9	26.7	21.8	25.2	4.8	6.6
1964	28.3	26.8	27.4	17.7(12.2)	25.1	17.7	18.6	21.9	4.4	6.3
1965	28.6	27.3	23.4	15.6(21.4)	25.6	24.0	13.7	19.5	3.6	8.9
1966	24.8	22.0	17.0	13.1(17.1)	21.7	15.3	14.2	17.9	3.9	8.8
Mar. 31, 1967	23.8	23.7	15.5	11.3(16.1)	21.7	21.7	14.6	18.8	5.0	14.6
Nonbank Financial Institutions										
Dec. 31, 1961	6.7	7.6	10.4	11.3(18.0)	8.1	31.2	19.6	14.6	22.9	9.6
1962	8.3	6.6	12.4	8.7(15.6)	10.8	18.3	20.1	14.3	19.6	10.2
1963	10.5	7.7	10.3	11.9(11.9)	12.2	28.3	23.1	12.5	16.0	9.8
1964	8.0	8.0	12.4	8.5(16.3)	8.8	23.5	24.7	13.8	16.3	10.0
1965	8.0	8.4	12.3	7.0(14.9)	7.7	19.3	20.5	13.3	15.0	11.4
1966	7.7	7.9	11.3	7.7(8.0)	8.0	14.0	17.9	11.9	13.7	9.3
Mar. 31, 1967	8.2	9.1	12.0	10.8(9.2)	8.2	16.3	17.9	11.6	14.9	12.6
Nonfinancial Corporations										
Dec. 31, 1961	26.7	19.1	24.4	22.0(4.9)	5.5	0.8	3.8	1.8	0.5	0.2
1962	14.7	14.0	18.3	16.0(4.0)	7.9	8.6	4.7	2.1	0.4	0.6
1963	14.6	13.0	19.3	4.1(4.1)	5.1	4.8	1.3	1.9	--	0.4
1964	10.2	9.2	10.4	3.1(--)	2.5	5.2	1.9	2.6	0.1	0.3
1965	9.7	8.3	9.1	13.5(7.5)	7.1	6.5	2.2	2.6	1.6	--
1966	4.7	3.7	4.1	8.1(4.9)	5.3	3.1	3.7	2.0	1.5	0.6
Mar. 31, 1967	3.6	3.4	3.3	2.8(4.2)	3.9	2.1	4.1	2.2	1.8	0.6

<u>State & Local Govts.</u>										
Dec. 31, 1961	1.1	3.0	2.2	11.4(5.1)	5.7	3.2	3.0	2.8	5.8	9.4
1962	2.0	4.7	2.1	17.4(19.2)	2.3	0.6	3.7	1.7	7.6	10.2
1963	2.4	5.1	2.2	9.9(9.9)	2.4	0.8	1.6	1.5	8.4	10.5
1964	5.4	5.6	3.5	28.1(9.2)	3.3	2.7	2.1	4.7	10.7	17.7
1965	5.9	10.0	6.5	39.4(1.0)	4.3	3.0	5.0	7.8	12.0	15.6
1966	6.0	10.2	4.1	15.2(5.9)	4.8	3.4	4.2	8.5	12.5	12.0
Mar. 31, 1967	8.7	7.7	3.7	22.1(3.4)	5.7	1.8	4.5	8.4	11.7	10.9
<u>Other Public Investors</u>										
Dec. 31, 1961	36.3	46.9	34.7	44.2(54.6)	59.2	32.8	50.8	53.8	65.6	76.8
1962	36.0	43.9	35.7	45.8(38.0)	43.3	37.1	47.2	57.4	66.5	73.6
1963	40.4	44.3	36.8	50.9(50.9)	52.4	39.5	52.1	58.9	70.8	72.7
1964	47.5	50.2	46.3	42.7(62.2)	59.9	51.0	52.7	57.1	68.5	65.6
1965	46.7	45.3	48.3	24.3(55.2)	55.4	47.3	58.6	56.8	67.9	64.1
1966	56.9	56.2	63.6	55.9(64.0)	60.2	64.1	60.0	59.7	68.5	69.3
Mar. 31, 1967	55.7	56.1	65.5	53.0(67.1)	60.6	58.0	58.9	59.0	66.7	61.3

1/ Percentages in parentheses were computed excluding the FMMA discount notes, issued to investors on demand.

Source: Treasury Survey of Ownership.

major ownership groups: commercial banks, nonbank financial institutions, nonfinancial corporations, state and local governments, and all others. The ownership percentages are shown for three maturity groupings (debt due within 1 year, in 1-5 years, and after 5 years) and for the years 1961 through 1967.

The patterns of ownership show a remarkable similarity. Moreover, variations in ownership were greater in the early sixties than during the last few years.

Small differences in the ownership percentages should be disregarded for a number of reasons. In the first place, small percentage variations in ownership in many of the categories involve only minor dollar amounts. Secondly, the maturity categories are quite broad and the average maturity of issues of the separate Agencies will differ within any of the maturity groupings. Thirdly, holdings of a specific Agency security by an ownership group may at times be less than what the group desires to hold if the Agency was retiring debt when the ownership group was able to buy and issuing debt when the ownership group did not have funds available for investment. It may be for this reason, for example, that commercial bank holdings of FHLB issues were relatively low in December, 1966 and March, 1967. Finally, since the percentage of debt held by certain ownership groups varies considerably by maturity (for example, commercial banks hold considerably more short-term debt than long-term), issues that were originally long-term but that have passed with time into the shorter-term maturity categories should

have ownership patterns that vary from original short-term issues. The variance in ownership of such issues should be biased in the direction of the ownership percentages for long-term Agency issues. In this regard, the ownership percentages for FLB and FNMA issues in the 1-5 year sector should differ from 1-5 year FHLB issues in the direction of the over 5 year percentages, and the ownership percentages of FLB, FNMA and FHLB in the within 1 year maturity sector would likewise vary somewhat from those of FICB and Bks. Coops.

After allowing for some variation in the percentages for the above reasons, there remain two cases in which differences in ownership among Agency securities may be significant, though even in these cases the differences are small. Nonbank financial institutions hold a larger share of FNMA and FHLB issues than of other Agency securities. This is not surprising, however, in view of the relationship of the Federal Home Loan Banks to savings and loan associations and of the active participation of most financial institutions in the mortgage market in which FNMA also plays an active role. Secondly, FNMA appears to be held to a lesser degree by commercial banks than are other Agency securities^{1/}; even this difference could be related to the fact that FNMA did not issue a single security over the entire 1962, Q4-1965, Q3 period.

B. Homogeneity by Issue Size

The size of individual issues in the Agency market ranges widely. On May 31, 1967, single non-guaranteed Agency issues had anywhere from \$60 million to \$700 million outstanding and from \$60

^{1/} The relevant ownership comparison is for FNMA issues not including discount notes, that is, the figures in parentheses on Table 11.

million to \$535 million held by the public. With but one exception the issues of the Federal Intermediate Credit Banks and of the Banks for Cooperatives had amounts publicly-held in a \$243-403 million range. Federal Home Loan Bank issues ranged in general from \$250-535 million. All of the Agency issues with less than \$100 million outstanding were obligations of the Federal National Mortgage Association and of the Federal Land Banks. While FNMA and FLB issues range up to \$400 million (publicly-held) in size, the large number of small issues makes the average issue size of these two Agencies significantly less than for the other Agencies.

The size of individual Agency issues is considerably less than in the U. S. Government securities market, and there are more individual Agency issues outstanding than there are Treasury coupon issues. As of the end of May, 1967, there were 49 Treasury coupon issues outstanding (excluding the 1-1/2 per cent notes), as compared with 70 separate issues of the five large Agencies (not including PC's). The average size of Treasury issues was \$3.1 billion in terms of total outstanding and \$1.1 billion in terms of publicly-held portions. There were only five Treasury issues for which the amount held by the public was below \$1 billion.

Table 12 shows the number of Agency issues outstanding, their average issue size and the range of issue size for selected dates. It is clear from the Table that the sizable growth in Agency debt from the mid-1950's has been through a growth in the number of issues as well as in their size. In the five years from May, 1955, to May, 1960,

Table 12
 SIZE AND NUMBERS OF INDIVIDUAL AGENCY ISSUES

	FICB	Bks. for Coops	FHLB	FNMA	FLB	All Agencies
May 31, 1967						
No. issues outstanding	9	4	11	17	29	70
Average issue size <u>1/</u>	365(343) ^{2/}	257	465(400)	196(168)	158(152)	248(226)
Range of issue size <u>1/</u>	236-465(161-403)	243-275	185-700(185-535)	63-550(63-400)	60-341(60-341)	60-700(60-535)
May 31, 1960						
No. issues outstanding	9	3	6	17	21	56
Average issue size <u>1/</u>	174	110	199	164	102	146
Range of issue size <u>1/</u>	137-210	92-138	105-351	90-797	60-154	60-797
May 31, 1955						
No. issues outstanding	4	3	2	1	7	17
Average issue size <u>1/</u>	65	37	71	570	151	126
Range of issue size <u>1/</u>	41- 91	30- 40	60- 81	570	71-228	30-570

1/ Millions of dollars.

2/ Figures in parentheses show amounts held by the public.

Source: Morgan Guaranty Trust Company, daily quotation sheets.

the number of individual Agency issues rose from 17 to 56 while the average issue size increased only slightly--and in fact decreased for FNMA and FLB. Between 1960 and 1967, on the other hand, the growth in the number of issues tapered down while the average issue size increased significantly, from \$146 million to \$248 million.

Since Agency debt is sure to grow further, any differing market characteristics of the small as versus larger issues should

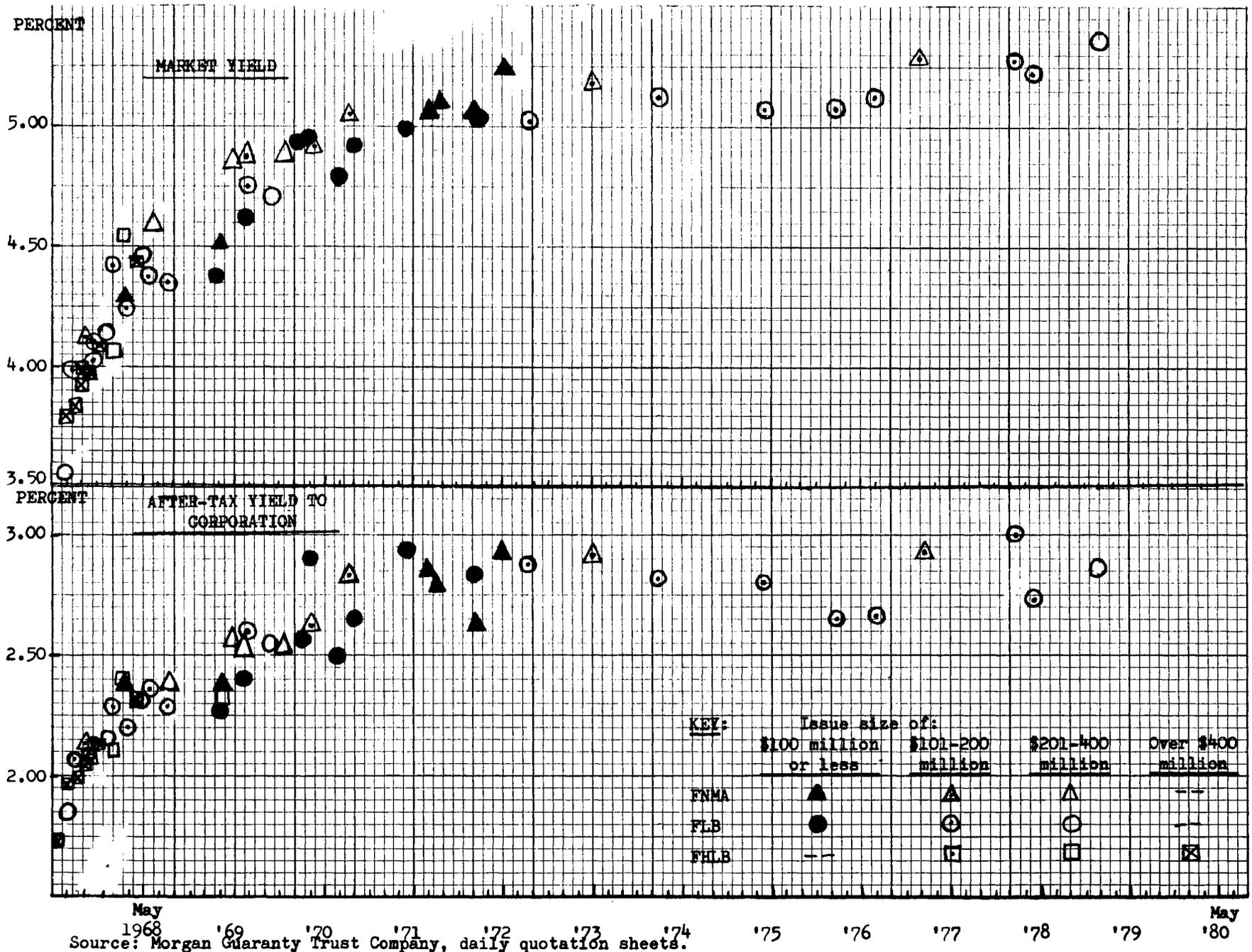
be of interest to the Agency debt managers, as well as to private and official investors. The evidence gathered for this study suggests that there is indeed a difference in the marketability^{1/} of the small issues when compared with larger Agency issues. On the basis of one observation in 1967, it appears that for the small issues (1) quoted yields vary more widely off the yield curve^{2/} and (2) the more active market participants hold them to a somewhat lesser degree.

Chart 15 shows for May 31, 1967, the plots for before- and after- tax yield curves differentiating the Agency debt by issue size. Issues of the Federal Intermediate Credit Banks and of the Banks for Cooperatives are not included since they vary only slightly in size. The Chart shows clearly that, at least on this one date, the issues whose quoted yields verged most widely off the yield curve were issues of \$100 million or less. This stands out particularly after allowance

^{1/} Less marketability of the small issues need not imply diminished liquidity. If small issues are held tightly in investor portfolios the offered side of the market would be weak but the bid side need not be, i.e., a ready market might exist for sales of the issues.

^{2/} In addition, spreads in quoted yields among dealers appear, for the debt of some Agencies, to be greater on the small Agency issues.

CHART 15
 YIELDS OF AGENCY SECURITIES BY ISSUE SIZE, MAY 31, 1967



is made for differences in coupons. Yields on the small issues lay above as well as below the yield curve, and accounted for a sizable portion of the lack of smoothness of the yield curve.

Ownership data also appear to point to a lesser tradeability of the small Agency issues. In Table 13, the ownership of FLB and FNMA debt on March 31, 1967, is shown differentiated by issue size. In all but one case (FNMA debt due within 1 year) the larger commercial banks and nonfinancial corporations reporting in the Treasury Survey held a greater share of the large Agency issues than of the small issues. Investor groups who are probably less active on the buy and sell side taken together--nonbank financial institutions and state-local governments--sometimes held greater and sometimes lesser portions of the small issues. And other investors, considerably less active in the market than the above groups, held higher--and sometimes sharply higher--shares of the small issues.

With relatively large institutions often holding only minimal amounts of the small Agency issues, it is indeed likely that buy orders for these issues--particularly of any size--would be filled only with difficulty, and probably at sharply rising prices. The volume of trading in the market and dealers' positions (particularly gross short positions) would also be smaller than for a comparable amount of larger-sized issues. It seems clear, then, that Agency debt could be made more attractive to at least some investors were the size of individual issues increased.^{1/}

^{1/} It will be recalled that financial institutions increased their portfolios of PC's sharply in 1967 with the introduction of relatively large-sized issues.

Table 13
OWNERSHIP BY SIZE OF AGENCY ISSUE, MARCH 31, 1967
(Per cent of Publicly-held Debt)

	Commercial Banks	Nonfinancial Corporations	Nonbank Financial Institutions	State and Local Governments	Other Investors
<u>FLB Debt</u>					
Due within 1 year					
Issues of < \$100 million	8.8	0.7	11.6	13.6	65.3
Issues of \$100-199 million	20.3	3.4	8.2	6.5	61.2
Issues of > \$199 million	23.5	5.1	8.4	4.2	58.9
Due in 1-5 years					
Issues of < \$100 million	11.9	1.4	9.5	17.3	59.7
Issues of \$100-199 million	21.5	2.8	12.9	5.6	57.1
Issues of > \$199 million	24.3	2.4	11.6	2.9	58.8
Due after 5 years					
Issues of < \$100 million					
Issues of \$100-199 million	8.0	0.8	9.3	13.9	67.9
Issues of > \$199 million	26.7	0.2	18.6	5.4	49.5
<u>FNMA Debt</u>					
Due within 1 year					
Issues of < \$100 million	21.8	5.7	14.9	2.3	55.2
Issues of \$100-199 million	24.7	4.0	10.0	2.7	58.0
Issues of > \$199 million	13.4	4.0	8.3	3.5	70.8
Due in 1-5 years					
Issues of < \$100 million	5.2	1.4	13.0	9.3	71.3
Issues of \$100-199 million	16.3	3.2	18.8	4.1	57.6
Issues of > \$199 million	13.8	6.6	20.2	2.0	52.4
Due after 5 years					
Issues of < \$100 million					
Issues of \$100-199 million	5.2	1.8	14.6	11.7	66.7
Issues of > \$199 million					

At the present time, the size of newly offered individual Agency issues is by and large determined by the operating needs of the particular Agency in any month. Should an Agency make the overt decision to increase the size of its issues, it would probably necessitate borrowing ahead of need and/or following a program of reopening issues already outstanding. Objections might be raised by the Agencies to borrowing ahead of need, since in the short-run it might cost them money. However, another proposal has been advanced that would eliminate this problem, namely the establishment of a centralized borrowing authority for all, or some group, of the Agencies. Were centralized borrowing instituted, it would permit larger--and more marketable--issues, it would reduce the number of financings per month, and it would also enable a better co-ordination of financings as between the Agency and U. S. Government securities markets.

IV. INDICATORS OF MARKET PERFORMANCE

The performance of the secondary market in Agency securities may be evaluated in terms of several indicators. They include the volume of trading, the size of dealers' positions, and the spread between quoted bid and asked security prices. In general, the marketability, and liquidity, of a security is related to these indicators. A large volume of trading implies that investors are able to execute the transactions they desire at reasonable speed; and in addition it implies that the market is "broad" since a sizable trading volume probably reflects a large volume of orders on the dealers' books from a wide spectrum of investors. The existence of dealers who take positions in securities is a crucial aspect of the market, enabling investor orders to be translated into transactions with speed, in size, and at prices close to the market. Finally, a small spread between bid and asked security prices indicates dealers' willingness to make markets and, at the same time, induces investor participation in the market.

The remainder of this chapter analyses these three indicators of Agency market performance, in isolation and in comparison with other securities markets. The analysis is in general confined to the period beginning in 1960 due to the lack of available data prior to the sixties.^{1/} Data are generally classified by term to maturity, since the indicators are quite different in magnitude for short-term and longer-term Agency debt. The data include fully marketable participation certificates for the relevant periods.

^{1/} Some data on Agency trading and positions are available for the 1958-1959 years but they are not consistent with later data.

A. The Volume of Trading

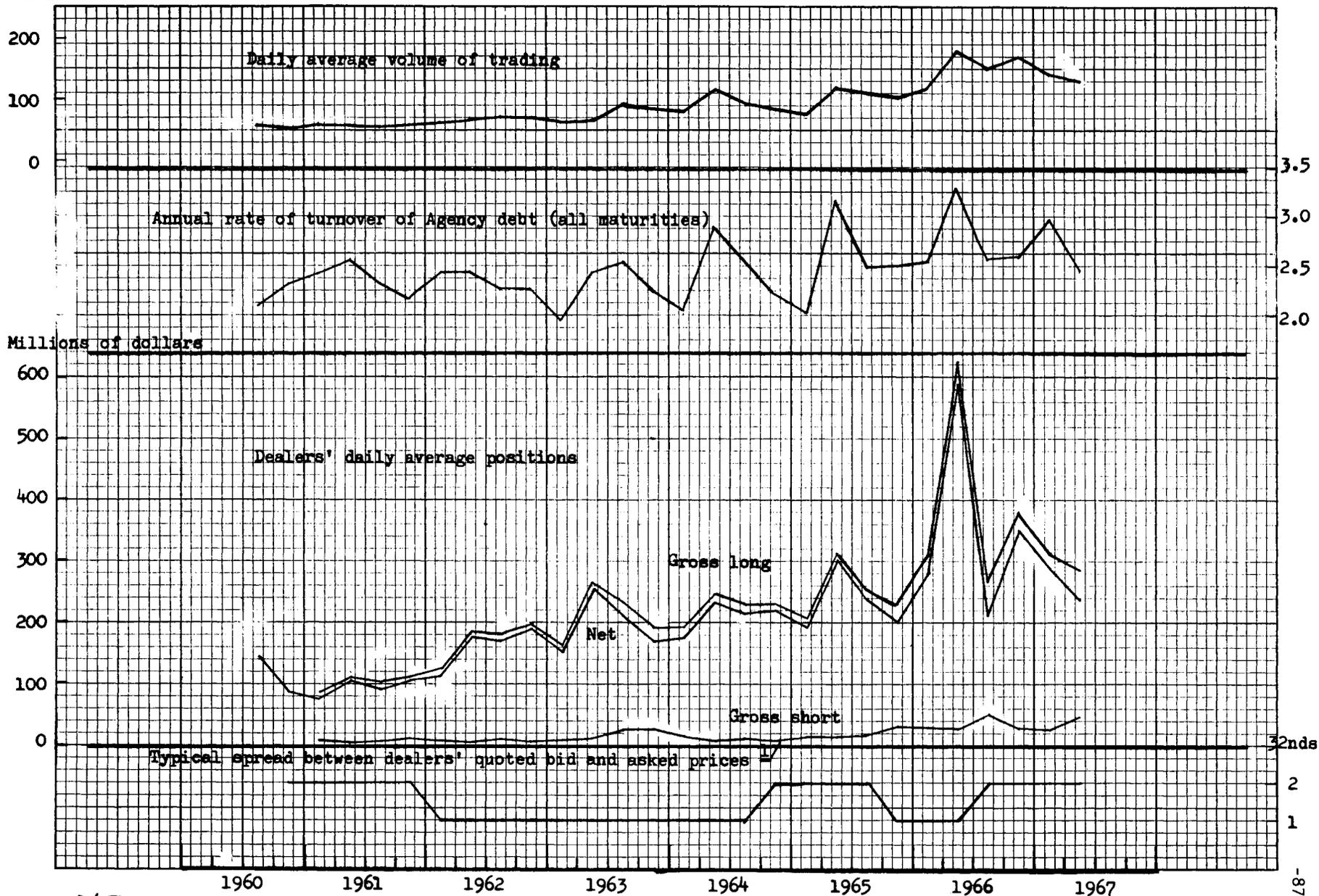
Daily average trading in Federal Agency securities has risen sharply from the early sixties. By 1966-67 the volume of trading stood at levels 3-4 times as high as in 1960-61. Daily trading in Agency securities due within 1 year averaged \$56 million in 1960-61 and some \$150 million in 1966-67. Daily trading in Agency debt due after 1 year, while considerably smaller, increased even more in percentage terms--from \$18 million on average in 1960-61 to \$64 million in 1966-67. Charts 16 and 17, Profile of Market Performance, illustrate the marked secular rise in trading of Agencies; quarterly data are presented in Appendix Table 7.

The growth in trading activity in the Agency market has outpaced that in other securities' markets, and by 1966-67 activity in both the short-term and longer-term sectors of the Agency market had surpassed trading volume in bankers' acceptances and in some maturity sectors of the Government securities market. Table 14 presents dealer transactions in Federal Agency debt, U. S. Government debt and bankers' acceptances. As the Table shows, trading in Agency issues maturing within 1 year was, by 1966-67, some three times as large as trading in bankers' acceptances or in Treasury issues maturing after 10 years, somewhat larger than trading in Treasury issues maturing within 1 year or in 5-10 years, and somewhat smaller than trading in 1-5 year Treasury maturities. Activity in Treasury bills of course far outpaces any other market. Trading in Agency issues maturing in more than 1 year had, by 1966-67, risen to a level roughly comparable to trading in bankers' acceptances or in long-term Treasury debt.

CHART 16
 PROFILE OF MARKET PERFORMANCE FOR FEDERAL AGENCY SECURITIES MATURING WITHIN 1 YEAR

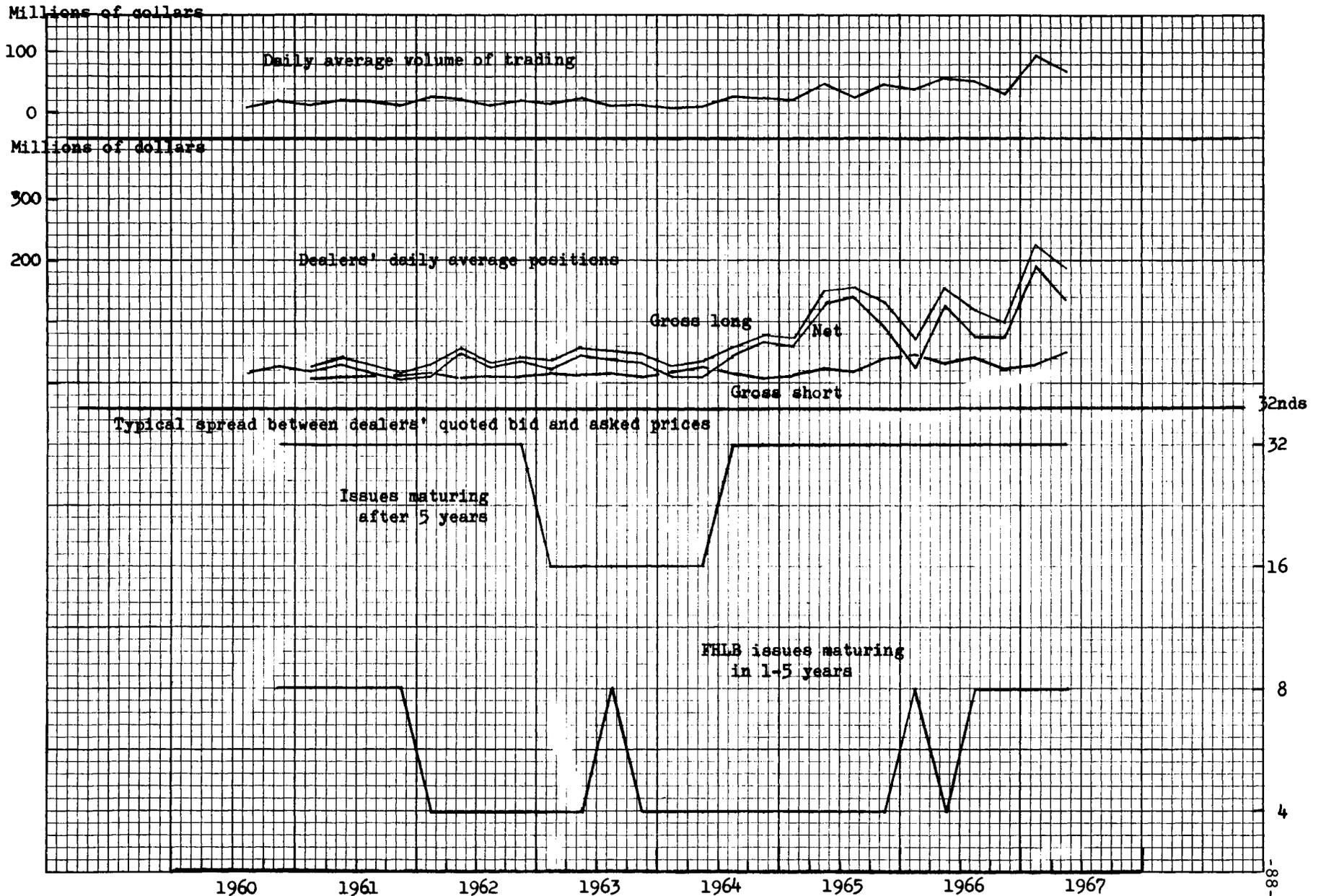
Quarterly data, 1960-67

Millions of dollars



1/ The spread as shown is for FHLB, FICB and Eks. for Coops. issues; spreads on FNMA and FLB issues are larger.
 SOURCE: Appendix Tables 7-11

CHART 17
 PROFILE OF MARKET PERFORMANCE FOR FEDERAL AGENCY SECURITIES MATURING AFTER 1 YEAR
 Quarterly data, 1960-67



SOURCE: Appendix Tables 7-11

Table 14
 GROSS DEALER TRANSACTIONS IN COMPARATIVE SECURITIES' MARKETS
 (Averages of daily data in millions of dollars)

Date	Federal Agency debt due:		U. S. Government debt due:					Bankers' Acceptances
	Within 1 year	After 1 year	Within 1 year		1 - 5 years	5 - 10 years	After 10 years	
			Bills	Coupon issues				
1960 ^{1/}	56	16	818	137	253	57	31	44
1961	56	19	1,035	168	265	54	30	54
1962	68	21	1,229	171	225	120	37	48
1963	78	18	1,200	122	216	141	50	45
1964	94	19	1,298	84	219	126	41	45
1965	105	36	1,402	79	195	102	50	42
1966	156	47	1,586	121	242	110	36	49
1967 ^{2/}	140	82	1,645	98	289	80	33	66

^{1/} Based on data for July-December.

^{2/} Based on data for January-June.

To what factors can this sharp rise in trading in the Agency market be attributed? To answer this question, multiple regressions were calculated relating dealers' transactions in Agency securities to the independent variables that are significant determinants of transactions in the U. S. Government securities market.^{1/} The simple least squares regressions related daily average dealer transactions in Agency securities to the independent variables for quarters of the 1960, Q3-1967, Q1 period. The results are presented in Table 15.

Three variables explain 97 per cent of the variance in Agency transactions during the 1960-67 period: Agency debt held by public investors, gross new Agency issues, and the level of free reserves. All three variables were found to be highly significant (at the 1 per cent level) as determinants of transactions.

The secular rise in transactions is explained by a secular rise in Agency debt and, to a lesser degree, in gross new issues. These independent variables, as well as transactions, are shown in Chart 18. The Chart also makes evident that many of the quarterly peaks in transactions can be related to the volume of new Agency issues marketed in that quarter. As shown in Table 15, a rise of \$12 million in daily average transactions was associated with a \$1 billion rise in Agency debt, and a \$17 million rise in transactions with a \$1 billion rise in gross new Agency issues.

^{1/} The pertinent regression results for the U. S. Government securities market are in Louise Ahearn and Janice Peskin, "Market Performance as Reflected in Aggregative Indicators," Treasury-Federal Reserve Study of the U. S. Government Securities Market, 1967.

Table 15
Results of Multiple Regressions Explaining Trading in Agency Securities^{1/}

\bar{R}^2	Durbin-Watson ratio	Constant	Net regression coefficients and standard errors		
			Agency debt held by public (Billions of \$) 2/	Gross new Agency issues to public (Billions of \$) 3/	Free Reserves (Millions of \$) 4/
.97	2.08#	-64.52	11.53** (.89)	17.01** (2.20)	.04** (.01)

** Significantly different from zero at 1 per cent level.

No positive serial correlation (Theil and Nagar's Table, 5 per cent significance level for rejecting null hypothesis of residual independence).

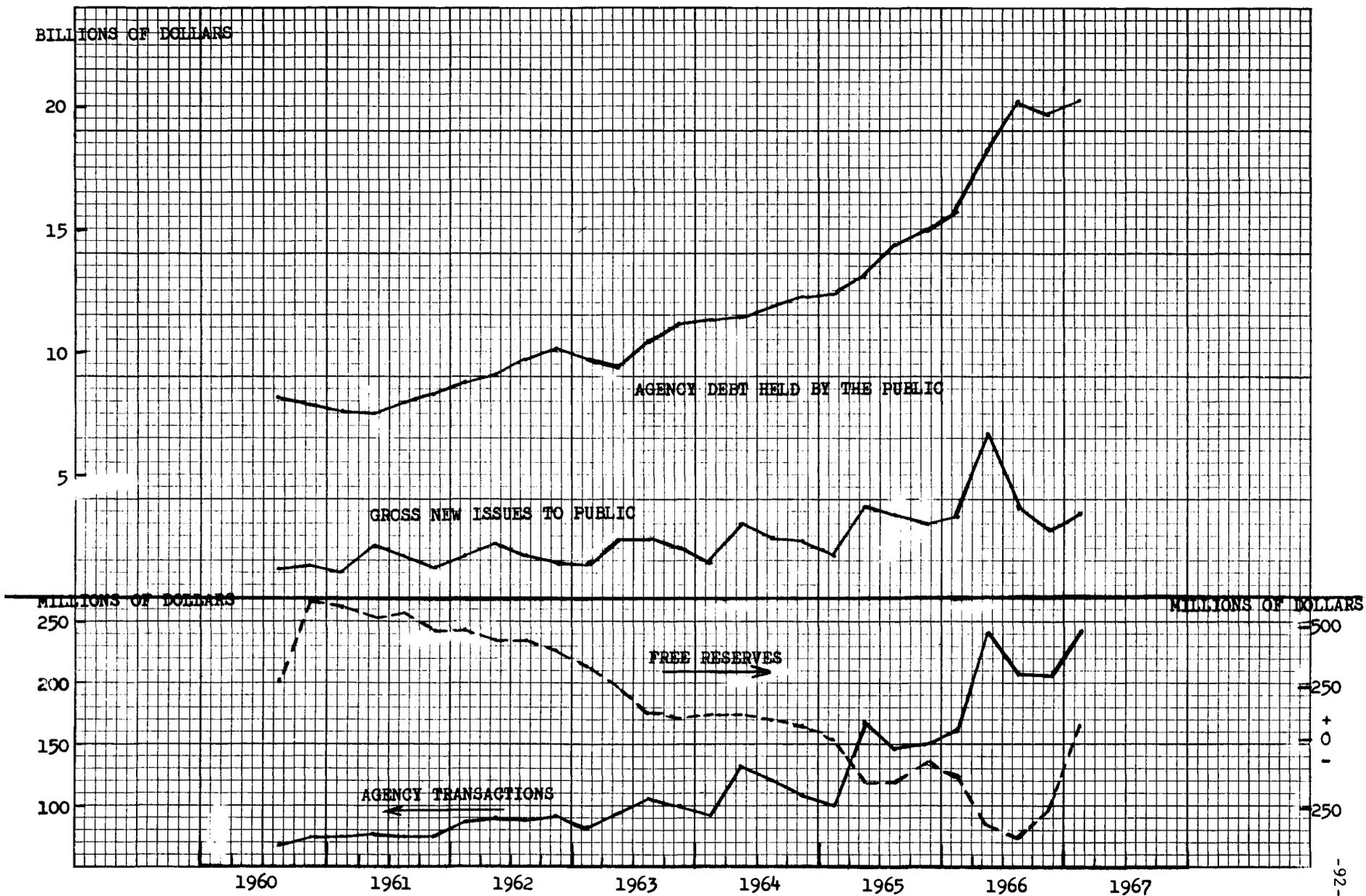
1/ The dependent variable is gross dealer transactions in Agency securities (all maturities and including participation certificates), quarterly averages of daily data in millions of dollars. The data are shown in Appendix Table _____. Regressions were run for the 1960, Q3 - 1967, Q1 period.

2/ Agency debt (including PC's) held by public investors; quarterly average of end-of-month data for four months in and closest to the quarter.

3/ Gross new Agency debt (including PC's) issued to public investors; total during quarter.

4/ Quarterly average of monthly averages.

CHART 18
 TRANSACTIONS IN AGENCY SECURITIES AND CAUSAL VARIABLES
 1960-1967



The volume of trading was also related to the degree of monetary tightness or ease, as measured by the level of free reserves.^{1/} The relationship, as measured, involved a \$4 million rise in the volume of trading with a \$100 million rise in free reserves (or decline in net borrowed reserves). The negative relationship between trading and monetary tightness probably reflects several factors. In the first place, holders of Agency debt may become less willing sellers when sales involve capital losses--the locked-in effect-- and more willing sellers when capital gains can be realized. Secondly, dealers' positions decline when money is tight and with low positions the translation of investor buy orders into purchases becomes more difficult.

These same variables were generally found to be significant determinants of trading volume in the U. S. Government securities market during the sixties, as discussed in Chapter 2 of the Ahearn-Peskin study, but the magnitudes of the relationships often differ from those found in the Agency market. Trading in U. S. Government securities was found to be more responsive to shifts in monetary ease or tightness than was Agency trading. A \$100 million rise in free reserves, for example, was associated with increases of \$12 million in trading in intermediate-term Treasury coupon issues and of \$58 million in trading in Treasury bills, as compared with only

^{1/} In an alternative equation, Agency transactions were significantly related to the level of interest rates on Agency debt. In this case, the volume of trading increased by \$19 million with a 1 percentage point decline in Agency interest rates.

\$4 million in Agency trading. The associated elasticities^{1/} were also somewhat higher for Treasury issues, ranging from .08-.19 compared with .05 for Agency issues.

The response of trading to increases in debt in the Agency and Treasury markets varies, but with no discernible pattern. The rise in trading for a \$1 billion rise in debt is larger for Agency issues than for Treasury coupon issues but smaller than for Treasury bills, as the accompanying table shows in line 1.^{2/} The elasticity of trading with respect to debt (line 2) varies between .8 and 2.1, and stands at 1.2 for the Agency market. The elasticity for the Agency market indicates that a percentage rise in debt held by public investors causes a somewhat greater percentage rise in the volume of trading. Only for short-term Treasury coupon issues is the elasticity less than 1.

Trading and Debt Relationships in Selected Markets

Item	Agency Market	Treasury Market		
		Bills	Coupon Issues due:	
			Within 1 year	5-10 years
Rise in trading (millions of dollars) per \$1.0 billion rise in debt ^{1/}	12	39	5	8
Elasticity: ($\frac{\Delta \text{trading}}{\Delta \text{debt}} \cdot \frac{\text{debt}}{\text{trading}}$) ^{2/}	1.2	1.6	.8	2.1

^{1/} Coefficients of multiple regression studies.

^{2/} At mean values (1960, Q3 - 1967, Q1) of debt and trading.

^{1/} Defined as the ratio between the percentage change in trading and the percentage change in free reserves, or $\frac{\Delta T}{\Delta F} \cdot \frac{F}{T}$
 where T -- trading
 F -- free reserves

The elasticities noted here were taken at the mean values of F and T for the 1960, Q3 - 1967, Q1 period.

^{2/} Debt was defined as debt held by the public for the Agency and Treasury coupon markets but as total debt outstanding for the Treasury bill market where official holdings are actively sold and purchased.

There appears to be no pattern in the differences in elasticities among the markets. The differences obviously do not relate to the maturities of the debt. Nor do they relate to the relative amounts of debt outstanding in any sector since the greatest amount of debt is in Treasury bills and the least in Agencies. There is also no variance in the elasticities that might be traced to comparative debt turnover (trading/debt) in the various market sectors; the highest elasticity (5-10 year Treasury issues) is in the sector for which turnover is the lowest, but the second highest elasticity (Treasury bills) is where turnover is the greatest.

The amount of debt outstanding was generally established, by this study as well as the Ahearn-Peskin study, to be the most important determinant of trading activity in a securities market. It is of some use to be able to visualize changes in market activity after making rough allowance for the sizable shifts that have occurred in debt outstanding. To enable this, Appendix Table 8 and the Market Profile Charts, pages 87 and 88, present a series on the annual rate of turnover of Agency debt, defined as daily average trading multiplied by 249 (the number of trading days in most years) and divided by the average debt held by the public. During the sixties as a whole, the annual rate of turnover of Agency debt averaged 2.5. As is particularly evident in column 1 of Table 16 there was a clear upward trend in the Agency turnover rate, especially after 1963. This upward trend undoubtedly reflects the rising volume of gross new Agency issues.

Table 16
Annual Rates of Turnover

Date	Agency Debt	Treasury Debt 4/				
		Treasury Bills 3/	Coupon Issues due:			
			Within 1 year	1 - 5 years	5 - 10 years	After 10 years
1960 ^{1/}	2.22	5.45	1.73	1.04	.79	.39
1961	2.38	6.46	1.60	1.24	.68	.37
1962	2.37	6.98	1.52	1.15	1.30	.45
1963	2.34	6.12	1.50	1.12	1.11	.70
1964	2.41	6.14	1.34	1.16	.95	.53
1965	2.56	6.19	1.27	1.08	.78	.62
1966	2.75	6.62	1.82	1.32	.97	.46
1967 ^{2/}	2.71	6.35	1.71	1.40	.88	.43

^{1/} Based on data for July-December.

^{2/} Based on data for January-June.

^{3/} Debt held by the public was the denominator for all classes except Treasury bills, where total bills outstanding was used.

^{4/} Turnover rates for Treasury debt were derived from Appendix Table 2 of the Ahearn-Peskin study.

The Table also includes comparative turnover rates for maturity sectors of the U. S. Government securities market. In the Treasury market, the turnover rate increases with the nearness to maturity of the coupon issues and is considerably larger for Treasury bills than for coupon issues. Turnover in the Agency market is greater than for short-term Treasury coupon issues, especially considering the inclusion of long-term Agency issues in the Agency turnover rate; Turnover in the Agency market is less than half that in the Treasury bill market, however.

Besides explaining at least some portion of the upward trend in turnover in the Agency market, the volume of gross new Agency issues undoubtedly accounts for some portion of the greater turnover in the Agency market when compared with the Treasury coupon market. New Agency securities are issued every quarter, and in considerable size (see Chart 18), enlarging both the volume of trading and turnover of Agency securities. For example, had there been no new Agency debt issues during the 1966-67, Q1 period the daily volume of Agency trading, instead of averaging \$211 million, might have been only about \$150 million; and the turnover rate an average 1.99 instead of 2.79.^{1/} In comparing the Agency market with other securities markets, the comparative volume of new issues can thus be an important source of trading differences. In some sectors of the U. S. Government securities market, to note a particular case, financings are considerably less frequent.

The importance of gross new issues to trading activity raises the question of just how low inter-financing trading is in the Agency market. It has sometimes been alleged, for example, that effecting trades--particularly purchases--apart from financings is very difficult. For this reason, an attempt was made to isolate the volume of trading excluding financing periods. Since Agency financings occur so frequently,

^{1/} Actual gross new Agency issues per quarter averaged \$4.0 billion over this period and for every billion dollars of new issues trading was estimated to be \$17 million higher. The estimated turnover rate of 1.99 uses the actual level of debt though without any new issues debt would have been lower.

however, there are not a great number of such inter-financing periods^{1/} to observe. Such data for 1966 and 1967 indicate a trading volume quite similar to the \$150 million of daily trading noted in the preceding paragraph (when all gross new issues were excluded).

Daily average trading for weekly periods during 1966 shows a wide variance; from a low of \$68 million to a high of \$259 million for Agency issues due within 1 year and from \$12 million to \$191 million for longer-term Agency issues. The highs of course occurred during financings. But when daily trading for all weeks in which there were no financings is averaged for the year, it shows no startling drop from average trading on all days in the short-term sector. There is a decline from \$156 million to \$121 million (lines 3 and 4 in Table 17). Trading in long-term issues drops considerably, however. It will be noted that Agency trading in both maturities combined excluding financing periods averages \$149 million a day during 1966.

Table 17
Daily Average Trading By Weeks During 1966
(Millions of dollars)

	Agency securities maturing:	
	Within 1 year	After 1 year
(1) Highest week	259	191
(2) Lowest week	68	12
(3) Average for year	156	47
(4) Average excluding financing periods*	121	28
(5) Range excluding financing periods*	68-181	12-54

* Number of weeks without financing periods was 12 for short-term Agencies and 27 for longer-term issues.

^{1/} Excludes the period from the offering date through the payment date for every new Agency issue, usually several weeks in duration.

In short-term Agencies, there were only 5 weeks in 1966 during which trading averaged \$100 million a day or less. In three-quarters of the weeks, trading was in a \$100-200 million range, and was above \$200 million in 8 weeks. In longer-term Agencies, trading averaged less than \$20 million a day in 5 weeks, and was most often in a \$20-60 million range.

In the first half of 1967, the number of Agency financings dropped considerably with the Home Loan Banks out of the market. Trading on non-financing days during February, March and April of 1967 was analysed.^{1/} For short-term Agency issues, it showed average daily trading of \$125 million. The lowest trading day was \$39 million and the highest \$197 million; on 8 of the 30 days, trading was less than \$100 million. For Agency issues due after 1 year, daily trading averaged \$57 million, with a low of \$24 million and a high of \$109 million. Again, the exclusion of trading on financing days does not radically alter one's impression of overall market activity, at least for short-term issues. Total trading averaged \$140 million a day during the first half of 1967, only somewhat above the \$125 million on non-financing days.

Despite some exaggeration of Agency trading relative to trading in certain other securities markets, it seems clear--from both the data and from dealers' comments--that activity in the short-term Agency market is equivalent to, if not greater than, that in the

^{1/} The number of such non-financing days was 30 for short-term Agencies and 32 for long-term issues.

market for short-term Treasury coupon issues. It is evident, moreover, that there has been a marked improvement in recent years in the performance of the Agency market as evidenced by the volume of trading and turnover. The growth in activity suggests increased "breadth" of the Agency market; it implies, as well, a greater market-ability of Agency securities, that is, the execution of investor buy and sell transactions with greater speed, in greater size, and probably at prices closer to the market.

B. Dealers' Positions

Dealers' daily average positions in Agency securities have, like transactions, risen sharply since the early 1960's. On average during the first half of 1967 dealers held daily net positions of \$264 million in Agency issues due within 1 year and of \$165 million in longer-term Agency issues. These net position levels are, respectively, some three and nine times larger than in 1961. Agency positions are shown in the Market Profile Charts, pages 87 and 88, and in Appendix Tables 9 and 10.

As the Charts show, dealers' gross short and long positions have also risen considerably. Gross long positions of dealers include securities owned outright and gross short positions are securities borrowed and sold. The rise in gross positions indicates an increased willingness and ability of dealers to both buy and sell Agency securities.

Dealers' net positions in Agency securities due within 1 year have in recent years been of the same order of magnitude as dealers' net positions in short-term Treasury coupon issues and bankers'

acceptances. Net positions in longer-term Agency issues have been not unlike net positions in any one maturity sector of the longer-term Treasury market. If all Treasury issues due after 1 year were lumped together, Agency positions would of course appear small in comparison.

These comparative data on net positions in various securities markets are shown in Table 18. The sharp upward trend in Agency positions, as well as in positions in bankers' acceptances, stands out clearly. Positions in Treasury coupon issues, on the other hand, show no trend, except perhaps for over-5 year maturities.

While gross long positions in Agency securities are, like net positions, roughly comparable to those in specific maturity sectors of the Treasury coupon market, gross short positions in Agency issues are decidedly smaller. Gross position data are presented in Table 19. Gross short positions in Agency securities due within and after 1 year each averaged about \$35 million a day during 1966 and 1967, considerably less than in the Treasury market. The small size of Agency gross short positions indicates a weakness on the offered side of the Agency market, at least when compared with the U. S. Government securities market.^{1/}

The low level of gross short positions probably reflects two factors. First, dealers may have difficulty finding investors willing to lend Agency securities in any reasonable volume.^{2/} Secondly,

- ^{1/} The small size of gross short positions probably limits the size of dealer gross long positions, thus reflecting back on the bid side of the market. In periods of expectations of falling security prices, an inability of dealers to hedge long positions by selling short would probably lead to a greater cut back in gross long positions than would otherwise have occurred.
- ^{2/} The small size of many outstanding Agency issues adds to the difficulty, since it probably decreases the amount of any specific issue held by one, or a few, investor(s).

Table 18

DEALER NET POSITIONS IN COMPARATIVE SECURITIES' MARKETS
(Averages of daily data in millions of dollars)

Date	Federal Agency debt due:		U. S. Government debt due:					Bankers' Acceptances
	Within 1 year	After 1 year	Within 1 year		1 - 5 years	5 - 10 years	After 10 years	
			Bills	Coupon issues				
1961	96	18	1,921	438	337	25	28	22
1962	163	30	2,424	499	273	95	27	35
1963	196	35	2,542	334	383	98	50	103
1964	212	33	2,636	265	309	131	85	206
1965	233	104	2,629	186	140	193	197	208
1966	361	76	1,925	335	142	56	16	284
1967 ^{1/}	264	165	2,874	329	520	117	83	404

^{1/} Based on data for January-June.

Table 19

DEALER GROSS POSITIONS IN COMPARATIVE SECURITIES' MARKETS
(Averages of daily data in millions of dollars)

	Federal Agency debt due:		U. S. Government debt due:				
	Within 1 year	After 1 year	Within 1 year		1 - 5 years	5 - 10 years	After 10 years
			Bills	Coupon issues			
<u>Gross Long</u>							
1961	104	29	2,044	484	516	85	56
1962	172	41	2,604	540	417	158	75
1963	214	50	2,709	361	547	239	94
1964	224	51	2,808	297	503	277	130
1965	253	127	2,865	262	353	276	236
1966	396	111	2,268	412	315	163	63
1967 ^{1/}	299	206	3,117	391	632	170	127
<u>Gross short</u>							
1961	8	11	125	46	180	60	29
1962	8	11	177	42	144	63	49
1963	18	15	165	28	164	141	45
1964	12	18	175	29	194	147	46
1965	20	24	235	76	213	83	40
1966	35	35	343	77	172	108	47
1967 ^{1/}	35	40	244	62	112	54	44

^{1/} Based on data for January-June.

investor sell orders may not be in sufficient size to guarantee that dealers are able to buy any specific Agency issue at a future date in order to enable return of the borrowed security.

As with dealer transactions, multiple regressions were run on daily average net, gross long and gross short positions for quarters of the 1961, Q1 - 1967, Q1 period. The results provide at least tentative answers to several important questions: (1) What factors have caused dealers' positions to rise during the sixties?; (2) Are Agency positions responsive to the same factors as positions in U. S. Government securities, and in the same magnitudes?

A model of position determination must include several groups of variables, each of which influences dealers' profits and thus the level of positions dealers desire to hold.^{1/} Dealers' profits (or losses) may be categorized as: (1) speculative; (2) trading; (3) interest carry. Speculative profits (or losses) result from capital gains and losses on the securities held in position as security prices fluctuate. When security prices rise, capital gains are realized on gross long positions and capital losses are experienced on securities sold short. The opposite is true when security prices decline. Thus expectations of near-term rises in security prices should cause dealers to increase gross long positions and cut gross short positions.

^{1/} What follows is only a minimal description of the theoretical model, which was described in detail in Chapter 3 of the Ahearn-Peskin study of the U. S. Government securities market. The reader is urged to first read the Chapter mentioned, including sections on measurement difficulties.

Trading operations contribute to dealers' profits. Trading profits depend on the spread between bid and asked security prices, the volume of securities traded, and trading costs. Interest carry on securities held in position is also an important item in the dealers' profit outlook. Nonbank dealers finance their positions by short-term borrowings, and at the same time they earn interest on the securities they hold. When interest paid on borrowings is greater than interest earned, there is a "negative carry"; when the interest earned is greater, there is a "positive carry." A rising positive carry or a falling negative carry should induce dealers to hold larger positions.

In addition, dealers underwrite the sale of new Agency issues, and their gross and net long positions should rise with the size and frequency of Agency financings. In general, official accounts have not purchased and sold Agency securities in the market and thus their transactions did not form part of the model tested.

The regression results are shown in Table 20. The model tested explains 85 per cent of the variance in dealers' net Agency positions, 91 per cent of the variance in gross long positions and 69 per cent of the variance in gross short positions during the sixties. The model accounted for a larger proportion of the variance in long positions of Agency securities during the sixties than did essentially the same model for positions in the U. S. Government securities market. But only two of the variables tested--gross new

Table 20
Results of Multiple Regressions Explaining Dealers' Positions in Agency Securities^{1/}

Dependent variable (Millions of \$)	\bar{R}^2	D-W ratio	Constant	Net regression coefficients and standard errors					
				Gross new Agency issues to public ^{2/} (Billions of \$)	Average volume of trading in Agencies, two preceding quarters ^{3/} (Millions of \$)	Agency debt held by public ^{4/} (Billions of \$)	Change in free reserves ^{5/} (Millions of \$)	Change in Agency yield preceding quarter ^{6/} (Basis points)	Interest carry on Agency securities ^{7/} (Basis points)
<u>Net Positions</u>									
(1)	.85	1.76#	-39.46	90.75** (11.61)	.71* (.31)				
(2)	.85	1.39	-31.12	84.69** (12.01)	.64 (.50)		1.27 (.82)	.07 (.44)	
(3)	.85	1.91#	-56.68	83.39** (13.31)		9.57* (3.99)			
<u>Gross Long Positions</u>									
(4)	.91	1.31	-34.86	90.14** (9.93)	.88** (.26)		1.18 (.61)		
(5)	.91	1.38	-22.13	90.17** (10.14)	.77 (.43)		1.07 (.70)	-.12 (.37)	
(6)	.92	1.52#	-57.31	82.10** (10.96)		11.88** (3.40)	1.03 (.61)		
<u>Gross Short Positions</u>									
(7)	.64	1.75#	-13.48		.43** (.06)		-.060 (.029)		
(8)	.69	1.66#	-20.68			4.64** (.64)	-.034 (.025)		

Footnotes are on following page.

Table 20-2

FOOTNOTES

- ** Significantly different from zero at 1 per cent level. * At 5 per cent level.
- # No positive serial correlation (Theil and Nagar's Table, 1 per cent significance level for rejecting null hypothesis of residual independence).
- 1/ The dependent variable is dealers' positions in Agency securities (all maturities and including participation certificates), quarterly averages of daily data in millions of dollars. The data are shown in Appendix Tables ____. Regressions were run for the 1961, Q1 - 1967, Q1 period.
- 2/ Gross new Agency debt (including PC's) issued to public investors; total during quarter.
- 3/ Daily average gross dealer transactions; average for two preceding quarters.
- 4/ Agency debt (including PC's) held by public investors; quarterly average of end-of-month data for four months in and closest to the quarter.
- 5/ Change in free reserves, based on quarterly averages of monthly averages; excludes all such quarterly changes less than \$50 million.
- 6/ Change during preceding quarter in quarterly averages of monthly yields on 3-month and 6-month Agency issues averaged. Source of basic yield data was Salomon Brothers and Hutzler, "An Analytical Record of Yields and Yield Spreads", Part III.
- 7/ Interest carry is interest earned on Agency securities held in position less financing costs. Interest earned was measured by averaging coupon rates on most outstanding Agency issues for the mid-month of the quarter. The series on financing costs was average posted rates for new loans in federal funds at the major New York City banks. Financing costs were then subtracted from interest earned; a plus indicates positive carry and a minus negative carry.

Agency issues and the volume of Agency trading or, alternatively, Agency debt--were significant determinants of Agency positions. Neither interest carry nor expectations of future security prices (as measured by the change in Agency yields last quarter,^{1/} the change in free reserves, or the change in the discount rate) were found to be significant.

^{1/} Table 20 presents the regression results for net and gross long positions including this variable. The sign of its coefficient is of some interest. In every instance there is a positive relationship between long positions and the preceding quarter's change in Agency yields. While the variable is not significant at the 5 per cent level, still the probability that the true coefficient is zero or negative is only 9-12 per cent. In the U. S. Government securities market, on the other hand, positions in intermediate- and long-term issues were related negatively (and significantly) to the preceding quarter's change in Treasury yields; and with a coefficient large enough to indicate virtually no chance of the true coefficient being positive. Several points can be made with respect to this apparent difference in behavior in the two markets. (1) This appears to some degree to be a difference between short-term and long-term markets in general. Thus, in the short-term U. S. Government securities market the change in yields last quarter was not significant as a determinant of positions and while its coefficient was always negative the standard errors were very large. This might indicate that dealers generally expect movements in long-term yields to continue direction and move relatively smoothly over the cycle but that they expect yields on short-term securities to move in a more erratic manner as with the season or near-term money market conditions. It could also indicate that dealers project short-term yield movements in a more sophisticated manner than long-term yields. (2) The difference does not arise from divergent movements in Agency and Treasury yields. During the sixties yield changes on Agency issues and on intermediate- and long-term Governments (the areas where there was a significant difference in coefficient signs) were positively related--the simple correlation coefficient was about 55 per cent. (3) To the degree that these relationships are truly measuring dealers' expectations, it would appear that dealers expect Treasury yield movements (at least on long-term issues) to continue direction but Agency yield changes to reverse direction over quarterly periods.

For gross short positions, however, the change in free reserves fell just short of being significant in one equation (equation 7). In this case, gross short positions were negatively associated with changes (positive) in free reserves, as expected. The coefficient relating short positions and free reserve changes was smaller for Agency securities than for U. S. Government securities. Positions as well as transactions in Agency securities thus appear to be consistently less responsive to changing monetary conditions than is the case for U. S. Government securities.

This lesser responsiveness of trading and positions in Agency securities to monetary developments during the sixties is not without foundation. As pointed out in Chapter II, until about 1965 Agency yields were declining relative to Treasury yields, i.e., the yield spread was being reduced. Probably of even greater importance was the absence of any selling of Agency securities by commercial banks with the tightening of monetary policy as the sixties progressed, whereas bank sales of Treasury issues were quite heavy.

The most important determinant of dealers' gross and net long positions in Agency securities during the sixties has been gross new issues of Agency debt. For every rise of \$1 billion in new Agency issues daily long positions (net and gross) were some \$82-91 million higher on average during the quarter.

This response of positions to gross new issues in the Agency market was virtually identical with that found for Treasury bills and greater than that found for Treasury coupon issues, where

the coefficients ranged between \$14 and \$51 million. However, it is impossible to draw conclusions about dealers' underwriting in the various markets from these regression results because the size of the financing coefficients depends on the number of financings in the quarter, the number of separate issues offered per financing and the dates of the financing(s) within the quarter. And these factors vary sharply between the Treasury bill, coupon and Agency markets, ranging from an average one financing a quarter in Treasury coupon issues to some 15 financings a quarter in Treasury bills. Positions, as well as transactions, in Agency securities are of course enlarged relative to the Treasury coupon market by the greater overall volume of new issues.

There is a basic difference in the source of underwriting profits in the U. S. Government and Agency markets. The method of marketing new Agency issues is to distribute them to large selling groups who receive commissions ranging from about \$.50 to \$3.50 per \$1,000^{1/} of issues. In the U. S. Government securities market, there are no such commissions, and the new issue is made attractive to investors by pricing it below comparable outstanding issues. While price discounting of necessity occurs with the Agency issues as well, in view of the commission to underwriters such discounting may be less than on Treasury issues. At least one dealer in interviews voiced his opinion that underwriting of Treasury issues was in fact more profitable than underwriting of Agency issues, due to the more attractive pricing of Treasury issues.

1/ The size of the commission increases with the maturity of the new issue.

The second independent variable found to be a significant determinant of positions in Agency debt was a measure of trading activity. Trading activity was measured by the average volume of daily trading during the preceding two quarters^{1/} or, alternatively, by the amount of publicly-held Agency debt outstanding. Equations 1 and 4 show a rise of \$.71 million in net positions and of \$.88 million in gross long positions with a \$1 million dollar rise in trading volume.^{2/} Gross short positions were also positively related to trading, by \$.43 million per \$1 million trading rise (equation 7). While the coefficient is only half the size of that for long positions, it represents a much greater percentage rise with trading activity than for long positions.

As an alternative measure of trading activity, the amount of Agency debt outstanding was also significantly and positively associated with positions. Equations 3, 6, and 8 show increases of \$9.6 million in daily average net positions, of \$11.9 million in daily average gross long positions, and of \$4.6 million in daily average gross short positions with a \$1 billion rise in Agency debt. These coefficients imply a similar--perhaps slightly greater--rise in positions with trading than do the trading coefficients themselves, given the relationship found earlier of an \$11.5 million rise in trading with a \$1 billion rise in debt.^{3/}

1/ Because the relationship between trading and positions may be two-way, with trading to some degree dependent on positions, and because the volume of new issues causes trading and positions to rise concurrently, the volume of trading was used for preceding quarters rather than for the same quarter to avoid a bias in the coefficients.

2/ The reader will note smaller coefficients in equations 2 and 5, where trading was not significant. The lack of significance was caused by multicollinearity between trading and interest carry and, to a lesser degree, between trading and yield changes in the preceding quarter.

3/ See Table 15, page 91.

These results thus indicate generally a somewhat less than proportional rise in positions with trading, i.e., a \$1 million rise in trading causes a less than \$1 million rise in positions. In the U. S. Government securities market, on the other hand, positions rose by somewhat more than the trading rise. However, data inadequacies make this finding only tentative.

While trading and new issues were the only independent variables found to be significant determinants of Agency positions, several other variables difficult to measure may well alter dealers' desires to hold Agency issues relative to U. S. Government issues. In the first place, the interest carry on Agency debt is greater than on U. S. Government securities since Agency interest rates are higher.^{1/} Secondly, the risk of capital loss on Agency debt held in position may be greater for dealers than on U. S. Government securities. This might be the case for any number of reasons, including: (1) greater fluctuations in Agency security prices; (2) greater difficulty in forecasting movements in Agency yields and prices; (3) diminished ability to alter gross positions in response to expectational stimuli; and (4) the frequency of new financings.

^{1/} To some degree the higher interest earned on Agency securities might be counterbalanced by higher dealer borrowing costs on such securities. Higher average borrowing costs would result if dealers found it more difficult to sell Agency issues under repurchase agreements. In this respect, it was not until late in 1966 that the Federal Reserve was given the authority to purchase (outright or under RP) non-guaranteed Agency debt. Moreover, responses of institutional investors to a questionnaire (see Joseph Scherer, "Institutional Investors and the U. S. Government Securities Market," Treasury-Federal Reserve Study of the U. S. Government Securities Market, 1967--page 23) showed the number of investors who enter into repurchase and resale agreements to be considerably less in Agency securities than in U. S. Government securities (29 as versus 55 per cent).

For whatever reasons, the profitability of Agency operations is certainly implied by the sharp rise in dealers' positions, absolutely and relative to positions in Treasury issues. The higher positions lend added support to the observation that the performance of the Agency market has indeed improved in recent years.

C. Spreads between Quoted Bid and Asked Security Prices

Spreads between quoted bid and offered prices are a key factor in the functioning of securities' markets. In a general sense, the size of spreads is indicative of the degree of "depth, breadth, and resiliency" characterizing a particular market. More specifically, small spreads would indicate a willingness of dealers to operate on both sides of the market.^{1/} In addition, small spreads engender a broad investor participation as the cost to the investor of transactions is diminished.

In the Profile Charts, pages 87 and 88, and in Appendix Table 11, spreads are shown for the various Agency securities by maturity category. A note of caution must be introduced in interpreting these data, which are derived from published quotations of one particular dealer (Morgan Guaranty Trust Company). As is true of quoted spreads in the U. S. Government securities market, the published quotations overstate the size of the spread for all preferred customers,

^{1/} In a healthy market, spreads must be subject to some minimum level consistent with dealer profitability. A reduction in spreads reduces dealers' trading profits unless the volume of trading rises correspondingly. Trading profits may be especially important when other dealer profits are limited by either high carrying costs or steadily rising interest rates.

whose trades take place at "inside" quotations. Additional sources of error in spread data on Agency issues may arise from the use of only one dealers' price quotations and from the potential inaccuracy of price quotations due to the relative trading inactivity in some longer-term Agency issues. Nevertheless, the published quotations are the only available source of spread data.

Data on published Agency spreads show some differences among the issues of the various Agencies as well as among the different maturities. Quoted spreads on the short-term issues of FICB, FHLB, and Bks. Coops. have in general fluctuated between $1/32$ and $2/32$ since 1958. Spreads on the short-term issues of FNMA and FLB, on the other hand, have more generally ranged between $2/32$ and $4/32$. This difference in spreads is probably indicative of lesser activity in the FNMA and FLB issues, at least in part due to their smaller average size.

Quoted spreads on Agency issues bearing maturities of 1 to 5 years have, since 1958, ranged between $4/32$ and a full point ($32/32$). To some degree, the movement in these spreads over time reflects shifts in the maturity structure of issues within the 1-5 year category; the shorter-term issues of course carry the smaller spreads. Over and above such a maturity difference, the FHLB issues have in recent years carried somewhat lower spreads when compared with FNMA and FLB issues. On the long-term Agency securities, issued by FNMA and FLB, quoted spreads have been at one-half point or at one point over the entire period.

Spreads on participation certificates have generally been the same as on FNMA and FLB issues in the 1-5 year and after 5 year maturities. Since 1966, they have been at one-half or one point on both FNMA and Export-Import Bank PC's.

The interviews conducted with dealers, summarized in Appendix I, disclosed some information on the spreads at which Agency issues actually trade, at least for the larger customers.^{1/} In general, the dealers interviewed said that short-term Agency issues trade at a 1/32 spread, but that the spread could be as low as 1/64. It was noted, however, that short-term FNMA issues trade at a larger spread, probably 4/32. It was less clear at what spreads the longer-term issues trade but one dealer pointed to around a 4/32 spread on 2-3 year issues and another noted a fair amount of business done at a 1/4 point spread on the longer-term Agency issues. In every case, these spreads are less than the quoted spreads shown in the accompanying Tables.

In only one case, that of the shortest-term issues, does there appear to have been any secular decline in quoted spreads with the rapid growth in trading activity and debt in the Agency market. For FICB, Bks. Coops. and FHLB issues due within 1 year the quoted spread during 1962-64 was 1/32 as compared with a 2/32 spread in prior years. One interviewed dealer also noted a decline in trading spreads in recent years. With the sharp rise in interest rates in 1965 and 1966, quoted spreads on all Agency issues increased.

^{1/} Odd-lots trade at greater spreads.

Quoted spreads on short-term Agency issues compare favorably with those on Treasury bills and short-term coupon issues. If anything, the quoted Agency spreads are smaller, as shown in Table 21. With a lengthening of maturities, however, there is a widening disparity among quoted spreads on Agency and U. S. Government issues. In the intermediate-term sector, Agency spreads have in recent years ranged from $4/32$ to a full point, compared with a $4/32$ spread on Treasury issues. Where for the longer-term Agency issues quoted spreads stood at $16/32$ or one point, Treasury spreads were $8/32$. It is probable that the spreads at which intermediate- and long-term Agency issues actually trade are considerably below those quoted, and also closer to the spreads at which Treasury issues trade. It is unlikely, however, that they are as low as those on Treasury issues.

The evidence, possibly misleading, shows no indication of any secular decline in spreads over the sixties on Agency securities other than the shortest-term issues. Nevertheless, the small size of spreads on shorter-term Agency issues indicates a strong market. On the other hand, the relatively large quoted spreads on long-term and on certain short-term issues points to a lesser tradeability of issues in some specific sectors of the Agency market.

Table 21

MOST TYPICAL SPREADS IN COMPARATIVE SECURITIES' MARKETS
(In 32nds or in basis points for Treasury bills)

Date	Federal Agency debt due:					U. S. Government debt due:				
	Within 1 year		1 - 5 years		After 5 yrs	Within 1 year		3 - 5 years	5 - 10 years	After 10 years
	FICB FHLB Bks. Coups	FNMA FLB	FHLB	FNMA FLB PC's	FNMA FLB PC's	3-mo. bill	6-13 mo. Coupon issues			
1958	2	2	8	8	16-32	3-4	2	4	8	8
1959	2	2	8	8	16-32	4	2	4	6	8
1960	2	4	16	16	32	3	4	4	8	8
1961	2	2	8	8	32	3	2	4	8	8
1962	1	2	4	8	32	2	2	4	8	8
1963	1	2	4	8	16	2	2	2	6	8
1964	1	2	4	8	16-32	2	2	4	4	8
1965	2	4	4	8-16	32	2	2	4	4	8
1966	1-2	4	8	16-32	32	3	2	4	4	8

AGENCY DEBT OUTSTANDING
(End of quarter data in millions of dollars)

<u>Quarter</u>	<u>Non-guaranteed</u> ^{1/}	<u>Participation Certificates</u> ^{2/}	<u>Total</u>
1954 - 1	1,071	--	1,071
2	1,155	--	1,155
3	2,092	--	2,092
4	2,064	--	2,064
1955 - 1	2,615	--	2,615
2	2,931	--	2,931
3	3,172	--	3,172
4	3,575	--	3,575
1956 - 1	3,681	--	3,681
2	3,888	--	3,888
3	4,129	--	4,129
4	4,018	--	4,018
1957 - 1	4,415	--	4,415
2	5,016	--	5,016
3	5,205	--	5,205
4	6,220	--	6,220
1958 - 1	6,327	--	6,327
2	5,422	--	5,422
3	5,637	--	5,637
4	5,722	--	5,722
1959 - 1	5,902	--	5,902
2	6,707	--	6,707
3	7,519	--	7,519
4	7,917	--	7,917
1960 - 1	7,753	--	7,753
2	8,403	--	8,403
3	7,726	--	7,726
4	7,910	--	7,910

Appendix Table 1-2

<u>Quarter</u>	<u>Non-guaranteed</u> ^{1/}	<u>Participation</u> ^{2/} <u>Certificates</u>	<u>Total</u>
1961 - 1	7,429	--	7,429
2	7,765	--	7,765
3	8,312	--	8,312
4	8,574	--	8,574
1962 - 1	8,995	--	8,995
2	9,332	--	9,332
3	9,883	--	9,883
4	10,133	--	10,133
1963 - 1	9,267	--	9,267
2	10,192	--	10,192
3	10,870	--	10,870
4	11,705	--	11,705
1964 - 1	11,133	--	11,133
2	11,865	--	11,865
3	11,996	--	11,996
4	12,127	300	12,427
1965 - 1	12,246	300	12,546
2	13,460	300	13,760
3	13,965	825	14,790
4	14,086	1,170	15,256
1966 - 1	15,055	1,170	16,225
2	17,626	2,610	20,236
3	18,396	2,075	20,471
4	19,249	2,020	21,269
1967 - 1	18,604	3,620	22,224
2	18,026	5,730	23,756

^{1/} Non-guaranteed Agency debt includes debt of the Federal Intermediate Credit Banks, Federal Land Banks, Banks for Cooperatives, Federal Home Loan Banks, Federal National Mortgage Association and Tennessee Valley Authority. Source of these data is the Treasury Survey of Ownership.

^{2/} Includes only fully marketable participation certificates: all FNMIA PC's, Export-Import Bank PC's issued in and after February 1967, CCC certificate issued in April, 1966 and retired in August 1966.

Appendix Table 2

NON-GUARANTEED AGENCY DEBT BY TYPE
(End of quarter data in millions of dollars)

<u>Quarter</u>	<u>Banks for Cooperatives</u>	<u>FICB</u>	<u>FLE</u>	<u>FHLB</u>	<u>FNMA</u>	<u>TVA</u>	<u>Total</u>
1954 - 1	110	617	940	204	--	--	1,871
2	72	353	679	51	--	--	1,155
3	120	776	1,017	179	--	--	2,092
4	120	641	1,030	273	--	--	2,064
1955 - 1	120	699	1,035	141	570	--	2,615
2	110	793	1,117	341	570	--	2,931
3	110	824	1,133	535	570	--	3,172
4	110	657	1,263	975	570	--	3,575
1956 - 1	110	702	1,321	873	670	--	3,681
2	133	834	1,322	929	670	--	3,888
3	143	861	1,437	918	770	--	4,129
4	143	705	1,437	963	770	--	4,018
1957 - 1	185	767	1,519	724	1,220	--	4,415
2	182	924	1,552	738	1,620	--	5,016
3	207	948	1,600	765	1,685	--	5,205
4	222	886	1,599	826	2,687	--	6,220
1958 - 1	191	971	1,625	476	3,064	--	6,327
2	199	1,159	1,646	456	1,962	--	5,422
3	232	1,205	1,687	616	1,897	--	5,637
4	252	1,116	1,743	714	1,897	--	5,722
1959 - 1	258	1,206	1,792	699	1,947	--	5,902
2	284	1,456	1,888	992	2,087	--	6,707
3	320	1,524	1,936	1,402	2,287	--	7,519
4	364	1,356	1,936	1,774	2,437	--	7,917
1960 - 1	360	1,416	2,047	1,293	2,637	--	7,753
2	330	1,600	2,137	1,255	3,081	--	8,403
3	346	1,665	2,137	1,167	2,411	--	7,726
4	407	1,454	2,210	1,266	2,523	50	7,910

Appendix Table 2-2

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<u>Quarter</u>	<u>Banks for Cooperatives</u>	<u>FICB</u>	<u>FLB</u>	<u>FHLB</u>	<u>FEMA</u>	<u>TVA</u>	<u>Total</u>
1961 - 1	404	1,519	2,210	829	2,416	50	7,429
2	382	1,723	2,357	1,055	2,193	50	7,765
3	384	1,782	2,431	1,335	2,281	100	8,312
4	435	1,585	2,431	1,571	2,453	100	8,574
1962 - 1	452	1,644	2,495	1,602	2,658	145	8,995
2	430	1,855	2,550	1,797	2,556	145	9,332
3	475	1,930	2,596	2,257	2,481	145	9,883
4	505	1,727	2,628	2,707	2,422	145	10,133
1963 - 1	480	1,842	2,661	2,014	2,126	145	9,267
2	459	2,133	2,725	2,770	1,960	145	10,192
3	473	2,233	2,796	3,299	1,899	170	10,870
4	589	1,952	2,834	4,363	1,787	180	11,705
1964 - 1	506	2,069	2,886	3,627	1,735	180	11,133
2	498	2,315	2,973	4,201	1,698	180	11,865
3	538	2,424	3,102	4,182	1,571	180	11,996
4	686	2,112	3,169	4,369	1,601	190	12,127
1965 - 1	723	2,206	3,293	4,090	1,739	190	12,246
2	687	2,462	3,532	4,757	1,797	225	13,460
3	708	2,603	3,612	5,046	1,756	240	13,965
4	797	2,235	3,710	5,221	1,884	240	14,036
1966 - 1	819	2,470	3,813	5,060	2,648	245	15,055
2	844	2,853	4,105	6,309	3,269	245	17,626
3	882	2,991	4,295	6,765	3,178	285	18,396
4	1,074	2,786	4,385	6,859	3,300	345	19,249
1967 - 1	1,113	2,944	4,450	5,741	4,010	345	18,604
2	1,042	3,297	4,611	4,585	4,078	415	18,026

Source: Treasury Survey of Ownership.

Appendix Table 3

NET EXPENDITURES (+) OR RECEIPTS (-) OF SELECTED AGENCIES
(Quarterly data in millions of dollars)

<u>Quarter</u>	<u>Banks for Cooperatives</u>	<u>FICB</u>	<u>FLB</u>	<u>FHLB</u>	<u>Total</u>
1961 - 1	- 3	64	- 2	- 704	- 645
2	- 25	204	149	276	604
3	4	57	77	358	496
4	50	-196	- 3	458	309
1962 - 1	18	58	64	- 541	- 401
2	- 21	212	57	596	844
3	45	75	47	432	599
4	29	-204	32	273	130
1963 - 1	- 24	114	34	-1,137	-1,013
2	- 21	291	64	797	1,131
3	14	100	71	983	1,168
4	116	-232	39	639	512
1964 - 1	- 3	118	52	- 543	- 376
2	- 89	246	87	494	738
3	40	109	129	181	459
4	149	-311	69	261	168
1965 - 1	37	94	129	- 519	- 259
2	- 36	256	234	737	1,191
3	20	139	80	406	645
4	87	-266	103	99	23
1966 - 1	23	135	99	- 146	111
2	24	384	292	933	1,633
3	38	138	191	588	955
4	193	-205	101	- 636	- 547
1967 - 1	39	159	53	-2,129	-1,878
2	- 71	354	161	-1,329	- 885

SOURCE: Monthly Statement of Receipts and Expenditures of the United States Government.

MATURITY STRUCTURE OF NON-GUARANTEED AGENCY DEBT
(End of quarter data in millions of dollars)

Quarter	Debt Maturing:			Total
	Within 1 year	In 1-5 years	After 5 years	
1960 - 2	5,326	1,717	1,360	8,403
3	4,720	1,446	1,560	7,726
4	4,414	1,786	1,710	7,910
1961 - 1	4,225	1,493	1,710	7,429
2	3,953	2,060	1,752	7,765
3	4,256	2,154	1,902	8,312
4	4,400	2,272	1,902	8,574
1962 - 1	4,690	2,003	2,302	8,995
2	4,932	2,090	2,302	9,332
3	5,438	2,143	2,302	9,883
4	5,788	2,043	2,302	10,133
1963 - 1	4,773	2,229	2,264	9,267
2	5,363	2,586	2,238	10,192
3	6,228	2,408	2,233	10,870
4	7,360	2,113	2,232	11,705
1964 - 1	6,788	2,213	2,132	11,133
2	7,318	2,503	2,044	11,865
3	7,184	2,833	1,979	11,996
4	7,406	2,742	1,979	12,127
1965 - 1	7,729	2,764	1,754	12,246
2	8,475	3,114	1,871	13,460
3	9,136	3,163	1,665	13,965
4	9,164	3,335	1,590	14,086
1966 - 1	10,127	3,214	1,713	15,055
2	12,435	3,387	1,803	17,626
3	12,670	3,932	1,794	18,396
4	13,446	4,008	1,794	19,249
1967 - 1	12,469	4,225	1,909	18,604
2	12,236	3,912	1,879	18,026

SOURCE: Derived from the Treasury Survey of Ownership.

Appendix Table 5

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YIELD SPREADS^{1/}
(Quarterly averages in basis points)

Quarter	3-month Agency yield less:			10-12 year Agency yield less:	
	3-month bill, market yield	3-month bill, investment yield	3-month CD	10-year Treasury	10-year Aa new corporate 2/
1954 - 1	24	22	--	--	--
2	27	25	--	--	--
3	2	0	--	--	--
4	8	6	--	--	--
1955 - 1	5	2	--	--	--
2	22	19	--	--	--
3	32	28	--	--	--
4	26	21	--	--	--
1956 - 1	30	25	--	--	--
2	43	38	--	--	--
3	24	19	--	25	-13
4	29	23	--	34	-24
1957 - 1	18	12	--	51	- 4
2	25	18	--	35	-26
3	23	15	--	36	-22
4	47	40	--	71	- 2
1958 - 1	5	1	--	53	- 9
2	7	5	--	42	-11
3	5	1	--	9	-23
4	2	- 4	--	29	-18
1959 - 1	15	9	--	29	-14
2	22	16	--	31	-14
3	16	7	--	18	-25
4	37	26	--	20	-21
1960 - 1	35	25	--	31	0
2	23	17	--	27	- 8
3	16	11	--	27	-18
4	26	21	--	20	-25

Appendix Table 5-2

Quarter	3-month Agency yield less:			10-12 year Agency yield less	
	3-month bill, market yield	3-month bill, investment yield	3-month CD	10-year Treasury	10-year Aa new corporate 2/
1961 - 1	15	10	--	24	-22
2	3	- 2	--	33	-10
3	12	7	--	37	-13
4	9	4	--	21	-19
1962 - 1	2	- 4	--	22	- 9
2	5	0	--	13	-13
3	6	0	-23	17	-11
4	3	- 3	-22	8	-10
1963 - 1	5	- 1	-22	12	-11
2	14	8	- 6	6	- 9
3	19	12	4	9	-14
4	13	5	-13	1	-16
1964 - 1	5	- 3	-24	5	-14
2	17	9	-16	3	-15
3	26	18	-12	1	-15
4	27	18	- 7	5	-18
1965 - 1	12	2	-15	7	- 9
2	23	13	-17	14	-18
3	24	15	-21	20	-15
4	23	13	-15	15	-16
1966 - 1	29	18	-10	18	-10
2	42	31	-30	32	-17
3	62	50	-24	29	-37
4	33	19	-19	39	-54
1967 - 1	26	15	-52	49	-30
2	23	14	-53	52	-25

1/ Quarterly averages of monthly data. Bills quoted at bid, other issues at offer.

2/ Equipment trust certificates.

SOURCE: Based on data in Salomon Brothers and Hutzler, An Analytical Record of Yields and Yield Spreads, Parts I and III.

MARKET YIELDS AT CONSTANT MATURITIES^{1/}
(Quarterly data in per cent)

Quarter	1-year			3-years		
	Agency	Treasury	Spread	Agency	Treasury	Spread
1963 - 1	3.24	3.06	.18	3.59	3.43	.16
2	3.26	3.09	.17	3.62	3.45	.17
3	3.76	3.48	.28	3.95	3.76	.19
4	3.88	3.68	.20	4.04	3.92	.12
1964 - 1	4.07	3.93	.14	4.26	4.15	.11
2	4.10	3.90	.20	4.26	4.11	.15
3	4.00	3.77	.23	4.13	3.97	.16
4	4.08	3.86	.22	4.15	4.02	.13
1965 - 1	4.27	4.04	.23	4.30	4.12	.18
2	4.35	4.03	.32	4.35	4.09	.26
3	4.47	4.31	.16	4.51	4.27	.24
4	4.58	4.39	.19	4.68	4.47	.21
1966 - 1	5.23	4.97	.26	5.28	5.01	.27
2	5.53	4.92	.61	5.47	4.98	.49
3	6.06	5.67	.39	6.09	5.74	.35
4	5.87	5.38	.49	5.67	5.35	.32
1967 - 1	5.00	4.60	.40	5.07	4.62	.45
2	4.70	4.32	.38	4.97	4.56	.41

Quarter	5-years			10-years		
	Agency	Treasury	Spread	Agency	Treasury	Spread
1963 - 1	3.89	3.70	.19	4.08	3.94	.14
2	3.89	3.72	.17	4.08	3.97	.11
3	4.08	3.87	.21	4.18	3.99	.19
4	4.13	4.01	.12	4.24	4.15	.09
1964 - 1	4.30	4.16	.14	4.35	4.23	.12
2	4.33	4.11	.22	4.33	4.19	.14
3	4.25	4.06	.19	4.32	4.20	.12
4	4.29	4.06	.23	4.35	4.18	.17
1965 - 1	4.33	4.14	.19	4.34	4.20	.14
2	4.42	4.15	.27	4.44	4.23	.21
3	4.54	4.27	.27	4.56	4.31	.25
4	4.71	4.47	.24	4.69	4.46	.23
1966 - 1	5.23	4.97	.26	5.08	4.83	.25
2	5.26	4.89	.37	5.16	4.78	.38
3	5.86	5.51	.35	5.66	5.22	.44
4	5.48	5.18	.30	5.32	5.00	.32
1967 - 1	5.07	4.64	.43	5.07	4.56	.51
2	5.19	4.78	.41	5.20	4.81	.39

^{1/} Yields derived from yield curves drawn on selected dates. Quarterly yields are averages for all dates within the quarter if yield curves were drawn on more than one date. Based on bid quotations.

SOURCE: Treasury Department.

GROSS DEALER TRANSACTIONS IN FEDERAL AGENCY SECURITIES*
(Averages of daily data in millions of dollars)

Quarter	Securities due within 1 year	Securities due after 1 year	Total
1960 - 3	58	11	69
4	53	20	73
1961 - 1	58	16	74
2	55	23	78
3	54	20	74
4	58	15	73
1962 - 1	62	25	87
2	67	23	90
3	72	16	88
4	71	21	92
1963 - 1	64	18	82
2	68	25	93
3	94	13	107
4	84	16	100
1964 - 1	82	10	92
2	116	16	132
3	94	27	121
4	85	24	109
1965 - 1	78	23	101
2	121	47	168
3	116	28	144
4	103	47	150
1966 - 1	121	40	161
2	181	59	240
3	152	55	207
4	171	35	206
1967 - 1	146	95	241
2	133	69	202

* Transactions include dealer purchases and sales but exclude allotments of new issues, maturities, exchanges and repurchase agreements. Classification is by final maturity date. Averages are based on the number of trading days in the quarter; participation certificates are included.

Source: Market Statistics Division, Federal Reserve Bank of New York.

Appendix Table 8

ANNUAL RATE OF TURNOVER OF FEDERAL AGENCY DEBT*

<u>QUARTER</u>		
1960 -	3	2.12
	4	2.32
1961 -	1	2.41
	2	2.58
	3	2.32
	4	2.19
1962 -	1	2.47
	2	2.47
	3	2.27
	4	2.26
1963 -	1	2.11
	2	2.44
	3	2.55
	4	2.24
1964 -	1	2.03
	2	2.37
	3	2.53
	4	2.21
1965 -	1	2.04
	2	3.19
	3	2.49
	4	2.50
1966 -	1	2.55
	2	3.28
	3	2.56
	4	2.60
1967 -	1	2.97
	2	2.45

* The annual rate of turnover equals daily average gross dealer transactions multiplied by 249 divided by Agency debt (including participation certificates) held by the public.

Appendix Table 9

DEALER NET POSITIONS IN FEDERAL AGENCY SECURITIES*

(Averages of daily data in millions of dollars)

Quarter	Securities due within 1 year	Securities due after 1 year	Total
1960 - 3	142	19	161
4	86	26	112
1961 - 1	77	19	96
2	109	31	140
3	93	18	111
4	105	5	110
1962 - 1	115	11	126
2	177	50	227
3	171	24	195
4	191	36	227
1963 - 1	156	22	178
2	255	44	299
3	212	38	250
4	168	34	202
1964 - 1	177	10	187
2	234	9	243
3	215	42	257
4	220	69	289
1965 - 1	194	61	255
2	301	128	429
3	238	138	376
4	200	90	290
1966 - 1	280	26	306
2	591	125	716
3	213	77	290
4	352	77	429
1967 - 1	288	192	480
2	239	137	376

* Data are on a commitment basis and include securities sold by dealers under repurchase agreement. Securities are classified by final maturity date, and include participation certificates. Averages are based on the number of trading days in the quarter.

Source: Market Statistics Division, Federal Reserve Bank of New York.

Appendix Table 10

DEALER GROSS POSITIONS IN FEDERAL AGENCY SECURITIES*
(Averages of daily data in millions of dollars)

Quarter	Securities due within 1 year		Securities due after 1 year		Total	
	Gross long	Gross short	Gross long	Gross short	Gross long	Gross short
1961 - 1	86	9	27	8	114	17
2	114	5	41	10	154	15
3	101	7	31	13	132	20
4	116	11	18	13	134	24
1962 - 1	123	9	29	17	151	26
2	184	6	57	7	241	13
3	181	10	34	10	215	20
4	198	7	45	10	244	17
1963 - 1	162	9	39	17	201	26
2	266	11	58	13	324	24
3	236	25	54	16	290	42
4	192	25	49	15	240	40
1964 - 1	193	16	29	19	222	35
2	244	10	36	26	279	37
3	227	12	58	16	285	28
4	230	9	79	9	309	18
1965 - 1	207	14	74	13	281	27
2	316	15	148	23	464	37
3	257	19	156	19	413	37
4	232	32	130	40	362	71
1966 - 1	310	30	71	46	381	76
2	625	29	156	33	781	62
3	267	51	118	40	385	90
4	380	29	99	22	479	51
1967 - 1	313	26	224	30	537	56
2	285	44	187	50	472	94

* Data are on a commitment basis, are classified by final maturity date, and include participation certificates. Gross long positions include securities sold under repurchase agreement.

Source: Market Statistics Division, Federal Reserve Bank of New York.

SPREAD BETWEEN DEALERS' QUOTED BID AND ASKED PRICES
ON FEDERAL AGENCY SECURITIES*
(Most typical spreads in 32nds)

Quarter	Banks for Cooperatives Debentures 1/	Federal Intermediate Credit Bank Debentures 1/	Federal Home Loan Bank issues due:	
			Within 1 year	In 1 - 5 years
1958 - 1	4	2	2	<u>2/</u>
2	2	2	2	4
3	2-3	3	3	8
4	2	2	2	8
1959 - 1	2	2	2	8
2	2	2	2	8
3	2	2	2	8
4	2	2	2	16
1960 - 1	2	2	2	16
2	2	2	2	16
3	2	2	2	16
4	2	2	2	8
1961 - 1	2	2	2	8
2	2	2	2	8
3	2	2	2	8
4	2	2	2	8
1962 - 1	1	1	1	4
2	1	1	1	<u>2/</u>
3	1	1	1	<u>2/</u>
4	1	1	1	4
1963 - 1	1	1	1	4
2	1	1	1	4
3	1	1	1	8
4	1	1	1	4
1964 - 1	1	1	1	4
2	1	1	1	4
3	1	1	1	4
4	2	2	2	4
1965 - 1	2	2	2	4
2	2	2	2	4
3	2	2	2	4
4	1	1	1	4'
1966 - 1	1	1	1	8
2	1	1	1	4
3	2	2	2	8
4	2	2	2	8
1967 - 1	2	2	2	8
2	2	2	2	8

Appendix Table 11-2

Quarter	Federal National Mortgage Assn.: Debentures due:			Federal Land Bank Bonds due:		
	Within 1 year	In 1 - 5 years	After 5 years	Within 1 year	In 1 - 5 years	After 5 years
1958 - 1	4	4	8	2-4	8	32
2	2	8	8-16	2	8	32
3	2-3	8	16	2	8	32
4	2-3	8	16	2	8	32
1959 - 1	2	8	16	2	8	32
2	2	8	16	4	8	32
3	2	8	16	4	8	32
4	2	8	16	4	8	32
1960 - 1	2	16	32	4	16	32
2	2	16	32	4	16	32
3	4	16	32	4	16	32
4	4	8	16	4	8	32
1961 - 1	2	8	16	2	8	32
2	2	8	16	2	8	32
3	2	8	32	2	16	32
4	2	8	32	2	16	32
1962 - 1	2	4	32	2	8	32
2	2	4	32	2	8	32
3	2	8	32	2	8	32
4	2	4	32	2	8	32
1963 - 1	2	4	16	1-2	8	16
2	2	4	16	1-2	8	16
3	2	8	16	2	8	16
4	2	8	16	1-2	8	16
1964 - 1	2	4	16	2	8	16
2	2	4-16	16	2	8	16
3	2	16	32	2	8	32
4	2-4	16	32	4	8	32
1965 - 1	4	4-16	32	2-4	8	32
2	2-4	16	32	4	8	32
3	4	4-16	32	4	8	32
4	4	16	16-32	4	8-16	16-32
1966 - 1	4	16-32	16-32	2-4	16-32	32
2	4	32	32	2-8	16-32	32
3	4	32	32	4-8	16-32	32
4	4	32	32	4-8	16-32	32
1967 - 1	4	32	32	4-8	16-32	32
2	4	32	32	4	32	32

Appendix Table 11-3

Quarter	FNMA Participation Certificates due:			Export-Import Bank Participation Certificates due: ^{4/}	
	Within 1 year	In 1 - 5 years	After 5 years	In 1 - 5 years	After 5 years
1965 - 1	2	4	16		
2	2-4	8	16		
3	4	8	16		
4	4	16	32		
1966 - 1	8	16-32	16-32		
2	8	32	32		
3	16	32	32		
4	16	32	32		
1967 - 1	16	16-32 ^{3/}	16-32 ^{3/}	16	16
2	16	32	32	32	32

^{1/} All such debentures mature within 1 year.

^{2/} No issues outstanding in this maturity.

^{3/} In the first quarter of 1967, the spread of 16 was on the new, larger FNMA PC's while the spread of 32 was on the earlier serial issues of PC's. Prior to 1967, only serial PC issues were outstanding.

^{4/} Includes only the fully marketable Export-Import Bank PC's, first issued in February, 1967.

* The quarterly series were derived from observations on the last trading day of each month. Generally, the typical spread is the one which existed in two out of the three months.

Source: Morgan Guaranty Trust Company, Government Bond Department, daily quotation sheets.

APPENDIX CHART 1
 DIFFERENCES IN YIELDS QUOTED BY MORGAN GUARANTY TRUST CO. AND FIRST NATIONAL CITY BANK ^{1/}

