

*federal reserve
bank
of cleveland*

ECONOMIC REVIEW

february 1972



Additional copies of the ECONOMIC REVIEW may be obtained from the Research Department, Federal Reserve Bank of Cleveland, P. O. Box 6387, Cleveland, Ohio 44101. Permission is granted to reproduce any material in this publication providing credit is given.

FEDERAL AGENCY ISSUES: NEWCOMERS IN THE CAPITAL MARKET

James L. Kochan

An increasingly important share of the United States capital market is being claimed by long-term Federal Agency debt issues. Although Federal Agencies have been selling debt securities since 1919, the volume of long-term issues had never been sufficient to support an active secondary market until the latter part of the 1960's. Since 1969, long-term agency debt has shown an especially sharp increase.

This article describes the characteristics of Federal Agency long-term debt instruments and the procedures used to place them on the market.¹ The effect of the increased volume of these issues on the development of an active secondary market is then discussed. Although data on this market are limited, evidence is presented which suggests that an active and efficient market for these securities does exist. The final section of the article examines the implication of the proposed Federal Financing Bank for the agency market.

¹In this article, long-term issues are those maturing in five years or over. Short- and intermediate-term issues are those maturing in less than one, and one-to-five years, respectively. For a discussion of this classification, see "U. S. Government Bonds as Capital Market Instruments," *Economic Review*, Federal Reserve Bank of Cleveland, August 1971, p. 4., Footnote 1.

IN THIS ISSUE

Federal Agency Issues: Newcomers in the Capital Market	3
--	---

ECONOMIC REVIEW

TABLE I

Long-term Federal Agency Debt Outstanding
December 31, 1971

<u>Agency</u>	<u>Type of Debt</u>	<u>Number of Issues</u>	<u>U. S. Government Guarantee</u>	<u>Volume (mil. of \$)</u>
Federal Land Banks	Bonds*	5	No	\$ 1,107
Federal National Mortgage Association	Debentures	13	No	3,198
	Mortgage-backed bonds*	1	Yes	200
Federal Home Loan Banks	Notes*	4	No	950
Federal Home Loan Mortgage Corporation	Mortgage-backed bonds*	2	Yes	290
Government National Mortgage Association	Participation certificates	24	Yes	2,780
Farmers Home Administration	Insured notes	6	Yes	1,350
Export-Import Bank	Participation certificates	1	Yes	250
Tennessee Valley Authority	Bonds*	7	No	375
TOTAL		63		\$10,500

* Income from these issues is exempt from state and local income taxes.

Sources: Salomon Brothers and First Boston Corporation

CHARACTERISTICS OF AGENCY ISSUES

A summary of the long-term debt issues that each Federal Agency had outstanding at the end of 1971 is presented in Table I. The listing indicates whether or not the issues are guaranteed by the Federal Government and, therefore, backed by its full faith and credit. This distinction held particular importance when agency issues were considered new instruments and investors were uncertain about their default risk. The absence of any hint of default, however, has allayed most of this uncertainty and has made this distinction less meaningful. Currently, characteristics such as issue size, denomination size, and tax status are more important factors affecting the marketability and tradeability of agency issues.

FLB Bonds. The Federal Land Bank (FLB) bonds are the joint obligations of the twelve Federal Land banks. The bonds are issued in

denominations that range from \$1,000 to \$100,000 and, except for one current outstanding issue, are not callable. The size of the five individual outstanding long-term issues ranges from \$148 million to \$300 million. Interest on the bonds is paid semi-annually by any Federal Land bank, Federal Reserve bank, or the U. S. Treasury. The bonds are secured by farm mortgages held by the Land Banks. They are not guaranteed by the Federal Government; however, they qualify as security for U. S. Government deposits at commercial banks and are considered lawful investments for Government trust funds.

FNMA Debentures. The Federal National Mortgage Association (FNMA) debentures are the direct obligations of the Association and are issued to finance its secondary market operations in Government-insured or guaranteed home mortgages. Although the total amount outstanding may not exceed the volume of mortgages and

United States Government obligations owned by the Association, they are not backed by any specific collateral security or guaranteed by the Federal Government. The debentures are issued in denominations ranging from \$5,000 to \$500,000, are not callable, and pay interest semi-annually at any Federal Reserve bank or at the Treasury Department. Thirteen separate long-term issues are currently outstanding, ranging in size from \$150 million to \$350 million.

FHLB Notes. Federal Home Loan Bank (FHLB) notes are issued to provide funds to the twelve regional Home Loan banks for lending to member savings institutions. They are not callable, are issued in denominations ranging from \$10,000 to \$1 million, and pay interest semi-annually at any Federal Reserve bank. These notes are the joint and several obligations of the Home Loan banks and are not guaranteed by the Federal Government. Four long-term issues are currently outstanding; three are \$200 million in size and one is \$350 million.

GNMA PCs. In 1964, FNMA became the trustee of three trusts made up of debt obligations owned by FNMA, the Veterans Administration, the Small Business Administration, and other agencies within the Federal Government. FNMA then issued participation certificates (PCs), which are bond-type instruments giving the owners a beneficial interest in the trusts. When FNMA was reorganized in 1968, the Government National Mortgage Association (GNMA) was organized as a corporate entity within the U. S. Department of Housing and Urban Development and given the responsibility of managing the trusts. In addition, GNMA assumed ownership and control of FNMA's share of the trusts' assets.

The PCs are not callable, are fully registered, have denominations that range from \$5,000 to \$1 million, and pay interest twice annually. Payment of interest and principal is guaranteed by GNMA, and the Treasury is authorized to purchase GNMA obligations to enable the agency to meet this guarantee.

The purpose of issuing the PCs was to reduce the amounts the originating agencies had to borrow from the U. S. Treasury. They were a means of reducing the size of the Government's budget by placing this debt into private hands. Sales of PCs began in November 1964 and continued until August 1968. GNMA, as trustee, administers the trusts and collects the interest and principal from the trusts' assets. GNMA is also authorized to roll over existing PCs as they become due; however, current policy is to pay them off at maturity. Twenty-four issues of long-term PCs are currently outstanding, ranging in size from \$25 million to \$500 million.

Mortgage-Backed Bonds. The mortgage-backed bonds issued by FNMA and the Federal Home Loan Mortgage Corporation (FHLMC), a subsidiary of Federal Home Loan Bank, are also guaranteed by GNMA. The agencies assemble VA-guaranteed and FHA-insured mortgages into trusts and issue bonds secured by these mortgages. The bonds are issued in denominations ranging from \$25,000 to \$1 million. Interest is paid semi-annually, and the bonds are not callable. The GNMA guarantee pledges the full faith and credit of the U. S. Government to payment of interest and principal. FHLMC currently has two long-term issues outstanding of \$140 and \$150 million, while FNMA has one long-term issue of \$200 million.

FmHA Notes. The Farmers Home Adminis-

ECONOMIC REVIEW

tration (FmHA), an agency within the Department of Agriculture, extends real estate and housing loans to farmers and other rural residents. It then assembles these assets into blocks with a face value of \$500,000 or \$1 million and sells "insurance contracts" covering the assets to private investors. Ownership of the contracts is registered with the Federal Reserve Bank of New York and denominational changes of the contracts are not permitted. They are guaranteed by the Federal Government, pay interest annually, are eligible collateral for Treasury Tax and Loan Accounts, and are acceptable for discounting by member banks at the Federal Reserve Banks.

Prior to FmHA's first public offering of these contracts in February 1970, the agency raised funds through private placement of its debt with individual investors. This practice was abandoned when the growth in volume of the agency's lending operations made private placement impractical. Six long-term FmHA issues are currently outstanding, ranging in size from \$150 million to \$300 million.

Export-Import Bank PCs. The Export-Import Bank currently has outstanding one issue of long-term PCs, which are participations in the Bank's loans. These PCs were issued in denominations ranging from \$5,000 to \$1 million, pay interest semi-annually, and are not callable before they mature in 1982. Since the Bank is wholly owned by the U. S. Government, its obligations are backed by the Government's full faith and credit.

TVA Bonds. The Tennessee Valley Authority (TVA) has issued 25-year power bonds since 1959 when Congress authorized the utility to issue bonds and notes. The Authority had seven issues

with maturities of five years or greater outstanding at the end of 1971. They are issued in multiples of \$1,000 and are callable, usually after five or ten years. In most respects, these bonds are more similar to private utility bonds than to Federal Agency issues.

FHA Debentures. The long-term debentures issued by the Federal Housing Administration (FHA) are rather specialized instruments that cannot be considered capital market instruments, although they are usually included in discussions of Federal Agency securities. They are not uniform in terms of maturity, yield, or denomination and, therefore, are not easily traded on a secondary market. They are issued as payment to a mortgagee who has purchased an FHA-insured mortgage that has gone into default. FHA acquires either the mortgage or the property from the mortgagee and, in return, issues a debenture with face value, maturity, and yield identical to those of the mortgage contract. The mortgagee can then either hold the debenture until it matures, sell it to another investor, or use it for payment of FHA insurance premiums. FHA will accept the debentures at face value from holders of insured mortgages for payment of FHA insurance premiums. Thus, the holders are principally mortgage lenders who acquired the debentures when some of their mortgages went into default or purchased them for use in paying FHA insurance premiums. It appears that there is very little open market trading of these debentures. Consequently, they are not included in the remainder of this discussion of agency capital market instruments.

U. S. Postal Service Bonds. The U. S. Postal Service, the newest Federal Agency, made its first public debt offering in January 1972, when it sold

\$250 million of 6 7/8 percent 25-year bonds. The bonds are callable in ten years, are not guaranteed by the Federal Government, and are exempted from state and local income and property taxes. Principal buyers were pension funds, life insurance companies, and individuals.

PRIMARY MARKET FOR AGENCY ISSUES

Marketing Procedures. Unlike the U. S. Treasury, which markets its new securities through direct subscriptions or refundings, the Federal Agencies employ methods very similar to those used by private corporations in placing new issues on the market. Of the Agency issues under discussion, FNMA, FHLB, and FLB sell their new issues through fiscal agents and a network of securities dealers and banks. New issues of TVA, Eximbank, FmHA, the Postal Service and mortgage-backed bonds are sold through underwriting syndicates.

A fiscal agent serves as an agency's liaison with the financial community. FNMA, FHLB, and FLB each employs its own agent who participates in all phases of marketing a new issue, from the determination of the total size, maturity, and price through observing the market activity after the issue's sale. Each agent has an organized network of securities dealers and dealer banks throughout the nation that form a selling group to market new agency securities to the public. When an agency requires new funds, either to carry out its operating functions or to refund a maturing issue, it consults with its fiscal agent, the U. S. Treasury, and the Federal Reserve Bank of New York about the terms of the proposed new issue. The Treasury

or the Federal Reserve Bank may request or recommend changes in the timing, size, yield, or other terms of the new issue. After the final terms have been established, the agency is ready to announce the sale of the new issue.

Members of the selling group and the general public are advised of the pending sale through an offering notice, which is issued by the fiscal agent about one week prior to the offering date. Selling group members then begin to accept tentative orders from investors. The evening before the offering date, the fiscal agent advises the group members by telegram of the offering price or coupon rate for the issue. Subscription books are opened only on the offering date, and the selling group members phone or wire their subscriptions to the fiscal agent. Each subscription generally equals the maximum set by the fiscal agent for each member of the group. Consequently, the issues are usually oversubscribed and the fiscal agent must make allotments to the group members. After these allotments are confirmed, the new securities can be traded in the secondary market on a "when issued" basis. New securities are dated and issued from one to two weeks after the offering date to permit time for receiving orders, making allotments, and preparing and delivering certificates.

The selling group is expected to achieve wide distribution of the securities and to place them with "true investors;" that is, investors interested in holding rather than trading the securities. One test of the pricing of a new issue is the issue's performance in the secondary market immediately after the sale and its distribution by the selling group. If the issue has been correctly priced and placed in the hands of true investors, its price

ECONOMIC REVIEW

should behave favorably relative to other agency issues in the secondary market. Since agency issues are usually quite easy to place, secondary market action is generally quite favorable.²

Members of the selling group receive commissions ranging from \$.50 per \$1,000 principal amount on a short-term issue to approximately \$3.50 on the longest maturities. The rates are low relative to those earned by underwriters of corporate and municipal bonds, but are acceptable because agency issues are relatively easy to sell and the offerings are frequent and usually large in size.

When new securities are issued through an underwriting syndicate, the members of the syndicate function as the selling group, with the leading members performing the duties of a fiscal agent. The syndicate may be chosen through competitive bidding or negotiation. In general, underwriting syndicates are used for the sale of longer-term issues, such as TVA power bonds, FmHA insured notes, and the mortgage-backed bonds. The fiscal agents' selling groups had been geared primarily for placing short- and intermediate-term agency securities.

Marketing Strategies. Successful marketing of a new debt issue requires the selection of a maturity and yield combination that will be attractive to an adequate number of investors. Until the past two years, most of the agencies limited their maturity selections to the short- and intermediate-term sectors, with only TVA, Eximbank, and FLB selling long-term debt on a regular basis. FNMA sold long-term issues during the 1960-1962 period,

and then waited until 1970 to sell other long-term issues. Generally, the agencies attempted to match the maturity of their debt to the maturity of their assets, and the three regular long-term borrowers were those agencies that held long-term assets.

Within the past two years, this pattern has been modified somewhat. The increase in the number of agencies issuing long-term debt has been due partly to the creation of new programs in which agencies acquire long-term assets, such as the mortgage-backed bond programs of FNMA and FHLMC, and also from greater diversification in the borrowing strategies of FNMA, FHLB, and FmHA. The three latter agencies have borrowed in the capital market quite frequently since 1970. FHLB began to sell long-term issues when the Home Loan Banks began making advances with maturities of up to ten years to their member institutions. FNMA started to issue long-term securities in order to obtain a more orderly refunding schedule for its rapidly growing outstanding debt. Similarly, FmHA began the public sale of its long-term debt because its lending activities had grown to the point where private loan sales were no longer possible.

The increased flexibility in the debt management policies of these agencies has apparently introduced some cyclical variation in the total outstanding long-term agency debt. Chart 1 suggests that, taken collectively, the agencies marketed long-term issues on a fairly regular basis when market conditions were favorable, as in 1971, but limited their offering to the short- and intermediate-term maturities when interest rates were relatively high, as in 1969. This pattern is very apparent in Table II, which lists the share of total new agency issues accounted for by

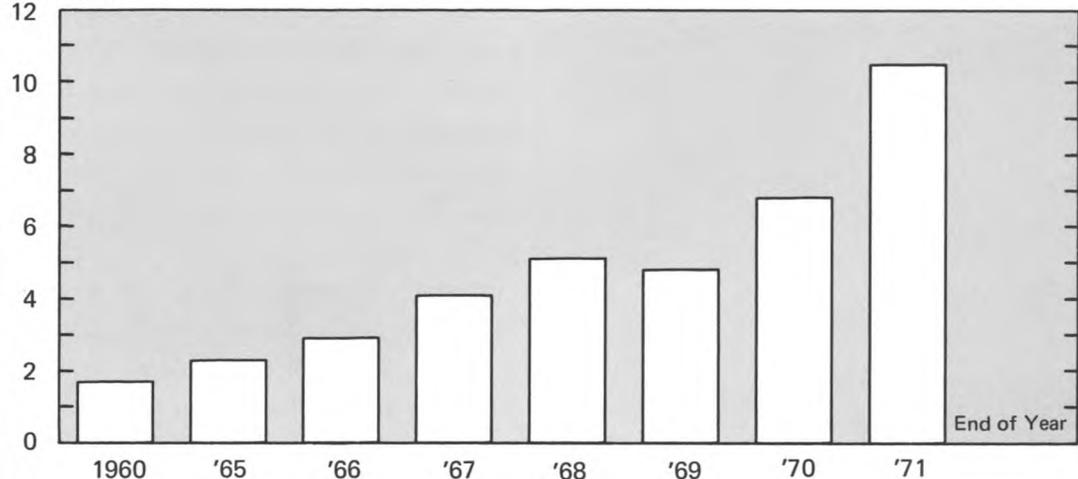
²For a more detailed discussion of fiscal agents see William J. Branscom, "Federal Agency Obligations and the Commercial Bank Portfolio," (a Stonier School of Banking Thesis, Rutgers University, 1963), pp. 24-33.

CHART 1

LONG-TERM FEDERAL AGENCY ISSUES

Outstanding Issues Maturing in 5 Years or More

Billions of dollars



Last entry: 1971

Sources: Salomon Brothers and *Treasury Bulletin*

long-term issues during each of the past twelve quarters along with a representative long-term interest rate for that quarter. Throughout 1969 when interest rates were rising steadily, sales of long-term issues were low; during February and March of 1970 when rates fell, sales jumped sharply; and during the second quarter of 1970 when rates moved upward, sales were low again. During the remainder of 1970 and throughout 1971, market conditions improved, and the volume of new issues remained relatively high.³

³Although some of these sales were issues of new instruments—the new FmHA securities and mortgage-backed bonds—which generally carry long maturities, it is also true that these securities had been issued earlier with intermediate maturities. The agencies did, therefore, adjust the maturities of these new instruments in response to changing market conditions.

Although the time period surveyed here is too short to form an estimate of the share of total new agency debt that will normally be long-term debt, it appears that a substantial volume of such debt will continue to be sold each quarter as long as market conditions are favorable.

Setting an appropriate interest rate is crucial to the successful marketing of a new issue. Agency issues compare favorably with Treasury securities in regard to risk, but the former are somewhat less liquid. Consequently, coupon rates on new agencies have been set below the yields on new corporates with approximately the same issue date but above the yields on new Governments. Within the past two years, yields on new agency issues with maturities around five years have generally been set between 20 to 75 basis points below the

ECONOMIC REVIEW

TABLE II

Long-term Debt Issued by Federal Agencies
1969-1971

Quarter	Volume (mil. of \$)	Long-term Issues as Percent of Total Issues	Average Yield on Long-term Government Bonds
1969 I	—0—	—0—	5.88%
II	\$ 100	3.1%	5.92
III	250	6.3	6.14
IV	<u>350</u>	<u>7.0</u>	6.53
TOTAL	700	4.7	
1970 I	1,200	17.5	6.56
II	350	7.2	6.82
III	1,150	20.9	6.65
IV	<u>1,540</u>	<u>40.2</u>	6.27
TOTAL	4,240	20.2	
1971 I	1,824	45.4	5.82
II	1,150	27.0	5.88
III	1,900	32.5	5.75
IV	<u>2,450</u>	<u>37.8</u>	5.62
TOTAL	7,324	35.7	

Sources: *Treasury Bulletin* and *Federal Reserve Bulletin*

yield of new five-year Aa utility bonds, and yields on new ten-year agencies were from 30 to 100 basis points below yields on new utilities with maturities of ten years and over. Yields on new agencies have usually ranged from 25 to 75 basis points above the yields set on new Treasury notes and bonds.

It is interesting to note that during periods in which the Federal Agencies marketed long-term issues and the Treasury did not (1966-1970 and the first half of 1971), yields on new agency issues were generally much closer to yields on new utility bonds than to secondary market yields on seasoned Governments of similar maturity. Because new issue yields usually reflect current market conditions more accurately than yields on seasoned issues, it appears that during the period from 1966 to mid-1971, new issue yields on

agencies were a better measure of market conditions in the Treasury sector of the capital market than were the yields on seasoned Governments. This is probably due to the fact that the Treasury was not selling new bonds during this period. If the Treasury had been selling long-term bonds during the period from mid-1965 through mid-1971, the spread between yields on these issues and on new long-term agencies most likely would have been within the 12 to 77 basis point range observed before and after the 1965-1971 period.

Buyers of Agency Issues. Information on buyers of long-term agency issues is limited to the Treasury's Survey of Ownership of Government-Sponsored Agency Issues. This Survey is at best only suggestive because of the large portion of the outstanding issues that are included in the "all other investors" category (see Table III). These ownership data suggest that the principal buyers of long-term agencies are commercial banks, savings institutions (mutual savings banks and savings and loan associations), state and local governments, insurance companies, and corporate pension funds. Data on commercial bank ownership is understated in the Survey because those agency issues purchased by banks for their trust accounts are included in the "other" category. This understatement may be substantial, because the attractive yields and safety of long-term agencies make them ideal investments for trust accounts. Also included in the "other" category are the holdings of individuals, foreign investors, non-profit organizations, and nonbank securities dealers.

Significant by their absence as buyers of agency issues have been the Federal Government's trust

TABLE III

Principal Owners of Long-term Federal Agency Issues
June 30, 1971
Millions of Dollars

Agency	Total	Commercial Banks	Savings Institutions	Insurance Companies		State and Local Governments		Corporate Pension Funds	All Other Investors
				Life	Fire, etc.	General Funds	Pension Funds		
Federal Land Banks Bonds	\$1,114	\$ 195	\$ 74	\$10	\$32	\$78	\$ 15	\$26	\$ 669
Federal National Mortgage Association Debentures	1,498	412	262	14	10	78	31	22	655
Mortgage-backed bonds	200	8	34	1	6	2	21	7	121
Federal Home Loan Mortgage Corporation Notes	750	134	138	—	4	13	4	6	450
Mortgage-backed bonds	140	2	40	—	1	—	4	6	88
Farmers Home Administration Insured notes	950	110	174	2	17	37	46	18	546
Export-Import Bank Participation certificates	1,225	319	73	3	23	110	77	4	608
Tennessee Valley Authority Bonds	525	2	33	16	4	1	133	9	325
TOTAL	\$6,402	\$1,182	\$828	\$46	\$98	\$319	\$331	\$98	\$3,462
Ownership share		18.5%	12.9%	0.7%	1.5%	5.0%	5.2%	1.5%	54.1%

Source: *Treasury Bulletin*

funds and the Federal Reserve Banks. The trust funds are major holders of long-term Government bonds, but even though almost all agency issues are legal investments for these trust funds, they hold no long-term agency issues other than some participation certificates.⁴

In September 1971, the Federal Reserve System began acquiring agency issues when it initiated direct purchases of these securities as part of its open market operations. In the future,

⁴Participation certificates are not included in Table III because the Survey of Ownership does not list them by individual issues. It is impossible, therefore, to estimate the pattern of ownership of long-term PCs. The Federal Government trust funds own \$1.9 billion PCs, or about 16 percent of the total outstanding. Some of these may be long-term PCs.

therefore, the Federal Reserve will be an owner of long-term agency securities, but will make its purchases in the secondary market. In contrast to the other owners, it will not be a buyer of new agency issues.

SECONDARY MARKET

Participants in the secondary market for long-term agency issues contend that within the past three or four years, this market has come into its own as a trading market and is no longer simply an appendage to the Government bond market. The market is, however, similar in many respects to the market for seasoned Government bonds. Most dealers who make markets in Treasury issues also quote prices on agency issues. Bid and asked

ECONOMIC REVIEW

prices are quoted in fractions of $1/32$ of a percentage point, with published spreads ranging from two full points on some issues to $12/32$ of a point on others. Trading in most long-term agencies is accomplished at a spread of $16/32$ of a point and occasionally at a spread of $4/32$ of a point if the issue is relatively new and trading actively. These spreads are comparable to those encountered in the market for long-term Governments.

The presence of dealers willing to quote prices on long-term agencies is a necessary, but not sufficient, condition for a highly developed secondary market. Other prerequisites are a large volume of securities available for trading and the participation of active traders; that is, commercial banks, insurance companies, and other large investors maintaining trading accounts in the securities. A mature secondary market is characterized by a high volume of trading, with a large number of investors adjusting their positions in response to relatively small movements in prices. A market is then said to enjoy the famous trio of depth, breadth, and resiliency.

This type of market exists for most Treasury bonds and appears to be developing for most long-term agency issues. It is difficult to document this development because data on trading volume, dealer positions, investor participation, and price changes are inadequate. There is, however, a substantial amount of indirect evidence that most of the ingredients that contribute to active secondary market trading are currently available to the long-term sector of the agency market.

A fundamental requirement for an active secondary market is an adequate volume of

outstanding issues. Although the exact volume required to support an active trading market is not known, market participants report that trading in long-term agencies began to increase markedly during the 1967-1968 period when total outstanding volume reached the \$4 to \$5 billion level. They also indicate that, due to the rapid growth in the volume of outstanding issues in the past two years, the long-term sector of the agency market currently has the necessary volume to support an active secondary market.

Trading will remain limited, however, if this volume is composed of many small-sized individual issues, or if the market is segmented because investors differentiate between the securities of the various agencies. A large volume of relatively small issues is not conducive to active trading because the market for each issue would be quite thin. For example, one of the few Treasury bond issues not actively traded are the 4s of 1988-1993; there are only \$246 million of these bonds outstanding. With the exception of this issue, the sizes of regular Treasury bond issues range from \$806 million to \$4.6 billion. Prior to 1967, most long-term agency issues were relatively small—only two outstanding issues were larger than \$150 million and none were larger than \$200 million. In contrast, by the end of 1971, thirty-two outstanding long-term issues totaled \$200 million or more, with twenty-one equal to \$250 million or larger.

The fact that these large issues are the debt of seven separate agencies could limit the tradeability of these securities if investors do not view the separate issues as a homogeneous group of market instruments. However, market participants have

suggested that, except for the mortgage-backed bonds, FmHA insured notes, and TVA bonds, long-term agency issues trade as a relatively homogeneous group of assets. The mortgage-backed bonds are still viewed as relatively new and are not traded as actively as regular agency issues. Trading in these bonds will probably increase as more reach the market and as more investors become familiar with them. The FmHA insured notes trade less actively because of their large minimum denominations and the fact that interest is paid only once a year rather than semi-annually. TVA bonds are traded separately from the other agencies—as mentioned earlier, they trade like corporate bonds rather than agency issues. Once the initial placement of these bonds is accomplished, most dealers specializing in Government and Federal Agency issues drop out of this market, leaving the secondary trading to corporate bond dealers.

A series of regressions were run in order to test whether the remainder of the long-term agency issues can be regarded as a homogeneous set of assets, and whether the size of an agency issue affects its market performance. Secondary market yields on long-term issues of FNMA, FLB, FHLB, FmHA, TVA, and the GNMA PCs were each regressed against four variables that might influence market yields: issue size, issuing agency (represented by dummy variables), maturity, and coupon rate. Market yields were used as the dependent variable under the assumption that any distinction investors may make between individual issues will be reflected in their prices and, therefore, in their market yields. Details of the regressions are presented in Table IV.

The regressions generally support the observations of market participants that issue size is an important determinant of an issue's performance in the secondary market and that the issuing agency is not. The coefficient on the issue size variable is negative in all equations, significant at the 95 percent confidence level in three of the regressions, and significant at nearly this level in the other two. It appears, therefore, that yields on the smaller-sized issues are somewhat higher than on large issues. Apparently, higher yields are necessary to compensate investors for the reduced marketability of the smaller issues.

The coefficients on the dummy variables indicate that, except for FmHA, the issuing agency has very little effect on market yields. The FmHA coefficient is positive and highly significant, indicating that the peculiar characteristics of these issues keep their market yields above yields on other agency issues of similar size and maturity.

The remainder of the agency coefficients are very small, with only the GNMA coefficient significantly different from zero in all five regressions. The interpretation of these coefficients is that the market values comparable issues of FNMA, FHLB, FLB, and TVA equally, but puts a small premium on PCs. Yields on PCs are approximately .10 of a percentage point below the other issues. This premium probably results from the fact that PCs are guaranteed, while the other agency issues (except for FmHA notes) are not. Given the choice between buying a PC or another agency issue of equal yield and maturity, many investors apparently choose the guaranteed asset, thereby keeping prices of the PCs somewhat above, and yields somewhat below, those of other

ECONOMIC REVIEW

TABLE IV

Estimated Relationships Between Market Yields of Federal Agency Long-term Issues and Selected Variables

$$\text{Market Yield} = b_1 D_1 + b_2 D_2 + b_3 D_3 + b_4 D_4 + b_5 D_5 + b_6 D_6 + b_7 + b_8 + b_9$$

Date	(FNMA)	(GNMA)	(FLB)	(FHLB)	(FmHA)	(TVA)	Coupon Rate	Maturity	Issue Size	Multiple R ²	Standard Error
December 15, 1971	.024 (.48)	-.095 (-2.53)	-.097 (-1.31)	.005 (.06)	.387 (5.02)	-.002 (-.019)	.020 (.66)	.005 (7.38)	-.0004 (-1.59)	.83	.149
December 29, 1971	.048 (.94)	-.098 (-2.61)	-.077 (-1.04)	-.025 (-.28)	.394 (5.44)	-.108 (-1.07)	.037 (1.22)	.005 (8.20)	-.0005 (-2.03)	.84	.149
December 31, 1971	.047 (.93)	-.098 (-2.63)	-.075 (-1.02)	-.019 (-.22)	.392 (5.43)	-.116 (-1.16)	.035 (1.17)	.005 (8.30)	-.0005 (-2.12)	.84	.149
January 4, 1972	.043 (.87)	-.093 (-2.52)	-.060 (-.83)	-.009 (-.10)	.392 (5.48)	-.107 (-1.07)	.033 (1.10)	.005 (8.35)	-.0004 (-1.88)	.84	.148
September 15, 1971	-.071 (-1.76)	-.063 (-2.64)	-.184 (-3.41)	-.006 (-.08)	.475 (8.11)	.094 (1.32)	.038 (1.84)	.004 (7.70)	-.0004 (-2.21)	.92	.099

NOTE: Observations on market yields of 58 long-term issues were taken from quotation sheets published by Salomon Brothers. Six dummy variables (D₁ through D₆) were used to take account of the influence of the six issuing agencies. The remaining variables were centered about their sample means, with the intercept term omitted from the equations. Estimates for the nine coefficients (b₁ through b₉) are presented below the corresponding independent variables; t-values for each coefficient are in parentheses.

The coefficients for the dummy variables (coefficients b₁ through b₆) measure the degree to which market yields on individual securities are influenced by the particular agency that issued the security. Coefficients b₇, b₈, and b₉ measure the quantitative impact on market yield of a one percentage point increase in coupon rate, an increase of one month in term to maturity, and a \$1 million increase in issue size. For example, the December 29, 1971 regression implies that on average, market yield would be ".394 - .048 = .346" of a percentage point higher if the security were issued by FmHA than if it were issued by FNMA, would increase .005 of a percentage point with a one month increase in term to maturity, and would decrease .0005 of a percentage point with each \$1 million increase in issue size.

The t-values are used to judge whether the influence of each of the independent variables is statistically significant. In these regressions, a t-value above 2.01

indicates that, if there is no association between market yield and the independent variable, the probability is less than 5 percent that a sample t-value this large would be obtained. Thus, in the December 29, 1971 regression, variables D₂, D₅, maturity, and issue size are judged to be statistically significant at the 5 percent level. The multiple R² indicates that from 83 percent to 92 percent of the total variation in market yields was explained by the variables included in these regressions.

The observations used in the first four equations were taken within a relatively short time period in order that each sample would contain the same set of long-term issues. It is possible, therefore, that these results were influenced by the selection of the sampling dates. Regression 5, which uses yields for September 15, 1971 and, therefore, has six fewer observations, is interesting in this respect. The results are similar except for the FLB coefficient, which is statistically significant. It is not known, however, to what extent the change in this coefficient is due to the different time period, or to the changed sample (a \$300 million FLB bond issue marketed in October 1971 is not in the September sample).

Although Regression 5 introduces the possibility of some variation in these coefficients over time, these results are not inconsistent with the impression gained from conversations with agency traders that market participants view comparable issues of FLB, FNMA, FHLB, and GNMA as a relatively homogeneous group of investment assets.

Sources: Salomon Brothers and Federal Reserve Bank of Cleveland

issues.⁵

Also of interest is the lack of significance of the TVA coefficient. Apparently, yields on the TVA bonds are similar to those of other agencies, even though TVA issues trade in a different market.

These regression results suggest that the principal prerequisite for an active secondary market—a sizable body of homogeneous assets available for trading—currently exists in the long-term agency market. Whether these securities are in fact actively traded is difficult to determine. Because dealers report their trading volume in only two maturity categories—over one year or under one year—it is impossible to measure directly the level of trading activity in long-term issues. On the basis of indirect evidence, however, it appears that a substantial amount of trading activity is being realized in this market.

The average daily level of dealer positions and transactions in agency issues maturing beyond one year has increased dramatically since 1966 (see Chart 2). Even though the over one-year totals are probably heavily influenced by the behavior of trading in the one-to-five year maturities, this growth suggests that trading activity in long-term agencies has increased sharply in recent years. Such an interpretation would be consistent with dealers' comments concerning the apparent growth in trading activity and with the results of a recent

⁵This result is somewhat surprising because it conflicts with market participants' contention that the guarantee has no effect on an issue's market performance. However, the size of the PC coefficient indicates that the magnitude of the difference between PCs and other issues, while not negligible, is quite small.

study of the secondary market for agency issues.⁶ This study found a significant positive correlation between dealer transactions and the total volume of securities outstanding and the volume of new agency issues sold during a quarter. These results were obtained using quarterly averages of all outstanding issues as the independent variable and may not hold exactly for trading in securities maturing in five years or more. However, even if the relationship is only roughly similar for the longer maturities, the growth in the volume of long-term agencies outstanding and in gross new issues since 1967 would be associated with rapid growth in trading in this market.

The growth in dealer positions resulted from, and also contributed to, the increased trading activity. The Peskin study found the level of trading activity and gross new issues to be the major determinants of dealer positions in agency securities.⁷ However, the relationship between the level of trading and the level of dealer positions goes both ways, because the presence of dealers maintaining positions is essential to active trading in any securities market. Growth in the size of dealer positions is generally regarded as reflecting an improvement in the performance of the secondary market.

Additional impetus to trading in agency issues by private investors is expected to result from the

⁶Janice Peskin, "Federal Agency Debt and Its Secondary Market," *Treasury-Federal Reserve Study of the U. S. Government Securities Market*, (Washington, D. C.: Board of Governors of the Federal Reserve System, 1967), pp. 85-100.

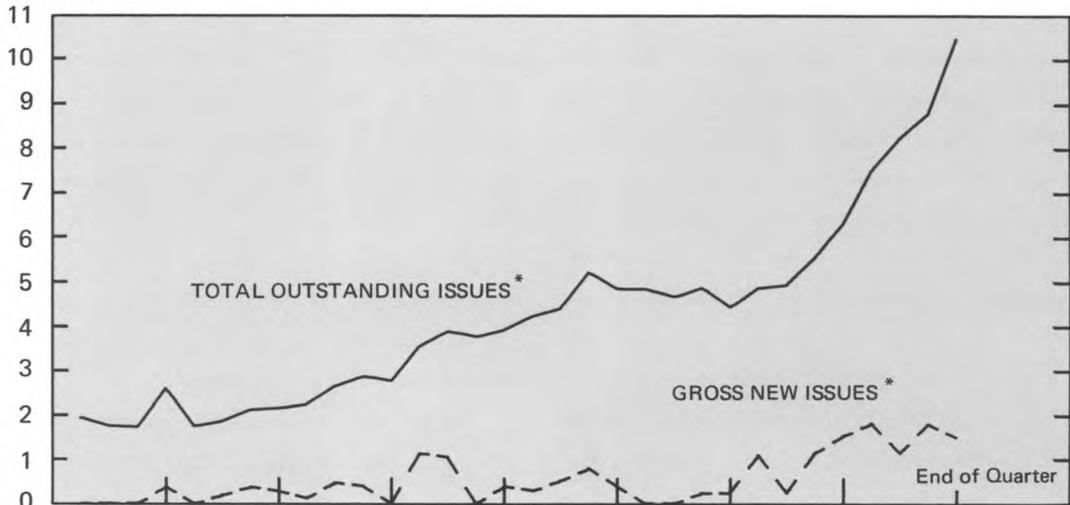
⁷*Ibid.*, pp. 100-113.

CHART 2

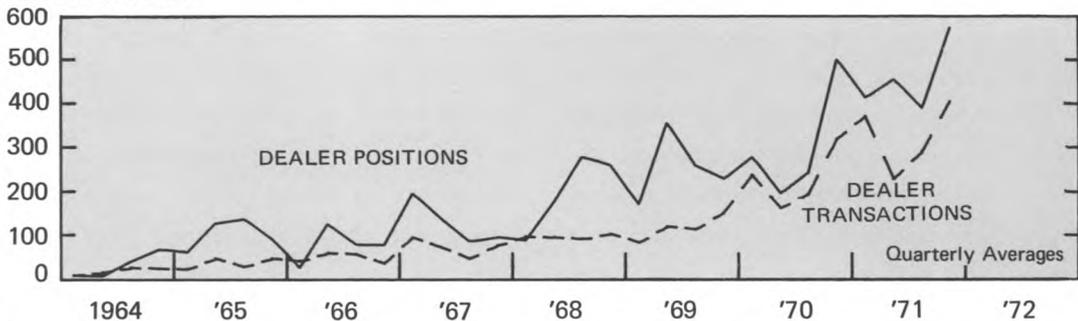
SECONDARY MARKET ACTIVITY in LONG-TERM AGENCY ISSUES

Selected Indicators

Billions of dollars



Millions of dollars



* Excluding TVA issues.

Last entry: 4Q 1971

Sources: Salomon Brothers, *Treasury Bulletin*, and Federal Reserve Bank of New York

recent initiation of direct open market operations in these issues by the Federal Reserve System. These operations, which bring a large, active trader into this market, should improve the marketability of all agency debt, including the long-term issues. Since these transactions began in September 1971,

roughly 20 percent of the System's purchases of agencies have been long-term issues.

A by-product of the System's new policy is that future long-term agency debt will probably be sold in blocks of \$200 million or larger. Guidelines adopted by the Federal Reserve for its operations

in agency issues limit transactions in issues with maturities of more than five years to those with \$200 million or over outstanding. Because eligibility for System purchase will increase the marketability of an issue, the agencies will almost certainly view the \$200 million level as the minimum size for their long-term issues. The results of the market regressions described earlier suggest that any increase in the minimum size of long-term agency issues will also increase their tradeability and improve the overall performance of their secondary market.

FEDERAL FINANCING BANK

The growth of the long-term agency market has been especially rapid during the past two years, as new instruments were introduced into this market and agencies took advantage of improved market conditions to lengthen the average maturity of their debt. Indications are that for the next few years this growth will be maintained as the current participants continue to tap the capital market and as new agencies, such as the U. S. Postal Service, get their borrowing programs underway. However, growth will accelerate sharply if the proposed Federal Financing Bank becomes a reality. As proposed in a bill currently before Congress, the Bank would centralize the marketing of securities for many existing Federal Agencies and for a group of proposed new agencies. The obligations of all agencies except FNMA, FHLB, and the members of the Farm Credit Administration would be eligible for purchase by the Financing Bank. The Bank would purchase these issues with funds raised through the sale of its own debt. Because the Financing Bank would have the authority to borrow from the U. S. Treasury, its

securities are expected to be considered the equivalent of direct Treasury obligations.

Under this new program, agencies such as Eximbank, FHA, TVA, and FmHA would no longer issue debt instruments to the public, but would sell their debt to the Bank. The Bank would then issue its own debt instruments to finance these purchases. In addition, Federal credit assistance programs for the financing of public housing and urban redevelopment, which are currently financed through the sale of tax-exempt public housing bonds, would be financed through the Bank. Finally, new borrowing agencies currently being proposed, such as the Environmental Financing Authority, the Urban Development Bank, the Rural Development Bank and others, would also obtain financing through the Bank.

If legislation establishing the Bank is approved by Congress, the Bank is expected to issue a large volume of debt securities of all maturities. Purchasing the public housing bonds alone will require over \$2 billion per year. Added to this volume would be the growing borrowing needs of existing agencies, such as FmHA, the Postal Service, TVA, etc., and the new agencies' initial and ongoing borrowings. It is not surprising, therefore, that this new Bank is expected to be a very active borrower.

The introduction of the Financing Bank should have a profound impact on the Federal Agency sector of the capital market. Many of the existing separate agency issues would be replaced with a single issue of unquestioned credit worthiness and improved marketability. In addition, the Bank would convert relatively illiquid long-term debt,

ECONOMIC REVIEW

such as the public housing bonds, into marketable instruments. Both of these developments should increase the volume of secondary market activity in all long-term agency issues. It is conceivable that with the establishment of the Federal Financing Bank, long-term agency issues, including those of

FNMA, FHLB, and FLB, will be sold and traded in a market as active and as efficient as the market for U. S. Government bonds. In that event, Federal Agency issues will have grown from relative obscurity as late as 1965 into one of the most prominent of the capital market instruments.



RECENTLY PUBLISHED ECONOMIC COMMENTARIES
OF THE FEDERAL RESERVE BANK OF CLEVELAND

"Business Economists Reexamine Outlook for 1972"
January 17, 1972

"Changing Financial Structure of Agriculture in Ohio"
January 31, 1972

"What is a DISC?"
February 14, 1972

"The Prime Rate: To Float or Not To Float?"
February 28, 1972

Economic Commentary is currently published every other week and is available without charge. Requests to be added to the mailing list or for additional copies of any issue should be sent to the Research Department, Federal Reserve Bank of Cleveland, P. O. Box 6387, Cleveland, Ohio 44101.