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Volume Author/Editor: Saul B. Klamman

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Chapter Author: Saul B. Klamman

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2. SUMMARY OF NEW ESTIMATES AND ESTIMATING TECHNIQUES

New estimates are provided in this paper for each of the three major classifications of mortgage debt discussed previously — type of property, type of mortgage, and type of holder. In some cases quarterly estimates have been made where only annual data were previously available, and in other cases both annual and quarterly estimates have been provided where no estimates existed before. In still other instances, where annual estimates were available for only part of the postwar period under review here, new estimates were made for later years, and earlier estimates were changed on the basis of new information or improved estimating techniques.¹¹

The extent of new estimates developed in this study is summarized in Table A and indicated by the symbols a_t and q_t denoting annual or quarterly figures. Within the limitations of existing information, the new estimates should permit more complete and meaningful analyses of mortgage market developments than was previously possible.

Estimates by Type of Property

The principal new estimates provided in this classification are for non-farm mortgage debt secured by total residential properties, by multifamily properties, and by nonresidential properties. From previously published data available on a current basis (annually or quarterly), which were limited to debt secured by one- to four-family dwellings, and by a combination of multifamily and non-residential properties, it was not possible to obtain separate residential and non-residential mortgage totals for analysis and comparison of developments in these distinctly different markets.

Some annual historical data through 1953 for the debt categories here estimated have been previously published, as noted above. Of these only

States was expedient because data readily available from published and internal reports of the Farm Credit Administration are so limited. Either inclusion or exclusion of the Bank's farm mortgage holdings on Puerto Rican properties is of little consequence, for such loans amounted to only about \$22 million, or less than 1.5 per cent, of total Federal Land Bank mortgage holdings at the end of 1956.

¹¹The new data on mortgage debt will, therefore, not be in agreement with figures in the following sources: R. W. Goldsmith, *A Study of Savings in the United States*, Princeton University Press, 1955, Vol. I; Leo Grebler, David M. Blank, and Louis Winnick, *Capital Formation in Residential Real Estate*, Princeton University Press for National Bureau of Economic Research, 1956; and J. E. Morton, *Urban Mortgage Lending: Comparative Markets and Experience*, Princeton University Press for National Bureau of Economic Research, 1956.

TABLE A

Data Available on Net Mortgage Flows, 1945 to 1956

Type of property and mortgage	MAIN FINANCIAL INSTITUTIONS										INDIVIDUALS & OTHER HOLDERS (7)			
	A L L HOLDERS (1)		Savings & loan associations (2)		Life insurance companies (3)		Commercial banks (4)		Mutual savings banks (5)			FEDERAL AGENCIES (6)		
	P ₁	P ₂	P ₁	P ₂	P ₁	P ₂	P ₁	P ₂	P ₁	P ₂	P ₁	P ₂		
1. All properties	a	q	Qa	Qa	MA	MA	SA	SA	Ma	SA	A	SA		
2. Nonfarm Residential	a	q	Qa	Qa	MA	MA	SA	SA	SA	SA	A	SA		
3. 1- to 4-family FHA	a _t	q _t	a _t	q _t	A	A	SA	SA	SA	SA	A	SA		
4. VA	a	q	A	q	A	A	a	q _t	a	q _t	a _t	q _t		
5. Conventional Multifamily	a	q	a _t	q _t	A	MA	a _t	q _t	a _t	q _t	M	SA		
6. FHA	a	q	Qa _t	Qa _t	MA	MA	SA _t	q	SA _t	q	M	SA		
7. Conventional	a _t	q _t	a _t	q _t	A	A	a _t	q _t	a _t	q _t	a	SA		
8. Multifamily	a	q	a _t	q _t	A	A	a	q _t	a	q _t	a _t	SA		
9. FHA	a	q	a _t	q _t	A	A	a	q _t	a	q _t	a _t	SA		
10. Conventional	a _t	q _t	a _t	q _t	A	A	a _t	q _t	a _t	q _t	M	SA		
11. Nonresidential	a _t	q _t	a _t	q _t	A	A	a _t	q _t	a _t	q _t	a	SA		
12. Farm	a	q	a _t	q _t	A	MA	SA	q	SA _t	q	a _t	SA		
Memoranda:														
Total FHA-insured	M	q	Qa _t	Qa _t	M	M	SA _t	q	SA _t	q	M	SA		
Total conventional	a _t	q _t	Qa _t	Qa _t	M	M	SA _t	q	SA _t	q	M	SA		
ALL OTHER HOLDERS (breakdown)														
	Mortgage companies (8)		Fire, casualty & marine insurance companies (9)		Fraternal orders (10)		Credit unions (11)		Self-administered pension funds (12)		Face amount investment companies (13)		Personal trust funds (14)	
1. All properties	a _t	q _t	A	q _t	P ₁	P ₂	P ₁	P ₂	P ₁	P ₂	P ₁	P ₂	P ₁	P ₂

Subcolumns: P_1 = 1945-1955; see general notes below. P_2 = 1953-1955; see general notes.

Reported figures:

A = annual Q = quarterly
S = semiannual M = monthly

Estimates:

a = annual, from other sources q = quarterly, from other sources
 a_t = annual, provided by this study q_t = quarterly, provided by this study

General Notes

The symbols in the table denote the types of data (reported, estimated, and estimated in this study) available on outstanding mortgage debt for various time periods during the postwar decade 1945-1956.

Reported figures are defined here to include those reported by mortgage holders directly to supervisory authorities, trade associations, or other groups, together with figures made available by federal and state agencies on mortgage programs which they administer. For savings and loan associations, life insurance companies, and mutual savings banks, symbols denoting reported figures have been used even though in some cases reports are not made by the complete universe of such institutions. The large proportion of these institutions providing data to the Federal Home Loan Bank Board, the Institute of Life Insurance, and the National Association of Mutual Savings Banks, however, leaves little estimating to be done, and these figures are, therefore, considered as reported. Estimated figures, whether taken from other sources or supplied by this study, are those not reported directly by private holders or government agencies but are based on related figures from such sources.

Subcolumn P_1 of each numbered column includes all reported figures plus annual estimates from various sources for the period 1945-1956. Symbols for reported and estimated figures on one line of this subcolumn indicate that reported figures for that type of property and mortgage are available for the latter part of the period, and estimates for the earlier part. Subcolumn P_2 includes only the quarterly estimates from all sources including this study for the period 1953-1956. Blank boxes in this subcolumn of columns 1 through 7 indicate that quarterly estimates were not required. Columns 8 through 14 are given only for line 1, all properties, because there are no reported or estimated figures for the separate types of property and mortgage.

Special Notes

For savings and loan associations, quarterly designations under P_1 on lines 1, 2, and 6, and for memoranda items are for the period beginning 1948. Prior to that year, annual estimates are available from this study or from other sources.

For life insurance companies, monthly designations shown under P_1 on lines 1, 2, 6, and 12, and for memoranda items are for the period beginning 1947. Prior to that year, data are available annually.

For commercial banks, semiannual designations shown under P_1 on lines 1, 2, 3, 11, and 12 are available beginning December 1947. Prior to that date, estimated data are available annually. Semiannual designations on line 6 and for memoranda items are available only since December 1951. Prior to that date, annual estimates are provided by this study.

For mutual savings banks, the monthly designation shown under P_1 on line 1 is available beginning in 1948. Prior to that date, estimated data are available annually. Semiannual designations shown on lines 2, 3, 11, and 12 are available beginning December 1947. Prior to that date, there are only annual estimates. Semiannual designations on line 6 and for memoranda items are available only since December 1951. Prior to that date, annual estimates are provided by this study.

Morton's figures (see his Table 2, p. 18) agree closely with annual estimates presented here, having been taken directly from unpublished Federal Reserve estimates for which the present writer and members of the Board's Flow-of-Funds Unit were responsible. Revisions of these earlier estimates account for most of the differences. Estimates presented in studies by Goldsmith, and by Grebler *et al.*, are significantly different from those developed here, based as they are on entirely different estimating techniques and on sources since suspended. Goldsmith's postwar estimates through 1949, for example, are based largely on the value of construction expenditures for the various types of property. The extension of these estimates through 1952 by Grebler *et al.* was developed "by extrapolating the 1949 [Goldsmith] estimate by the percentage increase from 1949 to 1952 in the Commerce series of mortgages on multifamily and commercial real estate (see *Survey of Current Business*, September 1953, p. 18)."¹²

The accuracy of estimates based entirely on construction expenditures must be questioned. Annual changes in mortgage debt will be influenced only in part by the value of construction expenditures; important also are transactions in existing real estate and the rate of amortization on outstanding debt. For purposes of developing long-term annual historical series, and in the absence of better, more consistent data, Goldsmith's technique was acceptable. For purposes of this study, however, which sought to develop quarterly as well as annual data for a relatively short period, with the possibility of maintaining quarterly series on a current basis, other methods, relying chiefly on the building up of totals from component debt series, were considered superior. These methods had become feasible with the advent of improved data on mortgage debt.

The resulting differences between previously published estimates and mine are much greater in earlier than in later postwar years. In the total residential mortgage debt category, differences are not very great in any year, ranging from a high of less than 6 per cent in 1945 to a low of less than 1 per cent in 1952, the last year for which Goldsmith-Grebler estimates were available. Nearly the entire difference reflects differences in estimates for multifamily mortgage debt. Differences in the one- to four-family mortgage debt series, based on the same basic source, are due to revisions in the data. For the multifamily mortgage debt series, my estimates are lower than the Goldsmith and Grebler estimates in each year, by 22 per cent in 1945 and 1946 and ranging lower to 5 per cent in 1952. Conversely, the nonresidential mortgage debt series in this paper is higher by from 22 to 4 per cent. The lower level of multifamily mortgage debt

¹²Grebler, Blank, and Winnick, *op. cit.*, Appendix L, p. 449. Their data for postwar years prior to 1949 were taken directly from Goldsmith.

shown here is based on data from the 1950 Census of Housing, not available when the earlier estimates were made.

Estimating techniques used in this study to derive annual and quarterly estimates of mortgage debt on nonfarm residential, multifamily, and non-residential properties are described in detail in column-by-column notes to the pertinent tables. Since data on one- to four-family mortgage debt have long been at hand, the problem was to break out separately debt secured by multifamily and nonresidential properties, available only as a combined total. This, then, would make possible an estimate of total residential mortgage debt (one- to four-family plus multifamily mortgage debt). The problem was approached by estimating each category separately by type of holder and combining these estimates for totals, an approach employed throughout the study.

For figures on an annual basis the major problem was estimation of holdings of savings and loan associations and of those in the broad category of individuals and others. (For holdings of other types of investors, data for most years were either reported or could be derived directly from estimated figures already in existence.) Estimates of mortgage debt on nonresidential properties held by savings and loan associations were derived from data obtained by the Federal Reserve in registration statements under Regulation X.¹³ These estimates together with those regularly available from the Federal Home Loan Bank Board permitted the derivation of series on residential and multifamily mortgage debt (see Table 16 for details).

A series of annual estimates on mortgage holdings of individuals and others secured by "multifamily and commercial properties" has been published for some time by the Department of Commerce.¹⁴ The breakdown of this estimated series into two separate series, shown in column 9 of Tables 6 and 7, was based on a benchmark figure for multifamily mortgage debt provided in the 1950 Census of Housing.¹⁵ The 1950 relationship between holdings by individuals and others of multifamily mortgages and of multifamily plus commercial property mortgages was then used as the basis for estimates of the former series for other years. Mortgage debt on commercial properties held by this group was obtained

¹³"Real Estate Loans of Registrants Under Regulation X." *Federal Reserve Bulletin*, June 1952, pp. 620-637.

¹⁴See the last pages of section 3 for a discussion of the reliability of this series.

¹⁵Unpublished estimates of multifamily mortgage debt held by "individuals and others" were prepared at the Federal Reserve by the author in collaboration with Mrs. Dorothy Projector, then with the Flow-of-Funds Unit. Mrs. Evelyn Hurley, also of the Flow-of-Funds Unit, was responsible for current estimates of this series. In the preparation of this paper, basic estimating techniques were re-examined, and revisions were made in the earlier series.

as a residual; and residential mortgage debt was obtained by combining the series on one- to four-family and on multifamily mortgage debt.

The inadequacy of this estimating technique for providing separate series of multifamily and nonresidential mortgage debt on the basis of movements of another estimated series of dubious reliability is obvious. Other estimating techniques were discarded, however, after experimentation yielded no better basis for the development of more reliable series. General weaknesses of the series on one- to four-family, multifamily, and nonresidential mortgage holdings of individuals and others are discussed more fully at the end of section 3, and detailed estimating techniques are described in notes to Table 5.

Estimates by Type of Mortgage

When the study was undertaken, existing published information on FHA-insured, VA-guaranteed, and conventional mortgage debt consisted of the following: for all mortgage holders taken together, a breakdown by FHA, VA, and conventional mortgages only within the one- to four-family property category; for the main financial institutions, a breakdown only for total and not for types of residential property; for savings and loan associations, annual data, and for life insurance companies, quarterly data on FHA, VA, and conventional mortgages on total nonfarm but not on residential properties. This base is broadened by estimates, presented here, of FHA-insured multifamily mortgage debt (from previously unpublished estimates of the FHA) and conventional multifamily mortgage debt (derived as a direct residual by subtracting FHA-insured multifamily debt from total multifamily mortgage debt).¹⁶ These estimates, together with previously available data, provide an integrated framework of statistics on residential mortgage debt by type of property and type of mortgage.

The most extensive contribution made by this study on estimates by type of mortgage is the breakdown by holdings of major types of lenders. The estimating techniques varied for each type of holder depending on information available, and the reliability of resulting figures may be judged by reference to detailed notes to pertinent tables. Generally, estimates were based on relationships between loans held by lenders and the total outstanding, between loans closed and outstanding, and on the trend of changes in outstandings between years.

For VA-guaranteed loans, the main task was one of estimating holdings for earlier postwar years; data for more recent years were available in most cases. For FHA-insured loans the task for all years was more formidable. It required estimating a breakdown for major lenders between

¹⁶VA-guaranteed mortgage debt is secured almost entirely by one- to four-family properties.

one- to four-family and multifamily mortgage debt and, for earlier years, estimating total FHA-insured residential mortgage debt as well. Most often, annual data on the face amount of FHA-insured mortgages outstanding by type of lender, reported by the Federal Housing Administration, were used as a basis for distributing the net amount of holdings of total FHA-insured mortgages, available from other sources, between one- to four-family and multifamily properties. Estimates of conventional mortgage debt by type of holder were derived as residuals by use of the estimates of VA and FHA mortgage debt outstanding.

Estimates by Type of Mortgage Holder

New estimates by type of property and type of mortgage, discussed in the two preceding sections, were used to build up the entire framework of estimates provided in this study through the process of estimating mortgage portfolios of each major type of holder. Totals, with minor exceptions, were derived directly from these holder estimates.

As Table A shows (column 3P₁), life insurance companies were the only major type of financial institution for which annual data were reported in all the property and mortgage classifications desired. For other major types of financial institutions, estimates of annual data by type of mortgage for earlier postwar years were required; for recent postwar years, a breakdown of FHA and conventional mortgage holdings by type of property was the main estimating requirement. A large portion of the quarterly figures by both type of property and mortgage, for all major types of financial institutions, was provided by this study (see Table A).

With respect to estimates of mortgage debt held by federal agencies, and by holders included in the residual catchall category, individuals and others, the paper brings together more detailed data, both previously published and unpublished, than existed before in any one place. For federal agencies, nine separate types of holders (listed on page 000) have been identified, including those no longer in existence, and their holdings classified by type of property.

Included in the individual and others category, are separate estimates for total mortgage portfolios of seven different types of miscellaneous financial institutions (see page 000), amounting at the end of 1955 to one-sixth of the total reported held by this entire miscellaneous group. No reliable information could be obtained on the holder distribution of the remaining five-sixths of mortgage debt in this group. Moreover, meager information on the mortgage portfolios of identified holders did not permit a breakdown by type of mortgage debt, and the varying reliability of estimates of their total mortgage holdings may be judged from notes to Table 2, columns 10 through 16.

Estimates for the two most important holders in the group -- mortgage companies and personal trust funds -- probably represent the extremes of reliability. For mortgage companies, estimates are firmly based on balance sheets of 860 companies holding the bulk of assets of all mortgage companies in the United States, obtained in the course of a special study on the postwar rise of mortgage companies.¹⁷ For personal trust funds, estimates can be considered only as rough approximations based on information received from a few large institutions administering trusts, and on other fragmentary statistics.¹⁸ Estimates of total mortgage holdings of other miscellaneous types of financial institutions, all much smaller than those of mortgage companies and personal trusts, may be taken as fairly reliable. Published reports on which annual estimates are based include: for fire, casualty, and marine insurance companies, annual financial statements; for fraternal orders, credit unions, and pension funds, an important segment of holdings available in reports of federal and state agencies; and for investment companies, the reports of the two major companies which account for the bulk of mortgage holdings of this group. Quarterly estimates in all cases are based on linear interpolation.

Quarterly Estimates

Quarterly estimates, published here for the first time for several categories within each of the three major classifications -- type of property, type of mortgage, and type of holder -- are based on a variety of different sources set forth in the notes to each table. Where direct sources were lacking, estimates were derived by interpolating between the end-of-year ratios of a series and the most closely related aggregate -- independently available or estimated -- of which it is a part. These interpolated ratios were then applied to quarterly totals of the closely related aggregates.

This technique is particularly appropriate for interim estimates of outstanding debt because relationships between debt components do not change much during the course of a year -- seldom more than 4 percentage points -- and the extent of quarterly interpolation is, therefore, small. Changes in mortgage debt during a period are related directly to outstandings at the beginning of the period, and they represent only a small percentage of such beginning balances. A wide divergence in movements between related series would have to occur during a year, therefore, to cause significant deviation in quarterly relationships from the trend sug-

¹⁷Saul B. Klamman, *Postwar Rise of Mortgage Companies*, National Bureau of Economic Research, Occasional Paper 60, in press.

¹⁸These estimates, developed in connection with other segments of the National Bureau's Postwar Capital Market Study, will be more fully described in a forthcoming publication on quarterly flows of funds through the capital markets.

gested by beginning and end-of-year ratios. The final accuracy of the interpolated quarterly series, of course, depends largely on the extent to which the aggregate, of which it is a part, is independently reported or estimated.

Usefulness of the New Estimates

The new data and estimating framework developed here should be useful as a basis for a more meaningful analysis of real estate and mortgage markets. They have already proved basic to the analysis of the decade flow of mortgage funds in the study of postwar mortgage markets. The continuation of detailed and comprehensive estimates of mortgage debt outstanding on a regular and current basis, so far as possible, should permit a better understanding of market events as they unfold.

Analysis of mortgage markets, parallel to that of construction markets, made possible by data in that area, is now permitted by more detailed data on the type of residential property securing the nation's mortgage debt and by the separation of mortgage data between residential and non-residential properties. Differences in the operation and growth of markets for individual dwellings, multifamily projects, and business properties are illuminated by data on the flow of mortgage funds into each of these markets.

Our understanding of the development of real estate and mortgage markets, of the varying participation of financial institutions within them, and our insight into the different methods of lender operation are all advanced by the availability of estimates on types of mortgage flows — FHA, VA, conventional — within these markets and by type of mortgage lender. For example, of the sharp net increase of \$80 billion in the flow of mortgage funds into markets for one- to four-family homes between 1945 and 1956, savings and loan associations accounted for well over one-third, while mutual savings banks accounted for less than one-seventh. This widely divergent participation is explained almost entirely by differences in participation in the conventional mortgage market; savings and loan associations accounted for over one-half of the total net flow of conventional one- to four-family mortgage funds, while savings banks accounted for only 3 per cent. The sharply increasing participation of mutual savings banks in the market for home mortgages in recent years, on the other hand, is explained by their rapid rise to leadership as a source of VA-guaranteed mortgage funds. In 1956 they accounted for 36 per cent of the flow of such funds into home mortgages compared with 30 per cent for savings and loan associations. By way of contrast to the varied participation of mutual savings banks in markets for conventional and federally underwritten home mortgages, they are by far the largest

supplier of funds for both conventional and federally underwritten multifamily residential mortgages, accounting for about two-fifths of the net flow of funds into both types of mortgages in the postwar decade. This is explained partly by the concentration of savings banks in eastern cities where most multifamily construction has occurred, and partly by the fact that savings and loan associations, the largest conventional mortgage lenders, participate only in a small way, by tradition and by law, in multifamily mortgage markets.

A foundation for these market observations, and for others generally assumed but not verified, is provided by the new data on type of mortgage within property classifications by type of lender. The way is cleared, also, for new analyses of and insights into market behavior not previously possible. The usefulness of the data generally is enhanced by their availability on a quarterly basis, which in the course of time should permit the separation of seasonal fluctuations, and hence the detection of significant short-term movements. Vistas are opened to future study in the relationship of net mortgage flows to short-term changes in institutional and capital market developments, and in federal mortgage, fiscal, and monetary programs and policies. These judgments seem valid notwithstanding important shortcomings in the estimates and in basic parts of the entire framework of data on outstanding mortgage debt which are considered in the following section.

3. DESCRIPTION AND APPRAISAL OF DATA ON OUTSTANDING MORTGAGE DEBT

Including the new estimates, more detailed and comprehensive statistics are available on mortgage debt outstanding than on other areas of mortgage finance. Even so, many serious gaps and shortcomings in the data, chiefly concerning mortgage portfolios of holders other than the four main types of financial institutions and of Federal agencies, remain and are pointed out in this section.

The several series which make up the body of mortgage debt statistics are based on a wide variety of sources and are of varying degrees of quality. Most of the basic data originate in financial reports of mortgage lenders to supervisory authorities or trade associations, or in other reports to federal agencies. Until early 1953, the several types of widely scattered data on mortgage debt were brought together into comprehensive annual time series in only one regularly published secondary source, the *Survey of Current Business* of the Department of Commerce. Since then, annual data, in limited classifications, have been published by this agency each