Abstract

The HUD Property Owners and Managers Survey (POMS) can be utilized to analyze a number of housing-finance related policy issues. This paper offers some findings relevant to multifamily finance from preliminary analysis of POMS data, offered in the spirit of illustrating potential uses of the data base. Adjustment techniques to correct for the effects of data truncation are developed and are applied to derive estimates of number of units per property, the size of the multifamily mortgage stock, and the magnitude of annual mortgage origination volume. Mortgage origination volume for 1995 is estimated using both a "hot-deck" and a regression-based imputation approach. Results from the internal POMS file at the Census Bureau as well from the public-use version of the file are included here. Advantages and shortcomings of POMS in relation to a number of other multifamily data sources are noted, as are possible directions for future research.

The Property Owners and Managers Survey and the Multifamily Housing Finance System[1]

Introduction

Discussion of policy issues in connection with the multifamily mortgage market in the 1990s have been significantly shaped by enactment of Federal legislation in 1992 establishing affordable goals for Fannie Mae and Freddie Mac, the two principal government sponsored enterprises (GSEs) in the mortgage markets.[2] In recognition of the substantial public benefits provided to the GSEs by federal sponsorship, HUD established minimum standards for the acquisition of mortgage loans on properties (a) affordable to low- and moderate ("low-mod") income families; (b) located in geographic areas underserved by the mortgage market; and (c) affordable to low-income families in low-income areas and very-low-income families, which is referred to as the "special affordable" housing goal in HUD's regulations.[3]

In setting the housing goals, HUD is statutorily required to consider a number of factors including the size of the conventional mortgage market relative to each of the housing goals.[4] The Department has found that in 1997, the GSEs represented acquired or guaranteed mortgages representing approximately 39 percent of units mortgaged that year. However, their transactions accounted for only 30 percent of conventionally

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[1] I would like to thank Fred Eggers, Ron Sepanik and Dav Vandenbroucke of HUD's Office of Policy Development and Research (PD&R) for their help interpreting the POMS data base. Acknowledgment is also due Harold Bunce of PD&R for extensive comments on an earlier draft. Howard Savage of the Housing and Household and Economic Statistics Division at the Bureau of the Census and Jack Goodman of the National Multi Housing Council provided additional technical assistance. Ming Chow and David Ni of Computer Based Systems, Inc. provided research assistance. Yongheng Deng provided valuable comments on an earlier version of this paper presented at the January, 1998 meetings of the American Real Estate and Urban Economics Association, as did other participants in the session. Responsibility for any remaining errors is my own. The views expressed here are those of the author and shold not be construed as representing those of the U.S. Department of Housing and Urban Development.

[2] The title of this legislation is the Federal Housing Enterprises Financial Safety and Soundness Act of 1992 (FHEFSSA). For details see U.S. Department of Housing and Urban Development (1995). Analysis of the multifamily activities of the GSEs since the goals were implemented is contained in Segal and Szymanoski (1997).

[3] An interim rule covering 1993-1994 (and later extended to 1995) became effective January 1, 1993. A Final Rule that became effective January 1, 1996 was published in the Federal Register December 1, 1995. A Proposed Rule covering 2000-2003 was published in the Federal Register March 8, 2000. See http://www.hud.gov/gse/.

[4] Other factors that HUD is required to consider in setting the low-mod goal are (1) national housing needs; (2) economic, housing, and demographic conditions; (3). The performance and effort of the enterprises toward achieving the Low- and Moderate-Income Housing Goal in previous years; (5) the ability of the enterprises to lead the industry in making mortgage credit available for low- and moderate-income families; and (6) the need to maintain the sound financial condition of the enterprises. Similar factors apply to the other housing goals.

financed units meeting the low-mod goal and 24 percent of units meeting the special affordable goal.

GSE performance can be determined directly from loan-level data provided by Fannie Mae and Freddie Mac to HUD. But their performance relative to the conventional mortgage market can be measured only by measuring or estimating the various components of that market, including both single-family and multifamily properties. Because of the disproportionately large share of multifamily units qualifying for each of the housing goals, the size of the conventional multifamily origination market is therefore of critical significance in establishing a benchmark against which GSE performance can be evaluated.

Multifamily loans represent a relatively small portion of the GSEs' business activities. For example, Within much of the single-family mortgage market, the GSEs occupy an undisputed position of industrywide dominance, holding loans or guarantees with an unpaid principal balance (UPB) of $1.5 trillion, comprising 36 percent of $4.0 trillion in outstanding single-family mortgage debt as of the end of 1997. In multifamily, the overall market presence of the GSEs is more modest. At the end of 1997, the GSEs direct holdings and guarantees were $41.4 billion, representing 13.8 percent of $301 billion in outstanding multifamily mortgage debt.[5] Viewed from another perspective, multifamily loans held in portfolio or guaranteed by the GSEs at the end of 1997 totaled $41.4 billion, less than 3 percent of their single-family combined portfolio and guaranteed holdings. In comparison, the outstanding stock of multifamily mortgages represent approximately 8 percent of the overall stock of mortgage debt.[6]

However, because of the relatively high degree of affordability of rental properties, the multifamily market contributes significantly to GSE transactions meeting the low-mod and special affordable goals. In 1997, Fannie Mae's multifamily purchases represented 13.4 percent of their total acquisition volume, measured in terms of dwelling units. Yet these multifamily purchases comprised 26.7 percent of units qualifying for the Low- and Moderate Income Housing Goal, and 44.4 percent of units meeting the Special Affordable goal. Multifamily purchases were 8.2 percent of units backing Freddie Mac's 1997 acquisitions, 18.8 percent of units meeting the Low- and Moderate Income Housing Goal, and 31.4 percent of units qualifying for the Special Affordable Housing Goal.[7] The multifamily market therefore comprises a significant share of units meeting the low-mod

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[5] Federal Reserve Bulletin, June 1998, A 35. The comparable figure for year-end 1992, before the interim housing goals took effect, was 10.5 percent. (Federal Reserve Bulletin, (December 1993), A 38.)

[6] Federal Reserve Bulletin, (June 1998), A 35.

[7] 1997 Annual Housing Activity Reports, Table 1.

and special affordable goals for both GSEs, and the goals may have contributed to increased emphasis by both GSEs on multifamily in the period since the Final Rule took effect in 1995.[8]

The majority of units backing GSE multifamily transactions meet the low-mod because the great majority of rental units are affordable to families at 100 percent of median income, the standard upon which the goal is defined. For example, 33.3 percent of units securing Freddie Mac's 1997 one-family owner-occupied mortgage purchases met the low-mod, compared with 95.9 percent of its multifamily transactions. Corresponding figures for Fannie Mae were 33.8 percent and 85.2 percent.[9] For this reason, multifamily purchases represent a crucial component of the GSEs' efforts in meeting the low-mod.

Because such a large proportion of multifamily units qualify for the low-mod and for the special affordable goal, Freddie Mac's weaker multifamily performance adversely affects its overall performance on these two housing goals relative to Fannie Mae. Units in multifamily properties accounted for 7.9 percent of Freddie Mac's mortgage purchases during 1996-1998, compared with 12.2 percent for Fannie Mae. Fannie Mae's greater emphasis on multifamily is a major factor contributing to the strength of its housing goals performance relative to Freddie Mac.

In recognition of their importance to GSE performance relative to the housing goals, issues regarding the size and structure of the larger multifamily market figured prominently in the public discussion and policy analysis surrounding the HUD rulemaking process during 1995. Ultimately, the levels at which HUD set the goals were based on analyses of the share of the market represented by goal-qualifying mortgages. Estimation of market parameters such as the average loan amount per unit proved especially difficult in multifamily because of uneven data quality. The size of the multifamily market became the object of controversy, with the GSEs arguing that $15 billion was a reasonable estimate based on data from the Home Mortgage Disclosure Act (HMDA), while HUD concluded that a $30 billion figure, drawn in part from the Survey of Mortgage Lending Activity, was more accurate.[10]

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[8] William Segal and Edward J. Szymanoski. The Multifamily Secondary Mortgage Market: The Role of Government-Sponsored Enterprises. Housing Finance Working Paper No. HF-002, Office of Policy Development and Research, Department of Housing and Urban Development, (March 1997).

[9] HUD analysis of GSE loan-level data. Affordability data are missing on 11.1 percent of units backing Fannie Mae's 1997 multifamily acquisitions, which may contribute to the disparity between Fannie Mae and Freddie Mac regarding percentage of multifamily acquisitions contributing to the low-mod goal.

[10] Analyses of multifamily issues connected with the GSE housing goals are contained in Blackley and Follain (1995); Bogdon and Follain (1995); Crews, Dunsky, and Follain (1995a, b); Dunsky, Follain and Ondrich (1995); and appendices to U.S. Department of Housing and Urban Development (1995).

The HUD Property Owners and Managers Survey (POMS) represents a relatively new data base, not available during the debate regarding the GSE housing goals, that can be utilized to analyze a number of policy issues relevant to GSE performance in the context of the broader multifamily mortgage market. This paper offers some findings relevant to multifamily finance from preliminary analysis of POMS data, offered in the spirit of illustrating potential uses of the data base. Advantages and shortcomings of POMS in relation to a number of other multifamily data sources are noted, as are directions for future research.

Previous analyses of POMS data include Goodman (1997a, 1997b); Harvard University Joint Center for Housing Studies (1997); and U.S. Department of Housing and Urban Development (1996, 1997); and Bogdon and Ling (1998). For POMS documentation, see U.S. Bureau of the Census (n.d.) and U.S. Department of Housing and Urban Development (1996b).

The paper begins with a summary of other data sources that have been drawn upon in analyses of the multifamily mortgage market. Section II summarizes the characteristics of the POMS sample. Findings regarding the average number of units per property are presented in Section III. In Section IV, the analysis turns to the issue of mortgage loan amount, utilizing a "hot deck" approach to imputate of missing values, ultimately for the purpose of estimating the size of the conventional multifamily mortgage origination market in 1995. This discussion is supplemented in Section V with a regression-based imputation approach. Section VI discusses the reasonableness of estimates of 1995 origination volume by drawing on additional data sources and methodologies. Section VII consists of a brief conclusion.

I.   Other Multifamily Data Sources

A lack of reliable data has come to be recognized as one of several features of the multifamily housing finance system that demarcates it from single-family finance. It does not appear that there is a single data base that comprehensively and consistently describes all segments of the multifamily mortgage market. Significant inconsistencies between data sources are evident. Studies of the multifamily mortgage market, therefore, typically draw upon a number of different data sources in order to piece together an understanding of the overall market.

Home Mortgage Disclosure Act (HMDA).   HMDA is designed to provide complete loan level data that includes a number of fields specially relevant to multifamily finance including loan amount at origination; type of lender (e.g., bank, thrift, mortgage bank); property location by census tract; loan approval/denial; conventional/government insured status; and loan purchase by Fannie Mae or Freddie Mac. Fields not covered in HMDA include loan-to-value ratio; refinance/purchase status; number of units; and affordability/rent information.

HMDA is intended to provide data on all multifamily mortgage originations in metropolitan areas in the period beginning January, 1990. Loans backed by properties in non-metropolitan areas are excluded.

The principal shortcoming of HMDA is that it suffers from a significant degree of under-reporting, especially with regard to commercial banks and mortgage banks, apparently because of confusion over reporting requirements. For example, HMDA reports that FHA-insured mortgages, which are originated primarily by mortgage bankers, totaled $383 million in 1995; FHA figures put this total at $1.7 billion. As much as 50 percent of Fannie Mae's multifamily purchases are not reported in HMDA.[11]

Survey of Mortgage Lending Activity (SMLA). The SMLA is compiled by FHA's Office of the Comptroller. Instead of a loan-level format, data are presented in summary tables providing annual origination volume by type of lender and by new/existing status of property. Thrift data are taken from OTS call reports and are therefore considered reliable. Survey data are utilized to estimate totals for other types of institutions, and are considered less reliable.

Questions have been raised about SMLA origination volume figures for commercial banks, reported at $19 billion for 1996. Many regard this figure as substantially overstated, possibly because of changes in the lending industry since the survey was designed 25 years ago, when commercial banks' multifamily market share was larger than today.[12]

GSE Public Use Data Base (PUDB). The PUDB consists of loan-level data on each mortgage purchase by Fannie Mae and Freddie Mac starting January 1, 1993. The source of these data are computer tapes collected by HUD from the GSEs as part of its regulatory oversight of the two Enterprises. Data fields included on the PUDB multifamily "Census Tract File" include mortgage loan amount (in ranges); census tract location; and various tract characteristics. A separate "National File," without census tract identifiers, includes affordability data; tract characteristics; number of units; and loan purpose (purchase/refinance/new construction/ rehabilitation). In order to protect the proprietary interests of the GSEs, as determined by the HUD Secretary, the two files cannot be merged.

The principal limitations of the PUDB are that (i) UPB is reported in ranges, rather than as a continuous variable; (ii) key measures of credit risk such as debt coverage ratio (DCR) and loan-to-value ratio (LTV) are missing; and (iii) only mortgages purchased by the GSEs are included.

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[11]Crews, Dunsky, and Follain 1995a.

[12] Crews, Dunsky and Follain, 1995b, 3ff; and ICF (1994).

Residential Finance Survey (RFS). Conducted by the Census Bureau most recently in 1990, the RFS provides detailed information on a sample of housing units drawn from the decennial census. Unlike HMDA, SMLA, and the PUDB, therefore, the RFS is used principally to measure the multifamily mortgage stock, rather than the flow of new originations. RFS data fields including number of units; purchase price; property value; mortgage loan amount; contract interest rate; and mortgage term are presented in summary form in a published volume.[13] As part of a study commissioned by HUD, Bogdon and Follain (1996) were granted access to confidential loan-level records maintained by the Census Bureau. These data were utilized to conduct a detailed analysis of default risk in the multifamily mortgage stock with an emphasis on DCR, LTV, and contract interest rate.

Multifamily Housing Institute. Efforts are underway at the Multifamily Housing Institute to construct an "Apartment Performance and Trends DataSource" ("APT") which will provide loan performance data to assist in evaluating credit risk, thereby facilitating securitization. Toward this end, the new database will provide loan level data on approximately 200 data elements, approximately two-thirds of which represent stable information that is not expected to change (e.g., UPB and LTV at origination, property location); other, dynamic elements such as rents and loan performance will be periodically updated. The Institute has collected data on approximately 24,00 properties and 3 million apartment units as of this writing.[14]

II. POMS Sample

A nationwide sample of 16,268 housing units identified as rented or vacant-for-rent in the 1993 American Housing Survey (AHS) National Sample was selected for the HUD Property Owners and Managers Survey (POMS), conducted between November, 1995 and June, 1996. The original sample was reduced by 2,990 units that were determined to be "out-of-scope" for a number of reasons such as ownership by a public housing authority; occupancy by the property owner; change in tenancy status after the 1993 AHS-National survey; new construction; or for other reasons.[15] The sample was further reduced by another 5,009 units that were classified as "noninterviews." The POMS public use data base made available from the Census Bureau consists of two files comprising 8,258 records, each corresponding to a single interview of a property owner or manager.

Data fields reported in POMS include mortgage loan amount, contract interest rate, estimated property value, purchase price, rents, operating costs, number of units, and others with specific relevance to housing finance. The potential for linking records in

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[13] Bureau of the Census, 1990 Census of Housing, Residential Finance, 1990 CH-4-1.

[14] *Update*, newsletter of the Multifamily Housing Institute, Fall 1997.

[15] U.S. Census Bureau (n.d.).

POMS to those in the AHS[16] offers the potential of combining POMS housing finance data with property age and condition, tract location, and other variables considered relevant to the pricing and availability of mortgage credit, permitting analysis of the relation between credit risk and housing affordability.

Weighting. The POMS sample includes 4,256 multifamily properties, representing 15,029,001 units after applying Census-derived unit weights. By design, the sum of POMS unit weights is close to the total of 15,137,000 multifamily units reported in the 1993 American Housing Survey.[17]

In addition to unit weights, the Census Bureau has also added property weights to the POMS data file. The property weights were calculated by dividing the unit weight by the number of units in a property, and then applying a noninterview adjustment factor[18] and a ratio estimate factor.[19] Summing property weights across the 4,256 multifamily properties in the POMS sample yields a total universe of 518,840 multifamily rental properties. This total compares with 622,201 multifamily rental properties reported in the 1991 Residential Finance Survey.[20]

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[16] Such links are not possible in the public use files, and require access to confidential Census data.

[17] This figure is the sum of renter-occupied and vacant-for-rent units located in structures with five or more units reported in the 1993 AHS. Note that in AHS, the unit of analysis is the structure, while in POMS it is the property. The following example illustrates the difference between the two approaches: Consider three duplexes on a single parcel of land. A unit in such a property would be identified as located within a two-unit structure in AHS, but in a 6-unit property in POMS.

[18] The noninterview adjustment factor adjusted the weights of interviewed records to account for records that could not be interviewed (noninterviews). POMS records were classified into noninterview cells by using AHS sample information for geography and units-in-structure. The noninterview adjustment factor was then computed separately for each cell.

[19] If there are a sufficient number of housing units in a Census primary sampling unit (PSU, comprised of counties or groups of counties and independent cities), the PSU is included in the AHS sample with certainty, and is called a "self-representing PSU." Other, "nonself-representing," PSUs are grouped into strata, and one PSU is selected to represent all PSUs in the stratum. In calculating POMS property weights, ratio estimation is used to reduce the portion of the variance due to the sampling of nonself-representing primary sampling units. These factors were identical to the first-stage ratio estimate factors used for the POMS unit-level weighting.

[20] The discrepancy between POMS and RFS total property weights arises in part because of a difference in the unit of analysis, which in POMS is the property, in contrast to RFS, where the unit of analysis is the mortgage, for mortgaged properties. According to Census Bureau staff, there are a relatively large number of multifamily properties with more than one first mortgage, whether because the property was built in stages or for other reasons. Recalculation of POMS property weights using an RFS-based control total (corrected for additions and deletions from the rental housing stock between 1990 and 1995) would overcome RFS/POMS discrepancies.

As illustrated below, the choice of unit versus property weights leads to widely divergent population estimates based on POMS data. This, in itself, is not a deficiency of the survey, but is a consequence of a salient institutional characteristic of the multifamily housing stock: the typical multifamily unit is located in a relatively small property as measured by the number of units; whereas the typical multifamily property is relatively large property. Table 1, based on RFS data, illustrates the difference in the distribution of units and of properties over unit size groups.

III. Number of Units per Property

The number of dwelling units in multifamily properties has become the object of policy concern, in part because of evidence that financing for smaller properties is more difficult.[21] Using POMS to calculate average number of units per property illustrates a potential use of the database as well as some of the complexities involved.

Multifamily Housing Stock. Average number of units per property can be calculated both for the entire stock of multifamily properties as well as the flow of 1995 originations.[22] The average for the stock is 27.3 units per property, which compares with an estimate based on Residential Finance Survey (RFS) data of 25.0 in Bogdon and Follain (1995).

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[21] U.S. Department of Housing and Urban Development 1994a; U.S. General Accounting Office 1993; National Mortgage News, August 4, 1997.

[22] Because of subsequent refinances, 1995 originations represent the most complete finance data of any origination year in the POMS sample.

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Table 1
Distribution of number of properties and of dwelling units by unit size group
Residential Finance Survey
Multifamily properties (5+ units)
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Unit size group	Properties	Cum. %	Units*	Cum. %
5 - 9	343,844	55.3%	2,406,908	14.5%
10 - 19	126,698	75.6%	1,837,121	25.6%
20 - 29	46,477	83.1%	1,138,687	32.5%
30 - 39	23,313	86.8%	804,299	37.3%
40 - 49	16,681	89.5%	742,305	41.8%
50 - 74	20,407	92.8%	1,265,234	49.4%
75 - 99	10,574	94.5%	919,938	55.0%
100 - 149	13,675	96.7%	1,702,538	65.2%
150 - 199	7,623	97.9%	1,326,402	73.2%
200 - 299	7,711	99.2%	1,923,895	84.8%
300 - 499	4,104	99.8%	1,639,548	94.7%
500 - 999	944	100.0%	707,528	99.0%
1000+	150	100.0%	168,750	100.0%

* Midpoint of unit size group multiplied by number of properties in group for all groups with < 1000 units. Average number of units in properties with 1000+ units estimated from POMS.

The effort involved in calculating this figure for the flow of 1995 originations is complicated by the fact that mortgage origination year information is missing for nearly half of the properties in the sample. The missing data problem regarding origination year, as well as other finance-related fields such as mortgage loan amount at origination, is correlated with property size: survey respondents on larger multifamily properties are more often third-party managers who apparently do not know, or do not have the authority to release, mortgage loan-related information.[23] Mortgage origination year is missing on 22.6 percent of 5 - 9 unit mortgaged properties and 52.3 percent of mortgaged properties with 100 or more units. (Table 2, line 1d.) [24]

Because of differences in the degree of data truncation between unit size categories, the strategy utilized to estimate units per property begins by calculating averages for each unit size category separately for 1995 reported observations and for observations where origination year data are missing. These estimates are reported on lines 2e and 2f (1995) and 1e and 1f (missing origination year) on Table 2. The weighted

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[23] On the incidence of third-party management by property size, see Goodman (1997b).

[24] These unit size categories were selected because they are identical to those used by the Bureau of the Census in calculating POMS weights. Note that the percentage of observations with missing origination year information is slightly different if unit weights are used, as shown in line 1b.

number of units and of properties within each unit size category is found in lines 2a and 2c (1995) and 1a and 1c (missing origination year).

As a first approximation, it would appear reasonable to assume that the percentage of "missing origination year" mortgaged properties that are in fact 1995 originations would be the same as the percentage of 1995 originations in the data for which origination year is known, and a proportion share of missing origination year observations are also assumed to be unmortgaged.[25] Thus it is assumed that 9.1 percent of 5 - 9 unit properties with missing origination year are in fact 1995 originations (line 2d). The product of line 2d and line 1c then yields an imputation of 5,753 missing-origination-year 5 - 9 unit properties to the 1995 origination year, using property weights to derive a population estimate (line 3b). Similarly, the use of unit weights results in an estimate of 37,833 missing origination-year-units (line 3a) in 5 - 9 unit properties that were in fact mortgaged during 1995 (lines 2b, 1a, and 3a).

Combining reported and imputed 1995 originations, applying property and unit weights, and then calculating separate weighted averages over unit size groups results in an estimate of approximately 201 units per property, averaging over units (line 5a), and 33 units per property if the average is taken over properties (5b). These widely divergent estimates underscore the significance of differences between the distribution of units and properties in the multifamily stock noted previously.[26] It is evident from Table 1 that properties with missing origination years are larger than properties with reported 1995 originations (lines 1e, 1f, 2e, and 2f, final column), an issue taken up in the following section.

IV.   Mortgage Loan Amount

The POMS data base includes a number of fields pertaining specifically to mortgage indebtedness including amount of first mortgage when made; year first mortgage made; mortgage insurance status; current interest rate; and mortgage purpose (purchase/refinance). Information is also provided on junior financing. The use of these data fields is complicated considerably by missing data, however. Thirty seven percent of respondents did not know whether the property they owned or managed had been mortgaged (Table 3); 72 percent of respondents who identified themselves as representing mortgaged properties did not know the amount of first mortgage when originated (Table 4).

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[25] In 93 percent of unweighted missing origination year observations, a property manager or other agent of the owner was the respondent. Thus the hypothesis can be rejected that missing origination year observation year observations are associated with mortgage loans so highly seasoned that the owner has forgotten the origination year.

[26] Note that the 6:1 ratio between unit- and property based averages is approximately similar to the proportion between estimates of the corresponding medians based on the RFS data in Table 1.

Lack of information regarding mortgage indebtedness is concentrated among third-party managers whose responsibilities evidently do not often require detailed knowledge of project financing. Among respondents who identified themselves as the property owner, only six percent did not know whether their property was mortgaged, compared with 42 percent of property managers (Table 5). Twenty three percent of property owners with mortgaged properties did not know the amount of their first mortgage when originated, compared with 73 percent for property managers (Table 6).

Third-party management is highly correlated with property size. As shown in Table 7, only 32 percent of respondents representing 5 - 9 unit properties were property managers or other agents of the owner, compared with 90 percent for properties with 100 or more units. This finding suggests that lack of mortgage information is concentrated among larger properties, a hypothesis which is confirmed by Tables 8 and 9. In properties with 5 - 9 units, 71 percent of respondents knew whether the property was mortgaged, compared with only 56 percent of respondents in properties with 100 or more units. (Table 8.) Excluding properties identified as unmortgaged, 49 percent of respondents in small, 5-9 unit properties knew the mortgage loan amount at origination, compared with only 20 percent for large properties with 100 or more units. (Table 9.)

Table 2

Average number of units per property and total number of units by size groups, 1995 originations

Estimated from Property Owners and Managers Survey (POMS)

	Unit size category					
	5 - 9	10 - 19	20 - 49	50 - 99	100+	All*
1 Missing origination year						
a Units	463,279	518,746	811,749	925,424	3,929,186	
b Units as % all orig. yrs.*	24.5%	35.3%	36.5%	4.6%	52.8%	
c Properties	63,539	37,735	23,951	12,066	17,245	
d Properties as % all orig. yrs.*	22.6%	35.1%	33.9%	45.4%	52.3%	
e Average units per property (unit weights)	6.7	13.6	34.8	75.0	320.2	205.5
f Average units per property (property weights)	6.5	13.2	32.2	72.1	216.3	40.6
2 1995 reported originations						
a Units	116,873	66,484	97,254	117,556	396,026	
b Units as % all nonmissing orig. yrs.*	8.2%	7.0%	6.9%	11.0%	11.3%	
c Properties	19,695	4,273	3,176	1,839	1,792	
d Properties as % all nonmissing orig. yrs.*	9.1%	6.1%	6.8%	12.7%	11.4%	
e Average units per property (unit weights)	6.7	13.7	32.2	69.1	327.3	179.5
f Average units per property (property weights)	6.3	13.7	30.6	65.8	220.3	25.9
3 Missing orig. year obs. imputed to 1995						
a Units	37,833	36,340	55,909	101,344	442,703	
b Properties	5,753	2,308	1,631	1,529	1,962	
4 Reported and imputed 1995 observations						
a Units	154,706	102,824	153,163	218,900	838,729	
b Properties	25,448	6,580	4,807	3,368	3,754	
a Units	6.7	13.7	33.2	71.8	323.6	200.7
b Properties	6.4	13.5	31.2	68.7	218.2	33.0

* Within unit size category.

** Reported and imputed

*** Reported and imputed; weighted average across unit size groups

Table 3
Mortgage status
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unweighted data

	Frequency	Percent
Mortgaged	2006	47.6%
Unmortgaged	652	15.5%
Not reported	1557	36.9%
TOTAL	4215	100.0%

Table 4
Mortgage loan amount status
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unweighted data
Properties identified as unmortgaged excluded

	Frequency	Percent
Reported	1041	28.4%
Not reported	2626	71.6%
TOTAL	3667	100.0%

Table 5
Mortgage status by respondent identity
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unweighted data

	Mortgaged	Unmortgaged	Not reported	TOTAL
Property owner	64.8%	29.0%	6.3%	100.0%
Property manager	46.9%	11.6%	41.5%	100.0%
Other agent of owner	45.8%	13.9%	40.3%	100.0%

Table 6

Respondent identity by mortgage loan amount status
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unweighted data

	Reported	Unmortgaged	Not reported	TOTAL
Property owner	53.9%	23.4%	22.7%	100.0%
Property manager	16.5%	10.1%	73.5%	100.0%
Other agent of owner	23.4%	11.1%	65.5%	100.0%

Table 7

Property size group by respondent identity
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unweighted data

Number of units	Property Owner	Property Manager	Other agent of Owner	TOTAL
5 - 9	67.8%	20.6%	11.6%	100.0%
10 - 19	51.9%	36.9%	11.1%	100.0%
20 - 49	39.2%	48.5%	12.3%	100.0%
50 - 99	18.5%	67.5%	14.1%	100.0%
100+	9.2%	72.0%	18.9%	100.0%

Table 8

Property size group by mortgage status
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unweighted data

Number of units	Mortgaged	Unmortgaged	Not reported	TOTAL
5 - 9	46.8%	34.1%	19.2%	100.0%
10 - 19	44.3%	26.5%	29.2%	100.0%
20 - 49	51.5%	17.7%	30.8%	100.0%
50 - 99	50.2%	11.0%	38.8%	100.0%
100+	46.6%	8.9%	44.4%	100.0%

Table 9
Property size group by mortgage loan amount status
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unweighted data
Properties identified as unmortgaged excluded

Number of units	Reported	Not reported	TOTAL
5 - 9	48.8%	51.2%	100.0%
10 - 19	37.9%	62.1%	100.0%
20 - 49	37.4%	62.6%	100.0%
50 - 99	28.6%	71.4%	100.0%
100+	20.3%	79.7%	100.0%

One method of estimating mortgage loan amounts for observations where this field is missing is to utilize the relationship between mortgage loan amount and number of units where both fields are populated to make inferences regarding observations where the number of units, but not the mortgage loan amount, is known.[27]   In order to take account of the possibility that this relation varies by property size, observations were divided into the size groups utilized by the Bureau of the Census for purposes of calculating weights, which are identical to those used in Tables 6-8 above.   It is assumed that, within each size group, the share of unmortgaged properties in the pool of properties where the mortgage loan amounts is not reported is the same as the share of unmortgaged properties in the pool where mortgage loan amount is reported.

Missing values for mortgage loan amounts were then calculated as the product of (a) the mean mortgage loan amount per unit for observations within known mortgage loan amounts, and (b) the number of units in the property, within the corresponding size group. In order to take into account that some observations with missing values for the mortgage loan amount were actually unmortgaged, however, this product was then multiplied by (c) the proportion of properties with nonmissing mortgage loan amounts that are identified as mortgaged, again within the corresponding size group. This approach of imputing missing values using relationships observed between variables in cases where the relevant fields are populated is sometimes described as "hot-decking."

Formally, define
$loan\_amt$ = mortgage loan amount at origination
t_units = total number of units in property
$unit\_upb$ = $loan\_amt/t\_units$
$m(unit\_upb)|$size group = mean value of $unit\_upb$ within t_units size
group* for $loan\_amt$ populated
prp_mrt = proportion of properties with nonmissing $loan\_amt$ that are
mortgaged within t_units size group*

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[27] Regarding imputation techniques for missing data, see Little and Rubin (1987); Rubin (1987); and Schafer (1997).

est_upb = estimated value of mortgage loan amount

loan_amt missing
est_ upb = m(unit_upb)|size group * t_units

loan_amt populated:
est_ upb = loan_amt for,

* t_units size groups:
      5 - 9 units
      10 - 19 units
      20 - 49 units
      50 - 99 units
      100+ units

      The aggregate mortgage loan amount represented by the entire multifamily housing stock originations can then be calculated as the sum over all size categories of the product of (a) average loan amount per unit, over all mortgaged and unmortgaged properties, incorporating estimated loan amounts for missing observations as specified above, and applying POMS unit weights, within each size category, and (b) the corresponding number of units in the population, calculated as the sum of POMS unit weights, over all mortgaged and unmortgaged properties, for that size category. Estimated aggregate loan amount within each size category is then summed across size categories to derive an estimate of the multifamily mortgage stock.[28]

      Table 10, which illustrates this procedure, shows considerable variation in mortgage loan amount per unit as between size categories. Calculating this average over all size categories, , including mortgaged and unmortgaged properties, and applying POMS unit weights, yields an estimate of $16,589. If the analysis is restricted to mortgaged properties, a figure of $23,779 is derived. It should be emphasized that population estimates derived using POMS property weights would diverge significantly from these figures.

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      [28] Alternatively, this total could be calculated as the product of loan amounts on mortgaged properties and the number of units in such properties. Because the latter quantity cannot be directly inferred from POMS due to missing data, however, the method utilized in the text is the preferred alternative.

Table 10			
Estimation of multifamily mortgage stock			
Property Owners and Managers Survey			
Multifamily properties (5+ units)			
Unit weights			
	(A)	(B)	(C)
	Average loan	Units in	Aggregate
Number of units	Amount per unit*	Population**	Loan amount***
5 - 9	14,780	1,894,444	$ 27,999,677,922
10 - 19	12,493	1,467,785	$ 18,337,596,263
20 - 49	14,399	2,223,786	$ 32,020,874,382
50 - 99	21,259	1,998,896	$ 42,493,769,846
100+	17,256	7,444,090	$128,457,456,824
TOTAL		**15,029,002**	**$249,309,375,237**

* Incorporates adjusted estimates for observations with missing loan amount data.
** Calculated as sum of POMS unit weights
*** (A) x (B)

The estimated size of the multifamily mortgage stock derived here from POMS data, $249 billion, is reasonably close to the actual year-end 1995 figure for the size of the multifamily housing stock published in the Federal Reserve Bulletin of $288 billion. The difference between these two estimates may be explained, in part, by the fact that the Federal Reserve figure includes not only first mortgages, but junior liens as well.[29] A more refined calculation would take into account paydown of principal on mortgage loans backing properties in the POMS sample.

Origination volume

POMS can also be utilized to estimate the annual flow of multifamily origination volume. Data are most complete for 1995, the survey year, since many prior-year originations would have been refinanced or paid down by the time the survey was conducted.

An additional difficulty in calculating annual origination flows from POMS is that the origination year is missing from a large percentage of observations, as noted previously. It is again assumed that the actual weighted distributions as between mortgaged/ unmortgaged, and, if mortgaged, of mortgage loan origination year, are identical to observations for which mortgage status and origination year are known. The total number of units in each size category that are reported as, or imputed to, 1995 originations (from Table 2) is then multiplied by the corresponding average mortgage loan

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[29] Steve Lumpkin, Board of Governors, Federal Reserve Bank.

amount per property for reported 1995 originations, to reach an estimate of 1995 origination volume of $37.2 billion as shown in Table 11.

V.   Estimating Origination Volume Using Regression-Based Imputation

Another way to impute mortgage loan amount for observations where this field is missing is to use regression-based techniques. In essence, this approach involves fitting a regression equation for the purpose of identifying the relationship between mortgage loan amount and specified independent variables for observations where all these fields are populated. The regression equation can then applied to observations where mortgage loan amount is missing in order to calculate "predicted" loan amount for these observations.

Table 11
Estimated mortgage loan amount by number of units, 1995 originations
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unit weights

Number of units	(A) Average Loan Amount per unit*	(B) Number of Units**	(C) Total mortgage Loan amount
5 - 9	$ 20,822	154,706	$ 3,221,335,127
10 - 19	$ 20,525	102,824	$ 2,110,407,223
20 - 49	$ 19,918	153,163	$ 3,050,729,260
50 - 99	$ 47,923	218,900	$10,490,372,852
100+	$ 21,794	838,729	$18,279,352,596
TOTAL		**1,468,321**	**$37,152,197,058**

* Reported 1995 originations.
** Actual and imputed 1995 originations, per Table 2.

An advantage of regression-based approaches is that they provide the analyst with the opportunity to utilize information from other fields as well as units in property for the purpose of exploiting observed relationships between these other fields and mortgage loan amount to increase explanatory power. A disadvantage of regression-based techniques, at least of the ordinary least squares approach used here, is that they may not be as flexible as the "hot-decking" approach outlined above in their treatment of nonlinear relationships between variables. By fitting a linear regression relationship, ordinary least squares may impose linearity in cases where such an assumption may not be appropriate. To some degree, this deficiency can be mitigated through the use of dummy variables, as discussed below.

Regression analysis of the POMS data is complicated by virtue of the fact that mortgage loan amount is "topcoded" on some observations in the public-use version of the data in order to protect the confidentiality of respondents. Presumably, disclosure of

raw, untopcoded mortgage loan-amount in conjunction with other fields would, in some instances, permit analysts to identify individual properties in the database. Consequently, partly in order to overcome limitations imposed by topcoding, access to internal, confidential Census bureau files was secured by applying for status, and being sworn in, as a Special Employee of the Census Bureau.

The first step in the imputation process was to identify the properties that reported to have been mortgaged in 1995 and where the mortgage loan amount was disclosed. These 138 nonmissing cases were used to estimate a regression equation linking mortgage loan amount and specified independent variables. A number of different regression specifications were considered. (See Appendix for details.) The preferred specification includes number of units in property; dummy variables to identify property location in the Northeastern, Midwestern, and Southern Census regions, and a dummy for properties with more than 1,000 units. The regional dummy variables were included to take account of the wide variation in property values across distinct markets in different geographic areas. The dummy for large properties was included in order to take account of an observed nonlinearity in the relationship between mortgage loan amount and number of units. This specification was chosen over others because it had the highest adjusted, R^2, approximately 0.69.

Table 12 summarizes regression results from the preferred specification. Number of units in property is significant at a p-value of 0.0001, confirming the strength of the relationship between number of units and mortgage loan amount. All of the dummy variables are negative in sign, indicating lower mortgage loan amounts in the Northeastern, Midwestern and Southern census regions relative to the Western region, which was the control group. Coefficients are significant at the 5 percent level for the Midwestern and Southern census region dummies. Finally, the dummy variable for properties with more than 1,000 units has a large, significant coefficient with a p-value of 0.0001.

Table 12
Regression Analysis of Mortgage Loan Amount, 1995 Originations
Property Owners and Managers Survey
Multifamily properties (5+ units)
Unit weights

	Parameter estimate	T	Prob > |T|		
INTERCEPT	1477530	2.907	0.0043	Adj. R^2=	0.6933
T_UNITS	18172	10.660	0.0001	F=	62.932
NE	-323736	-0.459	0.6533	Prob>F=	0.0001
MW	-1463703	-2.128	0.0352	DF=	132
S	-2094596	-2.896	0.0044		
BIG_PROP	25316150	6.613	0.0001		

The regression equation was first applied for the purpose of estimating mortgage loan amount for 97 properties in the sample identified as having been mortgaged in 1995, but where the mortgage loan amount was missing.

The next steps were to estimate mortgage loan amount for observations where (i) year of mortgage origination was missing, and it is unknown whether the property is mortgaged; and (ii) year of mortgage origination was missing, but the property is known to be mortgaged. Presumably, some portion of these observations represent 1995 originations as well.

The above regression equation was applied to 1,827 observations where year of origination and mortgage loan amount were both missing in order to determine predicted mortgage loan amount. In order to calculate the probability that a unit in a property with missing origination year was in fact located in a property mortgaged in 1995, the percent of units in properties mortgaged in 1995 was calculated as a proportion of the <u>nonmissing</u> total, defined as the sum of all units in properties where mortgage origination year was known plus all units in properties that were known to be unmortgaged.

Because it was observed that the 1995-origination-year percentage of units varied with the number of units in property, this calculation was conducted separately for properties with 5-9 units; 10-19 units; 20-49 units; 50-99 units, and 100 or more units. Based on the results of these tabulations, for example, the probability that a unit in a 5-9 unit missing-data property was actually in a property mortgaged in 1995 was 8.2 percent. This percentage was then applied to the loan amounts derived for the 5-9 unit missing-data cases using the regression equation. Corresponding adjustments were applied to each unit size category. Table 13 shows adjustment factors by number of units in property.

Table 13
1995 Originations as Percent of All Observations With Known Origination Year or Known to Be Unmortgaged
Property Owners and Managers Survey
Unit Weights

<u>Units in Property</u>	<u>1995%</u>
5-9	8.2%
10-19	7.0%
20-49	6.9%
50-99	11.0%
100+	11.3%

The final step in the imputation procedure was to add information from 12 observations where year of mortgage origination was missing but where the property was known to be mortgaged. Again, mortgage loan amount was estimated using the 1995 regression equation. In this case, however, a different adjustment factor was applied, taking into consideration the fact that these properties were known to be mortgaged. The

percentage of units in properties mortgaged in 1995 was calculated as a proportion of all units in mortgaged properties with known origination year, by unit size category. (Thus, unmortgaged properties were excluded from the calculation.) Based on these results, it was inferred that 13.2 percent of the loan amount imputed to 5-9 unit properties with missing origination year, but known to be mortgaged, actually represented 1995 originations, with corresponding adjustments applied to each of the other unit size categories. Table 14 shows adjustment factors by number of units in property.

Table 14
1995 Originations as Percent of All Observations With Known Origination Year
Property Owners and Managers Survey
Unit Weights

Units in Property	1995%
5-9	13.2%
10-19	10.8%
20-49	8.8%
50-99	13.0%
100+	13.0%

When the imputation process was complete, POMS unit weights were applied and adjusted loan amounts were summed across all observations. Combining reported and imputed mortgage loan amounts using the above regression-based technique yields estimated 1995 total multifamily origination volume of $39.1 billion. After removing FHA-insured loans totaling $2.3 billion, this method yields $36.7 billion as the estimated size of the conventional multifamily mortgage market. It is noteworthy that properties constructed during 1991-1995 were excluded from the POMS sample. For this reason, POMS yields a conservative estimate of the size of the 1995 multifamily mortgage market.

VI.   Other Estimation Methods

The reasonableness of origination volume estimates derived from the POMS data can be evaluated by comparing them with results derived from other sources and methodologies.

In 1995, Urban Institute researchers developed a model to project multifamily origination volumes from 1992 forward, based on data from the 1991 Survey of Residential Finance.[30] They applied a statistical model of mortgage terminations based on Freddie Mac's experience from the mid-1970s to around 1990. While mortgage characteristics in 1990 are not wholly similar to the characteristics of these historical mortgages financed by Freddie Mac, nevertheless the prepayment propensities of contemporary mortgages may at least be approximated by the prepayment experience of these historical mortgages. The research methodology took account of the influence of

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[30] Dunsky, Follain, and Ondrich (1995).

interest rate fluctuations on prepayments of the historical mortgages; the projections assumed that prepayments are motivated mainly by property sales. Forecast total mortgage origination volume (including FHA) based on mortgages existing in 1991 were $40.8 billion for 1995. After removing FHA-insured loans totaling $2.3 billion, this method yields $38.5 billion as the estimated size of the conforming multifamily mortgage market. The latter figure is closer to the $36.7 billion POMS regression imputation estimate and the $37.9 billion SMLA figure than to the $12.8 billion HMDA number.

Table 15 summarizes the various estimates of the 1995 conventional multifamily market discussed here. The POMS, Urban Institute, and SMLA figures are grouped together relatively closely in the $37-$39 billion range, with the HMDA figure of $12.8 billion representing an outlier.

Table 15	
Estimated 1995 Multifamily Origination Volume ($ billions)	
Urban Institute	$38.5
POMS	$36.7
SMLA figure	$37.9
HMDA	$12.8

VII.   Conclusion

The POMS data base provides a unique vantage point on the nation's multifamily housing stock with much unexplored potential. Because of the capability of linking POMS records with AHS unit-level records, for example, new possibilities have been established for the analysis of the availability and cost of mortgage credit by a range of factors including property characteristics, borrower characteristics, and neighborhood characteristics. Data truncation issues represent a significant challenge to the use of POMS mortgage finance data, and afford opportunities to apply and compare a variety of techniques   for   imputation   of   values   to   missing   observations.

Appendix:

Effect of alternative regression specifications on estimated 1995 multifamily origination volume

95 ORIGINATIONS
POMS Census internal file

MODEL 1	Parameter estimate	T	Prob > |T|		
INTERCEPT	53840	0.144	0.8857	Adj. R^2=	0.5582
T_UNITS	23086	13.195	0.0001	F=	174.097
				Prob>F=	0.0001
				DF=	136

est. '95 orig. flow = $ 35,806,944,774 (POMS unit weights)

MODEL 2	Parameter estimate	T	Prob > |T|		
INTERCEPT	1369563	2.345	0.0205	Adj. R^2=	0.5947
T_UNITS	23854	14.09	0.0001	F=	51.261
NE	-731135	-0.888	0.3762	Prob>F=	0.0001
MW	-2187034	-2.802	0.0058	DF=	133
S	-2852969	-3.476	0.0007		

est. '95 orig. flow = $ 31,134,729,255 (POMS unit weights)

MODEL 3	Parameter estimate	T	Prob > |T|		
INTERCEPT	648086	1.957	0.0524	Adj. R^2=	0.6758
T_UNITS	17115	9.956	0.0001	F=	143.761
BIG_PROP	27437492	7.093	0.0001	Prob>F=	0.0001
				DF=	135

est. '95 orig. flow = $ 43,422,707,330 (POMS unit weights)

MODEL 4	Parameter estimate	T	Prob > |T|		
INTERCEPT	1477530	2.907	0.0043	Adj. R^2=	0.6933
T_UNITS	18172	10.660	0.0001	F=	62.932
NE	-323736	-0.459	0.6533	Prob>F=	0.0001
MW	-1463703	-2.128	0.0352	DF=	132
S	-2094596	-2.896	0.0044		
BIG_PROP	25316150	6.613	0.0001		

est. '95 orig. flow = $ 39,064,009,211 (POMS unit weights)

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Housing Finance
W O R K I N G   P A P E R   S E R I E S

HF-010   **The Property Owners and Managers Survey and the Multifamily Housing Finance System,** *by William Segal,* September 2000.

The HUD Property Owners and Managers Survey (POMS) can be utilized to analyze a number of policy issues relating to financing for rental properties. In this paper, adjustment techniques to correct for the effects of data truncation are developed and are applied to derive estimates of number of units per property, the size of the multifamily mortgage stock, and the magnitude of annual mortgage origination volume, a critical parameter for benchmarking the performance of Fannie Mae and Freddie Mac. Mortgage origination volume for 1995 is estimated using both a "hot-deck" and a regression-based imputation approach. Results from the internal POMS file at the Census Bureau as well from the public-use version of the file are included here. Advantages and shortcomings of POMS in relation to a number of other multifamily data sources are noted, as are possible directions for future research.

HF-009   **1998 HMDA Highlights,** *by Randall M. Scheessele,* October 1999.

This paper describes home purchase and refinance mortgage market trends at the national level using HMDA data on mortgage denials and originations from 1998 and earlier. An important contribution of the paper is the recognition of manufactured home and subprime lenders that report to HMDA and their effect on mortgage market trends. The paper provides a list of 21 lenders that specialize in manufactured home lending and 200 lenders that specialize in subprime lending.

The paper finds that manufacture home loan applications and their increasing denial rates were the primary reason for the increasing conventional denial rat since 1993. The paper also finds that conventional prime home purchase lending to minority and lower-income borrowers increased substantially between 1993 and 1994 but growth in lending to these groups since 1994 was attributable to growth in FHA, manufactured home, and subprime lending.

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Additional information on housing finance topics also may be found by visiting the following web sites: http://www.huduser.org and http://www.rtk.net.

HF-008   **Do FHA Multifamily Mortgage Insurance Programs Provide Affordable Housing and Serve Underserved Areas? An Analysis of FHA's Fiscal Year 1997 Book of Business and Comparison with the GSEs,** *by Edward J. Szymanoski and Susan J. Donahue,* October 1999.

This paper analyzes the rent affordability of about 67,500 unassisted multifamily units, which were insured by FHA during Fiscal Year 1997, and the proportion of these units located in *underserved areas.* In addition, the paper also compares FHA's 1997 multifamily loans purchased by Fannie Mae and Freddie Mac (the government-sponsored enterprises, or GSEs) in regard to rent affordability and proportion of units located in underserved areas. The analysis shows that FHA is providing a substantial amount of modest cost rental housing and serving underserved areas with its unassisted multifamily mortgage insurance programs. About 95 percent of the FHA units in this study (including new construction and existing housing) were affordable at 100 percent of area median income, and over 40 percent were affordable at 60 percent of area median income. About 40 percent of the FHA units in the study were located in underserved areas. In drawing comparison between FHA and the GSEs, the paper first notes the differences as well as similarities between the multifamily programs of these respective agencies- for example, FHA offers higher loan-to-value ratios, lower debt service coverage ratios, and longer fixed-rate mortgage terms than do the GSEs. These underwriting differences notwithstanding, FHA's affordability and underserved area percentages for FY 1997 were very similar to those of comparable Fannie Mae and Freddie Mac mortgage purchases.

HF-007   **HMDA Coverage of the Mortgage Market,** *by Randall M. Scheessele,* July 1998.
This paper examines the coverage of HMDA data by taking advantage of loan-level data reported to HUD on mortgages insured by FHA and mortgages purchased by the GSEs. The FHA and GSE data bases provide an accurate standard against which HMDA data on FHA and GSE loans can be measured. The results of this paper provide background for using HMDA data to estimate the market share of loans for FHA and the GSEs by reporting HMDA coverage rates for FHA originations and GSE acquisitions of mortgages for 1993 through 1996. The paper finds that HMDA data under-reports GSE acquisitions mainly because a few large lenders fail to correctly report the sale of a significant number of their loans to the GSEs. Notwithstanding coverage issues, HMDA data continues to be the most comprehensive data base for measuring primary and secondary mortgage market activity.

HF-006   **Characteristics of Mortgages Purchased by Fannie Mae and Freddie Mac: 1996-97 Update,** *by Paul B. Manchester,* August 1998.

This paper (an update of HF-003) examines the mortgages purchased by Fannie Mae and Freddie Mac, the two major Government-Sponsored Enterprises (GSEs) in the conventional secondary mortgage market. The analyses focus on detailed borrower, locational, and loan characteristics of such mortgages in the 1996-97 period. In general, the report is based on the loan-level data that the GSEs submit annually to the Department. The paper finds that the GSEs generally increased their performance on the goals

established by HUD in 1995 and that they surpassed all of their 1996-97 goals, with Fannie Mae's performance exceeding Freddie Mac's performance on each of the goals in both years.

HF-005   **The GSEs' Funding of Affordable Loans: 1996 Update**, *by Harold L. Bunce and Randall M. Scheessele,* July 1998.

This paper (an update of HF-001) examines the borrower and neighborhood characteristics of (GSEs) in the conventional secondary mortgage market. The analysis is based on Home Mortgage Disclosure Act (HMDA) data on home purchase loans originated in metropolitan areas between 1992 and 1996. The GSEs' mortgage purchases are compared to all mortgages originated in the conventional conforming loan market, including originations retained in portfolio by banks and thrift institutions. The paper finds that there continues to be room for further increases in purchases of affordable loans by Fannie Mae and, especially, Freddie Mac.

HF-004   **The GSEs' Purchases of Single-Family Rental Property Mortgages**, *by Theresa R. DiVenti,* March 1998.

This paper examines the single-family rental mortgages purchased by Fannie Mae and Freddie Mac, the two major Government-Sponsored Enterprises (GSEs) in the conventional secondary mortgage market. These properties are the "mom and pop shops" of the rental market, meaning they are small and largely individually owned and managed. To date there has been little research on this segment of the rental market. This analysis looks at neighborhood, affordability, borrower, and financial characteristics of the GSEs' mortgage purchases. The study finds that, while single-family rental properties are a small portion of the GSEs' overall business, they are a large and important segment of the rental stock for lower income families.

HF-003   **Characteristics of Mortgages Purchased by Fannie Mae and Freddie Mac, 1993-95,** *by Paul B. Manchester, Sue George Neal, and Harold L. Bunce,* March 1998.

This paper examines the mortgages purchased by Fannie Mae and Freddie Mac, the two major Government-Sponsored Enterprises (GSEs) in the conventional secondary mortgage market. The analyses focus on detailed borrower, locational, and loan characteristics of such mortgages in the "1993-95 transition period," established by Congress in the Federal Housing Enterprises Financial Safety and Soundness Act of 1992. In general, the report is based on the loan-level data that the GSEs submit annually to the Department. The paper finds that although there were significant increases between 1993 and 1995 in the GSEs' funding of loans for groups traditionally underserved by the   mortgage market, their support is generally less than that provided by portfolio lenders.

HF-002   **The Multifamily Secondary Mortgage Market: The Role of Government-Sponsored Enterprises**, *by William Segal and Edward J. Szymanoski,* March 1997.

This paper examines the performance of Fannie Mae and Freddie Mac in enhancing the liquidity and efficiency of the affordable segment of the multifamily mortgage market. The paper focuses specifically on the period since 1993, when HUD established affordable housing goals for these two Government-Sponsored Enterprises (GSEs). A private secondary mortgage market has developed to address the finance needs of higher end properties; yet a comparable market for mortgages on properties affordable to lower-income families lags in development. Placed within a wider market context, it is found that the GSEs have been cautious in their affordable multifamily transactions. It is concluded that the GSEs have the potential to do more to enhance the affordable segment of the multifamily mortgage market.

HF-001 **The GSEs' Funding of Affordable Loans**, *by Harold L. Bunce and Randall M. Scheessele,* December 1996.

This paper examines the borrower and neighborhood characteristics of mortgages purchased by Fannie Mae and Freddie Mac, the two major Government-Sponsored Enterprises (GSEs) in the conventional secondary mortgage market. The GSEs' mortgage purchases are compared to all mortgages originated in the conventional conforming loan market, including originations retained in portfolio by banks and thrift institutions. The analysis is based on Home Mortgage Disclosure Act (HMDA) data on home purchase loans originated in metropolitan areas between 1992 and 1995. The paper finds that there is room for further increases in purchases of affordable loans by Fannie Mae and, especially, Freddie Mac.