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Amy D. Crews
Syracuse University

Robert M. Dunsky
Syracuse University

James R. Follain
Syracuse University

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WHAT WE KNOW ABOUT MULTIFAMILY MORTGAGE ORIGINATIONS AND WHY WE CARE

Amy D. Crews, Robert M. Dunsky,
and James R. Follain

Center for Policy Research
Maxwell School of Citizenship and Public Affairs
Syracuse University
Syracuse, New York 13244-1090

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Abstract

The three publicly available data sets on multifamily mortgage originations are examined and compared in an attempt to resolve the more than $20 billion discrepancy between the published estimates of the size of the conventional conforming multifamily lending market. The data are from the Survey of Mortgage Lending Activity, the Home Mortgage Disclosure Act data, and the 1991 Residential Finance Survey. The analyses show that all three data sets have substantial weaknesses, and that the primary source of the differences in estimates is due to differences in the populations covered. The 1993 multifamily mortgage originations volume is estimated to be about $30 billion.

Introduction

With strong incentives to change government as we know it, federal agencies are under great pressure to streamline and improve, and in some cases, alter their operations. The pressure is particularly great in the area of low- and moderate-income housing. The U.S. Department of Housing and Urban Development (HUD) is in the midst of a major policy shift away from the direct provision of housing into one of creating incentives for the private and nonprofit provision of these services.[1] This shift will require HUD to play more of a monitoring role and less of a producer's role. This will, in turn, require new information and statistics that are currently unavailable.

A specific example of this shift in policy is the establishment of specific affordable housing goals for the two Government Sponsored Housing Agencies (GSEs), Fannie Mae and Freddie Mac, by HUD. There are three affordable housing goals, one for low-moderate income housing, one for central cities, rural areas, and other underserved areas, and a special affordable goal, which focuses on housing for low-income families. The goals as proposed in February 1995 specify the percentages of the GSE loan purchases that must apply to the target groups.[2]

These goals are determined by the size of the conventional conforming mortgage market serving low- and moderate-income families and by the size of the market for special affordable mortgages relative to the overall conventional conforming mortgage market. An essential ingredient in the HUD methodology is an estimate of the volume of multifamily, relative to single-family, mortgage originations.[3] Unfortunately, neither the quantity nor the quality of the information about multifamily mortgage originations are very good, yet, the targets for the GSEs are based on this information. The problem for the agencies involved is illustrated by Blackley and Follain (1995), who report that an increase in the estimate of multifamily lending volume from $21 to $30 billion, increases the lending target associated with the special affordable goal from 17.8 percent to 19.2 percent. Similar increases are shown for the other two goals.

The purpose of this paper is twofold. First, the three primary public data sets that cover multifamily lending are explored to determine what is known about the size of the multifamily mortgage market. These are: HUD's Survey of Mortgage Lending Activity (SMLA); the Residential Finance Survey (RFS) conducted by the Bureau of the Census; and the Home Mortgage Disclosure Act (HMDA) data compiled by the Federal Reserve Board of Governors. The comparison is structured around the estimation of the volume of multifamily mortgage originations, an exercise which illustrates the many differences in the three sources. The analysis also draws upon the opinions of experts within the industry to help reconcile the differences among the various sources of information. Two particularly interesting and detailed examinations are also included. One compares the loans actually purchased by Fannie Mae with loans reported in the HMDA data. The other examines the SMLA and HMDA at the level of reporting financial institution; emphasis is placed upon commercial banks since this is the area in which differences between the two data sets are most glaring.

Second, our best estimate of the volume of multifamily lending is offered. This is a challenging assignment because the three data sets are not always designed to measure the same universe and, even when they are, some differences in estimates arise among the three sources. Nonetheless, careful review and comparison does suggest that multifamily originations in 1993 were about $30 billion. They could have been as low as $25 billion, however an estimate of $15 billion seems highly unlikely.

The organization of this paper is as follows. The next section briefly describes the three data sources. The third section reports on anecdotal information about multifamily lending. The fourth section uses the 1991 RFS to reveal the variation in the estimates of the multifamily originations generated using the RFS, the SMLA, and the HMDA published reports. The fifth section contains a comparison of Fannie Mae's portfolio of mortgage holdings and HMDA data.[4] The sixth section reports the findings of our comparative analysis of the SMLA and HMDA by lending institution. The final section summarizes the major conclusions of the analysis and offers some suggestions for future research.

The Data

The primary source of information about the volume of multifamily mortgage originations for nearly 20 years has been HUD's Survey of Mortgage Lending Activity. The monthly survey covers primarily commercial banks, savings and loan associations, mutual savings banks, life insurance companies, and mortgage bankers. It also contains some information on lending by federal agencies and state and municipal governments. Some of the data contained in the survey is collected by other agencies, such as universal data on thrifts that is collected by the Office of Thrift Supervision. Additional information is collected, directly from a sample of lending institutions. The SMLA reports lending activity at the institutional level.

The SMLA was carefully examined by ICF, Inc. (1994). Their report suggests that the SMLA data on commercial banks and mortgage bankers is weak due to both cross-sectional and longitudinal reporting bias. The SMLA does not calculate sample weights for the nonuniversally covered sections of the survey, however, HUD estimates weighting factors separately. HUD's methodology for estimating these weights will be described in detail in Section 6.

A second and relatively new source of information is the data collected because of the Home Mortgage Disclosure Act (HMDA).[5] Recent changes in the reporting requirements under the act have resulted in the inclusion of more lending institutions, particularly mortgage bankers, and more information on the loans processed by each institution. These changes were effective in the 1991 data release, however, due to problems with implementing the new policies, the 1993 wave is employed here. HMDA covered institutions include commercial banks, savings and loans, mutual savings banks, mortgage bankers, federally sponsored and other federal agencies, conventional mortgage pools, and credit unions. The HMDA requires that all covered institutions report their residential lending activity at the loan level. The new HMDA data are generally regarded as an excellent source, however, the analysis in this study will show that some caution is warranted.

The third source of information is 1991 Residential Finance Survey, which is a high quality statistical survey of residential properties and the characteristics of their mortgage debt. The survey is conducted every ten years, and was last conducted in the Spring of 1991. It provides information about the nature of multifamily originations by loan type, size, and interest rate terms for each property in the sample. The RFS is a good source of information about multifamily originations in the years just prior to the survey, i.e., 1989 to 1991. It becomes less accurate as one moves back in time because it will not include information about loans originated in a previous year, say 1980, that have since been refinanced. Otherwise, it is an excellent survey that is a representative sample of multifamily loans in the United States; in this regard, it is the only survey of this type.[6]

The published estimates of the volume of multifamily mortgage originations using these three sources vary widely. The SMLA estimate for the period 1989 to 1993 is about $30 billion per year (HUD 1994). The 1993 HMDA value is about $12.5 billion. The RFS based estimate is an annualized volume in the vicinity of $35 billion for the period 1989 to 1991:1. The remaining sections of this paper are devoted to reconciling these differences and to illuminating the relative strengths of these sources.

Anecdotal Information

A variety of explanations have been offered to explain differences among the various estimates of the volume of multifamily lending. Some of the explanations offered in roundtables conducted at HUD include the following: mortgage bankers under report in HMDA data as do commercial lending divisions of large banks; loans by lending consortia like those obtained by the Community Preservation Corporation of New York (CPC) are not included in the HMDA data; and the RFS and the SMLA may overestimate loan volume because they may include originations that are better classified as "workouts" of existing loans. These and other claims were investigated in a number of phone calls with industry representatives. Although instructive, this exercise did not produce precise information to help resolve the issues. Few

people are well-informed or particularly interested in market wide-information issues and few industry representatives are familiar with the details of the major data bases.

Despite these caveats, several insights were obtained. These include:

Mortgage Bankers

Multifamily loans made by mortgage bankers are probably underreported in HMDA and in the SMLA. The Mortgage Bankers Association (MBA) is aware of this and has informed its members that many of them are required to submit HMDA reports. They had hoped to see a change in the 1994 HMDA data because they put out the word in 1993; unfortunately, the difference between 1993 and 1994 multifamily lending reported by mortgage bankers in HMDA appears to be unchanged. The MBA is also considering a new survey of lenders who specialize in multifamily lending to provide better information about this item to HUD for the SMLA.[7]

Loan Consortia

Loan consortia lending could be as high as a few billion dollars in any given year but is probably far less according to the CPC. Exactly how they are handled in HMDA was not clear, but they cannot explain the large gap between HMDA and the SMLA.

Workouts

Workouts are renegotiations of existing mortgage contracts that typically stem from unusual vacancy problems. It was suggested during one of the HUD Roundtables on this subject that the treatment of workouts may be a partial explanation of the differences among the RFS, the SMLA, and HMDA. No information was found to suggest that workouts are systematically included in the SMLA and not included in the HMDA. Dunsky, Follain, and Ondrich (1995) report that many of the originations in the late 1980s were short-term balloon mortgages, but these should be reported as multifamily originations in all of the data sources under discussion.

HMDA Reporting

It is possible that some large commercial banks who do multifamily lending in a different division from the single family mortgage division may not understand the need to report. The extent of these potential errors was not determined.

To resolve the issues left unanswered by the anecdotal evidence, the focus of this study is now turned to a careful examination of the available data sources with emphasis on the goal of obtaining an estimate of multifamily mortgage originations volume. The next section begins with a comparison of the RFS with other sources.

Differences among Various Sources of Information about Multifamily Originations

Analysis of the 1991 RFS sheds light on the nature and extent of the differences among the three data sources. The analysis is applied to two populations. The first is meant to be one that includes the bulk of multifamily properties acquired with the use of mortgage debt; as such, they represent a potential universe from which the GSEs might look to purchase multifamily loans. The second is narrower and corresponds more closely to the types of loans likely to be found in the HMDA data set, which focuses on loans originated by banks, thrifts, and mortgage bankers. This smaller population helps identify accuracy of the HMDA data. It is not intended to represent the pool of loans to which the GSEs should limit their attention.

Both are based upon the public use version of the 1991 RFS. The first group is the largest; the second is a subset of the first. The unit of observation in this analysis is the multifamily property.[8] All statistics are computed using the mortgage weights provided in the RFS. The specific attributes of each group are as follows (numbers in parentheses are the variable labels on the public use tape of the RFS):

Group 1:

a. Only properties with five or more units are included; mobile homes and condominiums are excluded (include if r2 is equal to 5 or 6);

b. Properties are excluded if they were converted from nonresidential use around the time of acquisition (include if r17 does not equal 3);

c. Only properties acquired with a first mortgage are included (include if r64 for the first mortgage is greater than zero);

d. Only properties acquired by a purchase are included (include if r16 is equal to 1); this is done to exclude transactions not done at "arms length";

e. Properties in which the land and structure were acquired at different times are excluded (include if r15 is equal to 1;);

f. Properties are included only if their acquisition was financed with a new mortgage or if the information was not reported; this excludes loan assumptions (include if r62 is equal to 1 or 8 for first mortgages);

g. Only properties with a first mortgage originated in 1987 to 1991 are included (if r63 on the first mortgage equals 1 or 2).

Group 2 is Group 1 less:

a. Loans held by insurance companies, real estate investment trusts, pension funds, finance companies, state or municipal governments or housing finance agencies, individuals, or those otherwise not classified (exclude if r57 is not equal to 4, 9, 10, 12, 13, 14, or 15 for first mortgages).

b. Loans serviced by institutions other than commercial banks, savings and loans, mutual savings banks, mortgage bankers, and credit unions (include if r58 is equal to 1, 2, 3, 5, or 11 are included);

c. Loans with FHA, VA, FmHA, state bonding agency or "other" types of mortgage insurance; only loans with private mortgage insurance or no insurance (include if r60 is equal to 4 or 7).

A recent analysis reported by HUD shows that exclusions a and b together imply that the Group 2 total is about 60 percent of the Group 1 total. However, one of the servicer categories included in this difference is "not reported," of which a considerable proportion undoubtedly are commercial banks, savings and loans, etc. which would be included if servicer information were reported. If all of the "not reported" cases are included, the Group 2 total would be about 67 percent of the Group 1 total.

The public use tape does not allow the identification of the exact year of origination; only a range is given in order to satisfy certain confidentiality restrictions. As a result, a simple conversion factor to transform the numbers in 1989-1991 and 1987-1988 to annualized rates is used. Since the survey was conducted in April 1991, so originations in 1991 only include information about the first three or four months of 1991.

Table 1 reports the volume of multifamily holdings by lender type for various origination years and compares them to the estimates obtained from the SMLA published reports for these years (HUD 1993). Total originations in 1989-1991:1 were about $84 billion and nearly 105,000 mortgages were originated. Originations for 1987-1988 included over 83,500 loans totaling about $70 billion. On an annualized rate, originations are in the range of 42,000 to 45,000 loans per year and lending volume of $35 billion per year.[9]

The key information in this table is contained in the two columns at the lower far right; these contain differences between the SMLA and our RFS estimates by lender type (Group 1). The totals for the period being analyzed are about the same from the RFS and the SMLA, although the estimates differ by year. The SMLA reports about $42 billion in the period 1987-1988 on an annualized rate; the RFS reports only about $35 billion. The RFS estimates exceed the SMLA during 1989-1989:1 by $4.8 billion per year. This pattern is consistent with the fact that the estimates from the RFS will underestimate the true volume of originations as one moves farther back into history.[10]

Table 1 also sheds light on the sources of the differences by lender type. The largest difference pertains to savings and loan associations in 1987-1988; the SMLA reports a much larger number. In addition to the time dependent bias in the RFS, this difference is due to the face that the SMLA data on thrifts contains the universe of these institutions while the RFS contain a random sample. It may appear that a difference also exists in regard to the holdings of the GSEs; however, this simply reflects a difference in the classification of these loans in the two data sets. The RFS shows a separate category for loans held by the GSEs whereas the SMLA includes their holdings under mortgage pools or the federal credit

agencies. Perhaps the most significant observation is that the SMLA and RFS estimates for commercial banks are relatively close. This is important because the SMLA estimates for commercial banks are much larger than the HMDA estimates in 1993, which leads some to suspect that the SMLA is inaccurate. This comparison suggests that the SMLA estimate may be too high, but nothing close to the $10 billion; as is the difference between HMDA and the SMLA for 1993. If there is a problem with the SMLA, then perhaps it is confined to 1993. This point is explored further below.

Table 2 conducts the same analysis for the restricted sample (group 2) in order to shed light on the differences that might exist between the RFS and HMDA data. Unfortunately, HMDA data for these years are not available; however, insights can be obtained by applying criteria to the RFS that capture the restrictions associated with HMDA. These calculations indicate that the HMDA-like sample (group 2) generates estimates of multifamily loan originations about $15 billion or so less than those generated by the larger sample for the 1987 to 1991 period. The restricted annualized estimates for 1989-1991 and 1987-1988 are $20.1 and $19.5 billion, respectively.

There are three major messages from this analysis. First and foremost, the SMLA and HMDA estimates in any given year ought to be different by a substantial amount. The difference suggested by this analysis is that HMDA is about 60 percent of the amount generated by the SMLA in any given year if the share of multifamily loans by institutions within HMDA remain the same. Second, and as made more clearly below, the estimates from the actual HMDA data for 1993 ($12.5 billion) and 1994 ($14.4) appear to be substantially less than the $20 billion or so produced with the RFS under the HMDA restrictions. That is, the actual HMDA data may underestimate the correct volume of multifamily originations for its population; this may be due to under reporting. Third, the SMLA's estimate of the volume of multifamily mortgage originations for the period 1987-1991 is consistent with the estimate from the RFS. Of particular interest is the estimate of multifamily lending by commercial banks from both sources. The SMLA estimates for these years are higher than the RFS estimates by $1.25 to 1.39 billion; however, and as shall be shown, the

SMLA estimate of the volume of commercial bank multifamily lending for 1993 appears to be well off the mark.

A Comparison of Mortgage Purchases by Fannie Mae and HMDA Multifamily Originations

This stage of the analysis makes comparisons of the multifamily loans purchased by Fannie Mae that were originated in 1993 to multifamily loans reported in the 1993 HMDA. The purpose is to generate insights regarding the character of Fannie Mae multifamily loans relative to HMDA loans. In particular, inferences are drawn regarding the distributions of HMDA and Fannie loans by size of loan and their location. Census tract characteristics are used to measure locational traits, e.g., census tract median family income relative to the MSA median family income. The HMDA and Fannie data are analyzed at both the loan level and the census tract level.[11]

Table 3 reports the characteristics of HMDA multifamily loans at the loan level. Only loan applications for conventional loans that were originated are included; loan records without information about the state, metropolitan area, county, or census tract of the loan record are not included in the analysis. 21,265 loans fit these criteria. The average loan size is $541,000 and nearly 90 percent are originated by banks and thrifts. The average asset size of the lending institution is $9 billion. Nearly two-thirds of the loans are inside central cities. Of the HMDA loans, 851 were reported to have been sold to Fannie Mae and 1,096 were sold to Freddie Mac; the number of Freddie Mac purchases is surprising because Freddie Mac was supposedly inactive in this market at that time.

Table 4 provides summary statistics regarding Fannie Mae loans at the loan level. The sample is restricted to loans originated in 1993 which do not carry any form of government insurance. In addition, observations with missing state, county or tract values are dropped leaving a total sample of 990 loans. Most of the 1993 originations held by Fannie Mae were purchased in 1993 (757), while only 233 were

acquired in 1994. Unfortunately, the 851 HMDA loans sold to Fannie Mae (as reported by HMDA)cannot be matched with the 757 loans purchased by Fannie Mae in 1993 so no inferences are drawn as to whether these are the same loans.[12]

The size of the properties in loans purchased by Fannie are quite large; the average property includes 188 units; one is extremely large (1,481 units). Information about size of property is not available in the HMDA data. The locational characteristics of Fannie and HMDA loans are similar in that most are inside the central city, although the share of Fannie loans is less than among the HMDA data base. The average loan size per housing unit is about $23,604, which is considerably lower than the values computed with other data sources such as the RFS. Perhaps Fannie Mae is catering to affordable housing units and focusing on relatively low loan-to-value loans.

An interesting fact is that 853 of the 990 Fannie loans are purchases of loan refinancings; 1993 was also a **big** year for refinances of single family loans. Furthermore, Fannie loans were primarily purchased from mortgage companies; only 46 of the 990 mortgages came from banks and thrifts. The "other" category in the Seller Institution panel in Table 4 is nearly as large as the mortgage banking category. More information about this category would be interesting to know: are these being purchased from loan consortia or nonprofits, or do they represent refinances of loans in their existing portfolio?

The most interesting difference between the Fannie Mae and HMDA data in Tables 3 and 4 is the mean loan value; the Fannie Mae value is nearly ten times that of HMDA. To further investigate the relationship among Fannie and HMDA loans omitted observations in Tables 3 and 4 are included in this exercise. This examination shows that, of the 23,502 loans in the HMDA sample, 10 percent or 2,350 are larger than $1.2 million. Fifty percent are less than $.23 million. On the other hand, 90 percent of Fannie Mae loans or about 940 loans are above $1.2 million. Fewer than 5 percent are less than $.84 million. This suggests that Fannie is buying a large portion of the large multifamily loans being originated by HMDA institutions. An estimate of the exact share of all $1 million plus loans being purchased by Fannie Mae

requires many more assumptions about the lending of non-HMDA institutions, the coverage of HMDA, and whether the large loans purchased by Fannie Mae are in HMDA; however, it seems fair to say that if both Freddie Mae and Fannie Mae were equally active and were to focus their attention on large loans, they would dominate the market for large loans made by HMDA institutions.

The above analysis supports the conclusion that large mortgages are more likely to be found in Fannie Mae portfolios while smaller mortgages are reported in HMDA. The conclusion does not change when HMDA mortgages are restricted to the sample that was sold to Fannie Mae in 1993. Loans reported in HMDA as sold to Fannie in 1993 tend to be smaller in size than Fannie Mae's holdings of 1993 originations. This has an important implication regarding the ability of the GSEs to purchase multifamily mortgages. That is, they will be hard pressed to substantially increase their volume of mortgage purchases if they restrict their attention to large loans. If they are to increase their presence in the multifamily mortgage market by a substantial amount, they are likely going to have to shift their focus to smaller loans. Whether or not this is a prudent strategy from a safety and soundness perspective is another interesting and relevant question, but one that is well beyond the scope of this paper. However, this issue underscores the need for accurate information on multifamily mortgage markets.

Tables 5, 6, and 7 report the characteristics of the Fannie Mae and HMDA data bases at the census tract level. In these tables, the focus is on the total volume of lending and the total number of loans per census tracts which allows for the determination of whether the volumes of HMDA and Fannie lending are strongly related to one another and whether there are any differences in the incidence of their lending among neighborhoods defined to be underserved.[13] HMDA loan records in the same census tract as the Fannie Mae loan record do not necessarily represent the same loan; as noted above, exact matches cannot be made. Using the data described in Tables 3 and 4, a tract level dataset is constructed in which there are 10,514 census tracts represented among the loans in the HMDA and Fannie Mae data sets.

The first point to note about the results is the large number of Fannie Mae loans not reported in HMDA. Only 360 of the census tracts include multifamily lending reported in the 1993 HMDA data and loan purchases by Fannie Mae (Table 5); however, 522 of the census tracts in which Fannie Mae purchases are documented have no reported HMDA data (Table 6). That is, only 42 percent of Fannie loans are in census tracts in which HMDA data are reported. The Fannie loans outside the HMDA tracts represent over $2.3 billion in loans; total purchases by Fannie in this sample are about $2.9 billion. This is consistent with the idea that HMDA under reports multifamily loans originated by mortgage bankers because about 50 percent of the Fannie loans in the tracts that do not overlap with HMDA were originated by mortgage bankers.

Second, the number of census tracts in which some multifamily lending is reported in HMDA with no lending by Fannie Mae (Table 7) equals 9,632 census tracts, which is the vast bulk of the census tracts represented in the HMDA data (9,632 of 9,986). For the most part, the characteristics of HMDA loans in census tracts with no Fannie Mae lending appear to be similar in many ways to all HMDA loans. The biggest difference is that the average loan size in the HMDA data in census tracts with Fannie Mae lending is larger than among HMDA census tracts with no Fannie Mae lending, i.e., $1.8 million versus $.53 million. This difference presumably reflects the presence of Fannie Mae loans in the HMDA data, although this hypothesis cannot confirm this because the Fannie Mae and HMDA loans cannot be matched at the loan level.

Third, the Fannie Mae loans appear to be evenly distributed among census tracts. This can be seen by comparing the average size of all Fannie Mae loans (Table 4, $4.4 million) to the average size of Fannie Mae loans in census tracts without HMDA loans (Table 6, $4.8 million). This suggests that Fannie Mae is interested in a wide spatial distribution of its activity.

Obtaining a better understanding of the locational patterns of Fannie Mae multifamily lending is important. Of particular importance is whether their multifamily purchases are distributed evenly among

areas designated as underserved. The descriptive statistics in Tables 5, 6, and 7 shed some light on this issue, but fail to take account of some of the interrelationships among the locational information. To circumvent this problem several regressions designed to explain the variation in HMDA and Fannie Mae lending at the census tract level are estimated. The results of this analysis are reported in Table 8.

A simple regression model is employed to investigate the responsiveness of total multifamily loan volume in each census tract to three groups of regressors. The primary group of independent variables includes state dummies to control for regional effects; these are included in each regression. The second set of regressors contains information relevant to the target groups. One variable in this set is whether the census tract is underserved according to the proposed regulations; that is, the census tract is underserved if the median family income in the tract is less than 80 percent of the MSA median income and the percent minority in the tract is greater than 20 percent, or the family income in the tract is less than 120 percent of the MSA median income and the percent minority in the tract is greater than 30 percent. The other variables in this set are the percent minority in the tract and the relative income of the census tract. Either the underserved variable or its components are included in the regressions in order to avoid multicollinearity problems. The third set of variables captures basic information about the size and composition of the market for multifamily housing inside the census tract. These include the median rent of rental units, the number of multifamily units, and the vacancy rate among multifamily units.

The regressions are performed separately on the Fannie Mae data aggregated to the census tract level (881 tracts are represented) and on the HMDA data (9,992 tracts are represented). The results are reported in Table 8. The Model 1 results pertain to a specification with only state dummy variables. Models 2 and 3 include the second set of variables and Models 4 and 5 include the third set of basic tract information.

Several results emerge from this analysis. First, Fannie Mae lending does not appear to be highly targeted toward or away from tracts designated as underserved, although this result is sensitive to

specification. The estimate of the underserved coefficient is negative and significant in the equation without the third set of variables (Model 2); that is, Fannie Mae lending in the underserved census tracts is about $.85 million lower in these census tracts than in other ones. Given that Fannie Mae seldom buys more than one loan per census tract, this probably means that the average loan size is smaller in underserved tracts. However, including other census tract information (Model 4) reduces the size of this coefficient and its significance. Neither of the direct measures of the percent minority of the tract and its relative income are significant in the larger regression. Although more work along these lines is needed to define the pattern of Fannie Mae lending more precisely, placing preference on a model with more variables (e.g., Models 4 and 5) leads to the conclusion that Fannie lending appears to be evenly distributed among neighborhoods designated as underserved and all others.

Second, HMDA lending appears to be more sensitive to the underserved designation. Note that the coefficient of the underserved variable is negative and significant in both Models 2 and 4. Also, the percent minority and the relative income of the census tracts are both significant in Models 3 and 5. Their signs are consistent with the coefficient estimates of the underserved variable; all else equal, HMDA multifamily lending volume is lower the higher is the percent minority and the lower is the income of the census tract. This pattern may indicate a problem in the reporting of HMDA loans, differences in the source of lending among census tracts, or discrimination on the part of HMDA lenders.

Beyond these two primary results, several other patterns are apparent. Multifamily lending by both Fannie Mae and among HMDA institutions appears to be positively related to the median rent in the census tract and the number of multifamily housing units in the tract. Also, the higher the number of vacant multifamily units in the tract, the lower is the volume of lending.

Multifamily Lending by Commercial Banks: Insights Gained from a Comparison of the SMLA and HMDA Data

A critical question in the overall debate is the accuracy of the SMLA data and, in particular, its estimate of the volume of multifamily lending by commercial banks (see ICF 1994). A related question raised in HUD roundtable discussions concerns the accuracy of HMDA information for financial institutions, in particular, commercial banks. These questions are pursued by examining 1993 SMLA and HMDA data at the level of the reporting bank. A more complete description of this work is contained in Crews, Dunsky, and Follain (1995). The major findings of their work are reported here.

SMLA

The sample is restricted to all reporting commercial and mutual savings banks used to compute the multifamily lending statistics for the 1993 SMLA. Total reported multifamily loan originations for these banks in this SMLA sample equal $1.85 billion. This value is based upon the responses of 48 banks, 28 of which report multifamily loans. Of these 28 multifamily lenders, two report total originations of less than $50,000.

To obtain an estimate of the total lending volume by commercial banks using the SMLA, HUD uses expansion factors which are determined by bank size categories. Specifically, for each of four bank groups, g=1, ..., 4, HUD calculates the total real estate assets held by all commercial banks in a group using the Federal Reserve's Call Reports. This value for group g is denoted by $Total_g$. HUD also calculates the total real estate assets held by the SMLA banks in each group, and these values are denoted by $SMLA_g$. The estimate of the total multifamily lending volume is then obtained by multiplying the sum of the SMLA originations for each group, MFO_g, by the ratio of the asset values, and summing the group values:

$$TOTAL\ \ MFOs\ =\ \sum_{g=1}^{4}\ MFO_g \cdot \frac{TOTAL_g}{SMLA_g}.$$

The HUD estimate using this methodology is $19.9 billion.

The Call Report data was unavailable for this analysis, so a less sophisticated method based on aggregate information from the *Federal Reserve Bulletin* (November 1994) was employed to replicate the HUD methodology which is illustrated in Table 9. The replication methodology has two major differences from the HUD procedure. First, the banks are not stratified. Second, HUD separates the banks by type, while in this excercise, commercial and mutual savings banks are aggregated together. The total real estate assets of all commercial banks in 1993 is $916.8 billion as reported in the *Bulletin*. Bank assets in the SMLA are calculated as the average ending balance in real estate for each month that the bank reported in the sample, and amount to about $83 billion.

The resulting estimate of multifamily mortgage originations is about $20.5 billion, and is not affected by the omission of observations on banks with less than $50,000 in multifamily loans.[14] This value is slightly higher than the HUD (1994) estimate of $19.9 billion, but is surprisingly close given the much simpler method employed here.

The exercise above is instructive for the following reasons. First, the sample sizes are extremely small, which is a shortcoming not identified in the ICF, Inc. (1994) report. Second, the use of the HUD expansion factors is likely to be biased because the weights do not take account of attrition bias in the SMLA, since all banks that currently report in the survey have been in existence in their current form for at least 20 years. Thus, SMLA banks that merge with other institutions remain in the survey only if the SMLA bank is the parent bank. Furthermore, new banks will not be included in the data, and thus the SMLA is likely to be over-representative of larger banks. This point is validated by the fact that although the SMLA banks represent less than one half of one percent of all commercial banks, they account for 9 percent of all real estate assets. Finally, the exercise provides a framework for comparison with the HMDA data to come below.

HMDA

Unlike the SMLA, the HMDA data include a larger number of banks and a wider distribution of banks by size. For 1993, 1,531 banks report the origination of at least some multifamily lending in HMDA; the distribution of the banks in HMDA by four asset classes is reported in Table 10. Table 10 also contains the ratio of multifamily originations volume to total assets for HMDA reporting banks, as well as the percent of bank assets that are held in multifamily loans as reported in the June 1994 *Federal Reserve Bulletin*. These values are quite different among the groups, and indicate that the HUD methodology is further flawed. If originations are linearly related to bank size, then a simple expansion procedure may be appropriate. However, if the relationship is nonlinear, as indicated in Table 10, then a more sophisticated weighting procedure should be employed. This point was explored further in Crews, Dunsky, and Follain (1995) with regressions on cubic polynomials in assets using the HMDA data. Their findings support the hypothesis that the relationship is nonlinear and further weaken the support for the HUD methodology in that the correlation between assets and originations is weak at best.

The total volume of multifamily mortgage originations by all commercial banks in the 1993 HMDA is $4.84 billion, which is only one fifth of the SMLA estimated value. Because the HMDA data is supposed to represent the universe of covered banks, no weights are used in the official reports to scale the value upward as is done in the SMLA. One explanation for the gap between the HMDA and SMLA value is some under reporting by commercial banks in HMDA. The hypothesis that HMDA does not contain the full universe of commercial banks is supported by two facts. First, the sample in Table 10 contains only 1,531 lenders, or just over 10 percent of all commercial banks. While some lenders would necessarily not be a part of the sample if they do not write any multifamily mortgages, this number still seems too low. The second fact is that when the SMLA sample is merged with the HMDA data by lender identification numbers, only one match is obtained. Thus, there are at least 27 banks that write multifamily loans that are missing in HMDA.

To correct for the missing banks, the HMDA estimate should be scaled upward. In the absence of sampling weights, the method employed with the SMLA data is used to obtain a new estimate of HMDA originations volume as shown in the bottom panel of Table 9. Because HMDA reports total bank assets instead of real estate assets, the expansion weights are based on total assets. Using the simplified HUD methodology, the HMDA estimate becomes $8.5 billion, which is still smaller than the SMLA estimate but much closer to the 1991 RFS estimate for commercial banks (Table 1).

A final estimate of the volume of multifamily originations by commercial banks is obtained by adding together the unweighted originations reported in the SMLA and HMDA samples. This exercise is justified by the fact that only one bank reports in both samples. Adding the $1.85 billion from the SMLA with the $4.84 billion from HMDA suggests an estimate of multifamily lending by commercial banks in 1993 of about $7 billion.

Based on the analyses described in this section, a best guess of the volume of multifamily originations by commercial banks in 1993 is $7 to $8 billion, which is supported by the estimates using the RFS data reported in Table 1, the expanded HMDA estimate reported in Table 9, and the simple addition of the reported originations in HMDA and SMLA.

Conclusions

Although not all of the conflicts within the major datasets about multifamily lending have been resolved, several conclusions and patterns have emerged from these analyses. First, the 1991 RFS suggests that multifamily mortgage originations in 1987-1991 were at least $30 billion per year. Because of the overall quality of the RFS, this is an estimate worthy of serious consideration. Second, the hazard rate methodology employed in a related study by Dunsky, Follain, and Ondrich (1995) generates estimates of multifamily lending for 1993 in excess of $30 billion. This estimate also seems reasonable and reflects the

fact that a large volume of multifamily lending was done in the mid-1980s and many of these properties will be turning over during the mid-1990s.

Third, an estimate of $30 billion is also consistent with the SMLA's estimate for 1993; however, and as noted above, the SMLA's estimate of lending by commercial banks is probably too high. Our best estimate of Commercial Bank multifamily lending in 1993 is closer to $7 or $8 billion. This substitution alone reduces SMLA to under $20 billion; however, there are several other reasons why the SMLA may be underestimating multifamily lending in other lender categories. Lending by mortgage bankers is almost surely too low, perhaps by $2 billion or more. Furthermore, the SMLA omits some important categories of lending captured by the RFS such as lending by individuals. The RFS also suggests that the SMLA may be underestimating lending by life insurance companies by a couple of billion dollars. If these adjustments are made, the revised SMLA estimate is closer to $25 billion.

Based upon the investigations and statistical analyses performed here an estimate of total 1993 multifamily originations in the area of $30 billion is defensible. An estimate as low as $25 billion is possible. Estimates much lower than this are difficult to support. The analyses demonstrates that HMDA alone is not an accurate measure of the total market. This argument is based upon two facts. First, HMDA was not designed to cover multifamily lending by all lenders; it focuses on lending done primarily by commercial banks, thrifts, and large mortgage bankers in metropolitan areas. Second, HMDA surely underestimates lending by both mortgage bankers and commercial banks.

Some evidence is presented regarding the size distribution of lending that may shed light on the skepticism expressed by the GSEs about the $30 billion estimate. Fannie loan purchases are strongly focused on large loans relative to the typical multifamily loan. 90 percent of their loans are in excess of $1 million whereas only 10 percent of all HMDA multifamily loans are greater than $1 million. Alternatively stated, Fannie bought over 1,000 loans that were originated in 1993 that had outstanding balances of $1 million or more; HMDA reports that only 2,300 or so loans of $1 million or more were originated among

lenders required to provide HMDA reports. In other words, Fannie is already buying about half of these loans. If Freddie is going to buy the other half, where will the GSEs be able to buy another $10 billion each in multifamily loans? One possibility is to increase their attention on smaller loans.

In sum, this analysis has surely pointed to the need for more accurate information regarding multifamily mortgage originations. This study resembles more of an investigation of conflicting sources rather than a statistical analysis of reliable data sources. If HUD is to remain active as a regulator of GSE activity and it wishes to provide lending goals consistent with the market, then more investment in data collection is suggested.

Endnotes

1. See Follain and Szymanoski (1995), Bratt, Keyes, Schwartz, and Vidal (1995), and DiPasquale and Cummings (1992) for a discussion of possible justifications for the type of housing market intervention implied by the policy shift.

2. See HUD (1995a) for the details of these goals. Calhoun and Stark (1995) investigate the size of targeted markets and implications of GSE involvement in mortgage markets.

3. Multifamily housing is defined as dwellings that house five or more families. Single family housing is defined as dwellings that house one to four families.

4. The Fannie Mae data is not publically available. It was provided to the authors on a proprietory basis for use in the HUD report (Crews, Dunsky, and Follain 1995) from which this paper is derived.

5. The Home Mortgage Disclosure Act became effective in 1976, and required all banks and depository institutions in metropolitan areas and with more than $10 million in assets file a HMDA report on approved loans. With the recent changes in the reporting requirements, which requires both more institutions to report and more information to be reported by all institutions, the use of the HMDA data has become more widespread. See Canner and Smith (1991, 1992) and Canner and Passmore (1994) for more information on the HMDA data.

6. This opinion is based upon ongoing research being done by Follain for HUD in which four separate reports on multifamily housing finance based upon the RFS are being prepared. These reports will be available in the fall. However, Fergus (1995) offers some caveats to using the RFS.

7. HUD is currently soliciting proposals for the redesign of both the mortgage banker and commercial bank surveys in the SMLA.

8. The public use tape has multiple records per property. One record provides information about the property, e.g., acquisition date, numbers of units, purchase price, etc. Other records are included if there are mortgages associated with the property; there is one record per mortgage. Our data set has one record per property; in essence, we have appended the mortgage information to the property record.

9. Annualized rates are calculated by dividing the 1987-1988 period total by 2. The 1989-1991:1 rates are calculated by dividing the period totals by 2.33.

10. This follows from the fact that the RFS only reports on mortgages originated in a particular year that have not terminated. For example, the volume of originations in 1985 includes some mortgages that still exist and some that have terminated by 1991. Because the number of terminations in a particular cohort increases as the cohort ages, the RFS underestimates the actual number of originations and the bias increases as the age of the cohort (or year of origination) increases.

11. This data is not available in a public use form. It was provided to the authors for use in this study by Fannie Mae under proprietary agreement.

12. The Fannie Mae data contains mortgages in her portfolio as of the summer of 1995. Fannie has sold mortgages which were both originated and acquired in 1993. In addition, Fannie Mae has also purchased loans after 1993 which were originated in 1993. Unless all loans purchased and sold by Fannie Mae were available it is impossible to link mortgages reported in HMDA (1993) with observations in Fannie's 1995 portfolio.

13. The Fannie Mae data only provides information at the Census tract level, so loans purchased cannot be matched with lenders or in some other way. Therefore, the loans are organized by state, county and census tracts and the comparison made along these lines.

14. These observations are suspect because the two omitted banks together only reported 6 times during 1993. Since the bank's assets are a stock variable, the nonresponse does not likely affect the expansion factor portion of the calculation, but three quarters of the banks' lending activity is missing.

Table 1. Multifamily Mortgage Loan Originations from the RFS and SMLA, Group 1 (dollars)

	RFS					
	1989-1991[a]			1987-1988		
	Number	Mean	Sum[b]	Number	Mean	Sum[b]
Commercial Banks	28,680	677,141	19,420	21,060	603,596	12,712
Savings and Loan Associations	35,500	532,225	18,894	32,295	693,160	22,386
Mutual Savings Banks	3,592	710,254	2,551	4,372	462,767	2,023
Life Insurance Companies	2,300	4,411,488	10,146	3,254	3,169,754	10,314
Mortgage Bankers	5,597	1,055,644	5,908	3,000	880,107	2,640
Fed Sponsored Agencies	5,488	1,602,258	8,793	6,141	1,416,895	8,701
Conventional Mortgage Pools	221	1,503,106	332	522	596,983	312
Other Federal Agencies	1,775	1,260,303	2,237	2,463	1,193,439	2,939
REITs	172	2,260,578	389	144	3,150,061	454
Pension Funds	265	3,145,348	834	118	3,023,906	357
Credit Unions	241	135,275	33	777	151,184	117
Finanace Companies	2,483	2,648,576	6,576	1,087	940,663	1,023
State & Municipal Governments	882	1,559,129	1,375	401	4,452,963	1,786
Individual Investors	12,798	185,992	2,380	6,327	245,081	1,551
Other	4,877	716,629	3,495	1,767	1,206,409	2,132
Totals	104,871	794,926	83,365	83,728	829,422	69,446

	Annualized Rates[c]				SMLA		RFS vs SMLA	
	1989-1991		1987-1988		1989-1991	1987-1988		
	Number	Sum[b]	Number	Sum[b]	Sum[b]	Sum[b]	1989-1991 Differences	1987-1988 Differences
Commercial Banks	??	8,335	10,530	6,356	9,724	7,610	(1,389)	(1,254)
Savings and Loan Associations	??	8,109	16,148	11,193	9,748	17,658	(1,639)	(6,465)
Mutual Savings Banks	??	1,095	2,186	1,012	1,677	3,919	(582)	(2,907)
Life Insurance Companies	??	4,355	1,627	5,157	2,350	3,640	2,005	1,517
Mortgage Bankers	??	2,536	1,500	1,320	4,567	3,468	(2,031)	(2,148)
Fed Sponsored Agencies	??	3,774	3,071	4,351	NA[d]	NA	3,774	4,351
Conventional Mortgage Pools	??	143	261	156	NA	NA	143	156
Other Federal Agencies	??	960	1,232	1,470	1,313	1,130	(353)	340
REITs	??	167	72	227	NA	NA	167	227
Pension Funds	??	358	59	178	NA	NA	358	178
Credit Unions	??	14	389	59	NA	NA	14	59
Finanace Companies	??	2,822	544	511	NA	NA	2,822	511
State and Municipal Governments	??	590	201	893	1,528	4,123	(938)	(3,230)
Individual Investors	??	1,022	3,164	775	NA	NA	1,022	775
Other	??	1,500	884	1,066	40	72	1,460	994

Totals	??	35,779	41,864	34,723	30,947	41,620	4,832	(6,897)

NA = not applicable.

[a]Period is actually 1989 through the first quarter of 1991.

[b]Sums are in millions of dollars.

[c]Annualization rates are determined by dividing the sum by a weight factor. For the 1987-1988 period this factor if 2. For the 1989-1991:1 period this factor is 2.33.

Source: Authors' calculations using the 1991 RFS, and published SMLA values from HUD (1995b).

Table 2. Multifamily Mortgage Loan Originations From the 1991 RFS Under HMDA Restrictions, Group 2 (dollars)

	RFS with HMDA Restrictions						Annualized Rates[a]			
	1989-91[b]			1987-88			1989-91		1987-88	
	Number	Mean	Sum[c]	Number	Mean	Sum[c]	Number	Sum[c]	Number	Sum[c]
Commercial Banks	27,475	590,105	16,213	19,322	486,120	9,393	11,792	6,958	9,661	4,696
Savings and Loan Associations	33,013	525,183	17,338	29,695	681,880	20,248	14,169	7,441	14,848	10,124
Mutual Savings Banks	3,235	770,686	2,493	4,361	462,014	2,015	1,388	1,070	2,181	1,007
Life Insurance Companies	NA[c]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mortgage Bankers	4,898	557,870	2,732	2,745	407,557	1,119	2,102	1,173	1,373	559
Fed Sponsored Agencies	4,885	1,562,247	7,632	5,609	985,583	5,528	2,097	3,275	2,805	2,764
Conventional Mortgage Pools	214	1,298,821	278	503	424,592	214	92	119	252	107
Other Federal Agencies	101	1,749,216	177	125	2,364,443	296	43	76	63	148
REITs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pension Funds	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Credit Unions	241	135,275	33	777	151,184	117	103	14	389	59
Finanace Companies	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
State and Municipal Governments	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Individual Investors	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Totals	74,062	633,191	46,895	63,137	616,589	38,930	31,786	20,127	31,569	19,465

[a]Annualization rates are determined by dividing the sum by an adjustment factor. For the 1987-1988 period, this factor is 2. For the 1989-1991:1 period this factor is 2.33.

[b]Period is actually 1989 through the first quarter of 1991.

[c] Sums are in millions of dollars.

[d]NA = Not applicable.

Source: Author's calculations.

Table 3. HMDA Loan Level Descriptive Statistics on Multifamily Mortgages

HMDA Information

Variable	Label	Number	Mean	Standard Deviation	Minimum	Maximum
ASSETS	Assets of Lending Institution (thousands of dollars)	21,265	9,036,616	14,938,635	33	213,701,000
LOANAMT	Loan Amount (dollars)	21,265	541,158	1,196,470	1,000	49,001,000
BANKS	Originated by Banks (percent)[a]	21,265	37.88	48.51	0.00	100.00
THRIFTS	Originated by Thrifts (percent)[b]	21,265	50.26	50.00	0.00	100.00
OTHER	Originated by Other (percent)[c]	21,265	11.86	32.33	0.00	100.00
Census Tract Information						
CCITY	Central City Dummy (percent)	21,265	63.80	48.06	0.00	100.00
MSAINC93	Median MSA Income (dollars)	21,265	44,671	6,300	20,300	73,400
MPCENT	Minority in Census Tract (percent)	21,265	32.94	29.20	0.00	100.00
DPMEDINC	Income Relative to MSA Income (percent)	21,265	96.19	41.24	0.00	445.00
POP	Census Tract Population	21,265	5,595	2,883	0	71,872
OWNYR	Owner-occupied YR-round Housing Units	21,265	971	782	0	22,271
ROHU	Renter Occupied Housing Units	21,265	1,243	912	0	8,653
MDRENT	Median Contract Rent (dollars)	21,265	545	163	0	1,127
UNIT5	5+ Yr-round Housing Units	21,265	998	1,134	0	14,079
RUNIT5	5+ Yr-round Renter Occ Housing Units	21,265	801	852	0	8,603
VUNIT5	5+ Vacant Yr-round Housing Units	21,265	99	178	0	5,270

Distribution of Loan Purchasers

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Loan was Not Sold	18,678	87.8	18,678	87.8
Federal National Mortgage Association	851	4.0	19,529	91.8
Federal Home Loan Mortgage Corp.	1,096	5.2	20,625	97.0
Farmers Home Association	1	0.0	20,626	97.0
Commercial Bank	98	0.5	20,724	97.5
Savings Bank or Savings Association	83	0.4	20,807	97.8
Life Insurance Company	19	0.1	20,826	97.9
Affiliate Institution	22	0.1	20,848	98.0
Other Type of Purchaser	417	2.0	21,265	100.0

[a]Loan Agency code is either Office of Comptroller of the Currency, Federal Reserve System, or Federal Deposit Insurance Corp.
[b]Loan Agency code is Office of Thrift Supervision.
[c]Loan Agency code is National Credit Union Association of U.S. Department of Housing and Urban Development.
Source: Authors' calculations.

Table 4. Fannie Mae Loan Level Descriptive Statistics

Variable	Label	Number	Mean	Standard Deviation	Minimum	Maximum
NO_UNITS	Number of Units in Structure	990	188	136	5	1,481
ACQ_UPB	Unpaid Balance at Acquisition Date (dollars)	990	4,444,180	3,635,351	98,200	35,150,000
Loan per Unit			23,616			
Census Tract Information						
CCITY	Central City Dummy (percent)	990	57	49	0.00	100.00
MSAINC93	Median MSA Income (dollars)	990	42,635	6,930	21,600	63,100
MPCENT	Minority in Census Tract (percent)	990	24	22.99	0.00	100.00
DPMEDINC	Income Relative to MSA Income (percent)	990	106	39.69	25.00	400.00
POP	Census Tract Population	990	6,373	3,318	483	29,768
OWNYR	Owner-Occupied Yr-round Housing Units	990	1,252	831	0	7,472
ROHU	Renter-Occupied Housing Units	990	1,362	983	34	7,472
MDRENT	Median Contract Rent (dollars)	990	510	151	158	1,001
UNIT5	5+ Yr-round Housing Units	990	1,241	1,302	0	10,121
RUNIT5	5+ Yr-round Renter-Occupied Housing Units	990	974	936	0	6,708
VUNIT5	5+ Vacant Yr-round Housing Units	990	161	215	0	2,479

Frequencies of Discrete Variables

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
YEAR: Year of Acquisition				
Acquired in 1993	757	76.5	757	76.5
Acquired in 1994	233	23.5	990	100.0
FPURPOSE: Purpose of Loan				
Purchase	76	7.7	76	7.6
Refinancing	853	86.2	929	93.8
New Construction	60	6.1	989	99.9
Rehabilitation	1	0.1	990	100.0
SELL_INS: Seller Institution				
Mortgage Company	562	56.8	562	56.4
SAIF Insured Depository Institution	42	4.2	604	61.0
BIF Insured Depository Institution	4	0.4	608	61.4
Other	382	38.6	990	100.0

Source: Author's calculations.

Table 5. Descriptive Statistics at Census Tract Level for Census Tracts with Both HMDA and Fannie Mae Lending

Variable	Label	Number	Mean	Standard Deviation	Minimum	Maximum
HMDA Information						
HAVLOAN	Average Loan Size by Tract (dollars)	360	1,814,146	2,708,432	$15,000	21,500,000
LOAN_N	Average Number of Loans per Tract	360	2.26	2.34	1.00	28.00
HMDASUM	Average Sum of Loans by Tract (dollars)	360	3,140,367	5,857,574	$15,000	86,955,000
BANKS	Originated by Banks (percent)	360	51.56	45.61	0.00	100.0
THRIFTS	Originated by Thrifts (percent)	360	31.58	41.91	0.00	100.0
OTHER	Originated by Other (percent)	360	16.86	33.99	0.00	100.0
Fannie Mae Information						
ACQ_UPB	Average Unpaid Balance by Tract (dollars)	360	4,459,323	3,362,022	98,200	18,500,000
FANSUM	Average Sum of Loans by Tract (dollars)	360	5,209,290	5,891,696	98,200	82,024,992
NO_UNITS	Average Number of Units per Tract	360	174.18	137.83	5.00	1481.0
LOAN_N	Average Number of Loans per Tract	360	1.14	0.48	1.00	6.00
UNIT_SUM	Average SUM of Units by Tract	360	203.08	220.23	5.00	2802.0
MORTCOM	Originated by Mortgage Company (percent)	360	64.91	47.18	0.00	100.0
SAIF	Originated by SAIF Insured Depository Institution (percent)	360	8.33	27.17	0.00	100.0
BIF	Originated by BIF Insured Depository Institution (percent)	360	0.83	9.10	0.00	100.0
OTHERI	Originated by OTHER Institution (percent)	360	25.93	43.21	0.00	100.0
Census Tract Information						
MSAINC93	Median MSA Income (dollars)	360	43,690	6,709	30,300	63,100
MPCENT	Percent Minority in Census Tract	360	22.74	20.09	0.00	97.00
DPMEDINC	Income Relative to MSA Income (percent)	360	104.62	36.36	29.00	274.00
POP	Population	360	6661.5	3431.62	1065.00	29,768.00
OWNYR	Owner-Occupied Yr-round Housing Units	360	1,261	883	11	7,472
ROHU	Renter-Occupied Housing Units	360	1,537	1,065	116	7472
MDRENT	Median Value Rent (dollars)	360	531	151	216	1,001
UNIT5	5+ Yr-round Housing Units	360	1,395	1,432	0	10,121
RUNIT5	5+ Yr-round Renter-Occupied Housing Units	360	1,100	1,054	0	6,708
VUNIT5	5+ Vacant Yr-round Housing Units	36 0	160	216	0	2,199
INC120	120 Percent of Median Income by Tract (percent)	360	24.44	43.04	0.00	100.0

INC80	80 Percent of Median Income by Tract (percent)	360	20.28	40.26	0.00	100.0
UNDERS	HUD Under served Flag (percent)	360	25.83	43.83	0.00	100.0
Source: Authors'calculations.						

Table 7. Descriptive Statistics at Census Tract Level for Census Tracts with Only HMDA Lending

Variable	Label	Number	Mean	Standard Deviation	Minimum	Maximum
HMDA Information						
HAVLOAN	Average Loan Size by Tract (dollars)	9,632	535,176	#1,205,181	1,000	45,000,000
LOAN_N	Average Number of Loans per Tract	9,632	2.12	2.20	1.00	31.00
HMDASUM	Average Sum of Loans by Tract (dollars)	9,632	1,077,406	2,040,261	1,000	56,410,000
BANKS	Originated by Banks (percent)	9,632	47.23	47.16	0.00	100.00
THRIFTS	Originated by Thrifts (percent)	9,632	40.10	45.65	0.00	100.00
OTHER	Originated by Other (percent)	9,632	12.67	31.15	0.00	100.00
Census Tract Information[a]						
MSAINC93	Median MSA Income (dollars)	9,626	43,665	6,582	20,300	73,400
MPCENT	Percent Minority in Census Tract	9,626	30.45	29.92	0.00	100.00
DPMEDINC	Income Relative to MSA Income (percent)	9,626	98.13	40.75	0.00	445.00
POP	Population	9,626	5,092	2,849	0	71,872
OWNYR	Owner-Occupied Yr-round Housing Units	9,626	1,018	810	0	22,271
ROHU	Renter-Occupied Housing Units	9,626	916	713	0	8,653
MDRENT	Median Value Rent (dollars)	9,626	521	167	0	1,127
UNIT5	5+ Yr-round Housing Units	9,626	662	852	0	14,079
RUNIT5	5+ Yr-round Renter-Occupied Housing Units	9,626	525	634	0	8,603
VUNIT5	5+ Vacant Yr-round Housing Units	9,626	75	169	0	5,270
INC120	120 Percent of Median Income by Tract (percent)	9,626	21.39	41.01	0.00	100.00
INC80	80 Percent of Median Income by Tract (percent)	9,626	32.22	46.73	0.00	100.00
UNDERS	HUD Underserved Flag (percent)	9,626	36.52	48.15	0.00	100.00

[a]Observations are missing census tract information.
Source: Authors' calculations.

Table 6. Descriptive Statistics at Census Tract Level for Census Tracts with Only Fannie Lending

Variable	Label	Number	Mean	Standard Deviation	Minimum	Maximum
Fannie Mae Information						
ACQ_UPB	Average Unpaid Balance by Tract (dollars)	522	4,443,125	3,697,760	373,353	35,150,000
FANSUM	Average Sum of Loans by Tract (dollars)	522	4,836,004	4,051,072	373,353	35,150,000
NO_UNITS	Average Number of Units per Tract	522	198	130	12	1,066
LOAN_N	Average Number of Loans per Tract	522	1.11	0.41	1.00	6.00
UNIT_SUM	Average SUM of Units by Tract	522	217	150	12	1,066
MORTCOM	Originated by Mortgage Company (percent)	522	49.62	49.66	0.00	100.00
SAIF	Originated by SAIF Insured Depository Institution (percent)	522	1.15	10.67	0.00	100.00
BIF	Originated by BIF Insured Depository Institution (percent)	522	0.19	4.38	0.00	100.00
OTHERI	Originated by OTHER Institution (percent)	522	49.04	49.65	0.00	100.00
Census Tract Information						
MSAINC93	Median MSA Income (dollars)	522	41,929	7,040	21,600	63,100
MPCENT	Percent Minority in Census Tract	522	24.24	22.67	1.00	100.00
DPMEDINC	Income Relative to MSA Income (percent)	522	106.42	38.91	25.00	400.00
POP	Population	522	5,923	2,945	483	28,958
OWNYR	Owner-Occupied Yr-round Housing Units	522	1,226	795	0	6,174
ROHU	Renter-Occupied Housing Units	522	1,131	769	34	7,114
MDRENT	Median Value Rent (dollars)	522	492	149	158	1,001
UNIT5	5+ Yr-round Housing Units	522	981	950	0	9,527
RUNIT5	5+ Yr-round Renter-Occupied Housing Units	522	781	700	0	6,261
VUNIT5	5+ Vacant Yr-round Housing Units	522	145	206	0	2,479
INC120	120 Percent of Median Income by Tract (percent)	522	29.50	45.65	0.00	100.00
INC80	80 Percent of Median Income by Tract (percent)	522	22.80	41.99	0.00	100.00
UNDERS	HUD Underserved Flag (percent)	522	26.63	44.24	0.00	100.00

Source: Authors' calculations.

Table 8. Multifamily Lending Volume by Census Tract
(millions of dollars of originations)

Variable	Fannie Mae					HMDA				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Intercept	3.6048 (2.25)	3.7922 (2.36)	1.7005 (0.96)	0.3979 (0.24)	0.0184 (0.01)	0.5482 (1.93)	0.6299 (2.22)	-0.0729 (0.24)	-0.3543 (-1.26)	-0.4148 (-1.45)
Underserved		-0.8433 (-2.14)		-0.4113 (-1.02)			-0.2753 (-5.42)		-0.2321 (-4.66)	
Percent Minority			0.0046 (0.49)		0.0022 (0.24)			-0.0017 (-1.73)		-0.0044 (-4.79)
Percent of MSA Income			0.0145 (2.84)		0.0004 (0.07)			0.0067 (10.10)		0.0027 (3.73)
Median Rent				0.0080 (5.44)	0.0085 (5.07)				0.0019 (11.42)	0.0013 (6.97)
Multifamily Units: All				0.0010 (4.65)	0.0010 (4.58)				0.0012 (36.92)	0.0012 (37.00)
Multifamily Units: Vacant				-0.0016 (-1.20)	-0.0017 (-1.26)				-0.0020 (-11.16)	-0.0020 (-11.23)
Root MSE	4.817	4.807	4.797	4.638	4.643	2.273	2.270	2.254	2.077	2.072
R-square	0.077	0.082	0.087	0.149	0.148	0.047	0.050	0.063	0.205	0.209
Adj R-sq	0.028	0.032	0.036	0.100	0.097	0.042	0.045	0.058	0.201	0.204
Dep Mean	4.988	4.988	4.988	4.988	4.988	1.152	1.152	1.152	1.152	1.152
C.V.	96.573	96.368	96.173	92.966	93.076	197.345	197.064	195.631	180.208	179.830
Observations	881	881	881	881	881	9992	9992	9986	9986	9986

*t-ratios are in parentheses.
Source: Authors' calclulations.

Table 9. Estimates of Multifamily Mortgage Originations Using the SMLA and HMDA (billions of dollars)

Federal Reserve Bulletin Report (October 1994)		
Real Estate Assets of Commercial Banks in 1993	916.8	
Total Assets of Commercial Banks in 1993	3,598.6	
SMLA Banks Reporting Multifamily Activity	**All Banks Reporting MFOs > 0**	**All Banks Reporting MFOs > 50,000**
Total Multifamily Originations	1.85	1.85
Average Total Real Estate Assets	82.81	82.77
Number of Banks	28	26
Fed Real Estate Assets to SMLA Real Estate Assets Ratio	11.07	11.08
Estimated Multifamily Mortgage Originations[a]	20.48	20.50
HUD's Estimated Multifamily Originations Based on SMLA[b]		
Commercial Banks	18.82	
Mutual Savings Banks	1.11	
HMDA Commercial Banks Reporting Multifamily Originations	**All Banks Reporting MFOs[c]**	**MSA Banks Reporting MFOs[d]**
Total Originations by Commercial Banks	4.84	4.11
Total Assets of Commercial Banks	2,055	2,000
Fed Total Assets to HMDA Assets Ratio	1.75	1.80
Estimated Multifamily Mortgage Originations[e]	8.47	7.39

[a]Calculated as the product of the Fed to SMLA real estate assets ratio and total multifamily originations.

[b]Data from the U.S. Department of Housing and Urban Development (1995a).

[c]Commercial banks originations are identified by code=1, 2, 3 and ocode=0. There are 1,531 multifamily lenders represented in HMDA.

[d]Commercial banks with more than 1 million in assets and located in an MSA. There are 1,418 of these lenders.

[e]Calculated as the product of the Fed to HMDA total assets ratio and total multifamily originations.

Sources: Author's calculations, U.S. Department of Housing and Urban Development, and the *Federal Reserve Bulletin Report* (October 1994).

Table 10. 1993 Conventional Multifamily Loan Originations Based on HMDA Data for Commercial Banks by Institution Size

	Bank Class[a]			
	Largest	**Large**	**Medium**	**Small**
Defined by Rank	10 Largest	Next 90 Largest	Next 900 Largest	Not in 1,000 Largest
Defined by Asset Size	More than 36 Billion	Between 6 and 36 Billion	Between 300 Million and 6 Billion	Less than 300 Million
Number of Lenders	5	62	465	999
Average Assets (millions of dollars)	105,716	13,292	1,270	112
Average Total Multifamily Originations (thousands of dollars)	22,025	21,863	5,262	926
Multifamily Originations as a Percent of Total Assets	0.45	0.58	1.09	1.33
Commercial Banks Multifamily Loans/Assets[b] (percent)	0.53	0.71	1.07	0.84

[a]Institution size determined by total assets, and categories are the same as those used in *Federal Reserve Bulletin* (June 1994) for Commercial Banks. U.S. Commercial Banks have 3,598.6 billion in total assets (*Federal Reserve Bulletin*, October 1994).

[b]The *Federal Reserve Bulletin* reports share of assets held in multifamily residential loans, not originations to assets, for domestic commercial banks and nondeposit trusts.

Source: Author's calculations, *Federal Reserve Bulletin* (June 1994), *Federal Reserve Bulletin* (October 1994).

Table 1

Table 2

Table 3

Table 4

Table 5

Table 6

Table 7

Table 8

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Table 10

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