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# Securitized Jumbo Mortgages: 1986 - 2005

by

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## Abstract

# Securitized Jumbo Mortgages: 1986 - 2005

This paper provides a historical review of the characteristics of jumbo mortgages financed through securitization. The research uses loan-level data on a large proportion of all jumbo mortgages originated from 1986 through 2005 and later securitized. That sample permits detailed analysis of variations over time in the purchase and refinance shares of jumbo loans that were securitized, the types of loan products preferred by borrowers who took out those jumbo loans, the loan-to-value (LTV) ratios of the mortgages, and the credit scores of the borrowers.

The analysis finds that the fixed-rate share of jumbo mortgages that were securitized is highly sensitive to changes in the spread between the yields on fixed- and adjustable-rate loans. Year-to-year fluctuations in the average sale price of houses financed with jumbo mortgages that were securitized are more pronounced than variations in the sale prices of all new and existing homes in the U.S. During the protracted episode of extraordinarily low, single-digit mortgage rates of 2001-2004, hybrid and interest-only (IO) adjustable-rate mortgages comprised a rapidly growing share of jumbo loans that were securitized. During that episode of declining interest rates, borrowers preferred making larger down payments on jumbo mortgages that were securitized that had both fixed and adjustable rates and that were used both to purchase homes and to refinance existing loans.

Fifty-eight percent of borrowers who took out jumbo mortgages originated since 1996 and later securitized had FICO scores at origination of 700 to 800. Borrowers with FICO scores below 650 accounted for 18 percent of all those securitized jumbo loans. Borrowers with FICO scores greater than 800 consistently took out loans with low LTV ratios. There is a striking degree of consistent risk-based pricing by LTV ratio of jumbo mortgages that are securitized. When those loans are grouped based on borrower credit scores, interest rates are generally higher as LTV ratios increase. The yields on jumbo mortgages that are securitized are far less sensitive to borrower credit scores.

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# Securitized Jumbo Mortgages: 1986 - 2005

## I. INTRODUCTION

This paper provides a historical review of the characteristics of jumbo mortgages financed through securitization. A jumbo mortgage is a 1-4 (single-) family residential loan whose principal balance at origination exceeds the conforming loan limit for that year. Fannie Mae and Freddie Mac, the two government-sponsored enterprises (GSEs) that support the secondary mortgage market, are restricted to buying single-family loans that have balances less than that limit, which is adjusted annually based on changes in U.S. housing prices. In recent years jumbo mortgages have accounted for one-fifth to one-quarter of all originations of conventional loans—those that are neither insured nor guaranteed by the federal government—and about one-third of jumbo originations have been securitized. The market for mortgage-backed securities (MBS) collateralized by jumbo loans is the fourth largest segment of the U.S. secondary mortgage market, after the markets for MBS guaranteed by Fannie Mae, Freddie Mac, and the Government National Mortgage Association (Ginnie Mae).

Most previous research on the jumbo mortgage market has relied on the Monthly Interest Rate Survey (MIRS) conducted by the Federal Housing Finance Board (FHFB), which collects data on conventional first mortgages used to purchase homes (McKenzie 2002; Passmore, Sherlund, and Burgess 2005). The MIRS has three major shortcomings: the survey does not collect information on refinance mortgages, lacks data on the credit history of borrowers, and is based on a small sample of loans. This paper uses a sample of over 2.7 million jumbo loans developed from a June 2006 dataset provided by LoanPerformance.com, a private firm that collects information from servicers about the collateral backing MBS. That dataset provides loan-level information on a large proportion of all jumbo mortgages securitized since 1970. The sample used in the paper permits detailed analysis of variations over time in the purchase and refinance shares of jumbo loans that have been securitized, the types of loan products preferred by jumbo borrowers, the loan-to-value (LTV) ratios of the mortgages, and the credit scores of the borrowers.

*The author thanks Laura Goren for her painstaking work in updating an earlier draft with the most recent 2005 data.

Future research will use the sample to examine the spreads between the yields of jumbo and non-jumbo mortgages.

The remainder of the paper is organized as follows. Section II summarizes the evolution of the market for jumbo mortgages, focusing particularly on origination and securitization activity since 1992. Section III discusses the characteristics of the securitized jumbo mortgages in the sample used in the paper. Section IV concludes the paper and indicates avenues for future research. Appendix A summarizes how the sample used in the paper was created and provides descriptive statistics on key variables. Appendix B compares the sample to data reported by the FHFB's MIRS.

## II. THE EVOLUTION OF THE MARKET FOR JUMBO MORTGAGES

The distinction between jumbo and non-jumbo conventional mortgages dates to 1970, when the conforming loan limit was established. The volume of jumbo mortgage originations was relatively low in the 1970s and 1980s but grew rapidly in the 1990s and reached $570 billion in 2005. The primary drivers of the growth of jumbo originations have been changes in the conforming limit and the expansion of the conventional mortgage market as a whole. Securitization of jumbo loans began in the early 1980s and did not exceed $70 billion a year until 1992, but expanded rapidly in the late 1990s, reaching $237 billion in 2003 before declining to $205 billion in 2005. This section summarizes growth in the origination and securitization of jumbo mortgages, focusing particularly on activity since 1992. The section also provides recent information on the geographic distribution of jumbo loans that have been securitized.

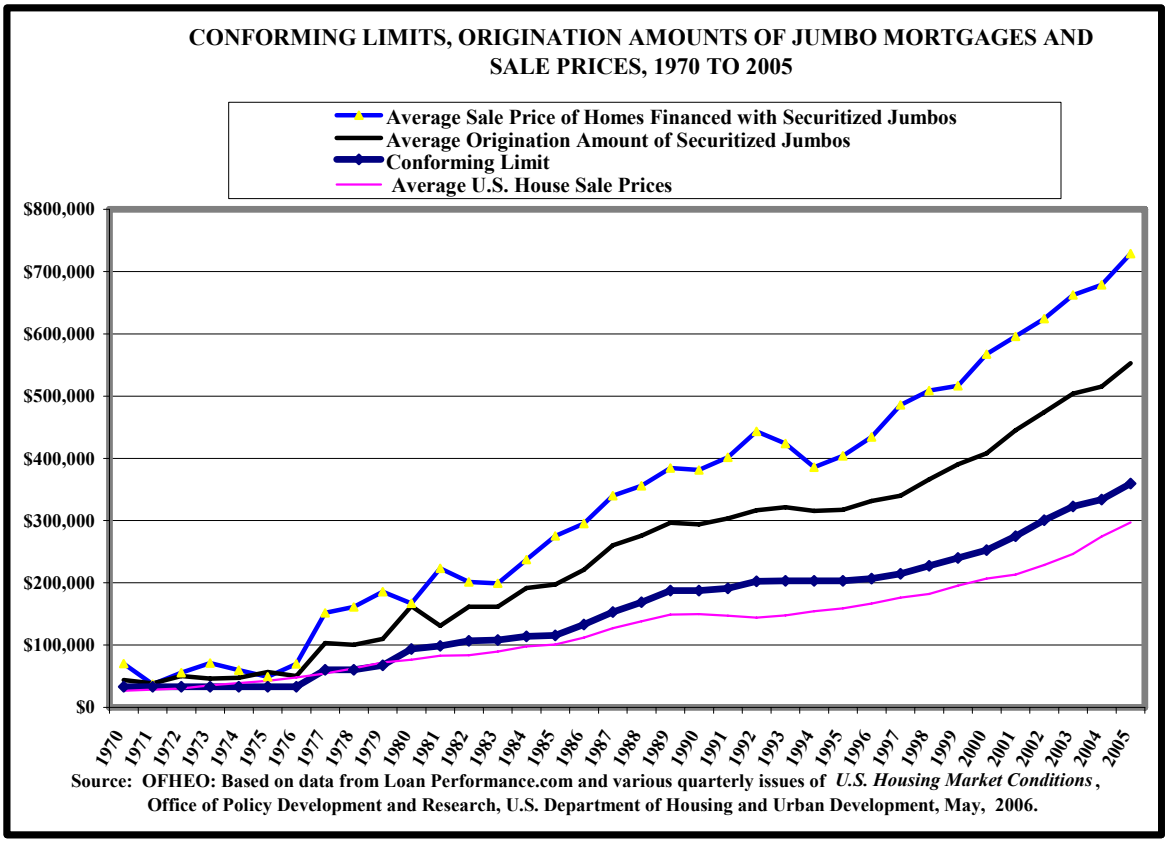
### Changes in the Conforming Loan Limit

The Emergency Home Finance Act of 1970, which authorized the creation of Freddie Mac, established what came to be called the conforming loan limit. The limit has ranged from $33,000 in the early 1970s to $417,000 in 2006. Since 1980, the limit has been adjusted

upwards each year to reflect the percentage change (in the year ending the previous October) in the national average purchase price for all conventionally financed homes, as reported by the FHFB's MIRS. The limit is 50 percent higher in Alaska, Hawaii, Guam, and the U.S.Virgin Islands than in the continental U.S.[1]

The average jumbo mortgage has a principal balance at origination that is considerably greater than the conforming loan limit. For example, the sample used in this paper indicates that the annual average loan size of jumbo mortgages originated in 2005 was $552,684.[2] That average exceeded that year's conforming loan limit of $359,650 by 53.7 percent. That percentage differential was lower than the 58.4 percent average differential over the 25-year interval ending in 2005 (Chart 1).

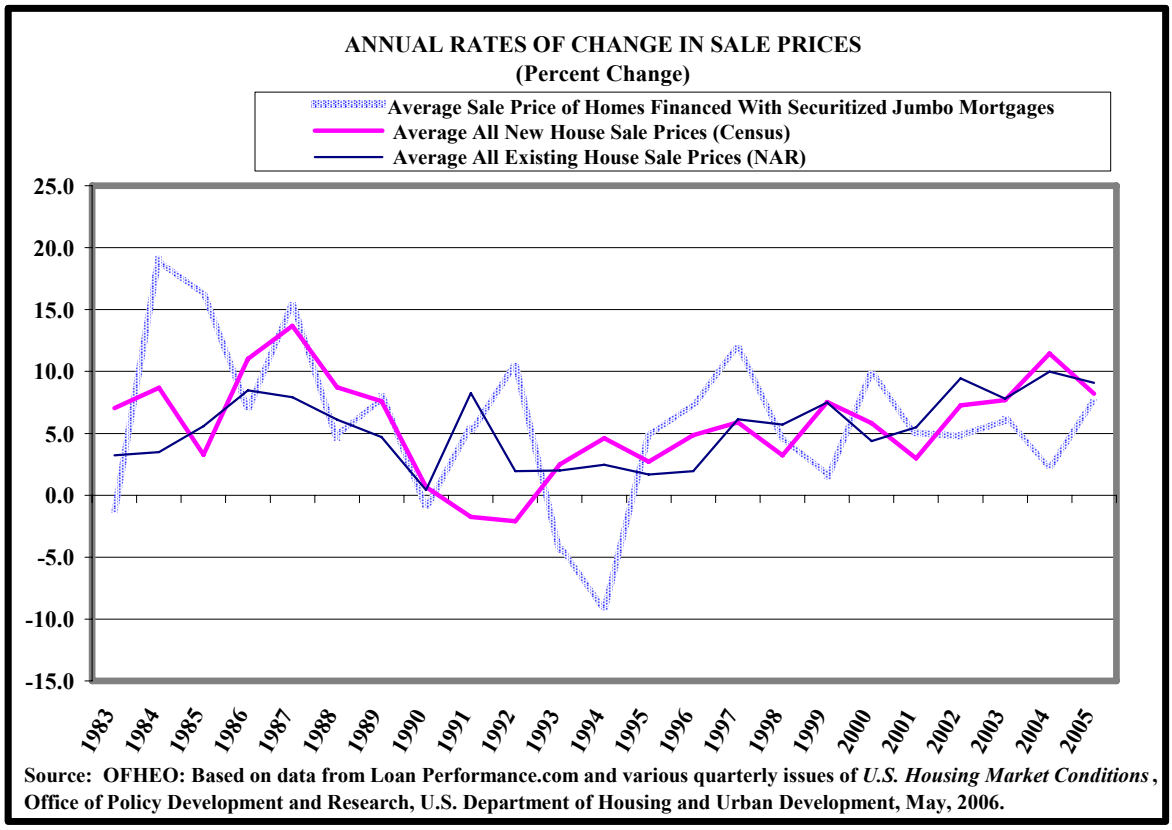
**CHART 1**




[1] 12 USC 302 (b)(2) and 305(a)(2)
[2] The median value was $486,615.

Chart 2 compares the annual rates of change from 1983 through 2005 in the average sale prices of all new and existing homes and of homes financed with jumbo mortgages that were securitized. Year-to-year fluctuations in the annual average sale price of houses financed with those jumbo loans were more pronounced than variations in the sale prices of new and existing homes. That finding is consistent with research by Ambrose, Buttimer, and Thibodeau (2001), which found that the prices of jumbo-financed homes are more volatile than the prices of less expensive homes.

**CHART 2**

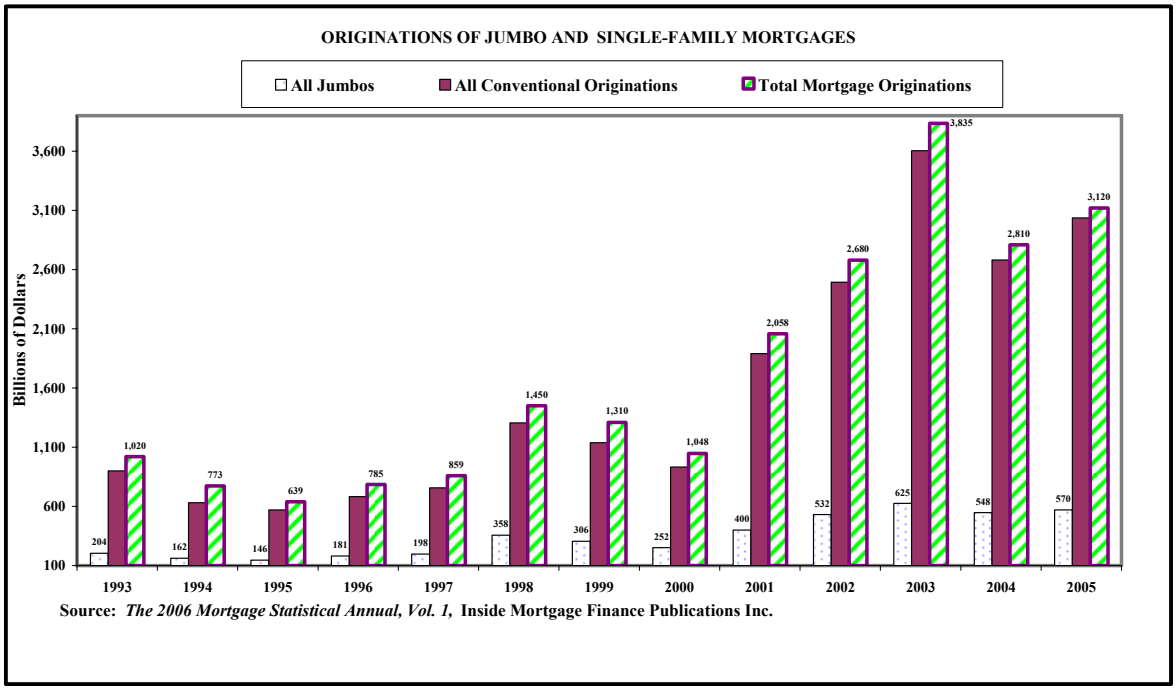



**Source: OFHEO: Based on data from Loan Performance.com and various quarterly issues of *U.S. Housing Market Conditions*, Office of Policy Development and Research, U.S. Department of Housing and Urban Development, May, 2006.**

**Originations of Jumbo Mortgages, 1993 - 2005**

The volume of jumbo mortgage originations more than tripled between 1993 and 2005. With the exceptions of 1995, 1999, 2000 and 2004, the jumbo market expanded in each year of that period (Chart 3). The growth of the jumbo market was most pronounced after

## CHART 3




2000. Beginning in November of that year, a protracted episode of declining interest rates helped to produce record increases in housing activity. Conventional market originations almost quadrupled from 2000 to 2003, reaching a record-high of $3.6 trillion in the last year. Over that interval, the volume of jumbo mortgage originations more than doubled, rising to $625 billion in 2003. The relatively slower pace of growth of jumbo originations reduced the jumbo share of all originations. That share declined from 24 percent in 2000 to 16.3 percent in 2003 (Table 1). In 2004, jumbo originations slipped by 12.3 percent to $548 billion. That decline was lower than the drop in all mortgage market originations, so that the jumbo share of the market increased to 19.5 percent. In 2005, jumbo originations rose by 4 percent to $570 billion, but the jumbo share of the market slipped to 18.3 percent.

Table 2 shows that the strong inverse relationship between changes in interest rates and changes in the demand for conventional loans were also very much in evidence in the jumbo market. The sharp increases in mortgage rates, as reflected in the commitment rate on 30-year fixed rate mortgages (FRMs) reported by Freddie Mac, that occurred during

**TABLE 1**

**JUMBO SHARE OF TOTAL MORTGAGE ORIGINATIONS**

| Year | All Jumbo Originations (Billions of Dollars) | Total Mortgage Originations (Billions of Dollars) | Jumbo Share of All Originations (%) |
|---|---|---|---|
| 1993 | 204 | 1,020 | 20.0 |
| 1994 | 162 | 773 | 21.0 |
| 1995 | 146 | 639 | 22.9 |
| 1996 | 181 | 785 | 23.0 |
| 1997 | 198 | 859 | 23.0 |
| 1998 | 358 | 1,450 | 24.7 |
| 1999 | 306 | 1,310 | 23.4 |
| 2000 | 252 | 1,048 | 24.0 |
| 2001 | 400 | 2,058 | 19.4 |
| 2002 | 532 | 2,680 | 19.9 |
| 2003 | 625 | 3,835 | 16.3 |
| 2004 | 548 | 2,810 | 19.5 |
| 2005 | 570 | 3,120 | 18.3 |

*Source: The 2006 Mortgage Market Statistical Annual, Vol. II.*, Inside Mortgage Finance Publications, Inc., 2006

1994, 1999 and 2000 were associated with significant reductions in the volume of both jumbo and conventional mortgage originations. Between 2000 and 2005, the annual average Freddie Mac commitment rate declined by 227 basis points to 5.99 percent. That rate reduction was associated with a surge in demand for all conventional mortgages, including jumbo loans.

**TABLE 2**

**GROWTH RATES FOR JUMBO AND ALL CONVENTIONAL SINGLE-FAMILY MORTGAGES AND CHANGES IN INTEREST RATES[b]**

| | Originations and Securitization of Jumbo Mortgages | | | | Changes in Interest Rates | |
|---|---|---|---|---|---|---|
| Year | Loan Performance Sample of Jumbos Loans That Were Securitized[a] | Issuance of Private-Label MBS Backed by Jumbo Loans[b] | All Jumbo Originations[b] | All Conventional Single-Family Originations[b] | 3-Month Treasury Bill Rate[c] | Freddie Mac Effective Commitment Rate on 30-Year FRMs[d] |
| | Year-to-Year Percent Change | | | | Percentage Points | |
| **1994** | -69.1 | -35.4 | -20.4 | -29.7 | 1.25 | 1.07 |
| **1995** | -66.9 | -44.4 | -9.9 | -10.4 | 1.24 | -0.40 |
| **1996** | 41.9 | 10.1 | 23.5 | 20.4 | -0.48 | -0.17 |
| **1997** | 191.1 | 65.0 | 9.4 | 11.1 | 0.05 | -0.21 |
| **1998** | 233.7 | 111.9 | 80.9 | 69.4 | -0.28 | -0.78 |
| **1999** | -35.0 | -31.4 | -14.4 | -14.1 | -0.14 | 0.47 |
| **2000** | -13.9 | -50.9 | -17.8 | -15.5 | 1.18 | 0.63 |
| **2001** | 212.9 | 214.2 | 59.0 | 102.8 | -2.42 | -1.11 |
| **2002** | 31.7 | 20.6 | 33.0 | 31.5 | -1.79 | -0.49 |
| **2003** | 47.0 | 38.4 | 19.4 | 44.8 | -0.60 | -0.72 |
| **2004** | 31.6 | -1.7 | -13.7 | -25.6 | 0.36 | 0.04 |
| **2005** | -2.0 | -12.3 | 4.0 | 13.2 | 1.78 | 0.00 |
| **Average** | **50.3** | **23.7** | **12.8** | **10.6** | **0.01** | **-0.14** |

[a] OFHEO sample of securitized jumbo mortgages based on data from LoanPerformance.com.
[b] *The 2006 Mortgage Market Statistical Annual, Vol. II*., Inside Mortgage Finance Publications, Inc., 2006
[c] H.15., Selected Interest Rates, Board of Governors of the Federal Reserve System, 2006
[d] Freddie Mac, Primary Mortgage Market Survey (PMMS). The effective commitment rate is equivalent to the coupon rate plus 20 percent of each point assessed.

**Securitization of Jumbo Mortgages, 1993-2005**

The earliest non-agency MBS backed by jumbo mortgages were issued in 1977 by Bank of America. Initially, the volume of activity was very low. The ensuing years saw an inverted yield curve that eliminated the differential between mortgage rates and funding costs. That motivated lenders to turn to the secondary market to unload sizable portions of their fixed-rate loans. Many of these initial issues that were sold on the secondary market

were supported by pool insurance or letters of credit and were rated double-A by Standard and Poor's (Fabozzi, Ramsey, and Marz 2000).

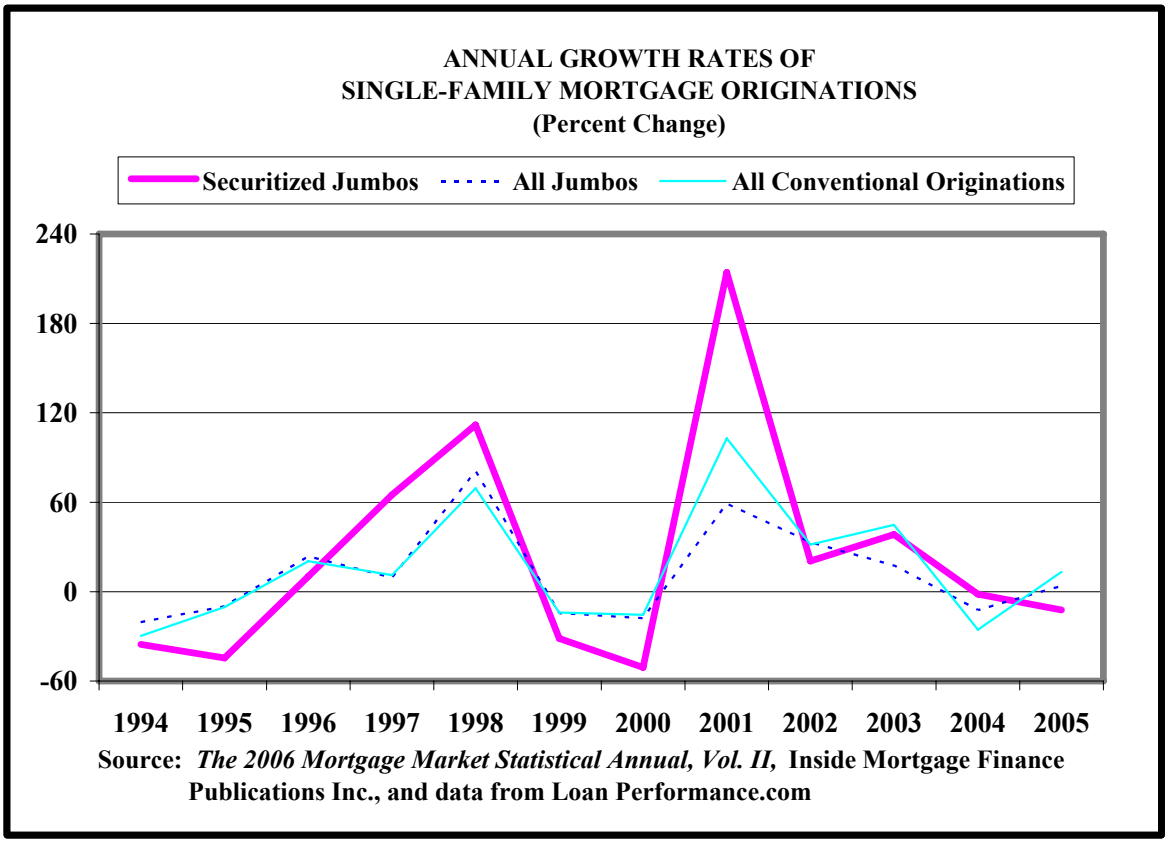
In 1984, the passage of the Secondary Mortgage Market Enhancement Act (SMMEA) provided a significant boost to the secondary market for jumbo mortgages. The legislation eliminated the need for issuers to register each new MBS separately and allowed shelf registration of non-agency issues rated double-A or higher. Another boost to the non-agency market came when, in 1986, an interim ruling by the IRS removed the unfavorable tax treatment of multi-class MBS. That was followed in 1987 by Congressional passage of Real Estate Mortgage Investment Conduit (REMIC) legislation. The latter two changes allowed a broad range of issuers to use subordinated securities to create highly rated multi-class MBS, without regard to the issuer's credit rating, and facilitated widespread use of multiclass securities in the nonagency secondary market.

The rapid expansion in the growth of non-agency issues received was spurred by several other factors. Among them was the 1991 to 1993 rally that occurred in bond markets and an accompanying general decline in interest rates. At the same time, an educational campaign sponsored by Wall Street dealers and the rating agencies, together with the increased use of larger deal sizes, more uniformity in credit enhancement structures, and access to a broader spectrum of investors all contributed to a narrowing of yield spreads on rated subordinated non-agency MBS. The conditions set the stage for a rapid rise in the issuance of non-agency jumbo securities.

Table 2 shows that our Loan Performance sample of jumbo loans that were securitized expanded at an average annual rate of 50.3 percent from 1994 to 2005. That growth rate was substantially higher than the 23.7 percent rate for issuance of private-label MBS backed by jumbo loans and the 12.8 percent rate reported for all jumbo mortgage originations. In 2005, the volume of jumbo loans securitized amounted to $205 billion and accounted for 35.9 percent of the $570 billion jumbo market.

In general, since 1993 annual fluctuations in the volume of jumbo loans originated that were securitized have closely followed those of all jumbo loans (Chart 4). The directional changes are identical, but the magnitude of the year-to-year fluctuations in originations of jumbo mortgages that were securitized tends to be considerably larger than for all jumbos. Table 1 shows that the year-to-year percentage growth in originations of jumbo mortgages that were securitized exceeded 100 percent in 1998 and 200 percent in 2001. Those extraordinary gains were associated with sharp declines in commitments rates for 30-year FRMs. By contrast, significant reversals in originations of jumbo loans that were securitized—as occurred during 1994, 1999, and 2000—were associated with episodes of increasing interest rates. That pattern closely mirrors the pattern of changes in total jumbo originations.

**CHART 4**



**Geographic Distribution of Jumbo Loans That Were Securitized**

California has long been the state with the highest volume of jumbo mortgage originations. In the sample used in this paper, 59.4 percent of the dollar volume of jumbo loans originated in 2005 that were securitized financed properties that were located in California (Table 3). New York ranked a distant second with 4.9 percent of all originations of jumbo loans that were securitized. California's dominance reflects a much greater number of jumbo loans than other states, rather than a larger average jumbo loan size. Twenty states, the District of Colombia, and one U.S. territory reported average loan amounts for jumbo mortgages originated in 2005 and securitized that were higher than in California.[3]

**TABLE 3**

**JUMBO MORTGAGES ORIGINATED IN 2005 AND SECURITIZED, BY STATE**

| Rankings of All States, by Volume | | | Rankings of Top-10 Highest Volume States, by Average Loan Amount | |
|---|---|---|---|---|
| State | Volume (Mil. of Dollars) | Percent of Total | State | Average Loan Amount |
| CA | $158,293 | 59.4% | FL | $569,438 |
| NY | $12,961 | 4.9% | NY | $563,316 |
| FL | $12,701 | 4.8% | IL | $555,902 |
| VA | $8,760 | 3.3% | CA | $554,599 |
| NJ | $7,560 | 2.8% | MA | $552,714 |
| MD | $7,321 | 2.7% | AZ | $543,524 |
| IL | $5,393 | 2.0% | NJ | $542,405 |
| AZ | $5,286 | 2.0% | WA | $539,539 |
| MA | $5,013 | 1.9% | MD | $513,508 |
| WA | $4,853 | 1.8% | VA | $511,559 |
| **Top-10** | **$228,142** | **85.7%** | **Top-10[a]** | **$551,676** |
| **Other** | **$38,218** | **14.3%** | **Other [a]** | **$558,776** |
| **All States** | **$266,359** | **100.0%** | **All States [a]** | **$552,684** |

[a]Weighted averages, by number of loans

Source: OFHEO sample of jumbo mortgages securitized based on data from LoanPerformance.com.

[3] The applicable conforming loan limits are 50 percent higher for mortgages secured by properties in Alaska, Guam, Hawaii, and the U.S. Virgin Islands. Hawaii and the U.S. Virgin Islands were among those places having higher average origination amounts than California.

## III. CHARACTERISTICS OF SECURITIZED JUMBO MORTGAGES

This section summarizes the major characteristics of jumbo mortgages that were securitized in our sample, focusing particularly on the period since 1986. The section shows how changes in the level of mortgage interest rates and in the spread between the yields on fixed- and adjustable-rate loans have affected the relative shares of those product types and of purchase and refinance mortgages in jumbo loans sold into the secondary market. Special attention is given to the refinancing boom spurred by the decline in interest rates in 2000 to 2004. Further, the section examines the credit risk of jumbo mortgages that were securitized, as reflected in loan-to-value ratios and borrower credit scores, and how that risk has been reflected in loan rates.

### Product Type

With very few exceptions, traditional FRMs have consistently accounted for a substantially larger share of jumbo loans that have been securitized than traditional adjustable-rate mortgages (ARMs). Borrowers who take out fixed-rate loans pay a higher interest rate to obtain protection against increases in the monthly payments due on ARMs that would result from tightening of monetary conditions. Over the interval 1986 to 2005, 60.0 percent of the mortgages covered by our sample were traditional FRMs (Table 4 and Chart 5). Traditional adjustable-rate loans accounted for 30.2 percent, interest-only (IO) ARMs 5.5 percent, option ARMs 1.9 percent, and interest-only FRMs 0.3 percent of the total volume of originations in the sample. In the conventional mortgage market as a whole, the comparable shares for FRMs and all types of ARMs were 72 percent and 28 percent, respectively, in the same period.[4]

[4] Data for the conforming market from Freddie Mac's Primary Mortgage Market Survey (PMMS) show that the share of all ARMs originated represented an annual average of 22 percent over the interval 1995 to 2005. For the sample of jumbo loans under review, that share was 37.6 percent.

## TABLE 4

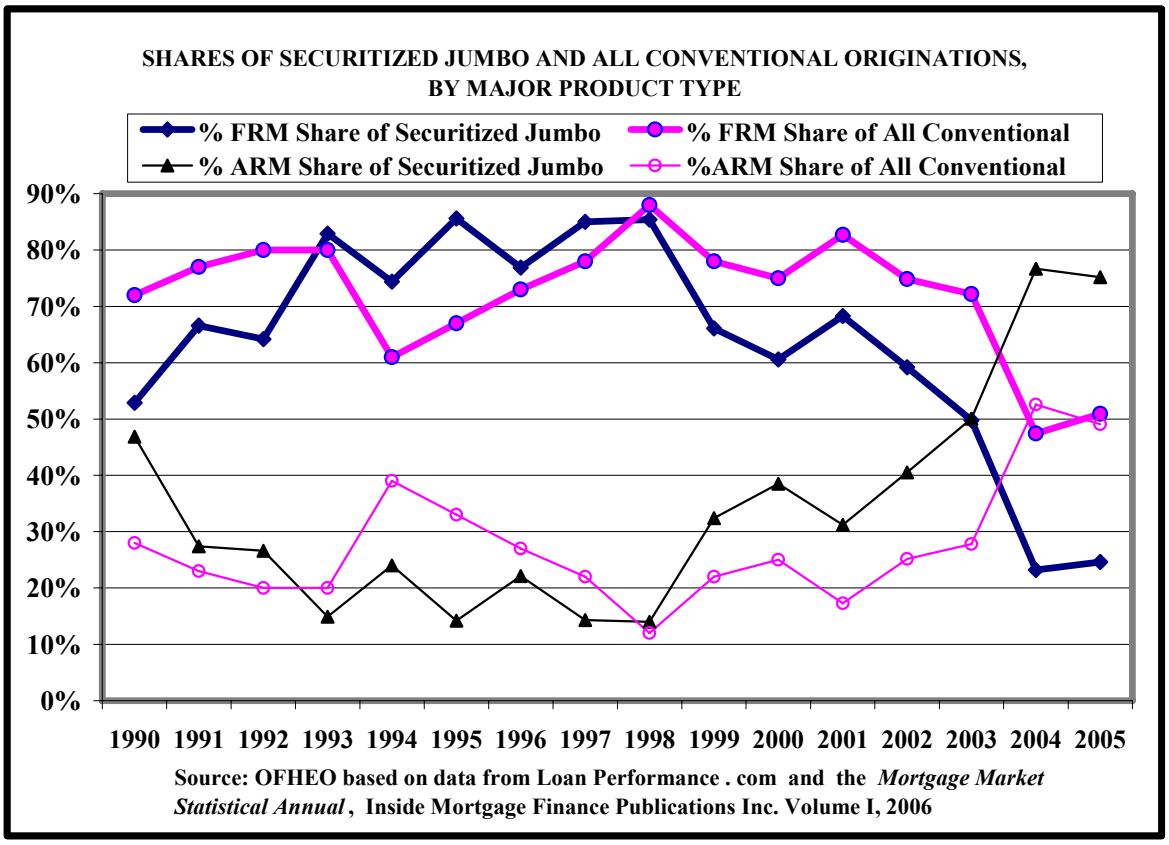
## ORIGINATIONS OF JUMBO MORTGAGES THAT WERE SECURITIZED, 1986 TO 2005 BY PRODUCT TYPE: PERCENT SHARE OF TOTAL LOANS VERSUS INTEREST RATES[a]

| | Share of Originations by Product Type | | | | | | Average Commitment Rates and Spread (Percent) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Fixed-Rate | | Adjustable-Rate | | | Other Mortgages | FRM | ARM | FRM-ARM Spread |
| | Tradi-tional | Interest-Only | Traditional | Interest-Only | Option | | | | |
| 1986 | 68.6% | 0.0% | 30.4% | 0.0% | 0.0% | 0.9% | 10.18 | 8.42 | 1.76 |
| 1987 | 46.2% | 0.0% | 52.0% | 0.0% | 0.0% | 1.8% | 10.2 | 7.82 | 2.38 |
| 1988 | 21.5% | 0.0% | 76.8% | 0.0% | 0.0% | 1.7% | 10.34 | 7.90 | 2.44 |
| 1989 | 47.2% | 0.0% | 48.3% | 0.0% | 0.0% | 4.5% | 10.32 | 8.80 | 1.52 |
| 1990 | 52.3% | 0.0% | 46.0% | 0.3% | 0.0% | 1.4% | 10.13 | 8.36 | 1.77 |
| 1991 | 66.5% | 0.0% | 26.8% | 0.5% | 0.0% | 6.2% | 9.25 | 7.10 | 2.15 |
| 1992 | 64.1% | 0.0% | 26.0% | 0.1% | 0.0% | 9.8% | 8.40 | 5.63 | 2.77 |
| 1993 | 82.8% | 0.0% | 14.5% | 0.0% | 0.0% | 2.7% | 7.33 | 4.59 | 2.74 |
| 1994 | 74.4% | 0.0% | 23.8% | 0.0% | 0.0% | 1.7% | 8.36 | 5.33 | 3.03 |
| 1995 | 85.4% | 0.0% | 13.9% | 0.3% | 0.0% | 0.4% | 7.96 | 6.07 | 1.89 |
| 1996 | 76.6% | 0.0% | 20.8% | 1.2% | 0.0% | 1.4% | 7.81 | 5.67 | 2.14 |
| 1997 | 84.8% | 0.0% | 12.0% | 2.3% | 0.0% | 0.9% | 7.60 | 5.60 | 2.00 |
| 1998 | 85.2% | 0.0% | 13.6% | 0.3% | 0.0% | 0.9% | 6.94 | 5.59 | 1.35 |
| 1999 | 65.6% | 0.1% | 31.2% | 1.0% | 0.0% | 2.2% | 7.43 | 5.98 | 1.45 |
| 2000 | 60.5% | 0.1% | 31.3% | 1.9% | 5.2% | 1.0% | 8.06 | 7.05 | 1.01 |
| 2001 | 68.2% | 0.1% | 28.0% | 2.7% | 0.5% | 0.5% | 6.97 | 5.83 | 1.14 |
| 2002 | 59.1% | 0.1% | 31.1% | 9.2% | 0.2% | 0.3% | 6.54 | 4.62 | 1.92 |
| 2003 | 49.0% | 0.6% | 32.3% | 17.1% | 0.5% | 0.5% | 5.82 | 3.76 | 2.06 |
| 2004 | 21.9% | 1.2% | 28.4% | 38.3% | 9.6% | 0.6% | 5.84 | 3.90 | 1.94 |
| 2005 | 19.1% | 4.8% | 16.7% | 33.9% | 22.1% | 3.4% | 5.86 | 4.49 | 1.37 |
| **Average** | **60.0%** | **0.3%** | **30.2%** | **5.5%** | **1.9%** | **2.1%** | **8.07** | **6.13** | **1.94** |

Source: OFHEO based on data from LoanPerformance.com and Freddie Mac.

[a] The term "traditional ARM" is typically used to refer to a mortgage that has an initial interest rate that resets within a short period, typically the first 12 months, following the date of first payment and thereafter has a rate-reset frequency of 12 months or less. Nearly all of the loans counted in the column labeled "traditional ARMs" in Table 3 are of that type. Before 2001, those mortgages include a very small proportion of loans that carry fixed rates for a number of years before converting to an adjustable rate. Interest-only (IO) mortgages pay interest only for an initial period, after which the rate may be either fixed (IO FRMs) or adjustable (IO ARMs). Option ARMs offer consumers four payment options, and if an option ARM borrower chooses to make only the minimum monthly payment, negative amortization results. Other mortgages include balloons, Agency two-steps, and other types of FRMs.

## CHART 5




Changes in the cost of mortgage credit change the preferences of households for fixed- and adjustable-rate loans. Higher mortgage rates and wider spreads between FRM and ARM yields tend to increase the adjustable rate share of originations, as households increase their demand for relatively lower-priced products. Since depositories are likely to hold most ARMs in portfolio, a larger adjustable-rate share of originations tends to reduce the proportion of originations, and change the mix of product types, that are securitized.[5]

Our sample indicates that the fixed-rate share of jumbo mortgages that are securitized is sensitive to changes in the spread between the yields of fixed- and adjustable-

[5] For a discussion of how changes in interest rates affected originations and securitization of non-jumbo mortgages in 2005, see *Mortgage Markets and the Enterprises in 2005*, in the research paper series of the Office of Federal Housing Enterprise Oversight (2006), and previous papers in that series that discuss earlier years.

rate loans (Table 4), although there is wide variation in the magnitude of those effects. To illustrate, interest rates and the FRM/ARM spread declined sharply from 1988 to 1991.

Specifically, a decline of 109 basis points in FRM commitment rates contributed to a narrowing of the FRM/ARM spread on mortgages that were securitized from 244 to 152 basis points in 1989; that spread then recovered to 215 basis points in 1991 (Table 4). Those changes in relative prices helped to produce a shift in originations towards fixed-rate loans, raising their market share from 21.5 percent in 1988 to 66.5 percent in 1991. The share of traditional ARMs declined from 76.8 percent to 26.8 percent over the same interval. A small volume of jumbo IO ARMs also began to be securitized during the period.

That pattern was reversed during the most recent episode of declining mortgage interest rates in 2001 to 2004. During that period, the 193 basis point decline in ARM rates exceeded the 113 basis point drop in FRM rates. As a consequence, the FRM/ARM rate spread increased from 114 to 194 basis points, and contributed to an increase in the shares of option and IO ARMs.

Balloon loans have not accounted for a significant share of jumbo mortgages that have been securitized, except for a few years in the early 1990s, as they have been largely replaced by the option and IO ARMs. Option ARMs offer payment flexibility, and if the borrower chooses to make the minimum monthly payment in a given month then negative amortization can occur. After the initial option period (generally 5 years) the loan is reset to amortize over the remaining years. During 2000, borrowers who took out jumbo mortgages that were securitized showed an increased preference for option ARMs, which accounted for 5.2 percent of the loans in our sample. The share of jumbo mortgages that were securitized that were option ARMs then fell to a negligible level in 2001 through 2003, but jumped to 9.6 percent in 2004 and 22.1 percent in 2005.

Our sample also indicates a growing interest in IO mortgages. The IO ARM share increased from 1.9 percent of all jumbo loans originated in 2000 that were securitized to a

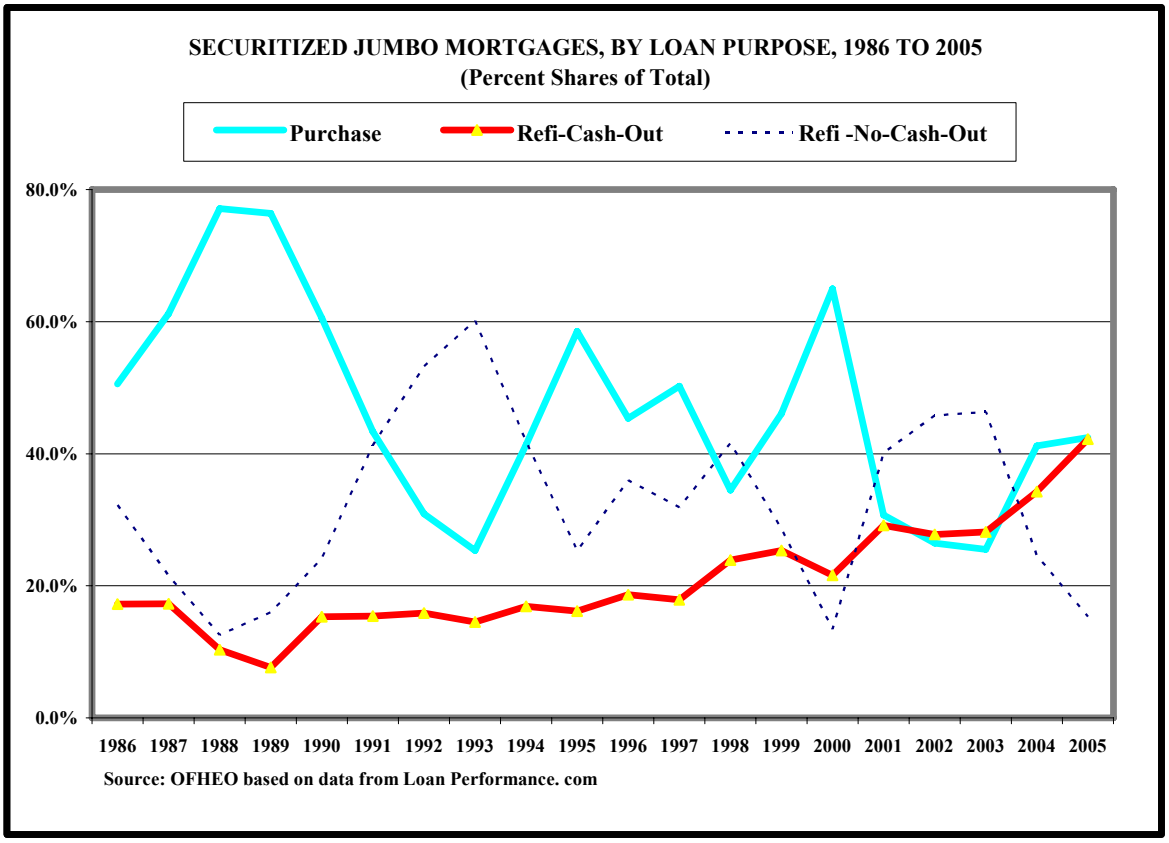
record-high 38.3 percent in 2004, and then retreated slightly to 33.9 percent in 2005. Interest-only FRMs, which accounted for just 1.2 percent of jumbo loans originated in 2004 that were securitized, rose to 4.8 percent in 2005. IO FRMs and ARMs accounted for a combined 38.7 percent of all jumbo loans originated in 2005 that were securitized, down slightly from 39.5 percent in 2004.

The expansion in option and interest-only ARMs and interest-only FRMs came at the expense of traditional FRM and ARM products, as borrowers opted for the greater flexibility of the former in the generally lower interest-rate environment. In 2005, traditional FRMs accounted for 19.1 percent of all jumbo mortgages that were securitized, the lowest level in 20 years (Table 4). Jumbo borrowers also demanded a smaller number of traditional ARM mortgages in 2005, decreasing that share to 16.7 percent of jumbos that were securitized, down from 32.3 percent two years earlier.

**Loan Purpose**

Our sample indicates that refinance mortgages accounted for more than one-half of the dollar volume of jumbo loans originated in the twenty-year interval ending in 2005 and securitized. Refinance loans accounted for an annual average of 53.4 percent of those jumbos, whereas purchase loans accounted for 46.6 percent. However, the refinance share was greater at the end of that period. In 2003, the refinance share of jumbo mortgages that were securitized was 74.5 percent, up from its most recent low of 35.0 percent in 2000, the last year in which FRM commitment rates exceeded 8 percent. In 2004 and 2005, with an increase in both FRM and ARM rates the refinance share receded to annual average of 58.8 percent and 57.5 percent, respectively (Chart 6).

## CHART 6




During periods of rising mortgage interest rates, as occurred during the first half of 2000, the relative share of refinancing activity tends to decline and the purchase share of mortgage originations tends to rise. By contrast, during periods of sharply declining interest rates, as we witnessed between 2000 and 2003, refinancing activity increases sharply, while the purchase share of total originations tends to decline.

The sharp decline in long-term interest rates from mid-2000 to mid-2003 led to the largest refinance boom in the history of the single-family mortgage market. Our sample documents the surge in refinancing activity in the jumbo market. The volume of jumbo refinance mortgages that were securitized increased by a factor of 13 from $11.9 billion in

2000 to $153.9 billion in 2003. No-cash-out refinance loans led the way, increasing by a factor of 21 from $4.6 billion in 2000 to $95.7 billion in 2003. By comparison, jumbo

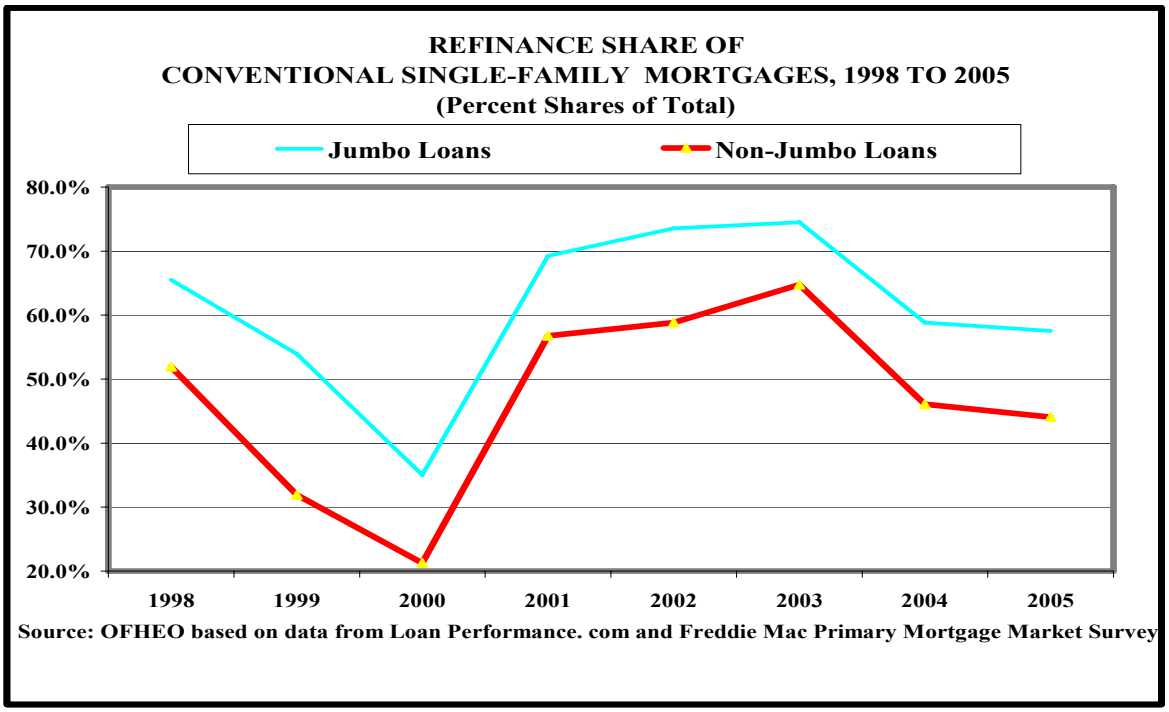
purchase mortgages originated in 2000 that were securitized, which were roughly two times refinance jumbos originated in that year and securitized, increased by a factor of 2.4, rising from $22.2 billion in 2000 to $52.6 billion in 2003.

Mortgage borrowers who refinance have the option of increasing their loan amounts in order to take cash out of their properties. Cash-out refinances have made up a larger share of jumbo mortgages originated in the most recent refinance boom and securitized than during the last surge in refinancing, which peaked in 1998. In 2005, the volume of cash-out refinancing stood at $112.4 billion, exceeding the volume of no-cash-out refinancing by a factor of 2.75.

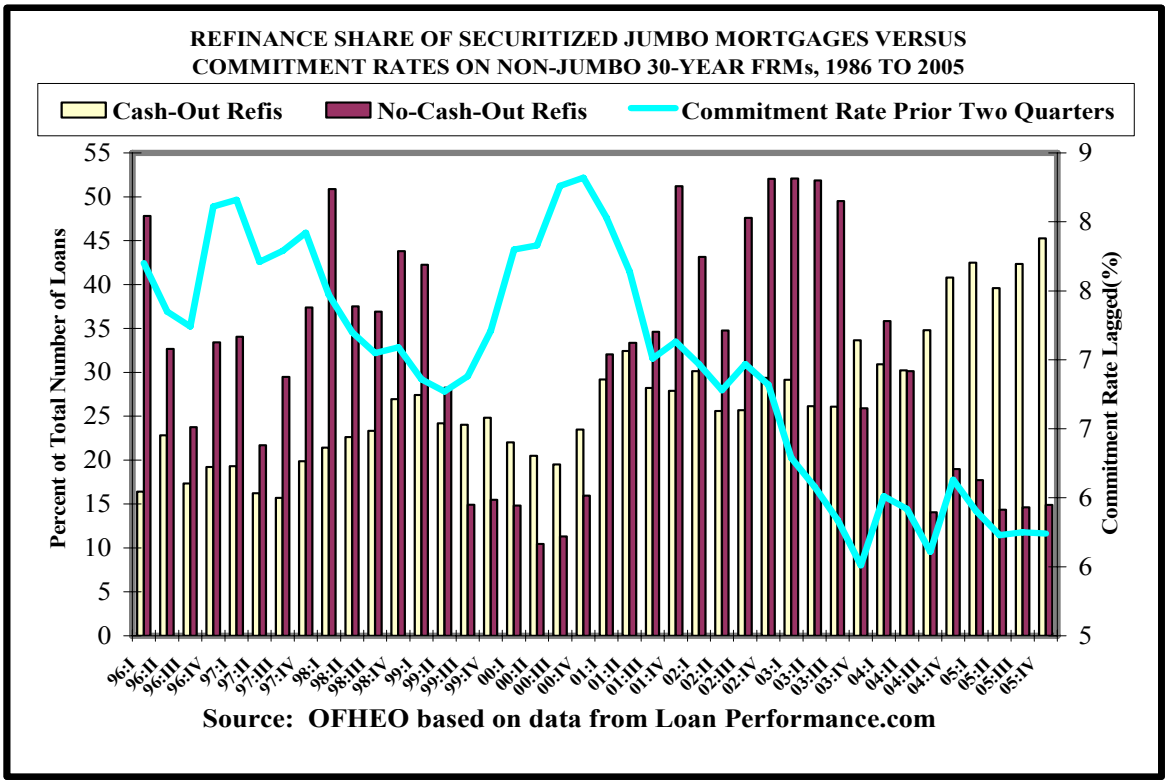
A comparison with the market for non-jumbo mortgages shows that the level of refinancing activity is somewhat lower in the non-jumbo market. A review of data from Freddie Mac's PMMS for the interval 1998 to 2005 shows that for non-jumbo loans, the annual share of all refinancings averaged 47.4 percent. For our sample of jumbo loans that were securitized, that share was 61.1 percent (Chart 7). Quarterly data further illuminate those relationships (Chart 8). From the second quarter of 1996 to the third quarter of 1998, the commitment rate on FRMs declined by 125 basis points to 6.86 percent.

That decline was associated with an increase from 52.6 percent to 69.7 percent two quarters later in the refinance share of jumbo mortgages that were securitized. The magnitude of that very strong inverse relationship was surpassed when the FRM commitment rate fell by 175 basis points from the fourth quarter of 1999 to the fourth quarter of 2002. That three-year interval saw a more pronounced jump in refinancing activity, with the refinancing share of originations of jumbo loans that were securitized increasing with a two-quarter lag from 31.0 percent to 78.0 percent.

## CHART 7




## CHART 8



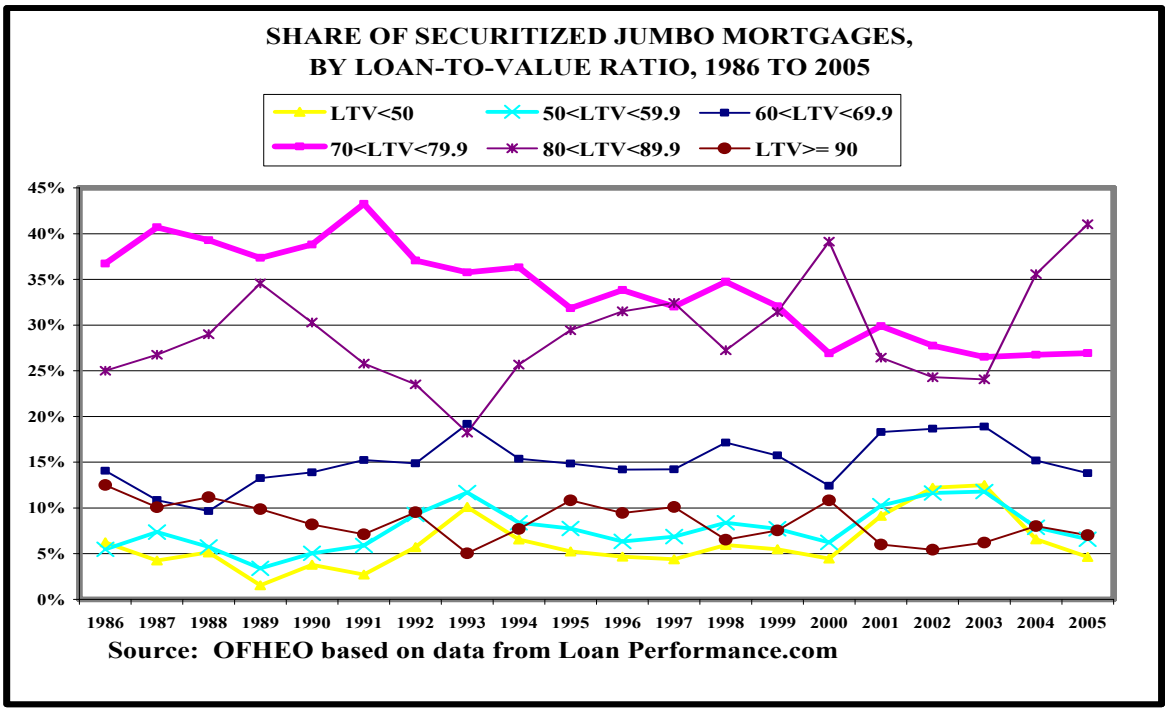
Further, when interest rates first began to decline in 2000, the cash-out refinance share of jumbo mortgages that were securitized rose (Chart 6 and 8). However, from early 2001 to late 2003 that gain was exceeded by a much larger increase in the no-cash-out share. That pattern was consistent with trends in the overall single-family market, where the percentage of cash-out refinances tends to decline during refinance booms. The cash-out share of jumbo mortgages that were securitized rose again in late 2004, exceeding the no-cash-out share by a wide margin.

**Loan-to-Value (LTV) Ratios**

Several studies have shown that loan-to-value (LTV) ratios are a critical determinant of the likelihood of default and prepayment of single-family mortgages and, thus, the interest rates on those loans. The risk of default has been shown to vary inversely with the size of the borrower's down payment. Under certain circumstances, if the borrower is willing to make a large down payment, so that the LTV ratio is relatively low, lenders may be willing to relax some of their requirements regarding the creditworthiness of the borrower. This section examines the LTV ratios for alternative cohort groups of loans, by purpose of loan, type of loan, and borrower credit scores.

Of securitized jumbo loans originated from 1986 to 2005, the annual share with LTV ratios between 70 and 90 percent averaged approximately 60 percent. Originations in the extreme LTV categories of less than 50 percent and greater than 90 percent accounted for a combined share of 15 percent of all those jumbo loans in that period. During the refinance boom of 2001 to 2003, the gains in the share of high down payment loans with LTV ratios of less than 70 percent generally came at the expense of a reduction in the share of lower down payment loans with LTV ratios greater than 80 percent (Chart 9). That pattern was somewhat reversed in 2004 and 2005. With the uptick in mortgage rates, there was a modest increase in the low down-payment share of jumbo mortgages that were securitized.

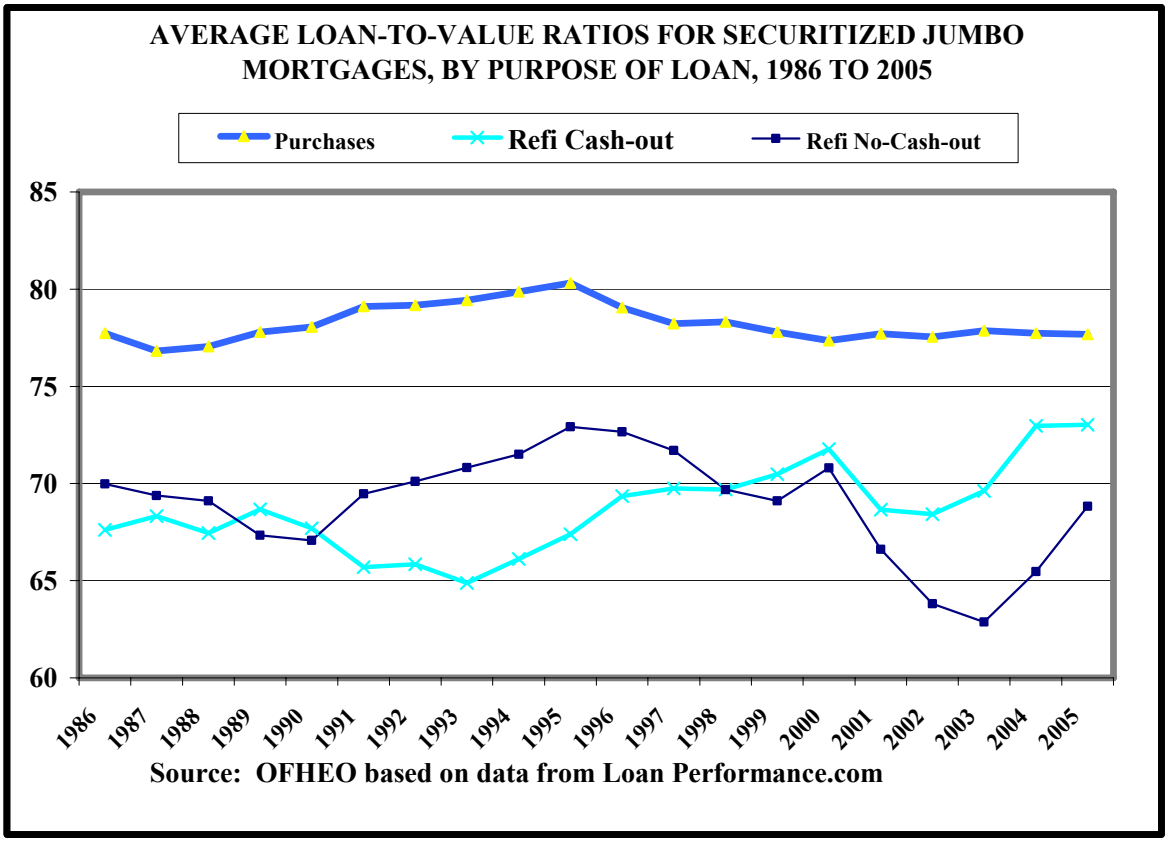
## CHART 9




Purchase jumbo mortgages sold into the secondary market generally have higher annual average LTV ratios than refinance loans that are securitized (Chart 10). That difference exists for both FRMs and ARMs. The LTV ratios for purchase and refinance mortgages averaged 78.2 percent and 68.8 percent, respectively, from 1986 to 2005. Over that interval, there was very little difference in the annual average LTV ratios of cash-out and non-cash-out jumbo refinance loans.

The annual average LTV ratios of jumbo mortgages that were securitized generally declined from 1995 to 2003, for both fixed- and adjustable-rate loans. Those declines averaged 11 percentage points for FRMs and 2 percentage points for ARMs. Annual average LTV ratios fell below 70 percent for FRMs and below 72 percent for ARMs in the early 2000s. That pattern reflects the interaction of three factors. First, lower interest rates reduced the monthly payments associated with larger balance loans, so that households were more willing to take out larger mortgages, which put upward pressure on average LTV ratios. Second, inflation in house prices has been very high, which tended to place a

**CHART 10**




damper on LTV ratios. Third, the volume of refinancings increased as interest rates fell, and refinancings typically have lower LTV ratios.

An examination of the patterns of growth in the annual average sale prices of homes financed with jumbo mortgages that were securitized and the average amounts of those loans over two intervals—1986 to 1995 and 1996 to 2004—is revealing. Over the first interval, when average LTV ratios remained relatively flat, loan amounts expanded at a rate of 4.4 percent per annum, which was higher than the annual gain in sale prices of 3.7 percent. In contrast, over the interval 1996 to 2004, the annual average loan amounts of jumbo mortgages that were securitized increased at an annual rate of 6.2 percent, while the sale prices of homes financed with those loans expanded at a slightly faster pace of 6.3 percent per annum. Over that interval, lower interest rates increased demand and contributed to house price growth. Lower rates also led to higher rates of refinancings,

with a substantial portion of these refinancings having lower annual average LTV ratios (Chart 10).

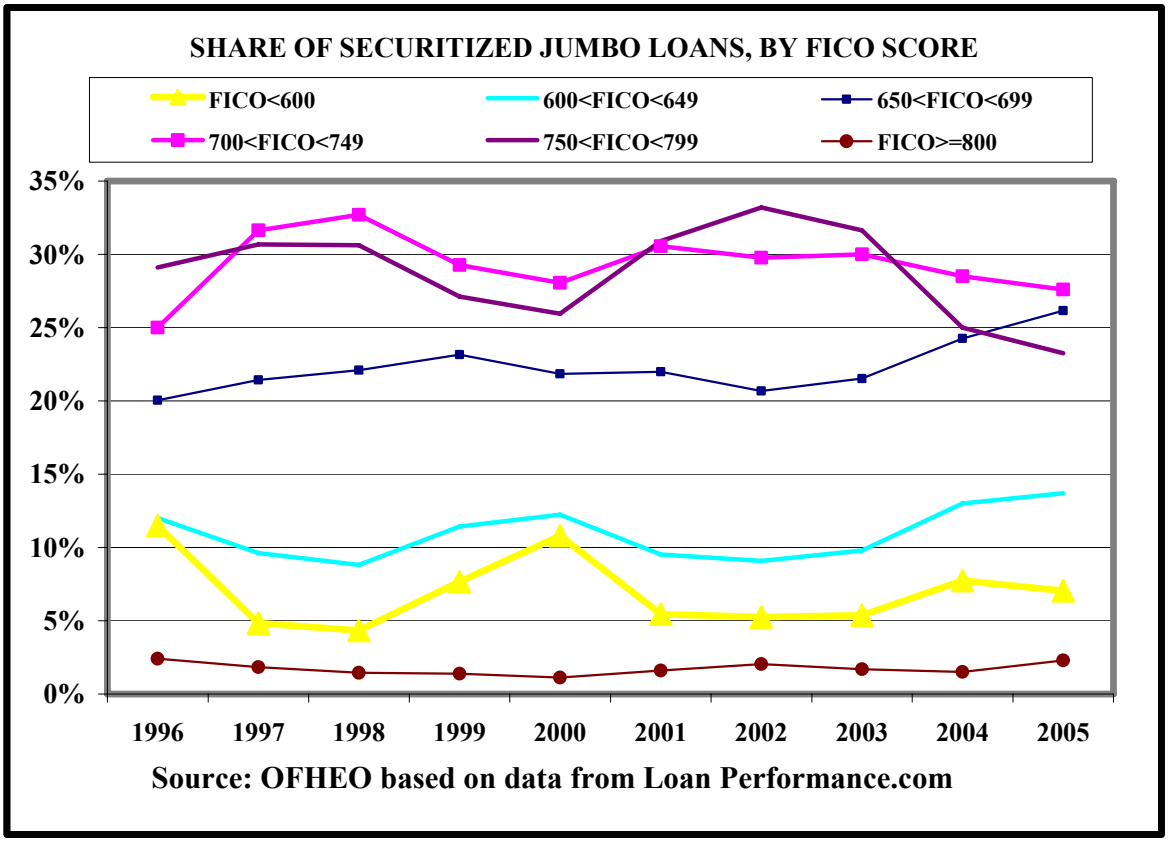
The lower LTV ratios of refinance loans during periods of declining interest rates reflect the typical buildup of home equity after purchase from rising prices and loan amortization. When interest rates are rising, average LTV ratios are higher because there are fewer refinance loans, and the refinance loans themselves have higher LTV ratios because they generally are for the purpose of taking equity out of the property.

**Borrower Credit Scores**

Single-family mortgage lenders frequently use credit scores—numerical assessments that rank borrowers in terms of their relative risk of defaulting on household debt—to underwrite loan applications. Fair, Isaac and Co. (FICO) is the leading supplier of credit scores, which are calculated based on the payment histories of millions of consumers collected and maintained by the three main national credit bureaus. The practice of using FICO scores in underwriting became widespread after Freddie Mac and Fannie Mae encouraged lenders to do so in the second half of 1995 (Straka 2000). Only 5 percent of the jumbo mortgages originated in 1994 and securitized are accompanied by FICO scores collected at origination. That share rises to 19 percent for 1996 originations, 72 percent for mortgages originated in 1997, and 98 percent for loans originated in 2005.

Our sample indicates that most borrowers who took out jumbo mortgages that were securitized have FICO scores at origination that fall in the 700 to 749 and 750 to 799 categories. Those borrowers account for a combined annual average of 58 percent of jumbo loans securitized over the interval 1996 to 2005 (Chart 11). The least credit worthy customers, with FICO scores below 650, accounted for an annual average of 17.9 percent of all jumbo loans originated in that period that were securitized.

**CHART 11**




Our sample also indicates that borrowers who took out purchase loans had an annual average FICO score of 716 over the interval 1996 to 2005. The comparable annual average scores for borrowers who refinanced with and without taking cash out were 678 and 713, respectively. Since 2001, the FICO scores of borrowers who have taken out purchase mortgages have been slightly lower than the scores of those who have refinanced without taking cash out.

Between 1996 and 2003, the annual average LTV ratios of jumbo mortgages that were securitized generally trended downward for borrowers in all FICO score categories for refinance loans while remaining steady for purchase loans (Chart 12 and 13). As noted above, jumbo purchase mortgages that are securitized are generally associated with higher LTV ratios than refinance loans (Chart 10). The decline in LTV ratios for refinance borrowers in all FICO score categories accelerated in the very favorable interest rate and

economic environment of 2001 to 2003. During 2004, the bottoming-out of mortgage rates led to an increase in annual average LTV ratios across nearly all FICO categories for refinance loans.

Our sample indicates that the least risky borrowers, those with FICO scores of 800 or higher, have consistently taken out jumbo mortgages with the lowest annual average LTV ratios. That result is shown for both purchase and refinance mortgages (Charts 12 and 13). The next most credit worthy category of borrowers, those with FICO scores between 750 and 799, also generally had lower average LTV ratios than borrowers in lower FICO score categories.

**CHART 12**

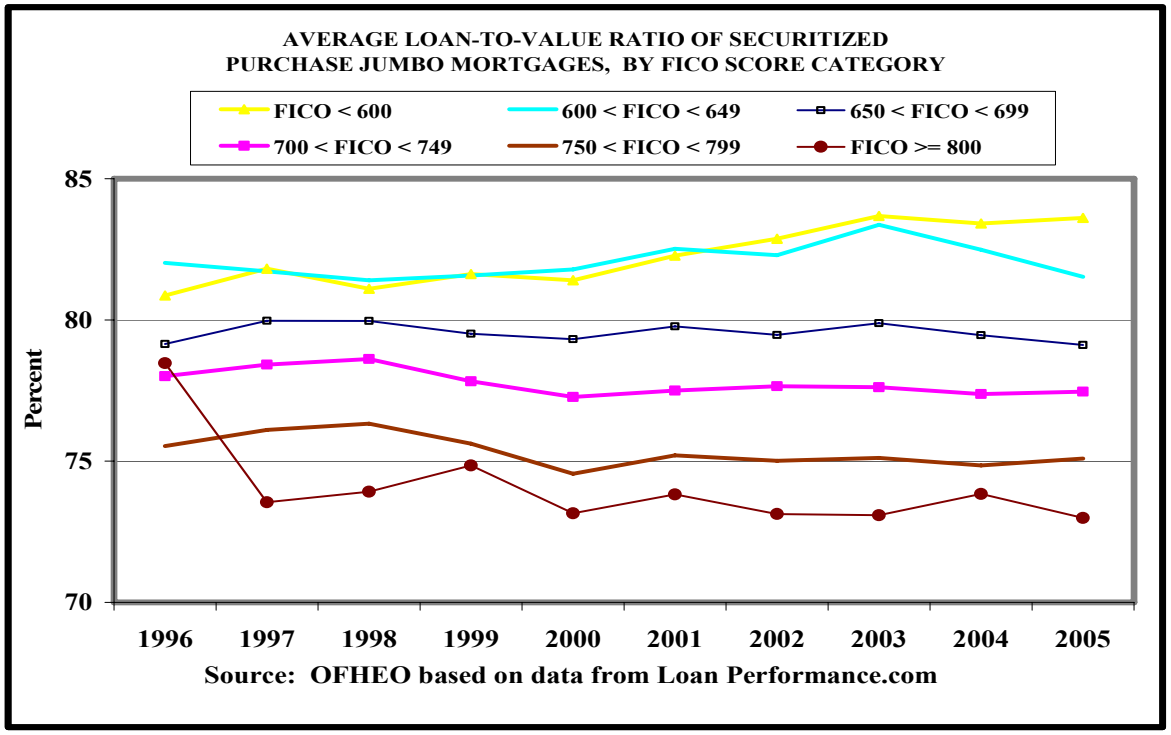
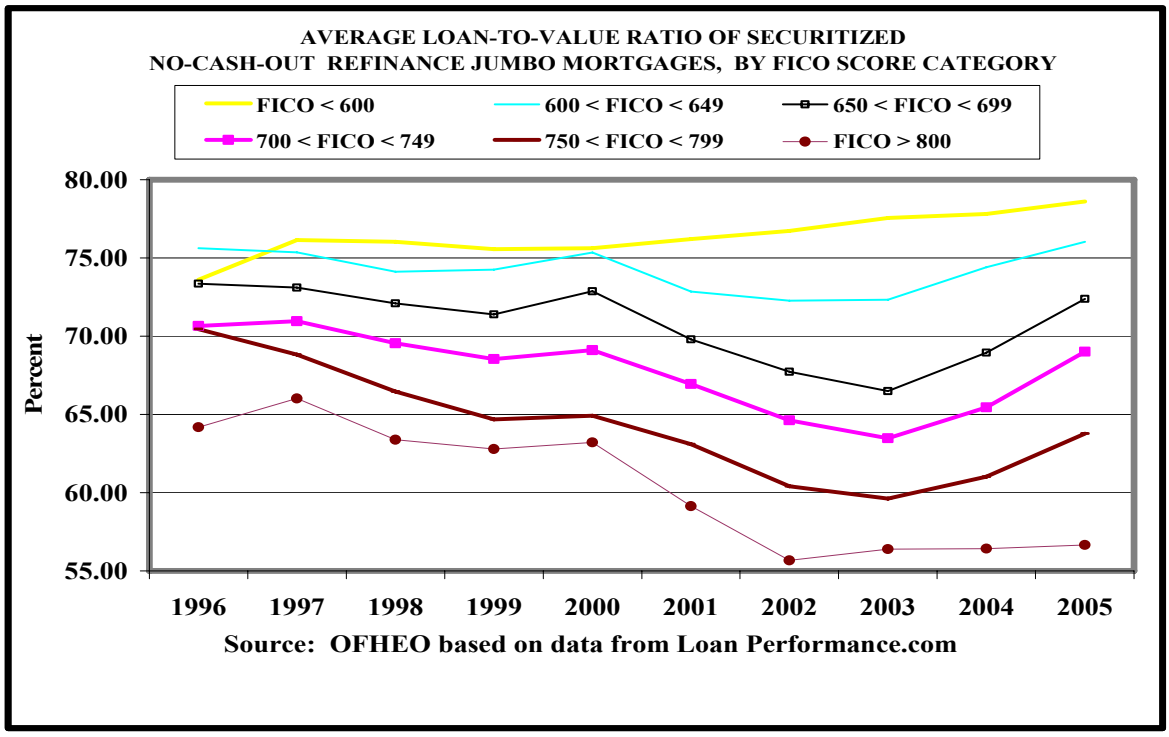


**CHART 13**

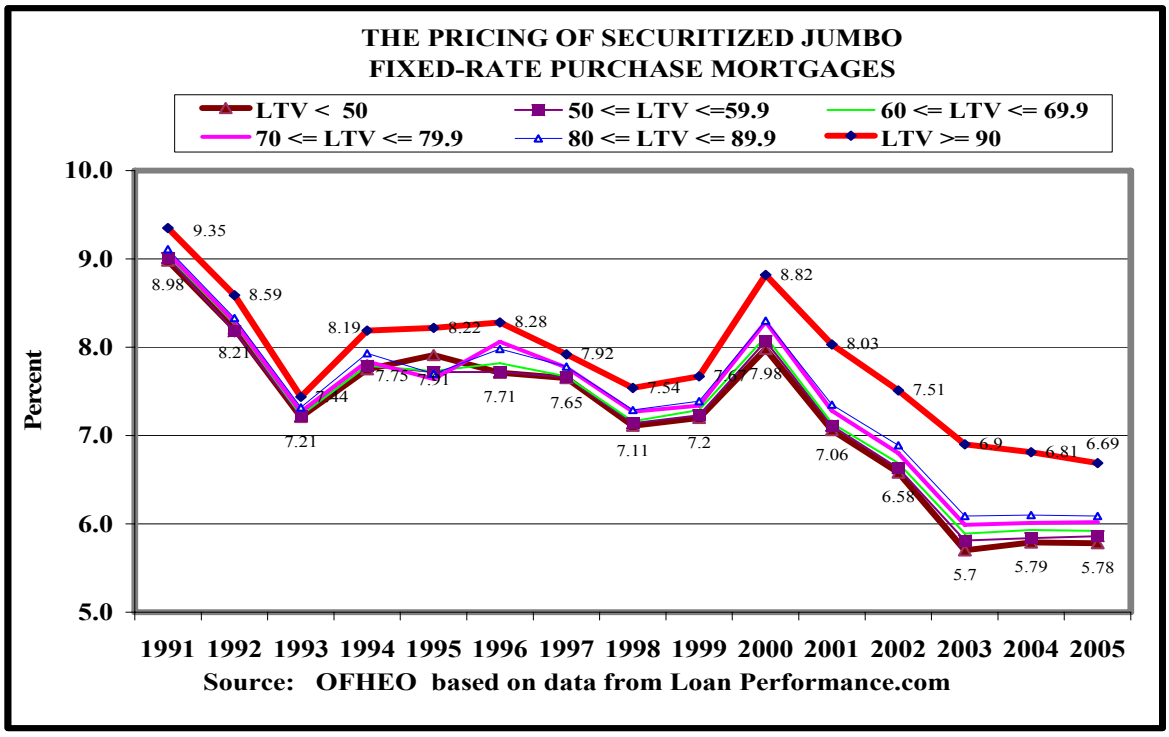



**Risk-Based Pricing of Jumbo Mortgages That Are Securitized**

Lenders may charge higher interest rates on mortgages with higher LTV ratios to compensate for the greater risk of default associated with lower down payments. Our sample shows a fair degree of consistent risk-based pricing of fixed-rate jumbo mortgages that are securitized by LTV ratio for both purchase and refinance loans (Charts 14 and 15). For example, the rates on purchase jumbo FRMs that are securitized and have LTV ratios of less than 50 percent were 62 basis points lower on average, between 1991 and 2005, than the rates on loans with LTV ratios greater than 90 percent. That differential was, on average, 44 basis points for refinance cash-out loans and 65 basis points for refinance-no-cash out loans.

Jumbo borrowers who financed home purchases often enjoyed a discount relative to borrowers who refinanced existing loans and took out cash-out at closing. In 2005 that discount was about 19 basis points in the case of low-risk borrowers with LTV ratios of

## CHART 14




## CHART 15

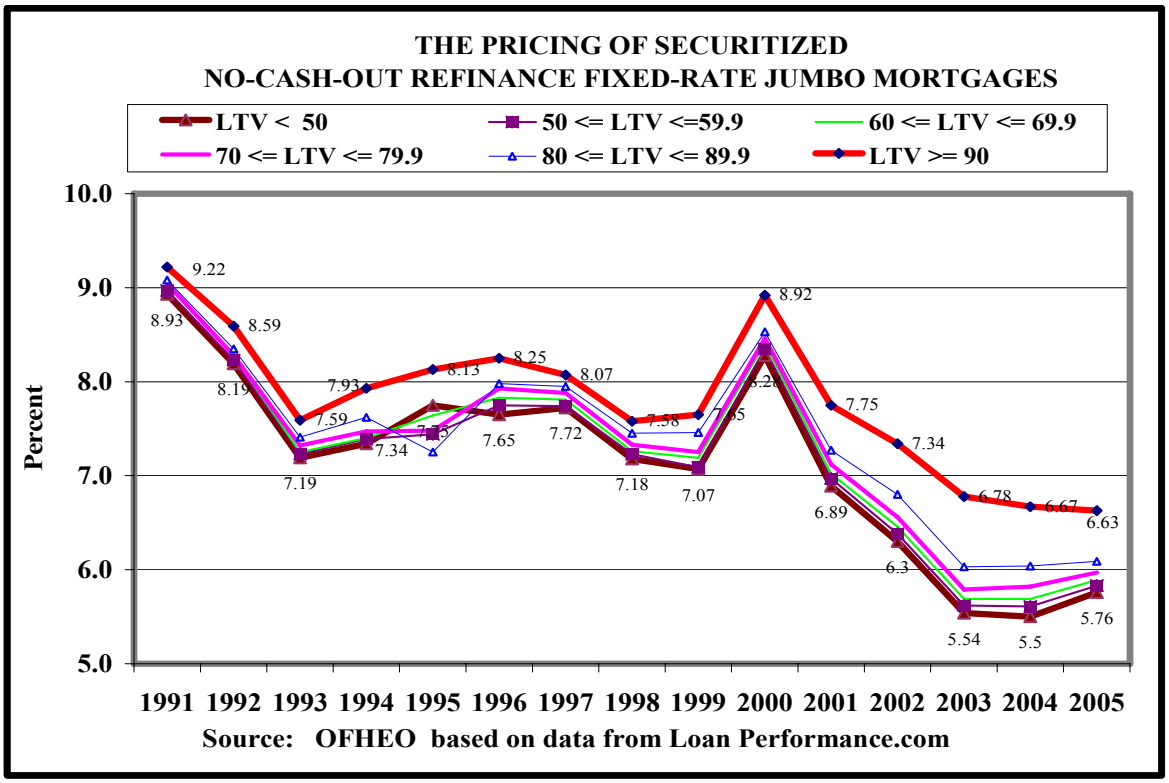


**TABLE 5**

**RISK-BASED PRICING OF SECURITIZED JUMBO FIXED-RATE MORTGAGES, BY FICO AND LTV CATEGORIES, IN 2005**

| | LTV <50 | 50 <= LTV <= 59.9 | 60 <= LTV <= 69.9 | 70 <= LTV <=79.9 | 80 <= LTV <= 89.9 | LTV >= 90 |
|---|---|---|---|---|---|---|
| **Purchase Loans** | | | | | | |
| FICO < 600 | 6.23 | 6.37 | 6.61 | 7.06 | 7.16 | 7.80 |
| 600 <= FICO <= 649 | 5.99 | 6.17 | 6.18 | 6.42 | 6.59 | 6.97 |
| 650 <= FICO <= 699 | 5.83 | 5.98 | 6.06 | 6.20 | 6.28 | 6.72 |
| 700 <= FICO <= 749 | 5.81 | 5.88 | 5.96 | 6.04 | 6.10 | 6.63 |
| 750 <= FICO <= 799 | 5.76 | 5.82 | 5.86 | 5.92 | 5.97 | 6.32 |
| FICO >= 800 | 5.74 | 5.81 | 5.84 | 5.89 | 5.91 | 6.24 |
| **Weighted Average[a]** | **5.89** | **6.01** | **6.09** | **6.26** | **6.34** | **6.78** |
| **No-Cash-Out Refinance Loans** | | | | | | |
| FICO < 600 | 6.54 | 7.04 | 6.77 | 6.93 | 6.92 | 7.28 |
| 600 <= FICO <= 649 | 5.98 | 6.03 | 6.11 | 6.24 | 6.37 | 6.94 |
| 650 <= FICO <= 699 | 5.86 | 5.91 | 5.98 | 6.06 | 6.15 | 6.56 |
| 700 <= FICO <= 749 | 5.78 | 5.84 | 5.89 | 5.96 | 6.03 | 6.23 |
| 750 <= FICO <= 799 | 5.73 | 5.78 | 5.83 | 5.88 | 5.95 | 6.65 |
| FICO >= 800 | 5.67 | 5.79 | 5.81 | 5.88 | 5.87 | 6.00 |
| **Weighted Average[a]** | **5.93** | **6.07** | **6.07** | **6.16** | **6.22** | **6.61** |
| **Cash-Out Refinance Loans** | | | | | | |
| FICO < 600 | 6.66 | 6.72 | 6.71 | 6.88 | 7.09 | 7.51 |
| 600 <= FICO <= 649 | 6.29 | 6.21 | 6.26 | 6.37 | 6.59 | 7.02 |
| 650 <= FICO <= 699 | 6.00 | 6.02 | 6.07 | 6.17 | 6.33 | 6.79 |
| 700 <= FICO <= 749 | 5.87 | 5.92 | 5.97 | 6.05 | 6.16 | 6.57 |
| 750 <= FICO <= 799 | 5.81 | 5.85 | 5.90 | 5.97 | 6.06 | 6.21 |
| FICO >= 800 | 5.85 | 5.85 | 5.85 | 5.93 | 5.95 | 6.79 |
| **Weighted Average[a]** | **6.08** | **6.10** | **6.13** | **6.23** | **6.36** | **6.82** |

[a]Weighted average, by number of loans
Source: OFHEO based on data from Loan Performance.com

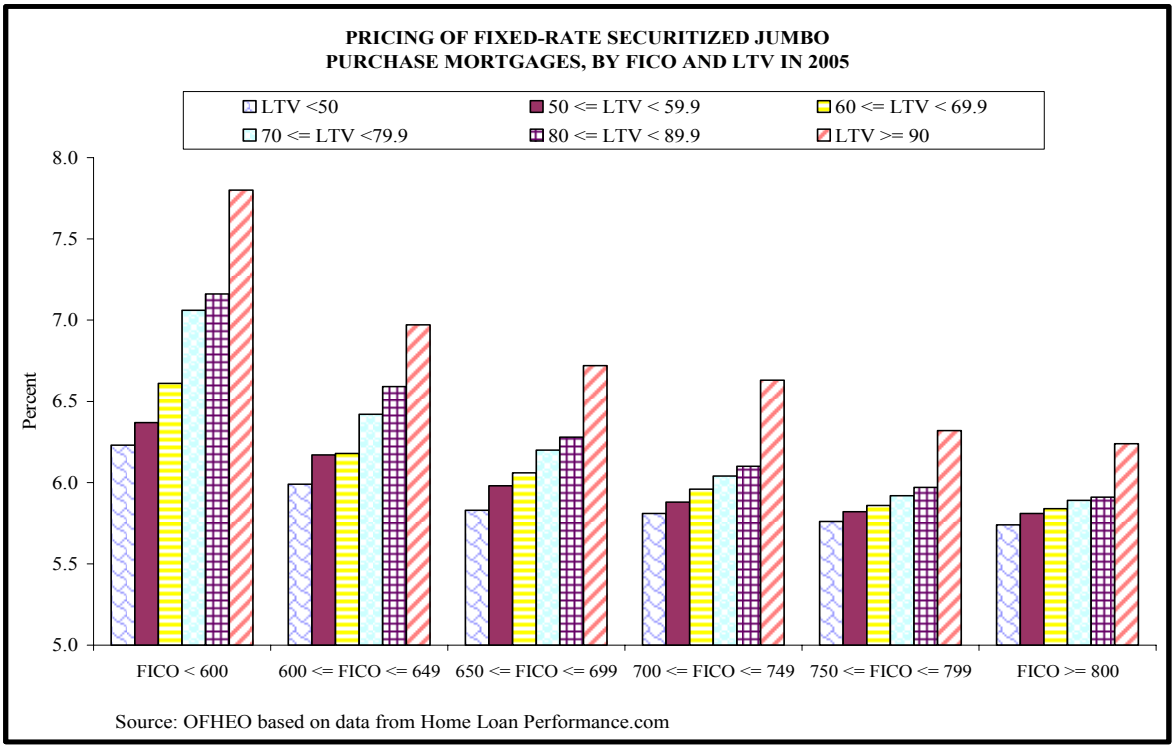
less than 50 percent, but declined to 4 basis points in the case of high-risk borrowers with LTV ratios of greater than 90 percent (Table 5).

Interest rates at closing for fixed-rate jumbo mortgages that were securitized and that were taken out by borrowers with FICO scores at origination of less than 600 are broadly consistent with *a priori* expectations. Over the interval 1991 to 2005, financing rates for purchase mortgages for borrowers with FICO scores less than 600 were, on average, 95 basis points higher than those for borrowers with excellent credit (FICO score >= 800). For refinance mortgages, that differential was 121 basis points.

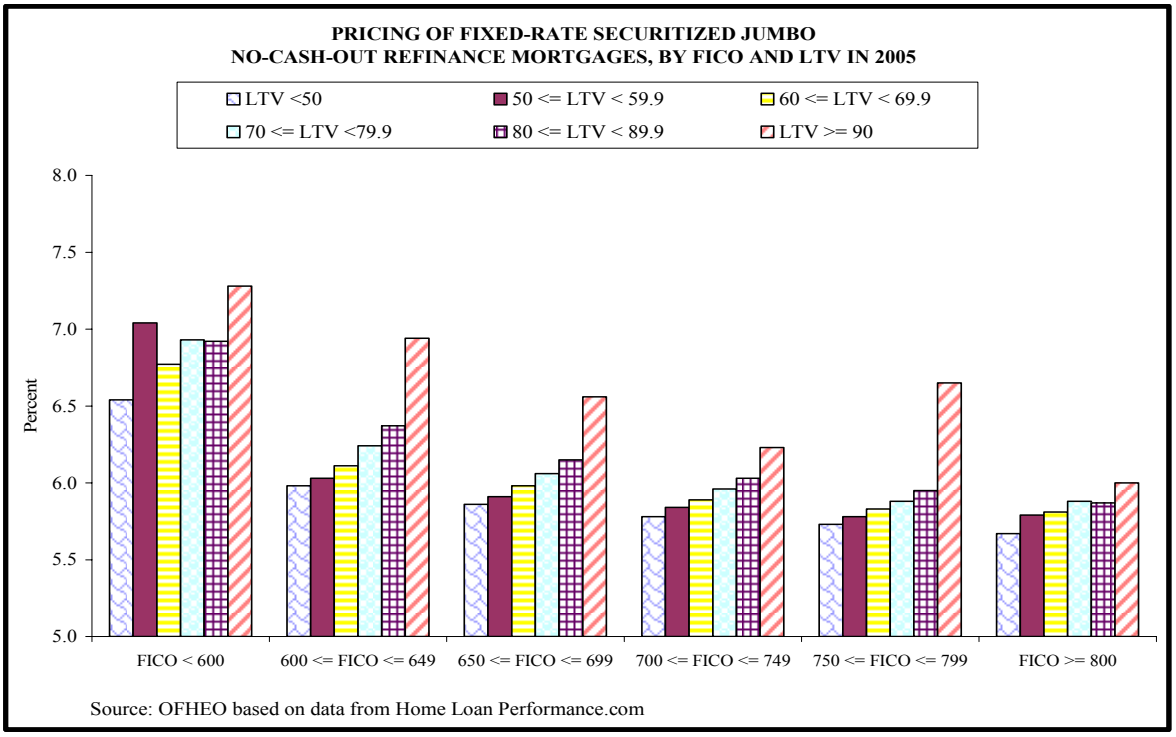
When interest rates are increasing, the financing cost gap between borrowers with weak credit histories and those with strong credit histories tends to widen. That occurs as mortgage rates for more credit risky borrowers increase more rapidly than rates for borrowers with excellent credit. That pattern is most evident in 1994 when the financing cost gap increased for fixed-rate purchase jumbo mortgages from 43 basis points in 1993 to 76 basis points in 1994. The same pattern emerged during the episode of rising interest rates that occurred in 1999 and 2000, when the financing cost gap between borrowers with strong credit histories and those with weak credit histories increased from 83 basis points in 1998 to 108 basis points in 2000.

The data reveal a fair degree of consistency in risk-based pricing for alternative combinations of LTV ratio and FICO score groupings. Table 5 and Charts 16 and 17 show fairly steady incremental price adjustments based on FICO scores and LTV ratios. They also show the largest credit risk penalty is assessed for loans with LTV ratios greater than

**CHART 16**



## CHART 17




90 percent. For example, during 2005, purchase FRMs with LTV ratios of 90 percent or more carried interest rates that were 50 to 157 basis points higher than those on loans with LTV ratios of less than 50 percent. Those differentials averaged 68 basis points for cash-out refinance mortgages and 74 basis points for no-cash-out refinance loans. The pattern of higher interest rates being charged for higher-LTV ratio mortgages is clearest for purchase mortgages in the less than 600 and 600 to 649 FICO score categories, as well as for no-cash-out refinance mortgages in the 600 to 649 category.

Our sample also suggests that high down-payment purchase loan borrowers with FICO scores greater than 800 received a 49 basis point reduction in rates below those paid by high down-payment borrowers with FICO scores of less than 600. In 2005, that rate advantage for high FICO score borrowers over low FICO score borrowers who both made high down payments was 87 and 81 basis points, respectively, for no-cash-out and cash-out refinance securitized jumbo mortgages.

Over the longer interval 1996 to 2005, the data indicate a consistent degree of risk-based pricing for purchase and refinance jumbo FRMs that were securitized. Borrowers with a LTV ratio of 95 percent and a FICO score within the range of 650 to 700 who took out purchase FRMs paid 50 basis points more, on average, than borrowers who had an LTV ratio of 80 and a FICO score within the range of 650 and 700. The equivalent ratios for cash-out and no-cash-out refinance loans are 69 and 54 basis points, respectively.

## IV. CONCLUSION

This paper provides an historical assessment of the characteristics of jumbo mortgages financed through securitization. The paper extends earlier analyses that relied on the FHFB's MIRS database by taking into account the credit scores of borrowers that have taken out jumbo loans originated since 1996 that were securitized and examining the factors that have influenced the recent refinancing boom. The major findings of the paper are:

- The fixed-rate share of jumbo mortgages that are securitized is highly sensitive to changes in the spread between the yields on fixed- and adjustable-rate loans.

- Year-to-year fluctuations in the annual average sale price of houses financed with jumbo loans that are securitized are more pronounced than variations in the sale prices of all new and existing homes in the U.S.

- During the protracted episode of extraordinarily low, single-digit mortgage rates of 2001-2004, hybrid, option, and IO ARMs comprised a rapidly growing share of securitized jumbo mortgages.

- During that period of declining rates, borrowers made larger down payments on jumbo mortgages that were securitized that had both fixed and adjustable rates and that were used to both purchase homes and to refinance existing loans.

- An annual average of 58 percent of borrowers who took out jumbo mortgages that were securitized had FICO scores at origination within the range of 700 to 800. Borrowers with FICO scores below 650 accounted for 18 percent of all jumbo loans originated in that period that were securitized.

Borrowers with FICO scores greater than 800 consistently take out loans with low LTV ratios.

- There is a fair degree of consistent risk-based pricing by LTV ratio of jumbo mortgages that are securitized. When those loans are grouped based on borrower credit scores, interest rates are generally higher as LTV ratios increase. The yields on jumbo mortgages that are securitized are far less sensitive to borrower credit scores.

Although those findings are largely consistent with our *a priori* expectations, they provide no evidence regarding the statistical significance of the relationships presented. Future research will employ the sample to examine how much of the spread between the yields of jumbo and non-jumbo mortgages is due to differences in the credit risk characteristics and size of those loans and the credit scores of the borrowers.

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## APPENDIX A

## THE DATA

The primary source of data for this paper is a June 2006 database leased from a private vendor, Loan Performance.com, that contains monthly loan-level records on 19,320,809 mortgages originated from 1970 to 2006. That vendor collects data on single-family mortgages that serve as collateral for private-label mortgage-backed securities (MBS). Loan Performance.com has the largest and most comprehensive information repository tracking non-Enterprise MBS in the United States. The data are remitted each month by banks, thrifts and mortgage companies that service the mortgages.

To create the sample used in this paper, those loans were subjected to a number of rigorous screening guidelines and validation checks for plausibility and consistency. Mortgages with principal balances below the conforming loan limit in the year of origination, government-insured and -guaranteed loans, and manufactured housing mortgages were excluded. In addition, the sample was constrained by imposing outlier constraints in the amount of $10 million on the sale price and loan amounts. A similar constraint in the amount of $40 million was placed on property appraisal values.

Validation checks for the plausibility of recorded loan-to-value (LTV) ratios were performed by comparing that ratio to the ratio of the loan amount to the sale price (for purchased mortgages) or the appraised value (for refinance loans). Only loans with an LTV ratio less than 125 percent were included in the sample. Similar data validation and robustness tests were applied to the term of the loan by computing the differential between the maturity and origination dates and comparing that differential to the reported term of the loan. The database was also screened to check for the integrity of the sale price and refinancing data. Refinance loan records that included sale prices were excluded from the sample.

The restriction of the sample to jumbo mortgages originated in the interval 1986 to 2005 resulted in 4,271,928 observations. Additional filters for first lien, single-family, purchase and refinance loans produced a sample of 4,087,865 individual loan records. The exclusion of observations for missing or outlier data that relate to sale price, origination amount, appraisal value, and LTV ratio resulted in a sample of 2,723,088 mortgages. Owner-occupied units account for nearly all of the mortgages in the sample.

Additional details on the filtering process are provided below.

| **Loan Categories** | **Number of Loans in Next Higher Level of Aggregation[a]** |
|---|---|
| All Loans | 19,320,809 |
| All jumbo | 4,307,522 |
| First Lien | 4,119,722 |
| Conventional | 4,119,064 |
| Purchase and Refinance loans | 4,093,350 |
| All Property Types Excluding Manufactured Housing | 4,092,846 |
| Sale Price < $10 million | 3,415,233 |
| Origination Amount < $10 million | 3,415,233 |
| Appraisal Value < $40 million | 3,047,911 |
| LTV > 0 | 3,047,803 |
| Year: 1986 to 2005 | 3,045,842 |

[a]This filtering scheme is based on revised LoanPerformance.com data. It does not include a count of missing values.

**TABLE A-1**

**SUMMARY DESCRIPTIVE STATISTICS FOR SELECTED VARIABLES FOR THE INTERVAL 1986 TO 2005**

| Variable | Number of Observations | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Loan amount | 2,723,088 | $467,912 | $214,048 | $33,100 | $9,000,000 |
| Closing interest rate | 2,697,126 | 6.32% | 1.63% | 0.00% | 16.30% |
| Appraised value | 2,723,088 | $702,459 | $479,713 | $29,500 | $25,250,000 |
| Term in months | 2,723,088 | 342 | 57.1 | 12 | 506 |
| LTV ratio | 2,723,088 | 72.12% | 13.53% | 0.02% | 124.31% |
| Origination year | 2,723,088 | 2001 | 3.82 | 1970 | 2006 |
| FICO score[a] | 2,296,149 | 706 | 65.77 | 0 | 894 |
| **ALL FIXED-RATE MORTGAGES** | | | | | |
| Loan amount | 1,341,296 | $507,947 | $241,565 | $33,600 | $9,000,000 |
| Closing interest rate | 1,333,047 | 5.73% | 1.88% | 0.00% | 16.30% |
| Appraised value | 1,341,296 | $741,433 | $525,258 | $33,600 | $23,999,774 |
| Term in months | 1,341,296 | 361 | 19.9 | 12 | 480 |
| LTV ratio | 1,341,296 | 73.96% | 12.77% | 0.21% | 124.14% |
| Origination year | 1,341,296 | 2003 | 2.96 | 1975 | 2006 |
| FICO score[a] | 1,247,755 | 696 | 67.43 | 0 | 888 |
| **ALL ADJUSTABLE-RATE MORTGAGES** | | | | | |
| Loan amount | 380,484 | $426,241 | $171,199 | $33,100 | $6,000,000 |
| Closing interest rate | 380,484 | 6.92% | 1.06% | 0.00% | 16.13% |
| Appraised value | 380,484 | $661,547 | $423,791 | $29,500 | $25,250,000 |
| Term in months | 380,484 | 324 | 74.0 | 24 | 506 |
| LTV ratio | 380,484 | 70.26% | 14.02% | 0.02% | 124.31% |
| Origination year | 380,484 | 2000 | 4.05 | 1970 | 2006 |
| FICO score[a] | 283,849 | 719 | 61.03 | 0 | 894 |

SOURCE: OFHEO based on data from LoanPerformance.com.

[a] FICO scores are only generally available in the database beginning in 1996, the first year in which lenders began collecting them as a general practice.

## APPENDIX B

## COMPARISON OF THE LOAN PERFORMANCE.COM AND MIRS DATA SAMPLES

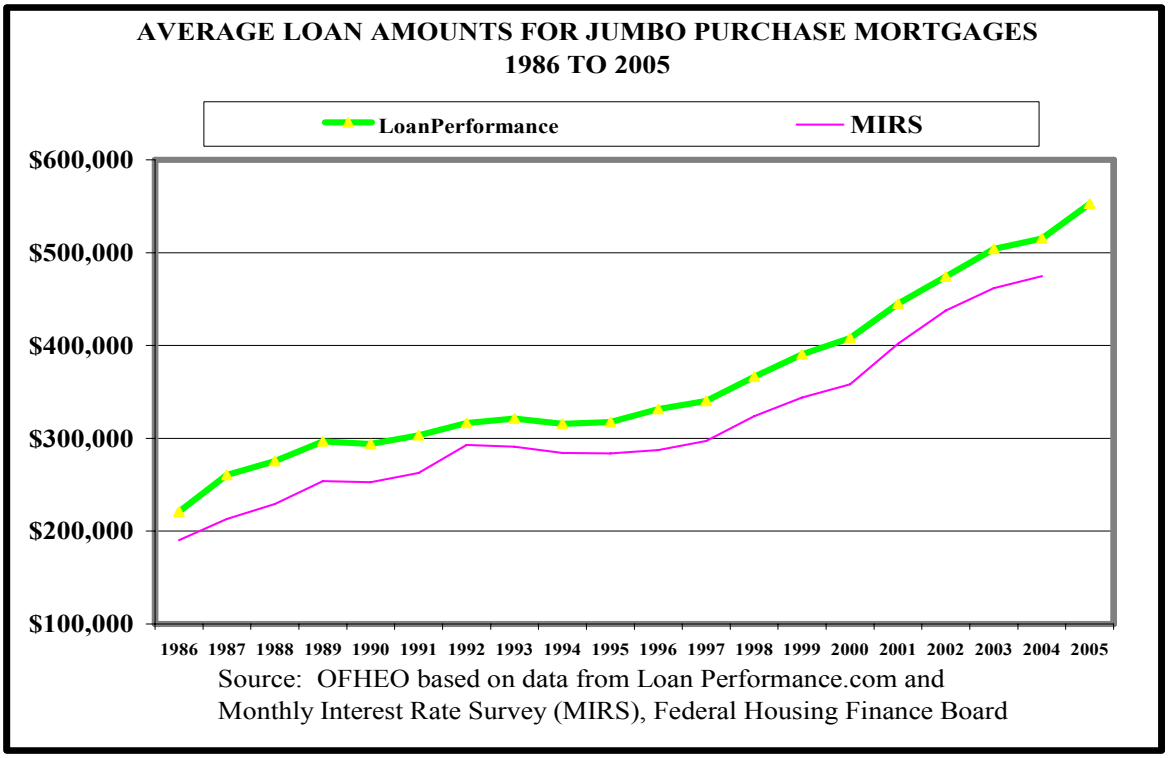
A number of studies have employed the database of the Federal Housing Finance Board's (Finance Board) Monthly Interest Rate Survey (MIRS) to compare the characteristics and estimate the differences in the yields of jumbo and non-jumbo purchase mortgages. The MIRS represents a nationwide set of loan-level data compiled from monthly submissions by savings and loan associations, mutual savings banks, commercial banks, and mortgage companies. The number of participants in the survey has varied over the years. The January 2007 survey is based on 15,668 reported loans from 72 lenders.[6] The Finance Board also provides annual historical data. Some of the annual data series go back to 1963 and several of the monthly series go back to 1973.

The data employed in this report covers the interval 1970 to 2005. It is composed of 1,832,770 individual loans. It includes both fixed-rate mortgages (FRMs) and adjustable-rate mortgages (ARMs). In 2005, ARMs accounted for 25 percent of the conventional loan originations in the survey. The MIRS data has served as the basis for establishing the conforming loan limits for Fannie Mae and Freddie Mac. The database excludes refinance, second, and interim loans, as well as lenders who specialize in the subprime market. The MIRS data set also has no information on the credit history of the borrower nor on other factors such as income and wealth which are generally considered to play an important role in influencing the risk of default and, in turn, the mortgage rate.

The annual average origination amount for purchase jumbo mortgages is consistently higher in the LoanPerformance.com sample used in this paper than in the MIRS data for the same year (Chart B-1). Over the interval 1986 to 2005, origination

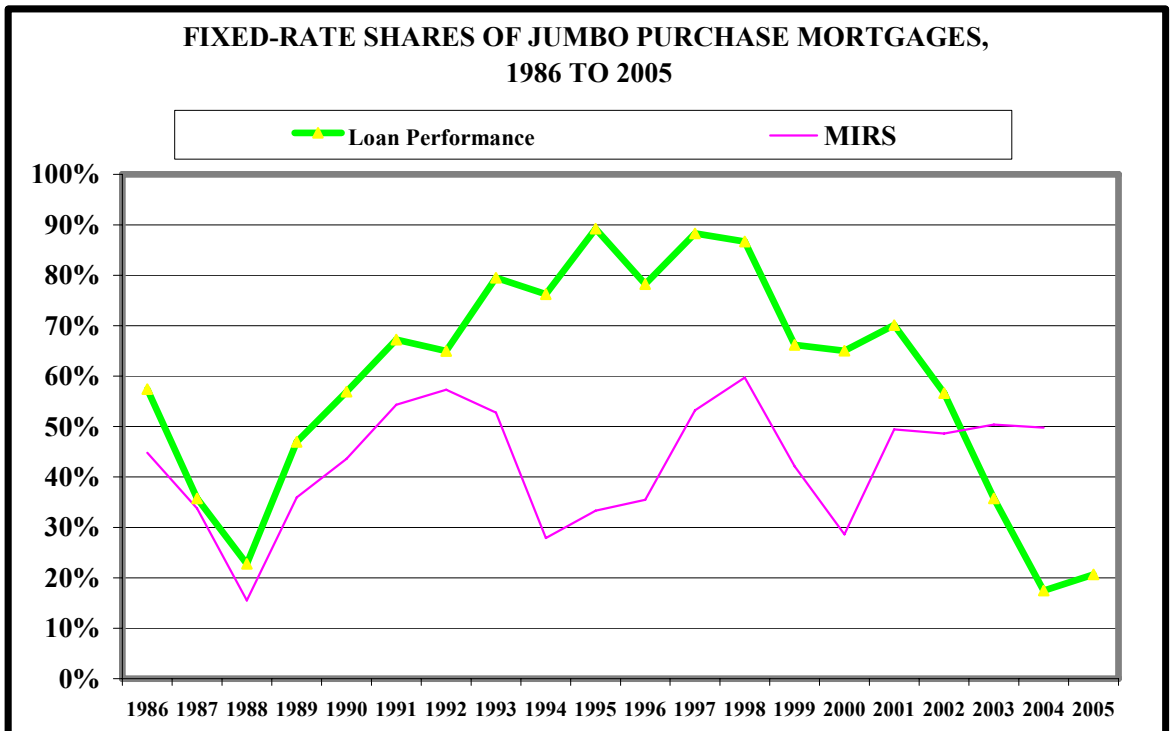
[6] Comparisons with the LoanPerformance.com data should be treated with caution. In conducting the MIRS survey, the Federal Housing Board asks a sample of mortgage lenders to report the terms and conditions on all single-family, fully amortizing, purchase-money, nonfarm loans that they close during the last five business days of the month. Additionally, the MIRS data is weighted to reflect the shares of mortgage lending by lender size and lender type as reported in the latest release of the Federal Reserve Board's Home Mortgage Disclosure Act data. Those factors suggest that direct comparisons should be viewed with caution.

## CHART B-1




Source: OFHEO based on data from Loan Performance.com and Monthly Interest Rate Survey (MIRS), Federal Housing Finance Board

## CHART B-2




Source: OFHEO based on data from Loan Performance.com and Monthly Interest Rate Survey (MIRS), Federal Housing Finance Board

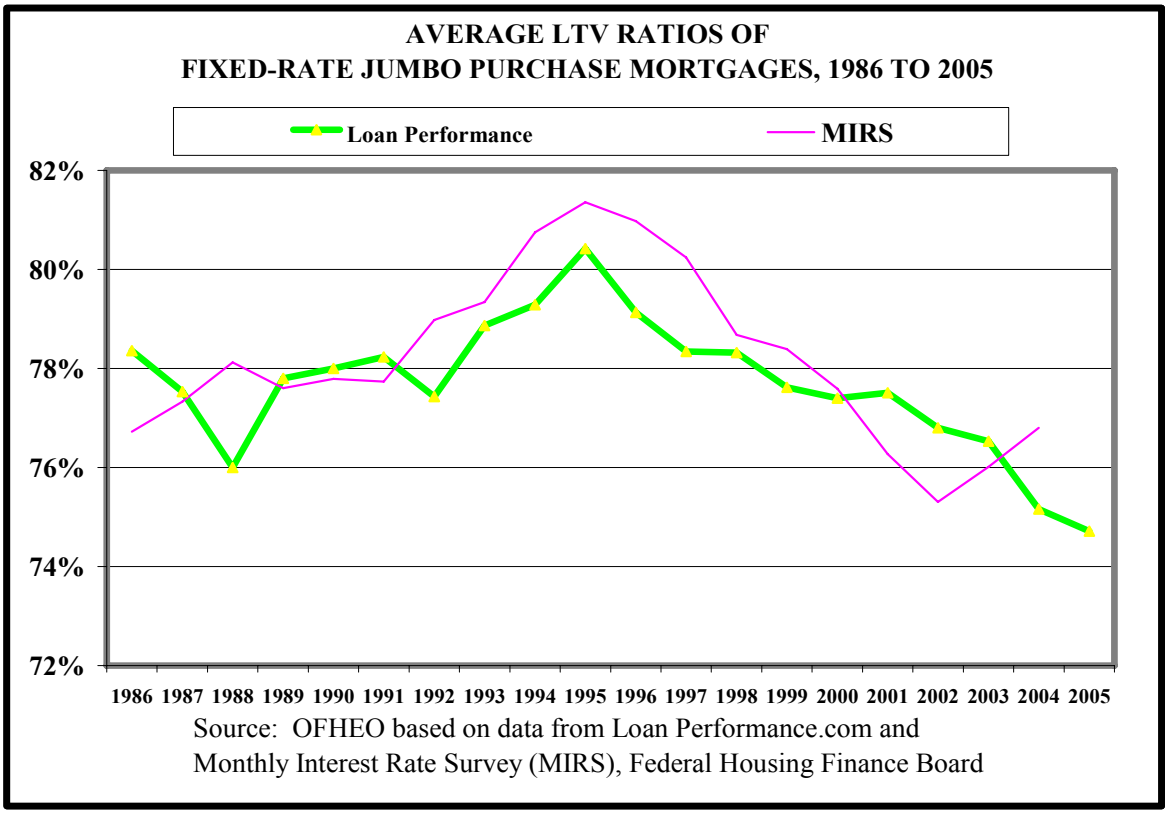
amounts were, on average, 13.3 percent higher in the LoanPerformance.com sample. In 2005, the average origination amount for jumbo purchase loans was $552,684 in the LoanPerformance.com sample and $505,803 in the MIRS sample.

The relative share of FRM jumbo purchase mortgages averaged 59.1 percent in the LoanPerformance.com sample and 42.6 percent in the MIRS sample (Chart B-2). The volatility of the FRM share, as measured by the standard deviation, was 22.6 percent for the LoanPerformance.com sample and 11.5 percent for the MIRS sample.

The pattern of changes in the annual average LTV ratios of purchase jumbo loans is roughly the same in the two samples. Average LTV ratios increased fairly steadily after 1988, reaching a peak in 1995 of 80 percent in the Loan Performance sample and 81 percent in the MIRS sample. Since 1995, there has been a fairly steady decline in average LTV ratios. In 2005, the average LTV ratio for jumbo purchase mortgages was 74.7 percent in the LoanPerformance.com sample and 75.3 percent in the MIRS sample (Chart B-3).

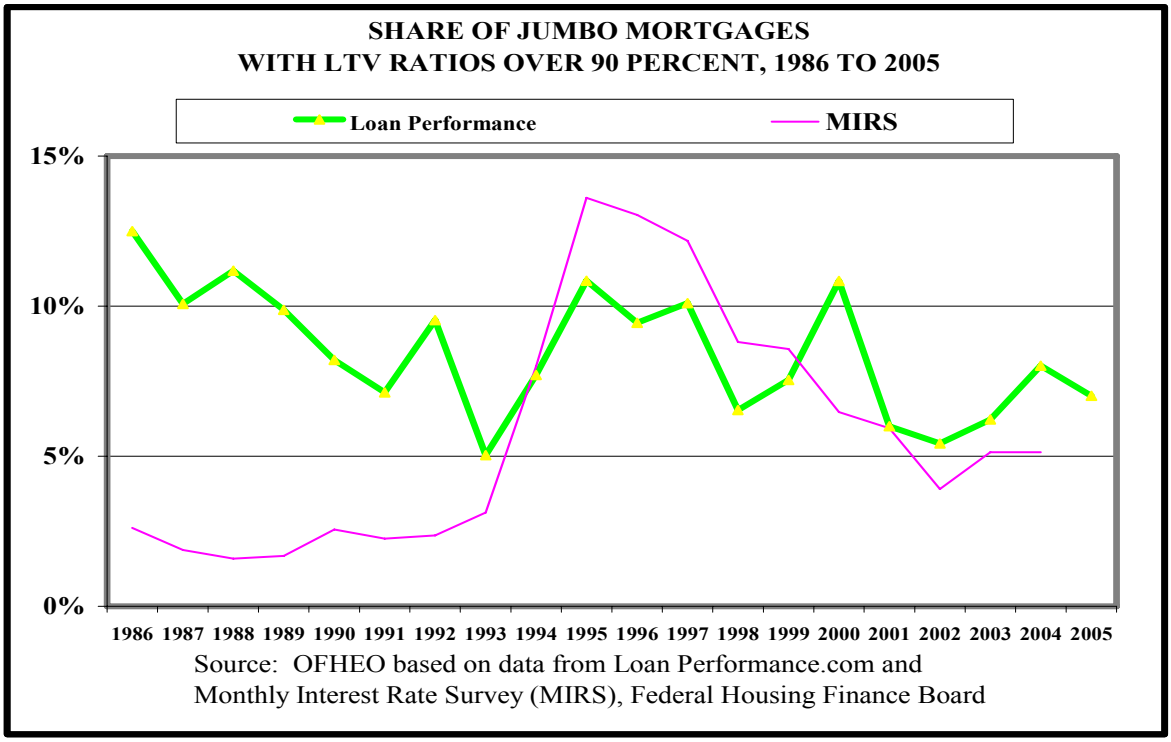
Between 1986 and 1994, the relative share of jumbo loans with LTV ratios greater than 90 percent was substantially larger in the LoanPerformance.com sample than in the MIRS sample. While the ratio of jumbo loans with very high LTV ratios fluctuated year-to-year in the LoanPerformance.com sample, in the MIRS sample the share of high LTV jumbo loans rose rapidly from 1993 to 1995 then declined steadily through 2002 (Chart B-4).

## CHART B-3




Source: OFHEO based on data from Loan Performance.com and Monthly Interest Rate Survey (MIRS), Federal Housing Finance Board

## CHART B-4




Source: OFHEO based on data from Loan Performance.com and Monthly Interest Rate Survey (MIRS), Federal Housing Finance Board