Overview of US mortgage markets

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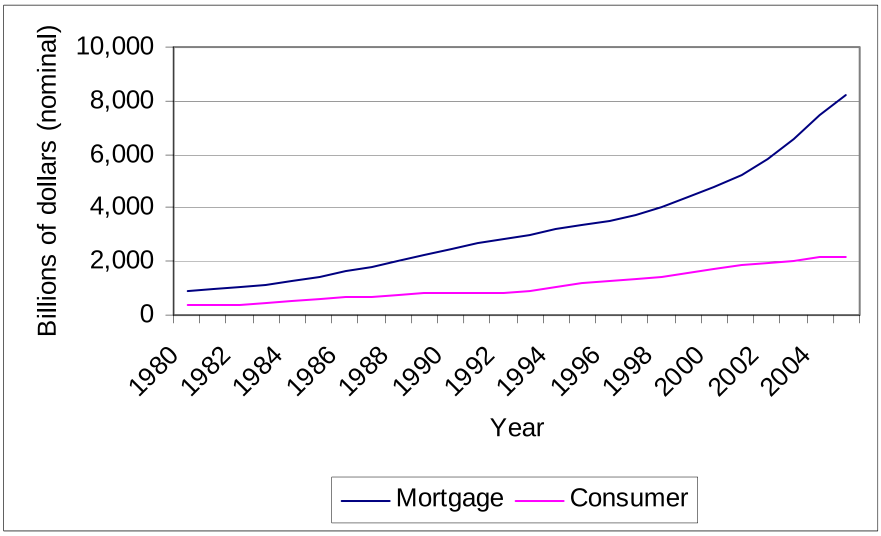
1. Summary

1.1 Overview of the US mortgage market

Owner-occupied housing and the mortgages used to finance it are currently the single largest asset and liability on the household balance sheet. As shown in Graph 1, residential mortgage debt has grown so that households now owe just over $8 trillion. Consumer credit, which includes personal loans, auto loans and credit card balances, now stands at just over $2 trillion. As a ratio of after-tax personal income (Graph 2), mortgage debt outstanding has roughly doubled since 1980, rising from about 45% of disposable personal income (DPI) to about 90%. The rise in mortgage debt has been driven by increasing home ownership (as rental payments are replaced by mortgage payments), declining interest rates, changes in tax laws, and rising home values. An interesting comparison is the ratio of mortgage debt to its collateral; that is, the aggregate loan-to-value (LTV) ratio for owner-occupied housing. As shown in Graph 3, this has increased much less sharply than the other debt measures and, indeed, has not increased much since the mid-1990s.

Graph 1

US household debt

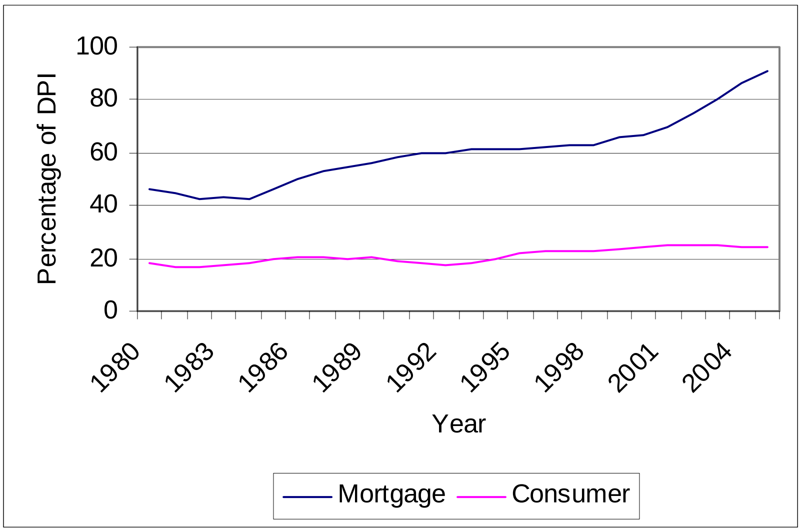


Source: Flow of Funds Accounts of the United States (FFA): http://www.federalreserve.gov/releases/z1/.

[1] The views expressed in this note are mine alone and do not necessarily reflect the opinions of the Board of Governors of the Federal Reserve System or its staff. E-mail: Andreas.Lehnert@frb.gov; tel: +1-202-452-3325.

Graph 2

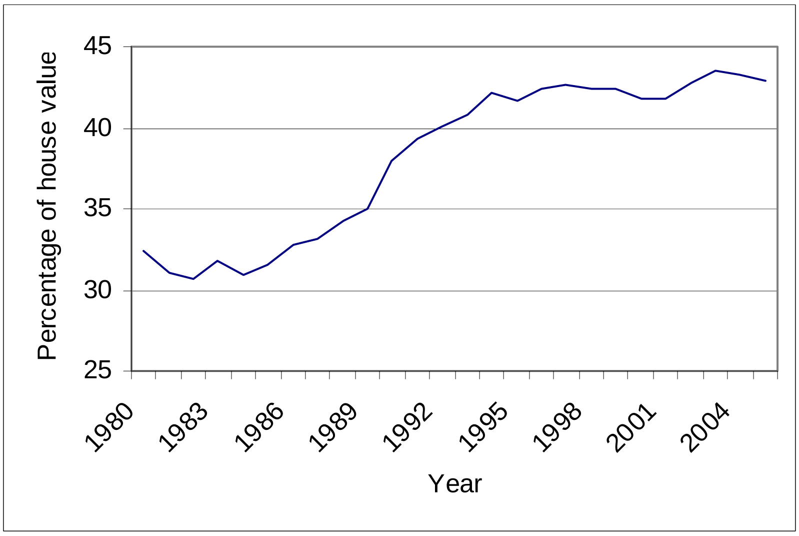
Debt/DPI ratio



Source: FFA.

Graph 3

Aggregate loan-to-value ratio



Source: FFA.

1.2 Defining characteristics of the US mortgage market

Loans are made by a huge variety of retail finance institutions, including traditional banks, mortgage brokers and finance companies. Many mortgages, especially those originated by non-bank institutions, are sold outright or swapped for an equivalent mortgage-backed security (MBS).

Originators can sell almost any type of mortgage into a well developed secondary mortgage market comprising many different institutions, including government-sponsored enterprises (GSEs), mortgage conduits, investment banks, and pools of managed assets. Mortgages that satisfy certain legally mandated restrictions on credit risk and size are most often securitised by the housing-related GSEs, Fannie Mae or Freddie Mac. Large mortgages, those with higher than normal credit risk, and mortgages with floating interest rates are likelier to be securitised by private entities. The basic goal of securitisers is to repackage the raw cash flow from a pool of mortgages into a form that investors prefer; this often means offering investors protection against credit risk (the risk that borrowers default) and prepayment risk (the risk that borrowers repay the mortgage early).

Borrowers can choose from a large menu of mortgage options that allow them to select both the interest rate and the amortisation characteristics; in addition, the overwhelming majority of these mortgages allow penalty-free early prepayment at the borrower's discretion. Typically, mortgage rates can be fixed for one to 10 years before converting to a floating rate mortgage, or the borrower can opt for a standard 15- or 30-year fixed rate mortgage. Regarding principal repayment, borrowers can choose a standard self-amortising mortgage, in which the principal amount is repaid over the term of the mortgage, or an interest-only mortgage, in which the borrower is only obligated to pay the interest on the mortgage each month, although he can pay down the principal arbitrarily, usually also lowering his monthly payments. In addition, borrowers can choose mortgages which allow negative amortisation, in which the principal grows over time when payments do not cover the interest costs of the mortgage.

Because most borrowers choose mortgages with fixed rates over some period and penalty-free prepayment, lenders are in effect selling borrowers an interest rate option. A sophisticated and robust market in a wide variety of fixed income derivatives has evolved to manage the risks associated with the prepayment option. These hedging instruments have allowed the growth of large, highly leveraged, portfolios of mortgages. The portfolio managers can insure themselves against sudden drops in cash flow from the portfolio if interest rates fall and the mortgages prepay by buying the correct mix of interest rate options.

1.3 Main developments over the past 15 years

Technological advances in information processing have had profound impacts on all parts of the mortgage market. These can be divided into three main areas:

First, technological progress has decreased the cost of approving a mortgage under a standardised set of lending guidelines. Today, lenders can input the borrower's information (income, credit history, the property's geographical location) into a desktop terminal and know instantly whether the loan satisfies a set of lending standards.

Second, technological progress has allowed more precise measurement of a borrower's credit risk. In part, this is because gathering and assessing a borrower's credit history became easier and more objective; credit history is now usually just summarised as a credit score (most often using a FICO score). Further, investors can now use information on the performance of large groups of loans to improve statistical models of default and prepayment probabilities.

Third, mortgage servicing has changed dramatically as a result of improved information technology. Mortgage servicers conduct much of the back office work of collecting payments; thus, they are the institutions most attuned to borrower distress, usually in the form of late or missed payments. Servicers today take an active role in credit risk management, often identifying the borrowers in danger of default and contacting them to negotiate debt restructuring or workout plans. These loss mitigation strategies often benefit both borrower and lender.

Regarding developments in the industrial organisation of the mortgage lending business, lenders rely much more on mortgage brokers today than in the past. Mortgage brokers are small-scale operations (often storefronts) that make loans and immediately pass them off to larger entities with which they have contracts. The number of mortgage brokers expands and contracts in line with the demand for mortgage originations.

Finally, the diversity and variety of mortgage products available to borrowers has expanded significantly over the past two decades. Innovations include loans with very high LTVs and high borrower debt/income ratios, adjustable rate, hybrid, and interest-only mortgages, as well as the widespread availability of home equity lines of credit. In addition, a number of mortgage products have been developed to facilitate special efforts to expand access to credit for lower-income borrowers and borrowers purchasing homes in lower-income neighbourhoods.

2. Laws affecting mortgages

Four main groups of laws affect mortgages: (i) foreclosure and bankruptcy laws; (ii) tax laws; (iii) laws governing lending practices; and (iv) laws guaranteeing access to credit.

2.1 Foreclosure and bankruptcy laws

Foreclosure laws govern the process by which a lender can seize property which secures a loan. These laws, broadly speaking, govern the rights of the lender and the borrower after the borrower fails to make three consecutive monthly mortgage payments. At this point, the lender can begin foreclosure proceedings against the borrower; the mortgage is said to be 90+ days delinquent or in foreclosure (in many statistics, the two categories are combined into a single category labelled as "seriously delinquent").

Foreclosure laws vary widely by state and, to some extent, the outcomes of foreclosure proceedings depend on the determinations made by individual judges even within the same legal jurisdiction. However, state laws can broadly be broken down into two main groups: those that require a judicial foreclosure process and those that do not. In the 21 states requiring judicial foreclosure, the court oversees and approves each stage of the foreclosure process. This can add a significant delay to property seizure.

Overall, lenders lose between 30 and 60% of a loan's value in a foreclosure. This is due in part to the legal fees associated with a foreclosure; however, borrowers are unlikely to default unless the property's price has depreciated significantly. See Capone (1996) for a discussion of the actual experience of foreclosure and Jankowski (1999) for more information on foreclosure laws.

Bankruptcy law governs the rights of lenders when the loans are not secured by real property, that is, for loans other than mortgages. Most typically, households file for bankruptcy in order to cancel unsecured loans such as credit card debt. Mortgage loans cannot be cancelled in the same way. However, there is a complicated interaction between bankruptcy and foreclosure laws. Also, bankruptcy law treats home equity as a special kind of asset.

In a typical bankruptcy proceeding, a borrower's unsecured debts are discharged; however, his creditors seize all non-exempt assets. Which assets are exempt, and what their dollar value is, varies considerably from state to state. Delaware, for example, allows all debtors to exempt a little over $5,000 of any property. Connecticut, by contrast, allows homeowners to exempt up to $75,000 in home equity alone. The statutes governing treatment of home equity are known as the homestead exemptions. Several states in the Midwest, as well as Texas and Florida, have unlimited homestead exemptions. Bankruptcy reform legislation enacted in October 2005 imposes a national cap on the amount of home equity that can be exempted.

2.2 Tax laws

The US tax code contains special provisions both for the treatment of housing wealth and for the treatment of mortgages. In general, these provisions favour housing wealth over other forms of wealth and mortgage debt over other forms of debt.

A comprehensive system of income tax seeks to tax all forms of income but allow deduction of costs associated with earning that income. However, in the US tax code, homeowners earn an imputed rent from their homes; this income is untaxed while the primary cost associated with earning that income, mortgage interest payments, is deductible.

Prior to the Tax Reform Act of 1986, many forms of consumer interest payments were tax-deductible. Following the act, only interest paid on mortgages used to acquire one's primary residence as well as home equity loans (which may be a substitute for consumer debt) remains tax-deductible. As estimated by Office of Management and Budget (2004), this mortgage interest deduction resulted in an estimated $62 billion in income tax expenditure in 2004. By comparison, the tax expenditure associated with the 401(k) tax-exempt savings programme is estimated to be $51 billion in 2005.

Note that the mortgage interest deduction only affects a household if it chooses to itemise its deductions, as opposed to taking the standard deduction. As discussed in Canner et al (2002), only about 50% of households with outstanding mortgages choose to itemise. Obviously, the likelihood of itemising increases with the mortgage size and income. For example, 80% of households with annual incomes above $80,000 and positive mortgage debt chose to itemise.

Primary residences also receive more favourable capital gains treatment than other assets. Until 1997, realised capital gains were generally not taxed because there was a rollover provision and a one-time $125,000 exemption for those over the age of 55. The 1997 law removed the rollover provision, and altered the exemption. The exemption is now available to all homeowners who have lived two of the most recent five years in the house and can be used repeatedly. For married couples, the first $500,000 in realised capital gains is now exempt from capital gains tax.

2.3 Laws regulating lending practices

The Truth in Lending Act (1969) mandates a standard set of disclosure rules for mortgages and other credit products. One goal of the law is to make shopping across lenders easier by allowing consumers to compare the loan terms and conditions. The specific requirements of lenders are contained in the Federal Reserve's Regulation Z. Enacted in 1994, the Home Ownership and Equity Protection Act (HOEPA) restricts certain terms of high-cost loans.

Since about 1999, several states have enacted laws aimed at stopping unfair and abusive mortgage lending practices, usually known as predatory lending. These laws, like the HOEPA, restrict terms of certain high-cost loans. In January 2004, the Office of the Comptroller of the Currency (OCC), a major national banking regulator, issued a rule that, for banks regulated by the OCC, supplanted the many different state laws with a single standard set by the OCC.

2.4 Credit access laws

Several laws are designed to protect access to credit for certain classes of borrower. The Equal Credit Opportunity Act (1974) banned discrimination on ethnic or racial grounds. Mortgage lending was thought to be particularly rife with discriminatory practices, prompting the Home Mortgage Disclosure Act (1975), or HMDA. This law, as updated in 1989, requires most mortgage lending institutions to file a report on each application for a mortgage and the outcome of that application (for example, whether the application was approved or denied, and whether the borrower accepted the offer). Over time, information from the HMDA reports has become a useful tool for monitoring mortgage markets.

The Community Reinvestment Act (1977), or CRA, broadly evaluates how well depository institutions serve the credit needs of households in the same geographical area as their deposit market. The CRA places particular emphasis on loans made to lower-income borrowers, or to borrowers in lower-income neighbourhoods. See Canner et al (2002) for further information on the CRA and mortgage markets.

3. Originations: the primary mortgage market

3.1 Classification of mortgages

Certain mortgages are eligible for special treatment in both the primary market and the secondary market. In general, loans to low-income borrowers are explicitly or implicitly guaranteed by the government in order to promote home ownership. This section discusses in broad terms the governmental or legal classification of mortgages, and how these classifications translate into primary and secondary market treatment.

3.1.1 Government-backed mortgages

Certain mortgages are explicitly backed by the government under two programmes: one administered by the Federal Housing Administration (FHA), the other by the Veteran's Administration (VA). These loans typically have very high LTV ratios (over 95%), and the borrowers may have fairly recent foreclosures or bankruptcies on their records. Thus, many FHA/VA loans might be classified as sub-prime in the private mortgage market. Under the FHA programme, lenders are insured against credit losses by the FHA, while under the VA programme only a portion of the mortgage principal is guaranteed. Thus, these so-called FHA/VA mortgages carry direct and explicit credit guarantees.

Inaugurated during the 1930s, the FHA/VA programmes are designed for low-income, first-time homebuyers with very small down payments. Indeed, to qualify for an FHA loan, a borrower needs less than a 5% down payment. Loan limits are generally low, but can vary substantially from area to area depending on the average house price in an area. At the moment, the basic FHA loan limit is about $170,000, but can range to over $300,000 in the highest-cost areas.

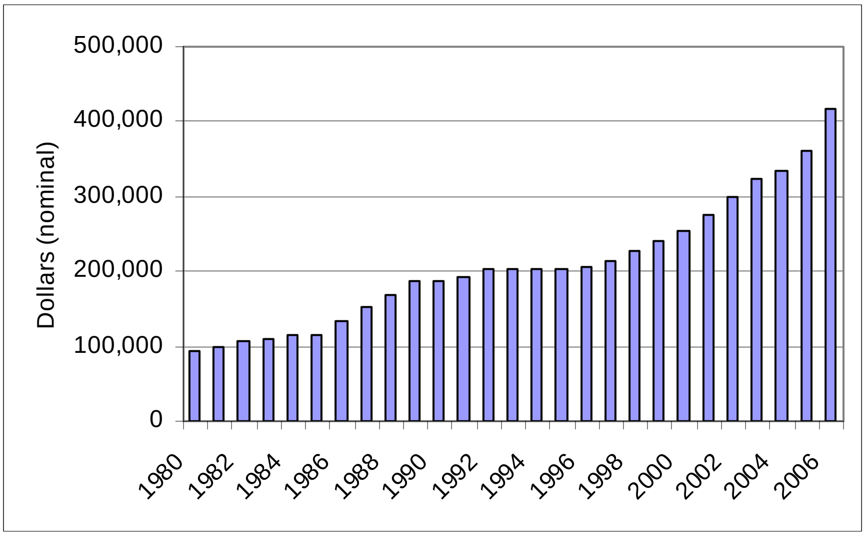
These mortgages are known as government-backed. Mortgages without government backing are known as conventional mortgages.

3.1.2 Conforming mortgages

Mortgages that are eligible for purchase by Fannie Mae or Freddie Mac are known as conforming mortgages. Such mortgages must both satisfy an underwriting criterion and have principal amounts below the conforming loan limit. The maximum growth in the conforming loan limit each year is set by a formula related to the growth in average house prices as measured by the Federal Housing Finance Board. The conforming loan limits for recent years are shown in Graph 4.

Graph 4

Single family conforming loan limit



Source: HSH Associates: http://library.hsh.com/?row_id=141.

The underwriting criterion is less well defined, but is generally taken to mean that the mortgage must have the same credit risk as an 80% LTV mortgage made to a borrower with a good credit history.

3.1.3 Jumbo mortgages

Mortgages with principal amounts greater than the prevailing conforming loan limit are referred to as jumbo mortgages. Because the conforming loan limit is a national standard, while house prices vary substantially between the relatively high-cost coastal regions and the rest of the United States, jumbos tend to be concentrated in certain high-cost areas. Further, there are several other ways in which the average jumbo borrower differs from the average conforming borrower, including income, debt service, and LTV ratios. (See Passmore et al (2005) for a complete discussion of the prevalence of jumbo mortgages by geography, as well as an analysis of other differences between jumbo and conforming mortgages.)

3.1.4 Sub-prime and near-prime mortgages

Borrowers with poor credit histories, high LTVs and/or incomplete documentation are considered to be higher credit risk. Although such borrowers can still obtain credit, they are classified as sub-prime or near-prime. Near-prime borrowers are also sometimes known as “alt-A”.

Credit histories are usually summarised in a credit score. This score takes into account all information available to a credit reporting bureau. This includes any delinquent payments or outstanding bills, total debt of all forms, and total available further credit (for example, the maximum limit on credit cards). Although several different credit models are available, these scores are sometimes generically referred to as FICO scores after Fair Isaac Company’s model. FICO scores range from below 400 to over 800. Although there are no strict ranges for sub-prime, near-prime and prime, as a rule of thumb borrowers with scores below 620 are usually considered sub-prime, borrowers with scores between 620 and 680 may be considered near-prime, and borrowers with scores above 680 are usually considered prime.

Borrowers with a few blemishes on their credit record, for example those with FICO scores between 620 and 680, are considered near-prime. Also classed in this group are those borrowers with good credit, but who refuse, or are unable, to provide complete documentation on income or assets at the time of origination. When these near-prime or low-doc loans are securitised, they are usually referred to as “alt-A”. Prime-quality borrowers are rated as “A” quality by rating agencies, while sub-prime borrowers as “B” or “C”. Because near-prime loans lie somewhere between the two, they are called “alt-A” or “A–” loans.

3.2 Types of lender

Loans are made by a variety of institutions, including (i) traditional depository institutions (banks and thrifts), (ii) mortgage bankers, and (iii) mortgage brokers. In addition, loans to targeted groups of borrowers may be made by a special lending programme within any of these institutions.

The key difference between depository institutions and mortgage bankers is that the latter are not subject to the same set of prudential and consumer protection regulations. For example, the Community Reinvestment Act applies only to depository institutions, not to mortgage banks. In addition, banks and thrifts can fund loans from their deposits. Mortgage banks, by contrast, usually securitise their loans very quickly, in effect relying directly on capital markets for their funding.

Mortgage brokers are often smaller firms that originate loans on behalf of a handful of institutions. The brokers earn fees based on the difference between the rate they charge borrowers and the wholesale rates charged by the ultimate institutions. In the past 15 years, mortgage brokers have become an important part of retail borrowing. Because information technology allows institutions to easily standardise underwriting standards, these third parties can do much of the work traditionally done by loan officers. The mortgage brokerage industry expands and contracts with mortgage origination volume. Thus, during refinancing waves, many individuals are drawn into the business, and then exit during slack periods.

Finally, many lenders have special programmes designed to serve targeted groups of borrowers. These are usually low-income or minority first-time homebuyers. The Community Reinvestment Act, for example, encourages lending to lower-income borrowers. Banks subject to the CRA often set up special lending programmes tailored to the needs of lower-income borrowers.

3.3 Mortgage contract features

3.3.1 Traditional mortgages

The traditional 30-year fixed rate self-amortising freely prepayable mortgage (FRM) remains the most popular mortgage type. During periods of high mortgage rates, other mortgage types may increase in popularity, but borrowers often refinance as quickly as possible into the traditional product. Nonetheless, several fairly new alternatives to the traditional 30-year FRM have been developed and appear to be increasing in popularity.

In effect, borrowers now choose from a menu of options in two dimensions: interest rate risk and amortisation schedules. The traditional FRM leaves the borrower with no interest rate risk, and its amortisation schedule is fixed from the outset so that the principal amount declines to zero at the mortgage's term.

3.3.2 *Amortisation schedules*

However, borrowers can choose alternative amortisation schedules. Currently, the most popular alternative is the interest-only (IO) mortgage. For a fixed initial period, IO mortgages require only interest payments, so that the mortgage's principal balance remains unchanged. In some of these mortgages, borrowers can pay down the principal at will, reducing their future monthly payments. Less common are mortgages featuring negative amortisation, where the monthly payments are insufficient to cover even the principal amount.

3.3.3 *Interest rate risk*

Separately, borrowers can choose how the interest rate on their mortgage (and hence their mortgage payment) varies with changes in an index interest rate. Contracts specify the index interest rate, the repricing frequency, the margin over the index rate, and, potentially, caps on rates. For example, a common type of adjustable rate mortgage (ARM) is indexed to one-year Libor, carries a margin of 125 basis points, and reprices every year.

Attention has focused recently on hybrid ARMs, which feature a fixed payment for an initial period before converting into a standard one-year floater. The initial period can be as short as three years or as long as 10 years. In essence, hybrid mortgages allow borrowers to buy arbitrarily long insurance against interest rate shocks.

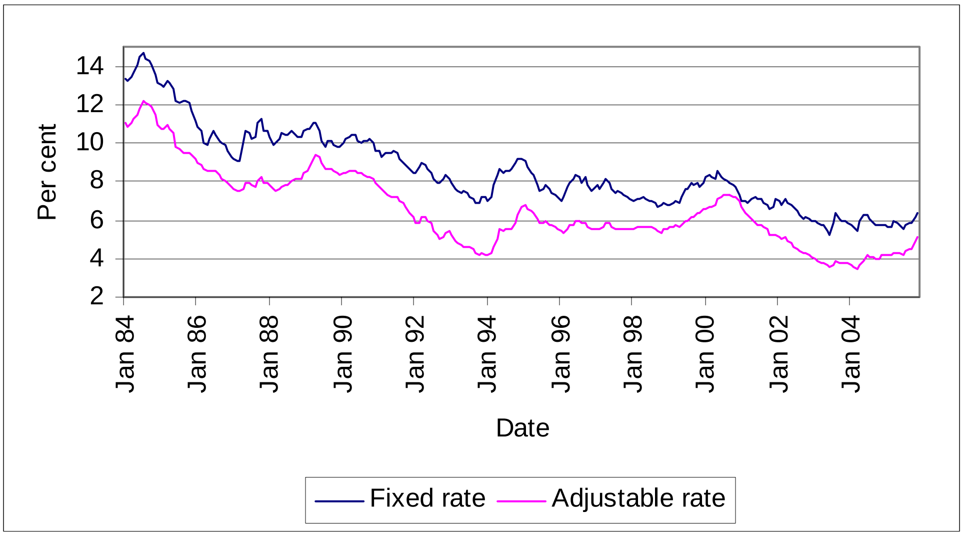
3.3.4 *Evidence on adjustable rate mortgage choice*

Although hybrid mortgages are a relatively new development, ARMs in general have been available for more than 20 years. As shown in Graph 5, during periods of high interest rates, and when ARMs are significantly cheaper than FRMs, mortgage borrowers are much likelier to pick ARMs over FRMs. The fraction of new mortgages that have adjustable rates seldom drops below 10%, and routinely exceeds 40%. However, as shown in Table 1, the fraction of outstanding mortgages with adjustable rates is much lower. This is because borrowers with an adjustable rate mortgage usually refinanance quite quickly into a fixed rate mortgage. Thus ARMs can terminate faster than FRMs.

In general, ARMs are more common among sub-prime borrowers and borrowers with jumbo loans.

Graph 5a

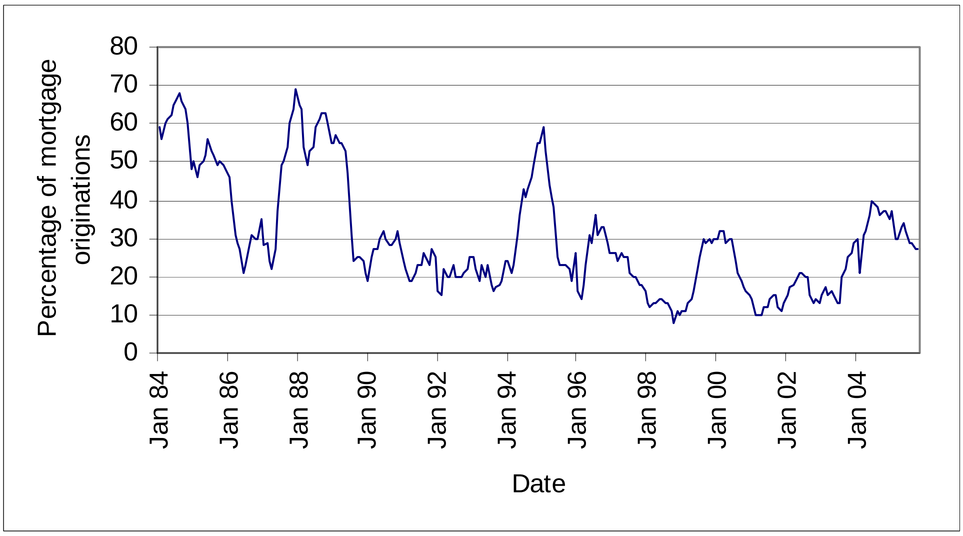
Contract interest rates on mortgages



Source: FHLMC (Freddie Mac).

Graph 5b

ARM origination fraction



Source: Federal Housing Finance Board.

Table 1

Percentage of households with variable rate mortgages

Year	Percentage
1989	20.2
1992	14.7
1995	18.8
1998	13.9
2001	11.4

Source: Survey of Consumer Finances. Among homeowners with some mortgage debt.

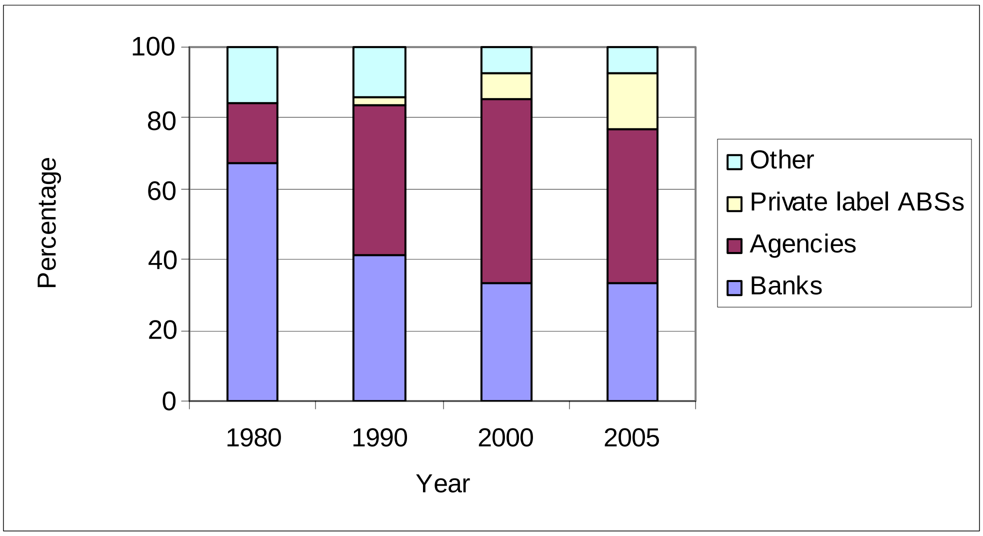
4. Mortgage funding

Mortgage lenders typically fund their loans with a mix of equity, debt and secondary market transactions. The extensive secondary market for all forms of mortgages allows lenders to transform the original whole mortgage loan into a highly rated security, which, because it carries essentially no credit risk, is extremely liquid. Most mortgages require extremely little capital backing to cover their credit risk. Thus, lending institutions typically have highly leveraged portfolios of securitised mortgages. These institutions mainly manage the interest rate risk associated with such portfolios.

Graph 6 shows the evolution of funding sources for home mortgages. As shown, in 1980 most home mortgage debt was held directly by banks (defined as commercial banks, thrifts, credit unions and other depositories). Since then, agency and private MBS pools have grown rapidly, mostly at the expense of bank portfolios. However, many banks use securitisation programmes, mainly as a credit guarantee: they choose to hold mortgages as MBSs rather than as whole loans.

Graph 6

Evolution of mortgage funding sources



Source: FFA.

4.1 Agency mortgage-backed securities

The most common form of MBSs are those guaranteed by the housing-related government sponsored enterprises, or GSEs. These are also sometimes known as the "agencies"; hence, the market for mortgages guaranteed by these entities is known as the "agency market".

There are two types of agency MBSs. GNMA or "Ginnie Mae" securities are collateralised by FHA/VA mortgages and are explicitly backed by the government. Standard agency securities are backed by conforming conventional mortgages and are not explicitly backed by a government guarantee.

The GSEs have established complex underwriting criteria to limit the amount of credit risk associated with a mortgage. A lender typically enters the relevant information (borrower credit score, property location, loan size, etc) into an automated underwriting system which then either accepts or rejects the loan. In addition to these restrictions on credit risk, the GSEs are prohibited from buying mortgages larger than the conforming loan limit (Graph 4).

In a typical transaction, a large mortgage lender enters into a long-term master agreement with one of the GSEs. As part of the agreement, the lender promises to deliver a certain volume of whole mortgage loans to the GSEs over a certain period of time. These MBSs are often presold to investors on the "to be announced" or TBA market. Some lenders prefer to hold the resulting MBSs on portfolio, so simply swap a pool of mortgages for an MBS backed by those mortgages.

For a discussion of the regulatory capital requirements faced by the GSEs and depository institutions, see Hancock et al (2005).

4.2 The non-agency mortgage market

Non-conforming mortgages are generally securitised in the private label market. These mortgages are typically jumbo primes, sub-primes, and adjustable rate mortgages of all types.

Non-agency MBSs rarely carry an explicit credit guarantee from an institution, unlike agency MBSs. Thus, they are designed much like other asset-backed securities, with cash flows from the underlying assets directed to different tranches of the security. Typically, these MBSs have a high-quality piece, usually rated AAA, and a first-loss piece. The first-loss piece is also known as the b piece, the equity tranche, or toxic waste.

As shown in Graph 6, the non-agency MBS market has grown strongly in recent years. In fact, 2004 saw record issuance of non-agency MBSs and relatively little issuance of agency MBSs. In part, this shift is due to the growth of the non-conforming sector, including jumbo and sub-prime mortgages.

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