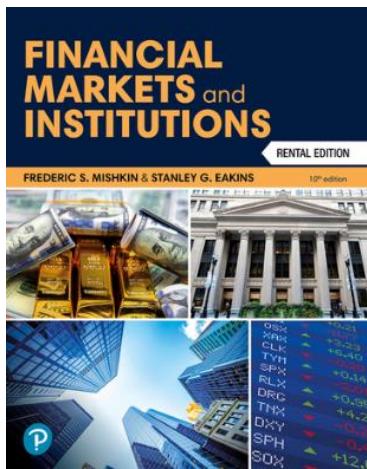


Financial Markets and Institutions

Tenth Edition



Chapter 14

The Mortgage Markets

 Pearson

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Chapter Preview (1 of 2)

The average price of a U.S. home is well over \$232,500. For most of us, home ownership would be impossible without borrowing most of the cost of a home.

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Chapter Preview (2 of 2)

- Topics include:
 - What Are Mortgages?
 - Characteristics of Residential Mortgages
 - Types of Mortgage Loans
 - Mortgage-Lending Institutions
 - Loan Servicing
 - Secondary Mortgage Market
 - Securitization of Mortgages

What Are Mortgages?

- A long-term loan secured by real estate
- An amortized loan whereby a fixed payment pays both principal and interest each month

Table 14.1

Mortgage Loan Borrowing, 2016

Type of Property	Mortgage Loans Issued (\$ billions)	Proportion of Total (%)
One- to four-family dwelling	9,986	72.38
Multifamily dwelling	1,099	7.97
Commercial building	2,506	18.16
Farm	205	1.49

What Are Mortgages? History (1 of 2)

- Mortgages were used in the 1880s, but massive defaults in the agricultural recession of 1890 made long-term mortgages difficult to attain.
- Until post- WWII, most mortgage loans were short-term balloon loans with maturities of five years or less.

What Are Mortgages? History (2 of 2)

- Balloon loans, however, caused problems during the depression. Typically, the lender renews the loan. But, with so many Americans out of work, lenders could not continue to extend credit (sound familiar?).
- As a part of the depression recovery program, the federal government assisted in creating the standard 30-year mortgage we know today.

Characteristics of the Residential Mortgage

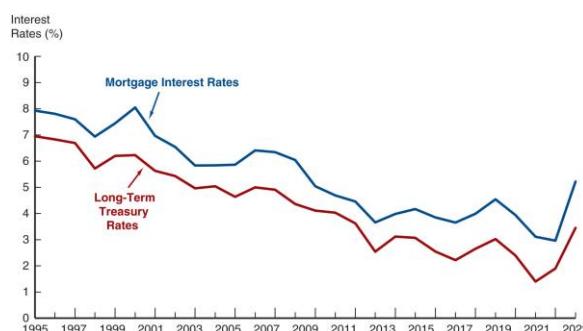
- Mortgages can be roughly classified along the following three dimensions:
 - Mortgage Interest Rates
 - Loan Terms
 - Mortgage Loan Amortization

Characteristics of the Residential Mortgage: Mortgage Interest Rates

- The stated rate on a mortgage loan is determined by three rates:
 - Market Rates: general rates on Treasury bonds
 - Term: longer-term mortgages have higher rates
 - Discount Points: a lower rates negotiated for cash up front

Figure 14.1

Mortgage Rates and Long-Term Treasury Interest Rates, 1985–2022



Source: <http://www.federalreserve.gov/releases/h15/data.htm> .

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (1 of 8)

- Suppose you had to choose between a 12% 30-year mortgage and an 11.5% mortgage with 2 discount points. Which should you choose? Assume you wished to borrow \$100,000.

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (2 of 8)

- First, examine the 12% mortgage. Using a financial calculator, the required payments is:
- $n = 360, i = 1.0, PV = 100,000,$
- Calculate the PMT. $PMT = \$1,028.61$

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (3 of 8)

- Now, examine the 11.5% mortgage. Using a financial calculator, the required payments is:
- $n = 360, i = 11.5 / 12, PV = 100,000,$
- Calculate the $PMT. PMT = \$990.29$

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (4 of 8)

- So, paying the points will save you \$38.32 each month. However, you have to pay \$2,000 upfront.
- You can see that the decision depends on how long you want to live in the house, keeping the same mortgage.

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (5 of 8)

- If you only want to live there 12 months, clearly the \$2,000 upfront cost is not worth the monthly savings.

Table 14.2

Effective Rate of Interest on a Loan at 12% with 2 Discount Points

Year of Payment	Effective Rate of Interest (%)	Year of Prepayment	Effective Rate of Interest (%)
1	14.54	6	12.65
2	13.40	7	12.60
3	13.02	10	12.52
4	12.84	15	12.45
5	12.73	30	12.42

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (6 of 8)

- Many mortgage lenders will point to the 30-year effective rate of interest, and argue that the points are a good deal (and it is here, compared to the 12.68% **effective rate** on a 12% **nominal rate** mortgage).
- Although the calculation is correct, the information is not what you need.

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (7 of 8)

You need to determine when the present value of the savings (\$38.32) equals the \$2,000 upfront. Using a financial calculator, this is:

$$i = 1, PV = -2,000, PMT = 38.32$$

Calculate n . $n = 74$ months, or about 6.2 years.

Characteristics of the Residential Mortgage: Mortgage Interest Rates & Points (8 of 8)

- So, if you **think** you will stay in the house and not refinance for at least 6.2 years, paying the \$2,000 for the lower payment is a sound financial decision.
- Otherwise, you should accept the 12% loan.

Characteristics of the Residential Mortgage: Loan Terms (1 of 3)

Mortgage loan contracts contain many legal terms that need to be understood. Most protect the lender from financial loss.

- Collateral: usually the real estate being financed
- Down payment: a portion of the purchase price paid by the borrower

Characteristics of the Residential Mortgage: Loan Terms (2 of 3)

- Mortgage loan contracts contain many legal terms that need to be understood. Most protect the lender from financial loss.
- PMI: insurance against default by the borrower
- Qualifications: includes credit history, employment history, etc., to determine the borrowers ability to repay the mortgage as specified in the contact

Characteristics of the Residential Mortgage: Loan Terms (3 of 3)

Lenders will also order a credit report from one of the credit reporting agencies.

- The score reported is called the FICO.
- The range is 300 to 850, with 660 to 720 being average.
- Payment history, debt, and even credit card applications can affect your credit score.

Characteristics of the Residential Mortgage: Loan Amortization

Mortgage loans are amortized loans:

- fixed, level payment
- pays interest due plus some principal
- balance on the mortgage will be zero when the last payment is made

Table 14.3

Amortization of a 30-Year, \$130,000 Loan at 8.5%

Payment Number	Beginning Balance of Loan	Monthly Payment	Amount Applied to Interest	Amount Applied to Principal	Ending Balance of Loan
1	130,000.00	999.59	920.83	78.76	129,921.24
24	128,040.58	999.59	906.95	92.64	127,947.95
60	124,257.09	999.59	880.15	119.44	124,137.65
120	115,366.01	999.59	817.18	182.41	115,183.60
180	101,786.66	999.59	720.99	278.60	101,508.06
240	81,046.91	999.59	574.08	425.51	80,621.40
360	992.56	999.59	7.03	992.56	0.00

Types of Mortgage Loans (1 of 2)

- Insured vs Conventional Mortgages: if the down payment is less than 20%, insurance is usually required
- Fixed-Rate Mortgages: the interest rate is fixed for the life of the mortgage
- Adjustable-Rate Mortgages: the interest rate can fluctuate within certain parameters

Types of Mortgage Loans (2 of 2)

- Other Types
 - Graduated-Payment Mortgages (GPMs)
 - Growing Equity Mortgages (GEMs)
 - Second Mortgages
 - Reverse Annuity Mortgages (RAMs)
 - Option ARMs
- The following table lists additional characteristics on all the loans.

Table 14.4 (1 of 2)

Summary of Mortgage Types

Conventional mortgage	Loan is not guaranteed; usually requires private mortgage insurance; 5% to 20% down payment
Insured mortgage	Loan is guaranteed by FHA or VA; low or zero down payment
Adjustable-rate mortgage (ARM)	Interest rate is tied to some other security and is adjusted periodically; size of adjustment is subject to annual limits
Graduated-payment mortgage (GPM)	Initial low payment increases each year; loan amortizes in 30 years

Table 14.4 (2 of 2)

Summary of Mortgage Types

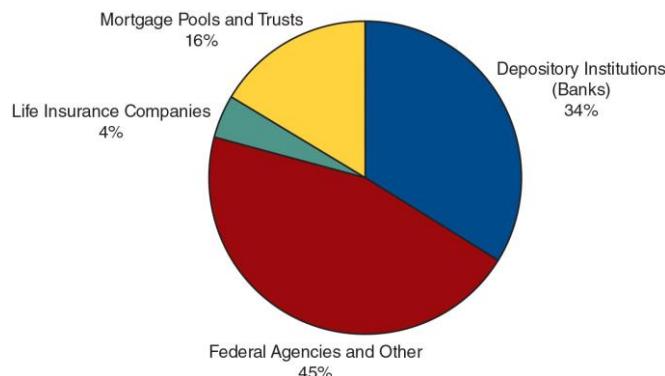
Growing-equity mortgage (GEM)	Initial payment increases each year; loan amortizes in less than 30 years
Second mortgage	Loan is secured by a second lien against the real estate; often used for lines of credit or home improvement loans
Reverse annuity mortgage	Lender disburses a monthly payment to the borrower on an increasing-balance loan; loan comes due when the real estate is sold

Mortgage-Lending Institutions

- Originally, thrift institutions were the primary originator of mortgages in the United States and, therefore, the primary holder of mortgage loans.
- As the next figure illustrates, this is not the case anymore.

Figure 14.2

Share of the Mortgage Market Held by Major Mortgage-Lending Institutions



Source: <http://www.federalreserve.gov/econresdata/releases/mortoutstand/current.htm> .

Loan Servicing (1 of 2)

- Most mortgages are immediately sold—frees cash to originate another loan.
- Loan servicers collect monthly payments, usually keeping a portion of the payments received.

Loan Servicing (2 of 2)

In all, there are three distinct elements in mortgage loans:

- The originator packages the loan for an investor
- The investor holds the loan
- The servicing agent handles the paperwork

E-Finance: Borrowers Shop the Web for Mortgages

Mortgages used to originate from a local bank. But the Web is well-suited to handle online mortgage origination:

- This is a financial product—nothing really needs to be delivered
- Mortgages are fairly standardized. There is no product differentiation to consider.
- Little bank loyalty for borrowers
- Online lenders have low overhead, and so lower fees.

Secondary Mortgage Market

- The secondary mortgage market was originally established by the federal government after WWII when it created Fannie Mae to buy mortgages from thrifts.
- The market experienced tremendous growth in the early to mid-1980, and has continued to remain a strong market in the United States

Securitization of Mortgages (1 of 2)

- The securitization of mortgages developed because of the risk of default and costs of prepayment/servicing.
- A pool of mortgages reduces this problem through diversification.

Securitization of Mortgages (2 of 2)

- The **mortgage-backed security (MBS)** is created.
- Pools including hundreds of mortgages.
- Rights to the cash flows sold as separate securities.
- At first, simple pass-through securities were designed.

Securitization of Mortgages: The Mortgage Pass-Through

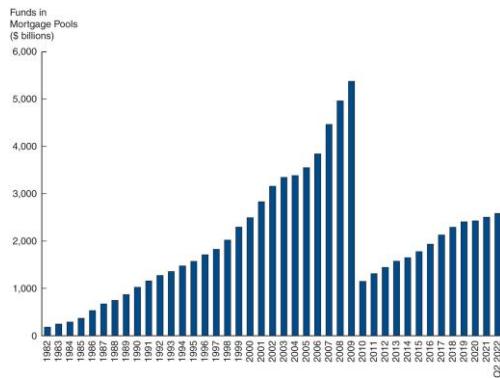
- **Definition:** A security that has the borrower's mortgage payments pass through the trustee before being disbursed to the investors
- This design did eliminate idiosyncratic risk, but investors still faced **prepayment risk**.

The Impact of Securitization on the Mortgage Market

- The value of mortgages held in pools is reaching nearly \$8.0 trillion near the end of 2009.
- Fell dramatically
- The securities compete for funds along with all other bond market participants.

Figure 14.3

Value of Mortgage Principal Held in Mortgage Pools,
1984–2022Q2



Source: <http://www.federalreserve.gov/econresdata/releases/mortoutstand/current.htm> .

Securitization of Mortgages: Types of Pass-Throughs

There are a variety of different types of pass-through securities. We will briefly look at three:

- GNMA Pass-Throughs
- FHLMC Pass-Throughs
- Private Pass-Throughs

Securitization of Mortgages: GNMA Pass-Throughs

Ginnie Mae began guaranteeing pass-throughs in 1968.

- GNMA mortgages can be originated by many different financial institutions.
- GNMA aggregates the mortgages and issues pass-throughs with rights to interest and principal.
- GNMA also offers default insurance on the mortgages in the pools.

Securitization of Mortgages: FHLMC Pass-Throughs (1 of 2)

Freddie Mac buys mortgages and packages them for resale in MBSs.

- FHLMC pools contain mortgages that are not guaranteed, and may have different rates, etc.
- Pass-through securities issued by Freddie are called **participation certificates**.

Securitization of Mortgages: FHLMC Pass-Throughs (2 of 2)

- **Definition:** A CMO is a structured MBS where investor “tranches” have different rights to different sets of cash flows.
- This design structured the **prepayment risk**. Some tranches had little prepayment risk, while other had a lot.
- Freddie Mac helped originate these structures, and continues to innovate new tranche designs.

Securitization of Mortgages: Private Pass-Throughs

- Bank of America offered the first private pass-through in 1977.
- Non-agency issuers are free to incorporate any type of mortgages into their MBSs, including jumbo loans, Alt-A loans, and other non-traditional mortgages.

Subprime Mortgages and CDOs (1 of 3)

- Subprime loans are loans to borrowers who have poor credit ratings or other issues with collateral, etc.
- In 2000, only 2% of mortgages were subprime. This climbed to 17% by 2006.
- The average FICO score was 624 for subprime borrowers. Prime mortgage borrowers were 742.

Subprime Mortgages and CDOs (2 of 3)

- However, these mortgages were hailed by politicians and bankers alike. They helped less-than-perfect borrowers secure the “American Dream” of owning a home. And since real estate prices can’t fall (right?), there is little risk involved.

Subprime Mortgages and CDOs (3 of 3)

Several factors lead to this dramatic increase in subprime lending:

- New mortgage products (2 / 28 ARMS, Option ARMS, NoDoc loans) made expensive houses “affordable” (sort-of).
- The creation of CDOs helped create deal flow to continue lending in subprime markets.
- When house prices were increasing, subprime borrowers had an out if problems arose.

The Real Estate Bubble (1 of 2)

Between 2000 and 2005 home prices increased an average of 8% per year. The run-up in prices was caused by two factors:

- The increase in subprime loans created new demand for housing
- Real estate speculators

The Real Estate Bubble (2 of 2)

In the aftermath of the financial meltdown, lending policies have largely returned to selecting capable borrowers:

- CDO issuance peaked in 2006 at \$520b, but in 2009 fell to \$4.2b. Up to \$58b in 2012.
- New legislation, such as Frank-Dodd, may require mortgage originators to hold a part of the mortgages they create.

Chapter Summary (1 of 4)

- **What Are Mortgages?** Loans made for the purchase of real property, and usually collateralized by the purchased property.
- **Characteristics of Residential Mortgages:** includes the length of the mortgage, the terms, and the rate charges for the loan

Chapter Summary (2 of 4)

- Types of Mortgage Loans: includes conventional, insured, fixed and variable rate, and a variety of other designs.
- Mortgage-Lending Institutions: the primarily originator and holder of mortgages is no longer thrift institutions as other attempt to generate fees

Chapter Summary (3 of 4)

- Loan Servicing: the fees generated by collecting, distributing, and recording payments
- Secondary Mortgage Market: the active market for mortgages after the mortgage has been originated

Chapter Summary (4 of 4)

- Securitization of Mortgages: growing in popularity, causing mortgages to compete with both Treasury and corporate debt. But also clearly a part of the problem in the Housing Bubble and Financial Crisis of 2007–2009.

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