

9.5.1: Buying a Home

Reasons to Rent or Own a Home

Owning a home has always been the American Dream. In fact, the rate of American home ownership has always been greater than in most European countries. Historically, the homeownership rate in the U.S. has ranged from 63% to 65%, going back to 1970. It rose to 69% just before the Great Recession, but then in 2015, as homes were foreclosed, it dropped all the way back down to 63%. Still, it remains a dream of most people to own their own home.

There are two main factors to consider when trying to decide whether to buy or rent: how long you will be in a location and what your current financial situation is. You need to own a house at least three years to recover your transaction costs, and you should consider whether you can afford the down payment and the monthly mortgage costs. Also, be sure to check if you would be eligible for tax benefits. You can deduct the annual interest of your mortgage plus local real estate taxes. Generally, young people rent while in college, then rent in a downtown area after they get their first job, and then buy a home after they become a couple (especially if they have children). People under 25 tend to rent, as they are not yet locationally stable and because the mortgage interest tax deduction does not help them much. Between the ages of 25 to 55, people tend to buy. At any age, however, low-income people tend to rent due to economic barriers.

You Are Buying a Location, Not Just a Physical Structure

When buying a home, you are buying into a school district, a government, and a neighborhood. Depending on the district, school quality (and associated taxes) can vary significantly and can be a major expense in owning a home. The government in your city or township may or not be interested in actively maintaining the infrastructure of the municipality, which can have an effect on road conditions and municipal taxes. Finally, you want a friendly neighborhood, and if you buy a house when you have children, you want other children for your kids to play with. When you have narrowed down your property choices, it pays to knock on a few doors to introduce yourself and ask about the neighborhood.

When either renting or owning, you consume **housing services**. This is easy to understand with renting but might be a little harder to grasp when it comes to owning. A house is a durable good, or a good that lasts more than three years. A house provides you with housing services that you then pay for. The correct price for a **durable good** is not its purchase price but what is called its annual user cost: your annual out of pocket expenses. For a home, the user cost includes:

- Mortgage payments
- Real estate and other taxes
- Home insurance
- Utilities (electricity, gas or oil, water, sewage)
- Trash collection
- Home and yard maintenance

This probably sounds like it would be more expensive than if you were renting, but really, it is not. Your landlord incurred these same expenses to own the property, and your rent has these expenses taken into account; instead of paying various municipalities, people and companies, you paid your landlord.

Calculate What You Can Afford

There are constraints established by financial institutions on the size of a mortgage you are allowed to take out. The size of the mortgage, of course, will dictate the price of the house you can afford. The Consumer Financial Protection Bureau is a government agency whose job it is to make sure that financial institutions treat consumers fairly. According to the CFPB, your debt payments can be no more than 43% of your gross income:

The 43 percent debt-to-income ratio is important because, in most cases, that is the highest ratio a borrower can have and still get a Qualified Mortgage. Evidence from studies of mortgage loans suggest that borrowers with a higher debt-to-income ratio are more likely to run into trouble making monthly payments.

Here is what makes a qualified mortgage:

A Qualified Mortgage is a loan a borrower should be able to repay. Beginning on January 10, 2014, lenders making virtually any residential mortgage loan will have to assess a borrower's ability to repay the loan. A Qualified Mortgage is presumed to meet this requirement. A Qualified Mortgage is a loan that avoids risky features and meets other requirements general, the borrower also must have a total monthly debt-to-income ratio including mortgage payments of 43% or less.

Your debt-to-income ratio is all your monthly debt payments divided by your gross monthly income. This ratio is one way that lenders measure your ability to manage your monthly loan payments. For example, let's say your monthly debt payments look like this:

- \$1500 for your mortgage
- \$100 for an auto loan
- \$400 for the rest of your debts

This means your monthly debt payments total \$2,000. If your gross monthly income is \$6,000, then your debt-to-income ratio is 33 percent (\$2,000 is 33% of \$6,000). Remember that your student loans must be included in this calculation, so student loans can be a drag on buying your first home.

These regulations are the direct result of the housing and mortgage crisis that lead to the Great Recession. Immediately prior to the housing bust, mortgage companies were committing vast fraud in the initiation and documentation of mortgages and then selling these mortgages to investors. Investors then lost their money in these fraudulent mortgages, and many people lost their houses because they could not make the mortgage payments.

But where did the magic number 43% come from? As I will detail below, the government sponsored (and now government owned) companies, Fannie Mae and Freddie Mac either own or guarantee about 60% of the residential mortgages in the United States. From an analysis of the mortgages they hold (including defaulted mortgages), Fannie Mae and Freddie Mac have determined that 43% is a safe ratio for a household.

Difficulties of First-Time Home Buyers

The biggest difficulty for first-time home buyers is saving up the down payment. As we said above, you can usually put only 10% down on a house and often only 5% down. For the 2019 median house price in the U.S., a 10% down payment would be \$23,000. Saving this amount is difficult, so you might do what many young people do: go to your relatives for help. Remember, though, that you cannot borrow the down payment, but anyone can give you a gift of some or all of the cost.

The second biggest difficulty for first-time home buyers is getting a mortgage. As I mentioned earlier, in order to get a qualified mortgage your debt payments to gross income ratio cannot be more than 43%. This includes auto loan, credit card, and student loan payments. Recently, student loans have surpassed the \$1.5 trillion mark and exceeded the amount of credit card debt owed by all the households in America (\$970 billion in 2018). The amount of student debt that young people have is negatively affecting the economy, slowing down consumer spending and home purchases. There has been talk in Washington, D.C. about figuring out a way to alleviate this debt, but no effective action has been taken yet.

Another difficulty for first-time buyers is that no one is really building a lot of starter homes' for first-time buyers. This is like a vicious cycle. Many first-time buyers cannot qualify for homes at today's prices, so builders are not building as many, so the choices for those first-time buyers who do qualify are limited.

Finally, after a big rush to the cities, the price of housing in hip neighborhoods is getting too expensive, leading millennials to flock to the suburbs. In a 2019 article in the The Wall Street Journal entitled "American Suburbs Swell Again as a New Generation Escapes the City" Valerie Bauerlein discusses this phenomenon:

Millennials, the generation now ages 23 to 38, are no longer as rooted as they were after the economic downturn. Many are belatedly getting married and heading to the suburbs, just as their parents and grandparents did.

Millennials are trying to find small towns that give the feel of a community, instead of a big sprawling suburb with big houses. This means a longer commute to work but better schools and environment for the whole family.

House as Nest or House as Investment

No doubt you have been told that a house is a great investment, and this is generally true. For most people nearing retirement, their work retirement fund and their home equity are the only assets they have to depend on. However, I will point out that a house is both a **nest** and an **investment**. As a nest, you consume housing services from the physical structure you own. You therefore want to be conservative in the type of mortgage you select, and I recommend a simple 30-year fixed rate mortgage. As an investment, a house is an asset that pays you a return either in a dividend or in the appreciation of its value. More than that, owning a house also offers some income tax relief.

Rate of Return on Houses as Investments

Prior to The Great Recession, houses were a great investment. From 1964 to 2009, the average growth rate of housing prices was 5.4% (Freddie Mac). In order to fully understand the rate of return on home ownership, we need to analyze how **leverage** (that is, borrowing part of your investment capital) impacts your investment. Let's say you buy a home at \$230,000, the median national (Zillow, 2019). You then put down 20% of this, or \$46,000. The return must be calculated on your actual cash investment of \$46,000 and not the total house price. If the house goes up in value by 10%, it is now worth \$253,000 for an increase of \$23,000. If you had not taken out a mortgage but paid all cash for the home, your return on investment would have been 10%. However, since you only invested \$46,000 cash into the home, your return on investment is: $\$23,000/\$46,000 = 50\%$. Note, however, that I did not take into account the transaction costs of buying and selling the home and all the costs while owning it.

Finding a Real Estate Agent

Just like finding a contractor to work on your home, finding a good real estate agent requires research. Since the seller pays the commission to the realtors, it costs you nothing to hire your own real estate agent. Here are some tips for finding a good agent.

First, since housing is a local market, you want to find an agent that has a lot of local experience. A local agent will know the home prices in the market and, through their contacts with other agents, know about homes that will be coming on the market soon. This latter information is valuable in a hot real estate market.

Second, it is best to get a referral from friends or acquaintances. A good agent will be loyal and focused on your needs, not just looking to make a commission. A good agent will also know competent home inspection services and mortgage and title insurance companies to help with your purchase.

Finally, you should sit down and interview the referred agent. Ask what they know about the school districts and municipalities in the areas in which you are interested. Ask them to show you recent comparable sales in those areas and ask them what they think you will need to pay. Talk to them about pre-qualifying for a mortgage so you know if you can afford the houses in that area. You need to spend some time talking to the agent about the school districts and the types of houses you like. A good agent will be patient with you to make sure you get a house you can afford and love.

Home Prices

The price of housing, like almost everything else, is determined by supply and demand. The more buyers and the fewer sellers in a local market, the faster housing prices rise. Conversely, more sellers and fewer buyers, the slower housing prices rise. Prior to the Great Recession, however, people actually believed that housing prices never went down. Sadly, that was not to be the case.

The American Association of Realtors' general rule is that if there is a six months' supply of houses, the market is in equilibrium; that is, housing prices neither move up or down. However, if there is less than a six months' supply, house prices tend to rise, and vice versa.

The first thing your real estate agent will do before they meet with you is to look up **comparables**. Comparables are houses that were sold or are for sale in your neighborhood or in the neighborhood you are considering. In order to be comparable, it should have approximately the same square feet as your house or the house you can afford, have the same number of bedrooms and bathrooms, and share other traits in common.

Zillow and Redfin are two good sources for house prices. They can give you fairly accurate estimates of average home prices in the area you are considering. When you look at prices, only look at **sales prices**, not the **listing price**. Only a sold house will give you the correct price that a willing seller and a willing buyer will agree upon.

The Down Payment and Private Mortgage Insurance

Conventional wisdom says that you need 20% as a down payment on a house. However, home buyers can usually put 5% or even 3.5% down if they arrange a U.S. Federal Housing Administration (FHA) loan on a 30-year fixed-rate home mortgage. Note that 3.5% FHA down payments are usually capped at \$417,000 for home mortgage loans, although there are exceptions to that rule depending on location. Many bank loans also often approve loans up to \$417,000 with 5% down. If the loan is larger than that, lenders will usually ask for another 5% down.

Regular 30-Year Fixed Mortgage

Traditional mortgages, like a 30-year fixed rate mortgage, usually require at least a 5% down payment. For example, if you are buying a home for \$200,000, you will need \$10,000 to secure a home loan.

FHA Mortgage

For a government-backed mortgage like a FHA, the minimum down payment is 3.5%. For a home that costs \$200,000, you will need to save \$7,000 to get a loan.

VA Loans

A U.S. Veteran's Affairs (VA) loan offers military members and veterans home loans with zero money down approvals. The U.S. Department of Agriculture (USDA) also has a zero-down loan guarantee program for specific rural areas.

In 2016, the average home down payment was 11% according to the National Association of Realtors. Home buyers age 35 and under on average put down 8% in the same time period. When you are figuring out how much to save for a down payment, know that, while you are not allowed to borrow the money for the down payment, it's perfectly acceptable to use any cash gifts from friends, family, or business partners. Setting aside any workplace bonuses or financial windfalls (like an inheritance) can also curb the impact of having to save. Many young people (including myself) got help with the down payment on their first house by their parents, grandparents, or other relatives; there is no need to be prideful about it. Accept with gratitude any help you get, and be sure to send them a thank you letter.

If you take out a traditional mortgage and do not make a 20% down payment, your financial institution will likely make you purchase **Private Mortgage Insurance (PMI)**. PMI is arranged by the lender and provided by private insurance companies to insure the financial institution against loss of money if they foreclose on your house and sell it. A buyer usually would be required to put down 20%, and the financial institution would put a mortgage of 80% of the purchase price. If the buyer defaults, and the lender forecloses on the home, the lender only has to sell the house for 80% of what you paid for it to be made whole on its mortgage. The 20% down payment gives the lender a cushion to recover its loan, even if home values have declined since the borrower bought the house.

If the buyer puts down less than 20%, this means that the lender's **Loan-to-Value ratio** (the percent of the purchase price the lender finances) is higher than 80%. This increases the risk that the financial institution will not recover its loan if the buyer defaults. PMI essentially insures the recovery of the difference between a 5% down payment and a 20% down payment. Let's say you buy a home for \$300,000. Whereas people used to put down 20% (\$60,000.00), you only put down 5% (\$15,000.00). The lender is now financing 95% of the purchase price (\$ 285,000.00). In order to cover the increased loan exposure, the lender will arrange for PMI and make you pay for this insurance. It costs somewhere between 0.5% and 1% of the total outstanding mortgage. For the example above, a 0.5% premium of the PMI on a mortgage of \$285,000 would cost you \$1,425.00 per year, or an additional monthly payment of \$119.00.

You should buy a home as soon as you have at least a 5% down payment and go ahead and pay the PMI premium. It is hard enough to save money for a down payment (or ask your parents for the down payment) when you are beginning your career. In addition to that, the Consumer Financial Protection Bureau states that when the amount outstanding on your mortgage becomes 78% or less of the value of your home, then by law, your lender must cancel the PMI (and you stop paying the premium). In practice, you can often get your lender to remove the PMI when your mortgage is 80% or less of the home's value. In both cases, you want to alert your lender of the Loan-to-Value and ask that the PMI be cancelled. The lender will likely not do it automatically.

Qualifying to remove the PMI happens reasonably quick because your home value will appreciate at least 3% per year. Your lender will not pay attention to the home values in your area so will not volunteer to remove your PMI. You have to ask your lender to do it. Stay informed about the property values of comparable homes in your neighborhood. The bank may ask you to pay for another appraisal (\$300 to \$500) but it is worth the money to save the PMI premium each month.

Where to Get a Mortgage

Many financial institutions say they can arrange a home mortgage for you, including commercial banks (e.g., Wells Fargo, Bank of America) and mortgage brokers (e.g., Rocket Mortgage and Ditech.com). Some will charge higher fees than others. However, the best place to get a mortgage is a credit union. As we discussed earlier, a credit union is essentially a non-profit entity, as it is owned by its members and, unlike a commercial bank, does not need to make a profit to pass on to stockholders. Therefore, a credit union will charge a lower interest rate and fewer fees than either a mortgage broker or a commercial bank.

If you are not currently a member of a credit union, you can easily join one. State laws differ slightly on credit unions, but you can now join almost any credit union by opening a checking and savings account and depositing \$5.00. Go visit the credit union office that is most convenient to you and open an account. You can then apply for a mortgage. Credit unions are in the business of lending money, so if your credit history is good, they will be happy to work with you.

Pre-Qualifying for a Mortgage

If you are ready to buy a house, it is important to pre-qualify for a mortgage. You do this by going to your financial institution and submitting all the paperwork they require before you make an offer on a house. You can do this while you are still house hunting. The lender will give you a letter saying you qualify for a mortgage of a certain amount, addressed either to you or to your real estate agent. A lender can easily determine the maximum mortgage that you qualify for. As we said before, your total monthly debt payments plus the mortgage payment cannot exceed 43% of your gross monthly income. If your credit score is acceptable, the lender will give you a letter testifying to the maximum mortgage you qualify for.

A credit score of 700 or above is ideal. A credit score from 600 to 700 may affect the interest rate you will be charged on the mortgage and may affect the maximum amount you can borrow. However, this usually will still allow you to get a mortgage close to the 43% maximum mortgage guideline. A credit score under 600 will be a problem in securing a mortgage but not impossible. If you have a credit score under 600, you should first try your credit union or an online mortgage broker like Rocket Mortgage or Ditech.com.

Pre-qualifying for a mortgage is an important competitive edge in winning a bid on a house, especially if several people are interested in the same house as you. The sales contract that you will sign will have a **contingency clause** which states that your offer is dependent on securing a mortgage. If you already have a letter from your lender saying they have pre-approved you for a mortgage, then the seller can feel comfortable that you will be able to close the deal.

It is common practice to get pre-approved for a mortgage now, so if you do not, you will be at a competitive disadvantage. This is especially true when there is a **seller's market** (more demand for than supply of houses) as opposed to a **buyer's market**.

Types of Mortgages

There are many different flavors of mortgages in the marketplace. These are the three most common:

- A fixed rate 30-year mortgage
- A fixed rate 15-year mortgage
- A three-year adjustable rate mortgage

The **thirty-year-fixed rate mortgage** is by far the most common type, and I recommend this for your principal residence. In this case, be conservative. Take out a conventional or FHA fixed-rate thirty year mortgage loan when you buy your house. A thirty-year fixed rate mortgage has a consistent monthly payment. This gives you a specific amount you need to budget each month. Also, the longer the term of the loan, the lower the amount of principle that must be paid back (or **amortized**) every month; that means a smaller monthly payment. As with any loan, the interest you pay is on the outstanding principle. But if the outstanding principal changes every month (along with the interest) as you pay down the loan, how do you end up with a consistent monthly payment? Simply put, the paydown of the principle of the loan changes every month. Here is a typical relationship of interest to principal each month in a thirty-year fixed rate constant payment mortgage:

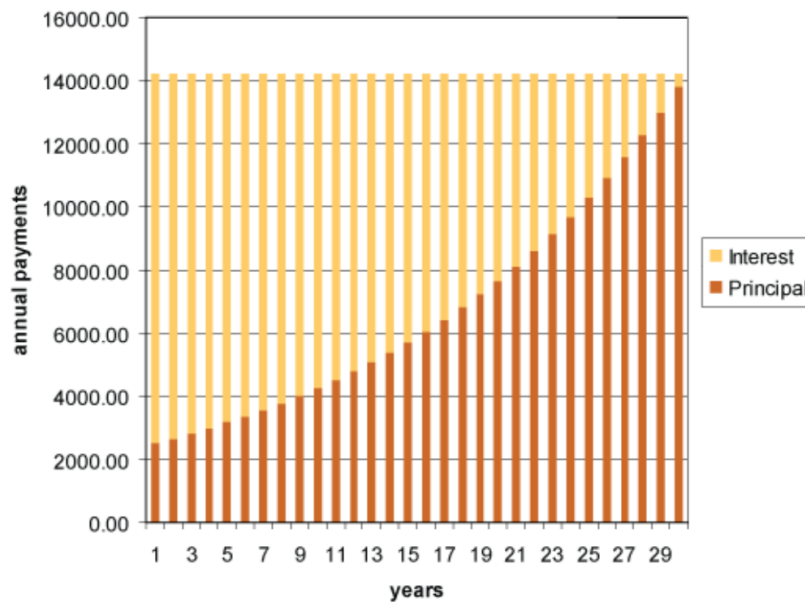


Figure 9.5.1.1: Amortization of a \$200,000 loan for 30 years at 5.9% by The Federal Reserve Board is in the public domain.

A **fifteen-year fixed rate mortgage** is similar to a thirty-year fixed rate mortgage, but you repay the principle over fifteen years instead of thirty. The only major advantage of a fifteen-year loan is that you pay off the principal sooner, which, in addition to being satisfying, saves a lot of interest. However, the monthly payment is larger. Below, you can see an example of how much interest you can save. The loan amount in each case is \$200,000, and the interest payments are shown in orange on the chart.

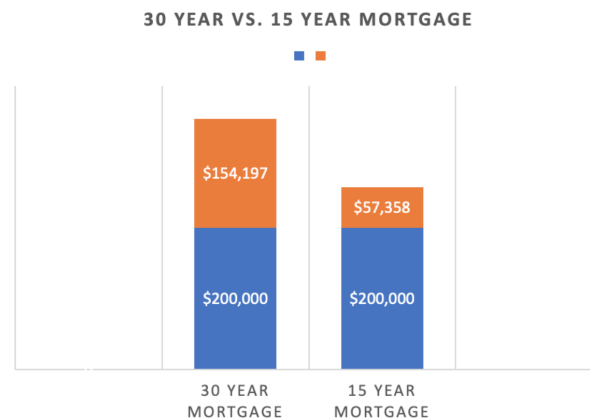


Figure 9.5.1.2: Mortgage Total Cost 15 year v. 30 year

Now let's compare payments between a thirty-year and a fifteen-year fixed rate mortgage. Here is a 95% Loan-to-Value loan for a thirty-year and a fifteen-year fixed rate mortgage on the median home price in the United States:

- Median home price: \$227,000
- Down payment (5%): \$11,350
- Closing costs (2%-3%): \$4,900
- Mortgage amount: \$222,450

For a \$222,450 mortgage, here is what your monthly payment would be:

Monthly mortgage payment for 30-year loan at 6% =

$$\$1.292 + P \cdot \frac{0.005}{1 - (1 + 0.005)^{-360}} = \$18.5/\text{mo} = \$1.477 \quad (9.5.1.1)$$

Monthly mortgage payment for 15-year loan at 6% =

$$\$1.819 + P \cdot \frac{0.005}{1 - (1 + 0.005)^{-180}} = \$18.5/\text{mo} = \$2.004 \quad (9.5.1.2)$$

Since rates and home prices vary, you can use an online calculator to calculate a mortgage. Generally, younger people buying their first or second house cannot afford the higher payment on a fifteen-year mortgage, so they choose the thirty-year instead. My advice is to go with the thirty-year mortgage with the lower monthly payment. This will help your cash flow.

A **three-year adjustable rate mortgage** (ARM) has an interest rate that is adjusted upward (or downward) based on a certain designated financial index after three years or to a predetermined rate. The principal payment is usually based on a thirty-year amortization. The advantage of this loan is that the interest rate is lower at the beginning. For example, on September 17, 2019, the rate on a five-year ARM ranged from 3.00% to 3.25% while the rate on a thirty-year fixed rate mortgage was 3.97%. However, when the interest rate is adjusted the payment often is higher, and this can create a cash flow problem for the borrower.

There are many different types of adjustable-rate mortgages, but they all have common elements. For example, if the mortgage is a five-year ARM, it will be tied to some index of interest rates, such as the five-year U.S. Treasury Note. Then, after the first five years, the interest rate will be changed once a year in accordance with any changes in the five-year Treasury Note. This also means that the monthly payment will change (up or down) as the interest rate of the index changes. The lender will also specify how much above the index interest rate your mortgage interest rate will be. This is called the **margin** or **mark up**. As an individual, you cannot borrow money at the same rate as the U.S. government, as you represent a higher risk for the lender. The higher risk is reflected in the higher rate. If we look at the rates in the previous paragraph, we see that the five-year ARM mortgage has a margin or risk premium of 1.4% over the five-year U.S. Treasury Note (3.00% 5yr ARM – 1.6% 5yr Treasury = 1.4% risk premium).

The likelihood is that once the first five years is over, the rate will increase and, as a result, your monthly payment will increase. The assumption here is that five years from now your salary will have increased, and you can afford a higher monthly payment. However, the ARM interest rate will have what is known as **caps** on it. Caps are limits on how much the ARM interest can rise in any one year or over the life of the loan. Here is a hypothetical example:

- 5-year Adjustable Rate Mortgage: 5.25% will not adjust more than +/- 0.5% in first 5 years then adjusts to market rate at the time
- Constant monthly payment: \$1,190
- Principle amortization based on 30-year amortization: 30-year amortization
- Rate for five years: 5.25%

After five years, the rate will adjust every year on the anniversary of the loan to a rate that is 2.00% above the rate of the five-year U.S. Treasury Note.

- Annual cap: Upon adjustment, the rate will not go up (or down) more than 0.25% each year it is adjusted or go up more than 1% total for the life of the loan.

With an adjustable rate mortgage, you may end up doing a partial amortization or a negative amortization of your principal. Partial amortization or zero amortization in a mortgage will occur if you take out an interest-only mortgage. If you are paying only the interest on the loan, it reduces the monthly payment. However, the downside is that the principal does not decrease and must be paid off if you sell the house or refinance the loan. If you are paying only the interest on your home mortgage plus a little bit of the principal (in order to reduce the monthly payment) the amount of the loan paid off will not decrease as rapidly as it will with a thirty-year or fifteen-year home loan.

If you take out an adjustable rate mortgage, you may also end up with negative amortization of the principal of your home loan. A negative amortization loan is one in which you are not even paying the market interest on your home loan. Any interest above the market interest is added to the balance of unpaid principal. Negative amortizations can be offered with certain types of mortgage products. Although negative amortization can help provide more flexibility to borrowers by reducing the monthly payment, it can also increase their exposure to interest rate risk and actually increases the amount they owe.

Fannie Mae and Freddie Mac

Fannie Mae, or FNMA, is shorthand for the Federal National Mortgage Association. **Freddie Mac**, or FHLMC, refers to the Federal Home Loan Mortgage Corporation. The main difference between Fannie and Freddie comes down to who they buy mortgages from. Fannie Mae mostly buys mortgage loans from commercial banks, while Freddie Mac mostly buys them from smaller banks that are often called **thrift banks**.

Fannie Mae and Freddie Mac were created by Congress to perform an important role in the nation's housing finance system: to provide liquidity, stability, and affordability to the mortgage market. They provide **liquidity** (ready access to funds on reasonable terms) to the thousands of banks, savings and loans, and mortgage companies that make loans to finance housing.

It may not seem like it, but the banking business model, especially in mortgage lending, is a very unstable business model. Banks borrow **short** (that is, borrow money from depositors or from 90-day Commercial Paper lenders) and lend it **long** through multi-year credit cards, one year lines of credit, three year auto loans and, in the case of the mortgage market, three to thirty year mortgages. Depositors can demand their money back at any time, and the 90-day Commercial Paper loans must be renewed every 90 days. If a large portion of the depositors demanded their money back at once or if the banks were not able to roll over the Commercial Paper, the bank would be illiquid and would likely have to close. Fannie Mae and Freddie Mac buy the three-to-thirty-year mortgages and give the banks a profit for originating them. The banks get their money back and can lend it out again.

As to affordability, Fannie Mae and Freddie Mac bundle the mortgages and attach a guarantee to the bonds they buy. Since the market considers this a “quasi-guarantee” by the U.S. government, the interest rate that FNMA and FHLMC must pay on these bonds approaches the low interests on U.S. Treasury bonds. This translates to low interest rates on mortgages that qualify for purchase by these two institutions. They are very powerful in the mortgage market, owning or having guaranteed over 60% of all U.S. mortgages.

Fannie Mae and Freddie Mac buy mortgages from lenders and either hold these mortgages in their portfolios or package the loans into **mortgage-backed securities** (MBS) that may be sold. Lenders use the cash raised by selling mortgages to the enterprises to engage in further lending. The enterprises’ purchases help ensure that individuals and families that buy homes and investors that purchase apartment buildings and other multifamily dwellings have a continuous, stable supply of mortgage money. These institutions also set the rates and the conditions for the mortgages they will buy (called **prime mortgages**). Fannie Mae and Freddie Mac also help stabilize mortgage markets and protect housing during extraordinary periods of stress in the broader financial system.

Fannie Mae was first chartered by the U.S. government in 1938 and was a company whose stock was sold to the public, and Freddie Mac was chartered by Congress in 1970 as a private company, whose stock was also sold to the public. During the Great Recession, both Fannie Mae and Freddie Mac went bankrupt and were taken over by the U.S. Treasury Department. They are still in what is called conservatorship and pay their profits to the U.S. Treasury.

The Home Mortgage Crisis of 2006 to 2009 and the Great Recession

The following graph shows median home prices in the U.S. before, during, and after the mortgage crisis of 2006 to 2009 (Case/Shiller, 2009). The Case/Shiller Index is one of the most respected indices of home prices. Note that home prices for the 10 largest U.S. cities (the Composite 10) and the 20 largest U.S. cities (the Composite 20) along with the National Index began dropping in early 2006 and continued to drop until sometime in the year 2009.

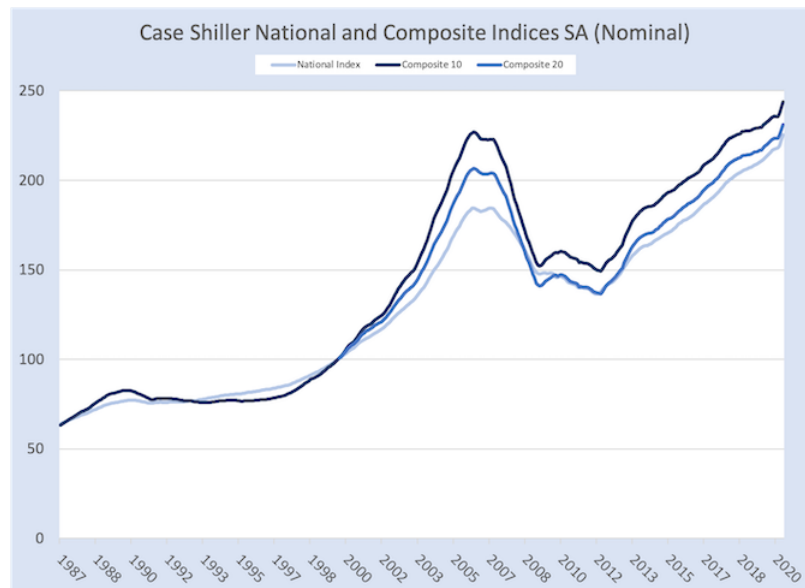


Figure 9.5.1.3: Case Shiller Index by Fred Rowland is used under a CC BY-NC 4.0 License. Source: Federal Reserve Economic Data [FRED] (12/2020).

As Akerloff and Shiller (both Nobel Prize laureates in Economics) contend in their book, *Animal Spirits*, most recessions begin with a financial crisis (2009). The Great Recession was no exception. Fannie Mae and Freddie Mac were not owned by the

government but instead private organizations that offered stock to the public. Fannie Mae and Freddie Mac were very profitable and became the envy of the Wall Street banks. In fact, as of now, they own or guarantee 60% of the mortgages in the United States!

They became so profitable by purchasing mortgages from banks and mortgage brokers (called the **originators**) and assembling them into bonds they then sold. Fannie Mae's and Freddie Mac' guarantees were seen by investors as being equivalent to an implicit guarantee by the U.S. government. Therefore, Fannie Mae and Freddie Mac were able to pay very low interest rates on the bonds, allowing them to make large profits on the difference between the interest rates they were receiving on the mortgages they purchased and the low rates they were borrowing their money at by selling bonds.

Wall Street banks wanted to get in on the action. The problem was that even the biggest banks could not match the implicit government guarantee that backed the Fannie Mae and Freddie Mac bonds. Instead, they came up with the idea of paying for default insurance on the bonds they wanted to issue to buy mortgages. The banks went to AIG, the largest insurance company in the world, and convinced them to issue default insurance. With this AIG guarantee, the banks were able to get the highest credit rating on their bonds and to borrow money almost as cheaply as Fannie Mae and Freddie Mac.

Like all screwy schemes, things went well (and profitably) for a while (from 2000 to 2003), but then the banks got greedy. As they started to run out of very credit-worthy mortgages to buy (the prime mortgages), the Wall Street banks bought less credit-worthy mortgages (known as **subprime mortgages**). These subprime mortgages were structured in a dizzying array of new types of loans or even loans where the income and assets of the home buyer were self-reported and not verified (called **liar loans**). These subprime mortgages were all bundled into bonds with some prime mortgages and the AIG guarantee the bonds the highest credit rating.

In 2006, subprime mortgage holders began to default—not just a few, but millions. This caused a total halt to the bond market for Wall Street banks. According to the **Generally Accepted Accounting Practices** rules (GAAP), if there is no market for an asset you own, you must write its value down to zero in your financial statements. The Wall Street banks had to write down the mortgage-backed bonds they held to zero, and as a result every major bank in the United States became insolvent (except for J.P. Morgan, who did not participate as much in this bond party). They all had to be bailed out in 2008 by the Federal Reserve Bank.

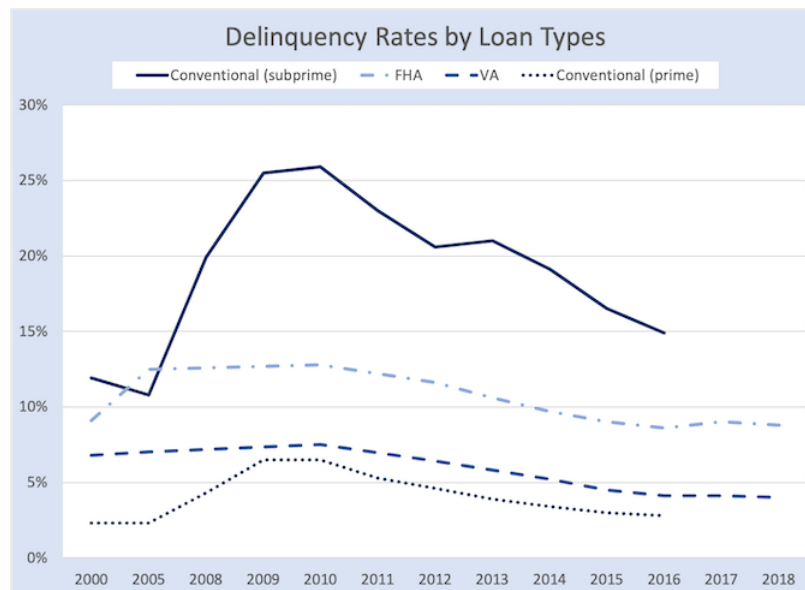


Figure 9.5.1.4: Delinquency Rates by Loan Types by Fred Rowland is used under a CC BY-NC 4.0 License. Source: Statistical Abstract of the United States data (2020).

The dominoes began to fall. The availability of cheap and easy money to buy houses had caused a spike in housing prices from 2000 to 2005. The mortgage defaults and the resulting disappearance of this easy money then caused housing prices to drop precipitously. Millions had bought homes at elevated prices and borrowed mortgages on those elevated prices. When home prices fell, the value of their homes was less than the mortgage amount they owed on their home (called being underwater). Ultimately, three million people lost their homes to foreclosure in 2008, and it is estimated that as many as ten million people lost their homes to foreclosure in the Great Recession. The financial crisis and the ensuing drop in home prices and foreclosures were one of the major causes, if not the major cause, of the Great Recession. Eight and a half million people lost their jobs in this recession. The value of stocks in the U.S. stock market dropped 38% to 40% during the recession.

Since then, housing prices have recovered in the United States (and internationally). Even further, some cities can be classified as unaffordable for middle class people. Here is data on the most unaffordable cities, when we compare home prices to income:



Figure 9.5.1.5: Where it is Hardest to Afford a Home by Statista is used under a CC BY-ND 3.0 License.

Transaction Costs of Purchasing a Home

Here is an estimate of the closing costs on a 95% Loan-to-Value loan and a thirty-year fixed rate mortgage on the median home price in the United States:

- Median home price: \$227,000
- Down payment (5%): \$11,350
- Closing costs (2%-3%): \$4,900
- Mortgage amount: \$222,450

The closing costs will be quite substantial, and these will likely include the following:

Table 9.5.1.1: Closing Costs

Item	Comments	
Mortgage Points	1% of Mortgage	\$2,200
Origination Fee		\$700
Appraisal Fee		\$300
Application Fee		\$200
Attorney Fee (Deed Preparation)		\$500
Inspection Fee (Termites or Radon)		\$300
Title Insurance		\$500
Other Fees		\$200
TOTAL		\$4,900

You may also be asked to pay for some other items at closing:

- **Reimbursement of Oil:** If your purchased home has oil heat, you will likely be asked to reimburse the seller for oil left in the oil tank.
- **Prepayment of Insurance:** The bank giving you the mortgage may ask you to pay at settlement the first six months of homeowners insurance, so they know, at least initially, that the home is insured.
- **Reimbursement of Real Estate Taxes:** If the seller has already paid all the real estate taxes for the year and there are, e.g., six months left in the tax year, you will have to reimburse the seller for six months of real estate taxes.
- **State Transfer Tax:** Some states have real estate transfer taxes, which are charged on home sales. As an example, the state of Pennsylvania has a 2% transfer tax on all home sales. One percent of this is paid by the buyer and 1% is paid by the seller.

You are entitled to a full good faith estimate of the closing costs at least a few days prior to closing on the house and closing on the mortgage. If you do not get one, ask for it.

How to Calculate the Monthly Payment

Start with the approximate sales prices of recently sold houses in the neighborhood. Next, figure out what amount of money you have for the down payment. This will most likely need to be a 5% down payment. If you do not have 5%, often you can put only 3% down. Next, realize your closing costs will be 2 % to 3% of the purchase price (depending on any real estate transfer tax in your state). Then calculate the mortgage you will need by taking the home price and deducting the 5% down payment and adding the closing costs. Finally, use a mortgage calculator online.

Tax Consequences of Home Ownership

There are significant income tax benefits to owning a home. The Internal Revenue Code allows you to deduct all interest you pay on your mortgage from your personal income. The tax savings you receive will be in line with the rate of federal income taxes you pay on your income. For example, if you pay a tax rate of 20% in income taxes, you will save 20% of the annual interest you pay on your mortgage. Let's say the total interest you pay annually on your mortgage is \$9,600, and your average tax rate is 20%. That means you will save $\$9,600 \times 0.20 = \$1,920$. Also, you do not have to wait until you file your taxes to get a refund of that money. You can adjust the IRS Form W-4 with your employer at any time. You will add additional deductions on the W-4 so that less income tax is withheld every pay period. This improves your cash flow and helps with the monthly mortgage payment. The ability to deduct the interest on your mortgage payments is a significant subsidy for American homeowners. This tax savings does not exist in many other countries.

Annual Costs of Home Ownership

If you purchase a brand new house, you will likely not have any major maintenance expenses for a couple years. However, for previously owned homes, the annual average for repairs and maintenance (painting, driveway resealing, etc.) is estimated to be from 2% to 4% of the value of the home per year, depending on how old the home is. Zillow estimates homeowners can spend over \$9,000 a year on average.

Common Mistakes in Taking Out a Mortgage

The biggest mistake people make in buying a home is to buy a more expensive house than they can afford. This, of course, means that they will take out a bigger mortgage than they can afford. The mortgage payment on the house is the gauge of how expensive a house you can qualify for. A qualified loan is one where the total debt payments-to-total income ratio is no more than 43%. However, just because you qualify for a certain loan size does not mean you should buy the most expensive house you can. There are maintenance expenses on the house and other expenses you need to consider. Seriously review your household budget and include the mortgage payment and expenses. Then decide what monthly mortgage payment you are comfortable with. Do not forget to consider the tax savings on the mortgage interest in your budget.

When to Refinance

Historically, common wisdom said that you should refinance if you can reduce your mortgage interest rate by 2%. However, many people refinance if they can lower their interest rate by 1%. You should definitely refinance an adjustable rate mortgage to a fixed rate thirty-year or fifteen-year mortgage to protect yourself against interest rate increases. Essentially, the decision to refinance should be based on a cost/benefit analysis. What will it cost you to refinance, and how much will you save per month? Calculate how many months it will take you to get back the fees you paid to refinance from the savings. Bankrate.com has a refinancing

calculator to show you how much you can save and how long it will take you to get your fees back. The fees to refinance are similar to the fees to take out the original mortgage:

- Origination fee
- Appraisal fee
- Application fee
- Attorney fee (deed preparation)
- Inspection fee (termites or radon)
- Title insurance
- Other fees (PMI insurance)

These could total up to 2% of the new financed amount. Always ask the bank early on what the fees for refinancing add up to. This will enable you to do an informed cost/benefit analysis.

Table 9.5.1.1. Refinancing Example

	Example	Your numbers
1. Your current monthly mortgage payment	\$1,199	
2. Subtract your new monthly payment	– \$1,073	
3. This equals your monthly savings	\$126	
4. Subtract your tax rate from 1 (e.g. $1 - 0.28 = 0.72$)	0.72	
5. Multiply your monthly savings (#3) by your after-tax rate (#4)	$\$126 \times 0.72$	
6. This equals your after-tax savings	\$91	
7. Total of your new loans' fees and closing costs	\$2,500	
8. Divide total costs by your monthly after-tax savings (from #6)	$\$2,500 / 91$	
9. This is the number of months it will take you to recover your financing costs	27 months	

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