

16. The Housing Decision II: Comparing Loans and Creating Your Housing Plan

Introduction

Once you understand the home buying process, it is important that you understand your options in the home decision, the process of comparing different mortgage loans, and how to create your housing plan.

Objectives

When you have completed this chapter, you should be able to do the following:

- A. Understand your options in the housing decision.
- B. Understand how to compare different types of loans with different fees and points.
- C. Understand and create your Housing Plan.

Understand Your Options in the Housing Decision

Some individuals will be making decisions about buying a house soon because of graduation, marriage, or prospective job offers. Should you buy a house immediately, or should you rent for a while? Are you interested in building or renovating? Decisions about housing are challenging but inevitable. As you understand yourself, your goals, and your job, you will be equipped with valuable information that will help you as you make the home decision. There are four major options for the home decision: renting, buying, building, renovating and other.

Renting

Renting has many advantages, including mobility. When you rent, it is relatively easy and relatively inexpensive to move from one place to another if your job or life situation changes. There are no costs for repairs or maintenance: for example, you don't have to worry about the cost of replacing the water heater or other household appliances if they break down. Another advantage is that financial commitments are lower with renting than with buying: rent costs are relatively low, there are fewer initial costs associated with moving in, and there are none of the legal headaches that often accompany buying a home. Finally, rent is easy to budget. You generally have only one bill—rent—to worry about.

Nevertheless, renting also has its disadvantages, such as a lack of stability and lack of the pride that comes from ownership. You can't modify your rental house as you would be able to modify a home. Although you can put up pictures, you can't paint walls, put up wallpaper, or renovate

the kitchen. Another disadvantage is that rent may increase unexpectedly. Someone else makes major financial decisions that affect you; these decisions can have a huge impact on your budget and pocketbook. There may also be restrictions on where you can rent: zoning laws make some locations unavailable. Tax benefits are also missing when you rent. Since you pay no interest as part of your rent, you cannot deduct interest costs from your taxable income. Finally, there is no potential for property appreciation with renting.

Buying

Many of the disadvantages of renting are advantages to buying a home. With buying, there is permanence and a pride of ownership. You can change the paint color, the kitchen, the landscaping, the garage, and so on. Generally, the monthly payment is fixed. The decision on how you pay for the house is between you and the bank, and once you decide, you won't have to worry about payment fluctuations. Buying allows you to use leverage, which means you can own the house using borrowed money, up to 95 percent in some cases. Another advantage to buying is that you get Uncle Sam's help. The interest payments you make to the bank or mortgage company on your house can be deducted on your itemized tax forms from your adjusted gross income, or AGI. Finally, you can borrow against the equity in your home. Equity is the difference between what your house is worth and how much you have borrowed to buy it. In emergencies, you can borrow money from the bank against your home's equity to meet your specific goals and needs.

However, buying also comes with disadvantages. Mobility is low, since houses are not liquid assets. It would likely be a challenge to sell the house quickly, and it is generally expensive to sell illiquid assets. Other disadvantages to buying include significant up-front costs, such as the down payment, points, title, and title insurance. Also, it generally costs more to own and operate a home than to rent. Costs for utilities, repairs, water, landscaping, painting, and so on are avoided when you rent but must be paid when you own. Finally, buying a home is a large financial commitment. Owning a home is a costly investment—in terms of dollars, time, and energy. And because a home is a large financial commitment, you need to remember that the home's value could decrease, that its mortgage could default, or that it could need repairs.

Building

There are many advantages to building. You can build exactly what you want because you design the house. Sometimes it is even cheaper to build than to buy, depending on market conditions. With building, you get new appliances and housing systems, so repairs in the first few years are generally less. And you can pick the location of where you want to build, assuming lots are available.

However, building also has disadvantages. It may be difficult to interpret building plans, such as the size of rooms, if you are unfamiliar with these plans. Building, like renovating, often exceeds the budget and has delays if not done correctly by competent labor. Building also necessitates additional expenses for a yard and fencing. There are also expenses for construction-loan interest

and rental costs that are incurred while you are waiting for the home to be built. Most importantly, there are high monitoring costs, in terms of time and money; high stress tolls, as you make the myriad decisions about the house; and high risk that the project may become more expensive than planned.

Renovating

The advantages of renovating include that you can often accomplish your housing goals faster than with building because the outside structure of the house is already in place. Another advantage is that you can generally see the house you are getting. It may be cheaper to buy and renovate than to build, particularly if you can do much of the work yourself (i.e., sweat equity). Renovating may be preferable if there are no available lots in a desired area, but there are existing homes for sale.

The disadvantages of renovating include that it may be more expensive to renovate than to build. Renovations often go over budget and have delays because of the uncertainty about what will actually need to be renovated. The rule of thumb for renovating, and sometimes building, is that you should double your budget and then double the resulting amount again. Moreover, you should be aware that you may have unanticipated additional expenses for a yard and fencing, depending on what was renovated. Also, the same construction-loan interest costs and rental expenses may be applicable, depending on how extensive the renovation is. During the renovation process, you may encounter other costly problems that were not noted before. Most importantly, just like in building, there are high monitoring costs, high stress tolls, and high risk that the project may become more expensive than planned.

Other Options

Other options include mobile homes, tiny houses, and recreational vehicles. The advantages of these are their lower costs. The main disadvantages are their much lower resale value, lack of permanence, challenge in getting financing, and the difficulty in building equity.

Understand How to Compare Different Types of Loans with Different Fees

Once you determine what you want and find a house you like, the next step is to determine how much you can afford. Don't buy the most expensive house in the neighborhood—use wisdom in your purchases. Remember, statistics indicate that most people are likely to move within seven years.

Many factors go into your decision of which loan to choose, and you have lots of options for your mortgage, fixed rate, adjustable rate, fixed with an interest only option and variable with an interest only option. The key factors that go into your choice of mortgage include time horizon, how long will you be in the home; risk tolerance, who will take the interest rate risk; cash flow preferences, how stable is your cash flow; and goals, what are your goals for this home. For help with these questions, see [Choosing a Mortgage Loan](#) (LT35).

It is critical that you understand all fees and expenses before you close on a house—there are many expenses. One of the largest expenses is your mortgage. With so many different options available for a mortgage, it is critical that you understand how to calculate a comparable rate on loans with different points and fee structures. Understanding the different expenses involved in buying a house and how to compare different loans with different points and fees will save you a lot of money overall. Critical to this ability to compare is an understanding of points, effective interest rates, how to calculate effective interest rates, and prepayment.

Points

Points are one percent of the loan, or 100 basis points of the loan. Some lenders offer mortgage loans with high contract interest rates and low points, while others offer the opposite. The borrower's challenge is to choose the mortgage contract that minimizes the effective cost of borrowing. How do you differentiate between loans with different interest rates, different points, and different costs? One way is to calculate the effective interest rate (EIR) for each of your loan options; you will then be able to choose the loan that minimizes the effective interest rate.

Effective Interest Rates

The effective interest rate (EIR) is the precise interest rate the borrower pays after all fees and costs have been taken into account. The EIR is different from the annual percentage rate, or APR. The APR is generated from a precise calculation specified in Regulation Z of the Truth in Lending Act. The difference between the APR and the EIR is that the EIR takes into account the costs of points and fees. If the loan has no prepayment, points, or other fees, then the EIR is the same as the APR.

The EIR is important because it allows you to quickly compare rates from various lenders with various schedules and costs; the EIR allows you to choose the rate that gives you the lowest cost. To calculate the EIR, you must make a major simplifying assumption. Many of the fees associated with home-buying are paid out of pocket, meaning that they do not come out of the loan. Other fees (like points) do come out of the loan. The assumption necessary for this calculation is that all fees come out of the loan. This is not an unreasonable assumption, especially if you assume you will pay back all out-of-pocket expenses with proceeds from the loan. Remember, the lender will retain the amount of the loan attributable to points when distributing loan proceeds, but the monthly payment will be based on the entire loan amount.

Calculating Effective Interest Rates

The three-step process for calculating the EIR is:

1. Calculate the payments on the total amount you will be repaying (the amount borrowed). Using your financial calculator, set N = your number of years, I = your interest rate, PV = minus the loan amount, and solve for your payment, or PMT .

- Calculate the amount of money you actually received (the total loan minus all costs). Again, assume that all costs for the home come out of the loan. This amount becomes your present value (with a minus sign).
- Set your payment (PMT) to your annual/monthly payment. PV = minus what you actually received, N = your years, and solve for your interest rate. This is the rate you are actually getting based on the costs you are paying.

If you are borrowing \$200,000 at 3.75% for 30 years, and you agree to pay one point and \$1,500 in fees, the following is your process:

- Your monthly mortgage payment will be \$926.23 (PV = -200,000, I = 3.75, N = 30 P/Yr = 12, and solve for your PMT).
- One point and \$1,500 in fees will be \$3,500, resulting in a net to your amount of \$196,500 (\$200,000 - 3,500).
- Inputting these figures into the equation, your PMT = \$926.23, PV = -196,500, N = 30, P/Yr=12. Solve for your effective interest rate, and you get a rate of EIR of 3.89 percent (see [Home Loan Comparison](#) (LT19)).

Home Loan Comparison (LT19.a)						
<i>Amount Needed: After points and fees = 1, Before Points and Fees=2:</i>						2
Loan Information:			Amount Needed (after points & fees):		\$ 200,000	
Loan Amount	\$ 200,000.00	Total Periods	360	Rates:		
Interest Rate (APR)	3.75%	Loan Payments:	360	APR		
Years (1-30)	30	Prepayment of Principal			3.75%	
Payments per year (12)	12	Number of Prepayments:	0	Effective		
Monthly Payments	\$ 926.23	Total of Prepayments:	\$ -	Interest Rate		
Prepayment after # years?		Savings from Prepayments:	\$ (0)	3.89%		
(blank = no early payoff)						
Received Before Fees	\$ 200,000	Amount Received After Fees	\$ 196,500			
Points	1.00	2,000	Other Fees	1,500	Total Costs	3,500
Regular Pmts.	Extra Payments	Pts & Fees	BalloonPmt	Total Paid	less Received	Interest Paid
333,443	-	3,500	-	336,943	200,000	136,943
Cost of loan without prepayment				Total Paid	less Received	Interest
333,443				336,943	200,000	136,943
Interest Saved by Prepayment:						(0)

Prepayment

Prepayment is the process of paying down the loan early by increasing principal payments or by selling the home. On average, most homeowners in the United States move every five to seven years. You should know how to calculate your effective interest rate when you plan to prepay the

loan (or sell the house) before maturity.

The EIR with prepayment is calculated in a similar manner to the EIR, except you must make an additional calculation for the balloon payment you will make when you pay off the loan:

1. Calculate the payments on the total amount you will be repaying (the amount borrowed). Using your financial calculator, set N = your number of years, I = your interest rate, PV = the loan amount, and solve for your payment, or PMT .
2. Calculate the amount of money you actually received for your loan (the total loan minus all costs). Again, assume that all costs for the home come out of the loan. This amount becomes your present value (with a minus sign).
3. Calculate the balance that will remain after you prepay; in other words, calculate your balloon payment. This is the amount you will need to pay off the remainder of the loan. To calculate the balloon payment, set N to the number of years or periods you will pay off the loan early. If you have a 30-year loan, and you pay the loan off after 12 years, you want to know the present value of 18 years of payments. Set I to your interest rate and PMT to your monthly or annual payments, then solve for the present value. This balloon payment is the amount of principal you will still owe after you prepay your loan. This amount becomes your future value.
4. Finally, set the number of years before prepayment as N (12 years in the above example), the balloon payment or balance remaining as FV , the PMT as monthly or annual payments, and the PV as negative the amount you received after paying points and fees, then solve for I to find your effective interest rate.

For example, assume from the previous problem that you want to know the effective interest rate should you pay off the loan after seven years. The first two steps are the same.

1. Your monthly mortgage payment will be \$926.23. ($PV = -200,000$, $I = 3.75\%$, $N = 30$, $P/Yr = 12$, and solve for your PMT).
2. One point and \$1,500 in fees will be \$3,500, resulting in a net to your amount of \$196,500 ($\$200,000 - 3,500$).
3. Your final payment at the end of year seven will be \$. This is calculated at $PMT = \$926.23$, $N = (30 - 7)$, $P/Yr = 12$, $I = 3.75\%$, and solve for your present value.
4. Finally, put these figures into the equation— your $PMT = \$926.23$, $PV = -196,500$, $N = 7$, $P/Yr = 12$ months, $FV = 171,116.08$ —and solve for your effective interest rate. You will get a rate of 4.06 percent (see [Home Loan Comparison](#) (LT19)).

Home Loan Comparison (LT19.a)						
<i>Amount Needed: After points and fees = 1, Before Points and Fees=2:</i>						2
Loan Information:		Amount Needed (after points & fees):			\$ 200,000	
Loan Amount	\$ 200,000.00	Total Periods	360	Rates:		
Interest Rate (APR)	3.75%	Loan Payments:	84	APR		
Years (1-30)	30	<i>Prepayment of Principal</i>			3.75%	
Payments per year (12)	12	Number of Prepayments:	0	Effective		
Monthly Payments	\$ 926.23	Total of Prepayments:	\$ -	Interest Rate		
Prepayment after # years?	7	Savings from Prepayments:	\$ 84,524	4.06%		
(blank = no early payoff)						
Received Before Fees	\$ 200,000	Amount Received After Fees	\$ 196,500			
Points	1.00	Other Fees	1,500	Total Costs	3,500	
Regular Pmts.	Extra Payments	Pts & Fees	BalloonPmt	Total Paid	less Received	Interest Paid
77,803	-	3,500	171,116	252,420	200,000	52,420
Cost of loan without prepayment				Total Paid	less Received	Interest
333,443				336,943	200,000	136,943
Interest Saved by Prepayment:						84,524

Understand and Create Your Housing Plan

As you prepare your Housing Plan, it will be helpful to develop a housing strategy for different periods of your life. This Plan will guide you as you make the housing decision which will impact your financial situation for a long time. Just a few suggestions before you develop this Plan.

- Before you begin looking for a home, spend a significant amount of time trying to understand your needs and requirements. What is important to you, spouse, and children? How important are schools, shopping, work? How long are you willing to commute each day?
- Generally, this will require you to rent for a period of time. Use this time wisely. Try to rent in your preferred area first. Check into rental houses. These can be a good intermediary between renting and buying.
- When you are planning to buy, calculate how much you can afford to spend. Don't spend so much on this goal that you are cramped in your other personal goals. Calculate into your spending the fact that you will be paying tithes and offerings and saving 10-20% each month for savings. Don't buy a "fixer-upper" unless you have the time and the inclination to do it. Remember your first priority is to do well at work. Having a beautiful house may not advance your career (although your spouse may love it).
- Once you have decided on a home don't scrimp on home inspections—they are good investments. Don't let the current owners discourage you from doing home inspections. Beware of the hidden costs of home ownership. Keep room in your budget for these.

- Get pre-approved for your loan, not pre-qualified. Don't spend the maximum amount banks will lend you. Keep good records of improvements for tax purposes. These can increase the cost basis of your home and reduce taxes when you sell.
- If you decide to build the key decision is your contractor. He will either make it extremely easy or difficult for you. Choose wisely. Interview his past clients, and check their financial condition and licenses. Ensure permit repairs have final inspections. Know what you want and put it on the plans in the beginning. Changes are four times as expensive after plans are completed. Work with the contractor (but a penalty clause for completion may be useful). Keep back 5% of the cost of the home until all problems are fixed.
- If you decide to renovate, make sure you have your vision of the house, and make sure that vision is on paper (plans). For every change, ensure a change order is drawn. Keep a running tally of all past, current, and estimated costs to complete the project. Review this weekly with the contractor. You might even put in a clause that if the contractor goes over the planned amount, he makes no new money on the excess over the planned amount. And be aware of the large time commitment necessary to renovate.

Housing Plan Example

As you think through the housing decision, it is necessary for you to create a Housing Plan. Following is an example of a possible Housing Plan that may give you some ideas. We have divided the plans and strategies into each of the specific areas discussed.

Vision

- This will be likely from your Plan for Life. It may also include:
 - We will have a home where the Spirit of the Lord is present.
 - We will dedicate our home and strive to make it a place where the Spirit is felt.
 - It will be both a modest and a model home, modest in terms of the neighborhood and model in that we will keep its value up and live within front- and back-end ratios.
 - It will be a home that is open to our children's friends, as well as open to foreign exchange students and others needing temporary lodging.
 - It is a place where we can be safe and comfortable and we can raise a righteous family.
 - It is where we will teach our children to work.

Goals

- A modest and model home, that we can share with family, neighbors and friends.
- A play area for the kids, and garages for dad, which we will use to bring the family together.
- We will pay our home off by age 45.
- A home that we keep up its value and live within front- and back-end ratios.

- We would eventually like to retire to a smaller home, one that is close to the grandkids and is in the mountains that opens up to the open area by lakes and streams.
- A home that is open to our children's friends, foreign exchange students, and others.

Plans and Strategies

Understand your limits

- We will buy a home consistent with the front- and back-end ratios and keep housing expenses (PITI and utilities costs) at less than ___% (40% maximum) of my monthly budget. We will not buy too big a house.
- We will make sure our home fits our budget, not our budget fits our home.
- We will save 5-20% for our first home down payment and pay 20% down on each future home.
- We won't buy a home on two incomes when we know you will go to one income in the future.

Finding your home

- We will do our homework before buying/renting to ensure that we are in the best place for ourselves and our family.
- We will do our homework to ensure that the schools are the best for our children and the neighborhood safe for my spouse.
- We will understand our "must haves" for our home and the "would like to haves" as well.
- We will not buy the largest home in a neighborhood as we know that the highest priced home generally does not sell for more than 10% above the median for a neighborhood.

Finding, funding and servicing the loan

- We will get a minimum of three realtors to bid for my business to ensure that I get the best loan for myself and family.
- We will get the lowest EIR for the loans provided given my expectations of how long we will be in the home.
- We will make additional payments each month to pay off the loan in ___ Years (i.e., 15 years).

Enjoying home ownership

- We will dedicate our home to the raising of a righteous posterity. A home need not be paid for to be dedicated to the Lord.
- We will ensure that we keep up the value of the home by budgeting ___% for home maintenance and repair (recommended 1-2% of the value of the home).
- We will keep up the appearance of the home by taking care of yard, interior and structure as a good steward.
- We will have my house paid off by age _____. I recommend that you have your home paid off by retirement and that you do not have mortgage debt in retirement.

- We will strive to have 20% saved for a down payment or to get rid of PMI as quickly as we can.
- We will maintain the value of the home by spending 2% of the home's value each year on maintenance.
- We will replace the roof every 20 years, 10% of the landscaping each year, and internal machinery as needed.
- We will pay off the home as soon as we can, and will not go into additional mortgage debt after age 60.
- We will up each mortgage payment to the closest \$100, and will strive to be wise stewards over all areas of home ownership.

Constraints

- Key to paying off the home is living on a budget and saving 20%.
- One half of all unexpected money (bonuses, tax refunds, etc.) will be put toward paying down principal (after our emergency fund).
- We will do all required maintenance and plan on replacing key housing machinery as needed. We will also not skimp on required maintenance.
- While we will try to do most of the work ourselves as a family, and will learn as we go, we will bring in experts in areas outside of our proficiency.
- We will stay strong in the gospel to keep our perspective, keeping our family focused, attending the temple and our meetings, and serving each other.

Accountability

- Children will have daily and weekly indoor jobs, as well as weekly yardwork.
- Home is where we teach our children to work. They will learn to use all landscaping and woodworking tools as we work together on our modest and model home.
- We will rotate the jobs weekly so all children will have the opportunities to work throughout the home and will become proficient on all tools.

For answers to additional questions regarding your housing decision, see [The Housing Decision III: Questions and Answers](#).

Summary

Buying a home is not easy. The purchase of a home will likely be the largest financial commitment you ever make. As such, you should not rush into this commitment. If you use wisdom and judgment in trying to decide what you want, what you can afford, and where you want to live, and if you will listen to and obey the promptings of the Holy Ghost, you will make correct decisions regarding your housing needs.

There are four major options for the home decision: renting, buying, building, and renovating. Each of these options has specific advantages and disadvantages.

One of the largest expenses is your mortgage. With so many different options available for a mortgage, it is critical that you understand how to calculate a comparable rate on loans with different points and fee structures. Understanding the different expenses involved in buying a house and how to compare different loans with different points and fees will save you a lot of money overall. Critical to this ability to compare is an understanding of points, effective interest rates, how to calculate effective interest rates, and prepayments.

There is much to learn and remember when buying a home. Keep your goal of buying a home in the perspective of your overall goals and objectives. Develop a home buying strategy, and follow it when you are buying a home. Buying a home is an important goal—but it is not the only one. In spite of the challenges associated with buying a home, having a home may bring many blessings and opportunities. Develop a Housing Plan when you are young, and follow it. It can be a great tool to helping you accomplishing your individual and family vision and goals.

Assignments

Financial Plan Assignment

As you think about where you want to live, it is important to develop your own housing strategy. Include this as part of your [PFP Education, Mission, Home and Auto Template](#) (LT01-15).

Start first from where you are. What is your current housing strategy? Where do you currently live? What expenses and fees are you paying, including rent, mortgage, maintenance, utilities, gas, repair and insurance? How can you reduce your housing expenses?

Then work on your plans and strategies. What is your housing strategy? I would break this down into your four areas: understanding your limits; finding your home; finding, negotiating, and funding your loan, and enjoying home ownership.

Strategies may include how often you will move, down payment strategy, negotiation strategies, strategies for warranties, how long you will stay in the house, etc. Again, the purpose of this strategy is to help you make wise decisions as to your housing needs and wants.

Learning Tools

The following Learning Tools may be helpful as you prepare your Personal Financial Plan:

[Maximum Monthly Payment for Christian Savers](#) (LT11)

This Excel spreadsheet will help you determine the maximum amounts that financial institutions will generally lend; the spreadsheet uses traditional front-end and back-end ratios. However, traditional banking ratios do not take into account the fact that Latter-day Saints pay tithes and other offerings and save a certain percentage of their earnings. This spreadsheet allows you to take these other factors into account and illustrates that you should be borrowing less for a home

than those who do not pay tithes and offerings.

[Home Loan Comparison with Prepayment and Financing](#) (LT19)

This Excel spreadsheet helps you determine the effective interest rate for multiple home loans; it takes into account the loan amount, interest rate, compounding periods, points, and other fees. In addition, it also calculates the rate, assuming prepayment, after a certain number of years. The spreadsheet also helps you determine how much time and money you will save if you prepay a specific amount of principal each period over the life of your loan.

[Debt Elimination Schedule with Accelerator](#) (LT20)

This spreadsheet allows you to input your different debts and interest rates. It then prioritizes that debt based on interest rates and creates a repayment plan based on the minimum payments due each month. This repayment plan is consistent with Marvin J. Ashton's plan in the article "One for the Money." This spreadsheet also allows you to include an accelerator amount and an amount in addition to your normal monthly payments; you will be able to see how long it will take you to pay off your debt.

Review Materials

Terminology Review

Breakeven Analysis. This is a form of loan analysis that does not take into account the time value of money, but is simple to calculate. You calculate all new costs and fees for the new loan, and savings in principle and interest over the old loan. You then divide all new costs by monthly savings which will give you your breakeven point in months. If your breakeven point is less than 4 years, it may be a good idea, 5-7 years, it might be considered, or greater than 7 years, be careful. You may likely move before 7 years.

Internal Rate of Return (IRR). This is a form of loan analysis to determine whether you should refinance or not. The process is to calculate all costs and fees for the loan, calculate the monthly savings, determine the number of months of savings, and set the number of months on the new loan equal to the number of months remaining on the old loan so you are not extending the loan! If your IRR is greater than your risk-free rate, then refinance.

Housing Ratios for Christians. As Christians, we have other important obligations that we also pay, i.e., tithing and paying ourselves, i.e., savings. As such, should have smaller houses (at least less expensive), because we pay the Lord first and ourselves second. For a spreadsheet that takes into account the fact that we pay the Lord first and ourselves second within this front-end and back-end ratio framework, see: [Maximum Monthly Mortgage Payments for Christian Savers Spreadsheet](#) (from the website).

Refinance. The process of getting another mortgage loan on your home and repaying the old loan with a goal to reducing your interest and other costs overall.

Short-sell. A short-sell is where a lender allows a property to be sold for less than the

amount owed on a mortgage and takes a loss. A short sell allows the borrower to avoid foreclosure, which involves hefty fees for the bank and poorer credit outcome for the borrower, and the lender to make “less” of a loss on the property and to not enter foreclosure. A short sell does not necessarily release the borrower from the obligation to pay the remaining balance of the loan.

Review Questions

1. What are the four options in regards to the home decision?
2. According to the *Handbook for Families*, how much of our take-home pay should we spend on our total house payment, including taxes, insurance, and maintenance costs?
3. What is the best measure of the total cost of a loan?
4. What is the best way to determine if you received a good loan or not?

Case Studies

Case Study 1

Data

You have decided on your dream house (well, at least your first house). In discussions with your mortgage broker, you have the choice between two loans, both of which are amortized over 30 years. Loan A is for \$200,000 at 6.0 percent with no points or loan-origination fees, and Loan B is for \$203,535 at 5.75 percent with a \$1,500 loan fee and one point (both loans will receive \$200,000 after the stated fees). In the problem we assumed you use the money from the loan to pay for the points and fees.

Calculations

Assuming you plan to stay in the house for 30 years, which loan is more advantageous based on the effective interest rate (EIR) and assuming annual payments?

Loan A: \$200,000 at 6.0 percent, no points, no fees, 30 years

Loan B: \$203,535 at 5.75 percent, 1 point, \$1,500 fees, 30 years

Case Study 1 Answers

Notes:

- a. Loan A has an EIR of six percent, as there are no fees and points. In that case, your EIR = your APR.
 - b. To get the amount borrowed after fees to equal the same amount for Loans A and B, I used Teaching Tool 19 and Excel Goal Seek and set Amount Received After Fees to the total loan amount for Loan A.
1. Calculate payment for Loan B.
 $N = 30, I = 5.75\%, PV = -\$203,535, PMT = ?$
 $PMT = \$14,393.25$
 2. Calculate the amount you received after all fees.
 $\$203,535 - 1 \text{ point } (\$2,000 * 1) - 1,500 = ?$
 $\$200,000$

3. Calculate your effective interest rate.

Set your PMT = \$14,393.25, N = 30, PV = -\$200,000, Solve for I.

I = 5.91%

Loan B is cheaper.

Home Loan Comparison (LT19.a)						Home Loan Comparison (LT19.b)							
Amount Needed: After points and fees = 1, Before Points and Fees=2: 2						Amount Needed: After points and fees = 1, Before Points and Fees=2: 1							
Loan Information:						Loan Information:							
Loan Amount	\$ 300,000.00	Total Periods	30	Rate:	6.00%	Loan Amount	\$ 203,535.35	Total Periods	30	Rate:	5.75%		
Interest Rate (APR)	6.00%	Loan Payments:	30	APR	6.00%	Interest Rate (APR)	5.75%	Loan Payments:	30	APR	5.75%		
Years (1-30)	30	Prepayment of Principal		6.00%		Years (1-30)	30	Prepayment of Principal		5.75%			
Payments per year (12)	1	Number of Prepayments:	0	Effective Interest Rate		Payments per year (12)	1	Number of Prepayments:	0	Effective Interest Rate			
Annual Payments	\$ 21,794.67	Total of Prepayments:	\$ -	6.00%		Annual Payments	\$ 14,393.25	Total of Prepayments:	\$ -	5.91%			
Prepayment after # years?		Savings from Prepayments:	\$ (0)			Prepayment after # years?		Savings from Prepayments:	\$ (0)				
(blank = no early payoff)						(blank = no early payoff)							
Received Before Fees	\$ 300,000	Amount Received After Fees	\$ 300,000			Received Before Fees	\$ 203,535	Amount Received After Fees	\$ 200,000				
Points		Other Fees		Total Costs		Points	1.00	Other Fees	1,500	Total Costs	3,535		
Regular Pmts.	Extra Payments	Pts & Fees	BalloonPmt	Total Paid	less Received	Interest Paid							
453,840	-	-	-	453,840	-	353,840	431,798	-	3,535	-	435,333	203,535	231,798
Cost of loan without prepayment				Total Paid	less Received	Interest							
				453,840	-	353,840	431,798	-	435,333	-	203,535	231,798	
				Interest Saved by Prepayment:		(0)							

Case Study 2

Data

Your spouse suggests that you will likely only be in the home for six years, although you estimate a longer time frame because current job looks very positive. You compromise and estimate that you will be in the home for 12 years. Review your choice between the two loans, both of which are amortized over 30 years but which will be paid back in 12 years with a balloon payment at year 12. Loan A is for the same \$200,000 at 6.0 percent with no points or fees, and Loan B is for \$203,535 at 5.75 percent with a \$1,500 loan fee and one point.

Calculations

Calculate the EIR for both loans, assuming a balloon prepayment after 12 years and annual payments.

Application

Which loan is more advantageous with prepayment using the EIR?

Case Study 2 Answers

1. Calculate payment for Loan B.

$$N = 30, I = 5.75\%, PV = -\$203,535, PMT = \$14,393.25$$

2. Set PV = to the amount you receive after all costs.

$$\$203,535 - 1 \text{ point } (\$2,000 * 1) - 1,500 = \$200,000$$

3. Solve for your balloon payment at year 12.

$$N = 18, PMT = \$ 14,393.25, I = 5.75, PV = \$158,812.56$$

4. Solve for your effective rate.

$$PMT = \$14,393.25, PV \text{ is } -\$200,000, N = 12, FV = \$158,812.56, \text{ solve for I.}$$

$$I = 5.97\%$$

Loan B is still cheaper (barely).

Home Loan Comparison (LT19.b)						
Amount Needed: After points and fees = 1, Before Points and Fees=2:						1
Loan Information:			Amount Needed (after points & fees):			\$ 200,000
Loan Amount	\$ 203,535.35	Total Periods:	30	Rates:	APR	
Interest Rate (APR)	5.75%	Loan Payments:	12	5.75%	Effective Interest Rate	
Years (1-30)	30	Prepayment of Principal				
Payments per year (12)	1	Number of Prepayments:	0			
Annual Payments	\$ 14,393.25	Total of Prepayments:	\$ -			
Prepayment after # years?	12	Savings from Prepayments:	\$ 100,266			
(blank = no early payoff)						
Received Before Fees	\$ 203,535	Amount Received After Fees	\$ 200,000			
Points	1.00	2,035	Other Fees	1,500	Total Costs	3,535
Paying Off Your Loan Early:						
Regular Pmts.	Extra Payments	Pts & Fees	BalloonPmt	Total Paid	less Received	Interest Paid
172,719	-	3,535	158,813	335,067	203,535	131,532
Cost of loan without prepayment				Total Paid	less Received	Interest
431,798				435,333	203,535	231,798
				Interest Saved by Prepayment: 100,266		

Case Study 3

Data

Your broker has said that for one more “buy down” point (a total of two points with the same \$1,500 fees), he can give you Loan C with an interest rate of 5.50 percent. Because of the additional point, the new loan amount is \$205,612.

Calculations

Calculate the EIR for Loan C of \$205,612 at 5.5%. How much did that extra point save you in terms of your effective interest rate over Loan A and Loan B?

Application

Assuming the same 12-year prepayment plan, which loan should you take?

Case Study 3 Answers

1. Calculate payment for Loan C.

$$N = 30, I = 5.5\%, PV = -\$205,612, PMT = \$14,147.21$$

2. Calculate amount received after all fees (two points).

$$\$205,612 - 2 \text{ points } (\$2,000 * 2) - 1,500 = \$200,000$$

3. Calculate the balance owed after 12 years (18 years remaining). The PV of 18 years of the PMT is:

$$N = 18, I = 5.5\%, PMT = -\$14,147.21, PV = \$159,100.62$$

4. Calculate effective interest rate to lender.

$$\text{Set your FV at year 12 to } = \$159,100.62, PMT = \$14,147.21, N = 12, PV = -\$200,000, \text{ solve for } I = ?$$

$$I = 5.85\%$$

Loan C saves 0.15% and 0.13% over Loans A and B, but because of the increase in points, the amounts of the loans increases to give the same \$200,000 needed.

Home Loan Comparison (LT19.c)						
<i>Amount Needed: After points and fees = 1, Before Points and Fees=2:</i>					1	
Loan Information:		Amount Needed (after points & fees):		\$ 200,000		
Loan Amount	\$ 205,612.24	Total Periods	30	Rates:		
Interest Rate (APR)	5.50%	Loan Payments:	12	APR		
Years (1-30)	30	Prepayment of Principal		5.50%		
Payments per year (12)	1	Number of Prepayments:	0	Effective		
Annual Payments	\$ 14,147.23	Total of Prepayments:	\$ -	Interest Rate		
Prepayment after # years?	12	Savings from Prepayments:	\$ 95,549	5.85%		
(blank = no early payoff)						
Received Before Fees	\$ 205,612	Amount Received After Fees	\$ 200,000			
Points	2.00	Other Fees	1,500	Total Costs	5,612	
Paying Off Your Loan Early:						
Regular Pmts.	Extra Payments	Pts & Fees	BalloonPmt	Total Paid	less Received	Interest Paid
169,767	-	5,612	159,101	334,480	205,612	128,868
Cost of loan without prepayment				Total Paid	less Received	Interest Paid
424,417				430,029	205,612	224,417
Interest Saved by Prepayment: 95,549						