January 27, 2025

LEC 05 - Sources of Credit and Finances of Housing

Chapter 6 - Choosing a Source of Credit

Learning Objectives

1. Analyze factors that affect the selection and use of financial services
2. Compare the types of financial institutions
3. Compare the costs and benefits to various savings plans
4. Identify factors used to evaluate different savings plans
5. Compare the costs and benefits of different types of chequing accounts

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Choosing a Source of Credit

- Credit costs money
    - Weight benefits of buying an item on credit versus waiting

Ask yourself the following questions:

1. Do I need a loan?
2. Can I afford a loan?
3. Can I qualify for a loan?

Evaluating Savings Plans

Rate of Return (Yield): Percentage increase in value due to interest

Compounding: Interest on interest

Annual Percentage Rate (APR): Percentage cost of credit on a yearly basis

- May be compounded more frequently
- EAR may be higher than APR

Effective Annual Rate (EAR): Calculates the effective return taking compounding into effect

$EAR = (1 + \frac{APR}{m})^m - 1$, where m is the number of compounding periods per year

- Depends on…
    - Quoted APR
    - How frequently interest is compounded
    - Interest charged up front
    - Other charges
- Provides the true rate of interest for comparison with other sources of credit
    - Lets you compare when shopping for rates

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Example

Peter MacLellan wants to buy a used car. The list price is $\$10,000$, sales tax 13%, total cost $\$11,300$. There is a $\$6,300$ dowm payment and a $\$5,000$ loan to be repaid in equal monthly instalments over one year. The bank quotes a fixed rate of 6%, compounded monthly ($0.5\% \ / \ month$). What is the monthly payment on Peter's car loan?

$= PMT(0.005,\ 12,\ 5000,\ 0,\ 0) \Rightarrow \$430.33$

Costs of Carrying Credit Card Balances

Adjusted Balance Method

- Interest calculated after subtractring payments made during the billing period

Previous Balance Method

- No credit for payments made during the billing period

Average Daily Balance Method

- Interest calculated on average daily balance

Chapter 7 - The Finances of Housing

Learning Goals

1. Evaluate available housing alternatives
2. Analyze the costs and benefits associated with renting
3. Implement the home-buying process
4. Obtain mortgage financing
5. Develop a strategy for selling a home

Opportunity Costs of Housing Choices

1. Interest earnings lost of money use for down payments
2. Time and cost of commuting
3. Loss of equity growth when renting
4. Time and money to repair and improve a home
5. Time and effort when you have a home built to your personal specifications
6. Money spent of all housing upkeep and maintenance

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Calculating Affordable Home Purchase Price Gross Debt Service Ratio

$PI \rightarrow$ Monthly principal and interest payments on your mortgage
$T \rightarrow$ Monthly property taxes
$H \rightarrow$ Monthly heating costs
$D \rightarrow$ Monthly debt service payments

$$Gross\ Debt\ Service\ (GDS) = \frac{PI+T+H}{GI}$$

- Most lenders recommend you spend no more than 32% of your gross income on shelter costs

$$Total\ Debt\ Service\ (TDS) = \frac{PI+T+H+D}{GI}$$

- Most lenders recommend you spend no more than 40% of your gross income on shelter and non-shelter costs

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The Home-Buying Process

Step 1: Determine your monthly gross income (annual income / 12)
Step 2: With a down payment of at least 10%, lenders use 32% of monthly gross income as a guideline for the GDS ratio, and 40% of monthly gross income as a guideline for the TDS ratio
→ Affordable monthly mortgage payment
Step 4: Divide this amount by the monthly mortgage payment based on current mortgage rates, and multiply by $\$1,000$
→ Affordable home purchase price
Step 5: Divide your affordable mortgage amount by 1 minus the fractional portion of your down payment (ex. 10% down payment)
→ Affordable home purchase price

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Term Rate	25 Years	20 Years	15 Years
4.0%	5.26	6.04	7.38
4.5%	5.53	6.30	7.63
5.0%	5.83	6.57	7.88
5.5%	6.10	6.84	8.14
6.0%	6.40	7.12	8.40
6.5%	6.70	7.41	8.66
7.0%	7.00	7.69	8.93
7.5%	7.32	7.99	9.21
8.0%	7.63	8.28	9.48
8.5%	7.95	8.59	9.76
9.0%	8.28	8.89	10.05
9.5%	8.61	9.20	10.33
10.0%	8.94	9.52	10.62

Example

Ahanu borrowed $\$500$ and paid 20% in interest when he repaid the principle after 1 year. The lender also charged him a $\$5$ service fee on a discount basis. What was the effective interest rate of his loan?

$$20 \div (500 - 5) = 4.04\%$$

If the 4% interest rate quoted on Ahanu's loan had been compounded monthly, what would have been the effective annual interest rate charged on the loan?

$$EAR = (1 + 0.04/12)^{12} - 1 = 4.07\%$$

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Example

The CLSP has agreed to lend you funds to complete a degree. The government will lend you $\$3,800$ today if you agree to repay the loan 5 years from now with a lump sum payment of $\$5,000$, what is the interest rate you are being charged?

$$= RATE(5,\ 0,\ 3800,\ -5000,\ 0) \Rightarrow 5.64\%$$

- Every time you make a payment to the bank on a loan, you are paying principal and interest
- Open loan means you can repay the loan faster at any time, meaning less interest

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Example

You have been pricing headphones in several stores. Three stores have the identical price of $\$300$. Each of these stores charge $18\%\ APR$, has a 30 day grace period, and sends out bills on the first of the month. On further investigation, you find that store A calculates the finance charge by using the average daily balance method, store B uses the adjusted balance method, store C uses the previous balance method. Assume you purchased the headphones on May 1 and made a $\$100$ payment on June 15, what is the finance charge for June if you purchase from each store?

Store A

$$((300 \cdot 15\ days) + (200 \cdot 15\ days))/30\ days = \$3.75$$

Store B

$$(300 - 100) = 200 \cdot 0.015 = \$3.00$$

Store C

$$300 \cdot 0.015 = \$4.50$$

Example

Bobby is trying to decide between 2 credit cards. One has no annual fee and an 18% interest rate, and the other has a $\$40$ annual fee and an 8.9% interest rate. Should he take the one that is free of the one that costs $\$40$?

⇒ It depends on various factors such as if you are planning to borrow, how much you are planning to borrow, and the other benefits of both cards

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Example

Based on the following data, would you recommend buying or renting? Assume after-taxt savings interest rate of 6%

Rental Costs

- Annual rent – $\$7,380$
- Insurance – $\$145$
- Security deposit – $\$650$
    - Opportunity Cost – $\$39$

  TOTAL – $\$7,564$

Buying Costs

- Annual mortgage payment – $\$9,800$
- Property taxes – $\$1,780$
- Insurance / maintenance – $\$1,050$
- Down payment / closing costs – $\$4,500$
- Growth in equity in home – $(\$225)$
- Annual house value appreciation – $(\$1,700)$

  TOTAL – $\$10,975$

Therefore, it is cheaper to rent

Example

Calculate the GDS and TDS ratios for the following data:

- Monthly mortgage payment – $\$2,100$
- Property taxes – $\$200$
- Heating costs – $\$115$
- Other housing costs – $\$70$
- Personal loan payment – $\$150$
- Car loan payment – $\$200$
- Credit card payment – $\$150$
- Gross monthly income – $\$7,800$

$$GDS = \frac{2100+200+115}{7800} = 30.96\%$$

$$TDS = \frac{2100+200+115+150+200+150}{7800} = 37.37\%$$

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Example

Estimate the affordable monthly mortgage payment for a 25 year loan at 6.5%, with a factor of 6.7. Monthly property taxes and insurance is estimated at $\$210$

$$Affordable\ monthly\ mortgage = (2950 \cdot 0.4) - 160 - 210 = \$810$$
$$Affordable\ mortagge\ amount = (810 \div 6.7) \cdot 1000 = \$120,896$$
$$Affordable\ home\ purchase\ price = 120896 \div 0.85 = \$142,230\ (15\%\ down\ payment)$$