

Course Summary

Lecture 13.2



Interest and the Time Value of Money

In the first two lectures, we considered interest compounding and the time value of money.

- Because interest compounds on interest, your savings can grow a lot over a long investment period. **It's best to start saving early.**
- And the higher the interest rate, the faster your savings will grow. **If you keep your savings in a low-yielding savings account at your bank, your savings will barely grow.**
- Because money today can earn interest, **a dollar today is more valuable than a dollar in the future.** This is the **time value of money.**
- By considering the interest rate in the market (and any risk premium), you can calculate the **present value** of any future cash flows.

Consumer Borrowing

In Lecture 3, we looked at consumer borrowing.

- The power of interest rate compounding applies to borrowing as well. **Debt at a high rate of interest is very expensive over the long-run.**
- **High-cost borrowing methods** – such as payday loans, auto title loans, and rent-to-own – **charge an especially high (implicit) interest rate.**
- If a borrower makes only the minimum payment, they will never pay off their credit card. But, by using a financial calculator, you can **calculate the monthly payment needed to pay down a credit card balance after a certain number of years.**

Mortgages

Lecture 7 focused on mortgages.

- Because of loan amortization, **the initial payments on a 30-year mortgage go almost entirely to interest.** But towards the end of the mortgage, most of the payment goes toward principal.
- Many mortgage borrowing decisions depend largely on how long a borrower plans to stay in a home. **The longer a borrower plans to stay in a home, the better it is to buy instead of renting, the better it is to take mortgage points, and (if interest rates have fallen) the better it is to refinance.**
- Fixed-rate mortgages require fixed payments over time. And while **adjustable-rate mortgages require lower initial payments,** the monthly payment may become much larger if interest rates increase over time.

Investment Products and their Risks

In Lecture 4, we introduced a number of different products and later, in lecture 9, we considered the tradeoff between the risks and returns of these products.

- Bank deposits and Treasury bills are **risk-free investments** but yield **low returns**.
- Corporate bonds are loans to corporations. Because of their **default risk, corporate bonds pay a higher return than Treasury bonds**.
- Stocks are among the **riskiest investments** and have had some of the **highest long-run returns** because of this.
- **Fees matter** when it comes to investment funds. Low cost index funds may outperform actively managed mutual funds in the long-run just because of their lower fees. (And the **efficient market hypothesis** is a reason to believe mutual funds can't consistently outperform the market).

Risk Diversification and Leverage

In Lecture 10, we considered how investors can modify their risk through diversification and leverage.

- Investors can **reduce their risk by diversifying their investments over multiple assets**.
- But the effects of diversification are limited by correlation between assets. **Further benefits can be realized by investing across multiple asset classes**, such as small stocks, foreign stocks, bonds, and commodities.
- Investors may also increase their returns by **leveraging their investments**, but doing so also may drastically increase risk.

Retirement Planning

In Lecture 5, we considered some basic retirement plans. In Lectures 6 and 8, we introduced inflation and taxes.

- Using a financial calculator and working backwards, you can **calculate how much you should set aside today to enjoy a certain income in retirement.**
- And if you **save enough of your income each year, you may be able to retire early!**
- Inflation, can easily be incorporated into your retirement plans. **Just make all plans using real interest rates and dollar amounts.**
- Taxes can make a big difference in your retirement wealth. **Invest for the long term, and your capital gains will be taxed at a lower rate and deferred.**
- And you can get further tax benefits if you **invest in tax advantaged retirement accounts.**

Risk and Retirement Planning

In Lecture 11, we showed how investors can manage the risks they face while saving for retirement.

- The **financial risk** from stock investments may be too much near or during retirement. For this reason, **life-cycle investing requires that retirees phase out of stocks and into less risky investments.**
- Retirees may worry that interest rates will fall as they near retirement, lowering the yield they may earn on their invested principal. But **interest rate risk can be hedged by investing in long-term bonds.**
- **Longevity risk** can be countered with annuities. **Life annuities make payments for as long as the retiree lives, making it impossible to outlive savings.**
- And **Social Security is the ultimate hedge against retirement risks!** It protects against financial risk, longevity risk, and inflation risk all at once!

Financial Behavior Bias

Finally, in Lecture 12, we considered how behavioral and other biases can cause consumers to make financial mistakes.

- Financial decision-making faces many obstacles from lack of knowledge and psychological biases. Many of these biases are rooted in ignorance.
- Challenges to financial decision-making include the following: **exponential growth bias, money illusion, loss aversion, diversification heuristic, wishful thinking, sunk cost fallacy, choice overload, perceptual distortions, self-control problems, and cognitive inertia.**
- These obstacles can be remedied by promoting financial education and making individual consumers aware of their susceptibility to bias.

Some general advice

Video providing financial advice

“Three Recommendations for Your Personal Finances”

<https://vimeo.com/176667708>

Some general advice

Here is advice for everyone.

- Start to save early and use the magic of interest compounding to work for you
- If interest rates fall, consider refinancing your mortgage
- Invest for your retirement using tax advantaged assets
- Take advantage of employers' matches
- There is a trade-off between risk and returns: you cannot get higher returns without taking on more risk
- Protect your wealth by diversifying your portfolio
- Take into consideration inflation in your retirement planning
- Consider whether to invest more in education and training

Final remarks

It is also important

- To keep it simple
- Do the calculations
- Understand the risks involved
- Do comparisons