

Class #2 Notes
September 5, 2012
Financial Markets and Instruments 3560
Professor Goldstein

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News: There were shots fired during Pauline Marois (Quebec's first female premier) victory speech, where one other person was killed.

News Sources: Wall Street Journal and Yahoo (Good to know for interviews)

Dow: 13,025 Gold: 1,694
S&P: 1,402 Euro: 1.2606
NASDAQ: 3,065 Oil: 95.47

Subscriptions for WSJ will arrive electronically, and a few Articles you should read:

1. "Making Retirement Assets Last"
 - a. This is important because we are the residual claimant on our parent's wealth
 - b. It is a way to understand how it is possible to run out of money or have money after death.
 - c. We are 10 years away from developing assets
 - d. We are 15 years away from understanding if we have a lot of money left to us (**Note from Dr. Goldstein: I thought I said that you are 15 years from your parents' retirement – I hope I didn't imply that your parents are going to pass away in 15 years!**)
 - e. Why is this important? What does it affect?
 - i. Careers
 - ii. Wealth Management
 - iii. Our Future
2. "529"
3. "Bullish Case for Dividend Stocks"
4. "How to allocate stocks and bonds"

Other News:

1. Manufacturing Jobs Report Came Out
2. Spain's in Trouble (will be heard often throughout the class)
3. US election is coming up soon
4. iPhone 5 is coming out September 12th

Chapter 2 Determinants of Interest Rates

Homework: Try and do the worksheet by Monday (Come to prepared to answer questions)

Pay Attention: This lesson is the underpinning for the rest of this course. People that don't know this will lose points on the exams. (Shows up in almost every question)

Present Value (PV) of a single cash flow

Time Value of Money (TVM) is very important to understand.

Ex) Cash flow 5 years from now where $r = 10\%$:

ALWAYS MAKE A TIMELINE (partial credit rewarded)

0 1 2 3 4 5 6

PV = 62.09213

$PV = 100/(1+r)^5$ $PV = CF_T/(1+r)^T$ ---for a single cash flow

Ex 2) Assuming a constant interest rate, what is the PV if payments are made at periods 3 and 5?

0 1 2 3 4 5

 100 100

$PV = 100/(1.1)^3 + 100/(1.1)^5 = \140.82 (Note from Dr. Goldstein: This was on the board since someone said it, but it is WRONG! The correct answer is \$137.2236124. I guess I better not trust the answers someone shouts out!)

Ex 3) Perpetuity: Starting today I promise to make \$100 payments to someone forever into the future

REMEMBER: 1st PAYMENT HAPPENS 1 PERIOD BEFORE THE FIRST PAYMENT

$PV = c/r$

0 1 2 3 4 5 6

100 100 100 100 100 100

 (1+r)² (1+r)² (1+r)² (1+r)² (1+r)² (1+r)²

How to get $PV = c/r$: (Oh, my Dan, I didn't expect you to actually type this!)

Sum of a Geometric Series = $ax + ax^2 + ax^3 + ax^4 + \dots$ (provided $x < 1$)

-- $a = c/1+r$ → this means that the first cash flow is one period from now (discount it) then make substitution

-- $x = 1/1+r$

Using some math tricks, we get: $PV - xPV = a$ which implies $PV = a/(1-x)$
(if you check your old math books, $a/(1-x)$ is the answer to the sum of a converging geometric series.)

So by substitution

$PV = a/1-x$

$PV = (c/1+r)/(1-(1/1+r)) = (c/1+r)/((1+r/1+r)-(1/1+r)) = c/r$

$PV = c/r$

This is important for valuing stocks, annuities, and perpetuities – all calc. buttons assume payment happens 1 period from now.

Annuity

Ex 4)

0 1 2 3 4 5 6

100 100 100 100 100

 1.1 (1+r)² (1+r)³ (1+r)⁴ (1+r)⁵

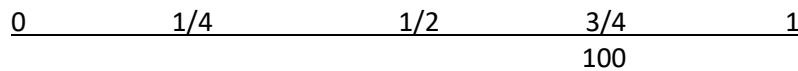
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- Need the first 5 years
- Use $PV = c/r$ in year 5
- What is the value today? $(c/r)/(1+r)^5$
- $PV = c/r - (c/r)/(1+r)^5$
- $PV = c/r - (c/r)/(1+r)^5 = c/(1+r) + c/(1+r)^2 + c/(1+r)^3 + c/(1+r)^4 + c/(1+r)^5$
- $PV = c/r [1 - 1/(1+r)^5] = \$ 379.078679$ or $PV = 100/.1[1 - 1/(1.1)^5] = \$ 379.078679$

Calculator = $PMT / i [1 - 1/(1+i)^N] + FV/(1+i)^N$

The next three months there will be some form of these equations.

Ex 5)



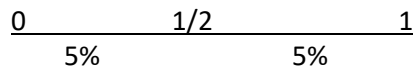
Q: Payment of \$100 made $\frac{3}{4}$ of a year from today
 $= 100/(1.1)^{3/4} = 93.101244$

Effective Annual Rate – it is the annual rate of interest when compounding occurs more than once a year.

- Discount anything if things are paid annually

Most times there is a “stated rate” compounded semi-annually – (not the effective rate) it is 5% every 6 months.

Ex 6)



$(1.05)^2 = 1 + EAR = 10.25\%$

IT IS EXTREMELY IMPORTANT TO DO THE HANDOUT PROBLEMS. It determines the A vs. B students.

See PowerPoint

TVM

- Compound Interest – interest you get on interest
- FV of lump sum is the inverse of PV of lump sum
- Value + Interest Rates Value inversely.
 - o Interest rates go up, value goes down.
 - o One problem parents have right now is retirement because low interest rates cause retirement portfolios to not grow as much in value.

FV of Annuity

- PV of annuity should move lump sum forward the amount of time.

Financial Calculators

Know how to use the store buttons (for exam) – do the problems

Read back over the PowerPoint

Skip the PV of a bond for HW because it was not covered in class or try it out on your own