FN 201 BUSINESS FINANCE

Lecture 1

Topics: Introduction to Finance, Time Value of Money

Agenda

- Instructor
- Course outlines and descriptions
- What is and who does Finance?
- Time Value of Money (TVM)
  - Future Value (FV)
  - Present values (PV)
  - Interest rate terminology
- Annuity / Perpetuity

Sukonpat Chantapant, aka, “Ajarn K”

- Education:
  - BSc in Economics at Australian National University (ANU), Australia with Honour
  - MSc in Computational Finance at Carnegie Mellon University, U.S.
  - Both under BOT Scholarships
- Certificate:
  - Financial Risk Manager (FRM)
- Experiences:
  - Bank of Thailand 10 yrs
    - Financial Institutions Supervision Group : Risk Management System Examination & Stress Testing Team
  - Rothchild Asset Management, New York (Internship program.)
    - Equity risk modeling

- Teaching Experience:
  - FN413 Strategic Financial Management (1S)
  - FN201 Business Finance (6S)
- Areas of interests:
  - Risk management (credit, market and liquidity risks)
  - Financial institutions and regulations
  - Options and option pricing
- Publication (Bank of Thailand Economic Symposium 2007):
  - Are Thai Banks Vulnerable? : A Structural Analysis of Bank Corporate Loan Portfolios and Implications” by Dr. Don Nakornthab , Dr. Krongkaeo Kritayakirana and Sukonpat Chantapant

Course outlines and descriptions

- Details in handout
- My style of teaching
  - Learn finance like economists
  - Emphasize on having the right intuition and logics as well as ability to produce correct answer
  - Learning by doing many exercises
- Grading

FN201 will form a foundation for further elective courses in finance

- FN 201 Business Finance
- FN 211 Financial Markets
- FN 311 Financial Management
- FN 312 Investment

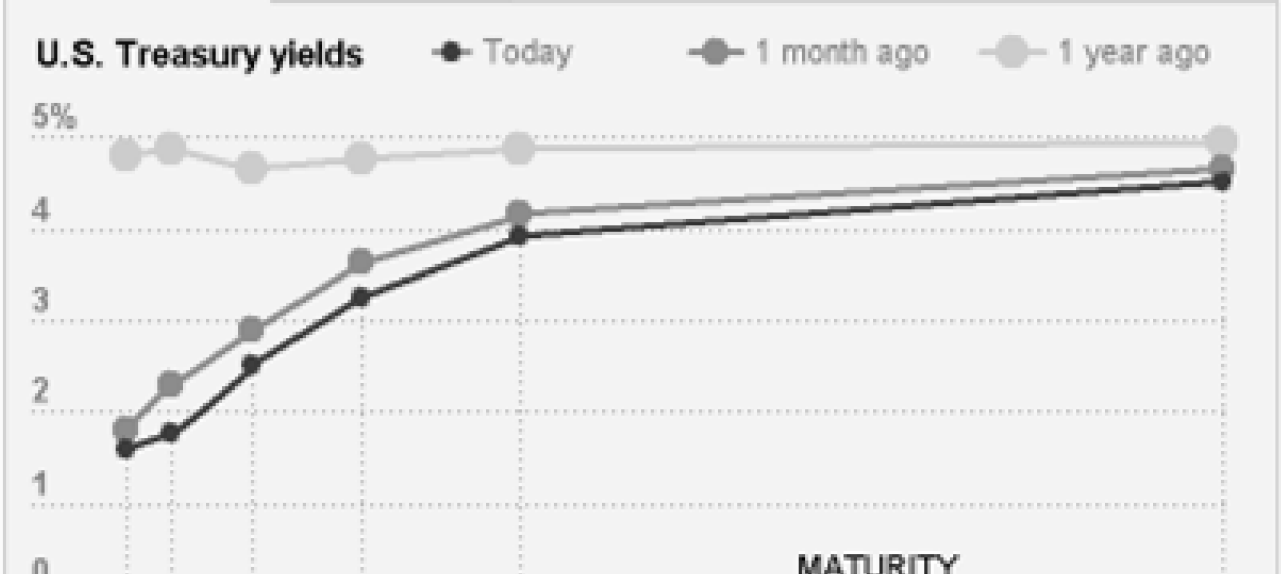
- FN 241 Risk Management and Insurance
- FN 313 International Financial Management
- FN 331 FI Management
- FN 421 Financial Statement and Reporting Analysis
- FN 426 Financial Derivatives
- FN 428 Investment Banking
- FN 413 Strategic Financial Management

Can you understand what is going on in the news?

Bonds

Government Bonds

YIELD CURVE | KEY RATES

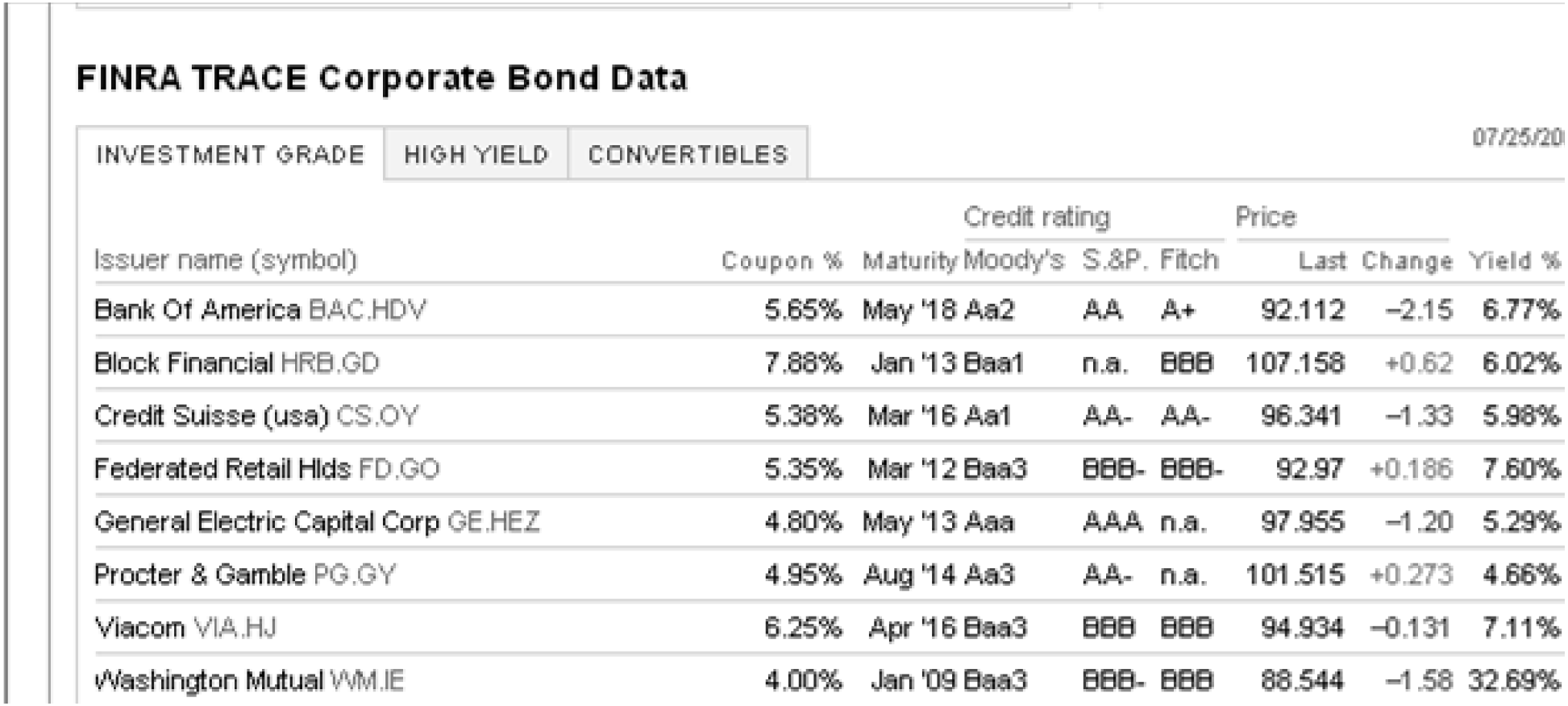


Treasury Bills, Notes and Bonds

Most recent issues

Maturity	% yield	Chang
3-month	**1.69%**	–0.04
6-month	**1.87%**	–0.09
2-year	**2.59%**	–0.11
5-year	**3.33%**	–0.11
10-year	**4.01%**	–0.09

Can you understand what is going on in the news?



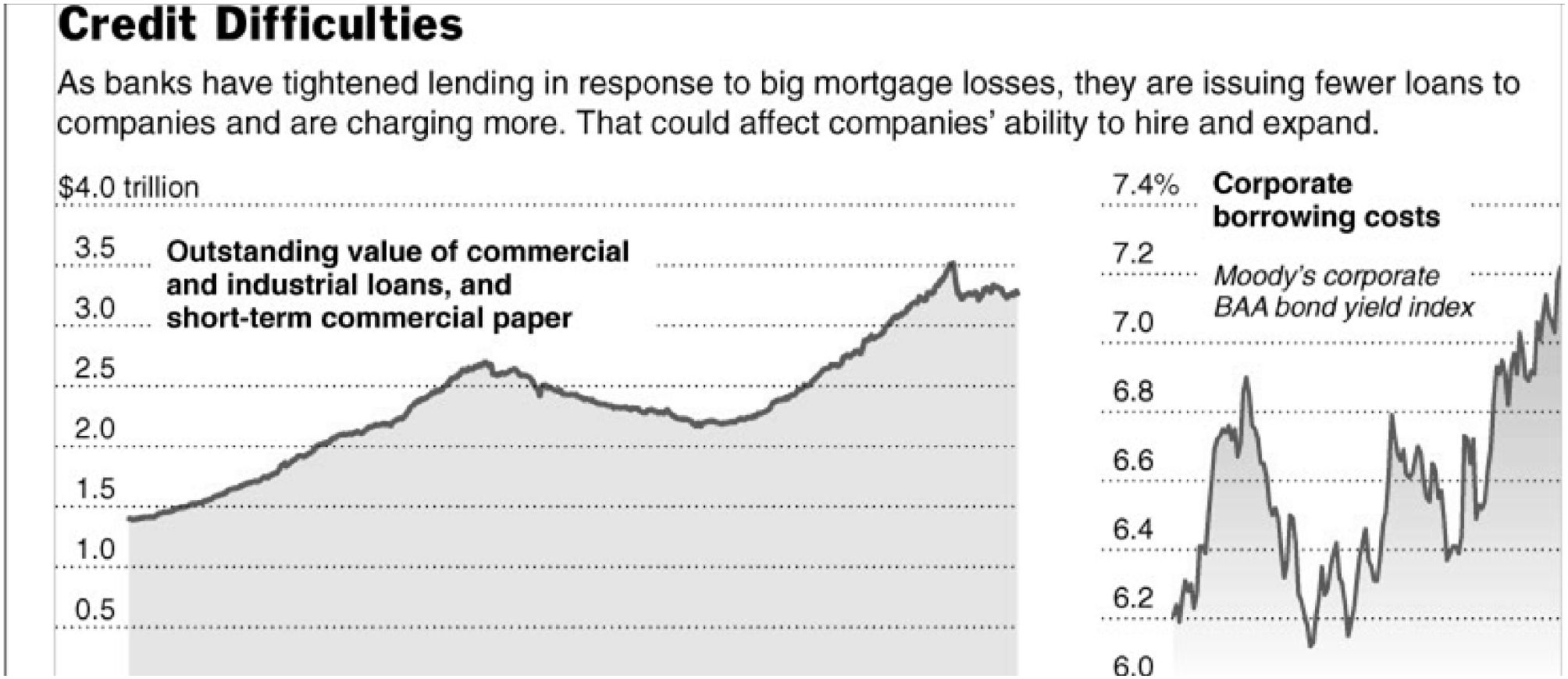
FINRA TRACE Corporate Bond Data

INVESTMENT GRADE | HIGH YIELD | CONVERTIBLES

07/25/20

Issuer name (symbol)	Coupon %	Maturity	Credit rating Moody's	S.&P.	Fitch	Price Last	Change	Yield %
Bank Of America BAC.HDV	5.65%	May '18	Aa2	AA	A+	92.112	–2.15	6.77%
Block Financial HRB.GD	7.88%	Jan '13	Baa1	n.a.	BBB	107.158	+0.62	6.02%
Credit Suisse (usa) CS.OY	5.38%	Mar '16	Aa1	AA-	AA-	96.341	–1.33	5.98%
Federated Retail Hlds FD.GO	5.35%	Mar '12	Baa3	BBB-	BBB-	92.97	+0.186	7.60%
General Electric Capital Corp GE.HEZ	4.80%	May '13	Aaa	AAA	n.a.	97.955	–1.20	5.29%
Procter & Gamble PG.GY	4.95%	Aug '14	Aa3	AA-	n.a.	101.515	+0.273	4.66%
Viacom VIA.HJ	6.25%	Apr '16	Baa3	BBB	BBB	94.934	–0.131	7.11%
Washington Mutual WM.IE	4.00%	Jan '09	Baa3	BBB-	BBB	88.544	–1.58	32.69%

Can you understand what is going on in the news?



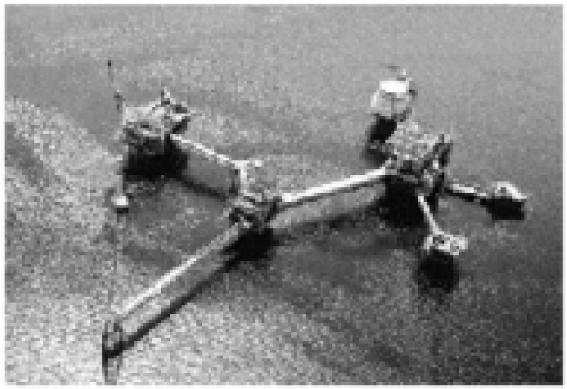
Can you understand what is going on in the news?

STOCK EXCHANGE

Investment opportunity in bear market

By Siriporn Chanjindamanee,
Oranan Paweewun
The Nation
Published on July 11, 2008

Thai bourse offers cheapest value in Asia



PTTEP's gas storage tanks at its field in

A spate of negative factors, including anxiety over the US sub-prime mortgage crisis, spiralling inflation and local political tension, has turned the punch-drunk Thai stock exchange into a bear market.

Shares have tumbled 21 per cent from the 52-week closing high last October when the SET Index stood at 915.03, and nearly 16 per cent from the final close at the end of 2007. The bourse has been the cheapest value in Asia, with a price-to-earnings ratio of about nine to 10 times.

Can you understand what is going on in the news?

CONVERSATIONS

Providing Loans Based on Cash Flow, N

By ROBB MANDELBAUM
Published: May 5, 2010

With the recession having left many banks reluctant to lend, s businesses have struggled to find other sources of credit. One intriguing alternative is On Deck Capital, which promises to revolutionize lending to small businesses.

Marilynn K. Yee/The New York Times

Mitch Jacobs, left, the founder and chief executive of On Deck Capital in New York, with an associate, Alfie Umbhau.

Traditional banks, says Mitch J On Deck's founder and chief executive, know so little about small-business borrowers that scares them off.

On Deck, by contrast, says it sc "the cloud" for the vast inform trail that every business now le develop a clear understanding potential client's creditworthin positive cash flow, ideally from transactions.

Share Your Thoughts

Are 20 percent interest rates and daily payments the answer? Tell us what you think at

Can you

Bernard L. Madoff

the news?

Updated: May 25, 2010

Overview

On Wall Street, his name was legendar

With money Bernard L. Madoff had ea
beaches of Long Island, he built a tradi
prospered for more than four decades.
influential spokesman for the traders
the marketplace.

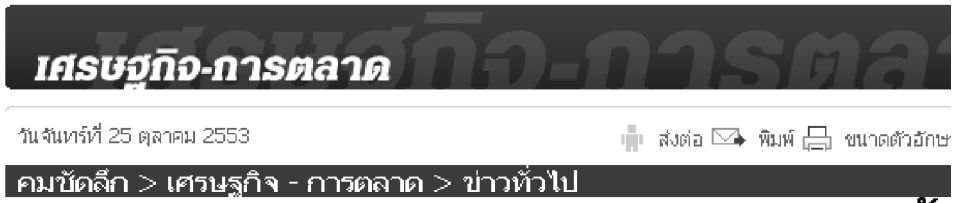
Montara Oil Spill May Lead Australia to PTTEP of Drilling Licenses

By James Paton - Nov 24, 2010 4:13 PM GMT+0700

PTT Exploration & Production Pcl may lose the right to drill in
after a review of the company's plans to prevent a repeat of its
Montara oil spill off the northwest coast, the energy minister sa

The study of the Thai company's operations is due by the end

Natural Hedging

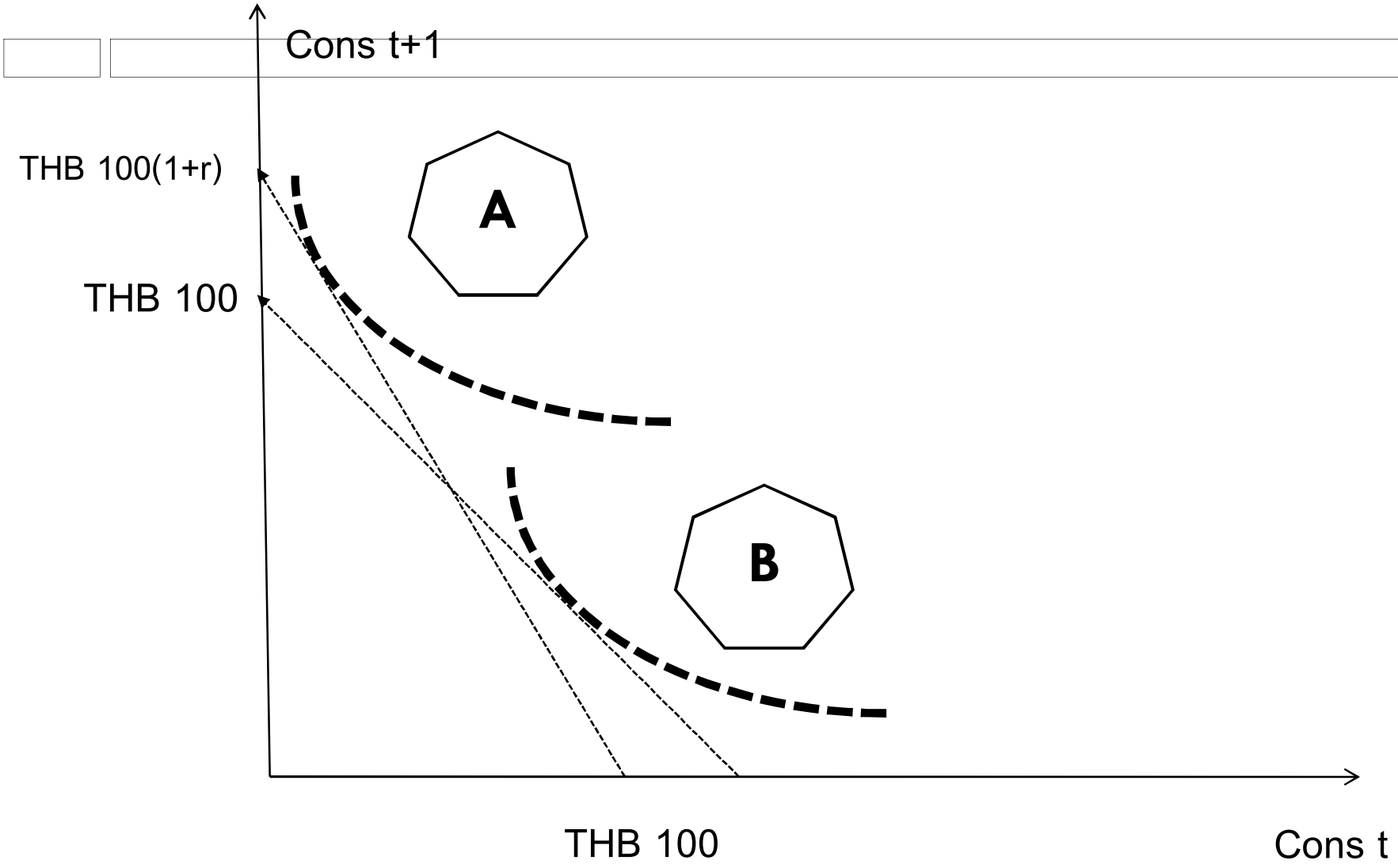


Who does and what is finance?

- What is Finance?
  - Finance = the allocation of resources across time and risk

- Who does finance?
  - Individual: make savings & investment choices:
    - (1) individual save/borrow and invest to adjust consumption → across time
    - (2) individual invest or hedge against future risk to adjust consumption → across state of nature

Individual Budget Line



Who does and what is finance? (2)

- Who does finance?
  - Firms / Corporations: Investment & Financing Choices
    - (1) firm decide whether to invest in project to generate return → across time & → across state of nature
    - (2) firm decide how to "finance" such project → across time & → across state of nature

Finance is about Discounting Cash Flows

Common-sense approach to investment decision?

- For example
  - If you have THB 100,000 to invest, would you invest in recently-issued Thai government 5yrs bond?
    - What information required to make an informed decision?
  - If project A is expected to generate a return of 10% and a similar project would yield a return of 7% or 15%, would you invest in the project A?
    - What information required to make an informed decision?

Time Value of Money (TVM)

- Which one is preferred?
  - 1) THB100 received today
  - 2) THB100 received 10 days from now

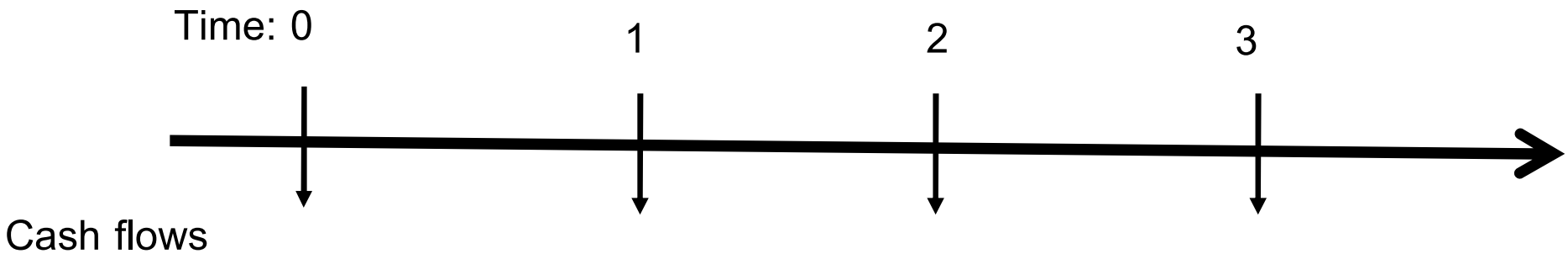
- Which one is preferred?
  - 1) Invest THB100 in government bond with return of 5%
  - 2) Invest THB100 in stock market with possible return of 5%
  - 3) Gamble in Casino THB100 with possible return of 5%

Time Value of Money (TVM) - 2

- Key principles of finance
  - 1) A dollar today is worth more than a dollar tomorrow
  - 2) A safe dollar is worth more than a risky one

TVM

Our main weapon – time line tool



Present Value (PV) & Future Value (FV)

- Present Value vs Future Value

- Discounting vs Compounding

Interest Rate Terminology

Interest Rate Terminology

- What is the average rate of return?

- Simple interest vs Compound interest

Interest Rate Terminology

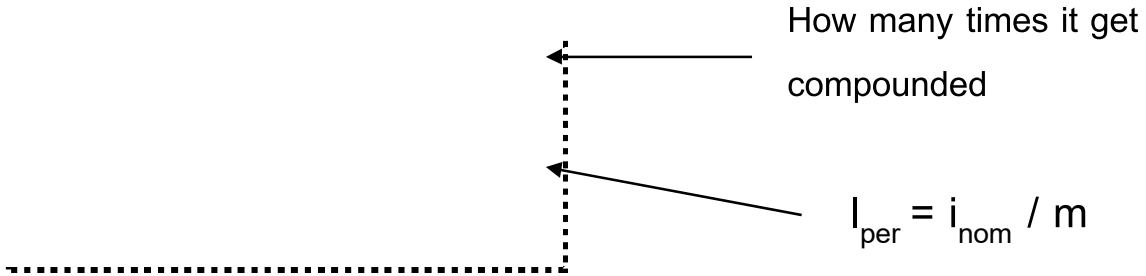
- 1) Nominal interest rate (i_{Nom})
  - Or quoted rate (i_{Quoted})
  - Interest rate usually quoted in terms of Annual Percentage Rate (APR)
  - Must be accompanied by the number of compounding periods per year

$$i_{Per} = i_{Nom} / m$$

- 2) Periodic rate (i_{Per})
  - The rate paid in each period or rate per compounding interval
  - m = # of compounding periods per year

Future Value

- If invest C in a bank account with a return i_{nom} per year, how much would you have after 1 yr, 2 yr,..., t yr?



- If rate compound continuously
  - Use i_{nom} not i_{per} because the time factor (t) wi

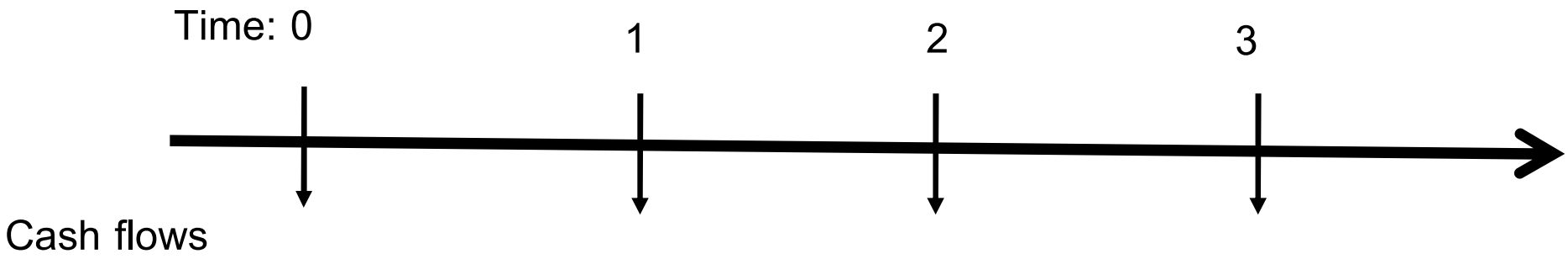
Ex1: Cal FV

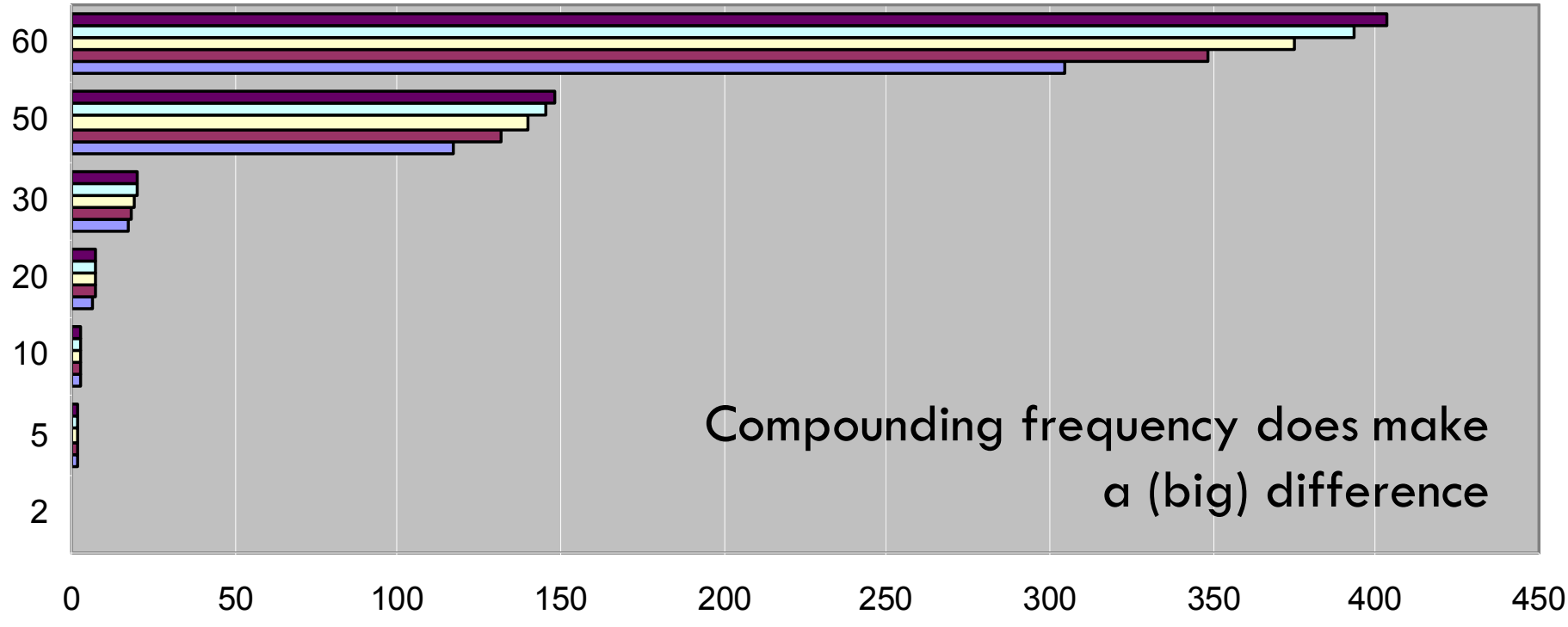
- Cal. future value of THB 100 invested for 1,5,10,30 years at 10% compounded m times per year
  - Compounding frequency does matter

m times per year	t years			
	1	5	10	30
1	110.00	161.05	259.37	1,744.94
2	110.25	162.89	265.33	1,867.92
4	110.38	163.86	268.51	1,935.81
12	110.47	164.53	270.70	1,983.74
365	110.52	164.86	271.79	2,007.73
infinity	110.52	164.87	271.83	2,008.55

Ex2: Cal PV

How PV and FV look like on time line tool?





	2	5	10	20	30	50	60
Infinity	1.221	1.649	2.718	7.387	20.077	148.312	403.097
Daily	1.220	1.645	2.707	7.328	19.837	145.370	393.522
Quarterly	1.218	1.639	2.685	7.210	19.358	139.564	374.738
Semi-Annual	1.216	1.629	2.653	7.040	18.679	131.501	348.912
Annual	1.210	1.611	2.594	6.727	17.449	117.391	304.482

Annual Semi-Annual Quarterly Daily Infinity

Continuous Compounding & Euler Number (1)

- e -> Euler's number
  - Named after Leonhard Euler
  - The value of (1+1/n)^n approaches [e] = 2.7 1828 1828 45 90 45

n	$(1 + 1/n)^n$
1	2
2	2.25
5	2.48832
10	2.59374246
100	2.704813829
1,000	2.716923932
10,000	2.718145927
100,000	2.718268237

  - e also equals to 1 + 1/1! + 1/2! + 1/3! + 1/4! + 1/5! + 1/6! + 1/7! +…..

Continuous Compounding & Euler Number (2)

- Continuous compounding

n	$(1 + r/n)^n$	exp(r) r=10%
1	1.1	
2	1.1025	
5	1.104080803	
10	1.104622125	
100	1.105115698	
1,000	1.105165393	
10,000	1.105170365	
100,000	1.105170863	1.105170918

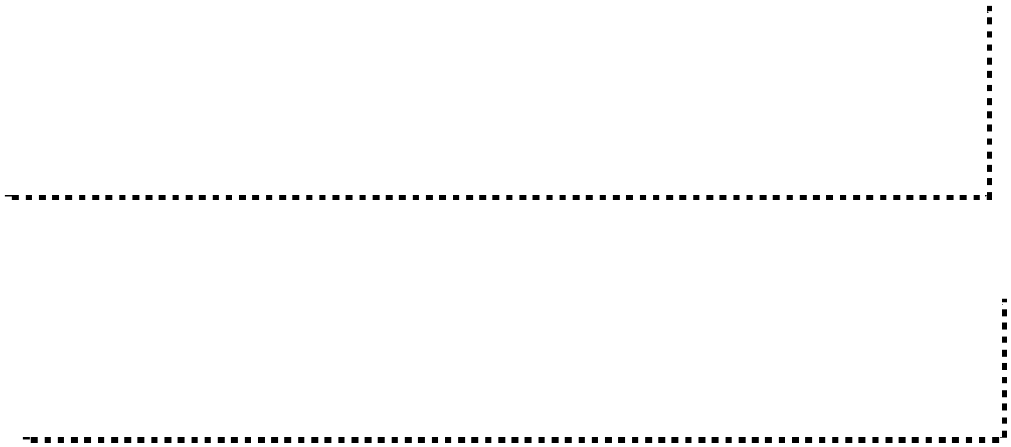
- Approximation works quite well

Which one is preferred?

- Case 1
  - Plan A: I = 10%, m =4
  - Plan B: I = 11%, m =4
- Case 2
  - Plan A: I = 10%, m =4
  - Plan B: I = 9.9%, m =8
  - Plan C: I = 9.7%, m = 365

Interest Rate Terminology

- 3) Effective annual rate (EAR)
  - Annual rate that produces the same result as if it compound once a year
  - Rate effectively earned



Ex3: Compute EAR

- Find EAR for 10% semiannual investment $i_{Per} = i_{nom} / m$
  - EAR $= (1 + i_{Nom} / m)^m - 1$
    $= (1 + 0.1 / 2)^2 - 1$
    $= 10.25\%$

Compounding	m	EAR
Annual	**1**	
Semiannual	**2**	
Quarterly	**4**	
Monthly	**12**	
Daily (365)	**365**	
Infinity	**Inf…**	

Ex4: Compute EAR

- I = 5.00% & m =1
- I = 4.95% & m =2
- I = 4.90% & m =4
- I = 4.85% & m = 32
- I = 4.70% & m = infinity

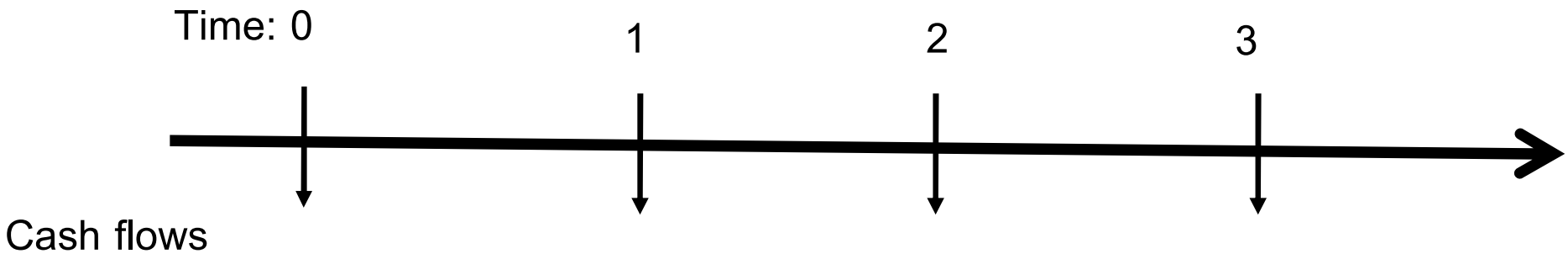
Ex5: Test of concept

- 4.1 Which of the following statements is true?
  - a. The process of discounting is the inverse of the process of compounding
  - b. Present value of an annuity due is always less than the present value of an equivalent annuity at positive interest rates
  - c. Both are true
  - d. Both are false

- 4.2 The concept of compound interest is most appropriately described as:
  - a. Interest earned on an investment
  - b. The total amount of interest earned over the life of an investment
  - c. Interest earned on interest
  - d. None of the above

Recall the formula

How would it look like on time line tool?



Ex6: Test of concept

- If the interest rate is 12%, what is the 2-year discount factor?
  - a. 0.7972
  - b. 0.8929
  - c. 1.2544
  - d. None of the above

- If the present value of the cash flow X is $240, and the present value cash flow Y $160, then the present value of the combined cash flow is:
  - a. $240
  - b. $160
  - c. $80
  - d. $400

Ex7: Test of concept

- At an interest rate of 10%, which of the following cash flows should you prefer?

  Year 1 Year 2 Year 3

  - a. 500 300 100
  - b. 100 300 500
  - c. 300 300 300
  - d. They are the same

Introduction to Annuities / Perpetuities

- Let's think about these financial problems
  - Find PV of a stream of (constant) cash flow, paid annually, forever
  - Find PV of a stream of (constant) cash flow, paid monthly, forever

Perpetuity / Perpetuities

  - Find PV of a stream of (constant) cash flow, paid annually, for X years
  - Find PV of a stream of (constant) cash flow, paid monthly, for X years

Annuity/ Annuities

Perpetuities & Annuities (1)

- Perpetuities is a stream of periodic cash flows, starting at t=1, going forever

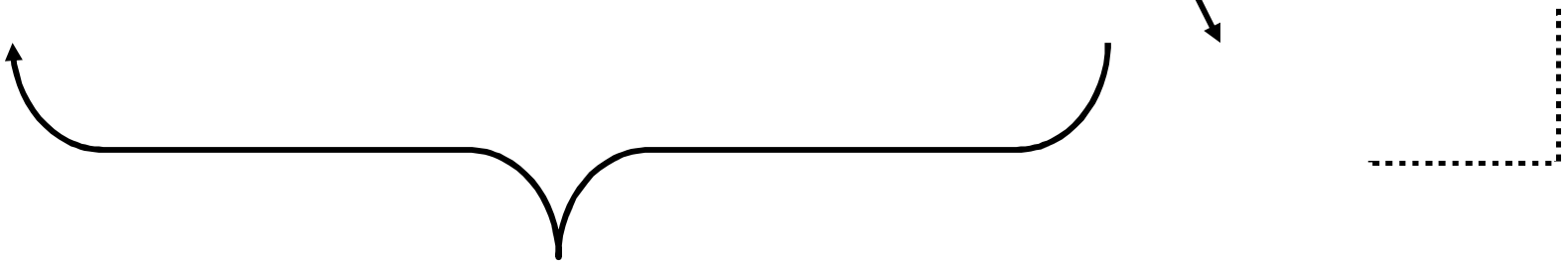
- Annuities is a stream of periodic cash flows, starting at t=1, going for a specified number of periods

Perpetuities Formula

Annuities Formula

Think of Annuities as 2 perpetuities

	Cash flow							
Year	1	2	3	4	5	6	……	PV
1. Perpetuity A	$C	$C	$C	$C	$C	$C	..	
2. Perpetuity B				$C	$C	$C	…	
3. Three-year annuity	$C	$C	$C					



PV = C* Annuities Factor

This is an everyday financial problem

- Mortgage payment
- Car hire-purchase
- Installment loan for your new LCD

- Saving plan for retirement

Q&A