



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. Krongkao 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?

FINRA TRACE Corporate Bond Data

07/25/2008

INVESTMENT GRADE

HIGH YIELD

CONVERTIBLES

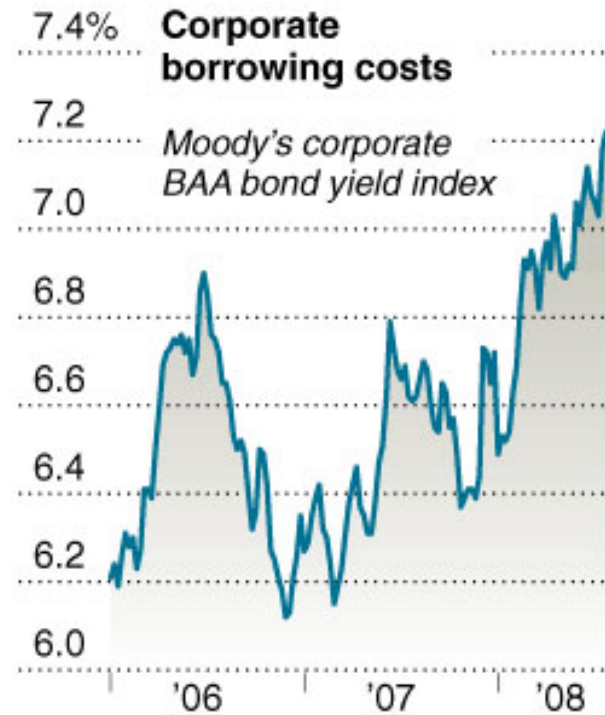
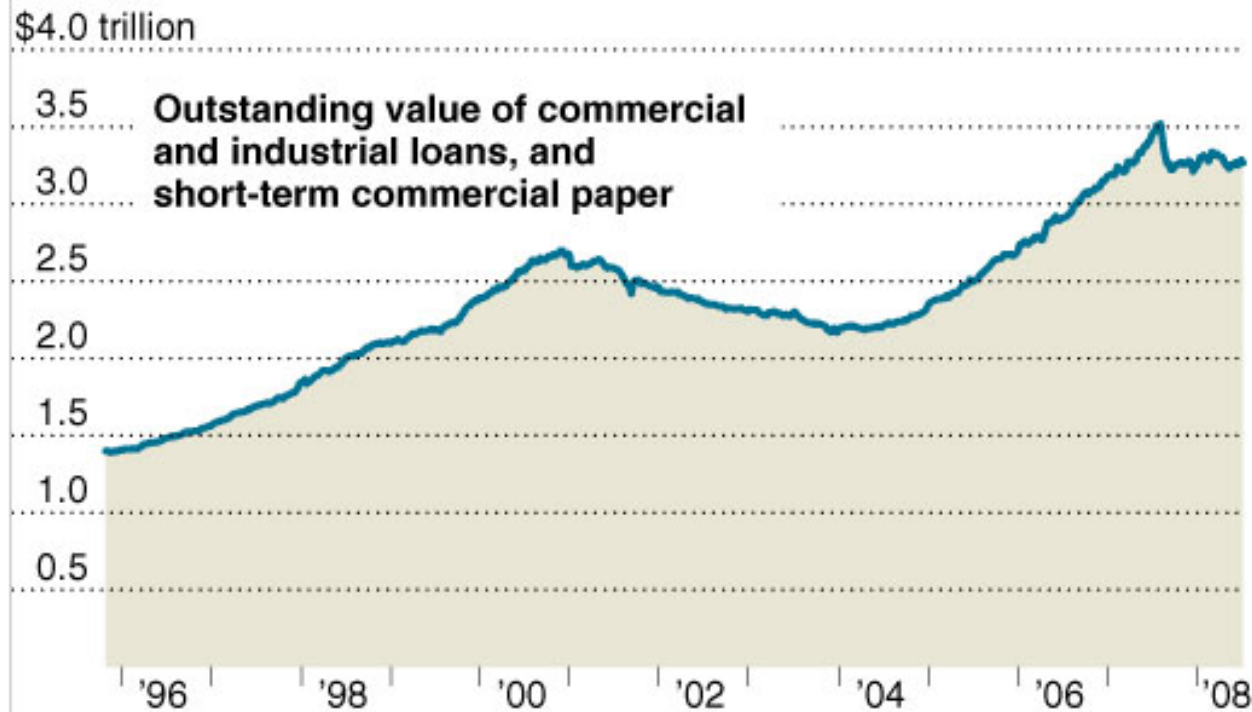
Issuer name (symbol)	Coupon %	Maturity	Credit rating			Price		Yield %
			Moody's	S.&P.	Fitch	Last	Change	
Bank Of America BAC.HDV	5.65%	May '18	Aa2	AA	A+	92.112	-2.15	6.77%
Block Financial HRB.GD	7.88%	Jan '13	Baa1	n.a.	BBB	107.158	+0.62	6.02%
Credit Suisse (usa) CS.OY	5.38%	Mar '16	Aa1	AA-	AA-	96.341	-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%
Wells Fargo & Co WFC.GDT	5.63%	Dec '17	Aa1	AA+	AA	93.599	-2.38	6.55%
Wells Fargo & Co WFC.GDW	4.38%	Jan '13	Aa1	AA+	AA	95.35	+1.05	5.56%

The most active information represents the most active fixed-coupon bonds (ranked by par value traded). Inclusion in Investment Grade or High Yield tables based on TRACE dissemination criteria. 'C' indicates yield is unavailable because of issuer's call option.

Can you understand what is going on in the news?

Credit Difficulties

As banks have tightened lending in response to big mortgage losses, they are issuing fewer loans to companies and are charging more. That could affect companies' ability to hire and expand.



Sources: Federal Reserve Board, via Haver Analytics; Bloomberg

Can you understand what is going on in the news?

STOCK EXCHANGE

Investment opportunity in bear market

By Siriporn Chanjindamane, 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 Oman are shown in this file photo. The company's stock is a top pick among brokers.

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.

Several stock gurus, however, have pointed out that a sharp fall in the stock market always presents an investment opportunity.

According to the Securities Analysts Association's (SAA) consensus, 21 actively traded stocks are undervalued from the average fair value estimated by the association by 14 to 44 per cent, based on their closing prices on Tuesday. Interestingly, 20 of the 21 are on the SET 100

Can you understand what is going on in the news?

CONVERSATIONS

Providing Loans Based on Cash Flow, Not Credit Score

By ROBB MANDELBAUM

Published: May 5, 2010

With the recession having left many banks reluctant to lend, small 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.

Share Your Thoughts

Are 20 percent interest rates and daily payments the answer? Tell us what you think at nytimes.com/boss.

Related

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

On Deck, by contrast, says it scours "the cloud" for the vast information trail that every business now leaves to develop a clear understanding of a potential client's creditworthiness. It seeks businesses with positive cash flow, ideally from a lot of small-ticket transactions.

It takes no collateral, and — here's the biggest difference between On Deck and traditional lenders — the loan is repaid automatically with daily deductions from the borrower's bank account.

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the news?



Ruby Washington/The New York Times

Updated: May 25, 2010

Overview

On Wall Street, his name was legendary. Now it is infamous.

With money Bernard L. Madoff had earned as a lifeguard on the beaches of Long Island, he built a trading powerhouse that had prospered for more than four decades. At age 70, he had become an influential spokesman for the traders who are the hidden gears of the marketplace.



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Montara Oil Spill May Lead Australia to Strip PTTEP of Drilling Licenses

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

ADD TO QUEUE

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[PTT Exploration & Production Pcl](#) may lose the right to drill in Australia after a review of the company's plans to prevent a repeat of its 2009 Montara oil spill off the northwest coast, the energy minister said.

The study of the Thai company's operations is due by the end of the year, [Martin Ferguson](#) said in parliament today. Australia will assess all wells completed off its coast since 2005 and give the agency overseeing offshore petroleum

เศรษฐกิจ-การตลาด

วันจันทร์ที่ 25 ตุลาคม 2553

ส่งต่อ พิมพ์ ขนาดตัวอักษร Reset

คมชัดลึก > เศรษฐกิจ - การตลาด > ข่าวทั่วไป

**สภาผู้ส่งออกกระทบ.ปมบาทแข็งจี้จ่าย
ค่าระวางเรือเป็นดอลลาร์-หวังช่วยลดต้นทุน**

การเงิน - การลงทุน : ถนนนักลงทุน

วันที่ 4 ตุลาคม 2553 02:00

ก้าวใหม่ 'บ้านปู' ปักหมุดบนแผนที่โลก

โดย : กรุงเทพธุรกิจออนไลน์



ชรินทร์ รุ่งกุศลกิจ ประธานเจ้าหน้าที่บริหาร บมจ.บ้านปู

Natural Hedging



Foreign Currency Deposit Account

The depositors can mitigate their foreign exchange risks as well as minimizing any incurred expenses in converting from one currency to another. With Foreign Currency Deposit Account, customers will be able enjoy competitive rate from UOB.

- Type of Account
- Acceptable Currencies
- Documents required
- Initial Deposit
- Maintenance Fee
- Deposit Commission
- Withdrawal Commission
- Foreign Bills for Collection
- Interest Rate

Who does and what is finance?

- What is Finance?

- Finance = the allocation of resources across time and risk

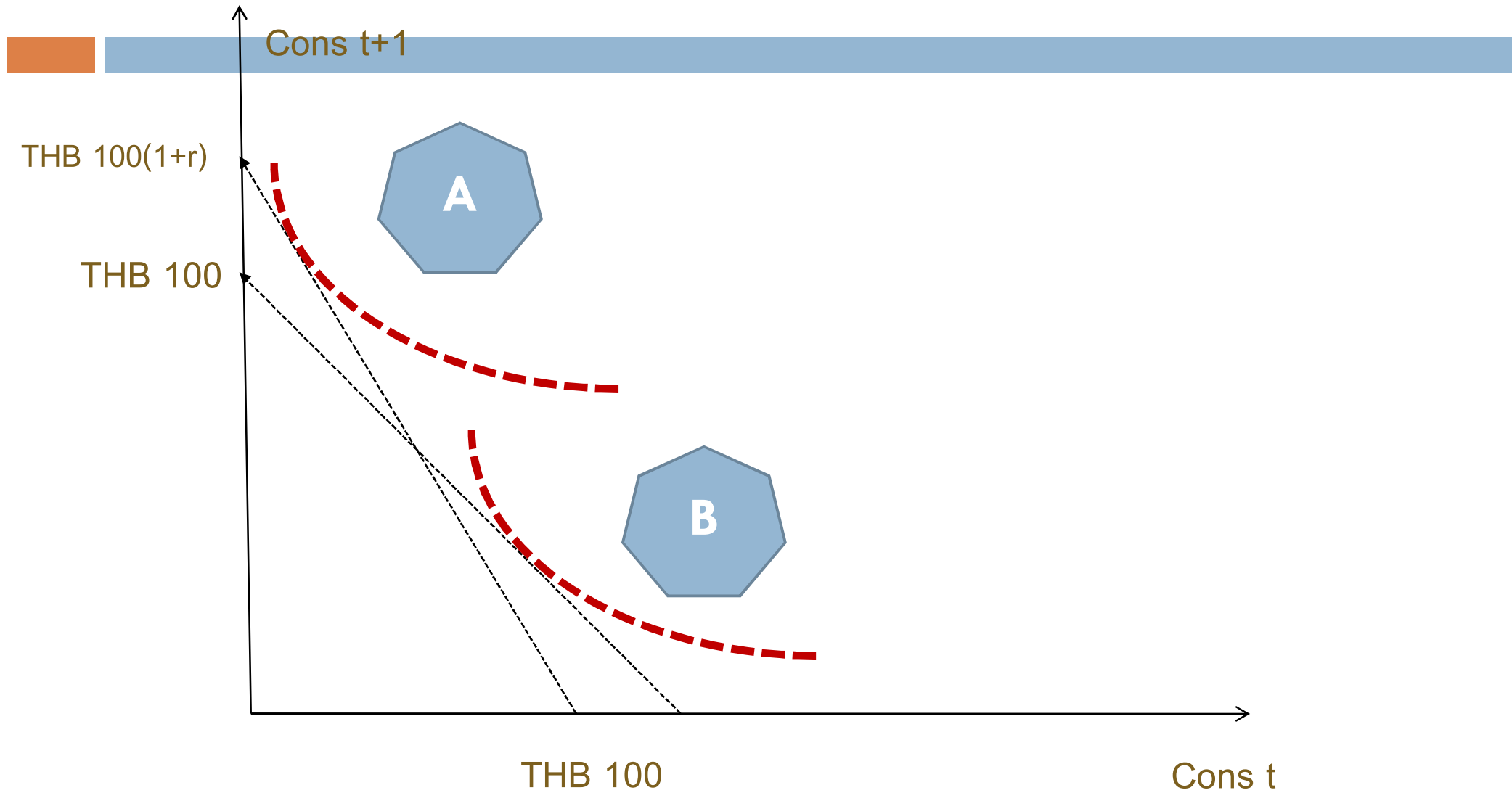
- Who does finance?

- 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

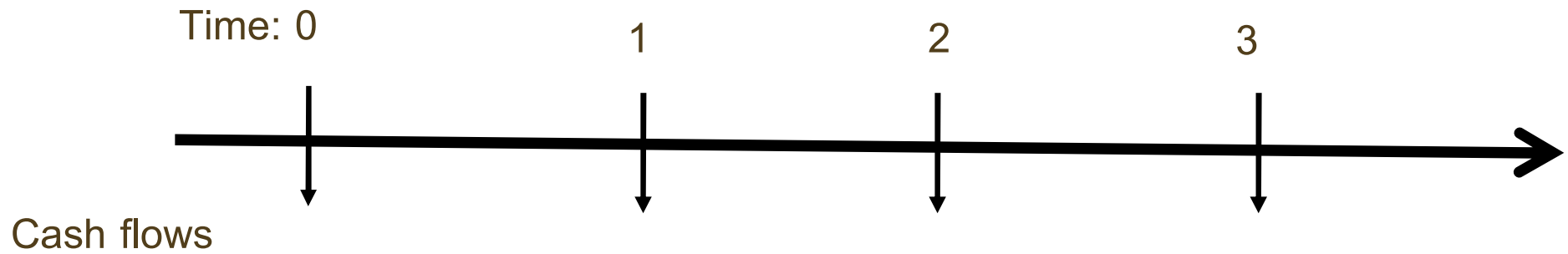
- Which one is preferred?
 - ▣ 1) Invest THB100 in government bond with return of 5%
 - ▣ 2) Invest THB100 in stock market with possible return of 5%
 - ▣ 3) Gamble in Casino THB100 with possible return of 5%

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



Our main weapon – time line tool



Present Value (PV) & Future Value (FV)



□ Present Value vs Future Value

□ Discounting vs Compounding

Interest Rate Terminology

SCB
ไทยพาณิชย์

7.11 ฟากค์
ดอกเบี้ยสูงสุด

ดอกเบี้ยประจำ
ก้าวกระโดด

วันนี้ - 30 กันยายน 2554

2% 3% 7.11%
เดือนที่ 1-4 เดือนที่ 5-8 เดือนที่ 9-11 เดือน

SCB
ไทยพาณิชย์
ไม่ว่าที่ไหน

The advertisement features a man in a light blue shirt pointing towards the interest rate information. The background is a gradient of purple and blue. The text is in Thai, with '7.11' being the most prominent number, indicating a 7.11% interest rate for the final months of the year. The promotion is for a 'Fixed Deposit' (เงินฝากประจำ) with a 'Leap Rate' (ดอกเบี้ยก้าวกระโดด) that increases from 2% to 7.11% over the course of the year.

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

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

- 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?

How many times it get compounded

$$i_{\text{per}} = i_{\text{nom}} / m$$

- If rate compound continuously

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



Ex 1: Cal FV

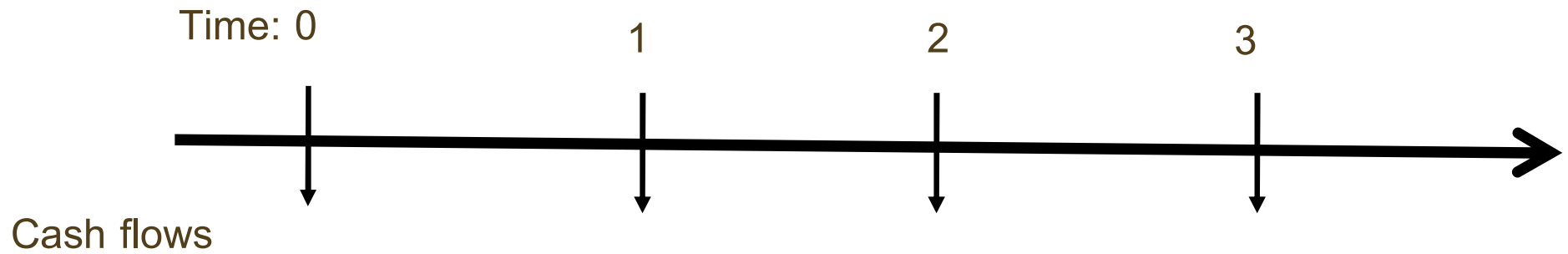
- Cal. future value of THB 100 invested for 1,5,10,30 years at 10% compounded m times per year
 - Compounding frequency does matter

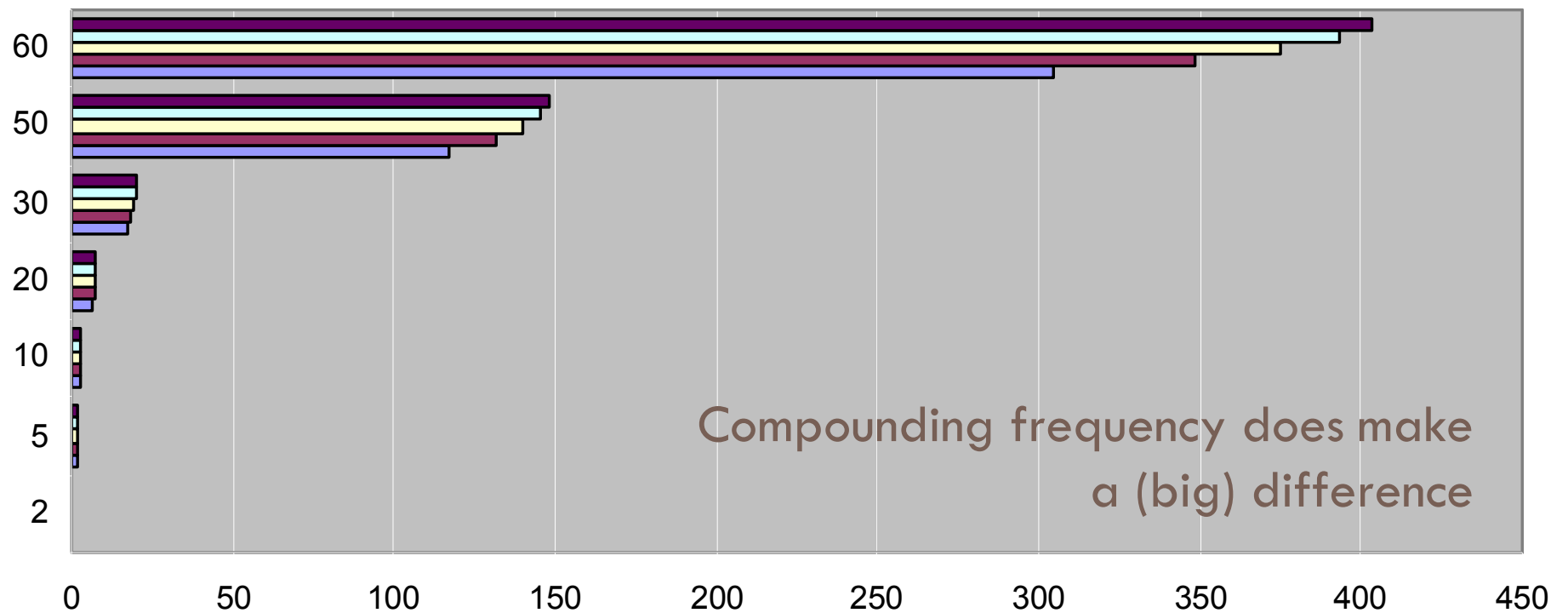
m times per year	t years			
	1	5	10	30
1	110.00	161.05	259.37	1,744.94
2	110.25	162.89	265.33	1,867.92
4	110.38	163.86	268.51	1,935.81
12	110.47	164.53	270.70	1,983.74
365	110.52	164.86	271.79	2,007.73
infinity	110.52	164.87	271.83	2,008.55

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

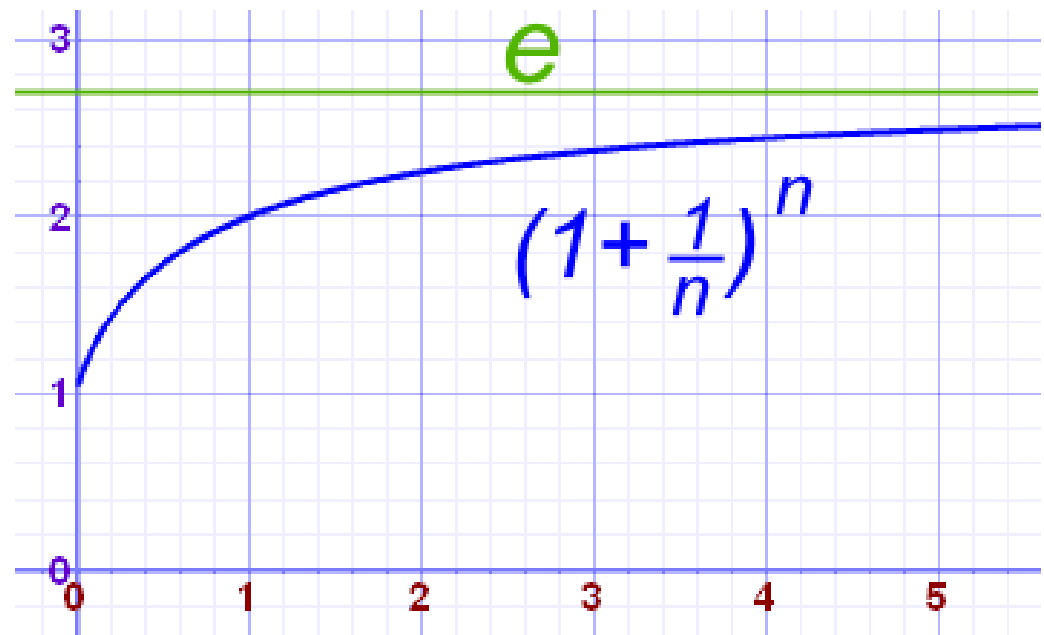
Continuous Compounding & Euler Number (1)

□ e -> Euler's number

▣ Named after Leonhard Euler

▣ The value of $(1 + 1/n)^n$ approaches $[e] = 2.718281828459045$

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 $1 + 1/1! + 1/2! + 1/3! + 1/4! + 1/5! + 1/6! + 1/7! + \dots$

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

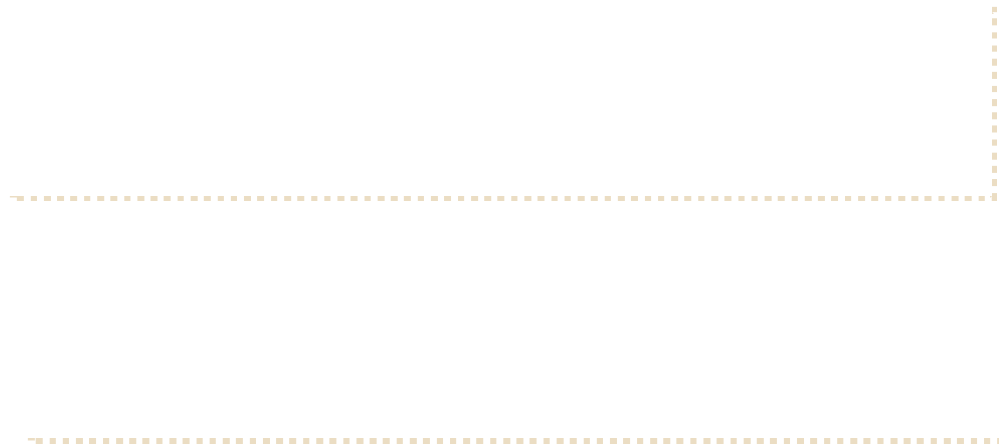
- Plan A: $l = 10\%$, $m = 4$
- Plan B: $l = 11\%$, $m = 4$

□ Case 2

- Plan A: $l = 10\%$, $m = 4$
- Plan B: $l = 9.9\%$, $m = 8$
- Plan C: $l = 9.7\%$, $m = 365$

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

- EAR $= (1 + i_{\text{Nom}} / m)^m - 1$
 $= (1 + 0.1 / 2)^2 - 1$
 $= 10.25\%$

$$i_{\text{Per}} = i_{\text{nom}} / m$$

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

Ex4: Compute EAR

- $i = 5.00\%$ & $m = 1$
- $i = 4.95\%$ & $m = 2$
- $i = 4.90\%$ & $m = 4$
- $i = 4.85\%$ & $m = 32$
- $i = 4.70\%$ & $m = \text{infinity}$

Ex5: Test of concept

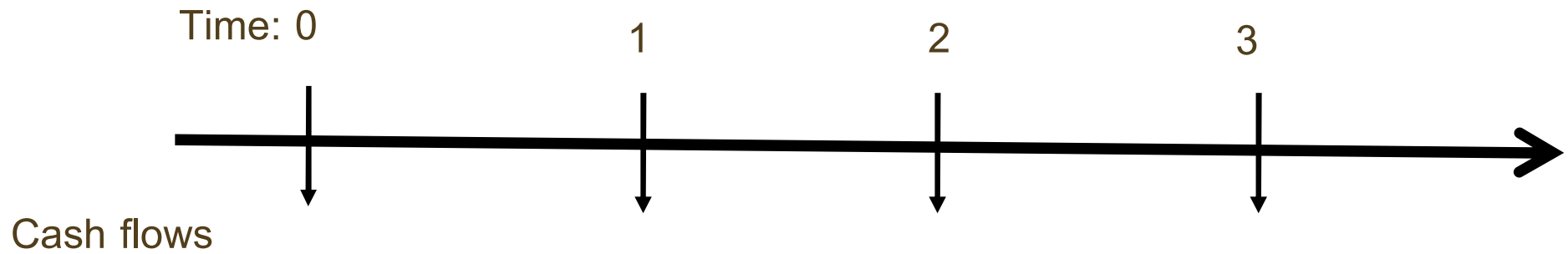
- 4.1 Which of the following statements is true?
 - a. The process of discounting is the inverse of the process of compounding
 - b. Present value of an annuity due is always less than the present value of an equivalent annuity at positive interest rates
 - c. Both are true
 - d. Both are false

- 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

A set of dotted lines forming a grid for writing. It consists of three horizontal lines and one vertical line on the right side, creating three rows for text.

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

- ▣ 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



**Perpetuity /
Perpetuities**



**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

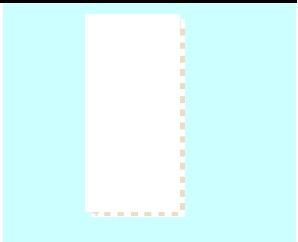
Perpetuities Formula

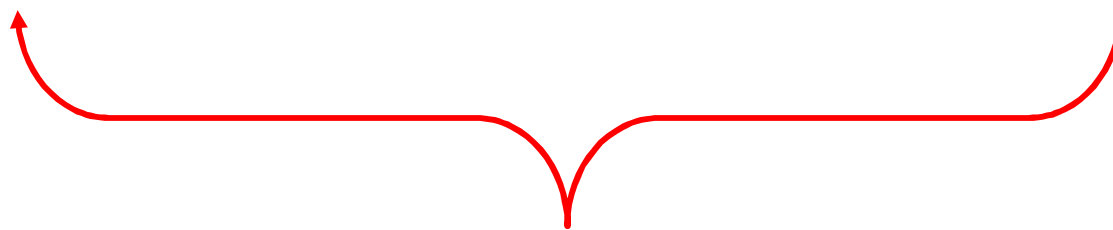


Annuities Formula



Think of Annuities as 2 perpetuities

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



$$PV = C * \text{Annuities Factor}$$

This is an everyday financial problem

- Mortgage payment



- Car hire-purchase



- Installment loan for your new LCD



- Saving plan for retirement



Q&A

