Fulbright Economics Teaching Program   Financial Analysis   Syllabus
Academic Year 2005-2006   Case Study

Fulbright Economics Teaching Program
Academic Year 2005 2006
Fall Semester
Financial Analysis Syllabus

Teaching team

    Instructor : Mr. Nguyen Minh Kieu, Ms. Viktoria Dalko
    Co-instructor : Mr. Diep Dung
    Tutor : Mr. Huynh The Du
    Translator : Ms. Tran Thi Kim Chi

Class meeting time

Weekly Lectures	Date	Time
Lecture 1	Tuesday	2:00 4:30 pm
Lecture 2	Wednesday	10:15 11:45 am
Review or case study	Friday	10:15 11:45 am

Office hours

Office hours for this course are planned on all working days from 4:30 to 6:00 p.m. and from
9:00 to 11:30 a.m. on Saturday. Specific office hours of each teaching team member will be

announced at the beginning of the course. If the office hours scheduled
are not convenient for you, please feel free to make appointments with teaching team members and choose the most
convenient time to you.

Course objectives

To provide participants a framework and tools of financial analysis for policy
planning and decision making
To introduce participants the basic financial concepts of time value of money, risk
and return, cost of capital, capital budgeting, capital structure, dividend policy, debt
and equity financing, and financial models such as discounted cash flows model,
capital asset pricing model, Gordon model, Baumol model, Miller-Orr model,
To instruct participants to use these concepts and models in a real world of business
To provide participants basic concepts and knowledge to study other related courses
including Appraisal of Development Expenditures, Development Finance, Public
Finance.

Course description

This course will be offered on Fall Semester and lasted in 16 weeks with two lectures and
one review or case study each week. Additionally, there are six assignments delivered and
required participants to submit for every two weeks, and 2 exams: one mid-term and one

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final exam undertaken by all participants. Details of each lecture are presented in class schedule (page 3).

Teaching methods

This course is instructed in Vietnamese, however some materials and readings delivered may be in English and Vietnamese. Teaching team members use co-participation as the main teaching method which requires the participants attend all formal lectures, discuss, and ask questions as many as possible and make group discussions after class.
The participants are encouraged to discuss with and raise questions to teaching team members on the issues related to the course.

Readings

There are a lot of readings provided to participants including teaching handouts, lecture notes and reading materials abstracted from the following textbooks and references:

1. Van Horne, J.C., and Wachowicz, J.M., (2001), Fundamentals of Financial **Management, 11** [th]Edition, Prentice Hall
2. Ross, Westerfield and Jordan: Fundamentals of Corporate Finance, Seventh edition,

2005, McGraw-Hill Irwin
3. Ross, S.A., Westerfield, R.W., Jaffe, J.F., (2002), Corporate Finance, 6 [th] Edition, McGraw-Hill and Irwin
4. Brealey, R.A., and Myers, S.C., (1996), Principles of Corporate Finance, 5 [th] Edition, McGraw-Hill
5. Frank J. Fabozzi, Franco Modigliani, Frank J. Jones, Michael G. Ferri: Foundations of **financial markets and institutions, Third edition, 2002, Prentice Hall**
6. Madura, J. (2001) Financial Markets and Institutions, 5 [th] Edition, South-Western College Publishing
7. Shapiro, A. A., (1999), Multinational Financial Management, 6 [th] edition, Prentice Hall.
8. Eun and Resnick: International Financial Management, Third Edition, 2004, Irwin-McGraw-Hill

Course requirements and expectations

It is expected that participants will read the assigned readings before class, regularly attend class, actively take part in class discussions and successfully complete all assignments and exams. Sometimes the readings may not be easy to read and require some subsequent readings for further understanding. Participants may be called upon to comment on the assigned readings or answer the instructors questions. For further readings and advanced materials, please read textbooks in the library or ask teaching team members.

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Course assessment

The performance of participants in this course will be assessed via assignments (15%), case study (15%), mid-term (30%) and final exam (40%). For the assignments, participants may form up discussion groups of 2 3 people but all must write and submit their own wording solutions. For exams, each participant may use only one A4 (both sides) sheet of summary but no other materials or textbooks are allowed during the exams.

Class schedule

This course is designed for16 weeks, including 14 lecture-weeks, 2 exam-weeks, and 6 assignments. Each lecture-week consists of 2 lectures and 1 weekly review or case study, and exam-week consists of exam-review, exam and exam-feedback.

PART 1: INTRODUCTION TO FINANCIAL ANALYSIS

WEEK 1

Lecture 1: Tuesday, 6/09/05
 Topic: Overview of financial analysis
 Readings: Brealey & Myers, chapter 1
 Handouts: Lecture notes N.M. Kieu, Overview of financial analysis
 Instructor: Nguyen Minh Kieu
  Wednesday,

Topic: Overview of financial analysis (cont.)	Wednesday, 7/09/05
Readings: Brealey & Myers, chapter 1	
Handouts: Lecture notes N.M. Kieu, Overview of financial analysis	
Instructor: Nguyen Minh Kieu	
Case study: Friday, 9/09/05	
Topic: Imex. Co Ltd.	
Instructor: Diep Dung, Huynh The Du	

WEEK 2

Lecture 2: Tuesday, 13/09/05 Assignment 1 delivered
Topic: Time value of money and discounted cash flow model
Readings: Brealey & Myers, chapter 2&3
Handouts: Lecture notes N.M. Kieu, Time value of money
Instructor: Nguyen Minh Kieu

Wednesday, 14/09/05
Topic: Time value of money and discounted cash flow model (cont.)
Readings: Brealey & Myers, chapter 2&3
Handouts: Lecture notes N.M. Kieu, Time value of money
Instructor: Nguyen Minh Kieu

Review: Friday, 16/09/05
Topic: Lecture 1&2
Instructor: Diep Dung

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WEEK 3

Lecture 3: Tuesday, 20/09/05
Topic: Risk, rate of return and capital asset pricing model
Readings: Brealey & Myers, chapter 7&8
Handouts: Lecture notes N.M. Kieu, Risk and rate of return
Instructor: Nguyen Minh Kieu

Wednesday, 21/09/05
Topic: Risk, rate of return and capital asset pricing model (cont.)
Readings: Brealey & Myers, chapter 7&8
Handouts: Lecture notes N.M. Kieu, Risk and rate of return
Instructor: Nguyen Minh Kieu

Case study: Friday, 23/09/05 Assignment 1 due
Topic: Tiger Capital Ltd.
Instructor: Diep Dung, Huynh The Du

PART 2: FINANCIAL ANALYSIS AND INVESTMENT DECISIONS

WEEK 4

Lecture 4: Tuesday, 27/09/05 Assignment 2 delivered
Topic: Bond and stock valuation
Readings: Brealey & Myers, chapter 3&4
Handouts: Lecture notes N.M. Kieu, Bond and stock valuation
Instructor:

Nguyen Minh Kieu	**Wednesday, 28/09/05**
	Topic: Bond and stock valuation (cont.)
	Readings: Brealey & Myers, chapter 3&4
	Handouts: Lecture notes N.M. Kieu, Bond and stock valuation
	Instructor: Nguyen Minh Kieu

Case study: Friday, 29/09/05
       Topic: Petrovietnam
Instructor: Diep Dung, Huynh The Du

WEEK 5

Lecture 5: Tuesday, 04/10/05
      Topic: Capital budgeting and decisions
  Readings: Brealey & Myers, chapter 5&6
  Handouts: Lecture notes Financial analysis and investment decisions
Instructor: Nguyen Minh Kieu

       Wednesday, 05/10/05
      Topic: Capital budgeting and decisions (cont.)
  Readings: Brealey & Myers, chapter 5&6
  Handouts: Lecture notes Financial analysis and investment decisions
Instructor: Nguyen Minh Kieu

Case study: Friday, 07/10/05 Assignment 2 due
      Topic: Mercury Project

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Instructor: All teaching team members

WEEK 6

Lecture 6: Tuesday, 11/10/05 Assignment 3 delivered
Topic: Cash and inventory decisions
Readings: Brealer & Myers, chapter 31
Handouts: Lecture notes N.M. Kieu, Cash and inventory management
Instructor: Nguyen Minh Kieu

Wednesday, 12/10/05
Topic: Cash and inventory decisions (cont.)
Readings: Brealer & Myers, chapter 31
Handouts: Lecture notes N.M. Kieu, Cash and inventory management
Instructor: Nguyen Minh Kieu

Case study: Friday, 14/10/05
Topic: Eastern Textile Ltd.
Instructor: Diep Dung, Huynh The Du

WEEK 7

Lecture

7: Topic: Accounts receivable management and decisions
 Tuesday: Readings: Brealey & Myers, chapter 30
 18/10/05 Handouts: Lecture notes N.M. Kieu, Receivables and payables management
 Instructor: Nguyen Minh Kieu

Exam Review Wednesday, 19/10/05
 Topic: Mid-term Exam review
 Readings: Brealey & Myers, chapter 31
 Handouts: Lecture notes N.M. Kieu, Cash an inventory management
 Instructor: Nguyen Minh Kieu

Exam Review: Friday, 21/10/05 Assignment 3 due
 Topic: Mid-term Exam review
 Instructor: Diep Dung

WEEK 8

Exam review:
 Topic:
 Readings:
 Handouts:
 Instructor:

Exam review:
 Topic:
 Readings:

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Handouts:
Instructor:

Review: Friday, 28/10/05
Topic: Mid-term exam
Instructor:

PART 3: FINANCIAL ANALYSIS AND FINANCING DECISIONS

WEEK 9

Lecture 9: Tuesday, 1/11/05
Topic: Financial leverage and capital structure Assignment 4 delivered
Readings: RWJ Chapter 17
Handouts: Lecture notes N.M. Kieu, Operating and financial leverage
Lecture notes N.M Kieu, Capital structure Determination
Instructor: Viktoria

Wednesday, 2/11/05
Topic: Financial leverage and capital structure (cont.)
Readings: RWJ Chapter 17
Handouts: Lecture notes N.M. Kieu, Operating and financial leverage
Lecture notes N.M Kieu, Capital structure Determination
Instructor: Viktoria

Case study: Friday, 4/11/05
Topic: The trouble I have seen, by David N. James (HBR article)
Instructor: Viktoria.

Diep Dung, Huynh
The Du

WEEK 10

Lecture 10: Monday, 08/11/05
    Topic: Corporate senior bond instruments, international banking and money markets, and international bond markets
  Readings: Fabozzi Chapter 20, 21, ER Chapter 6, 7
  Handouts: Lecture notes
  Instructor: Viktoria

Lecture 17: Wednesday, 09/11/05
    Topic: International bond markets (cont.)
  Readings: Fabozzi Chapter 20, 21, ER Chapter 6, 7
  Handouts: Lecture notes
  Instructor: Viktoria

Case study: Friday, 11/11/05 Assignment 4 due
    Topic: Clarkson Lumber Co. by Thomas R. Piper (HBS case)
  Instructor: Viktoria, Diep Dung, Huynh The Du

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WEEK 11
Lecture 11: Tuesday, 15/11/05 Assignment 5 delivered
Topic: Analysis and decisions of short-term finance and planning: cash, liquidity, credit and inventory management
Readings: RWJ Chapter 19, 20, (incl. appendix), 21 (incl. appendix)
Handouts: Lecture notes
Instructor: Viktoria
Lecture 12 Wednesday, 16/11/05
Topic: Analysis and decisions of short-term financing (cont.)
Readings: RWJ Chapter 19, 20, (incl. appendix), 21 (incl. appendix)
Handouts: Lecture notes
Instructor: Viktoria
Case study: Friday, 18/11/05
Topic: How fast can your company afford to grow. by Neil C. Churchill and John W. Mullins (HBR article)
Instructor: Viktoria, Diep Dung, Huynh The Du

WEEK 12
Lecture 12: Tuesday, 22/11/05
Topic: Analysis and decisions of equity financing sources:
primary markets, secondary markets in the United States and around the world
Readings: Fabozzi Chapter

Readings: Fabozzi Chapter 14, 15, 18, 19, ER Chapter 8
Instructor: Viktoria

Lecture 12 Wednesday, 22/11/05
    Topic: Analysis and decisions of equity financing sources
Readings: Fabozzi Chapter 14, 15, 18, 19, ER Chapter 8
Handouts: Lecture notes
Instructor: Viktoria

Case study: Friday, 24/11/05 Assignment 5 due
    Topic: Netscape's Initial Public Offering by W. Carl Kester , Kendall Backstrand
       (HBS case)
Instructor: Viktoria, Diep Dung, Huynh The Du

WEEK 13

Lecture 13: Monday, 29/11/05 Assignment 6 delivered
    Topic: Cost of capital, raising capital and analysis and decisions of dividend
       policy
Readings: RWJ Chapter 15, 16, 18
Handouts: Lecture notes
Instructor: Viktoria

    Wednesday, 30/11/05
    Topic: Cost of capital, raising capital and analysis and decisions of dividend
       policy (cont.)

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Readings: RWJ Chapter 15, 16, 18
Handouts: Lecture notes
Instructor: Viktoria

Case study: Friday, 2/12/05
Topic: Ford Motor Co.'s Value Enhancement Plan (A) by Andre F. Perold
(HBS case)
Instructor: Viktoria, Diep Dung, Huynh The Du

PART 4: FINANCIAL STATEMENTS ANALYSIS

WEEK 14

Lecture 14: Monday, 6/12/05
Topic: Financial statements analysis
Readings: Stickney & Weil, chapter 6
Handouts: Lecture notes N.M. Kieu, Financial statements analysis
Instructor: Nguyen Minh Kieu

Wednesday, 7/12/05
Topic: Financial statements analysis (cont.)
Readings: Stickney & Weil, chapter 6
Handouts: Lecture notes N.M. Kieu, Financial statements analysis
Instructor: Viktoria

Case study: Friday, 9/12/05 Assignment 6 due
Topic: Agifish Co. Ltd.
Instructor:

Instructor:
Diep Dung,
Huynh The

WEEK 15 Du
Exam review: Monday, 13/12/05
Topic: All topics
Readings: All delivered
Handouts: All delivered
Instructor: All teaching team members
Exam review: Wednesday, 14/12/05
Topic: All topics
Readings: All delivered
Handouts: All delivered
Instructor: All teaching team members

WEEK 16
Office hour: Thursday, 22/12/05
Topic: All topics
Readings: All readings

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Handouts: All handouts
Instructor: All teaching team members
Final Exam: Friday, December 23, 2005
Instructor: All teaching team members

Assignments

Assignment	Topic	Delivery Date	Due Date	Prepared by
1	Time value of money Risk, return and CAPM	13/09/2005	23/09/05	N.M. Kieu
2	Bond and stock valuation Capital budgeting	27/09/2005	07/10/05	N.M. Kieu
3	Cash and inventory management Receivables management	11/10/2005	21/10/05	N.M. Kieu
4	Operating and financial leverage Capital structure	01/11/2005	11/11/05	Viktoria
5	Short-term financing determination Long-term financing determination **Ginny's Restaurant by Mark** Mitchell (HBS exercise)	15/11/2005	24/11/05	Viktoria
6	Dividend policy Financial statements analysis	29/11/2005	09/12/05	Viktoria

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IMEX CO., LTD.

1. Settings

Imex Co. is a firm newly equitized from a state owned enterprise. Its predecessor is the Foreign Trade Company founded in 1975, whose main function was to implement the foreign trade plans with countries in the Economic Mutuality Council. By the end of the 1980s, as foreign trade activity changed, the firms functions also changed to adapt to the new circumstances. The firm was renamed as Imex and began to specialize in import and export. After only two years, Imex has become a strong, large-scale enterprise operating in almost all areas of business, but it is still principally involved in import and export with its two main product lines being the export of rice and the import of fertilizer. Since then, the Imex brand name has become well known.

Imex operated efficiently until 1997. However, when the financial crisis arose in East Asia and around the world, many held the opinion that import and export activity would face many difficulties and risks. Based on this view, Imex decided to diversify into the production of import substitutes and to invest in infrastructure. All the resources taken from import and export were used in these activities. Since then, goods manufactured at high cost have proven to be uncompetitive and infrastructure projects entered into on impulse have faced many obstacles in investment procedures and site clearance, resulting in

continual losses for the firm.

Since the firm did not track its business activities or prepare its financial plans in a clear, systematic way (investments were made on impulse; imports for sale were confused with imports for production, building factories or infrastructure works; production costs were confused with investment costs), it was not able to assess which operations were not efficient. It seemed that the firm operations were inefficient in all areas. The reason given for Imexs slowdown was the financial crisis.

After 5 years of continuing losses, Imex was equitized at the beginning of 2003 in the hope of creating a new momentum to overcome its difficulties. The government holds 30% of the shares. Despite having made losses for a long time, Imexs import and export activities have actually been developing very well, and the brand name Imex is strong and well known. Besides the traditional products rice and fertilizers Imex has promoted the export of seafood and import of household appliances. Import and export goods other than rice and fertilizer account for nearly 50% of total import and export value. Accordingly, the brand name Imex was left unchanged when the firm was equitized.

As a financial expert and an experienced manager, Mr. An, the new CEO, attributes one reason for the above disorder to accounting practices. Thus, he is looking for competent financial specialists to work with him to prepare a plan to rearrange the finance and accounting department according to the joint stock company model, in which accounting and finance are clearly separated and each play an important role.

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This plan is on the agenda of the Board for their upcoming meeting. It is predicted that the plan will be hard to pass, because among the 12 Board members there are five members (former leaders of Imex, including the Chairman of the Board) who are used to the current style of financial management and are determined to resist changes. Three other members, who have just bought shares in IPO, support the changes. The remaining four members have not yet made up their minds and will lean towards the side with the most persuasive arguments. They are, however, influenced by the old system. According to Imexs articles, the plan will be adopted if more than 50% of the Board members agree. If 50% of the members agree and 50% of them disagree, the group including the Chairman will prevail.

2. Concepts of the role of accounting and finance

In a centrally planned economy, production is the most important element and is seen as being the center of economic activity. Financing, distribution, and consumption are regarded as insignificant subordinate functions to serve production. Accounting is seen as the recording of what has actually happened in the firm calculated in terms of money. Financial management is a vague concept and is unnecessary, since the financial plan has been decided and handed down from above, attached to the production plan. This lack of clarity regarding the role of finance results in the misunderstanding that accounting and finance are the same. Recording activities that have actually happened for managers who already know about them (they decided to carry out those activities) and thus are not interested, is the daily work of the accounting department. In addition, the role of the chief accountant is seen as being the person who, together with the CEO, goes to apply for budgetary

capital
from
the   With the transition to a market economy, firms have gained autonomy in
governinge anfd implementing their production plans, but the old management style is
still influential and firms do not attach importance to financial management. As a
result, many managers cannot understand financial statements even after 15 years of
transition to the market economy. This includes the majority of the Board members
of Imex, including the former CEO of the pre-equitization Imex.

3. The current model and financial structure of Imex

3.1 The main activities

Imexs business activities include import, export, production, and
infrastructure investment.

Import and export: These are the main functions of Imex, principally the
export of rice and seafood, and the import of fertilizer and household appliances. In
principle, Imex purchases rice for export under a procurement contract with farmers.
However, the two parties often violate the contract. When prices go up, farmers break
the contract; and when the price falls, the firm finds a way not to buy at the agreed
price. For this reason, rice procurement is often carried out through intermediaries.
The procurement of seafood is in a similar situation. Fertilizers and household
appliances are sold through agents. Import and export are the most efficient (i.e.
profitable) operations, accounting for more than 40% of annual revenue.

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Production: Imex owns a cement plant with a capacity of 150,000 tons per year, but actual production and sales amount to only 100,000 tons per year, while inventories are high. Collection from sales is slow, and accounts receivable are considerable. The average collection amounts to 150 days. In addition, Imex opened a ceramic tile mill with a capacity of 2 million m ^{2} per year last year. The investment capital in the plant is 98 billion dong, and it is at the stage where the firm is still exploring the market. Production activity constitutes 40% of revenue of the firm, but its cost amounts to more than 50% (even after excluding administrative costs in the head office). The only production activities which show a profit are the rice husking plant and seafood processing plant.

Infrastructure investment: Imex is undertaking a build-operate-transfer highway project. The project is progressing slowly because the compensation and site clearance (right-of-way acquisition) have yet not been finished. Three years have elapsed since the deadline for completion, but the work realized only amounts to 30% of the total project. In addition, Imex is engaged in a project for a 400-apartment complex for sale. The total investment is around 100 billion dong. The house is still under construction with 80% of the total work having been completed, but all the apartments have already been sold. Imex has collected 90% of the proceeds; the remaining 10% will be collected as the building is handed over to its occupants. The construction of the apartments has been highly profitable and hence Imex plans to develop another project ten times the scale of the current one.

Capital contributed to joint ventures: Imex has two joint ventures. One is a feed mill with a capacity of 20,000 tons per year. The feed mill has been operating

efficiently, and Imex owns 30% of it. The other joint venture is a chemical fertilizer 70%. The fertilizer plant has been operating for 3 years but its products are poor quality, priced high, and cannot be sold. Imex has contributed into joint ventures mainly with its land use right and its deferred-payment purchases of equipment from joint venture partners under the commercial banks guarantee.

Securities investment: Imex acquired securities one year following the opening of the securities market; at that time, the VNINDEX was 540.

3.2 Financial management

Although the government holds 30% of the shares, Imex is an independently managed enterprise with regard to finance. The Law of Enterprises governs the firms operation.

3.3 Organization of the accounting and finance department

The accounting and finance department of Imex can be divided into three levels: managers, consolidated accounts, and detailed accounting. The accounting operation is divided into groups of accounts. Each accountant is responsible for keeping track of certain accounts.

The managers of the accounting and finance department: The chief accountant has overall responsibility for detail accounting and the consolidated accounts, but the most important duty before equitization was to work together with the CEO to apply for budgetary capital (government funds) and investment projects.

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The three vice-chief accountants are in charge of current assets, fixed assets, and liabilities, respectively.

The consolidated accounting section has responsibility for preparing financial statements and annual financial plans.

The accountants (detail accounting) are assigned to keep track of specified accounts as follows:

Cash and bank deposits
Inventories
Accounts receivable
Investments (securities, joint-venture capital)
Fixed assets
Expenditures
Accounts payable
Tax and contribution to budgetary capital
Bank loans
Project accounting (one accountant is in charge of each project)
Treasurer

3.4 The duties of the accounting and finance department

To organize and implement the accounting work in compliance with regulations

To make accounting and finance plans to facilitate the firms operations

3.5 The actual operations of the accounting and finance department

The actual operations focus only on accounting, while the financial management function hardly exists.

4. The stakeholders requests

4.1 The CEOs requests

Faced with the urgent need for a rearrangement of the accounting and finance department, and knowing that the plan will be difficult to have adopted, the CEO needs to have a compelling plan to get the support of the four wavering members and to persuade the conservative members. Thus, it is necessary to make two points clear in the plan:

How to help the Board members to distinguish between accounting, financial accounting, and financial management, and hence to clarify the role of each function, especially that of financial management
How to organize the accounting and finance department of the firm

4.2 The Boards requests

Most of the Board members are used to the current style of management and do not want to change it. Faced with the prospect of changes in the firms accounting and

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finance department, the conservative members want to show that the current management is proper and changes are not necessary. Hence, they want to hire some financial experts to put forward the arguments for the current system.

Suggested questions

1. What would you do if Mr. An, the CEO, asked you to make a plan to reform the accounting department. In contrast, what would your arguments be if the Board hired you to support the current management style.

2. Many people have suggested that Imexs operations are not efficient because its investments have not been reasonable. Do you think that this is correct. What should Imex do to make itself efficient.

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TIGER CAPITAL LTD.

In preparation for the start up of Tiger Capital, an investment fund in Vietnam, the founders
of the fund are concerned about the market efficiency and the ability to value financial assets
in Vietnam. Mr. Nam Viet, who has been working as a financial expert for almost 30 years in
market assessment and financial asset valuation for international investment funds in East
Asia, has been assigned to explore the market. He is well known in the Tokyo, Hong Kong,
Bangkok and Manila exchanges for his valuable analyses.

Mr. Nam Viets first task is to gather the information needed on the Vietnam stock market in
relation to his assignment. He has the following information:

1. The formation and development of the Vietnam securities exchange

1.1 The formation of the Vietnam securities exchange

During 1995-1996, Vietnams economy had changed considerably after a decade of doi moi.
However, the model of state owned enterprises (SOEs) had revealed inadequacies. Many
SOEs were in distress and in need of rearrangement. At that time, the privatization and
equitization of SOEs were not widely accepted. Nevertheless, the government promulgated
the first legal document on equitization, Decree 28/CP, on May 7, 1996 regarding
transforming some SOEs into corporations to meet the requirements of doi moi,
industrialization, and modernization of the country. Only 10 SOEs were equitized during the
following two years. To promote the process, the government issued

following two years. To promote the process, the government issued
Decree 44/1998/ND-CP to replace Decree 28/CP to equitize almost all SOEs of non-targeted
industries within 5-10 years. In the same effort, the foundation of a securities market was
proposed to create a favorable environment for equitization promotion.

From another angle, to achieve the targeted growth rate of 7-7.5% per year in this period, the
demand for funds for economic development was huge. The banking system had just passed
through the shock of 1989 and started embracing the market mechanism, and hence, it could
not play a significant role yet. Bank credits constituted only just over 10% of the total funds
for the economy. A new channel of funds was required to meet the demand for investment
funds.

The two factors above led to the idea of developing a securities market to promote
equitization and create a new channel of funds. The government issued Decree 75/CP on the
establishment of the Securities Commission on November 28, 1996. Decree 48/1998/ND-CP
regarding securities and a securities market was promulgated on July 14, 1998. After almost
5 years of arrangement and many delays, the Vietnam securities market was officially
established on July 20, 2000, with the exchange center located in HCM City.

1.2 Trading behavior

After almost 3 operating years and 600 trading sessions, the overall picture of the market is as
follows:

> Investors mainly focus on trading stocks, whose transaction value amounts to 90% of
> the total market transaction value, while trading in bonds is quiet. However, the value
> of listed stocks comprises only 30% of total market value while the value of listed

Nguyen Minh Kieu/Huynh The Du   1   Translator: Kim Chi
                                                                              Editor: Andy Richardson

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bonds amounts to 70%. The total value of listed securities is currently 6,600 billion dong including above 1,000 billion dong of 21 company stocks. Seven hundred and fifty trading sessions have been held safely with a total transaction value of 3,700 billion dong. [1]

The VNINDEX started at 100, reaching a peak of 570 nearly one year later, and then went down continuously sinking to 151.48 in July 14, 2003. The chart of the VNINDEX behavior is shown in Appendix 1.

2. The market structure

2.1 The commodities and the issuers

Types of securities: There are three types of securities including 21 listed company stocks, 40 government bonds, and 2 corporate bonds. Derivatives are not allowed in Vietnam yet.

All of the 21 listed companies are former SOEs that have been equitized.

The total registered capital is 1,046 billion dong. The value of the stock market is 2,081 billion dong, equivalent to 134 million dollars, or 0.37% of GDP, and 0.65% of the total bank loan balance in the Vietnamese banking system.

The value of the bond market is 4,285 billion dong, or less than 1% of GDP, including 40 government bonds with a value of 4,127 billion dong, 2 corporate bonds issued by the Bank for Investment and Development of Vietnam (BIDV) with a value of 158 billion

dong.

2.2 Investors

Individual investors: 14,500 accounts have been opened in the securities companies, but only about 1,000 accounts trade regularly.

Institutional investors: There are very few institutional investors like Dragon Capital. At the time of writing there are no active securities investment funds. The National Securities Commission has just licensed the establishment of the Vietfund Management Company (VFM); a joint venture between Saigon Thuong Tin Bank (Sacombank) and Dragon Capital with a legal capital of 8 billion dong.

2.3 Intermediate institutions

There are nine securities companies.

Settlement bank: BIDV

There is no organization to assess the market.

2.4 Market information

Under current regulations, when a firm issues its securities, it must submit two important documents (among others) to the National Securities Commission, namely the Disclosure and

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[1]Reported by the National Securities Commission on the review of three years operation of Vietnam Securities Exchange.

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                                                                       Editor: Andy Richardson

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the financial statements certified by an accepted audit company for the last two continuous years. The purpose of these two documents is to publicize all information on the firms performance in the past, present, and future. All information on the firms operations is announced in the shareholders conferences.

In theory, if these two documents are clearly and objectively prepared, all investors can find information about the past, present, and future operations of the listed firm by looking at them. However, investors are concerned about the reliability of the information, especially in the firms development strategy and audited financial statements.

Financial statements

Despite being an important source of information on firms, many firms do not focus on the preparation of transparent financial statements, which are presumably provided to the tax office, banks, and the Securities Commission (for listed companies). Thus, firms strive to make their financial statements as beautiful as possible.

The competent agencies receiving financial statements are little concerned about analysis of financial statements since they regard this as the auditors task. In addition, their ability to analyze and benchmark criteria to make persuasive conclusions is limited.

Regulations on the preparation and audit of financial statements have been specified in detail, but their enforcement is not strict. If regulations were strictly enforced, firms would not be able to manipulate their financial statements, but if a listed firm does not wish to follow some principles in accounting, it can do so.   [2]In practice, many firms have manipulated financial statements.

Information on the firms development strategy

Basically, the firms development strategy is its investment plan, or its plan to implement investment projects. The point is how reliable are the projects. Is a project with very high NPV or IRR reliable. Under current conditions, as both forecasts and standards for project valuation are inadequate, one can assert that project appraisal results will not be reliable. Therefore, predictions of the firms development based on their announced plans are not reliable.

2.5 Trading mechanism

Transactions are made by matching orders in the market or by agreement.

According to regulations, securities prices are not allowed to fluctuate totally freely; prices in a trading session should fluctuate by no more than 5% from the previous trading session (the range of fluctuation allowed in the period when the market was newly established was only 3%).

3. Valuation of financial assets

3.1 Developing a portfolio

Is it possible to design portfolios that can eliminate all specific risks with 21 stocks, 40 government bonds, and 2 corporate bonds. Looking at the fluctuation of the 21 stocks

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[2]Phuong Thao, The tricks of listed companies to manipulate financial statements, Securities Investment, 185, 23/6/2003, p. 6.

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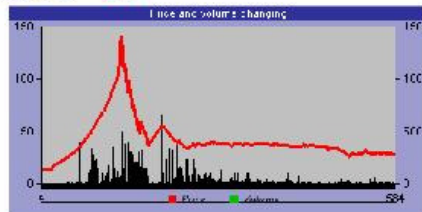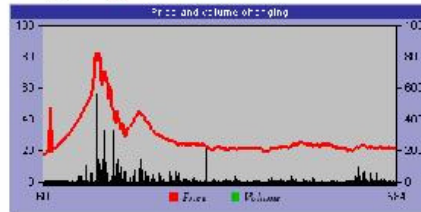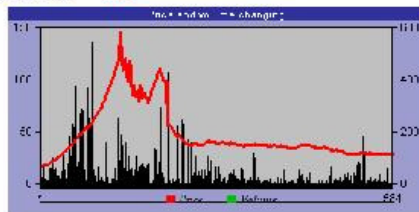Academic 2005-06   Case Study

(Appendix 1), Mr. Nam Viet finds that virtually all of them have the same trend, and hence, he wonders how they correlate.

3.2 Calculating asset valuation indices

As an experienced specialist in financial asset valuation, Mr. Nam Viet regards the capital asset pricing model (CAPM) as the most easily applicable and persuasive model for managers. Therefore, he decides to base his calculations on this model, and modify the results with his experiences to have the closest-to-reality outcomes when he determines the components in the formula: $r = r_f + (r_m - r_f)$.

Information on r_f

In Vietnam, government bonds have been issued since before the security market came into existence. Government bonds are issued through the local treasury system and the open market. Surprisingly, the coupon rate must compete with deposit rates offered by Vietnamese commercial banks; in other words, the difference between coupon rates and bank deposit rates for the same term is negligible. For example:

> On June 26, 2000, the BIDV offered bonds with a 5 year term and a coupon payable in advance at the beginning of each year. Interest for the first year was 6.55% with interest for the following years being equal to the 12-month deposit rate (payable in advance) plus 0.5%, the rate to be announced on January 26 every year. As a result, the BIDV sold a large volume of bonds at par value. The equivalent interest rates paid at the end of period were 8.01% in 2002 and 8.86% in 2003.

> On July 28, 2000, the government issued 5-year

On July 28, 2000, the government issued 5-year
bonds with a coupon of 6.5% payable

In August 2003, the government issued 5-year bonds with a fixed coupon of 8.7% payable at the beginning of each year. [3]

Information on r _m_

Looking at the behavior of the VNINDEX it is difficult to calculate a market interest rate. If we take a start point of July 28, 2000, and an end point of July 19, 2003, the nominal average increase in the market rate is 14.4%, and the inflation-adjusted increase is 13%. On this basis Nam Viet has suggested a risk premium, based on his experience, of 8% for the Vietnamese market.

Beta coefficient (   )

Although it is not reliable to derive a beta coefficient within 60 months, some securities companies have calculated betas for listed companies as shown in Appendix 2.

The above is the information that Mr. Nam Viet has collected on financial asset valuation in Vietnam. Now, he is going to analyze and make conclusions to present to Tiger Capitals founders.

Questions

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[3] http://www.tvcstock.com/TVH/BanTin/BTN23042003.mht
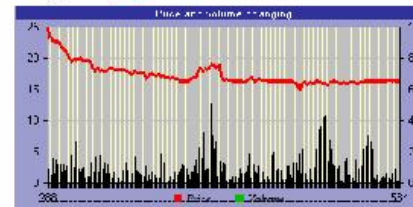
Nguyen Minh Kieu/Huynh The Du   4   Translator: Kim Chi
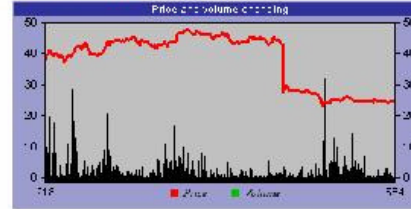   Editor: Andy Richardson

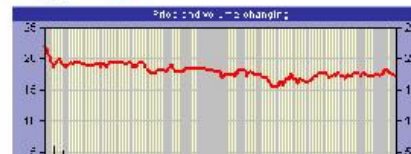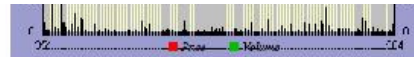Fulbright Economics Teaching Program Financial Analysis   Tiger Capital Co., Ltd
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1. Some people regard the Vietnamese securities market as being of semi strong-form efficiency. Do you think this is right. Present your argument.

2. Many people think that it is impossible to value financial assets in Vietnam, even though they are being traded normally. What do you think we need to do to value financial assets in Vietnam.

3. Currently the Vietnamese banking system has been using short-term funds to make medium and long-term loans. This entails a significant risk. Do you think the securities market can replace the banking system in supplying long-term funds in Vietnam.

Nguyen Minh Kieu/Huynh The Du 5

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Appendix 1:

BEHAVIORS OF VNINDEX AND 21 STOCKS

Vietnam Stock Index Diagram

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Tên công ty: **BPC**

Tên công ty: **BTC**

Tên công ty: **AGF**
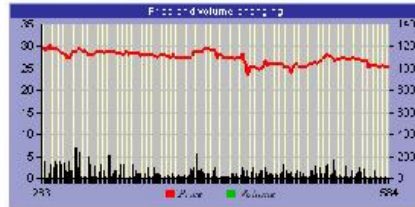
Tên công ty: **SAV**

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Tên công ty: **VTC**

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Appendix 2:

STATISTICS OF STOCK INDICES

No	Stock	Beta	Alpha	RSquare	E(Rs)	STD(Rs)	E(Rm)	STD(Rm)	COV(SM)	Corr Coe(sm)
1	AGF	0.349	0	0.122	-0 0.013	-0.001		0.013	0	0.349
2	BBC	0.385	-0	0.148	-0.002 0.014	-0.001		0.014	0	0.385
3	BTC	0.002	-0	0	-0.076 0.264	-0.001		0.264	0	0.002
4	BPC	0.009	-0	0	-0.012 0.104	-0.001		0.104	0	0.009
5	BT6	0.387	-0	0.15	-0.001 0.013	-0.001		0.013	0	0.387
6	CAN	0.003	-0	0	-0.017 0.127	-0.001		0.127	0	0.003
7	DPC	0.264	-0	0.07	-0.002 0.016	-0.002		0.016	0	0.264
8	GIL	0.011	-0	0	-0.007 0.08	-0.001		0.08	0	0.011
9	GMD	0.019	-0	0	-0.004 0.06	-0.001		0.06	0	0.019
10	HAP	0.03	-0	0.001	-0.011 0.116	0.001		0.116	0	0.03
11	HAS	0	-0	0	-0.089 0.283	-0.001		0.283	0	0
12	KHA	0.009	-0	0	-0.004 0.07	-0.001		0.07	0	0.009
13	LAF	0.019	-0	0	-0.018 0.138	-0		0.138	0	0.019
14	REE	0.575	-0	0.331	0 0.027	0.001		0.027	0	0.575
15	SAM	0.571	0	0.326				0.026	0	

16	SGH	0.011	-0	0.000	-0.021 0.14 -0.002			0.14		0.011
17	SAV	0.364	-0	0.026	-0.001 0.013 -0.001			0.013	0	0.364
18	TMS	0.064	-0	0.004	-0.004 0.079 0.001			0.079	0	0.064
19	TRI	0.278	-0	0.078	-0.001 0.015 -0.001			0.015	0	0.278
20	TS4	0	-0	0	-0.038 0.19 -0.001			0.19	0	0
21	VTC	-0	-0	0	-0.064 0.251 -0.001			0.251	-0	-0

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Appendix 3:

TEN STOCKS WITH THE LARGEST TRADING VOLUMES

1. By transaction volume (in number of shares)

No.	Stock	No. of Trading Sessions	Transaction Volume	Weight (%)	Session Average
1	SAM	449	14,265,500	28.665	31,771
2	REE	449	13,070,100	26.263	29,109
3	BBC	238	4,295,000	8.63	18,046
4	TMS	446	2,728,000	5.482	6,116
5	HAP	446	2,262,300	4.546	5,072
6	AGF	171	1,818,800	3.655	10,636
7	SAV	166	1,665,000	3.346	10,030
8	TRI	234	1,648,800	3.313	7,046
9	BT6	178	1,301,700	2.616	7,312
10	SGH	304	917,900	1.844	3,019

2. By transaction

2. By transaction value (in million dongs)

No.	Stock	No. of Trading Sessions	Transaction Value	Weight (%)	Session Average
1	SAM	449	558,878	31.635	1,244,717
2	REE	449	439,680	24.888	979,244
3	TMS	446	164,052	9.286	367,831
4	HAP	446	136,782	7.742	306,686
5	BBC	238	92,656	5.245	389,310
6	AGF	171	54,245	3.07	317,222
7	TRI	234	46,072	2.608	196,888
8	LAF	390	43,760	2.477	112,205
9	GIL	232	35,525	2.011	153,125
10	SAV	166	33,713	1.908	203,090

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Appendix 4:

LISTED COMPANIES AND SECURITIES COMPANIES

1. Listed companies

AGF : An Giang Fishery Import-Export Joint Stock Company
BBC : Bien Hoa Confectionery J. S. Company
BPC : Bim Son Packing J. S. Company
BT6 : Concrete 620- Chau Thoi J. S. Company
BTC : Binh Trieu Mechanic & Construction J.S. Company
CAN : Ha Long Canning J. S. Company
DPC : Da Nang Plastic J. S. Company
GIL : Binh Thanh Manufacturing and Trading J. S. Company
GMD : Transportation Union Agent J. S. Company
HAP : Hai Phong Paper J. S. Company
HAS : Ha Noi Post Office Installation J. S. Company
KHA : Khanh Hoi Import-Export J. S. Company
LAF : Long An Import-Export Processing J. S. Company
REE : Refrigeration Electrics J. S. Company
SAM : Cable &

**SAM : Cable &
Telecommunication Material J.
S. Company**

SAV : Import Export & Economic Cooperation J. S. Company

SGH : Sai Go n Hotel J. S. Company

TMS : Foreign Trade Delivery Storage J. S. Company

TRI : Sai Gon Beverages J. S. Company

TS4 : Fishery 4 J. S. Company

VTC : VTC Telecommunication J. S. Company

2. Securities Companies

ACBS   :   ACB Securities Company

Agriseco : Agri Bank Securities Company

BSC   : BIDV Securities Company

BVSC   : Bao Viet Securities Company

FSC   : The First Securities Company

IBS   : Incombank Securities Company

SSI   : Sai Gon Securities J. S. Company

TSC   : Thang Long Securities Company

VCBS   : Vietcombank Securities Company

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Appendix 5:   **STOCKS OF LISTED COMPANIES**

No.	Stock Listed	volume	Total asset '02 (mil. dong)	Equity '02 (mil. dong)	Net profit '02 (mil. dong)	Net profit '01 (mil. dong)	EPS (dong/ share)	Price 31/03/03	PE 3/'03	ROA (%)	ROE (%)	Dividends '02(%)	Dividends '01 (%)
1	AGF	4,179,130	167,138	65,905	24,475 16,462	5,856.49	24,100 4.12	14.64 37.14	24.00 24.00				
2	BBC	5,600,000	162,868	84,302	4,144 5,783	740.05 12,100	16.35 2.54	4.92 5.00	12.00				
3	BPC	3,800,000	54,116	56,003	9,856 7,965	2,593.64 15,000	5.78 18.21	17.60 15.50	15.00				
4	BT6	5,882,690	216,920	80,898	16,815 9,397	2,858.37 15,100	5.28 7.75	20.79 15.00	12.89				
5	BTC	1,261,345	41,271	14,779	525	1,839 308.24	18,000 58.40	0.94 2.63	12.00 12.00				
6	CAN	3,500,000	80,433	44,157	7,630 8,500	2,179.97 14,400	6.61 9.49	17.28 16.00	17.00				
7	DPC	1,587,280	26,955	19,112	2,358 2,630	1,485.87 11,500	7.74 8.75	12.34 10.00	10.00				
A	GIL	2,550,000	93,225	34,116	14,338 12,651	5,622.83 24,100	4.29 15.38	42.03 25.00	32.00				
9	GMD	17,178,455	448,102 281,191	96,631 85,909	5,625.15 30,800	5.48 21.56	34.37 32.00	32.55					
10	HAP	2,008,000	70,489	56,705	8,858 8,005	4,411.15 29,000	6.57 12.57	15.62 30.00	30.00				
11	KHA	1,900,000	76,721	25,702	6,020 4,178	3,168.26 21,400	6.75 7.85	23.42 16.00	12.00				
12	LAF	1,909,840	80,719	36,777	8,216 3,034	4,301.97 21,800	5.07 10.18	22.34 18.00	10.00				
13	REE	22,500,000	443,012 273,734	34,302 44,934	1,524.53 12,800	8.40 7.74	12.53 12.00	15.00					
14	SAM	18,000,000	232,426 194,905	58,022 34,826	3,223.43 18,000	5.58 24.96	29.77 16.00	16.00					
15	SAV	4,500,000	174,377	66,848	14,673 8,778	3,260.70 15,300	4.69 8.41	21.95 16.00	16.00				
16	SGH	1,766,300	22,815	21,403	2,513 1,557	1,423.01 13,300	9.35 11.02	11.74 9.00	9.00				
17	TMS	2,200,000	99,250	40,425	10,991 9,398	4,996.00 27,000	5.40 11.07	27.19 22.00	18.00				
18	TRI	3,790,300	93,681	54,286	8,672 10,991	2,287.84 17,200	7.52 9.26	15.97 18.00	18.00				
19	TS4	1,500,000	39,888	20,158	5,241 3,625	3,493.69 16,400	4.69 13.14	26.00 16.00	12.00				
20	HAS	1,200,000	97,538	18,597	4,755 4,201	3,962.58 19,500	4.92 4.88	25.57 14.00	13.00				
21	VTC	1,786,440	33,796	24,852	7,945 4,624	4,447.12 19,000	4.27 23.51	31.97 13.50					12.50
	Total/TB	95,020,650	2,371,617 1,308,644	308,504 259,077	524 18,348	8.92 11.61	21.58 16.90	16.62					

Source: Vietcombank Securities Company VCBS

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MERCURY RESIDENTIAL BUILDING [1]

For Mr. Vuong, the sales manager of High Sky Co., Ltd, February 14th, 2003 was a particularly important day. On that day he was given the responsibility of preparing the documentation calling on the joint-venture partners to participate in the auction of a 10.3 ha plot of land on Nguyen Huu Canh Street, District One, Ho Chi Minh City (HCMC) in order to set up the Mercury residential building project with over 6,000 apartments or condominiums for sale or for rent.

After just over one month of hard work, Mr. Vuong together with his associates will submit a preliminary evaluation of the project to the first meeting of the proposed joint-venture partners on April 1st, 2003.

THE HOUSING MARKET IN HO CHI MINH CITY

1. Housing demand in Ho Chi Minh City

According to calculations from Ho Chi Minh Citys Department of Land and Housing, the housing demand in HCMC over the next 10 years will be about 954,000 apartments (each with an area of approximately 70m^2), with 60%-70% being residential apartments, of which about 160,000 apartments will be needed for low income residents. To meet this demand, it will be necessary to have 100,000 more apartments every year on average. According to estimates from the Department of

average. According to estimates from the Department of Construction in HCMC, only about 50,000 new apartments are being built every year. This means that the supply of new residences is only about 50% of the total demand, of which 80% are being built by the private sector.

Traditionally, Vietnamese people have always preferred to own their own houses and do not like apartments. However, the steady rise in land prices is making the construction of houses more expensive and living in street front houses at the present time is inconvenient, resulting in a move towards living in apartments. These factors are playing a part in the increase in demand for apartments.

2.   Types of apartment complex in Ho Chi Minh City

At present, there are 4 principal types of apartment building in HCMC. The first type is buildings for the resettling program located in the city center, the second is buildings for the resettling program located in the suburbs, the third type is apartment buildings for business purposes and the fourth type is high-class condominiums. Investors in the first three types are actually state businesses. With the first type, investors are granted the privilege of not paying the land use levy for the area of the building construction, and are given a discount of 50% on the land use levy for the area included in the project but not used for building construction. Moreover, investors are allowed to sell the first and second floor apartments at commercial prices, and to transfer

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[1] [1]This is just a scenario for discussion in class at FETP and does not imply the analysis of any real case.

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the reimbursement to the resettled households as a kind of advance on capital. With the second type, the privileges are the same but the buildings do not attract purchasers because of their location in the suburbs and outlying areas. With the third type, in actual fact, the apartments are often bought up when they are still at the planning stage. People who have a real need find it difficult to purchase them unless they have enough information or financial capability. There are different types of investor in the fourth type of apartment, mostly joint ventures with foreign partners. This type of apartment is for people with high incomes. The businesses are going well and are very profitable.

3. Irrationality of the housing market

From the information above, we can see that there is a considerable demand for housing in HCMC, and some apartment buildings are sold out when they are still at the planning stage. In fact, the people buying these apartments are not really people with an actual need, but are nearly all real estate speculators who then re-sell them to make money on the difference in price. As a result, there are a considerable number of vacant apartments left in the buildings. At present, average apartments are priced from 300-500 million dong, but very few of those who have a genuine need for the apartments have the ability to purchase them.

4. Purchasing ability of people with a need

Housing demand usually arises when two people go together to the Peoples Committee of the ward to register their marriage. At this time, a young couple have saved almost nothing yet, so buying an apartment at a price from 300-500 million dong is

impossible. However, what is certain is that they will be able to buy one after 10 to 15 years. If they are granted some form of credit with payment in installments, they will be able to satisfy their demand immediately. As the financial markets in Vietnam are not yet developed, reputations in credit relationships between entities in the economy, and in particular the creditworthiness of individuals, is not high. Granting someone a loan to buy property with payment by installments over a 10 - 20 year period is still something which is new and difficult for a number of credit companies.

In fact, in several countries and in developed countries in particular, most of the housing demand, which is the most important demand for the majority of people, is satisfied through some form of mortgage lending. Recognizing this trend, a number of banks in VN have already established a lending policy for the purchase of apartments. Customers wishing to sign a contract to be granted a loan to purchase an apartment must satisfy certain conditions. They must have a permanent household registration in HCMC, the object of borrowing must be to get money to buy an apartment, the maximum time of the loan is 10 years, and the amount of the loan must not exceed 50% of the apartment price. In considering whether or not to grant a loan, it is important to appraise the borrowers income and solvency in order to decide the period of the loan. Property used as a mortgage is a secondary condition [2]used to guarantee the loan.

Because of the problems outlined above, the outright purchase of an apartment is not possible and the most reasonable solution for such customers is to rent an apartment

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[2]In fact, mortgaged property is an essential condition when the banks decide to grant a loan.

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at a minimum of one million dong per month while saving money over 10 to 15 years to buy an apartment of their own.

These problems are a paradox now, but it is forecast that in the near future as peoples standard of living and income gradually stabilize, the degree of trust in credit relations will improve, and the business of making loans to buy houses will develop. This will become a positive element that will help the real estate markets function become more active and healthy.

MERCURY APARTMENT BUILDING PROJECT

1. The plot of land on Nguyen Huu Canh Street

Included in a plan to mobilize capital of 35,000 40,000 billion dong to meet the demand for investment for development with a target of achieving an average annual GDP growth rate of 12%, is a decision by HCMC to auction several plots of land. The first lot to be auctioned was at 22-22 Bis Le Thanh Ton Street, District 1 and it was sold for 56 billion dong. A lot of more than 10 ha on Nguyen Huu Canh Street is also included in this plan. This piece of land has a very favorable location right in the heart of HCMC, and is ideal for the construction of high-rise buildings. The City requires that a modern high-rise apartment complex be constructed here.

2. Principal parameters for the project

According to regulations, and to the

buildings will be constructed on this plot of land, with basic parameters as follows:

2.1. Standard and technical parameters

The total area of this plot is 10.3 ha, of which 6.2 ha are in civilian use (60.3% of the total area), 2.5 ha are used for transportation (24.3% of the total area), and 1.6 ha is used for vegetation (15.4% of the total area). It has a very advantageous location for the construction of apartment buildings.

According to the regulations, the proportion of land which can be used for the construction of high-rise buildings is a maximum of 60%.

The number of floors to be built: Of the four high-rise buildings, two have a minimum height of 20 floors and two have a minimum height of 30 floors. Hence the project plan uses an average number of 24 floors with 2 underground floors.

Number of floors for sale: Of the 26 floors to be built, the 2 underground floors and the first floor are to be set aside for public services. This leaves 23 floors remaining for sale.

Percentage of floor area for sale: The percentage of floor area for sale comprises 65% with the remainder being public areas such as corridors and staircases.

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Area for sale and forecast number of apartments: From the parameters listed above, we get a total area to be sold of 561,522 m^2. The average area of each apartment is 84 m^2. The total number of apartments planned is about 6,100 units.

Estimated period for construction is 36 months.

2.2. Construction cost parameters

The average construction cost is 4,200,000 dong/m^2 of floor built (including the investment cost of infrastructure inside each building).

The main infrastructure construction cost is 350,000dong/m^2 of land.

The actual price paid at the land auction was 935 billion dong. This price was 1.1 times the initial asking price when HCMC called for the auction.

3.   Total invested capital and capital source

3.1.   Total invested capital

Based on the parameters above, the direct costs required to implement the project are as follows:

Table1: Estimated costs of the investment project

Amount in million dong

No.	Purpose	Cost
1.	Value of the plot of land (1.1 times the initial price)	935,000
2.	Preparation cost for the investment	84,500
3.	Construction cost of the main infrastructure backbone	36,315
4.	Construction cost of the Blocks	4,101,552
5.	Contingency fund (5% of total cost excluding land purchase)	211,118
	Total	*5,368,485*

3.2. Sources of investment capital

Of the almost 5,400 billion dong total investment for the project, about 4,200 billion dong will be mobilized from the prepaid money of customers purchasing the apartments. High Sky Co Ltd and several other partners, using all their owned capital, will contribute the remaining 1,200 billion dong. The capital demand not yet met will reach a high point of 1,000 billion dong.

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The ratio of contribution for each party is as follows: High Sky Co Ltd will contribute 300 billion dong, and the five other partners will contribute the rest.

4. Selling price and business methods

4.1. Proposed selling price

Taking the average selling prices of several apartment buildings in HCMC as a basis, such as 9 million dong/m^2 at the Cao at apartment building in District 5; 8.9 million dong/m^2 at Nguyen inh Chinh apartment building, in Phu Nhuan District; 8.85 million dong/m^2 at ang Dung apartment building, in Phu Nhuan District and USD 1,200/m^2 (equivalent to 18.5 million dong/m^2) at Pasteur apartment building, District 1, the proposed selling price to be applied to this project will be 10 million dong/m^2.

The price of 10 million dong/m^2 will be the price at the time the plan is publicized. This will be when the initial trading contract is first signed. After that, the selling price will increase by 10% every year. The price when construction is finished will be 12.1 million dong/m^2.

With the aim of product diversification to satisfy various types of customers, the apartments will be divided into 3 types: large sized apartments with one large bedroom, two small bedrooms and 3 bathrooms; medium sized apartments with 1 large bedroom, two small bedrooms, and 2 bathrooms; and small sized apartments with one bedroom and one bathroom. The areas for each size are 96m^2, 72m^2 and 64m^2 respectively. Thus the average price of an apartment will vary from 700

million to 1 billion dong.

4.2.   Business methods

It is envisaged that the mode of operation will be for purchasers to register for purchase when the plans are available, with the following terms of payment:

Upon signing the contract, the purchaser pays 35% of the apartment value.

Following the completion of construction, the purchaser pays 30% of the apartment value.

After receiving possession of the apartment, the purchaser is to pay the next 30% of the apartment value.

After completion of the sale procedures (the purchaser receives the title deeds), the purchaser pays the remaining 5% of the apartment value.

From the experience of earlier projects and on the basis of this projects characteristics, it is estimated that sales and payments will occur throughout the period of construction. In the first year of the project, 40% of the total will be sold and the cash collected. In each of the following two years, 30% of the total will be sold and the cash received.

In addition, there are some other modes of operation, such as selling with payment by installments and leasing. The prices for payment by installments and leasing

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will be calculated based on the estimated selling price of 10 million dong already noted above.

4.3. Regulation on the calculation of trading results and the payment of income tax

During the construction process, it will not be possible to calculate all the costs even though turnover clearly arises, so the Department of Tax has permitted income tax to be assessed when the project is complete (when the total investment capital has been accounted for). This means that income tax will be paid at the end of the 4th year.

On the basis of this regulation the investor can draw out the period for finalizing the project accounts to delay the payment of income tax with the purpose of making use of the capital, and hence making the business more profitable.

5. Preliminary calculation of the effectiveness of the investment

5.1. Implementation schedule for the use of invested capital

The estimated demand for expenditure from invested capital for the project is presented in table 2 below:

Table 2: Details of investment costs

Unit: million dong

No.	Items	Year 1	Year 2	Year 3	Year 4	Total	

1 Land purchase					
% of total cost	100%				
Estimated expenditure	935,000				935,000
2 Initial costs					
% of total cost	60%	20%	10%	10%	
Estimated expenditure	50,700	16,900	8,450	8,450	84,500
3 Infrastructure construction					
% of total cost		60%	30%	10%	
Estimated expenditure	-	21,789	10,894	3,631	36,315
4 Main building construction					
% of total cost		40%	50%	10%	
Estimated expenditure	-	1,640,621	2,050,776	410,155	4,101,552

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	Year 1	Year 2	Year 3	Year 4	Total	
5 Contingency					211,118	211,118
Total	985,700	1,679,310	2,070,120	633,355	5,368,485	

5.2. Revenue collection plan

Table 3: Revenue estimation   *Unit: million dong*

No.	Items	Year 1	Year 2	Year 3	Year 4	Total	
1	Percentage sold		40%	30%	30%	100%	
2	Selling price		10	11	12.1		
3	Total area sold		224,609	168,457	168,457	561,522	
4	Amount receivable		2,246,088	1,853,023	2,038,325	6,137,435	

5.3. Calculation of the business results

Table 4: Estimation of the business results

Unit: million dong

No.	Target	Amount
1 Revenue		6,137,435
2 Expenditure		5,332,170
3 Earnings before tax		805,265
4 Corporate tax (32%)		257,685
5 Earnings after tax		547,580

The trading result will be calculated at the end of the 4 thyear for tax payment.

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5.4.   Effectiveness of the project (NPV, IRR)

Calculations of the net present value (NPV) and the internal rate of return (IRR) of the project are as follows:

Table 5: Assessment of the financial efficiency of the project

Unit: million dong

No.	Target	Year 1	Year 2	Year 3	Year 4	
I	**Cash inflows**	-	2,246,088	1,853,023	2,038,325	
II	**Cash outflows**	985,700	1,679,310	2,070,120	633,355	
1	Purchase of land	935,000	-	-	-	
2	Initial costs	50,700	16,900	8,450	8,450	
3	Infrastructure construction	-	21,789	10,894	3,631	
4	Construction of building	-	1,640,621	2,050,776	410,155	

5 Contingency	-	-	-	211,118
6 Tax paid				257,685
III Net cashflow	**(985,700)**	**566,778**	**(217,098)**	**1,404,970**

NPV@12%   310,101
IRR   28%

6. Opinions regarding the project

In order to provide information for the participants of the meeting, Mr. Vuong and his associates have gathered, surveyed, and requested consultative opinions from certain organs, units, and individuals concerning the project:

6.1. Opinion of the city authorities

The construction of apartment buildings on the plot of land on Nguyen Huu Canh Street and at other locations is essential, so the City Departments, services and sections will facilitate the execution of the project.

Socioeconomically, this is a highly effective project. Implementation of the project will solve the housing problems of nearly 30,000 people (about 6% of the annual housing demand), so the city will provide supportive measures for its realization.

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6.2. Opinion of the residents living in the area

When this project is built, we will have to move away, which will disrupt our lives and routines, so it is necessary to have reasonable compensation and support.

6.3. Opinion of some customers

Investing in this project will give the purchasers more opportunity to choose an apartment that satisfies their needs.

6.4. Opinion of a land and construction consultancy firm

Investing in an apartment building of over 6,000 apartments such as this is a very heavy commitment. It is possible that there will be considerable difficulty in selling these apartments. They cannot all be sold at one time. Furthermore, with such a large number of apartments, there will be nearly 30,000 people living in the complex. As this is a large number it will be necessary to diversify the functions of the project by leasing from 2-3 floors for use as supermarkets and other recreational facilities with the top floor and roof terrace as restaurants, coffee shops and so on.

Carrying out such a project at one go is too great a commitment and the risks are considerable, so the investment could perhaps be divided into 2 phases with only 2 buildings being constructed in each phase. However, there are some counter-arguments because dividing the investment into phases will make the implementation schedule longer. Thus parts of the project could get out of step. In addition, the second phase of

construction will badly affect the residents living in the two buildings already built, so selling the first phase apartments would probably be very difficult.

6.5. Opinion of the trading and commerce consultative unit

At present, the business methods outlined above are appropriate for many apartment buildings. However, this is a large scale project with a large number of apartments which will be almost impossible to sell all at one time, so a variety of different selling methods such as outright sale, selling with payment by installments, or leasing can be applied in order to increase the number of customers.

6.6. Opinion of the financer

Sources of invested capital: Mobilizing 1,000 billion dong at one time will require a considerable effort from all partners taking part in the project. But this is only the most optimistic view of the situation. If people are slower to purchase than in the forecast, then an enormous source of capital will be needed which could mean up to 3,000 billion dong. In such a scenario the partner of the project would not be able to meet the demand. Therefore, it is necessary to consider other more feasible ways of mobilizing capital. On the other hand, using other sources of capital will increase the equitys rate of return.

The effectiveness of the investment: In fact, the implementation of projects is normally subject to many changes and hence incompatible with using fixed calculations. It is thus important to consider the various external factors that have an impact on the

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project in order to know exactly how much the probability of inefficiency is, and then propose measures for risk prevention.

7. Information on capital mobilization

Diversification of the sources of capital can be carried out by such means as borrowing capital from domestic credit organizations or issuing infrastructure bonds.

7.1. Borrowing capital from domestic credit organizations

This method of mobilizing capital faces two problems, namely:

Loan limit problem: According to the regulations currently in force, a credit organization is only allowed to grant a certain customer a loan of up to a maximum of 15% of the credit organizations equity. Because of this, no domestic credit organization is able to grant the whole sum required. The Agricultural and Rural Development Bank, the bank with the largest share capital, only has about 3,500 billion dong meaning that it can only grant a maximum loan of about 525 billion VND. If all the domestic credit organizations were combined, the total amount of shareholders equity would total about 15,000 billion VND, and the maximum loan limit would reach 2,250 billion VND. But it would be very difficult to have such a large loan granted.

Loan guarantee problem: With such projects as these, the banks usually ask for some form of property as a guarantee for the loan. Where the loan is being guaranteed by property being built from the capital to be borrowed, the banks

as to contribute at least 50% of the required capital [3]. This is a rather difficult condition for High Sky Co. Ltd and other partners.

7.2. Issuing infrastructure bonds

As a matter of fact, only the Peoples Committee of HCMC has ever issued infrastructure bonds, and the General Corporation of Oil and Gas issued corporate bonds. The General Corporation of Post and Telecommunications is intending to issue bonds but the scheme has not been carried out yet. Issuing infrastructure or corporate bonds will be very difficult because the creditworthiness in the public eye is not high enough. With this project and the development level of the present capital market, it will be very difficult to find an organization which is able to sponsor the issuing of such bonds.

From the problems mentioned above, we can see that the construction project for the Mercury apartment building is very efficient, but High Sky Co. Ltd and the other partners still confront a lot of difficulties in executing the project. Even if High Sky Co Ltd. and the partners are successful in the land tender a lot of time must elapse before we see the realization of such a futuristic project.

Questions for discussion:

---

[3]According to the regulation on loan guarantees, the amount of contributed equity, and/or guarantee property, and/or property sponsored by s 3rd party must be at least 15% of the total amount of investment in the project in order to guarantee the loan with property formed from the loan capital.

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1   In your opinion, on the basis of reality and prospect, how will an evaluation of the reality and prospects for the HCMC real estate market assist you in assessing the Mercury project in general.

2   Many people have voiced the opinion that this project is very effective, but not realistic because it is too large. What comment do you have on this opinion.

3   In your opinion, what is essential to do to assess this projects efficiency.

4   Do you have any comments on the opinions mentioned in the partners meeting.

5   What solution do you think is the most feasible to mobilize the investment capital required for the project.

Nguyen Minh Kieu/Huynh The Du

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Translator: Nguyen Huu Luan
Editor: Andy Richardson

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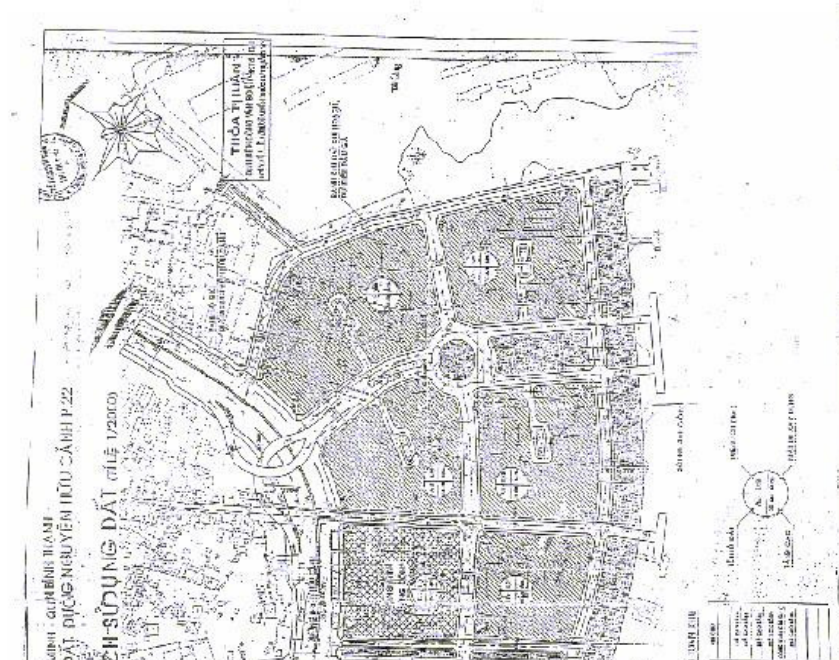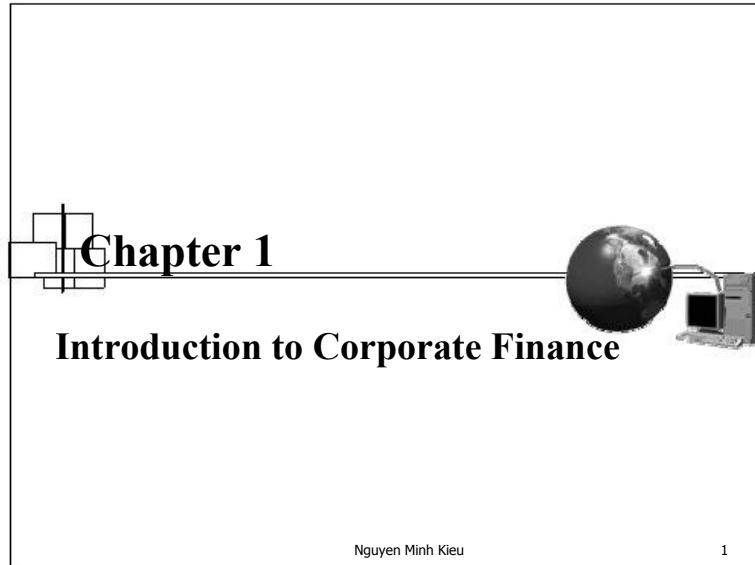
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Financial Analysis
Lecture 1

Chapter 1

Introduction to Corporate Finance

Nguyen Minh Kieu

1

The outline of chapter 1

What is Corporate Finance concerned with.

What is the difference between finance and accounting.

The relationship between corporate finance and financial system

2

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Financial Analysis
Lecture 1

What is Corporate Finance.

Corporate finance (CF) concerned with:

Acquiring assets

Financing assets acquisition

Managing assets effectively and efficiently

Distributing earning profits

Corporate finance examines making decisions

3

Three major decisions of CF

Investment decisions

  Related to the amount and composition of assets (current and fixed assets) needed to be held by the firm

  Related to achieving an appropriate balance between current assets and fixed assets

Financing decisions

  Related to the types of finance used to acquire assets

  Related to achieving an appropriate balance between short-term and long-term sources and between debt and equity sources

  Related to achieving an appropriate balance between retained earnings and dividends

Dividend policy decisions

  Related to achieving an appropriate balance between retained earnings and dividend payment

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Major decisions of corporate finance and the balance sheet

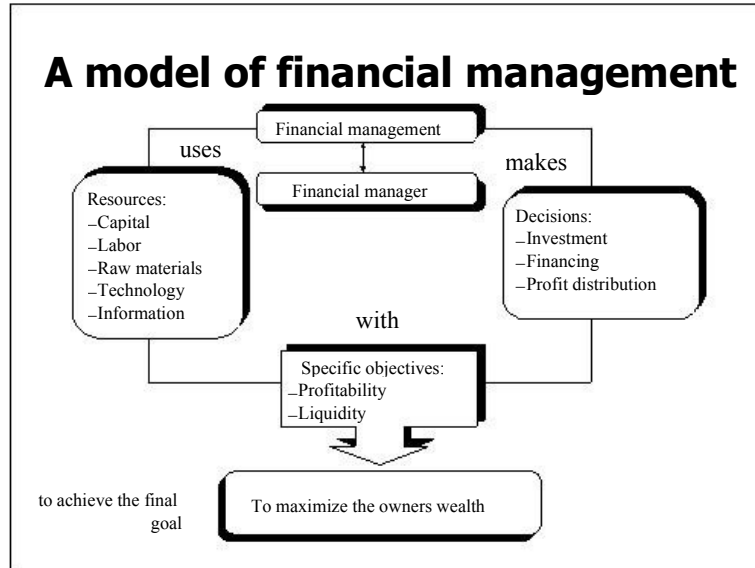| Assets	Liabilities and owners equity
Current assets	**Liabilities**
Cash	Current liabilities
Marketable securities	Payables
	Short-term debts
Receivables	Long-term debts
Inventories	**Equity**
Fixed assets	Preferred stocks
Land	Common stocks
Building	Retained earnings
Equipments	
Total assets	**Total liabilities and equity**

Investment decisions

Financing decisions
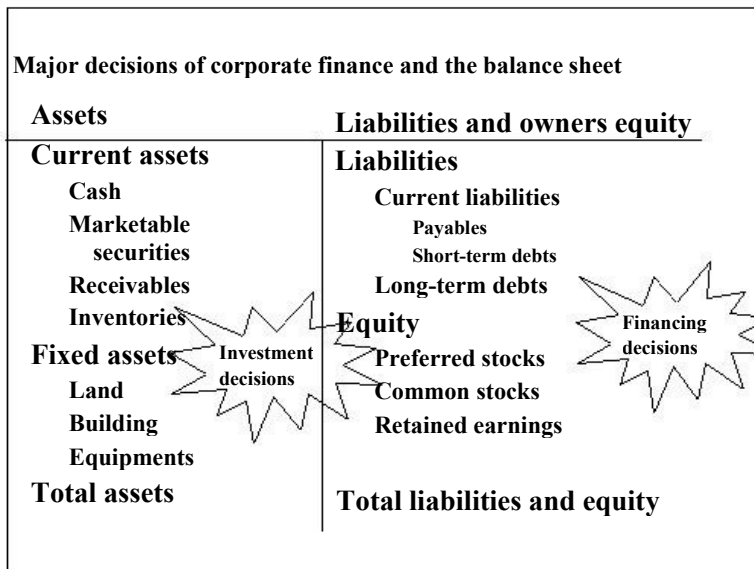
Examples of investment decisions

Decisions on investing current assets

- Cash balance determination
- Credit policy determination
- Inventory determination

Decisions on investing fixed assets

- Capital budgeting and investment decisions
- Financial assets valuation and investment decisions

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Lecture 1

Examples of financing decisions

Decisions on short-tem and long-term financing

Short-term financing
Using payables or
Short-term debts
Short-term bank loans or commercial papers

Long-term financing
Using debts or
Using bank loans or issuing corporate bonds
Equity
Using retained earnings or issuing new stocks

Decisions on capital structure
Optimal capital structure theory
Net operating income theory
M&M theory

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Examples of dividend policy decisions

How should the firm use its net income to maximize the wealth for shareholders.

Retained earnings for reinvestment or

Dividend payment

How does the dividend policy affect on stock price of the firm.

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Lecture 1

The objectives of FM

Profitability objective is concerned with maintaining or increasing the firms earnings via:

- Cost control
- Pricing policy
- Sales volume
- Stock management
- Capital expenditures

Liquidity objective ensuring that the firm is always able to meet its obligations, by:

- Anticipating cash shortages
- Maintaining the confidence of creditors and bankers
- Pre-arranging finance to cover cash shortages

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The goal of the firm

Maximizing a firms earnings after tax (EAT) => shortcomings

Maximizing earnings per share (EPS) => shortcomings

A firm may have various objectives, but the final goal of the firm is to *maximize the wealth of the firms present owners*

Maximize value of the firm

Maximize market price of the firms stock

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Financial Analysis
Lecture 1

The central position and role of financial management
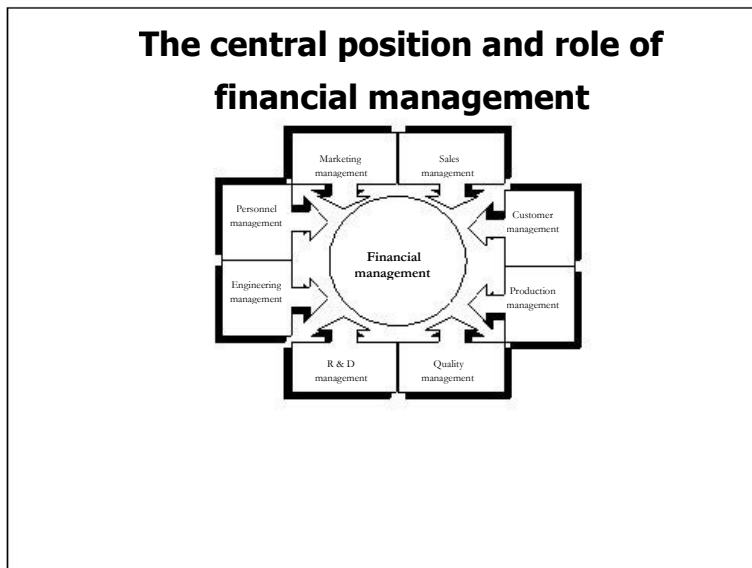
Organization of FM Function

CEO Chief Executive Officer

CFO Chief Financial Officer reports to CEO

Controller responsible for accounting and external reports

Treasurer responsible for investment, financing, and asset management

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Lecture 1

Financial Management on the Organization Chart

BOARD OF DIRECTOR

PRESIDENT (CEO)

| VICE PRESIDENT Operations | VICE PRESIDENT Finance | VICE PRESIDENT Marketing |

Treasurer
. Capital budgeting
. Cash management
. Commercial banking and investment banking relationships
. Credit management
. Dividend disbursement
. Financial analysis and planning
. Investor relations
. Pensions management
. Insurance/risk management
. Tax analysis and planning

Controller
. Cost accounting
. Cost management
. Data processing
. General ledger
. Government report
. Internal control
. Preparing financial statements
. Preparing budgets
. Preparing forecasts

A model of financial management
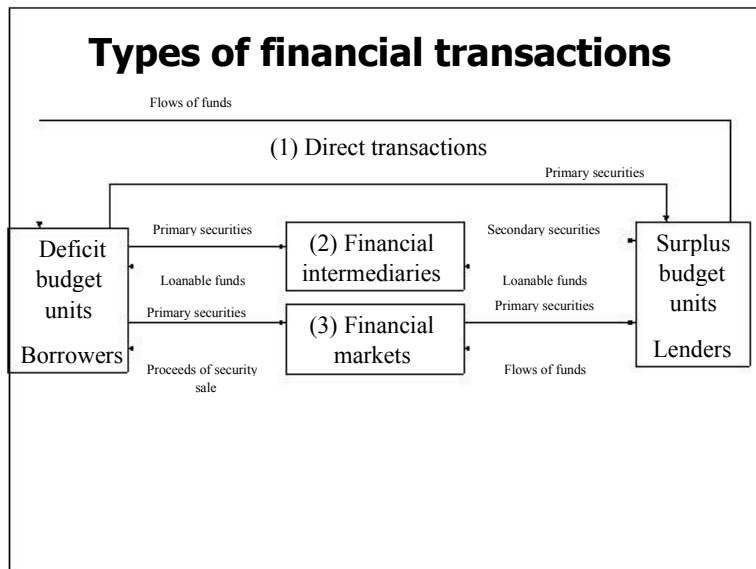
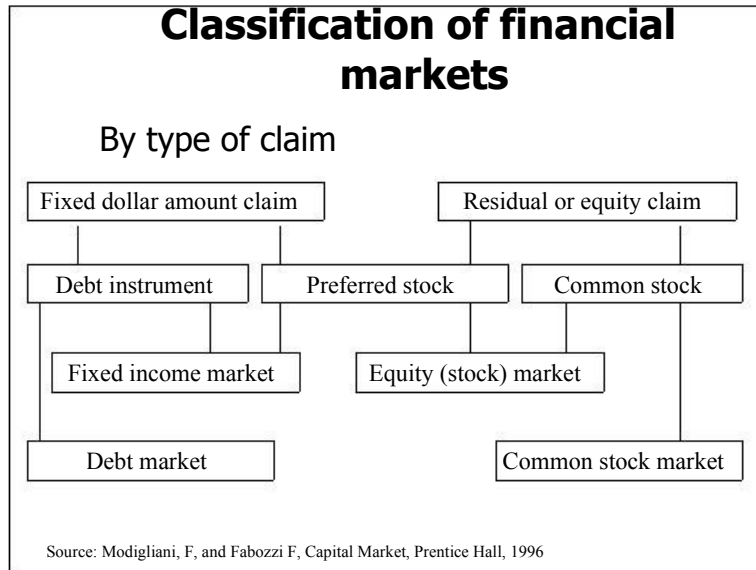home.cd3wd.ar.cn.de.en.es.fr.id.it.ph.po.ru.sw

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Accounting versus financing
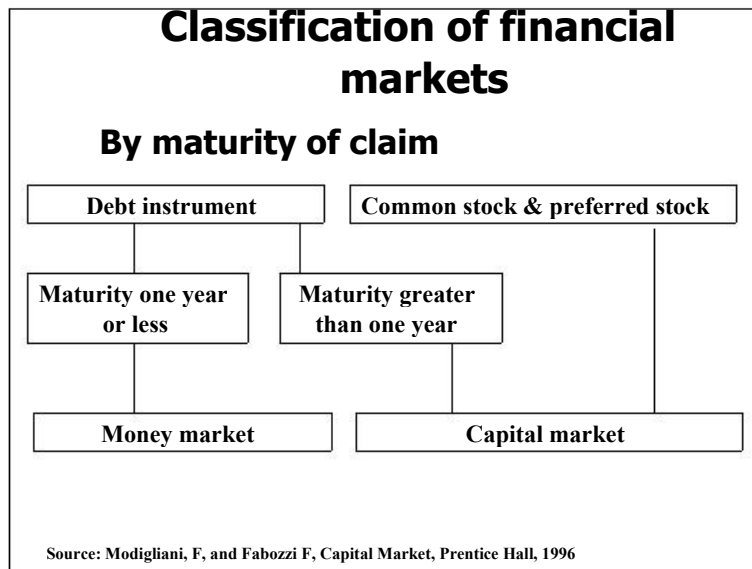
Accounting concerned with:

- Recording what happened on the related accounts
- Making financial statements
- Reporting to the external stakeholders

Financing concerned with:

- Planning and budgeting what will happen
- Using financial statements for analysis and making decision
- Reporting to the internal managers

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The relationship between corporate finance and financial system

Financial system concerned with:

    Financial markets

    Financial institutions

    Financial instruments

Why do we examine financial system as studying corporate finance.
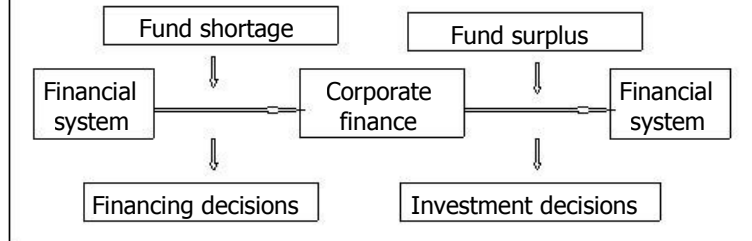
Fund shortage		Fund surplus

Financial system	Corporate finance	Financial system

Financing decisions	Investment decisions

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Financial Analysis
Lecture 1

Financial market

Financial market a market where financial assets are exchanged

What is a financial asset. Asset. Tangible asset versus intangible asset.

- A asset is any possession that has value in an exchange. Assets consist of tangible and intangible assets

- Tangible asset is one whose value depends on particular physical properties (buildings, land, machinery, or materials)

- Intangible assets represent legal claims to some future benefit, their value is no relation to the physical form in which the claims are recorded

- Financial assets are intangible assets

Examples of financial assets

A bond issued by the Government (Gov. bond)

A bond issued by BIDV

Common stock issued by REE

Common stock issued by Kinh Do Company

Home mortgage loan

Options

Certificate of deposit (CD)

Treasury bills

Commercial papers

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Financial Analysis
Lecture 1

The purpose and role of financial market

Purpose to allocate savings efficiently to ultimate users

Roles of financial market:

- Determine the price of financial assets via interaction of buyers and sellers (demand and supply)
- Provide investors a mechanism to liquidate financial assets
- Provide buyers and sellers information, thus, reduce costs of transactions

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Capital mobilization and allocation via financial markets

Savers: Households, Institution, **investors**, Local, **Businesses**, Government, Foreign, **entities** → Financial Intermediaries / Financial Markets → Borrowers: Households, Institution, **investors**, Local, **Businesses**, Government, Foreign, **entities**

Capital Mobilization · Capital Allocation

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Financial Analysis
Lecture 1

Types of financial transactions

Flows of funds

(1) Direct transactions

Primary securities

Deficit budget units Borrowers	Primary securities	(2) Financial intermediaries	Secondary securities	Surplus budget units Lenders
	Loanable funds		Loanable funds	
	Primary securities	(3) Financial markets	Primary securities	
	Proceeds of security sale		Flows of funds	

Classification of financial markets

By type of claim

Fixed dollar amount claim		Residual or equity claim
Debt instrument	Preferred stock	Common stock
Fixed income market	Equity (stock) market	
Debt market		Common stock market

Source: Modigliani, F, and Fabozzi F, Capital Market, Prentice Hall, 1996

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Lecture 1

Classification of financial markets

By maturity of claim

| Debt instrument | Common stock & preferred stock |

| Maturity one year or less | Maturity greater than one year |

| Money market | Capital market |

Source: Modigliani, F, and Fabozzi F, Capital Market, Prentice Hall, 1996

Financial institutions

Financial institution institutions that mobilize money from savers and uses those funds to make loan and other financial services

Financial institutions include bank and non-bank institutions:

Bank

Commercial banks

Saving institutions

Non-bank

Insurance companies

Pension funds

Finance companies

Mutual funds

What is difference between bank and non-bank institution.

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Lecture 1

Financial instruments

Capital market instruments
  Stocks
  Bonds
Money market instruments
  Treasury bills
  Commercial papers
  Bank acceptance
  Repurchase agreement
  Certificate of deposits,
Foreign exchange market instruments
  Domestic currency
  Foreign currencies
Derivative market instruments
  Forward contract
  Swap contract
  Future contract
  Option contract

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Financial system in Vietnam

Financial market
Financial institutions
Financial instruments

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Financial Analysis
Lecture 1

Financial market

Capital market Formed since July 2000

Foreign exchange market Formed since 1991

Money market Still have not been developed

Capital market

Capital market in Vietnam known as Stock Market

Vietnam Stock Market formed in July 2000

Organized market

OTC market

In general, Vietnam stock market is a very small market

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Financial Analysis
Lecture 1

VN index

VN Index

Source: Saigon Securities Company
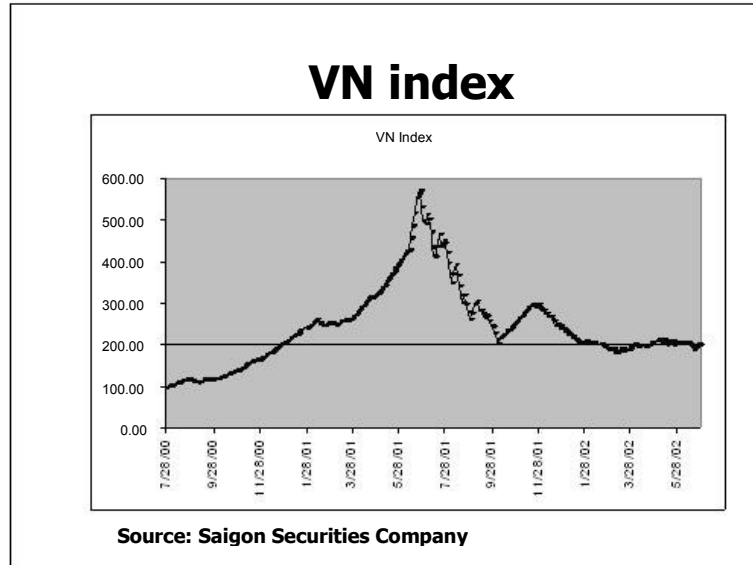
Prices of major stocks
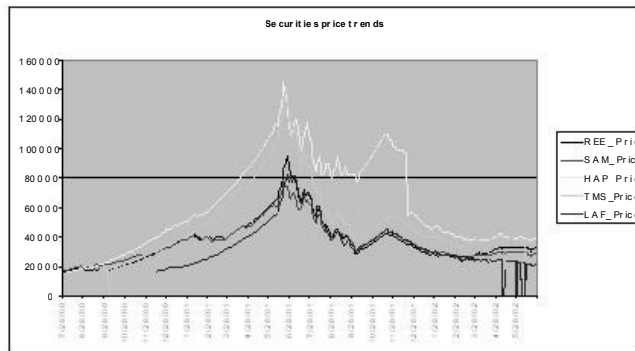
Source: Saigon Securities Company

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Financial Analysis
Lecture 1

Conditions to be listed

Conditions	Initial public offer	Seasoned new issue	Bond offer
Form of ownership	Joint stock company, equitized company	Joint stock company, equitized company	Joint stock company, equitized company, state-owned company
Capital	= > 10 billion VND =	> 10 billion VND =	> 10 billion VND
Income statement	Profitable 2 latest years	Profitable 2 latest years	Profitable 2 latest years
Management Experienced in	management	Experienced in management	Experienced in management
Underwriting required	Required if value of the offer > 10 billion VND	Required if value of the offer > 10 billion VND	Required
Ratio of shares held outside shareholders	- Minimum 20% if value of the offer less than 100 billion VND - Minimum 15% if value of the offer more than 100 billion VND	- Minimum 20% if value of the offer less than 100 billion VND - Minimum 15% if value of the offer more than 100 billion VND	- Minimum 20% if value of the offer less than 100 billion VND - Minimum 15% if value of the offer more than 100 billion VND
Maximum value of the offer	Unrestricted Equals total value	of outstanding shares	Unrestricted
Transferability	Unrestricted Unrestricted Unrestricted		
Form of shares	Face value uniformed	Face value uniformed	Face value uniformed

Money market

Money market in Vietnam have not been developed

Money market instruments are not diversified for the investors selection

  Treasury bills

  CDs issued by commercial banks and finance companies

Lack of Interbank Offer Rate like SIBOR or LIBOR

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Financial Analysis
Lecture 1

Foreign Exchange Market

Formed since 1991, called Center for Foreign Currency Transactions (CFCT)

In 1994, the Interbank Foreign Currency Market (IFCM) were established replacing for CFCT in trading foreign currencies

Kinds of currency transactions

Before 1998, all are spot transactions

After 1998, transactions are included:

Spot

Forward

Swaps, and

Options offered since 2002

Financial institutions in Vietnam

The State Bank of Vietnam plays the role of central bank

Credit institutions play the role of financial intermediaries
  Banks
  Non-bank institutions

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Financial Analysis
Lecture 1

Credit institutions

Banks Depository institutions, including:

Commercial banks

Development and investment bank

Specializing banks

Export and import bank

Housing bank

Social policy bank

Non-bank institution Non-depository institutions

Commercial banks

State-owned banks

    Vietnam Bank for Industry and Commerce
    Vietnam Bank for Agriculture and Rural Development
    Vietnam Bank for Foreign Trade (Vietcombank)
    Mekong Delta Housing Bank
    Social policy bank

Joint stock banks (Asia Commercial Bank, East Asia Commercial Bank,)

Joint venture banks

Foreign bank branches

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Non-bank institutions

Non-bank institutions non-depository institution

Types of non-bank institutions

- Finance company
- Leasing company
- Insurance company
- People credit fund
- Development assistance fund
- Investment funds

Financial instruments

Capital market
  Stocks
    24 listed types of stock traded on organized stock exchange
    Hundred of types of stock traded on OTC market
  Bonds
    Government bonds
    Corporate bonds

Money market
  Treasury bills
  CDs issued by finance companies and commercial banks

Foreign exchange market

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Financial Analysis
Lecture 1

Financial instruments (cont.)

Foreign exchange market
   Spot contracts
   Forward contracts
   Swaps contracts
   Options contracts
   Future contracts are not available in Vietnam
Mortgage securities are not formally traded
on financial market in Vietnam

Conclusions

Financial system in Vietnam have formed and started its operation and development since the economy had been transformed into market economy.

Components of financial system including financial market, financial institutions, and financial instruments have gradually formed.

However, financial system in Vietnam has currently been being on the way of development.

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Outputs of working capital management practices

A survey conducted in August 2000

A sample of 150 small and medium enterprises located in HCM City

Interviewee were included:

    Owner-managers

    Managers

    Chief-accountants

    Senior accountants

Research on working capital management practices

Table 1: Structure of SMEs in the sample by type of industry and form of ownership

		No. of firms	Percentage
Type of industry	Trading	99	66.0%
	Manufacturing	51	34.0%
	Total	150	100.0%
The form of ownership	Private enterprise	40	26.7%
	Limited company	105	70.0%
	Joint stock company	5	3.3%
	Total	150	100.0%

Source: Data analysis for the study

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Research on working capital management practices

Table 2: Sample distribution by form of ownership within industry

The form of ownership	Type of industry			
	Trading		Manufacturing	
	No. of firms	Percentage	No. of firms	Percentage
Private enterprise	31	31.3%	9	17.6%
Limited company	65	65.7%	40	78.4%
Joint stock company	3	3.0%	2	3.9%
Total	99	100.0%	51	100.0%

Source: Data analysis for the study

Research on working capital management practices

Table 3: Preparing cash budgets

		No.	%
Frequency of preparing cash budgets	Never	8	5.4%
	Rarely	7	4.7%
	Sometimes	17	11.4%
	Often	61	40.9%
	Always	56	37.6%
	Total	149	100.0%
Period for preparing cash budget	Never	9	6.0%
	Weekly	16	10.7%
	Monthly	114	76.0%
	Quarterly	7	4.7%
	Semiannually	2	1.3%
	Annually	2	1.3%
	Total	150	100.0%

Source: Data analysis for the study

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Table 4: Cash balance determination

		No.	Percentage
Determining the target cash balance	Never	12	8.0%
	Rarely	46	30.7%
	Sometimes	73	48.7%
	Often	14	9.3%
	Always	5	3.3%
	Total	150	100.0%
Cash balance determination	Based on theories of cash management	1	7%
	Based on historical data	21	14.0%
	Based on owner/manager's experience	124	82.7%
	Others	2	1.3%
	No answer	2	1.3%
	Total	150	100.0%

Source: Data analysis for the study

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Table 5: Cash surplus or shortage

		No.	Percentage
Occurring cash shortage	Never	12	8.0%
	Rarely	18	12.0%
	Sometimes	116	77.3%
	Often	3	2.0%
	Always	1	.7%
	Total	150	100.0%
Occurring cash surplus	Never	7	4.7%
	Rarely	82	54.7%
	Sometimes	51	34.0%
	Often	6	4.0%
	Always	4	2.7%
	Total	150	100.0%
Cash surplus investment	Bank deposit	28	18.7%
	Treasury bill purchase	1	.7%
	No investment	113	75.3%
	Others	1	.7%
	Not cash surplus	7	4.7%
	Total	150	100.0%

Source: Data analysis for the study

Research on working capital management practices

Table 6: Sales on credit and credit polices

		No.	Percentage
Sell products or services on credit	Never	3	2.0%
	Rarely	7	4.7%
	Sometimes	19	12.7%
	Often	78	52.0%
	Always	43	28.7%
	Total	150	100.0%
Set up credit policy to the customers	Never	11	7.3%
	Rarely	15	10.0%
	Sometimes	30	20.0%
	Often	60	40.0%
	Always	34	22.7%
	Total	150	100.0%

Source: Data analysis for the study

Research on working capital management practices

Table 7: Frequency of reviewing receivable levels and bad debts

		No.	Percentage
Review levels of receivables	Weekly	16	10.7%
	Monthly	124	82.7%
	Quarterly	8	5.3%
	Annually	1	.7%
	No answer	1	7%
	Total	150	100.0%
Review bad debts	Never	7	4.7%
	Weekly	9	6.0%
	Monthly	120	80.0%
	Quarterly	7	4.7%
	Semiannually	3	2.0%
	Annually	3	2.0%
	No answer	1	7%
	Total	150	100.0%

Source: Data analysis for the study

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Table 8: Percentage of bad debts compared to sales

Bad debt percentages		No.	Percentage
	Less than 5 % of sales	66	44.0%
	5 -10% of sales	67	44.7%
	10 -20% of sales	12	8.0%
	More than 20% of sales	1	.7%
	Don't know	2	1.3%
	No answer	2	1.3%
	Total	150	100.0%

Source: Data analysis for the study

Research on working capital management practices

Table 9: Frequency of reviewing inventory levels and preparing inventory budgets

		No.	Percentage
Review inventory levels	Never	2	1.3%
	Rarely	8	5.3%
	Sometimes	11	7.3%
	Often	52	34.7%
	Always	77	51.3%
	Total	150	100.0%
Prepare inventory budgets	Never	7	4.7%
	Rarely	9	6.0%
	Sometimes	13	8.7%
	Often	52	34.7%
	Always	69	46.0%
	Total	150	100.0%

Source: Data analysis for the study

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Research on working capital management practices

Table 10: Basis of determining inventory levels and using EOQ Model

		No.	Percentage
Inventory level determination	Based on theories of inventory management	3	2.0%
	Based on historical data	3	2.0%
	Based on owner/management's experience	141	94.0%
	Others	3	2.0%
	Total	150	100.0%
EOQ Model application	Do not know this model	134	89.3%
	Know but never use	9	6.0%
	Sometimes use	5	3.3%
	Often use	2	1.3%
	Total	150	100.0%

Source: Data analysis for the study

Conclusions

Most SMEs have not considered financial management important

Working capital management practices were based on experience rather than applying financial theories

Lack of knowledge and implement of financial models for decision making
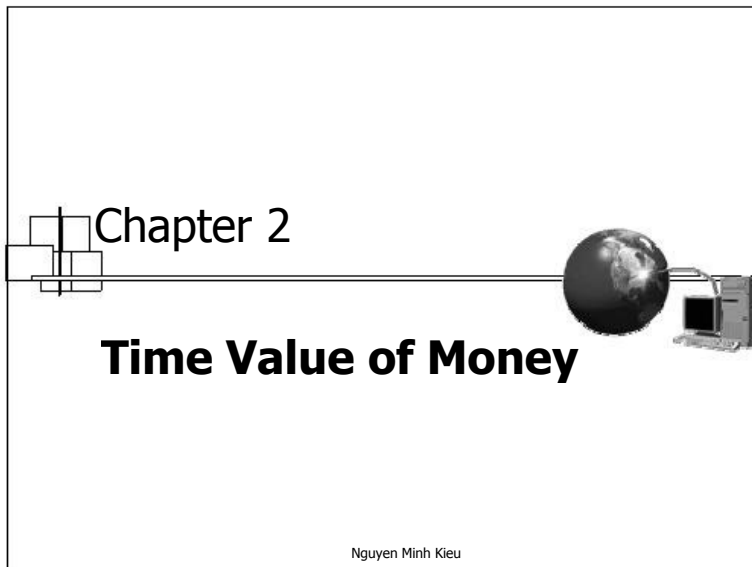
Decisions made based on subjective feelings rather than on scientific and quantitative analysis

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Financial Analysis
Lecture 2

Chapter 2

Time Value of Money

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The outline of chapter 3

Interest
- Simple interest
- Compound interest
- Continuous compound interest

Time value of money
- Future value and present value
  - Single amount
  - Annuities
  - Annuities due
  - Perpetuity
- Compounding more than once a year

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Interest rate

Interest money paid (borrowers) or earned (lenders) for using money

Simple interest interest paid (earned) on only the principal (original amount) borrowed (lent)

Compound interest interest paid (earned) on any previous interest earned, as well as on the principal borrowed (lent)

Continuous compound interest interest is compounded continuously

Lenders and Borrowers, Principal and Interest

Principal or original amount

| Lenders | | Borrowers |

Interest money paid for using the principal
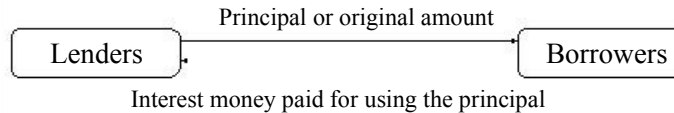
Let the followings denote:
SI: simple interest in dollars
P_0: principal
r: nominal interest per year
s: number of interest periods per year
i:interest rate per time period per year
n: number of year
FV_s: future value the value at some time of a present amount
PV_0: present value the current value of a future amount of money = P_0

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Simple interest

$SI = P_0(i)(n)$

Ex: You deposit $1000 in a saving account with a simple interest rate of 6%. At the end of 5 years you get the accumulated interest of:

$SI = 1000(0.06)(5) = \$300$

and the terminal value (future value) of:

$FV_5 = 1000 + (1000)(0.06)(5) = \$1300$

Generally:

$FV_n = P_0 + SI = P_0 + P_0(I)(n) = P_0[1+(i)(n)]$ (3-1)

$PV_0 = P_0 = FV_n/[1+(i)(n)]$ (3-2)

Compound interest

$FV_1 = P_o(1 + i)$

$FV_2 = FV_1(1 + i) = P_o(1 + i)(1 + i) = P_0(1 + i)^2$

$FV_s = P_o(1 + i)^s$ (3-3)

$FV_s = P_o(FVIF_{i,s})$ (3-4)

$FVIF_{i,s}$: Future value interest factor at i% for s periods

$PV_0 = P_0 = FV_s/(1+i)^s$ (3-5)

$PV_0 = FV_s(PVIF_{i,s})$ (3-6)

$PVIF_{i,s}$: present value interest factor at i% for s periods

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Compound interest (cont.)

$i = r/s$, (3-3) may be rewritten: $FV_s = P_0(1+r/s)^s$. If a sum of P is deposited to accrue interest for n years, the future value at the end of n years is:

$FV_{sn} = P(1+r/s)^{sn}$

$s = 1$ annual interest

$s = 2$ semiannual interest

$s = 4$ quarterly interest

$s = 12$ monthly interest

$s = 365$ daily interest

$s = \infty$ continuous interest

Continuous compounding

$$FV_8 = \lim_{s. \, 8} FV_{sn} = \lim_{s. \, 8} P_o \left[1 + \frac{r}{s} \right]^{sn}$$

Let r/s = 1/x <=> s = r.x and sn = s.r.x

$$FV_8 = \lim_{s. \, 8} P_o \left[1 + \frac{r}{s} \right]^{sn} = \lim_{x. \, 8} P_o \left[1 + \frac{1}{x} \right]^{s.r.x} = P_o e^{r.n}$$

Recall that

$$\lim_{x. \, 8} \left[1 + \frac{1}{x} \right]^{x} = e = 2.71828...$$

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Future and present value of single amount

Future value the value at some future time of a present amount of money, or a series of payments, evaluated at a given interest rate

$$FV_n = PV_o(1+i)^n = PV_o(FVIF_{i,n})$$

Present value the current value of a future amount of money, or series of payments, evaluated at a given interest rate

$$PV_o = FV_o/(1+i)^n = FV_n(PVIF_{i,n})$$

Examples of future and present value

You deposit $100 in the time account at annual interest rate of 5%. How much you will get after 5 years.

PV_0 = $100, i = 5% = 0.05, n = 5 => FV_5 = .

$FV_5 = 100(1+0.05)^5 = 100(FVIF_{5,5}) = 100(1.2763) = 127.63

You want to obtain $127.63 in 5 years, how much you have to deposit in a time account at present time.

FV_5 = $127.63, i = 5% = 0.05, n = 5 => PV_0 = .

$PV_0 = 127.63/(1+0.05)^5 = 127.63(PVIF_{5,5}) = 127.63(0.7835) = 100

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Solving for interest rate

Suppose you buy a security at price of $78.35 which will pay you $100 after 5 years. What is the interest rate you can earn on your investment.

PV_0 = $78.35, FV_5 = $100, n = 5, i = .

We have: $FV_5 = PV_0(FVIF_{i,5})$

$100 = 78.35(FVIF_{i,5})$

$FVIF_{i,5} = 100/78.35 = 1.2763 => i = 5\%$ (derive from Table 1)

Other way

$FVIF_{i,5} = (1+i)^5 = 1.2763$

$1+i = (1.2763)^{1/5} = (1.2763)^{0.2} = 1.05$

$=> i = 1.05 \ 1 = 0.05 = 5\%$

Solving for time

Suppose you know the security will provide a return of 5 percent per year, that it will cost $78.35, when does the security mature so that you will receive $100 at maturity.

PV_0 = $78.35, FV_n = $100, i = 5%, n = .

$100 = 78.35(1+0.05)^n = 78.35(FVIF_{5,n})$

$FVIF_{5,n} = 100/78.35 = 1.276 => n = 5$ years (derive from Table 1)

Other way

$FVIF_{5,n} = (1+0.05)^n = 100/78.35 = 1.2763$

$n(\ln 1.05) = \ln 1.2763$

$n = (\ln 1.05)/\ln 1.2763 = 5$ years

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Time line and cash flows

Time line a graphical representation which is used to show the timing of cash flow

A cash flow a series of payments or receipts occurring over a specified number of periods.

Outflow: a series of payments (deposit, cost, or an amount paid)

Inflow: a series of receipts
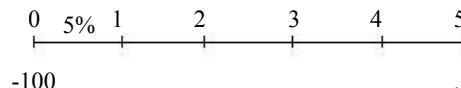
Kinds of cash flows

Annuity a equal cash flow occurring over a specified number of periods

- Ordinary annuity: equal cash flow occurring at the end of each period
- Annuity due: equal cash flow occurring at the beginning of each period

Perpetuity An ordinary annuity whose cash flow continues forever

Uneven (or mixed) cash flow cash flow in which the amount (payment or receipt) varies from one period to the next

Illustration of time line and cash flows

Time   0   5%   1   2   3   4

Cash flow   -100 $FV_4 = .$

Annuity   0   1   2   3   4

100   100 100 100

Uneven cash flow   0   1   2   3   4

100 200   500 300
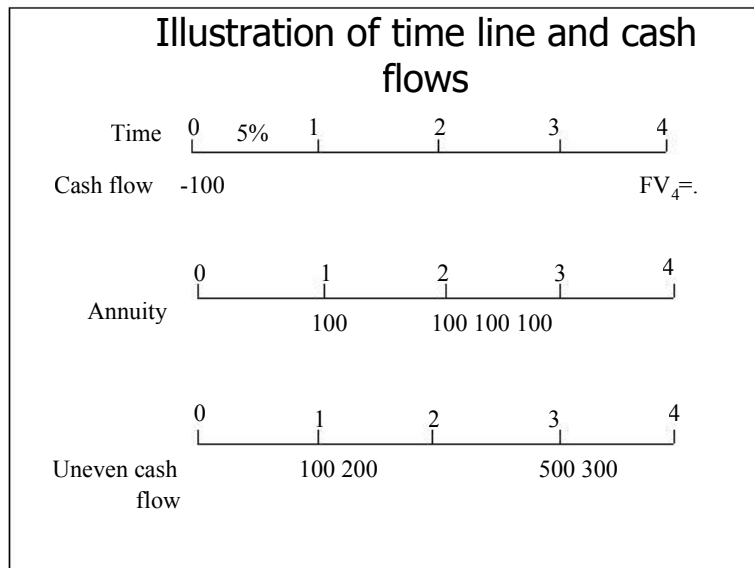
Future value of an ordinary annuity

$FVA_n = R(FVIFA_{i,n})$

$$FVA_n = R \left[\sum_{t=1}^{n} (1 \quad i)^{n-t} \right]$$

$$FVA_n = R \left[(1+i)^n - 1 \right] / i$$

Numerical solution

Tabular solution

Financial calculation solution

Excel solution

R: the periodic receipt or payment

n: the length of the annuity

FVIFA$_{i,n}$: the future value interest factor at i% for n periods

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Assume you lease your house at price of VND20 million per year
and deposit all receipts at the end of each year in a saving
account for the annual interest rate of 10%. How much you will
have at the end of three years.

Numerical solution

$FVA_3 = 20 + 20(1+0.1) + 20(1+0.1)^2 = $ VND66.2 million

Tabular solution (Table 3)

$FVA_3 = R(FVIFA_{i,n}) = 20(FVIFA_{10,3}) = 20(3.310) = $ VND66.2 million

Financial calculation solution

PMT = - 20, n = 3, i% = 10 => FV = VND66.2 million

Excel solution

Select f_x, financial, FV, click OK, and enter rate = 0.1,
nper = 3, pmt = - 20, then click OK

Present value of an ordinary annuity

$$PVA_n = R \left[\sum_{t=1}^{n} 1/(1+i)^t \right] = R \left[\frac{1}{i} - \frac{1}{i(1+i)^n} \right]$$

R: the periodic receipt or payment

n: the length of the annuity

$PVA_n = R(PVIFA_{i,n})$

Numerical solution

Tabular solution

Financial calculation solution

Excel solution

PVIFA$_{i,n}$: the present value interest factor at i% for n periods

Assume you plan to withdraw VND20 million at the end of each year for 3 years from your saving account which offers you the annual interest rate of 10%. How much you have to deposit in you account at the current time.

Numerical solution

$$PVA_3 = 20/(1+0.1) + 20/(1+0.1)^2 + 20/(1+0.1)^3 = VND\ 49.74\ million$$

Tabular solution (Table 4)

$$PVA_3 = R(PVIFA_{i,n}) = 20(PVIFA_{10,3}) = 20(2.487) = VND49.74\ million$$

Financial calculation solution

PMT = 20, n = 3, i% = 10 => PV = VND49.74million

Excel solution

Select f_x, financial, PV, click OK and enter rate = 0.1, nper = 3, pmt = 20, then click OK

Solving for unknown interest or discount rate

If you know:
   The annuitys future or present value
   The periodic payment or receipt, and
   The number of periods

You can solve for compound or discount rate

Solutions to solve for interest rate include:
   Tabular
   Financial calculator
   Excel

Illustrated example

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Assume Ms. A plans to have VND 34 million at the end of 5 years in order to travel abroad. Annually she decides to deposit her money of VND6 million in a saving account. If the bank compounds interest annually, what interest rate does she expect the bank offer.

Tabular solution (Table 3)

$FVA_n = R(FVIFA_{i,n}) = 6(FVIFA_{i,5}) = 34 => FVIFA_{i,5} = 34/6 = 5.67$

$=> i = 6\%$ (approximately)

Financial calculation solution

$PMT = -6$, $n = 5$, $FV = 34 => i = 6.26\%$

Excel solution

Select f_x, financial, rate, click OK, and enter nper = 5, pmt = - 6, FV = 34, then click OK

Solving for unknown periodic payment or receipt

If you know:
- The annuitys future or present value
- The interest rate, and
- The number of periods

You can solve for periodic payments or receipts

Solutions to solve for interest rate include:
- Tabular
- Financial calculator
- Excel

Illustrated example

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Assume Ms. A plans to have VND 34 million at the end of 5 years in order to travel abroad. How much does she have to deposit in a saving account at the end of each year if the bank annually compounds interest at a rate of 5% .

Tabular solution (Table 3)

$$FVA_n = R(FVIFA_{i,n}) = R(FVIFA_{5,5}) = R(5.526) = 34 => R = 34/5.526$$

$$=> R = VND6.15 \text{ million}$$

Financial calculation solution

n = 5, FV = 34, i = 5% => PMT = VND6.15 million

Excel solution

Select f_x, financial, PMT, click OK, then enter nper = 5, rate = 0.05, FV = 34, then click OK

Annuity Due

Annuity due calls for a series of equal payments or receipts occurred at the beginning of each period

Future value of annuity due ($FVAD_n$)

$$FVAD_n = R(FVIFA_{i,n})(1+i)$$

Present value of annuity due ($PVAD_n$)

$$PVAD_n = R(PVIFA_{i,n-1}) + R$$
$$= R(PVIFA_{i,n-1} + 1)$$

Illustrated example

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Assume you lease your house at price of VND20 million per year and deposit all receipts at the beginning of each year in a saving account for the annual interest rate of 10%. How much you will have at the end of three years.

Numerical solution

$FVA_3 = 20(1+0.1) + 20(1+0.1)^2 + 20(1+0.1)^3 = VND72.82$ million

Tabular solution (Table 3)

$FVA_3 = R(FVIFA_{i,n})(1+i) = 20(FVIFA_{10,3})(1+0.1)$
$= 20(3.310)(1.1) = VND72.82$ million

Financial calculation solution

BGN, PMT = - 20, n = 3, i% = 10 => FV = VND72.82 million

Excel solution

Select f_x, financial, FV, click OK, and enter rate = 0.1, nper = 3, pmt = - 20, type = 1, then click OK

Assume you plan to withdraw VND20 million at the beginning of each year for 3 years from your saving account which offers you the annual interest rate of 10%. How much you have to deposit in you account at the current time.

Numerical solution

$PVA_3 = 20/(1+0.1) + 20/(1+0.1)^2 + 20 = VND54.71$ million

Tabular solution (Table 4)

$PVA_3 = R(PVIFA_{i,n\ 1} + 1) = 20(PVIFA_{10,2} + 1) = 20(1.736 + 1)$
$$= VND54.72\ million$$

Financial calculation solution

$PMT = 20$, $n = 3$, $i\% = 10 \Rightarrow PV = VND54.71$ million

Excel solution

Select f_x, financial, PV, click OK and enter rate = 0.1, nper = 3, pmt = 20, type=1, then click OK.

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Perpetuity

Perpetuity is an ordinary annuity whose payment or receipts continue forever

For an annuity, we have:

$$PVA_n = R \left[\sum_{t=1}^{n} 1/(1+i)^t \right] = R \left[\frac{1}{i} - \frac{1}{i(1+i)^n} \right]$$

For perpetuity, we have:

$$PVA_\infty = R \left[\frac{1}{i} - \frac{1}{i(1+i)^\infty} \right] = \frac{R}{i}$$

Uneven or mixed cash flows

Uneven cash flow A series of cash flow in which the amount varies from one period to the next

Present value $PV = \sum_{t=1}^{n} CF_t \left(PVIF_{i,n}\right)$

Future value $FV_n = \sum_{t=1}^{n} CF_t \left(FVIF_{i,n}\right)$

Illustrated example

Assume that you lease your car for 5 years with the payment schedule at up as follows: $6000 for the first two years, $5000 for the next two years and 4000 for the final year. What is the present value of your income if the discount rate is of 6%.

Tabular solution

$PV_0 = 6000(PVIF_{6\%,1}) = 6000(0.943) = \$5658$

$PV_0 = 6000(PVIF_{6\%,2}) = 6000(0.890) = \$5340$

$PV_0 = 5000(PVIF_{6\%,3}) = 5000(0.840) = \$4200$

$PV_0 = 5000(PVIF_{6\%,4}) = 5000(0.792) = \$3960$

$PV_0 = 4000(PVIF_{6\%,5}) = 4000(0.747) = \$2988$

Sum = $22146

Excel solution

Select f_x, financial, NPV, then enter rate = 0.06 and use the mouse to bold for selecting the cash flows, click OK.

Assume that you lease your car for 5 years with the payment
schedule at up as follows: $6000 for the first two years, $5000
for the next two years and 4000 for the final year. What is the
future value of your income at the end of year 5 if the discount
rate is of 6%.

Tabular solution

$FV_5 = 6000(FVIF_{6\%,4}) = 6000(1,2625) = \$7575$

$FV_5 = 6000(FVIF_{6\%,3}) = 6000(1,1910) = \$7146$

$FV_5 = 5000(FVIF_{6\%,2}) = 5000(1,1236) = \$5618$

$FV_5 = 5000(FVIF_{6\%,1}) = 5000(1,0600) = \$5300$

$FV_5 = 4000(FVIF_{6\%,0}) = 4000(1,0000) = \$4000$

Sum = $29639

Excel solution

Select f_x, financial, NPV, then enter rate = 0.06 and use the
mouse to bold for selecting the cash flows, click OK, then
calculate the future value of the present value that has just
found

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Future and present value for n years and m times a year

Future value
$$FV_n = PV_0[1+(i/m)]^{mn}$$
Present value
$$PV_0 = FV_n/[1+(i/m)]^{mn}$$

Continuous compounding

Future value

$$FV_n = PV_0[1+(i/m)]^{mn}$$

As m approach infinity, we get continuous compounding and

$$FV_n = PV_0(e)^{in}$$

Present value

$$PV_0 = FV_n/(e)^{in} = FV_n.e^{in}$$

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Nominal and effective interest rate

Nominal interest rate A rate of interest quoted for a year that has not been adjusted for frequency of compounding

Effective annual interest rate The actual rate of interest earned (paid) after adjusting the nominal rate for a number of compounding periods per year

$$Effective\ rate = \frac{FV_n - PV_o}{PV_0} = \frac{PV_0[1 + (i/m)^{mn} - PV_0}{PV_0} = [1 + (i/m)^{mn} - 1$$

For one year, n = 1, we get: effective rate = $[1+(i/m)]^m$ 1

Assume that you deposit $1000 for 3 years with an interest rate of 6%per year. How much do you get at the end of year 3 if the bank pays the interest (a) semiannually, (b) quarterly, (c) monthly, and (d) continuously.

(a) $FV_3 = 1000[1+(0.06/2)]^{2\times3} = \$1194.05$

(b) $FV_3 = 1000[1+(0.06/4)]^{4\times3} = \$1195.62$

(c) $FV_3 = 1000[1+(0.06/12)]^{12\times3} = \$1196.88$

(d) $FV_3 = 1000(e)^{0.06\times3} = \$1197.22$

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Lecture 2

Discounted cash flow model (DCF)

$$PV = \frac{CF_0}{(1+k)^0} + \frac{CF_1}{(1+k)^1} + \ldots + \frac{CF_n}{(1+k)^n} = \sum_{t=0}^{n} \frac{CF_t}{(1+k)^t}$$
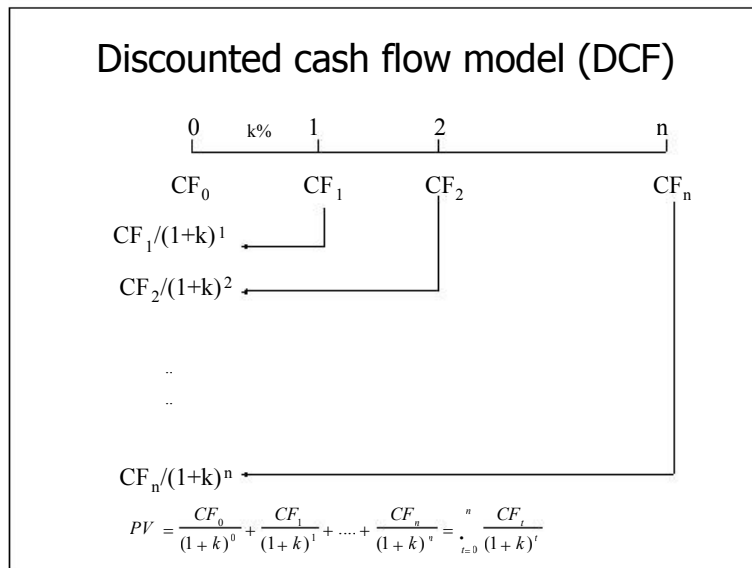
Applications of DCF model

Valuation
   Asset valuation
   Firm valuation
   Financial asset valuation
      Bond valuation
      Stock valuation
Capital budgeting
   Investment project decisions
   Financial asset investment decisions
Leasing
   Leasing vs purchasing decisions
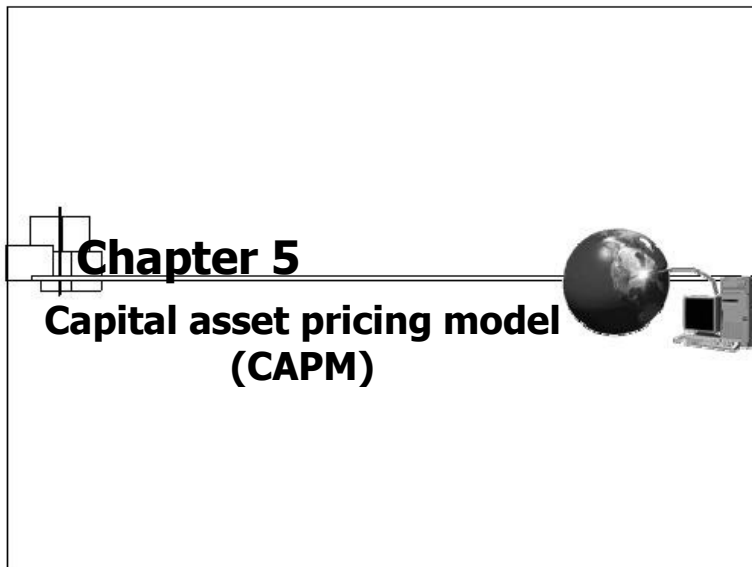
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Chapter 5

Capital asset pricing model (CAPM)

The outline of the chapter

Objective
Overview
Assumptions
Capital asset pricing model
Limitations
Arbitrage pricing theory

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Overview

Capital asset pricing model was developed by William Sharpe in 1960

This model describes the relationship between risk and expected (required) return

A securitys expected (required) return = risk-free rate + risk premium based on the systematic risk of the security

Risk-free rate = Rate of return on treasury bill/bond

Should the bill or bond be chosen.

Assumptions

The capital market is efficient

There are two investment opportunity: a risk-free asset and a portfolio of risky security

Security risk consisting of systematic (market) and unsystematic risk (business risk)

The investor holds the security in a period, say, one year.

The investor is risk averse person.

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Capital asset pricing model (CAPM)

The characteristic line A line that describes the relationship between an individual securitys return and return on the market portfolio. The slope of this line is beta.

Security market line (SML) A line that describes the linear relationship between expected rates of return for individual securities (and portfolio) and systematic risk measured by beta.

Relationship between an individual securitys returns and returns on the market portfolio

Example of Remico stock

Market portfolio: TSE 300

State	Type of economy	Return on market	Return on Remico.Ltd.
I	Boom	15	25
II	Boom	15	15
III	Recession	-5	-5
IV	Recession	-5	-15

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Relationship between an individual securitys returns and returns on the market portfolio

Assume that the probability of occurring the economy state is the same

Type of economy	Return on market	Expected return on Remico. (%)
Boom	15	(25x0.5) + (15x0.5) = 20
Recession	-5	(-5x0.5) + (-15x0.5) = -10

Relationship between an individual securitys returns and returns on the market portfolio
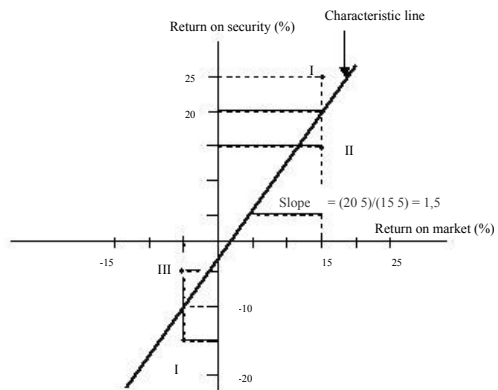
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Beta as a measure of responsiveness

Beta ( ) measures the sensitivity of a stocks return to changes in return on the market portfolio.

How to determine beta

$$= \frac{20 - (-10)}{15 - (-5)} = \frac{30}{20} = 1.5$$

Significance of beta - Each percent of changes in return on the market portfolio, a stocks return will change   % .

Beta estimation in practice

Investment dealers generally estimate beta by using regression analysis on historical data.

In practice, beta is usually provided by financial information services, for example:

    In the US, beta provided by Value Line

    In Canada, beta provided by Burns Fry Limited.

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Beta of a some of stocks

Stock	Beta
Amazon.com (AMZN)	3.31
Apple computer (AAPL)	0.72
Boeing (BA)	0.96
Bristol-Myers Sqibb (BMY)	0.86
The Coca-Cola Company (KO)	0.96
Dow Chemical (DOW)	0.86
The Gap (GPS)	1.09
General Electric (GE)	1.13

Relationship between risk and return - CAPM

Assumptions:

- The capital market is efficient
- There are two investment opportunity: a risk-free asset and a portfolio of risky security
- Security risk consisting of systematic (market) and unsystematic risk (business risk)
- The investor holds the security in a period, say, one year.
- The investor is risk averse person

Capital asset pricing model: $\bar{R}_j = R_f + (\bar{R}_m - R_f)_i$

CAPM as a function: y = b + ax

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The security market line

Expected return

Security market line

M

$\bar{R}_m$

Risk premium

R_f

Risk-free return

Beta of security

0   1
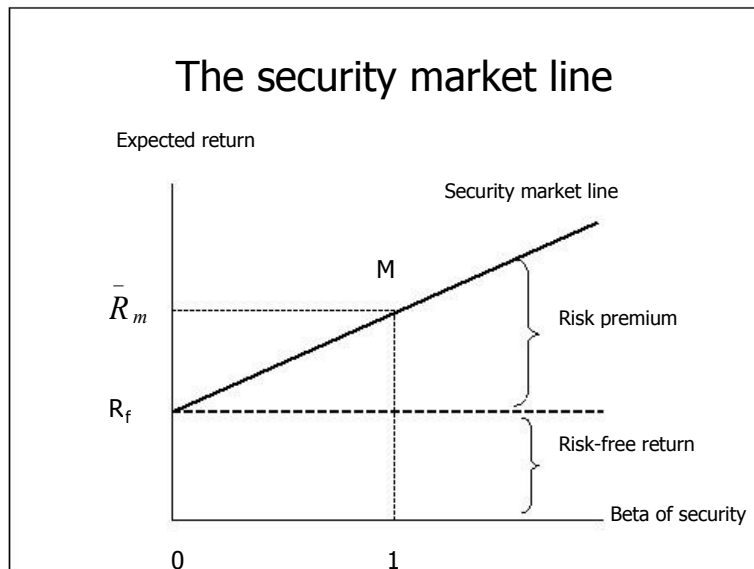
Important points associated with CAPM

Relationship between a stocks return and beta is positive linear described by the SML which has the slope: $(\bar{R}_m - R_f)$

= 0 => The expected return on a security with a beta of zero is the risk-free rate, R_f

= 1 => The expected return for any security with a beta of 1 is the market return, R_M

CAPM is held for portfolio as well. Beta of portfolio:

$$\beta_p = \sum_{i=1}^{n} w_i \beta_i$$

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Example to illustrate CAPM

Stock Nike (NKE) and Yahoo (YHOO) have beta of 1.01 and 3.32 respectively. Risk-free rate is 7% and market rate of return is 12%.

The expected return of NKE

$$\bar{R}_i = R_f + (\bar{R}_m - R_f)\beta_i = 7 + (12 - 7)1.01 = 12.05\%$$

The expected return of YHOO

$$\bar{R}_j = R_f + (\bar{R}_m - R_f)\beta_i = 7 + (12 - 7)3.32 = 23.6\%$$

In the case of portfolio

Assume that the investor combines a portfolio
with 40% of stock Nike and 60% of stock Yahoo

The expected rate of return of the portfolio:

$$R_p = (0.4\text{x}12.05) + (0.6\text{x}23.6) = 18.98\%$$

Beta of the portfolio:

$$_p = (0.4\text{x}1.01) + (0.6\text{x}3.32) = 2.396$$

The expected rate of return of the portfolio
determined by CAPM

$$\bar{R}_p = R_f + (\bar{R}_m - R_f)\ _p = 7 + (12 - 7)2.396 = 18.98\%$$

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Shifts in the SML

The SML may be shifted the impacts of:

An increase in inflation An increase in inflation rate leads to an increase in nominal risk-free rate (= Real rate + Inflation rate) and this makes the SML shift upward.

Changes in risk aversion Level of risk aversion is offset by risk premium:

$$(\bar{R}_m - R_f)$$
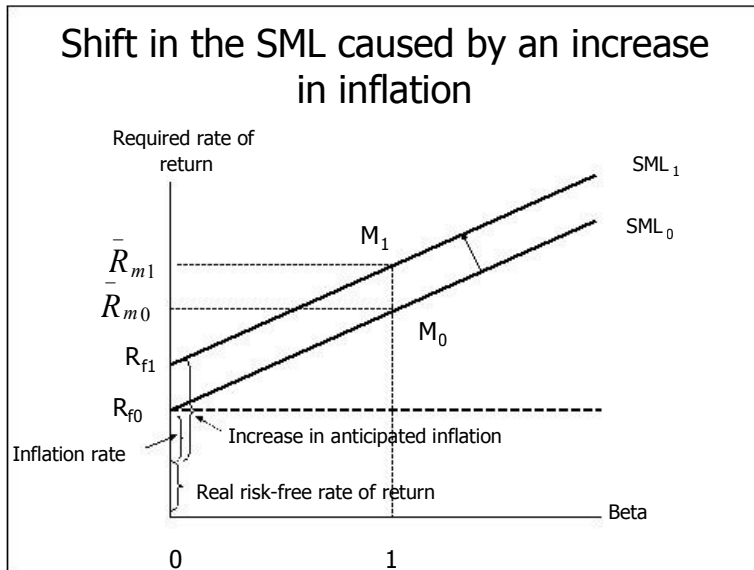
Shift in the SML caused by an increase in inflation

Shift in the SML caused by increase risk aversion
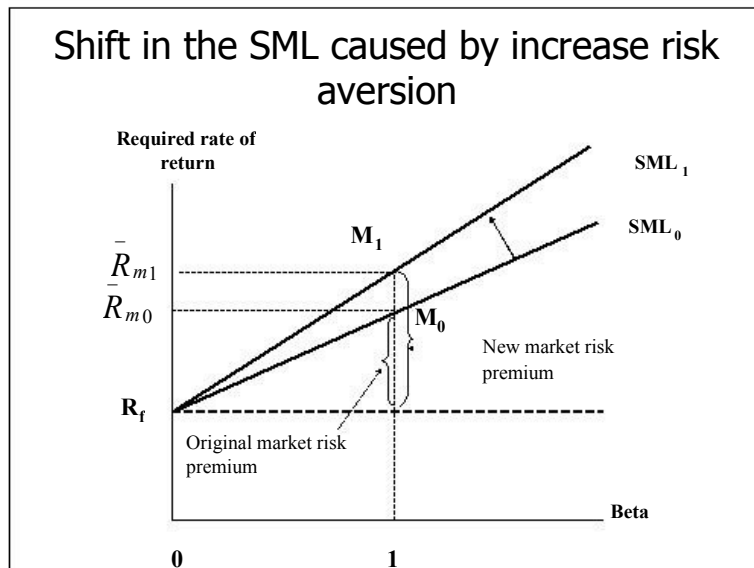
CAPM application

Estimating the risk-free rate (R_f)

Estimating the difference between the market rate and risk-free rate (risk premium)

Estimating the beta of a company

Put all variables estimated into the model to determine the required or expected rate of return.

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Arbitrage pricing theory

Two factor model

$$R_i = a + b_{1j}F_1 + b_{2j}F_2 + e_j$$

Multifactor model

$$R_j = a + \sum_{i=1}^{m} b_{ij}F_{ij} + e_j$$

where:

R_j: expected return of stock j

a: constant

F_{ij} (i=1m): value of factor 1m affecting on return of stock j
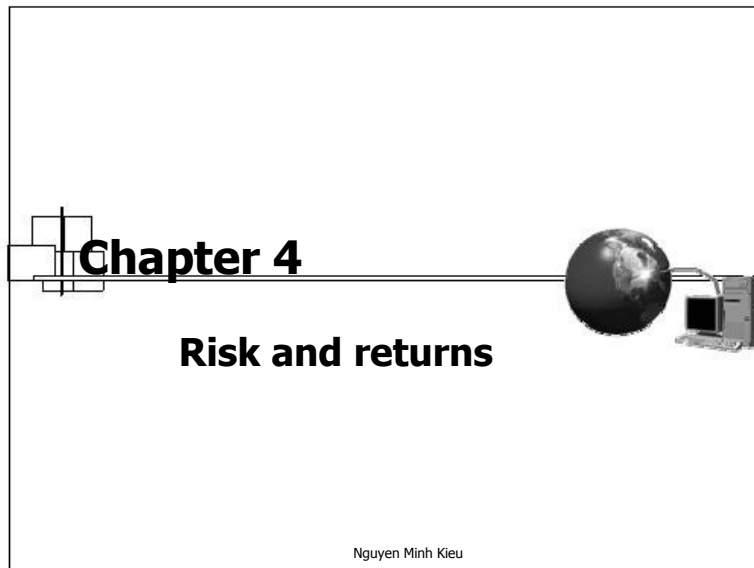
b_{ij}: sensitivity of return of stock j under the impact of factor i
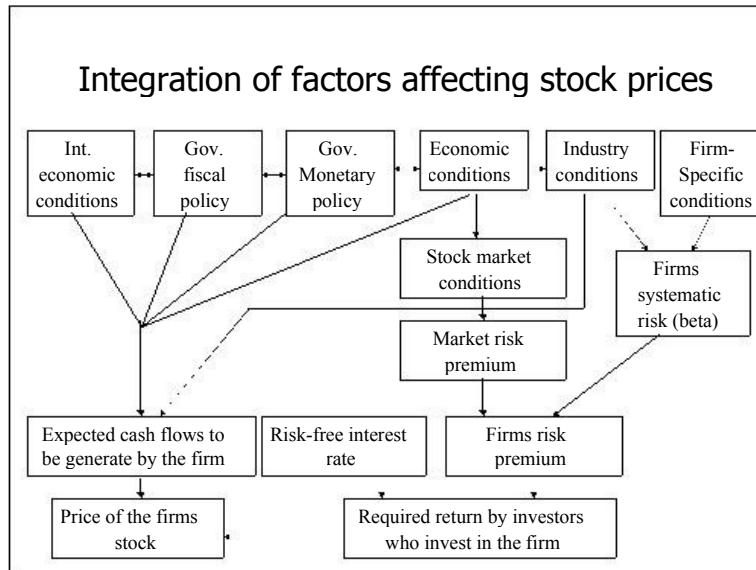
Integration of factors affecting stock prices

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Chapter 4

Risk and returns

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The outline of the chapter

Definition of risk and return
Risk measurement
Attitude to risk
Risk and return of a portfolio
Diversification
Risk classification

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Defining risk and return

Return Income received on an investment, consisting of dividend plus capital gain.

Rate of return Percent of income received divided by the beginning price.

$$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$$

D_t, P_t is dividend and stock price at time period t respectively

P_{t-1} is stock price at time period t 1

Risk The variability of returns from those that are expected

Examples Let compare risk when you buy

    a treasury bill

    a government bond

    a corporate bond

How to measure risk.

Risk measured by probability distributions

Expected return E(R): The weighted average of possible returns, with the weights being the probabilities of occurrence

Standard deviation (σ): A statistical measure of the variation of a distribution around its mean. It is the square root of the variance.

Coefficient of variation (CV) The ratio of standard deviation of a distribution to the mean of that distribution. It is a measure of relative risk.

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Risk measurement

Expected return and standard deviation

Expected return

$$E(R) = \sum_{i=1}^{n} (R_i)(P_i)$$

R_i: return for ith possibility
P_i: probability of return that occurring
n: number of possibilities

Standard deviation

$$\sigma = \sqrt{\sum_{i=1}^{n} [R_i - E(R)]^2 P_i}$$

Coefficient of variation

$$CV = \frac{\sigma}{E(R)}$$

Examples

State of the economy	Probability	Expected return of stock A (%)	Expected return of stock B (%)
Boom	0.30	100	20
Normal	0.40	15	15
Recession	0.30	(70)	10
	100.00		

For stock A: $E_A(R) = R_1P_1 + R_2P_2 + R_3P_3$
$= 0.3(100) + 0.4(15) + 0.3(-70) = 15\%$

For stock B: $E_B(R) = R_1P_1 + R_2P_2 + R_3P_3$
$= 0.3(20) + 0.4(15) + 0.3(10) = 15\%$

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Standard deviation of stock A

$R_i\ E(R)$	$[R_i\ E(R)]^2$	$P_i[R_i\ E(R)]^2$
100 15 = 85	7225	0.3(7225) = 2167.5
15 15 = 0	0	0.4(0) = 0
- 70 15 = - 85	7225	0.3(7225) = 2167.5
		$\sigma^2 = 4335$

$$s = \sqrt{s^2} = \sqrt{4335} = 65.84\%$$

Standard deviation of stock B

R_i E(R)	$[R_i E(R)]^2$	$P_i[R_i E(R)]^2$
20 15 = 5	25	0.3(25) = 7.5
15 15 = 0	0	0.4(0) = 0
10 15 = - 5	25	0.3(25) = 7.5
		$\sigma^2 = 15$

$$s = \sqrt{s^2} = \sqrt{15} = 3.87\%$$

σ_A = 6.84% and σ_B = 3.87% => Stock A is riskier than stock B

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Coefficient of variation (CV)

	Project A	Project B
Expected return	0.08	0.24
Standard deviation	0.06	0.08
Coefficient of variation	0.75	0.33

σ_A = 6% and σ_B = 8% => Is project B riskier than project A. In this case, we should consider CV of two projects.

CV_A = 0.75 and CV_B = 0.33 => Project A is riskier than project B

Attitudes toward risk

How to define the investments attitudes toward risk. Examine show game: *Lets Make a Deal*

There are two doors. Behind one of these doors is $10,000 and you have an option: open or not open the doors.

- If you choose opening doors => There are two possibilities:
  - you get $10,000, if you are right in opening the right door
  - you get $0, if you are wrongin opening the wrong door
- If you choose not opening => you will get a certainty equivalent amount (CE), without risk
- Your attitudes toward risk are defined based on the relation between CE and expected value
  - CE < expected value => risk aversion
  - CE = expected value => risk indifference
  - CE > expected value => risk preference

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Return of a portfolio

Portfolio A combination of two or more securities or assets.

The expected return of a portfolio a weighted average of the expected returns of the securities comprising that portfolio.

The general formulas for the expected return of a portfolio is as follows:

$$E_p(R) = \sum_{i=1}^{m} W_j E_i(R)$$

W_j: proportion or weight of total funds invested in security j
$E_j(R)$: the expected return for security j
m: number of different securities in the portfolio

Example

Security A and B have the expected return of 14,68% and 12% respectively. If the weight of each security A is 65% and the weight of B is 35%, the expected return of the portfolio is:

$$E_p(R) = \sum_{j=1}^{m} W_j E_i(R) = (0.65)14.68 + (0.35)12 = 13.74\%$$

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Risk of a portfolio comprising two assets

Risk of a portfolio is measured by portfolio standard deviation and variance of that portfolio.

Formulas for variance of a portfolio comprising two securities j and k is:

$$\sigma_p{}^2 = W_j{}^2 \sigma_j{}^2 + 2W_j W_k \sigma_{j,k} + W_k{}^2 \sigma_k{}^2$$

Standard deviation is the square root of the variance.

Risk of a portfolio comprising m assets

Risk of a portfolio comprising m assets is measured by standard deviation (σ_p)

$$\sigma_P = \sqrt{\sum_{j=1}^{m}\sum_{k=1}^{m} W_j W_k \sigma_{j,k}}$$

m: the total number of different securities in the portfolio

W_j: proportion of total funds invested in security j

W_k: proportion of total funds invested in security k

$\sigma_{j,k}$: the covariance between possible returns for security j and k

$r_{j,k}$: the expected correlation coefficient between possible returns j and k

Covariance a statistical measure of the degree to which variables move together. The equation for covariance is: $\sigma_{j,k} = r_{j,k}\sigma_j\sigma_k$

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Illustration of calculations

A portfolio of two stocks, stock 1 and 2. Stock 1 has the expected return is 16% with a standard deviation of 15%. Stock 2 has the expected return is 14% with a standard deviation of 12%. The expected correlation coefficient between the two stocks is 0.40. By investing equal-dollar amounts in each of the two stocks, the expected return and standard deviation of the portfolio are calculated as follows:

$$E_p(R) = (0.5)16 + (0.5)14 = 15\%$$

$$\sigma_p^{\,2} = W_j^{\,2}\sigma_j^{\,2} + 2W_jW_k\sigma_{i,k} + W_k^{\,2}\sigma_k^{\,2}$$

$$\sigma_p^{\,2} = (0.5)^2(0.15)^2 + 2(0.5)(0.5)(0.4)(0.15)(0.12) + (0.5)^2(0.12)^2$$

$$\sigma_p^{\,2} = 0.012825$$

$$\sigma_p = \sqrt{0.012825} = 11.3\%$$

Systematic and unsystematic risk

Systematic risk The variability of return on stocks or portfolio associated with changes in return on the market as a whole.

Unsystematic risk The variability of return on stocks or portfolio not explained by general market movements. It is avoidable through diversification.

Total risk = Systematic risk + Unsystematic risk

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Diversification

Combination of investing in stocks that their returns have a negative correlation.

As a result, decreasing in return of this stock is offset by increasing in return of the other stock => Risk reduction.

Diversification can reduce risk, but only unsystematic risk not systematic risk.
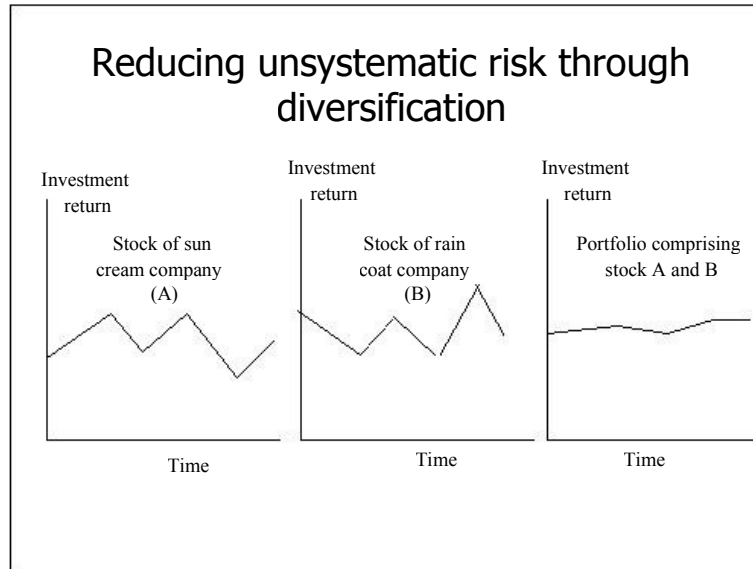
Reducing unsystematic risk through diversification

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Example

Consider return of stock W, M and a portfolio of WM
(returns of W and M have correlation coefficient r = - 1)

Year	Stock W	Stock M	Portfolio WM
1997	40%	(10%)	15%
1998	(10)	40	15
1999	35	(5)	15
2000	(5)	35	15
2001	15	15	15
Average return	15	15	15
Standard deviation	22.6%	22.6%	0.0%

Risk illustration

The impact of diversification on return and risk of a portfolio

Consider following example:

	Stock S	Stock T
Proportion (W)	60%	40%
Expected return (R)	17.50%	5.5%
Variance (σ^2)	0.066875	0.013225
Standard deviation (σ)	25.86%	11.50%
Covariance between S and T ($\sigma_{S,T}$)	- 0.004875	
Correlation coefficient between S and L ($\cdot_{S,T}$)	- 0.1639	

Return and standard deviation of the portfolio ST

Expected return of the portfolio

$R_p = W_s R_s + W_t R_t = (0.6 \times 17.5) + (0.4 \times 5.5) = 12.7\%$

Variance of the portfolio

$\sigma^2 = (0.6)^2 (0.2586)^2 + 2(0.6)(0.4)(-0.004875) + (0.4)^2 (0.1150)^2$
$= 0.023851$

Standard deviation of the portfolio

$\sigma = \sqrt{0.023851} = 0.1544 = 15.44\%$

Average standard deviation

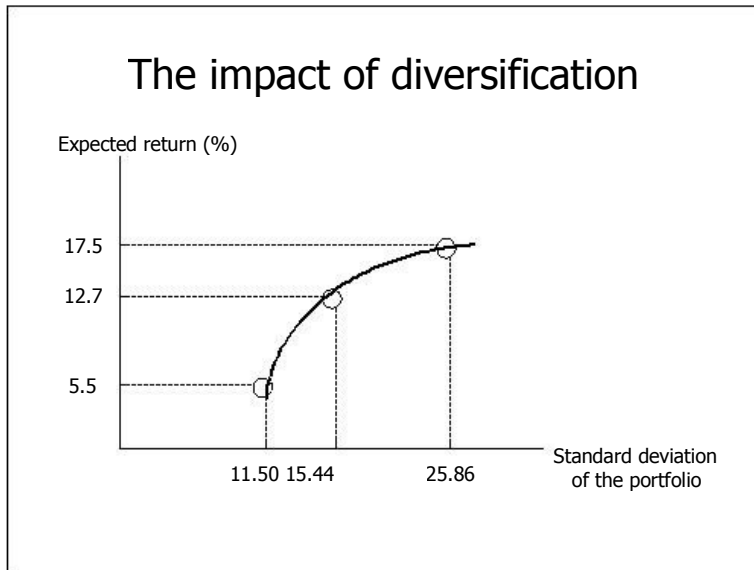$\sigma = (0.6)(0.2586) + (0.4)(0.1150) = 0.2012 = 20.12\%$

The impact of diversification

In the case $\rho_{S,T} = 1$

Standard deviation of the portfolio is equal the weighted average standard deviations of stocks.
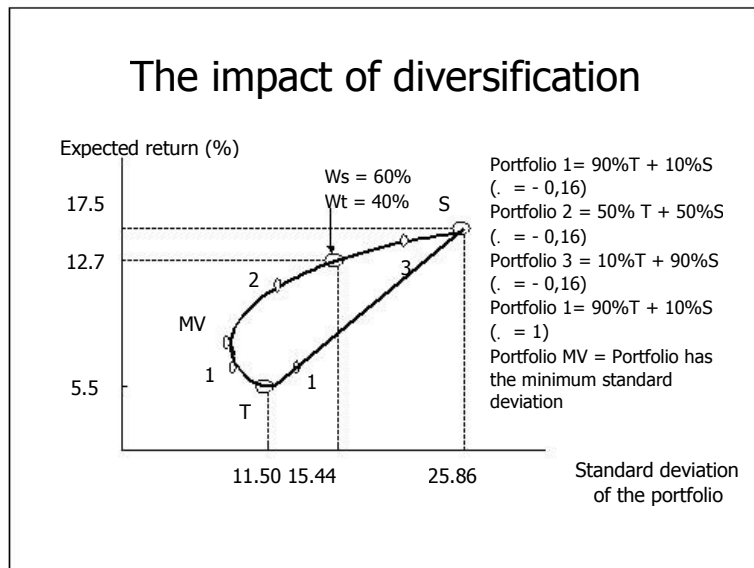
In the case $\rho_{S,T} < 1$

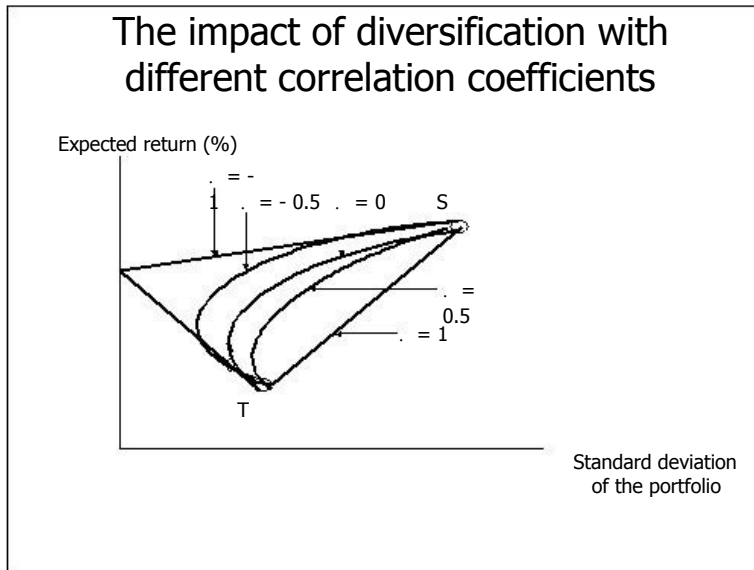Standard deviation of the portfolio is small the weighted average standard deviation of stocks.

The impact of diversification

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The impact of diversification

Expected return (%)

Ws = 60%
Wt = 40%

Portfolio 1= 90%T + 10%S
(. = - 0,16)
Portfolio 2 = 50% T + 50%S
(. = - 0,16)
Portfolio 3 = 10%T + 90%S
(. = - 0,16)
Portfolio 1= 90%T + 10%S
(. = 1)
Portfolio MV = Portfolio has
the minimum standard
deviation

17.5

12.7

5.5

S

MV

2

3

1

1

T

11.50 15.44   25.86

Standard deviation
of the portfolio

The impact of diversification with different correlation coefficients

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Efficient frontier

Expected return (%)

Minimum
variance
portfolio

Efficient frontier (red curve)

R

S

MV

W 1

2 3

T

Standard deviation
of the portfolio
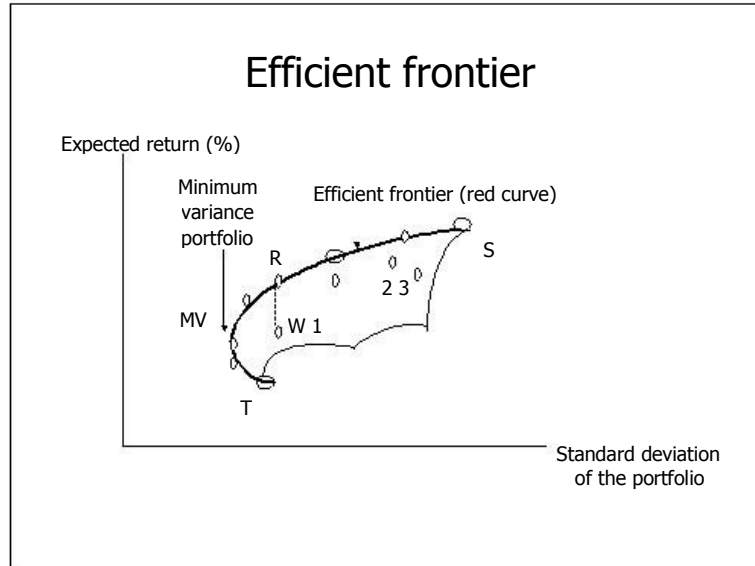
Portfolio of a risk-free asset and risky stock

Ms. A consider investing $350 in stock P and $ 650 in a risk-free asset. Ms. As portfolio is described as follows:

	Expected return on stock P	Expected return on risk-free asset
Return	14%	10%
Standard deviation	0.20	0
Proportion	35%	65%

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Return and risk of the portfolio

The expected return of the portfolio
  (0.35 x 14)+(0.65 x 10) = 11.4%

Variance of the portfolio

$$\sigma_p^{\,2} = (0.35)^2 (0.20)^2 = 0.0049$$

Standard deviation of the portfolio

$$\sigma = \sqrt{0.0049} = 0.07 = 7\%$$

Assume that Ms. A borrows $200 at the risk-free rate. Combining this with her original sum of $1000, she invests a total of $1,200 in stock P.

The expected return of the new portfolio

(1.20 x 14) + (- 0.2 x 10) = 14.8%

Variance of the new portfolio
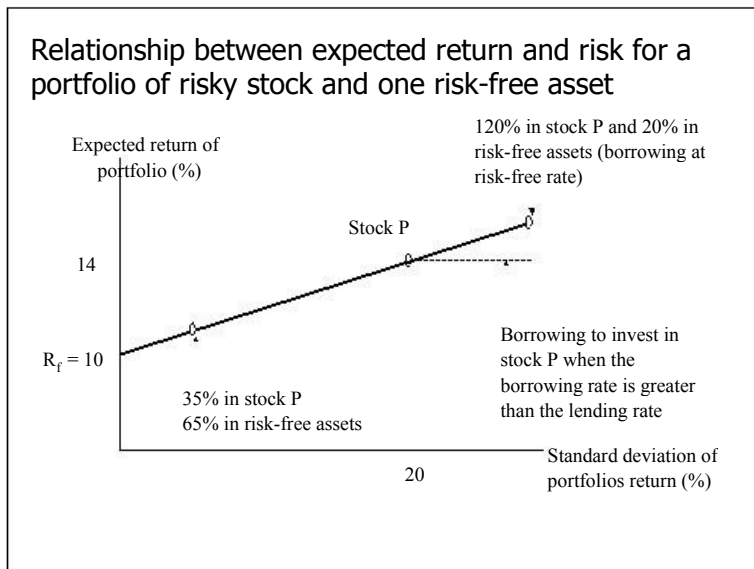
$$\sigma_p^{\,2} = (1.2)^2 (0.20)^2 = 0.0576$$

Standard deviation of the new portfolio

$$\sigma = \sqrt{0.0576} = 0.24 = 24\%$$

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Relationship between expected return and risk for a
portfolio of risky stock and one risk-free asset

120% in stock P and 20% in
risk-free assets (borrowing at
risk-free rate)

Expected return of
portfolio (%)

Stock P

14

$R_f = 10$

35% in stock P
65% in risk-free assets

Borrowing to invest in
stock P when the
borrowing rate is greater
than the lending rate

Standard deviation of
portfolios return (%)

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The optimal portfolio

In reality, an investor is likely to combine an investment in the risk-free asset with a portfolio of risky assets, for example portfolio Q

Portfolio Q is a combination of
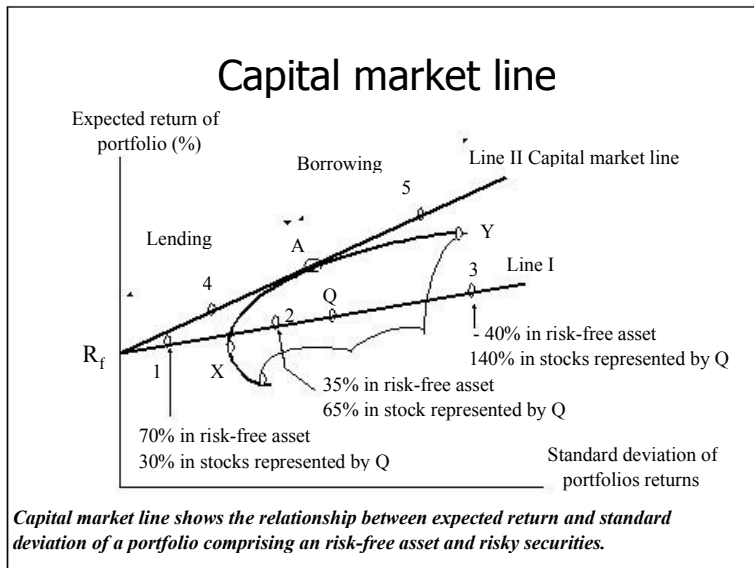- 30% stock BCE
- 45% stock CIBC
- 25% stock CM

The optimal portfolio is on the line running from R_F through A. This line is the tangent to the efficient set of risky securities at point A.

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Capital market line

Expected return of
portfolio (%)

Borrowing   Line II Capital market line

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Lending
A   Y

4   3   Line I
Q
2
- 40% in risk-free asset
R_f 140% in stocks represented by Q

1   X
35% in risk-free asset
65% in stock represented by Q

70% in risk-free asset
30% in stocks represented by Q
Standard deviation of
portfolios returns

*Capital market line shows the relationship between expected return and standard
deviation of a portfolio comprising an risk-free asset and risky securities.*

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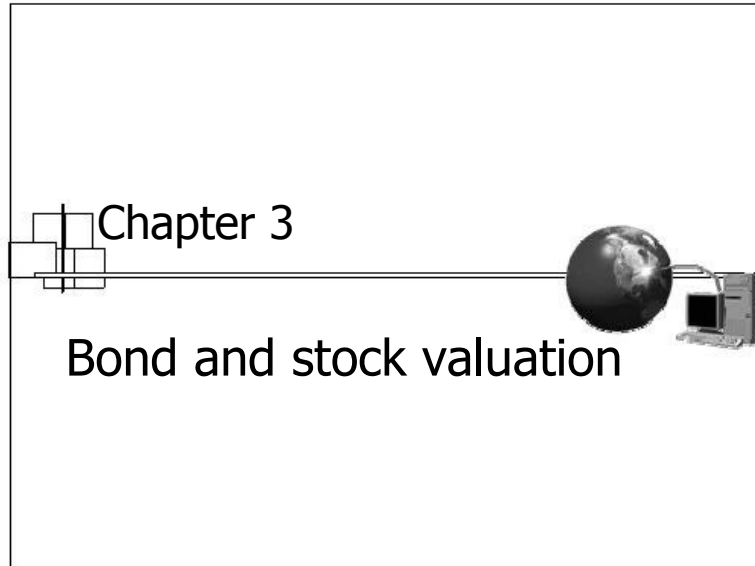
home.cd3wd.ar.cn.de.en.es.fr.id.it.ph.po.ru.sw

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Chapter 3

Bond and stock valuation

The outline of chapter 4

Some basic concepts

Bond valuation

  Perpetual bonds

  Maturity bonds

Preferred stock valuation

Common stock valuation

  Constant growth stocks

  No growth stocks

  Non-constant growth stocks

Rates of return

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Some basic concepts

Liquidation value versus going-concern value

Liquidation value the amount of money that could be realized if an asset or a group of assets sold separately from its operating organization.

Going-concern value the amount that a firm could be sold for as a continuing operating business.

Book value versus market value

Book value (1) the book value of an asset is the accounting value of an asset the assets cost minus its accumulated depreciation, (2) the book value of a firm is the dollar difference between the firms total assets and its liabilities and preferred stock listed on its balance sheet.

Market value the market price at which an asset trades.

Some basic concepts (cont.)

Market value versus intrinsic value

> Market value the market price at which an asset trades
>
> Intrinsic value the price a security ought to have based on all factors bearing on valuation. In short, intrinsic value of a security is its economic value.

This chapter will consider how to determine a securitys intrinsic value, i.e., what the security ought to be worth based on hard facts.

In general, this value is the present value of the cash-flow stream provided to the investor, discounted at a required rate of return appropriate for the risk involved.

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Securities on capital market

Securities used in this lecture include:

Bond
Government bond
Perpetual bond
Maturity bond
Nonzero coupon bond
Zero coupon bond
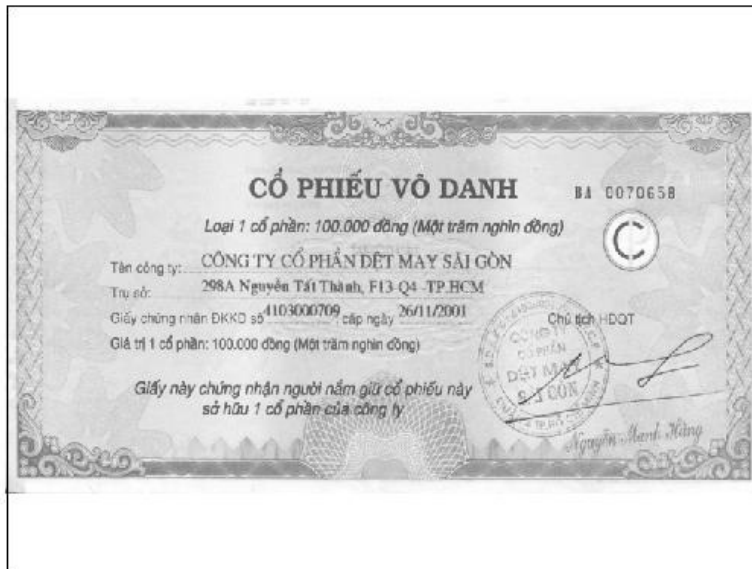Corporate bond
Inconvertible bond
Convertible bond
Callable bond i

Stock
Preferred stock
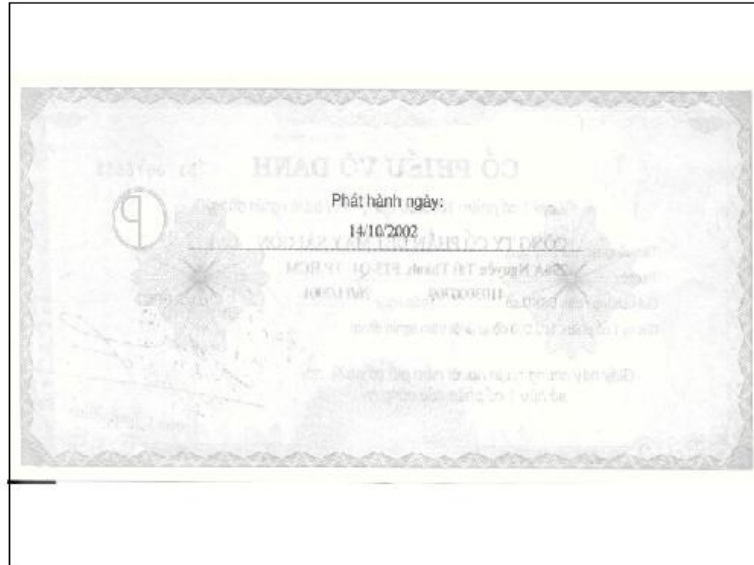Common stock
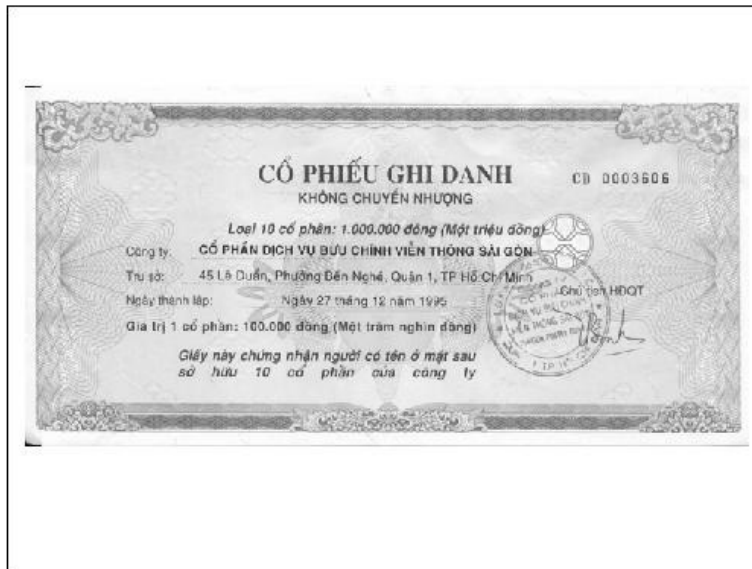
Distinguish the differences between bond and stock
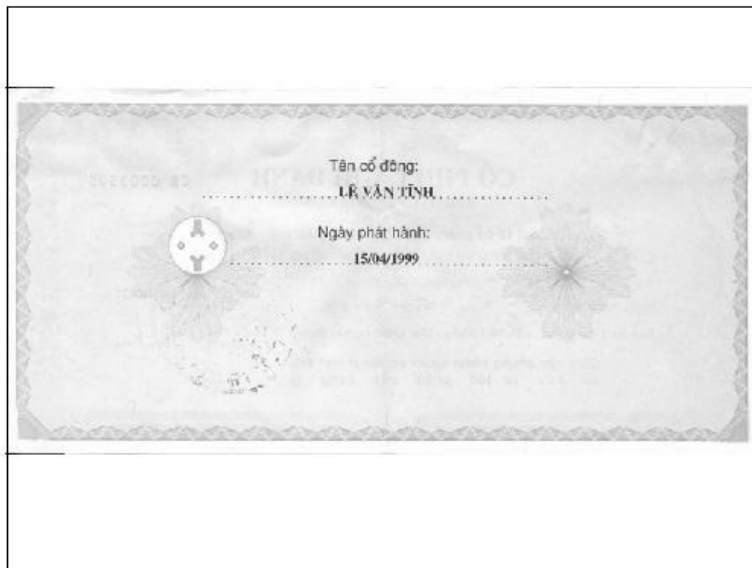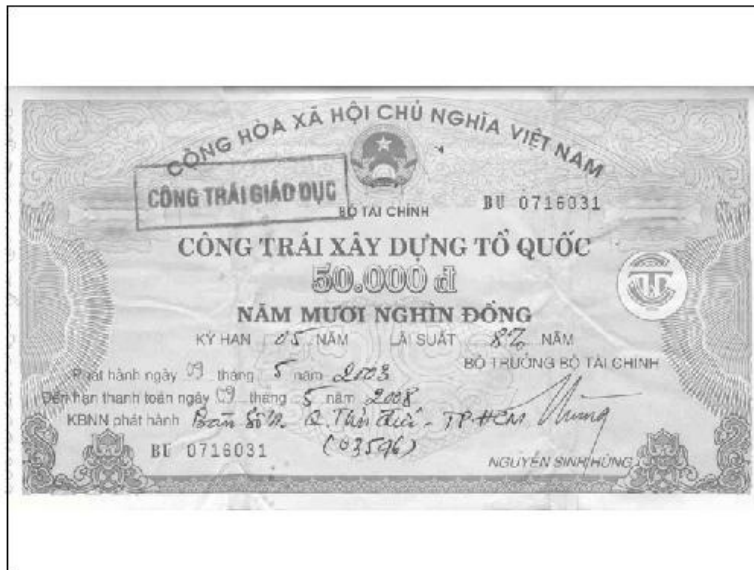
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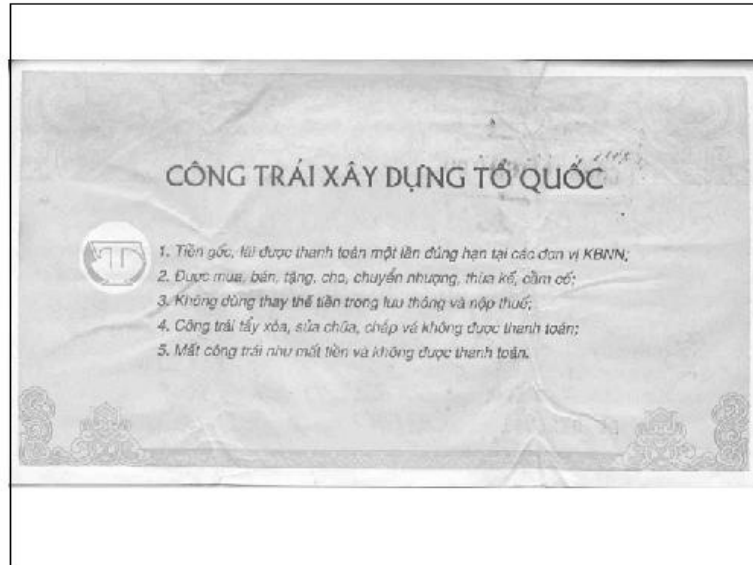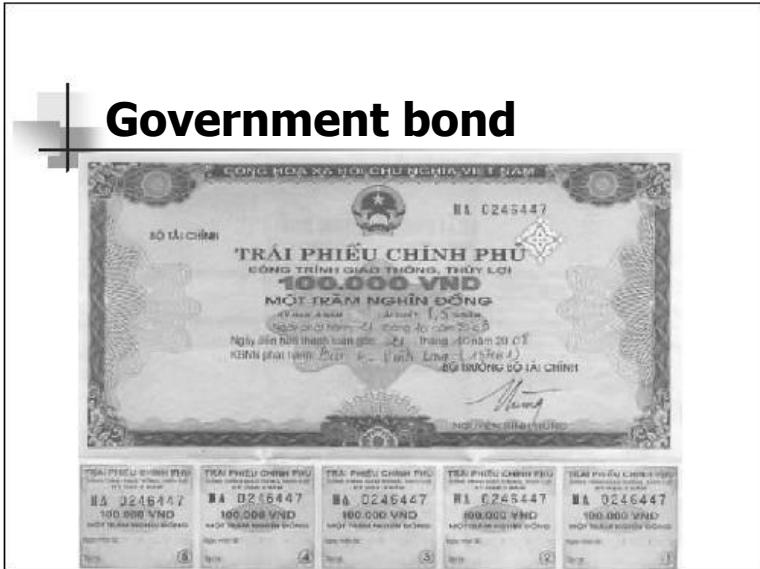
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Government bond

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Bond valuation

Bond a long-term debt instrument issued by a corporation or government.

Face value   the stated value of a bond, usually $1000

Coupon rate   the stated rate of interest on a bond, the annual interest payment divided by the bond s face value

Perpetual bond (consolidated annuities or consol)   a bond that never matures, issued by Great Britain after Napoleonic Wars

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Bond valuation

Bond classifications

Government or treasury bond vs. corporate bond

Maturity bond vs. perpetual bond

Nonzero coupon bond vs. zero coupon bond

Principle of bond valuation

Value of a bond equals the present value of cash flows generated from the bond.

Perpetual bond valuation

Perpetual bond or consol A bond that never matures.

$$V = \frac{I}{(1+k_d)^1} + \frac{I}{(1+k_d)^2} + ... + \frac{I}{(1+k_d)^8} = \sum_{t=1}^{8} \frac{I}{(1+k_d)^t} = I(PVIFA_{k_d,8}) = \frac{I}{k_d}$$

Assume that you buy a perpetual bond which give you the annual interest of 80\$ and your required rate of return is 14%. The value of this bond will be:

$$V = I/k_d = 80/0{,}14 = 571{,}43\$$$

Bonds with a finite maturity

Nonzero coupon bond valuation

$$V = \frac{I}{(1+k_d)^1} + \frac{I}{(1+k_d)^2} + \dots + \frac{I}{(1+k_d)^n} + \frac{MV}{(1+k_d)^n} = I(PVIFA_{k_d,n}) + MV(PVIF_{k_d,n})$$

where n is the number of years until final maturity and MV is the maturity value of the bond.

A 9-year-maturity bond with the face value of 1000$, and annual coupon rate of 10% and the investor requires a rate of return 12%, the value of the bond will be:

$$V = \frac{100}{(1+0,12)^1} + \frac{100}{(1+0,12)^2} + \dots + \frac{100}{(1+0,12)^9} + \frac{1000}{(1+0,12)^9} = 100(PVIFA_{12,9}) + 1000(PVIF_{12,9})$$

V = 100(5,328) +1000(0,361) = 893,8$

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Bonds with a finite maturity

Zero-coupon bond A bond that pays no interest but sells at a deep discount from its face value.

Zero coupon bond valuation

Assume you want to buy a nonzero coupon bond with the face value of $1000 and maturity of 10 years. If your required rate of return is 12%, the value of the bond will be:

$$V = \frac{MV}{(1+k_d)^n} = MV(PVIF_{k_d,n})$$

$$V = \frac{1000}{(1+0,12)^{10}} = MV(PVIF_{12,10}) = 1000(0,322) = 322\$$$

Semiannual interest compounding bond

Semiannual interest compounding bond valuation

$$V = \sum_{t=1}^{2n} \frac{I/2}{(1+k_d/2)^t} + \frac{MV}{(1+k_d/2)^{2n}} = (I/2)(PVIFA_{k_d/2,2n}) + MV(PVIF_{k_d/2,2n})$$

If the 10 percent coupon bonds of Treasury bond have maturity of 5 years, and our nominal required rate of return is 12%, the value of one $1,000-par-value bond is:

$$V = \sum_{t=1}^{10} \frac{1/2}{(1+12/2)^t} + \frac{10}{(1+12/2)^{10}} = (1/2)(PVIFA_{12/2,10}) + 10(PVIF_{12/2,10})$$

$$V = 0,5(PVIFA_{6\%,10}) + 10(PVIF_{6\%,10}) = 0,5(7,360) + 10(0,558) = 9,26$$

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Behavior of bond prices

The market required rate of return = the stated coupon rate => the price of the bond will equal its face value.

The market required rate of return < the stated coupon rate => the price of the bond will be more than its face value.
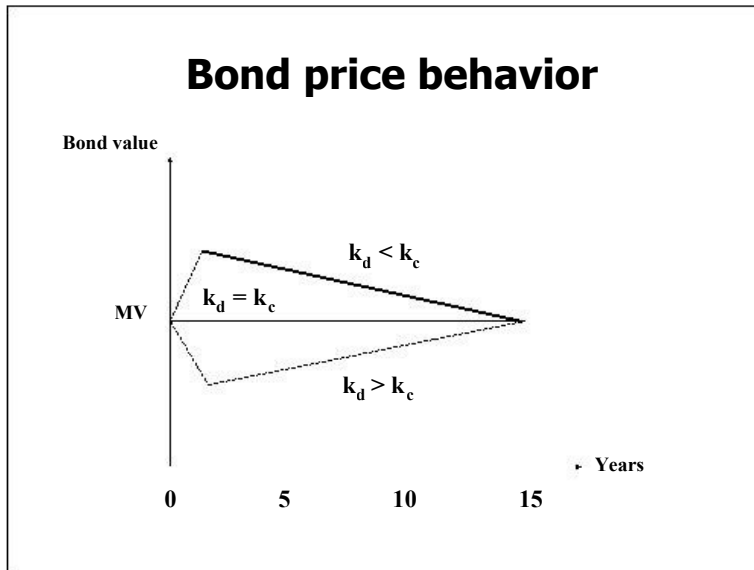
The market required rate of return > the stated coupon rate => the price of the bond will be less than its face value.

The market required rate of return increases => the bond price will fall.

The market required rate of return decreases => the bond price will increase.

Bond price behavior

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Ex: A $1000 bond has 15 year maturity and annual coupon rate of15%, and the investors required rate of return is 15% as buying this bond.

Value of the bond as soon as it was issued 15% = k_c = k_d:

$V = 150(PVIFA_{15\%,15}) + 1000(PVIF_{15\%,15})$

$= 150(5{,}8474) + 1000(0{,}1229) = 1000\$$

Value of the bond 1 year after issuing, if 15% = k_c > k_d = 10%

$V = 150(PVIFA_{10\%,14}) + 1000(PVIF_{10\%,14})$

$= 150(7{,}3667) + 1000(0{,}2633) = 1368{,}31\$$

Value of the bond 1 year after issuing, if 15% = k_c < k_d = 20%

$V = 150(PVIFA_{20\%,14}) + 1000(PVIF_{20\%,14})$

$= 150(4{,}6106) + 1000(0{,}0779) = 769{,}49\$$

Risks of bond investment

Credit risk Risk occurs when the issuer cannot pay the debt.

Interest rate risk Risk occurs when the market interest rate changes after the issuing. The market interest rate increases, the bond price will decrease.

Market interest rate	Price of the bond	
	One-year bond	14-year bond
5%	1095.24	1989.86
10	1045.45	1368.33
15	1000.00	1000.00
20	95.33	769.47
25	920.00	617.59

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Sensitivity of bond to interest rate movements

Bond price elasticity:

$$e = \frac{Percent\ change\ in\ price}{Percent\ change\ in\ interest\ r\,ate}$$

One-year bond: e = [(1095,24 1000)/1000]/[(5 15)/15] = 9,524%/ -66,667% = - 0,14

14-year bond: e = [(1989,86 1000)/1000]/[(5 15)/15] = 98,986%/ - 66,667% = - 1,48

For a given change in market required return, the price of a bond will change by a greater amount, the longer its maturity.

Relationship for two bonds

Bond price

Bond selling at a premium

Bond selling at par

Face value

5 -year, 8% coupon bond

Bond selling at a discount

15 -year, 8%coupon bond

Coupon rate, 8%

Market required rate of return

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Yield on bond

Yield to maturity (YTM)

$$V = \frac{I}{(1+YTM)^1} + \frac{I}{(1+YTM)^2} + \dots + \frac{I}{(1+YTM)^n} + \frac{MV}{(1+YTM)^n} = I(PVIFA_{YTM,n}) + MV(PVIF_{YTM,n})$$

Given V, I, MV, and n, you can solve the equation for YTM

Yield to call (YTC)

$$V = \frac{I}{(1+YTC)^1} + \frac{I}{(1+YTC)^2} + \dots + \frac{I}{(1+YTC)^n} + \frac{PC}{(1+YTC)^n} = I(PVIFA_{YTC,n}) + PC(PVIF_{YTC,n})$$

Given V, I, PC, and n, you can solve the equation for YTC

A \$1000-par-value bond with 12 years until maturity, and an 8 percent coupon rate is selling at \$761\$. What is the YTM of this bond.

Yield to maturity (YTM) Using interpolation method to find out YTM

If YTM = 10, we have:

$$V = 80(PVIFA_{10\%,12}) + 1000(PVIF_{10\%,12}) = 80(6.814) + 1000(0.319) = 864.12\$$$

If YTM = 15, we have:

$$V = 80(PVIFA_{5\%,12}) + 1000(PVIF_{15\%,12}) = 80(5.421) + 1000(0.187) = 620.68\$$$

$$0.05 \begin{bmatrix} X & \begin{bmatrix} \textbf{0.10 864.12\$} \\ \textbf{YTM 761.00\$} \end{bmatrix} & 103.12 \ 243.44 \\ & \textbf{0.15 620.68\$} & \end{bmatrix}$$

$$\frac{X}{0.05} = \frac{103.12}{243.44} \Rightarrow X = \frac{(0.05)(103.12)}{243.44} = 0.0212$$

$$X = YTM - 0.10 \Rightarrow YTM = 0.10 + X = 0.1212$$

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Preferred stock valuation

Preferred stock A type of stock that

   Promises a fixed dividend

   Has no stated maturity

=> preferred stock is similar to perpetual bond

Valuation formula

$$V = \frac{D_p}{k_p}$$

D_p: the stated annual dividend per share of preferred stock

k_p: the appropriate discount rate

Illustration: Suppose REE issue a preferred stock with $100 par value and 9-percent dividend, and the investors required return was 14%,its value per share would be:

V = $9/0.14 = 64.29$

Common stock valuation

Dividend discount models

$$V = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + ... + \frac{D_8}{(1+k_e)^8} = \sum_{t=1}^{8} \frac{D_t}{(1+k_e)^t}$$

Constant growth

$V = D_1 / (k_e \; g)$

No growth, $g = 0$

$V = D_1 / k_e$

Growth phases

$$V = \sum_{t=1}^{t_1} \frac{D_0(1+g_1)^t}{(1+k_e)^t} + \sum_{t=t_1+1}^{8} \frac{D_{t_1}(1+g_2)^{t-t_1}}{(1+k_e)^t}$$

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Ex: Stock As dividend per share at t=1 is expected to be \$2. The dividend grows in five years at 10%, then at 6% forever. Is the investors required return was 14%, what is the price of this stock.

The present value of dividend received in the first five years

$$V_1 = \sum_{t=1}^{t_1} \frac{D_0(1+g_1)^t}{(1+k_e)^t} = \sum_{t=1}^{5} \frac{2(1+0,10)^t}{(1+0,14)^t} = 8.99\$$$

The present value of dividend received from the year 6

$$V_2 = \sum_{t=t_1+1}^{8} \frac{D_{t_1}(1+g_2)^{t-t_1}}{(1+k_e)^t} = \sum_{t=6}^{8} \frac{D_5(1+g_2)^{t-5}}{(1+k_e)^t} = \frac{D_6}{(k_e-g_2)}$$

$$V_2 = \frac{D_6}{(k_e-g_2)} = \frac{D_5(1+g_2)}{(k_e-g_2)} = \frac{D_0(1+g_1)^5(1+g_2)}{(k_e-g_2)} = \frac{2(1.1)^5(1.06)}{0.14-0.06} = 42.63$$

Price of stock V = V$_1$ + PV(V$_2$) = 8.99 + 42.63(PVIF $_{14\%,5}$)

= 8.99 + 42.63(0.519) = 31.12\$

Limitations of the dividend discount model

The model can not apply when the valuing firm retains most its earnings rather than distributes them as dividend.

The model may result in an inaccurate valuation of a firm because of potential errors in determining:

  the dividend to be paid over the next year
  The growth rate
  The required rate of return by the investors

Price-Earnings (PE) method

This method is based on the mean PE ratio of all publicly traded competitors in the respective industry

V = (the expected earnings of firm per share)x(Mean industry PE ratio)

How to determine the PE ratio.

Let b denote the retained earning ratio => 1 b = The dividend-payout ratio = D_1/E_1, where D_1, E_1 are respectively the expected dividend and earnings per share in period 1.

Because 1 b = D_1/E_1 => (1 b) $E_1 = D_1$

We have: V = $D_1/(k_e g)$ = (1 b)$E_1/ (k_e g)$ =>V/E_1= (1 b)/($k_e g$)

PE = V/E_1 = (1 b)/($k_e g$)

Example illustrated PE method

VINATRANS stock with

Par value = 100,000 dong, k_e = 20%, g = 10%

Number of share outstanding = 80.000, Expected EPS = 75,000 dong

Dividend-payout ratio = 100%

PE = (1 b)/(k_e g) = (1 0)/(0.2 0.1) = 10

Stock price = 75,000 x 10 = 750,000 dong

BIBICA stock

Par value = 10,000 dong, k_e = 15%, g = 10%

Number of share outstanding = 5,600,000, expected EPS = 2,400 dong

Dividend-payout ratio = 40%

PE = (1 b)/(k_e g) = (1 0.4)/(0.15 0.1) = 12

Stock price = 2,400 x 12 = 2,800 dong

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Limitations of the PE method

The PE method may result in an inaccurate valuation for a firm because of potential errors in:

- The forecast of the firms future earnings
- The choice of the industry used to derive the PE ration

Some investors could not trust the PE ratio regardless of how it is derived

Yield on stock

Yield on preferred stock

$$P_0 = \frac{D_p}{k_p} => k_p = \frac{D_p}{P_0}$$

Yield on common stock

$$P_0 = \frac{D_1}{k_e - g} => k_e = \frac{D_1}{P_0} + g$$

These formulas may be used to determine the component cost of capital later on.

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Chapter 6

Capital Budgeting

The outline of chapter 6

Basics of capital budgeting
Cash flow estimation
Cost of capital
Decision rules for capital budgeting

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Basics of capital budgeting

Importance of capital budgeting

Project classifications

Steps in capital budgeting

Importance of capital budgeting

Why capital budgeting is important to a firm.

- The result of capital budgeting decisions continue for many years
- Capital budgeting can improve the timing of asset acquisitions and the quality of assets purchased
- Capital budgeting involves substantial expenditure and value creation

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Project classifications

Based on the purpose of a project
- Replacement: maintenance of business
- Replacement: cost reduction
- Expansion of existing products or markets
- Expansion into new product or markets
- Safety and/or environment projects
- Others

Based on relation of projects
- Independent projects
- Mutual exclusive projects

Steps in capital budgeting

Estimating the cost of the project

Estimating the expected cash flows from the project

Determining the appropriate cost of capital at which cash flows are discounted.

Selecting and calculating criteria for decision making

Making decision: accept or reject the project.

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Estimating the cost of the project (CF $_0$) or initial investment cash flow

CF_0 includes costs:

    Purchasing assets

    Shipping

    Installation

    Any other cost related to the assets installation

    Working capital requirement (WCR) for operation of the first year

In the case of replacing old by new asset, needs to add the following items:

    - old asset sale

    + (price of old asset sale book value of the old asset) * income tax

The necessary cost for WCR = % of expected income

$CF_0 < 0$

Note: Interest is not included in the CF $_0$s cash flow

Estimating the expected cash flows from the project

Cash flow The actual net cash flow, as opposed to accounting net income, that flows into or out of a firm during some specified period.

Cash flow estimation involves:

Identifying the relevant cash flows

Changes in net working capital

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Relevant cash flows

Relevant cash flows The specific cash flows that should be considered in a capital budgeting decision.

Two cardinal rules help financial manager avoid mistakes in determining relevant cash flows:

  Capital budgeting decisions must be based on cash flows, not accounting income

  Only incremental cash flows are relevant to the accept/reject decision.

Cash flow versus accounting income

In capital budgeting, annual cash flows, not accounting profits, are used .

Net cash flow = Net income + Depreciation

	Accounting profits	Cash flow
Sales	$100,000	$100,000
Costs except depreciation	50,000	50,000
Depreciation	10,000	-
Operating income	40,000	50,000
Taxes (40%)	16,000	16,000
Net income/cash flows	24,000	34,000

Net cash flow = Net income + Depreciation = 24,000 + 10,000

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Incremental cash flows

Incremental cash flow The net cash flow attributable to an investment project. It is changes in the firms total cash flows that occur as a direct result of accepting the project.

In determining incremental cash flows, we need to consider 4 problems:

Sunk costs

Opportunity costs

Effects on other firm parts of the firm externalities

Shipping and installation costs

Sunk costs

Sunk cost A cash outlay that has already incurred and which cannot be recovered regardless of whether the project is accepted or rejected.

Sunk costs are not incremental costs, and they should not be included in the analysis.

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Opportunity costs

Opportunity cost The return that will not be earned if funds are invested in a particular project.

Opportunity costs must be included in the projects evaluation.

Externalities

Externalities The effects of a project on cash flows in other parts of the firm.

For example, in evaluating a new branch building project of a bank, the net revenue produced by customers that shift from the main office to the new branch should not be treated as incremental income in the capital budgeting decision.

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Shipping and installation costs

Shipping and installation costs occurred when a firm acquires fixed assets are included in incremental cash flows

For examples, if a computer was bought at the invoice price of $1000 and shipping and installation costs are $100, then the full cost paid for computer investment is $1,100.

Changes in net working capital

Investing on a project leads to increasing in current assets and liabilities.

The difference between the required increase in current assets and the spontaneous increase in current liabilities is the change in net working capital.

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Determining the cost of capital

Basic definitions

Cost of debt

Cost of preferred stock

Cost of retained earnings

Cost of newly issued common stock

Weighted average cost of capital

Basic definitions

Capital component One of types of capital used by firms to raise money.

Cost of capital components are included:

k_d = interest rate on the firms new debt = before tax component cost of debt = 10%

$k_d(1\ T)$= after-tax component cost of debt, where T = 40% is income tax rate

k_p = component cost of preferred stock

k_s = component cost of retained earnings

k_e = component cost of external equity obtained by issuing new common stock

WACC = the weighted average cost of capital

Cost of debt

After-tax cost of debt the relevant cost of new debt, taking into account the tax deductibility of interest: used to calculate the WACC.

After-tax cost of debt = Interest rate tax savings

$$= k_d \quad k_d T = k_d(1 \ T)$$
$$= 10(1 \ 0,4) = 6\%$$

Cost of preferred stock

Cost of preferred stock (k_p) the rate of return investors required on the firms preferred stock

Cost of preferred stock: $k_p = \dfrac{D_p}{P_n}$

Where:

D_p = preferred stock dividend

P_n = net issuing price = price flotation costs

Ex. A stock pays \$10 dividend per share and sells for \$100 in the market. Flotation cost = 2.5%.

$$k_p = \frac{D_p}{P_n} = \frac{10}{97.50} = 10.30\%$$

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Cost of retained earnings

Cost of retained earnings (k_s) the rate of return required by stockholders on a firms common stock

We must assign a cost of retained earnings because of its opportunity cost. If the firm cannot invest retained earning and earn at least k_s, it should pay these funds to stockholders and let them invest directly in other assets.

Cost of retained earnings may be estimated by one of three approaches:

    The CAPM approach

    The bond-yield-plus-risk-premium approach

    The discounted cash flow approach

The CAPM approach

This approach is used to estimate k_s through 4 steps

Step 1: estimate the risk-free rate, k_f generally taking treasury bond or bill rate

Step 2: estimate the stocks beta coefficient, b_i and use this as an index of the stocks risk

Step 3: estimate the expected rate of return on the market, k_m

Step 4: substitute the preceding values into the CAPM equation to estimate the required rate of return on the stock: $k_s = k_f + (k_m\ k_f)b_i$

Illustrated example: Assume that k_f = 8%, k_m = 13%, b_i = 0.7 for a given stock. This stocks k_s is calculated as follows: $k_s = 8 + (13\ 8)0.7 = 11.5\%$

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Bond-yield-plus-risk-premium approach

This approach is used to estimate k_s by adding a risk-premium of three to five percent point to the interest rate on the firms long-term debt.

$$k_s = \text{Bond yield} + \text{Risk premium}$$

For example, the debt of a riskier company such as Continental Airlines might carry a yield of 12%, its cost of retained earnings will be: $k_s = 12 + 4 = 16\%$

Risk premium, 4%, is a judgmental estimate but empirical research suggests that it may be ranged from 3 to 5 percent.

Discounted cash flow approach

Based on the discounted cash flow model, we have: $P_0 = \dfrac{D_1}{k_s - g}$

From this model we can derive: $k_s = \dfrac{D_1}{P_0} + g$

Assume stock A sells for $23, its next expected dividend is $1.24 and its expected growth rate is 8 percent. Its cost of retained earnings is:

$$k_s = \frac{D_1}{P_0} + g = \frac{1.24}{23} + 8 = 13.4\%$$

Cost of newly issued common stock or external equity, k_e

k_e based on the cost of retained earnings but increased for flotation cost. Flotation cost (F) the percentage cost of issuing new common stock

$$k_e = \frac{D_1}{P_0(1-F)} + g$$

Assume stock A sells for $23 with a flotation cost of 10%, its next expected dividend is $1.24 and its expected growth rate is 8 percent. Its cost of newly issuing common stock is:

$$k_e = \frac{D_1}{P_0(1-F)} + g = \frac{1.24}{23(1-0.10)} + g = 14.0\%$$

Weighted average cost of capital, WACC

Weighted average cost of capital a weighted average of the component costs of debt, preferred stock and common equity

$$WACC = w_d k_d (1-T) + w_p k_p + w_s k_s$$
$$= 0.45(10\%)(1-0.4)+0.02(10.3\%)$$
$$+0.53(13.4\%) \qquad = 10.0\%$$

Weighted average cost of capital is used as discount rate in capital budgeting.

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Capital budgeting decision rules

Four primary methods used to rank projects and decide whether or not they should be accepted are:

Payback period (PP)

Net present value (NPV)

Internal rate of return (IRR)

Modified internal rate of return (MIRR)

Illustrated example

Assumptions in the example

For simplicity, in this example we assume that:

- Projects are equally risky
- CF_t are expected cash flows adjusted to reflect taxes, depreciation, and salvage values
- The investment outlays shown as CF0 include any necessary changes in net working capital
- Cash flows occur at the end of the designated year
- Project S is a short-term in the sense that its cash flows tend to come in sooner than Ls.

Example

Year	Expected after-tax cash flows, CF$_t$	
	Project S	**Project L**
0	($1000)	($1000)
1	500	100
2	400	300
3	300	400
4	100	600

Payback period

Payback period the length of time required for the net revenues of an investment to recover the cost of the investment.

$$\text{Payback period} = \text{Year before full recovery} + \frac{\text{Unrecovered cost at start of year}}{\text{Cash flow during year}}$$

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Payback period

	0	1	2	3	4
Project S					
Net cash flow	-1000	500	400	300	100
Cumulative NCF	-1000	-500	-100	200	300

	0	1	2	3	4
Project L					
Net cash flow	-1000	100	300	400	600
Cumulative NCF	-1000	-900	-600	-200	400

Payback S = 2 + 100/300   Payback L = 3 + 200/600

= 2.33 years   = 3.33 years

Conclusions

Project S has a lower payback than L

The lower the payback the better

If the firm required a payback of three years or less, project S would be accepted, but project L would be rejected

If the projects were mutually exclusive, S would be ranked over L because S has the shorter payback.

Payback period is complained in that it ignores the time value of money and dose not take account of costs of capital. So, it is modified by the discounted payback period.

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Discounted payback period

Discount rate = 10%　　　　　**01234**
Project S
Net cash flow　　　　　**-1000 500 400 300 100**
Discounted NCF　　　　　**-1000 455 331 225 68**
Cumulative discounted NCF -1000 -545 -214 11 79

Discount rate = 10%　　　　　**01234**
Project L
Net cash flow　　　　　**-1000 100 300 400 600**
Discounted NCF　　　　　**-1000 91 248 301 410**
Cumulative discounted NCF -1000 -909 -661 -360 50

Discounted payback S = 2.0 + 214/225 = 2.95 years

Discounted payback L = 3.0 + 360/410 = 3.88 years

Net present value

Net present value (NPV) A method of ranking investment proposals using the NPV which is equal to the present value of future net cash flows discounted at the cost of capital.

Discounted cash flow (DCF) techniques Methods of ranking investment proposals that employ time value of money concepts: two of these are the net present value and internal rate of return methods.

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Steps in NPV methods

Find the present value of each cash flow, including both inflows and outflows, discounted at the projects cost of capital

Sum these discounted cash flows, this sum is defined as the projects NPV

If the NPV is positive, the project should be accepted, while if the NPV is negative, it should be rejected.

If two project are mutually exclusive, the one with the higher NPV should be chosen, provided that NPV is positive.

NPV formula

$$NPV = CF_0 + \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \ldots + \frac{CF_n}{(1+k)^n} = \sum_{t=1}^{n} \frac{CF_t}{(1+k)^t}$$

Where CF_t is the expected net cash flow at period t and k is the project cost of capital

	0	1	2	3	4
Project S					
Net cash flow	-1000.0	500.00	400.00	300.00	100.00
Present value	($1,000.0)	454.55	330.58	225.39	68.30
Net present value $78.82					
NPV	$78.82				

	0	1	2	3	4
Project L					
Net cash flow	-1000.0	100.00	300.00	400.00	600.00
Present value	($1,000.0)	90.91	247.93	300.53	409.81
Net present value $49.18					
NPV	$49.18				

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Internal rate of return (IRR)

Internal rate of return methods A method of ranking investment proposals using the rate of return on an asset investment calculated by finding the discount rate that equates the present value of future cash inflows to the investments cost.

IRR the discount rate which forces the PV of a projects inflows to equal the PV of its costs.

Internal rate of return (IRR)

PV(Inflows) = PV(Investment cost)

$$CF_0 + \frac{CF_1}{(1+IRR)^1} + \frac{CF_2}{(1+IRR)^2} + \ldots\ldots + \frac{CF_n}{(1+IRR)^n} = 0$$

$$\sum_{t=1}^{n} \frac{CF_t}{(1+IRR)^t} = 0$$

Solve this equation for IRR

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Internal rate of return (IRR)

	0	1	2	3	4
Project S					
Net cash flow	-1000.0	500.00	400.00	300.00	100.00
Present value	($1,000.0)	454.55	330.58	225.39	68.30
Net present value $78.82					
NPV	$78.82				
IRR	14.5%				

	0	1	2	3	4
Project L					
Net cash flow	-1000.0	100.00	300.00	400.00	600.00
Present value	($1,000.0)	90.91	247.93	300.53	409.81
Net present value $49.18					
NPV	$49.18				
IRR	11.8%				

IRR decision rule

Hurdle rate the discount rate of cost of capital which the IRR must exceed to a project be accepted.

IRR > hurdle rate => project is accepted

In our example, if both projects have a cost of capital, or hurdle rate, of 10% and two projects are independent => both should be accepted because both expected to earn more than cost of capital needed to finance them.

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Modified internal rate of return (MIRR)

Modified IRR The discount rate at which the present value of a projects cost is equal to the present value of its terminal value, where the terminal value is found as the sum of the cash inflows, compounded at the firms cost of capital.

PV costs = PV terminal value

$$\sum_{t=0}^{n} \frac{COF_t}{(1+k)^t} = \frac{\sum_{t=0}^{n} CIF_t (1+k)^n}{(1+MIRR)^n} \qquad PV\cos ts = \frac{TV}{(1+MIRR)^n}$$

Where COF refers to cash outflows and CIF refers to cash inflows.

Modified internal rate of return (MIRR)

	0	1	2	3	4
Project S					
Net cash flow	-1000.0	500.00	400.00	300.00	100.00
Present value	($1,000.0)	454.55	330.58	225.39	68.30
Net present value $78.82					
NPV	$78.82				
IRR	14.5%				
MIRR	12.1%				

	0	1	2	3	4
Project L					
Net cash flow	-1000.0	100.00	300.00	400.00	600.00
Present value	($1,000.0)	90.91	247.93	300.53	409.81
Net present value $49.18					
NPV	$49.18				
IRR	11.8%				
MIRR	11.3%				

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Chapter 7

Cash and inventory management

The outline of chapter 7

Cash management
    Reasons for holding cash
    Determining the target cash balance
    Investing the idle cash
Inventory management
    Inventory classification
    Determining the economic order quantity

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Reasons for holding cash

Cash
- Cash on hand
- Cash at bank

Reasons for holding cash
- Transaction motive the need to have cash for daily payments
- Speculative motive the need to hold cash in order to be able to take advantage bargain purchase that might arise
- Precautionary motive the need for a safety supply to act as financial reserve.

Determining the target cash balance

The target cash balance involves a trade-off between the opportunity cost of holding too much cash and the trading costs of holding too little

The optimal cash balance makes total costs (= Opportunity cost+ transaction cost) minimum.

Total costs of holding cash include:

Opportunity cost

Trading cost

Graph description of determining cash balance

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Total costs = Opportunity cost + Trading cost

Costs of holding
cash

Total costs

Opportunity cost

Trading cost

0   C*

Size of cash balance

Determining the cash balance

Situation discussion How does your company determine the cash balance.

- Based on the managers experience
- Based on applying theories of cash management
- Never determine cash balance
- Other ways

Have you ever heard of Baumol model.

- Yes
- No
- Known but never use the model

Have you ever heard of Miller-Orr model.

- Yes
- No
- Known but never use the model

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The Baumol model

Assumptions The model assumes:

The firm has a constant disbursement rate.

There no cash receipts during the projected period.

No safety stock is allowed for.

Variables involved in the model

F = The fixed cost of selling securities to replenish cash (dong)

T = The total amount of new cash needed for transactions over the planning period

K = The opportunity cost of holding cash (% per annum)

C = The initial cash balance (dong)

Determining cash balance based on the Baumol model

The average cash balance = (Beginning cash balance+ Ending cash balance)/2 = (C + 0)/2 = C/2 => Opportunity cost = (C/2)K

The number of times the company must sell marketable securities to replace cash = T/C => Trading cost= (T/C)F

Total cost = Opportunity cost+ Trading cost

$$TC = (C/2)K + (T/C)F$$

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Determining the optimal cash balance

Cash balance is optimal when total cost is minimum.

We differentiate the TC equation with respect to the cash balance and set the derivative equal to zero, that is: $\dfrac{dTC}{dC} = 0$

TC = (C/2)K + (T/C)F

$$\frac{dTC}{dC} = \frac{K}{2} - \frac{TF}{C^2} = 0 \implies C = \sqrt{\frac{2TF}{K}} = *$$

Using Baumol model

Which cases are suitable to the Baumol model.

The outflows exceed inflows, that is, the amount the company pays is greater than the amount it receives during the projected period.

Examples: Producing and exporting companies, Consulting companies, divisions using budget from headquarter for its expenditures

What do we need to use the model.

Estimating the cash disbursement during the period

Estimating the trading cost of selling marketable securities

Estimating the opportunity cost of holding cash short-term interest rate

A money market available for trading money market instruments

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Example

MM&Co. plans to pay cash weekly. At the beginning of week 0, the company has a cash balance of C = 600 million dong, and the outflows exceed inflows by 300 million dong per week. As the cash balance drops to zero, the company has to replace cash by selling treasury bills with a trading cost of 1 million dong. For cash surplus, the company can deposit for a interest rate of 0.65%/ month. How can the company use the Baumol model to determine the target cash balance.

Example solution

The optimal cash balance determined by using Baumol model:

$$C = \sqrt{\frac{2TF}{K}} = \quad *$$

Where F = 1 million dong

K = 0.65% x 12 = 7.8%/year = 0.078

T = 300 x 52 = 15,600 million dong

$$C* = \sqrt{\frac{2TF}{K}} = \sqrt{\frac{2(15600)1}{0.078}} = 632 \text{ million dong}$$

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The Miller-Orr model

Assumptions:

Inflows and outflows fluctuate randomly from day to day.

The distribution of daily net cash flow (cash inflows minus cash outflows) is normally distributed.

Variables used in the model

F = Transaction cost of buying and selling marketable securities

K = The percentage opportunity cost of holding cash

C = Cash balance at a point of time

L = Lower limit of cash balance

H = Upper limit of cash balance

Z = The target cash balance

H*, Z* = The optimal values of H and Z

The Miller-Orr model graph

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Determining cash balance

The maximum cash balance (H) is set to minimize the opportunity cost.

The minimum cash balance (L) is set to minimize the trading cost.

The target cash balance (Z) is set to wander randomly within the lower and upper limits.

If C = H => buying (H Z) dollars of marketable securities to decrease cash balance to Z.

If C = L => selling (Z L) dollars of marketable securities to increase cash balance to Z

Determining cash balance by using Miller-Orr model

The target cash balance (Z) determined by

$$Z^* = \sqrt[3]{\frac{3F\sigma^2}{4K}} + L$$ σ^2: The variance of net daily cash flows

The maximum cash balance (H) determined by $H^* = 3Z^* - 2L$

The average cash balance ($C_{average}$) determined by

$$C_{average} = \frac{4Z^* - L}{3}$$

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Example

Trading cost of selling marketable securities F=1000$, the nominal interest rate is 10% per annum, and the standard deviation of net daily cash flows is 2,000$.

The daily opportunity cost, K, is $(1+K)^{365}$ 1 = 0.1 $\quad 1 + K = \sqrt[365]{1.10} = 1.000261 \qquad . \qquad K = 0.000261$

Let us assume that L = 0

$$Z^* = \sqrt[3]{\frac{3F\sigma^2}{4K}} + L = \sqrt[3]{\frac{3(1000)2000^2}{4(0.000261)}} + 0 = 22568\,\$$$

$$H^* = 3Z^* - 2L = 3(22568) = 67{,}704\,\$$$

$$C_{average} = \frac{4(22{,}568) - 0}{3} = 30{,}091\,\$$$

Conclusions withdrawn from the Miller-Orr model

The optimal cash balance (z^*) is positively related to trading cost, F, and negatively related to opportunity cost, K. This finding is consistent with the Baumol model.

The optimal cash balance and average cash balance are positively related to the variability of cash flows. => the firm whose cash flows are subject to greater uncertainty should maintain a larger average cash balance.

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Implications of the Miller-Orr model

To use the Miller-Orr the manager must do four things:

1. Set the lower control limit for the cash balance. This limit can be related to a minimum safety margin decided on by management.

2. Estimate the standard of daily cash flows.

3. Estimate the interest rate.

4. Estimate the trading cost of buying and selling marketable securities.

Borrowing or selling marketable securities.

Borrowing is likely to be more expensive than selling marketable securities because the interest rate is likely to be higher than trading cost.

A firm is more likely to need to borrow to cover an unexpected cash outflow, the greater its cash flow variability and lower its investment in marketable securities.

For the larger company, the opportunity cost of holding cash is usually greater than the trading cost of buying and selling marketable securities.

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Managing the collection and disbursement of cash

Float is the difference between bank cash and book cash.

Disbursement float causing an immediate decrease in book cash but no immediate change in bank cash

Collection float causing an immediate an increase in book cash but no immediate change in bank cash

Net float the sum of disbursement float and collection float

Objectives of managing the collection and disbursement of cash

    Collection: Accelerating collection

    Disbursement: Delaying disbursement

Basic parts of cash collection process

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Three parts of collection float

Mail float is the part of the collection and disbursement process where checks are trapped in the postal system.

In-house processing float is the time it takes the receiver of a check to process the payment and deposit it in a bank for collection.

Availability float refers to the time required to clear a check through the bank system.

Cost of float

The cost of float can be determined by:

Estimating the average daily receipts

Calculating the average delay in obtaining the receipts

Discounting the average daily receipts by the delay-adjusted cost of capital

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Example

Suppose that Company ABC has two receipts each month:

	Amount	Number of days delay	Float
Item 1	500,000	3	1,500,000
Item 2	300,000	5	1,500,000
Total	800,000		3,000,000

Cost of float

Average daily receipts = 800,000.000 / 30 = 26,666,667 dong

Average daily float = 3,000,000,000 / 30 = 100,000,000 dong

Weighted average delay = (5/8)*3 + (3/8)*5 = 3.75 days

Suppose cost of debt capital is 10%, then interest rate for 3.75 days: 0.1(3.75/365) = 0.00103

The present value of the delay cash flows = (26,666,667) / (1 + 0.00103) = 26,639,229 dong

The net present value of the delay float = 26,639,229 26,666,667 = - 27,438 dong

The net present value of the delay float for the year = - 27,438 x 365 = - 10,014,870 dong

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Investing idle cash

Why does a company has to invest the idle cash.

How does the company invest its idle cash.

Deposit the idle cash into a bank account

Buy money market instruments

Treasury bills

CDs

Commercial papers

Bankers acceptance

Eurodallar

Inventory management

Inventory classification based on production process
- Raw-materials
- Work-in-process
- Finished goods

Inventory classification by the dollar value
- Group A its percentage is low in items but high in value
- Group B
- Group C its percentage is high in items but low in value

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Economic order quantity

Economic Order Quantity (EOQ) The quantity of an inventory item to order so that total inventory costs are minimized over the firms planning period.

Total inventory costs are included:

Ordering costs (O): Assume that ordering costs per order are constant regardless of size of the order. The total ordering cost for a period is simply the cost per order times the number of order for that period.

Carrying cost per unit (C): represent the cost of inventory storage, handling, insurance, and required rate of return on the investment in inventory over the period

Economic order quantity model

EOQ model determines the optimal order quantity (Q*) that minimize total inventory costs over planning period

Variables involved:

Ordering cost per order (O)

Carrying cost per unit (C)

Total inventory costs (T)

Total usage (in units) of an item of inventory (S)

The order quantity (Q)

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Total inventory costs = Total ordering costs + Total carrying costs

Costs

Total inventory costs

Total carrying costs

Total ordering costs

0   C*

Order size

Determining the optimal order quantity

Average inventory = (Beginning inventory + Ending inventory)/2 = (Q + 0)/2 = Q/2

Carrying cost for period = (Carrying cost per unit) x (Average inventory) = C(Q/2)

Total number of order = (Total usage of an item of inventory for that period / (Order quantity) = S/Q

Total ordering costs = (Ordering cost per order) x (Total number of order) = O(S/Q)

Total inventory costs = (Total carrying costs) + (Total ordering costs) = C(Q/2) + O(S/Q)

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Determining the optimal order quantity **(cont.)**

Total inventory costs = C(Q/2) + O(S/Q)

If the firm sets up a larger Q => Total ordering costs will be low but total carrying cost will be high.

If the firm sets up a smaller Q => Total ordering costs will be high but total carrying cost will be low.

Q is optimal as if the total inventory costs is minimized.

Determining the optimal order quantity **(cont.)**

Total inventory costs: T= C(Q/2) + O(S/Q)

$$\frac{dT}{dQ} = \frac{C}{2}\frac{C}{Q} - \frac{OS}{2}$$

Total inventory costs minimized if we take derivative of T with respect to Q and set the result equal 0. Then we obtain:

$$\frac{dT}{dQ} = \frac{C}{2} - \frac{OS}{Q^2} = 0 \qquad . \qquad Q = \sqrt{\frac{2OS}{C}} = \quad *$$

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Chapter 8

Accounts receivable management

Outline of the chapter

Objective of receivable management

Credit policies

Credit standard policies

Credit term policies

Credit period

Cash discount

Credit policies with default risk

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Objective of receivables management

Receivables come from sales in credit

Credit sales Increasing revenue Increasing profit

Credit sales increasing receivables Increasing operating costs

Objective of receivables management is:

to determine whether increasing in revenue and profit is large enough to offset increasing in costs, or

to determine whether saving in cost is large enough to offset decreasing in profit.

Objective of receivables management

Sales in credit

Revenues increase

Receivables increase

Profits increase

Increase in costs related to receivables

Opportunity costs

Compare increase in profit and in costs

Determine credit policies

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Credit policies

Credit standards

Credit terms

    Credit period

    Cash discount

    Credit policies with influence of default risk

Credit standards

Credit standards the minimum quality of credit worthiness of a credit applicant that is acceptable to the firm.

Credit standard policy may be:

- Lowering lower the standards or easier in accepting sales in credit
- Highering Higher the standards or more difficult in accepting sales in credit

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Impact of a lower credit standard

Impact of a higher credit standard

- Decreasing in receivables
- Saving in opportunity costs
- Higher credit standard
- Decreasing in sales
- Decreasing in profit
- Whether saving in costs is offset decreasing in profit

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Suppose that ABC. Ltd s product sells for $10 a unit, of which $8 represents variable costs before tax. Annual sales are presently running at level of $2.4 million and opportunity cost of carrying the additional receivables is 20 percent before tax. The relaxation in credit standards is expected to produce a 25 percent increase in sales but average collection period is increased to 2 months. Should the firm relax its credit standard.

Profitability of additional sales

Additional sales = 2.4 x 25% = $0.6 million =$600,000

Additional sales in unit = 600,000 / 10 = 60,000

Additional profit = 60,000(10 8) = $120,000

Opportunity cost of receivables

Receivable turnover = 12 months/Average collection period = 12 / 2 = 6

Additional receivables = Additional sales revenue/ receivable turnover = 600,000 / 6 = $100,000

Investment in additional receivables = 100,000(8/10) = $80,000

Required before-tax return on additional investment= 80,000 x 20% = $16,000 (opportunity cost)

Policy determination

Additional profit from relaxation of credit standards = $120,000

Opportunity cost originated from relaxation of credit standards = 16,000$

Additional profit > Opportunity cost

The company should lower its credit standards

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Credit terms

Credit terms include:
- Credit period
- Cash discount, and
- Cash discount period

Example a credit term 2/10 net 30 means
- Credit period = 30 days
- Cash discount = 2%
- Cash discount period < or = 10 days

A change in credit terms is often a change in:
- Credit period, or
- Cash discount

Impact of increasing credit period

Increasing average collection period → Increasing receivables → Increasing opportunity cost

Increasing credit period

Increasing sales → Increasing profits → Whether increasing profits is offset increasing costs

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Impact of decreasing credit period

Decreasing average collection period → Decreasing receivables → Saving opportunity cost

Decreasing credit period

Decreasing sales → Decreasing profits → Whether saving costs is offset decreasing profits

ABC. Ltd s product has selling price of $10, variable cost per unit is $8, and its annual revenue is 2.4 million dollars. The opportunity cost of carrying receivable is 20%. If the firm changes its credit terms from net 30 to net 60, there are $360,000 in additional sales and its average collection period increases from 30 to 60 days. Should the firm change its credit period.

Additional profit

Additional sales: $360,000 => Additional sales in unit = 360,000 / 10 = 36,000

Additional profit = 36,000(10 8) = $72,000$

Opportunity cost of carrying receivables

New receivable turnover = 12 months/Average collection period
= 12 / 2 = 6

Additional receivables associated with new sales =Additional sales / New receivable turnover = 360,000 / 6 = $60,000

Additional receivables associated with original sales = (2,400,000 / 6) (2,400,000 /12) = $200,000

Total receivables = 60,000 + 200,000 = $260,000

Investment in additional receivables = 260,000(8/10) = $208,000

Opportunity cost of carrying receivables = 208,000 x 20% = $41,600

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Policy determination

Additional profit if credit period changed = $72,000

Opportunity cost of carrying receivables = $41,600

Additional profit > Opportunity cost

The firm should change its credit period.

Cash discount terms

Cash discount terms include:

- Cash discount rate
- Cash discount period

Changing cash discount terms means:

- Changing cash discount rate
- Changing cash discount period

In reality, cash discount period is rarely changed.

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Impact of increasing cash discount rate

Average collection period decreased → Receivables decreased → Saving the opportunity cost of carrying receivables

Discount rate increased

Net sales decreased → Profit decreased → Whether cost saved is offset profit decreased

Impact of decreasing cash discount rate

Average collection period increased → Receivables increased → Opportunity cost of carrying receivables increased

Discount rate decreased

Net sales increased → Profit increased → Whether profit increased is offset opportunity cost increased.

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Presently the annual sales of ABC. Ltd is 3 million dollars and its average collection period is 2 months. Opportunity cost of carrying receivables is 20%. ABC believes if its credit term is changed from net 45 to 2/10 net 45, its average collection period will lower to 1 month and 60 percent of its customers will pay earlier to take discount. Should the firm change its credit term.

Determine cost saved

Receivable turnover before changing credit term = 12months/Average collection period = 12 / 2 = 6

Receivables before changing credit term = Sales / Receivable turnover = 3,000,000 / 6 = $500,000

Receivables after changing credit term= 3,000,000 /12 = $250,000

Receivables decreased = 500,000 250,000 = $250,000

Cost saving = 250,000 x 20% = $50,000

Determine profit lost because of discount taken by customers = 3,000,000 x 0.6 x 0.02 = $36,000

Policy determination

Cost saving = $50,000

Profit loss = $36,000

Cost saving > Profit loss

The firm should change its credit term.

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Change in credit policy with default risk

Generally, lowering credit standards leads to increase in sales, thus, increase in profit.

However, lowering credit standards leads to increase in default risk and average collection period, thus, increase in opportunity costs.

How should the firm make a decision.

Impact of changing credit terms with default risk

Increase in average collection period → Increase in receivables → Increase in opportunity cost

Lowering credit standards → Increase in loss due to default risk → Is profit increases offset to opportunity cost increased and loss due to default risk.

Increase in sales → Increase in profit

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The current annual sales of ABC. Ltd is 2.4 million dollars, its profit margin and opportunity cost of carrying receivables are 20%. The firm is considering to determine its policies. Information of current policy, policy A, policy B are described as below:

	Current policy	Policy A	Policy B
Sales in credit (demand)	2,400,000	3,000,000	3,300,000
Additional sales		600,000	300,000

Loss due to default risk:
  Original sales
  Additional sales
	2%	10%	18%

Average collection period:
  Original sales
  Additional sales
	1 month	2 months	3 months

Policy analysis

Items	Policy A	Policy B
1. Additional sales	$600.000	$300.000
2. Additional profit due to additional sales (Additioanl sales x Profit margin)	600,000 x 0.2 =$120,000	300,000 x 0.2 = $60,000
3. Additional receivables (Additional sales /Receivanle turnover after change)	600,000/12/2 = $100,000	300,000/12/3 = $75,000
4. Investment in additional receivables (Additional receivables x Cost of goods sold)	100,000 x 0.8 = $80,000	75,000 x 0.8 = $60,000
5. Opportunity cost of investment in additional receivables (20%)	80,000 x 0.2 = $16,000	60,000 x 0.2 = $12,000
6. Lost due to default risk of additional sales (Additional sales x default risk rate)	600,000 x 0.1 = $60,000	300,000 x 0.18 = $54,000
7. Total lost (line 5 + 6)	$76,000	$66,000
8. Additional profit after minusing lost: (2) (7)	$44,000	($6,000)

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Policy determination

Policy A:

Additional profit = $120,000

Opportunity cost due to additional receivables = $16,000

Loss due to default risk = $60,000

Net profit = $44,000

Policy B:

Additional profit = $60,000

Opportunity cost due to additional receivables = $12,000

Loss due to default risk = $54,000

Net profit = - $6,000

The firm should lower its current credit standards to policy A, but not to B.

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Cost of Capital

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Key Concepts and Skills

- Know how to determine a firms cost of equity capital
- Know how to determine a firms cost of debt
- Know how to determine a firms overall cost of capital
- Understand pitfalls of overall cost of capital and how to manage them

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Chapter Outline

The Cost of Capital: Some Preliminaries

The Cost of Equity

The Costs of Debt and Preferred Stock

The Weighted Average Cost of Capital

Divisional and Project Costs of Capital

Flotation Costs and the Weighted Average
Cost of Capital

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Why Cost of Capital Is Important

We know that the return earned on assets depends on the risk of those assets

The return to an investor is the same as the cost to the company

Our cost of capital provides us with an indication of how the market views the risk of our assets

Knowing our cost of capital can also help us determine our required return for capital budgeting projects

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Required Return

The required return is the same as the appropriate discount rate and is based on the risk of the cash flows

We need to know the required return for an investment before we can compute the NPV and make a decision about whether or not to take the investment

We need to earn at least the required return to compensate our investors for the financing they have provided

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Cost of Equity

The cost of equity is the return required by equity investors given the risk of the cash flows from the firm

There are two major methods for determining the cost of equity

Dividend growth model

SML or CAPM

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The Dividend Growth Model Approach

Start with the dividend growth model formula
and rearrange to solve for R_E

$$P_0 = \frac{D_1}{R_E - g}$$

$$R_E = \frac{D_1}{P_0} + g$$

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Dividend Growth Model Example

Suppose that your company is expected to pay a dividend of $1.50 per share next year. There has been a steady growth in dividends of 5.1% per year and the market expects that to continue. The current price is $25. What is the cost of equity.

$$R_E = \frac{1.50}{25} + .051 = .111$$

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Example: Estimating the Dividend Growth Rate

One method for estimating the growth rate is to use the historical average

Year Dividend Percent Change

1995 1.23

1996 1.30

1997 1.36

1998 1.43

1999 1.50

$(1.30\ 1.23) / 1.23 = 5.7\%$

$(1.36\ 1.30) / 1.30 = 4.6\%$

$(1.43\ 1.36) / 1.36 = 5.1\%$

$(1.50\ 1.43) / 1.43 = 4.9\%$

Average $= (5.7 + 4.6 + 5.1 + 4.9) / 4 = 5.1\%$

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Advantages and Disadvantages of Dividend Growth Model

Advantage easy to understand and use

Disadvantages

- Only applicable to companies currently paying dividends
- Not applicable if dividends arent growing at a reasonably constant rate
- Extremely sensitive to the estimated growth rate an increase in g of 1% increases the cost of equity by 1%
- Does not explicitly consider risk

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The SML Approach

Use the following information to compute our cost of equity

Risk-free rate, R_f

Market risk premium, $E(R_M)$ R $_f$

Systematic risk of asset,

$$R_E = R_f + {}_E(E(R_M) - R_f)$$

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Example - SML

Suppose your company has an equity beta of .58 and the current risk-free rate is 6.1%. If the expected market risk premium is 8.6%, what is your cost of equity capital.

R_E = 6.1 + .58(8.6) = 11.1%

Since we came up with similar numbers using both the dividend growth model and the SML approach, we should feel pretty good about our estimate

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Advantages and Disadvantages of SML

Advantages

- Explicitly adjusts for systematic risk
- Applicable to all companies, as long as we can compute beta

Disadvantages

- Have to estimate the expected market risk premium, which does vary over time
- Have to estimate beta, which also varies over time
- We are relying on the past to predict the future, which is not always reliable

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Example Cost of Equity

Suppose our company has a beta of 1.5. The
market risk premium is expected to be 9%
and the current risk-free rate is 6%. We have
used analysts estimates to determine that
the market believes our dividends will grow at
6% per year and our last dividend was $2.
Our stock is currently selling for $15.65. What
is our cost of equity.

Using SML: R_E = 6% + 1.5(9%) = 19.5%

Using DGM: R_E = [2(1.06) / 15.65] + .06
= 19.55%

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Cost of Debt

- The cost of debt is the required return on our companys debt
- We usually focus on the cost of long-term debt or bonds
- The required return is best estimated by computing the yield-to-maturity on the existing debt
- We may also use estimates of current rates based on the bond rating we expect when we issue new debt
- The cost of debt is NOT the coupon rate

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Example: Cost of Debt

Suppose we have a bond issue currently outstanding that has 25 years left to maturity. The coupon rate is 9% and coupons are paid semiannually. The bond is currently selling for $908.72 per $1000 bond. What is the cost of debt.

N = 50; PMT = 45; FV = 1000; PV = -908.75; CPT I/Y = 5%; YTM = 5(2) = 10%

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Cost of Preferred Stock

Reminders

- Preferred generally pays a constant dividend every period
- Dividends are expected to be paid every period forever

Preferred stock is an annuity, so we take the annuity formula, rearrange and solve for R_P

$R_P = D / P_0$

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Example: Cost of Preferred Stock

Your company has preferred stock that has an annual dividend of $3. If the current price is $25, what is the cost of preferred stock.

R_P = 3 / 25 = 12%

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The Weighted Average Cost of Capital

We can use the individual costs of capital that we have computed to get our average cost of capital for the firm.

This average is the required return on our assets, based on the markets perception of the risk of those assets

The weights are determined by how much of each type of financing that we use

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Capital Structure Weights

Notation

E = market value of equity = # outstanding shares times price per share

D = market value of debt = # outstanding bonds times bond price

V = market value of the firm = $D + E$

Weights

$w_E = E/V$ = percent financed with equity

$w_D = D/V$ = percent financed with debt

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Example: Capital Structure Weights

Suppose you have a market value of equity equal to $500 million and a market value of debt = $475 million.

What are the capital structure weights.

V = 500 million + 475 million = 975 million

w_E = E/D = 500 / 975 = .5128 = 51.28%

w_D = D/V = 475 / 975 = .4872 = 48.72%

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Taxes and the WACC

We are concerned with after-tax cash flows, so we need to consider the effect of taxes on the various costs of capital

Interest expense reduces our tax liability

This reduction in taxes reduces our cost of debt

After-tax cost of debt = $R_D(1-T_C)$

Dividends are not tax deductible, so there is no tax impact on the cost of equity

$$WACC = w_E R_E + w_D R_D(1-T_C)$$

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Extended Example WACC - I

Equity Information

50 million shares

$80 per share

Beta = 1.15

Market risk premium = 9%

Risk-free rate = 5%

Debt Information

$1 billion in outstanding debt (face value)

Current quote = 110

Coupon rate = 9%, semiannual coupons

15 years to maturity

Tax rate = 40%

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Extended Example WACC - II

What is the cost of equity.

$R_E = 5 + 1.15(9) = 15.35\%$

What is the cost of debt.

N = 30; PV = -1100; PMT = 45; FV = 1000; CPT I/Y = 3.9268

$R_D = 3.927(2) = 7.854\%$

What is the after-tax cost of debt.

$R_D(1-T_C) = 7.854(1-.4) = 4.712\%$

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Extended Example WACC - III

What are the capital structure weights.

E = 50 million (80) = 4 billion

D = 1 billion (1.10) = 1.1 billion

V = 4 + 1.1 = 5.1 billion

w_E = E/V = 4 / 5.1 = .7843

w_D = D/V = 1.1 / 5.1 = .2157

What is the WACC.

WACC = .7843(15.35%) + .2157(4.712%) = 13.06%

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Eastman Chemical I

Click on the web surfer to go to Yahoo Finance to get information on Eastman Chemical (EMN)

Under profile, you can find the following information
- # shares outstanding
- Book value per share
- Price per share
- Beta

Under research, you can find analysts estimates of earnings growth (use as a proxy for dividend growth)

The bonds section at Yahoo Finance can provide the T-bill rate

Use this information, along with the CAPM and DGM to estimate the cost of equity

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Eastman Chemical II

Go to Bondsonline to get market information
on Eastman Chemicals bond issues

- Enter Eastman Ch to find the bond information
- Note that you may not be able to find information
  on all bond issues due to the illiquidity of the bond
  market

Go to the SEC site to get book market
information from the firms most recent 10Q

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Eastman Chemical III

Find the weighted average cost of the debt
- Use market values if you were able to get the information
- Use the book values if market information was not available
- They are often very close

Compute the WACC
- Use market value weights if available

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Cost of Equity

I. The cost of equity, R_E

   A. Dividend growth model approach (from Chapter 8):

$$R_E = D_1/P_0 + g$$

   where D_1 is the expected dividend in one period, g is the dividend growth rate, and P_0 is the current stock price.

   B. SML approach (from Chapter 13):

$$R_E = R_f + \beta_E \times (R_M - R_f)$$

   where R_f is the risk-free rate, R_M is the expected return on the overall market, and β_E is the systematic risk of the equity.

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Cost of Debt

II. The cost of debt, R_D

    A. For a firm with publicly held debt, the cost of debt can be measured as the yield to maturity on the outstanding debt. The coupon rate is irrelevant. Yield to maturity is covered in Chapter 7.

    B. If the firm has no publicly traded debt, then the cost of debt can be measured as the yield to maturity on similarly rated bonds (bond ratings are discussed in Chapter 7).

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WACC

III. The weighted average cost of capital, WACC

A. The firm's WACC is the overall required return on the firm as a whole. It is the appropriate discount rate to use for cash flows similar in risk to those of the overall firm.

B. The WACC is calculated as:

$$WACC = (E/V) \times R_E + (D/V) \times R_D \times (1 - T_C)$$

where T_C is the corporate tax rate, E is the *market* value of the firm's equity, D is the *market* value of the firm's debt, and $V = E + D$. Note that E/V is the percentage of the firm's financing (in market value terms) that is equity, and D/V is the percentage that is debt.

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Divisional and Project Costs of Capital

Using the WACC as our discount rate is only appropriate for projects that are the same risk as the firms current operations

If we are looking at a project that is NOT the same risk as the firm, then we need to determine the appropriate discount rate for that project

Divisions also often require separate discount rates

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Using WACC for All Projects - Example

What would happen if we use the WACC for all projects regardless of risk.

Assume the WACC = 15%

Project	Required Return	IRR
A	20%	17%
B	15%	18%
C	10%	12%

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The Pure Play Approach

Find one or more companies that specialize in the product or service that we are considering

Compute the beta for each company

Take an average

Use that beta along with the CAPM to find the appropriate return for a project of that risk

Often difficult to find pure play companies

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Subjective Approach

Consider the projects risk relative to the firm overall

If the project is more risky than the firm, use a discount rate greater than the WACC

If the project is less risky than the firm, use a discount rate less than the WACC

You may still accept projects that you shouldnt and reject projects you should accept, but your error rate should be lower than not considering differential risk at all

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Subjective Approach - Example

Risk Level	Discount Rate
Very Low Risk	WACC 8%
Low Risk	WACC 3%
Same Risk as Firm	WACC
High Risk	WACC + 5%
Very High Risk	WACC + 10%

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Flotation Costs

The required return depends on the risk, not how the money is raised

However, the cost of issuing new securities should not just be ignored either

Basic Approach

Compute the weighted average flotation cost

Use the target weights because the firm will issue securities in these percentages over the long term

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NPV and Flotation Costs - Example

Your company is considering a project that will cost $1 million. The project will generate after-tax cash flows of $250,000 per year for 7 years. The WACC is 15% and the firms target D/E ratio is .6 The flotation cost for equity is 5% and the flotation cost for debt is 3%. What is the NPV for the project after adjusting for flotation costs.

f_A = (.375)(3%) + (.625)(5%) = 4.25%

PV of future cash flows = 1,040,105

NPV = 1,040,105 - 1,000,000/(1-.0425) = -4,281

The project would have a positive NPV of 40,105 without considering flotation costs

Once we consider the cost of issuing new securities, the NPV becomes negative

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Quick Quiz

What are the two approaches for computing the cost of equity.

How do you compute the cost of debt and the aftertax cost of debt.

How do you compute the capital structure weights required for the WACC.

What is the WACC.

What happens if we use the WACC for the discount rate for all projects.

What are two methods that can be used to compute the appropriate discount rate when WACC isnt appropriate.

How should we factor in flotation costs to our analysis.

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Chapter 9

OPERATING AND FINANCIAL LEVERAGE

Outline of the chapter

Operating leverage
Effect of operating leverage
Break-even point analysis
Degree of operating leverage (DOL)
DOL and break-even point
DOL and business risk

Financial leverage
EBIT-EPS break-even or indifference analysis
Degree of financial leverage (DFL)
DFL and financial leverage

Total leverage

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Concepts of leverage in finance

Leverage The use of fixed costs in an attempt to increase (or lever up) profitability.

Operating leverage The use of fixed operating costs by the firm to increase EBIT.

Financial leverage The use of fixed financing costs by the firm to increase EPS.

Operating leverage

Operating leverage The use of fixed operating cost to lever up EBIT.

Fixed operating costs Costs are fixed regardless of volume, for example:

- Depreciation
- Insurance
- Part of the overall utility bills
- Part of the cost of management

Operating leverage measured by the ratios:

- Fixed cost / Total costs
- Fixed cost / Sales

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Analyze the effect of operating leverage

Three firms before changes in sales	Firm F	Firm V	Firm 2F
Sales	$10,000	$11,000	$19,500
Operating costs			
Fixed cost (FC)	7,000	2,000	14,000
Variable cost (VC)	2,000	7,000	3,000
Operating profit (EBIT)	1,000	2,000	2,500
Operating leverage ratios			
FC/total costs	0.78	0.22	0.82
FC/sales	0.70	0.18	0.72
Three firms after 50% increases in sales			
Sales	$15,000	$16,500	$29,250
Operating costs			
Fixed cost (FC)	7,000	2,000	14,000
Variable cost (VC)	3,000	10,500	4,500
Operating profit (EBIT)	5,000	4,000	10,750
Percent change in EBIT $(EBIT_t - EBIT_{t-1})/EBIT_t$	400%	100%	330%

Conclusion

| Increase in sales | Increase in sales |
| Without operating leverage | With operating leverage used by the firm |

Increase in EBIT (100%) ≤ Increase in EBIT (400%)

Percent change in EBIT in the case of using operating leverage is bigger than that of without using operating leverage.

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Break-even analysis (1)

Break-even analysis A technique for studying the relationship among fixed costs, variable costs, profits, and sales.

Break-even point The sales volume (in unit or dollar) required so that total revenues and total costs are equal, thus, profits equal 0.

Let the followings denote:

EBIT = Earnings before interest and taxes

P = price per unit

V = variable cost per unit

(P V) = unit contribution margin

Q = quantity (units) produced and sold

F = Fixed cost

Q_{BE} = Break-even point (quantity)

Break-even analysis (2)

At the break-even point:

$$\text{Sales} = \text{Total costs}$$
$$PQ_{BE} = VQ_{BE} + F$$
$$(P\ V)\ Q_{BE} = F$$
$$Q_{BE} = F/(P\ V)$$

Assume that a company produces bicycles that sell for $50 per unit, The company has annual fixed costs of $100.000, and variable costs are $25 a unit regardless of the volume sold.

$$Q_{BE} = F/(P\ V) = 100,000/(50\ 25) = 4,000\ \text{units}$$

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Break-even point in sales

Let the followings denote:

S_{BE} = break-even sales revenues

FC = Fixed cost

VC_{BE} = Total variable costs at the break-even point

At the break-even point:

$S_{BE} = FC + VC_{BE} = FC + (VC_{BE}/S_{BE})S_{BE}$

Because the relationship between total variable costs and sales is assumed constant, VC_{BE}/S_{BE} = VC/S for any level of sales. Thus, S_{BE} = FC + $(VC/S)S_{BE}$

=> S_{BE} = FC/[1 (VC/S)]

Break-even point in sales (2)

Using data from the given example of Company F, V and 2F, the break-even point in sales is determined as follows:

Company F:

S_{BE} = FC/[1 (VC/S)]=7000/[1 2000/10000]

$$= 8750$$

Company V: .

Company 2F: .

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Break-even chart with the break-even point expressed in units

Doanh thu va chi ph (1000$)

Degree of operating leverage (DOL)

Degree of operating leverage (DOL) The percentage change in a firms operating profit (EBIT) resulting from a 1 percent change in sales.

Degree of operating leverage (DOL) at Q units of output or sales	=	Percentage change in operating profit (EBIT)
		Percentage change in output or sales

$$DOL = \frac{\cdot\, EBIT \ / \ EBIT}{\cdot\, Q \, / \, Q}$$

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How to measure DOL.

DOL in units

$$DOL_Q = \frac{Q(P-V)}{Q(P-V)-F} = \frac{Q}{Q-Q_{BE}}$$

DOL in dollars of sales

$$DOL_S = \frac{S-VC}{S-VC-FC} = \frac{EBIT+F}{EBIT}$$

Suppose that selling price of bicycle product is $50 for an unit, the annual fixed cost is $100,000 and variable cost is $25 for an unit. What is the firms DOL.

Degree of operating in units

$$DOL_{5000} = \frac{5000(50-25)}{5000(50-25)-100.000} = 5$$

$$DOL_{6000} = \frac{6000(50-25)}{6000(50-25)-100.000} = 3$$

What is the meaning of DOL.

It means that a 1 change in sales from the 5,000-unit sales position causes a 5 percent change in EBIT.

From the 6,000-unit sales, a 1 change in sales causes 3 percent change in EBIT.

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Relationship between DOL and EBIT

Quantity produced and sold (Q)	Operating profit (EBIT)	Degree of operating leverage (DOL)
0	- 100,000	0.00
1000	- 75,000	- 0.33
2000	- 50,000	- 1.00
3000	- 25,000	- 3.00
Q$_{BE}$= 4000	0	Infinite
5000	25,000	5.00
6000	50,000	3.00
7000	75,000	2.33
8000	100,000	2.00

Plot of DOL versus quantity produced and sold

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Relationship between DOL and EBIT

DOL= 0 at the sales of $0

Moving from the firms break-even point, the greater is the absolute value of the firms operating profit or loss and the lower is the relative sensitivity of operating profit to changes in outputs (sales) as measured by DOL.

DOL approaches positive (or negative) infinity as sales approaches the break-even point.

DOL approaches 1 as sales grow beyond the break-even point.

DOL and business risk

Business risk

Change in quantity produced and sold

$DOL = \dfrac{.\ EBIT\ /\ EBIT}{.\ Q\ /\ Q}$

Degree of operating (DOL)

Change in (EBIT)

Magnify the variability of EBIT and, hence, business risk

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Financial leverage

Financial leverage The use of fixed financing costs (bond and preferred stock) by the firm.

Financial leverage involves the use of fixed financing cost in the hope of increasing the return to common shareholders (EPS).

Differences between operating leverage and financial leverage

Operating leverage

Use the fixed operating costs to lever up the operating profit (EBIT)

Can not be determined by management, indicated by the requirement of the firms operations.

Financial leverage

Use the fixed financing costs to lever up the return (EPS) to common shareholders

May be chosen by management

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Should the firm use financial leverage.

EBIT-EPS break-even analysis

EBIT-EPS break-even analysis Analysis of the effect of financing alternatives (bonds, preferred stocks and common stocks) on earnings per share (EPS)

The break-even point is the EBIT level where EPS is the same for two (or more) alternatives.

Example: CTC with long-term financing of $10 million consisting entirely of common stock equity, wishes to raise $5 million for expansion through one of three possible financing plans: (1) all common stock, (2) all debt at 12 percent interest, or (3) all preferred stock with 11 percent dividend. The present annual EBIT is $1.5 million dollars but with expansion is expected to rise to $2.7 million. The income tax rate is 40 percent and 200,000 shares of common stocks are outstanding. Common stock can be sold at $50 per share under the first financing option, which translates into100,000 additional shares of stock.

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How to calculate EPS.

$$EPS = \frac{(EBIT - I)(1 - t) - PD}{NS}$$

Where: I = Annual interest paid to debt
PD = Annual preferred dividend paid
t = Corporate tax rate
NS = Number of shares of common stock
outstanding

EPS under three financing alternatives

	Common stock	Debt	Preferred stock
Earnings before interest and tax (EBIT)	$2,700,000	$2,700,000	$2,700,000
Interest (I)	-	600,000	-
Earnings before taxes (EBT)	2,700,000	2,100,000	2,700,000
Income taxes [EBT x t]	1,080,000	840,000	1,080,000
Earnings after taxes (EAT)	1,620,000	1,260,000	1,620,000
Preferred stock dividends (PD)	-	-	550,000
Earnings available to common shareholders (EACS)	1,620,000	1,260,000	1,070,000
Number of shares of common stock outstanding (NS)	300,000	200,000	200,000
Earnings per share (EPS)	$5.40	$6.30	$5.35

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Indifference point

Indifference point The level of EBIT that produces the same level of EPS for two (or more) alternative capital structure.
  Alternative 1: Common stock and debt
  Alternative 2: Common stock and preferred stock

Chart for three additional-financing alternatives

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Indifference point determined mathematically

At the indifference point, we have:

$EPS_1 = EPS_2$

$$\frac{(EBIT_{1,2} - I_1)(1-t) - PD_1}{NS_1} = \frac{(EBIT_{1,2} - I_2)(1-t) - PD_2}{NS_2}$$

$EBIT_{1,2}$ = EBIT indifference point between financing alternative 1 and 2

I_1, I_2 = Annual interest paid under financing alternative 1 and 2

PD_1, PD_2 = Annual preferred stock dividend paid under financing alternative 1 and 2

t = Corporate tax rate

NS_1, NS_2 = Number of shares of common stock to be outstanding under financing alternative 1 and 2

Indifference point between common stock
and debt financing alternatives

Common stock financing

$$EPS_1 = \frac{(EBIT_{1,2} - I_1)(1-t) - PD_1}{NS_1} = \frac{(EBIT_{1,2} - 0)(1 - 0.4) - 0}{300,000} = \frac{0.6 EBIT_{1,2}}{300,000}$$

Debt financing

$$EPS_2 = \frac{(EBIT_{1,2} - I_1)(1-t) - PD_1}{NS_1} = \frac{(EBIT_{1,2} - 600,000)(1 - 0.4) - 0}{200,000}$$

At the indifference point, $EPS_1 = EPS_2$

$(EBIT_{1,2})(0.6)(200,000) = (EBIT_{1,2})(0.6)(300,000)(0.6)(600,000)(300,000)$

$(EBIT_{1,2})(60,000) = 108,000,000,000$

$EBIT_{1,2} = \$1,800,000$

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Indifference point between common stock and preferred stock financing alternatives

Common stock financing

$$EPS_1 = \frac{(EBIT_{1,2} - I_1)(1-t) - PD_1}{NS_1} = \frac{(EBIT_{1,2} - 0)(1-0,4) - 0}{300.000} = \frac{0,6\,EBIT_{1,2}}{300.000}$$

Preferred stock financing

$$EPS_2 = \frac{(EBIT_{1,2} - I_1)(1-t) - PD_1}{NS_1} = \frac{(EBIT_{1,2} - 0)(1-0,4) - 550.000}{200.000}$$

At the indifference point, $EPS_1 = EPS_2$

$$(EBIT_{1,2})(0.6)(200,000) = (EBIT_{1,2})(0.6)(300,000)(550,000)(300,000)$$
$$(EBIT_{1,2})(60,000) = 1,650,000,000,000$$
$$EBIT_{1,2} = \$2,750,000$$

How to determine financing alternatives.

Indifference point between common stock and debt financing alternatives is $1.8 million.

If EBIT is lower than the indifference point ($1.8 million), EPS under common stock financing is greater than EPS under debt financing.

If EBIT is higher than the indifference point ($1.8 million), EPS under debt financing is greater than EPS under common stock financing.

Indifference point between common stock and preferred stock financing alternatives is $2.75 million.

If EBIT is lower than the indifference point ($2.75 million), EPS under common stock financing is greater than EPS under preferred stock financing.

If EBIT is higher than the indifference point ($2.75 million), EPS under preferred stock financing is greater than EPS under common stock financing.

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Degree of financial leverage

Degree of financial leverage (DFL) The percentage change in a firms earnings per share (EPS) resulting from a 1 percent change in operating profit (EBIT).

Degree of financial leverage (DFL) at EBIT of X dollars $=$ $\dfrac{\text{Percentage change in earnings per share (EPS)}}{\text{Percentage change in operating profit (EBIT)}}$

$$DFL_{EBIT} = \frac{\%.\,EPS}{\%.\,EBIT} = \frac{.\,EPS/EPS}{.\,EBIT/EBIT}$$

$$DFL_{EBIT} = \frac{EBIT}{EBIT - I - [PD/(1-t)]}$$

Degree of financial leverage

$$DFL_{EBIT} = \frac{EBIT}{EBIT - I - [PD/(1-t)]}$$

For debt-financing alternative

$$DFL_{EBIT} = \frac{EBIT}{EBIT - I} = \frac{2,700,000}{2,700,000 - 600,000} = 1.29$$

For preferred stock financing alternative

$$DFL_{EBIT} = \frac{2,700,000}{2,700,000 - 0 - [550,000/(1-0.4)]} = 1.51$$

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What does the DFL mean.

In the case of using debt-financing, DFL $_{\text{EBIT of \$2.7 million}}$ = 1.29

In the case of using preferred stock financing, DFL$_{\text{EBIT of \$2.7 million}}$ = 1.51

1% change in EBIT results change 1.29% in EPS if using debt-financing and 1.51% if using preferred stock financing.

Financial leverage and financial risk

Financial risk The added variability in earnings per share (EPS) that is induced by the use of financial leverage.

Use of financial leverage => Increase in fixed financing costs => Increase in probability of insolvency => Increase in financial risk

Use of financial leverage => Change in EPS as EBIT changed => Increase in business risk.

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Total leverage

Total leverage is the use of both fixed operating and financing costs by the firm.

Financial leverage is combined with operating leverage, the result is referred to as total leverage.

Degree of total leverage (DTL) is the percentage change in a firms earnings per share (EPS) resulting from a 1 percent change in output or sales.

Total leverage

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How to determine the DTL.

Degree of total leverage
(DTL at Q units (or S
dollars) of outputs (or
sales))

$=$

$$\frac{\text{Percentage change in EPS}}{\text{Percentage change in output (or sales)}}$$

$$DTL_Q = \frac{Q(P-V)}{Q(P-V) - F - I - [PD/(1-t)]}$$

$$DTL_S = \frac{EBIT + F}{EBIT - I - [PD/(1-t)]}$$

Example

A firm produces bicycle with the selling price of $50, variable cost per unit is $25 and fixed operating cost is $100,000. Suppose that the firm has $200,000 in debt at 8 percent interest and the tax rate is 40 percent. Degree of total leverage at 8,000 units are determined as follows:

$$DTL_{8000} = \frac{8000\,(50-25)}{8000\,(50-25)-100,000-16,000} = 2.38$$

Other way: DTL = DOL x DFL

$$= 2.00 \times 1.19 = 2.38$$

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What does the DTL mean.

$$DTL_{8000} = \frac{8000\,(50 - 25)}{8000\,(50 - 25) - 100{,}000 - 16{,}000} = 2.38$$

1% change in output results 2.38 percent change EPS. This change comes from the impact of:

    Degree of operating leverage (2.00), and

    Degree of financial leverage (1.19)

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Financial Leverage and Capital Structure

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Key Concepts and Skills

Understand the effect of financial leverage on cash flows and cost of equity

Understand the impact of taxes and bankruptcy on capital structure choice

Understand the basic components of the bankruptcy process

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Chapter Outline

The Capital Structure Question
The Effect of Financial Leverage
Capital Structure and the Cost of Equity Capital
M&M Propositions I and II with Corporate Taxes
Bankruptcy Costs
Optimal Capital Structure
The Pie Again
Observed Capital Structures
A Quick Look at the Bankruptcy Process

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Capital Restructuring

We are going to look at how changes in capital structure affect the value of the firm, all else equal

Capital restructuring involves changing the amount of leverage a firm has without changing the firms assets

Increase leverage by issuing debt and repurchasing outstanding shares

Decrease leverage by issuing new shares and retiring outstanding debt

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Choosing a Capital Structure

What is the primary goal of financial managers.

Maximize stockholder wealth

We want to choose the capital structure that will maximize stockholder wealth

We can maximize stockholder wealth by maximizing firm value or minimizing WACC

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The Effect of Leverage

How does leverage affect the EPS and ROE of a firm.

When we increase the amount of debt financing, we increase the fixed interest expense

If we have a really good year, then we pay our fixed cost and we have more left over for our stockholders

If we have a really bad year, we still have to pay our fixed costs and we have less left over for our stockholders

Leverage amplifies the variation in both EPS and ROE

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Example: Financial Leverage, EPS and ROE

We will ignore the effect of taxes at this stage

What happens to EPS and ROE when we issue debt and buy back shares of stock.

Financial Leverage Example

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Example: Financial Leverage, EPS and ROE

Variability in ROE

  Current: ROE ranges from 6.25% to 18.75%

  Proposed: ROE ranges from 2.50% to 27.50%

Variability in EPS

  Current: EPS ranges from $1.25 to $3.75

  Proposed: EPS ranges from $0.50 to $5.50

The variability in both ROE and EPS increases when financial leverage is increased

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Break-Even EBIT

Find EBIT where EPS is the same under both the current and proposed capital structures

If we expect EBIT to be greater than the break-even point, then leverage is beneficial to our stockholders

If we expect EBIT to be less than the break-even point, then leverage is detrimental to our stockholders

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Example: Break-Even EBIT

$$\frac{EBIT}{400,000} = \frac{EBIT - 400,000}{200,000}$$

$$EBIT = \frac{400,000}{200,000} \left(EBIT - 400,000 \right)$$

$$EBIT = 2EBIT - 800,000$$

$$EBIT = \$800,000$$

$$EPS = \frac{800,000}{400,000} = \$2.00$$

Break-even Graph

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Example: Homemade Leverage and ROE

Current Capital Structure

Investor borrows $2000 and uses $2000 of their own to buy 200 shares of stock

Payoffs:

Recession: 200(1.25) - .1(2000) = $50

Expected: 200(2.50) - .1(2000) = $300

Expansion: 200(3.75) - .1(2000) = $550

Mirrors the payoffs from purchasing 100 shares from the firm under the proposed capital structure

Proposed Capital Structure

Investor buys $1000 worth of stock (50 shares) and $1000 worth of Trans Am bonds paying 10%.

Payoffs:

Recession: 50(.50) + .1(1000) = $125

Expected: 50(3.00) + .1(1000) = $250

Expansion: 50(5.50) + .1(1000) = $375

Mirrors the payoffs from purchasing 100 shares under the current capital structure

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Capital Structure Theory

Modigliani and Miller Theory of Capital Structure
  Proposition I firm value
  Proposition II WACC

The value of the firm is determined by the cash flows to the firm and the risk of the assets

Changing firm value
  Change the risk of the cash flows
  Change the cash flows

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Capital Structure Theory Under Three Special Cases

Case I Assumptions
  No corporate or personal taxes
  No bankruptcy costs
Case II Assumptions
  Corporate taxes, but no personal taxes
  No bankruptcy costs
Case III Assumptions
  Corporate taxes, but no personal taxes
  Bankruptcy costs

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Case I Propositions I and II

Proposition I

The value of the firm is NOT affected by changes in the capital structure

The cash flows of the firm do not change, therefore value doesnt change

Proposition II

The WACC of the firm is NOT affected by capital structure

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Case I - Equations

$$WACC = R_A = (E/V)R_E + (D/V)R_D$$

$$R_E = R_A + (R_A \ R_D)(D/E)$$

R_A is the cost of the firms business risk, i.e., the risk of the firms assets

$(R_A \ R_D)(D/E)$ is the cost of the firms financial risk, i.e., the additional return required by stockholders to compensate for the risk of leverage

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Cost of capital (%)

R_E

WACC = R_A

R_D

Debt-equity ratio (D/E)

$R_E = R_A + (R_A - R_D) \times (D/E)$ by M&M Proposition II

$R_A = \text{WACC} = \left(\dfrac{E}{V}\right) \times R_E + \left(\dfrac{D}{V}\right) \times R_D$

where $V = D + E$

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Case I - Example

Data

Required return on assets = 16%, cost of debt = 10%; percent of debt = 45%

What is the cost of equity.

R_E = .16 + (.16 - .10)(.45/.55) = .2091 = 20.91%

Suppose instead that the cost of equity is 25%, what is the debt-to-equity ratio.

.25 = .16 + (.16 - .10)(D/E)

D/E = (.25 - .16) / (.16 - .10) = 1.5

Based on this information, what is the percent of equity in the firm.

E/V = 1 / 2.5 = 40%

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The CAPM, the SML and Proposition II

How does financial leverage affect systematic risk.

CAPM: $R_A = R_f + \beta_A(R_M - R_f)$

Where β_A is the firms asset beta and measures the systematic risk of the firms assets

Proposition II

Replace R_A with the CAPM and assume that the debt is riskless ($R_D = R_f$)

$R_E = R_f + \beta_A(1+D/E)(R_M - R_f)$

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Business Risk and Financial Risk

$R_E = R_f + {}_A(1+D/E)(R_M \ R_{f})$

CAPM: $R_E = R_f + {}_E(R_M \ R_{f})$

$_E = {}_A(1 + D/E)$

Therefore, the systematic risk of the stock depends on:

Systematic risk of the assets, $_A$, (Business risk)

Level of leverage, D/E, (Financial risk)

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Case II Cash Flow

Interest is tax deductible

Therefore, when a firm adds debt, it reduces taxes, all else equal

The reduction in taxes increases the cash flow of the firm

How should an increase in cash flows affect the value of the firm.

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Case II - Example

	Unlevered Firm	Levered Firm
EBIT	5000	5000
Interest	0	500
Taxable Income	5000	4500
Taxes (34%)	1700	1530
Net Income	3300	2970
CFFA	3300	3470

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Interest Tax Shield

Annual interest tax shield
  Tax rate times interest payment
  6250 in 8% debt = 500 in interest expense
  Annual tax shield = .34(500) = 170
Present value of annual interest tax shield
  Assume perpetual debt for simplicity
  PV = 170 / .08 = 2125
  PV = $D(R_D)(T_C) / R_D = DT_C$ = 6250(.34) = 2125

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Case II Proposition I

The value of the firm increases by the present value of the annual interest tax shield

- Value of a levered firm = value of an unlevered firm + PV of interest tax shield
- Value of equity = Value of the firm Value of debt

Assuming perpetual cash flows

$V_U = EBIT(1-T) / R_U$

$V_L = V_U + DT_C$

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Example: Case II Proposition I

Data

EBIT = 25 million; Tax rate = 35%; Debt = $75 million; Cost of debt = 9%; Unlevered cost of capital = 12%

V_U = 25(1-.35) / .12 = $135.42 million

V_L = 135.42 + 75(.35) = $161.67 million

E = 161.67 75 = $86.67 million

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The value of the firm increases as total debt increases because of the interest tax shield. This is the basis of M&M Proposition I with taxes.

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Case II Proposition II

The WACC decreases as D/E increases because of the government subsidy on interest payments

$R_A = (E/V)R_E + (D/V)(R_D)(1-T_C)$

$R_E = R_U + (R_U\ R_D)(D/E)(1-T_C)$

Example

$R_E = .12 + (.12-.09)(75/86.67)(1-.35) = 13.69\%$

$R_A = (86.67/161.67)(.1369) + (75/161.67)(.09)(1-.35)$

$R_A = 10.05\%$

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Example: Case II Proposition II

Suppose that the firm changes its capital structure so that the debt-to-equity ratio becomes 1.

What will happen to the cost of equity under the new capital structure.

$R_E = .12 + (.12 - .09)(1)(1-.35) = 13.95\%$

What will happen to the weighted average cost of capital.

$R_A = .5(.1395) + .5(.09)(1-.35) = 9.9\%$

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M&M Proposition I with taxes implies that a firm's WACC decreases as the firm relies more heavily on debt financing:

$$WACC = \left(\frac{E}{V}\right) \times R_E + \left(\frac{D}{V}\right) \times R_D \times (1 - T_C)$$

M&M Proposition II with taxes implies that a firm's cost of equity R_E, rises as the firm relies more heavily on debt financing:

$$R_E = R_U + (R_U - R_D) \times (D/E) \times (1 - T_C)$$
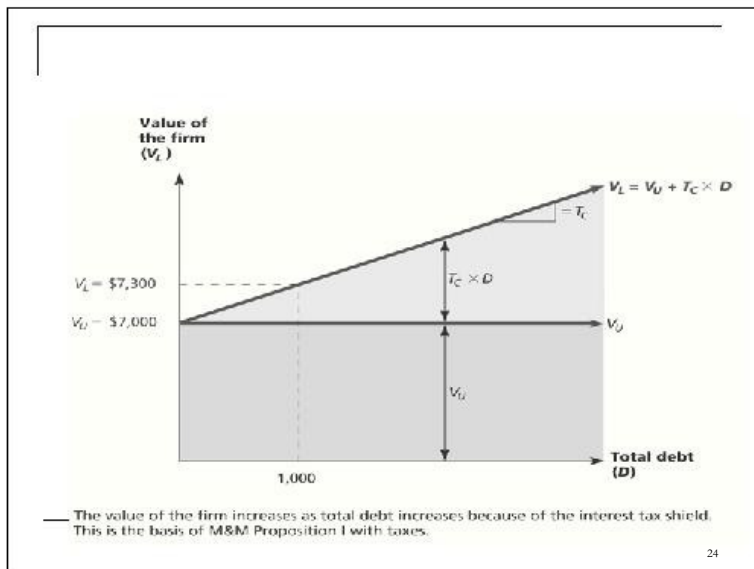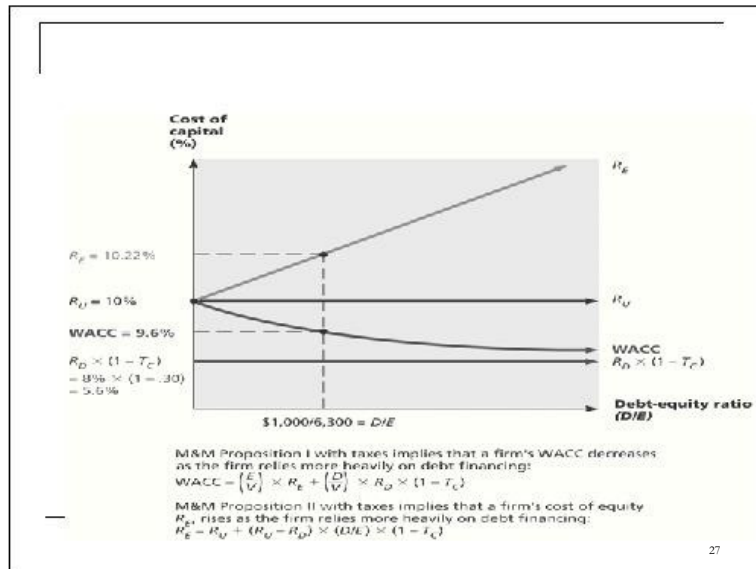
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Case III

Now we add bankruptcy costs

As the D/E ratio increases, the probability of bankruptcy increases

This increased probability will increase the expected bankruptcy costs

At some point, the additional value of the interest tax shield will be offset by the expected bankruptcy cost

At this point, the value of the firm will start to decrease and the WACC will start to increase as more debt is added

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Bankruptcy Costs

Direct costs
  - Legal and administrative costs
  - Ultimately cause bondholders to incur additional losses
  - Disincentive to debt financing

Financial distress
  - Significant problems in meeting debt obligations
  - Most firms that experience financial distress do not ultimately file for bankruptcy

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More Bankruptcy Costs

Indirect bankruptcy costs
- Larger than direct costs, but more difficult to measure and estimate
- Stockholders wish to avoid a formal bankruptcy filing
- Bondholders want to keep existing assets intact so they can at least receive that money
- Assets lose value as management spends time worrying about avoiding bankruptcy instead of running the business
- Also have lost sales, interrupted operations and loss of valuable employees
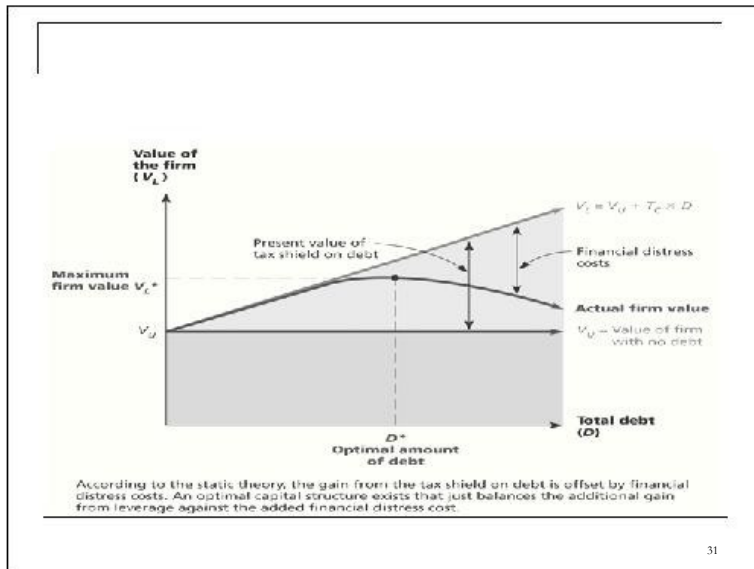
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According to the static theory, the gain from the tax shield on debt is offset by financial distress costs. An optimal capital structure exists that just balances the additional gain from leverage against the added financial distress cost.

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According to the static theory, the WACC falls initially because of the tax advantage of debt. Beyond the point $D*/E*$, it begins to rise because of financial distress costs.

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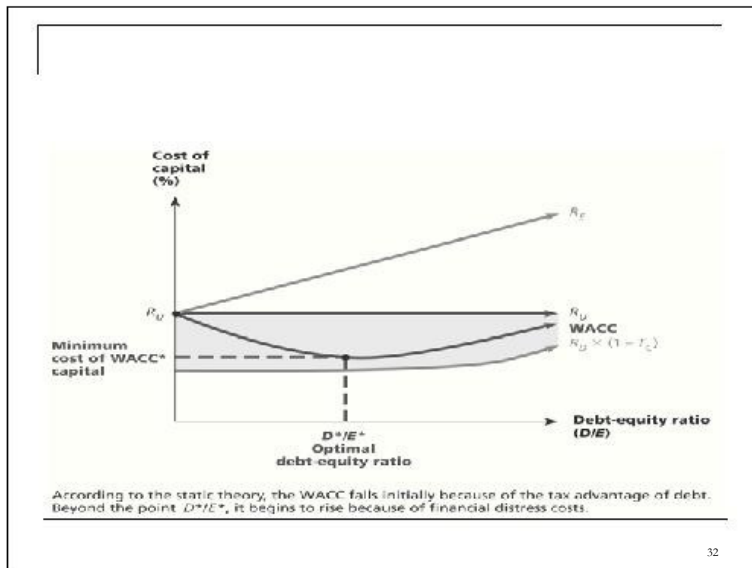
Conclusions

Case I no taxes or bankruptcy costs
- No optimal capital structure

Case II corporate taxes but no bankruptcy costs
- Optimal capital structure is 100% debt
- Each additional dollar of debt increases the cash flow of the firm

Case III corporate taxes and bankruptcy costs
- Optimal capital structure is part debt and part equity
- Occurs where the benefit from an additional dollar of debt is just offset by the increase in expected bankruptcy costs

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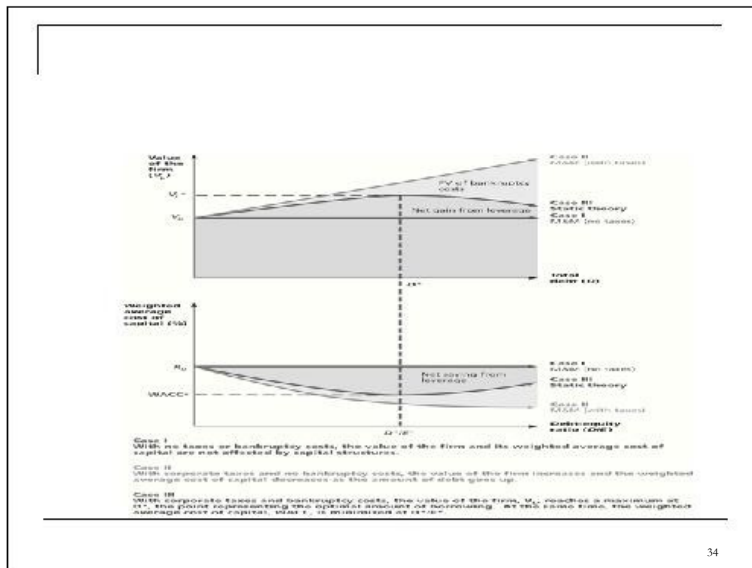
Managerial Recommendations

The tax benefit is only important if the firm has a large tax liability

Risk of financial distress

- The greater the risk of financial distress, the less debt will be optimal for the firm
- The cost of financial distress varies across firms and industries and as a manager you need to understand the cost for your industry

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Lower financial leverage

Higher financial leverage

In the extended pie model, the value of all the claims against the firm's cash flows is not affected by capital structure, but the *relative* values of claims change as the amount of debt financing is increased.

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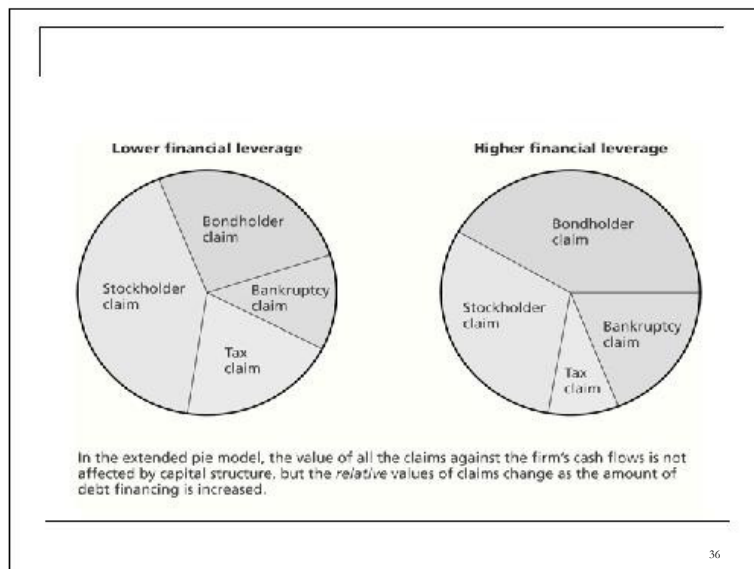
The Value of the Firm

Value of the firm = marketed claims +
nonmarketed claims

- Marketed claims are the claims of stockholders
  and bondholders
- Nonmarketed claims are the claims of the
  government and other potential stakeholders

The overall value of the firm is unaffected by
changes in capital structure

The division of value between marketed
claims and nonmarketed claims may be
impacted by capital structure decisions

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Observed Capital Structure

Capital structure does differ by industries

Differences according to Cost of Capital 2000 *Yearbook by Ibbotson Associates, Inc.*

Lowest levels of debt

Drugs with 2.75% debt

Computers with 6.91% debt

Highest levels of debt

Steel with 55.84% debt

Department stores with 50.53% debt

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Work the Web Example

You can find information about a companys capital structure relative to its industry, sector and the S&P 500 at Yahoo Marketguide

Click on the web surfer to go to the site

- Choose a company and get a quote
- Choose ratio comparisons

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Bankruptcy Process Part I

Business failure business has terminated
with a loss to creditors

Legal bankruptcy petition federal court for
bankruptcy

Technical insolvency firm is unable to meet
debt obligations

Accounting insolvency book value of equity
is negative

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Bankruptcy Process Part II

Liquidation

Chapter 7 of the Federal Bankruptcy Reform Act of 1978

Trustee takes over assets, sells them and distributes the proceeds according to the absolute priority rule

Reorganization

Chapter 11 of the Federal Bankruptcy Reform Act of 1978

Restructure the corporation with a provision to repay creditors

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Quick Quiz

Explain the effect of leverage on EPS and ROE

What is the break-even EBIT.

How do we determine the optimal capital structure.

What is the optimal capital structure in the three cases that were discussed in this chapter.

What is the difference between liquidation and reorganization.

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International and US Stock Markets

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Chapter Overview

Part I:
  Stock markets around the world
    International
    US
Part II:
  Raising equity
    Venture Capital
    IPO

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Part I:

International and US Stock Markets

A Statistical Perspective

Market Structure, Trading Practices, and Costs

International Equity Market Benchmarks

World Equity Market Benchmark Shares

Trading in International Equities

Factors Affecting International Equity Returns

Common stock markets in the US

Market efficiency

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Market Capitalization of Developed Countries

Almost 92% of the total market capitalization of the worlds equity markets is accounted for by the market capitalization of the developed world.

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Market Capitalization of Developing Countries

The other 10% is accounted for by the market capitalization of developing countries in emerging markets.

Latin America
Asia
Eastern Europe
Mideast/Africa

Recently the growth rates in these emerging markets have been strong, but with more volatility than we have here at home.

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Measures of Liquidity

The equity markets of the developed world tend to be much more liquid than emerging markets.

Liquidity refers to how quickly an asset can be sold without a major price concession.

So, while investments in emerging markets may be profitable, the focus should be on the long term.

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Measures of Market Concentration

Emerging Markets tend to be much more concentrated than our markets.

Concentrated in relatively few companies.

That is, a few issues account for a much larger percentage of the overall market capitalization in emerging markets than in the equity markets of the developed world.

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Market Structure, Trading Practices, and Costs

Primary Markets

Shares offered for sale directly from the issuing company.

Secondary Markets

Provide market participants with marketability and share valuation.

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Market Structure,
Trading Practices, and Costs

Market Order

An order to your broker to buy or sell share immediately at the market price.

Limit Order

An order to your broker to buy or sell at the at a price you want, when and if he can.

If immediate execution is more important than the price, use a market order.

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Market Structure, Trading Practices, and Costs

Dealer Market

The stock is sold by dealers, who stand ready to buy and sell the security for their own account.

In the U.S., the OTC market is a dealer market.

Auction Market

Organized exchanges have specialists who match buy and sell orders. Buy and sell orders may get matched without the specialist buying and selling as a dealer.

Automated Exchanges

Computers match buy and sell orders.

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International Equity Market Benchmarks

North America

Europe

Asia/Pacific Rim

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World Equity Benchmark Shares

World Equity Benchmark Shares (WEBS)

Country-specific baskets of stocks designed to replicate the country indexes of 14 countries.

WEBS are subject to U.S. SEC and IRS diversification requirements.

Low cost, convenient way for investors to hold diversified investments in several different countries.

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Trading in International Equities

Magnitude of International Equity Trading

Cross-Listing of Shares

Yankee Stock Offerings

The European Stock Market

American Depository Receipts

12

Magnitude of International Equity Trading

During the 1980s world capital markets began a trend toward greater global integration.

Diversification, reduced regulation, improvements in computer and communications technology, increased demand from MNCs for global issuance.

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Cross-Listing of Shares

Cross-Listing refers to a firm having its equity shares listed on one or more foreign exchanges.

The number of firms doing this has exploded in recent years.

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Advantages of Cross-Listing

It expands the investor base for a firm.

Establishes name recognition for the firm in new capital markets, paving the way for new issues.

May offer marketing advantages.

May mitigate possibility of hostile takeovers.

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Yankee Stock Offerings

The direct sale of new equity capital to U.S.
public investors by foreign firms.

- Privatization in South America and Eastern Europe
- Equity sales by Mexican firms trying to cash in on NAFTA

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The European Stock Market

There is not as yet a single European stock market that comprises all national markets.

NASDAQ Europe hopes to become a pan-European stock market that operates independently of any national European exchange.

All trading is denominated in the euro.

It expects to offer trading in both European and U.S. stocks.

www.NasdaqEurope.com

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American Depository Receipts

Foreign stocks often trade on U.S. exchanges as ADRs.

It is a receipt that represents the number of foreign shares that are deposited at a U.S. bank.

The bank serves as a transfer agent for the ADRs

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American Depository Receipts

There are many advantages to trading ADRs as opposed to direct investment in the companys shares:

- ADRs are denominated in U.S. dollars, trade on U.S. exchanges and can be bought through any broker.
- Dividends are paid in U.S. dollars.
- Most underlying stocks are bearer securities, the ADRs are registered.

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Global Registered Shares

DaimlerChrysler AG is a German firm, whose stock trades as a GRS.

GRS are one share traded globally, unlike ADRs, which are receipts for banks deposits of home-market shares and traded on foreign markets.

They trade in both dollars and euros.

All shareholders have equal status and voting rights.

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Factors Affecting
International Equity Returns

- Macroeconomic Factors
- Exchange Rates
- Industrial Structure

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Macroeconomic Factors Affecting International Equity Returns

The data do not support the notion that equity returns are strongly influenced by macro factors.

That is correspondent with findings for U.S. equity markets.

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Exchange Rates

Exchange rate movements in a given country appear to reinforce the stock market movements within that country.

One should be careful not to confuse correlation with causality.

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Industrial Structure

Studies examining the influence of industrial structure on foreign equity returns are inconclusive.

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COMMON STOCK MARKETS IN THE UNITED STATES

Major National Stock Exchanges

- NYSE or Big Board
- AMEX or ASE or Curb

Regional Stock Exchanges

- Boston, Chicago, Cincinnati, San Francisco, Philadelphia

OTC Market

- NASDAQ
- NASD

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NYSE

Centralized continuous auction market

Exchange participants:

    single specialist

    commission brokers

    independent floor brokers

    registered traders

SuperDot

Major roles of NYSE-specialist

    Dealer

    Agent

    Catalyst

    Auctioneer

Commissions

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OTC Market

Trading unlisted stocks

Listing requirements

NASDAQ stock market

NASDAQ market tiers
   - NASDAQ National Market
   - Small Capitalization Market

NASDAQ market makers

Other OTC markets
   - OTC Bulletin Board
   - Pink Sheets

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Pricing Efficiency of the Stock Market

Forms of Efficiency
Weak form
Semistrong form
Strong form
Implications for Investing in Common Stock
Active strategies
Passive strategies

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Part II:
Raising Capital

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Raising Capital

Understand the venture capital market and its role in financing new businesses

Understand how securities are sold to the public and the role of investment bankers

Understand initial public offerings and the costs of going public

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Venture Capital

- Private financing for relatively new businesses in exchange for stock
- Usually entails some hands-on guidance
- The ultimate goal is usually to take the company public and the VC will benefit from the capital raised in the IPO
- Many VC firms are formed from a group of investors that pool capital and then have partners in the firm decide which companies will receive financing
- Some large corporations have a VC division

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Choosing a Venture Capitalist

Look for financial strength

Choose a VC that has a management style that is compatible with your own

Obtain and check references

What contacts does the VC have.

What is the exit strategy.

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Selling Securities to the Public

Management must obtain permission from the Board of Directors

Firm must file a registration statement with the SEC

SEC examines the registration during a 20-day waiting period

- A preliminary prospectus, called a red herring, is distributed during the waiting period
- If there are problems the company is allowed to amend the registration and the waiting period starts over

Securities may not be sold during the waiting period

The price is determined on the effective date of the registration

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Table I

Method	Type	Definition
Public Traditional negotiated cash offer	Firm commitment cash offer	Company negotiates an agreement with an investment banker to underwrite and distribute the new shares. A specified number of shares are bought by underwriters and sold at a higher price.
	Best efforts cash offer	Company has investment bankers sell as many of the new shares as possible at the agreed-upon price. There is no guarantee concerning how much cash will be raised.
Privileged subscription	Direct rights offer	Company offers the new stock directly to its existing shareholders.
	Standby rights offer	Like the direct rights offer, this contains a privileged subscription arrangement with existing shareholders. The net proceeds are guaranteed by the underwriters.

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Table II

Nontraditional cash offer	Shelf cash offer	Qualifying companies can authorize all shares they expect to sell over a two-year period and sell them when needed.
	Competitive firm cash offer	Company can elect to award the underwriting contract through a public auction instead of negotiation.
Private	Direct placement	Securities are sold directly to the purchaser, who, at least until recently, generally could not resell securities for at least two years.

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Underwriters

Services provided by underwriters
  Formulate method used to issue securities
  Price the securities
  Sell the securities
  Price stabilization by lead underwriter
Syndicate group of investment bankers that market the securities and share the risk associated with selling the issue
Spread difference between what the syndicate pays the company and what the security sells for in the market

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Firm Commitment Underwriting

Issuer sells entire issue to underwriting syndicate

The syndicate then resells the issue to the public

The underwriter makes money on the spread between the price paid to the issuer and the price received from investors when the stock is sold

The syndicate bears the risk of not being able to sell the entire issue for more than the cost

Most common type of underwriting in the United States

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Best Efforts Underwriting

Underwriter must make their best effort to sell the securities at an agreed-upon offering price

The company bears the risk of the issue not being sold

The offer may be pulled if there is not enough interest at the offer price and the company does not get the capital and they have still incurred substantial flotation costs

Not as common as it used to be

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Green Shoes and Lockups

Green Shoe provision
- Allows syndicate to purchase an additional 15% of the issue from the issuer
- Allows the issue to be oversubscribed
- Provides some protection for the lead underwriter as they perform their price stabilization function

Lockup agreements
- Restriction on insiders that prevents them from selling their shares of an IPO for a specified time period
- The lockup period is commonly 180 days
- The stock price tends to drop when the lockup period expires due to market anticipation of additional shares hitting the street

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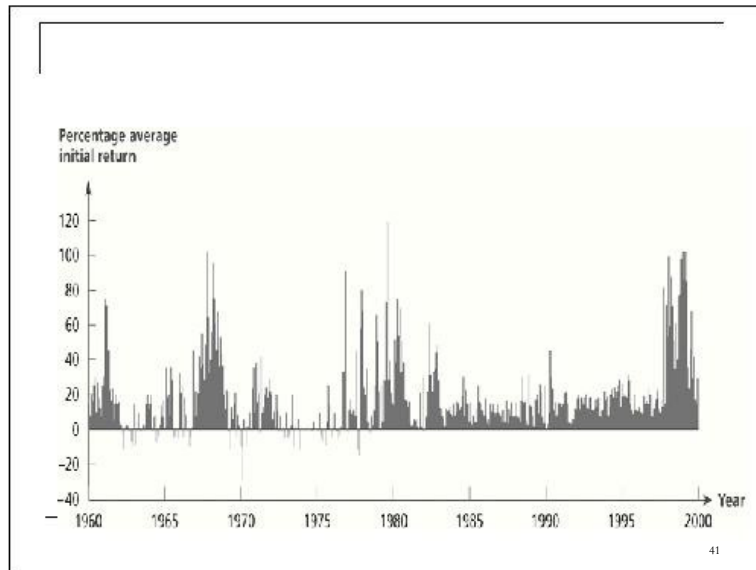Lecture 12

IPO Underpricing

Initial Public Offering IPO

May be difficult to price an IPO because there isnt a current market price available

Additional asymmetric information associated with companies going public

Underwriters want to ensure that their clients earn a good return on IPOs on average

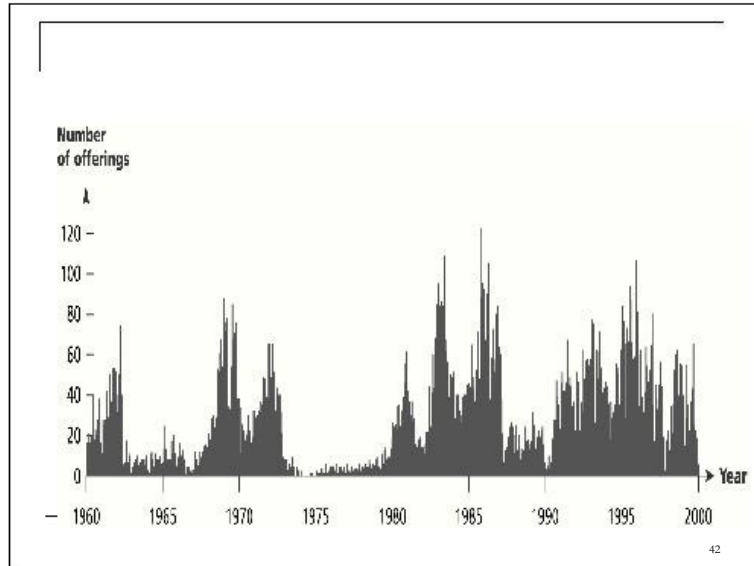Underpricing causes the issuer to leave money on the table

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Work the Web Example

How have recent IPOs done.

Click on the web surfer to go to the Bloomberg site and follow the IPO Center link

How many companies have gone public in the last week.

How have companies that went public three months ago done. What about six months ago.

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New Equity Issues and Price

- Stock prices tend to decline when new equity is issued
- Possible explanations for this phenomenon
  - Signaling and managerial information
  - Signaling and debt usage
  - Issue costs
- Since the drop in price can be significant and much of the drop may be attributable to negative signals, it is important for management to understand the signals that are being sent and try to reduce the effect when possible

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Issuance Costs

Spread

Other direct expenses legal fees, filing fees, etc.

Indirect expenses opportunity costs, i.e., management time spent working on issue

Abnormal returns price drop on existing stock

Underpricing below market issue price on IPOs

Green Shoe option cost of additional shares that the syndicate can purchase after the issue has gone to market

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Rights Offerings: Basic Concepts

Issue of common stock offered to existing shareholders

Allows current shareholders to avoid the dilution that can occur with a new stock issue

Rights are given to the shareholders

- Specify number of shares that can be purchased
- Specify purchase price
- Specify time frame

Rights may be traded OTC or on an exchange

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Dilution

Dilution is a loss in value for existing shareholders

- Percentage ownership shares sold to the general public without a rights offering
- Market value firm accepts negative NPV projects
- Book value and EPS occurs when market-to-book value is less than one

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Shelf Registration

- Permits a corporation to register a large issue with the SEC and sell it in small portions
- Reduces the flotation costs of registration
- Allows the company more flexibility to raise money quickly
- Requirements
  - Company must be rated investment grade
  - Cannot have defaulted on debt within last three years
  - Market value of stock must be greater than $150 million
  - No violations of the Securities Act of 1934 in the last three years

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Private Placement of Securities

Sale of securities to a limited number of institutional investors.

SEC specified conditions to be met for private placement.

Issuers work with investment bankers.

Rule 144A offering or non-Rule 144A offering

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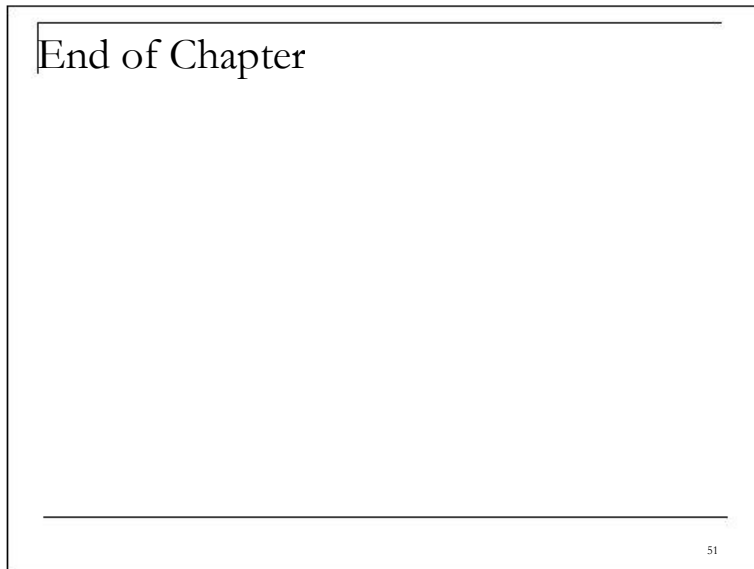Lecture 12

Rule 144 A

SEC rule permitting large institutions to trade securities acquired in a private placement among themselves without having to register these securities with the SEC.

SEC Rule 144A improves liquidity of privately placed securities.

Encourages non-U.S. firms to issue securities in the U.S. private placement market.

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End of Chapter

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Dividends and Dividend Policy

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Key Concepts and Skills

Understand dividend types and how they are paid

Understand the issues surrounding dividend policy decisions

Understand the difference between cash and stock dividends

Understand why share repurchases are an alternative to dividends

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Chapter Outline

Cash Dividends and Dividend Payment

Does Dividend Policy Matter.

Some Real-World Factors Favoring a Low Payout

Some Real-World Factors Favoring a High Payout

A Resolution of Real-World Factors

Establishing a Dividend Policy

Stock Repurchase: An Alternative to Cash Dividends

Stock Dividends and Stock Splits

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Cash Dividends

Regular cash dividend cash payments made directly to stockholders, usually each quarter

Extra cash dividend indication that the extra amount may not be repeated in the future

Special cash dividend similar to extra dividend, but definitely wont be repeated

Liquidating dividend some or all of the business has been sold

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Dividend Payment

Declaration Date Board declares the dividend and it becomes a liability of the firm

Ex-dividend Date
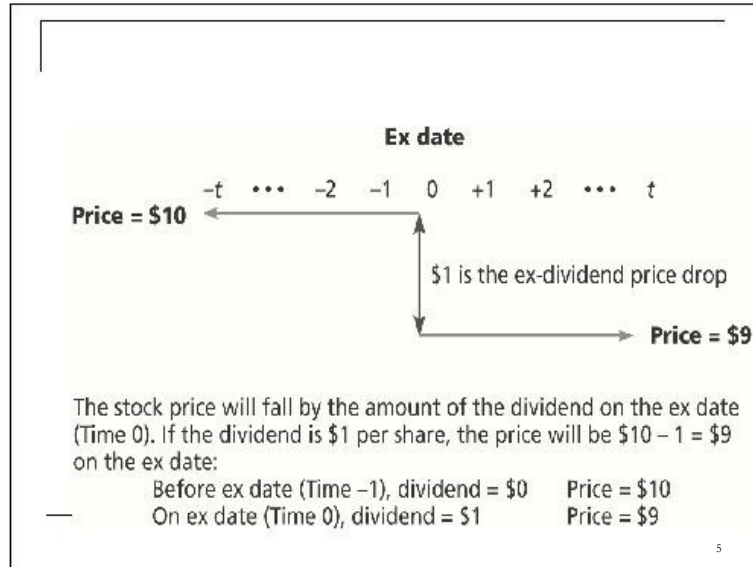- Occurs two business days before date of record
- If you buy stock on or after this date, you will not receive the dividend
- Stock price generally drops by about the amount of the dividend

Date of Record Holders of record are determined and they will receive the dividend payment

Date of Payment checks are mailed

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Ex date

Price = \$10

$1 is the ex-dividend price drop

Price = \$9

The stock price will fall by the amount of the dividend on the ex date (Time 0). If the dividend is $1 per share, the price will be $10 – 1 = $9 on the ex date:

Before ex date (Time –1), dividend = $0   Price = $10
On ex date (Time 0), dividend = $1   Price = $9

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Does Dividend Policy Matter.

Dividends matter the value of the stock is based on the present value of expected future dividends

Dividend policy may not matter

- Dividend policy is the decision to pay dividends versus retaining funds to reinvest in the firm
- In theory, if the firm reinvests capital now, it will grow and can pay higher dividends in the future

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Illustration of Irrelevance

Consider a firm that can either pay out dividends of $10,000 per year for each of the next two years or can pay $9000 this year, reinvest the other $1000 into the firm and then pay $11,120 next year. Investors require a 12% return.

  Market Value with constant dividend = $16,900.51
  Market Value with reinvestment = $16,900.51

If the company will earn the required return, then it doesnt matter when it pays the dividends

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Low Payout Please

Why might a low payout be desirable.

Individuals in upper income tax brackets might prefer lower dividend payouts, with the immediate tax consequences, in favor of higher capital gains

Flotation costs low payouts can decrease the amount of capital that needs to be raised, thereby lowering flotation costs

Dividend restrictions debt contracts might limit the percentage of income that can be paid out as dividends

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High Payout Please

Why might a high payout be desirable.

Desire for current income
- Individuals in low tax brackets
- Groups that are prohibited from spending principal (trusts and endowments)

Uncertainty resolution no guarantee that the higher future dividends will materialize

Taxes
- Dividend exclusion for corporations
- Tax exempt investors dont have to worry about differential treatment between dividends and capital gains

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Dividends and Signals

Asymmetric information managers have more information about the health of the company than investors

Changes in dividends convey information

Dividend increases

Management believes it can be sustained

Expectation of higher future dividends, increasing present value

Signal of a healthy, growing firm

Dividend decreases

Management believes it can no longer sustain the current level of dividends

Expectation of lower dividends indefinitely; decreasing present value

Signal of a firm that is having financial difficulties

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Clientele Effect

Some investors prefer low dividend payouts and will buy stock in those companies that offer low dividend payouts

Some investors prefer high dividend payouts and will buy stock in those companies that offer high dividend payouts

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Implications of the Clientele Effect

What do you think will happen if a firm changes its policy from a high payout to a low payout.

What do you think will happen if a firm changes its policy from a low payout to a high payout.

If this is the case, does dividend POLICY matter.

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Dividend Policy in Practice

Residual dividend policy

Constant growth dividend policy dividends increased at a constant rate each year

Constant payout ratio pay a constant percent of earnings each year

Compromise dividend policy

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Residual Dividend Policy

Determine capital budget

Determine target capital structure

Finance investments with a combination of debt and equity in line with the target capital structure

  Remember that retained earnings are equity

  If additional equity is needed, issue new shares

If there are excess earnings, then pay the remainder out in dividends

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Example Residual Dividend Policy

Given
- Need $5 million for new investments
- Target capital structure: D/E = 2/3
- Net Income = $4 million

Finding dividend
- 40% financed with debt (2 million)
- 60% financed with equity (3 million)
- NI equity financing = $1 million, paid out as dividends

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Compromise Dividend Policy

Goals, ranked in order of importance
  Avoid cutting back on positive NPV projects to pay
  a dividend
  Avoid dividend cuts
  Avoid the need to sell equity
  Maintain a target debt/equity ratio
  Maintain a target dividend payout ratio
Companies want to accept positive NPV
projects, while avoiding negative signals

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Stock Repurchase

Company buys back its own shares of stock
  Tender offer company states a purchase price and a desired number of shares
  Open market buys stock in the open market

Similar to a cash dividend in that it returns cash from the firm to the stockholders

This is another argument for dividend policy irrelevance in the absence of taxes or other imperfections

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Real-World Considerations

- Stock repurchase allows investors to decide if they want the current cash flow and associated tax consequences
- Investors face capital gains taxes instead of ordinary income taxes (lower rate)
- In our current tax structure, repurchases may be more desirable due to the options provided stockholders
- The IRS recognizes this and will not allow a stock repurchase for the sole purpose of allowing investors to avoid taxes

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Information Content of Stock Repurchases

Stock repurchases sends a positive signal that management believes that the current price is low

Tender offers send a more positive signal than open market repurchases because the company is stating a specific price

The stock price often increases when repurchases are announced

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Example: Repurchase Announcement

America West Airlines announced that its Board of Directors has authorized the purchase of up to 2.5 million shares of its Class B common stock on the open market as circumstances warrant over the next two years

Following the approval of the stock repurchase program by the companys Board of Directors earlier today. W. A. Franke, chairman and chief officer said The stock repurchase program reflects our belief that America West stock may be an attractive investment opportunity for the Company, and it underscores our commitment to enhancing long-term shareholder value.

The shares will be repurchased with cash on hand, but only if and to the extent the Company holds unrestricted cash in excess of $200 million to ensure that an adequate level of cash and cash equivalents is maintained.

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Stock Dividends

Pay additional shares of stock instead of cash

Increases the number of outstanding shares

Small stock dividend
- Less than 20 to 25%
- If you own 100 shares and the company declared a 10% stock dividend, you would receive an additional 10 shares

Large stock dividend more than 20 to 25%

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Stock Splits

Stock splits essentially the same as a stock
dividend except expressed as a ratio

For example, a 2 for 1 stock split is the same as a
100% stock dividend

Stock price is reduced when the stock splits

Common explanation for split is to return
price to a more desirable trading range

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Quick Quiz

What are the different types of dividends and how is a dividend paid.

What is the clientele effect and how does it affect dividend policy relevance.

What is the information content of dividend changes.

What is the difference between a residual dividend policy and a compromise dividend policy.

What are stock dividends and how do they differ from cash dividends.

How are share repurchases an alternative to dividends and why might investors prefer them.

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