Chapter 2

The Business, Tax, and Financial Environments

FLORIDA INTERNATIONAL UNIVERSITY
COLLEGE OF ENGINEERING

Learning Objectives

After studying Chapter 2, you should be able to:

1. Describe the four basic forms of business organization in the United States -- and the advantages and disadvantages of each.
2. Understand how to calculate a corporation's taxable income and how to determine the corporate tax rate - both average and marginal.
3. Understand various methods of depreciation.
4. Understand why acquiring assets through the use of debt financing offers a tax advantage over both common and preferred stock financing.
5. Describe the purpose and make up of financial markets.
6. Demonstrate an understanding of how letter ratings of the major rating agencies help you to judge a security's default risk.
7. Understand what is meant by the term "term structure of interest rates" and relate it to a "yield curve."

FLORIDA INTERNATIONAL UNIVERSITY
COLLEGE OF ENGINEERING

Chapter 2 Topics

- The Business Environment
- The Tax Environment
- The Financial Environment

The Business Environment

The U.S. has four basic forms of business organization:

- Sole Proprietorships
- Partnerships (general and limited)
- Corporations
- Limited liability companies

The Business Environment: Sole Proprietorship

Sole Proprietorship -- A business form for which there is one owner. This single owner has unlimited liability for all debts of the firm.

- Oldest form of business organization.
- Business income is accounted for on your *personal income tax form*.

The Business Environment: Sole Proprietorship

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Advantages	Disadvantages
• Simplicity	– Unlimited liability
• Low setup cost	– Hard to raise additional capital
• Quick setup	– Transfer of ownership difficulties
• Single tax filing on individual form	

The Business Environment: Partnership

Partnership -- A business form in which two or more individuals act as owners.

- Business income is accounted for on each partner's *personal income tax form*.

Types of Partnerships

General Partnership -- all partners have *unlimited liability* and are liable for all obligations of the partnership.

Limited Partnership -- limited partners have *liability limited* to their capital contribution (investors only). At least one general partner is required and all general partners have unlimited liability.

Summary for Partnership

Advantages	Disadvantages
• Can be simple • Low setup cost, higher than sole proprietorship • Relatively quick setup • Limited liability for limited partners	• Unlimited liability for the general partner • Difficult to raise additional capital, but easier than sole proprietorship • Transfer of ownership difficulties

The Business Environment: Corporation

Corporation -- A business form legally separate from its owners.

- An artificial entity that can own assets and incur liabilities.
- Business income is accounted for on the *income tax form of the corporation*.

Summary for Corporation

Advantages	Disadvantages
• Limited liability	• Double taxation
• Easy transfer of ownership	• More difficult to establish
• Unlimited life	• More expensive to set up and maintain
• Easier to raise large quantities of capital	

The Business Environment: Limited Liability Companies

Limited Liability Companies -- A business form that provides its owners (called "members") with corporate-style limited personal liability and the federal-tax treatment of a partnership.

- Business income is accounted for on each "member's" *individual income tax form*.

The Business Environment: Limited Liability Companies

Generally, an LLC will possess only the first two of the following four standard corporation characteristics:

- Limited liability
- Centralized management
- Unlimited life
- Transfer of ownership without other owners' prior consent

Summary for LLC

Advantages

- Limited liability
- Eliminates double taxation
- No restriction on number or type of owners
- Easier to raise additional capital

Disadvantages

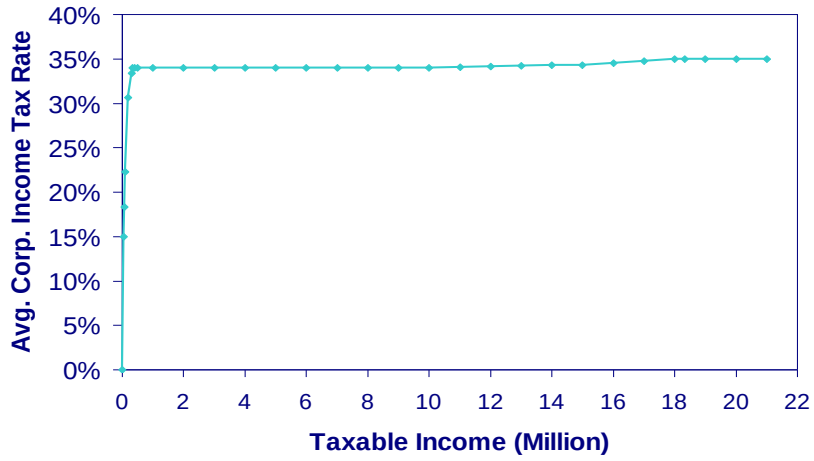
- Limited life (generally)
- Transfer of ownership difficulties (generally)

2007 Federal Corporate Income Tax Rates

Taxable Income	Tax Rate	Corporate Income Tax
Not over $50,000	15%	15% over 0
$50,000-75,000	25%	7,500 + 25% over 50,000
$75,000-100,000	34%	13,750 + 34% over 75,000
$100,000-335,000	39%	22,250 + 39% over 100,000
$335,000-10 million	34%	113,900 + 34% over 335,000
$10 million-15 million	35%	3,400,000 + 35% over 10 mil.
$15 million - 18,333,333	38%	5,150,000 + 38% over 15 mil.
over $18,333,333	35%	6,416,667 + 35% over 18,333,333

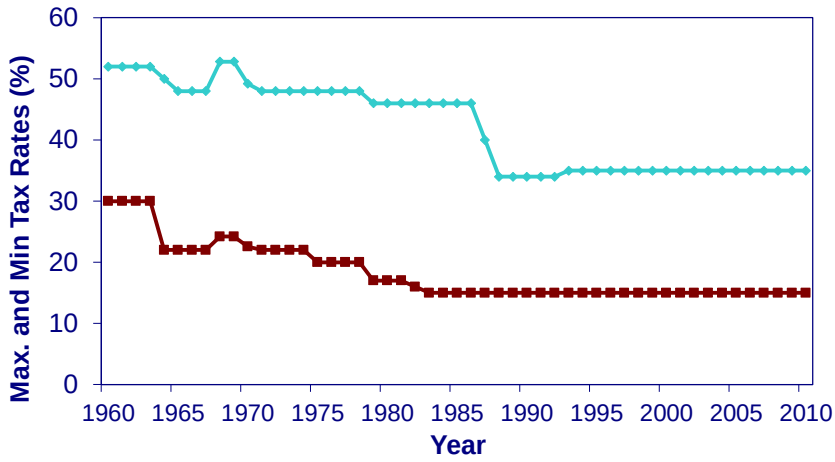
FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Average Federal Corporate Income Tax Rates



FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Maximum and Minimum Federal Corporate Income Tax Rates



COLLEGE OF ENGINEERING

Income Tax Example

Lisa Miller of *Basket Wonders (BW)* is calculating the *income tax liability*, *marginal tax rate*, and *average tax rate* for the fiscal year ending December 31. *BW's* corporate taxable income for this fiscal year was $250,000.

COLLEGE OF ENGINEERING

Corporate Income Taxes

Corp. Taxable Income At Least	But <	Tax Rate	Tax Calculation
$ 0	$ 50,000	15%	.15x(Inc > 0)
50,000	75,000	25%	$ 7,500 + .25x(Inc > 50,000)
75,000	100,000	34%	13,750 + .34x(Inc > 75,000)
100,000	335,000	39%	*22,250* + .39x(Inc > 100,000)
335,000	10,000,000	34%	113,900 + .34x(Inc > 335,000)
10,000,000	15,000,000	35%	3,400,000 + .35x(Inc > 10,000,000)
15,000,000	18,333,333	38%	5,150,000 + .38x(Inc > 15,000,000)
18,333,333		35%	6,416,667 + .35x(Inc > 18,333,333)

Income Tax Example

Income tax liability

= *$22,250* + .39 x ($250,000 - $100,000)

= *$22,250* + $58,500

= $80,750

Marginal tax rate = 39%

Average tax rate = $80,750 / $250,000

= 32.3%

Depreciation

Depreciation represents the systematic allocation of the cost of a capital asset over a period of time for financial reporting purposes, tax purposes, or both.

- Generally, profitable firms prefer to use an accelerated method for tax reporting purposes.

3 Conditions for Depreciation

To qualify for depreciation, a property must:

- Having a life longer than a year;
- Used for business purpose; and
- Property value declines with time. (Land is not depreciable)

Common Types of Depreciation

- Straight-line (*SL*)
- Accelerated Types
  - Double Declining Balance (*DDB*)
  - Modified Accelerated Cost Recovery System (*MACRS*)

How to Apply SL Depreciation

Straight-line (*SL*) Depreciation

- **Depreciable basis (DB)**: purchase price, shipping, installation, calibration, training, etc.
- **Recovery period (N)**: time period (in years) the property is to be depreciated.
- **Salvage value (S)**: the remaining value of the property at the recovery period.
- Annual Depreciation (D) can be calculated as

$$D_{SL} = \frac{DB - S}{N}$$

Depreciation, Book Value, Market Value

- The **book value** of an asset is its original depreciable basis, adjusted for any subsequent changes of depreciation.
- **Market value** is the price that could be obtained by selling an asset on a competitive, open market.

Example of SL Depreciation

- **Depreciable basis (DB)**: $100,000.
- **Recovery period (N)**: 5 years.
- **Salvage value (S)**: $10,000.
- Annual Depreciation (D) can be calculated as

$$D_{SL} = \frac{\$100{,}000 - 10{,}000}{5} = \$18{,}000$$

Year	Depreciation	Book Value
0		$100,000
1	$18,000	$82,000
2	$18,000	$64,000
3	$18,000	$46,000
4	$18,000	$28,000
5	$18,000	$10,000

How to Apply DB Depreciation

Declining-Balance (*DB*) Depreciation

- **Declining balance multiple (m)**: The number used to determine the depreciation rate, e.g., 200% (double), 175%, 150%, etc.
- **Recovery period (N)**: time period (in years) the property is to be depreciated.
- **Salvage value (S)**: the remaining value of the property at the recovery period.
- Annual Depreciation Rate (R) can be calculated as

$$R = \frac{m}{N}$$

How to Apply DB Depreciation

- Annual Depreciation Rate (R) can be calculated as

$$R = \frac{m}{N}$$

- Annual Depreciation (D) can be calculated as

$$D_{DB} = R(\text{remaining } BV)$$

- From previous example, for double declining balance,

$$R = \frac{m}{N} = \frac{200\%}{5} = 40\%$$

Year	Depreciation	Book Value
0		$100,000
1	$40,000	$60,000
2	$24,000	$36,000
3	$14,400	$21,600
4	$8,640	$12,960
5	$2,960*	$10,000

* Modified to keep salvage value ≥ $10,000

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

MACRS Depreciation

Modified Accelerated Cost Recovery System (*MACRS*)

- Ignores salvage value

Property type:

- Personal property (everything except real property)
  - General Depreciation System (GDS): 3, 5, 7, 10, 15, 20 years classes (half-year convention)
  - Alternative Depreciation System (ADS): SL depreciation with recovery period are equal or longer than GDS (half-year convention)
- Real property: ADS (**half-month** convention): 27.5 (residential), 39 years (non-residential) classes

MACRS GDS Property Classes

Property Class	Personal Property (all property except real estate)
3-Year Property	• Special handling devices for food and beverage manufacture • Special tools for the manufacture of finished plastic products, fabricated metal products, and motor vehicles • Property with ADR class life of 4 years or less
5-Year Property	• Automobiles and trucks (The depreciation for automobiles is limited to $2960 the first tax year, $4700 the second year, $2850 the third year, and 1675 per year in subsequent years.) • Aircraft (of non-air-transport companies) • Equipment used in research and experimentation • Computers • Petroleum drilling equipment • Property with ADR class life of more than 4 years and less than 10 years
7-Year Property	• All other property not assigned to another class • Office furniture, fixtures, and equipment • Property with ADR class life of 10 years or more and less than 16 years

MACRS GDS Property Classes

Property Class	Personal Property (all property except real estate)
10-Year Property	• Assets used in petroleum refining and certain food products • Vessels and water transportation equipment • Property with ADR class life of 16 years or more and less than 20 years
15-Year Property	• Telephone distribution plants • Municipal sewage treatment plants • Property with ADR class life of 20 years or more and less than 25 years
20-Year Property	• Municipal sewers • Property with ADR class life of 25 years or more
Property Class	**Real Property (real estate)**
27.5 Year	Residential rental property (does not include hotels and motels)
39 Years	Nonresidential real property

MACRS GDS Percentage Rate

Recovery Year	3-year class	5-year class	7-year class	10-year class	15-year class	20-year class
1	33.33	20.00	14.29	10.00	5.00	3.750
2	44.45	32.00	24.49	18.00	9.50	7.219
3	14.81*	19.20	17.49	14.40	8.55	6.677
4	7.41	11.52*	12.49	11.52	7.70	6.177
5		11.52	8.93*	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55*	5.90*	4.888
8			4.46	6.55	5.90	4.522
9				6.56	5.91	4.462*
10				6.55	5.90	4.461
11				3.28	5.91	4.462
12-15					5.90	4.461
16					2.95	4.461
17-20						4.462
21						2.231

Calculation of MACRS GDS Percentages

1. The 3-, 5-, 7-, and 10-year classes use 200% and the 15- and 20-year classes use 150% declining balance depreciation.
2. All classes switch to straight-line depreciation in the optimal year, shown with the asterisk (*).
3. A half-year of depreciation is allowed in the first and last recovery years.
4. Salvage value are assumed to be zero for all assets.

MACRS GDS Percentages Calculation for 5-year Property

Yr		DDB	SL	Depr.	BV
0					100%
1	0.5	20.00%	10.00%	**20.00%**	80.0%
2	1	32.00%	17.78%	**32.00%**	48.0%
3	1	19.20%	13.71%	**19.20%**	28.8%
4	1	11.52%	11.52%	**11.52%**	17.3%
5	1	6.91%	11.52%	**11.52%**	5.8%
6	0.5	1.15%	5.76%	**5.76%**	0.0%

$$D_{SL} = \frac{\text{Remaining } BV}{Remaining\ Recovery\ Periods}$$

$$Depr = Max(D_{SL}, D_{DDB})$$

How to Apply MACRS - GDS Depreciation

MACRS-GDS Depreciation

- **Depreciable basis (DB)**: purchase price, shipping, installation, calibration, etc.
- **Property class**: 3, 5, 7, 10, 15, or 20 years.
- Find the yearly percentage from MACRS-GDS table.
- Annual Depreciation (D) can be calculated as $D_{MACRS} = (\%)(\text{Original } DB)$

Yr	Depr. %	Depr.	Book Value
0			$100,000
1	20.00%	$20,000	$80,000
2	32.00%	$32,000	$48,000
3	19.20%	$19,200	$28,800
4	11.52%	$11,520	$17,280
5	11.52%	$11,520	$5,760
6	5.76%	$5,760	$0

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

How to Apply MACRS - ADS Depreciation

MACRS-ADS Depreciation

- **Depreciable basis (DB)**: purchase price, shipping, installation, calibration, etc.
- Find the recovery period from IRS publication.
- Annual Depreciation (D) can be calculated as SL-depreciation with half-year convention.

Yr	Depr. %	Depr.	Book Value
0			$100,000
1	10.00%	$10,000	$90,000
2	20.00%	$20,000	$70,000
3	20.00%	$20,000	$50,000
4	20.00%	$20,000	$30,000
5	20.00%	$20,000	$10,000
6	10.00%	$10,000	$0

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Economic Stimulus Act of 2008

Bonus Depreciation

- Increases a limited and additional temporary depreciation deduction of 50% of "adjusted depreciable basis" in the first year -- subject to stipulations.
- Designed to enhance capital investment by businesses.

Economic Stimulus Act of 2008

Bonus Depreciation

Example:

- $100,000 machine under 5-year MACRS property class. *Bonus* = 50% of $100K = $50K.
- Remaining $50K ($100K - $50K bonus) at 20% rate based on MACRS is $10K.
- Result is $60K depreciation charge in the first year.
- 2nd year: $50K (32%) = $16K Depreciation

COLLEGE OF ENGINEERING

American Recovery and Reinvestment Act of 2009

Goals

- Create new jobs and save existing ones
- Spur economic activity and invest in long-term growth
- Foster unprecedented levels of accountability and transparency in government spending

Means:

- Providing $288 billion in tax cuts and benefits for millions of working families and businesses
- Increasing federal funds for education and health care as well as entitlement programs (such as extending unemployment benefits) by $224 billion
- Making $275 billion available for federal contracts, grants and loans
- Requiring recipients of Recovery funds to report quarterly on how they are using the money.

http://www.recovery.gov/Pages/home.aspx

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Other Tax Issues

Alternative Minimum Tax is a special tax which equals 20% of alternative minimum taxable income (generally not equal to taxable income). Corporations pay the maximum of AMT or regular tax liability.

Quarterly Tax Payments require corporations to pay 25% of their estimated annual tax liability on the 15th of April, June, September, and December.

FLORIDA INTERNATIONAL UNIVERSITY COLLEGE OF ENGINEERING

Interest Deductibility

Interest Expense is the interest paid on outstanding debt and is *tax deductible*.

The after-tax cost of debt is:

(Interest Expense) X (1 - Tax Rate)

Thus, debt financing has a tax advantage!

Dividend Income

Cash Dividend is the cash distribution of earnings to shareholders and is *not* a tax deductible expense.

- A corp. may own stock in another company. If it received a cash dividend, normally 70% of the dividend is tax exempt. However, the corp. must have owned the stock for at least 45 days.
- If a corp. owns 20% or more of another company's stock, 80% of any dividend received is tax exempt.

Handling Corporate Losses and Gains

- Corporations that sustain a net operating loss can carry that loss back (*Carryback*) 2 years and forward (*Carryforward*) 20 years to offset operating gains in those years.
- Losses are generally carried back first and then forward starting with the earliest year with operating gains.

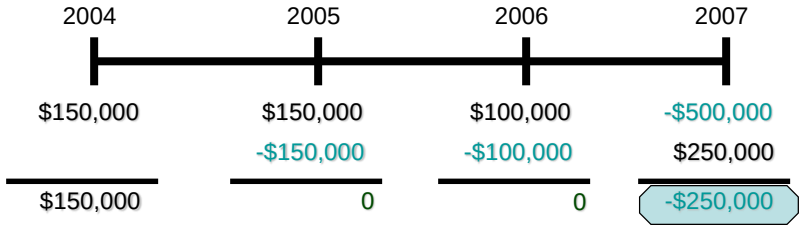
Corporate Losses and Gains Example

Lisa Miller is examining the impact of an operating loss at *Basket Wonders (BW)* in 2007. The following time line shows operating income and losses. What impact does the 2007 loss have on *BW*?

Corporate Losses and Gains Example

The loss can offset the gain in each of the years 2005 and 2006. The remaining $250,000 can be carried forward to 2008 or beyond.

Impact: Tax refund for federal taxes paid in 2005 and 2006.



Corporate Capital Gains / Losses

- Generally, the sale of a "capital asset" (as defined by the IRS) generates a capital gain (asset sells for more than book value) or capital loss (asset sells for less than book value).
- Often historically, capital gains income has received more favorable U.S. tax treatment than operating income.

Corporate Capital Gains / Losses

- Currently, capital gains are taxed at ordinary income tax rates for corporations, or a maximum 35%.
- Capital losses are deductible only against capital gains.

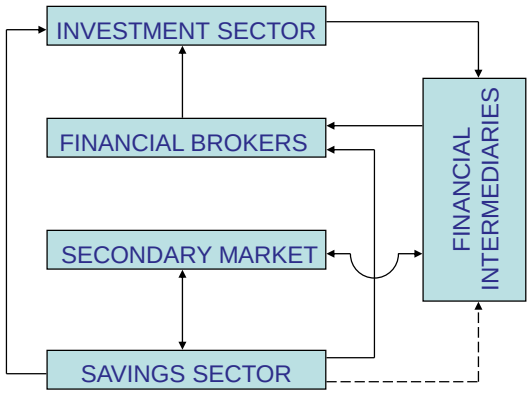
Personal Income Taxes

- The U.S. has a progressive tax structure with four tax brackets of 10%, 15%, 25%, 28%, 33%, and 35%.
- Personal income taxes are determined by taxable income, filing status, and various credits.
- Result is that low income individuals pay no federal tax and others may fluctuate between the marginal rates.

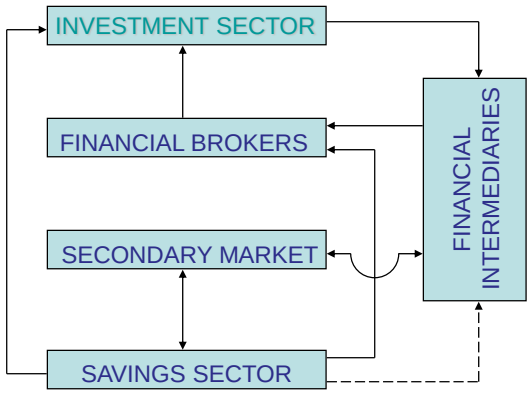
Financial Environment

- Businesses interact continually with the financial markets.
- Financial Markets are composed of all institutions and procedures for bringing buyers and sellers of financial instruments together.
- The purpose of financial markets is to efficiently allocate savings to ultimate users.

Flow of Funds in the Economy



Flow of Funds in the Economy



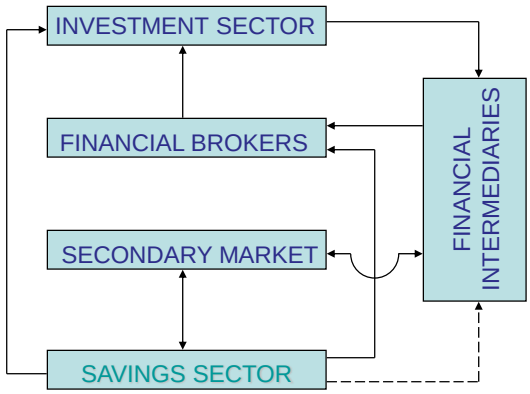
INVESTMENT SECTOR

Businesses

Government

Households

Flow of Funds in the Economy



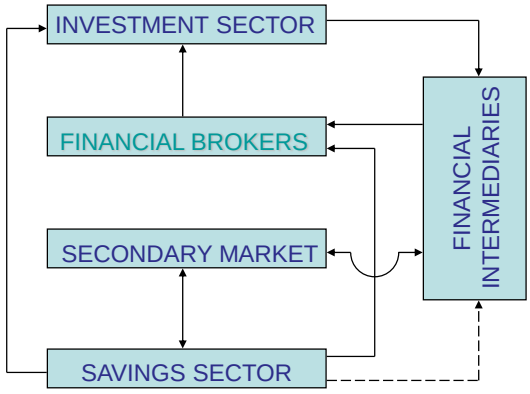
SAVINGS SECTOR

Households

Businesses

Government

Flow of Funds in the Economy

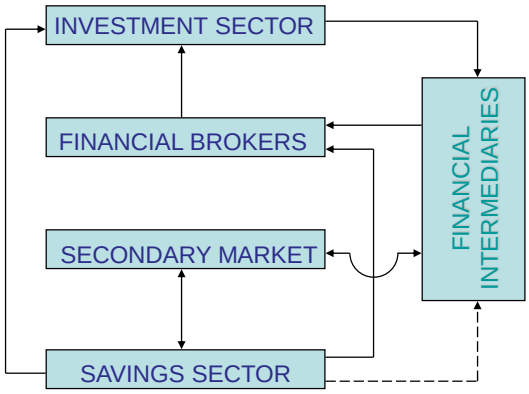


FINANCIAL BROKERS

Investment Bankers

Mortgage Bankers

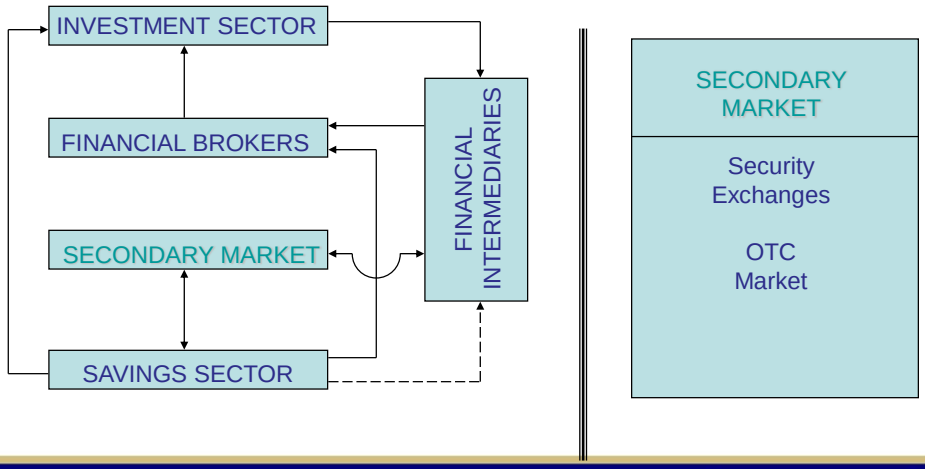
Flow of Funds in the Economy



FINANCIAL INTERMEDIARIES

Commercial Banks
Savings Institutions
Insurance Cos.
Pension Funds
Finance Companies
Mutual Funds

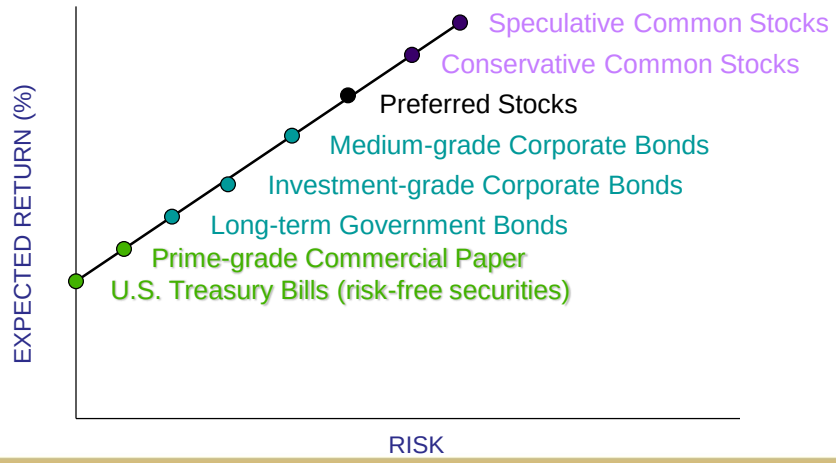
Flow of Funds in the Economy



Allocation of Funds

- Funds will flow to economic units that are willing to provide the greatest expected return (holding risk constant).
- In a rational world, the highest expected returns will be offered only by those economic units with the most promising investment opportunities.
- Result: Savings tend to be allocated to the most efficient uses.

Risk-Expected Return Profile



What Influences Security Expected Returns?

Default Risk is the failure to meet the terms of a contract.

Marketability is the ability to sell a significant volume of securities in a short period of time in the secondary market without significant price concession.

Ratings by Investment Agencies on Default Risk

MOODY'S INV SERVICE		STANDARD & POOR'S	
Aaa	Best Quality	AAA	Highest Grade
Aa	High Quality	AA	High Grade
A	Upper Med Grade	A	Higher Med Grade
Baa	Medium Grade	BBB	Medium Grade
Ba	Possess Speculative Elements	BB	Speculative
⋮	⋮	⋮	⋮
C	Lowest Grade	D	In Default

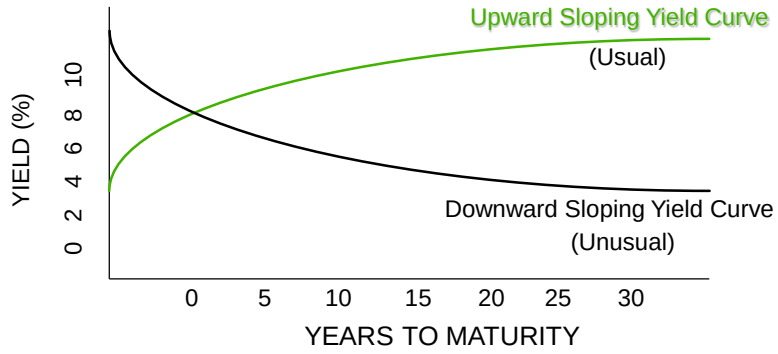
Investment grade represents the top four categories.
Below investment grade represents all other categories.

What Influences Expected Security Returns?

Maturity is concerned with the life of the security; the amount of time before the principal amount of a security becomes due.

Taxability considers the expected tax consequences of the security.

Term Structure of Interest Rates



A yield curve is a graph of the relationship between yields and term to maturity for particular securities.

What Influences Expected Security Returns?

Embedded Options provide the opportunity to change specific attributes of the security.

Inflation is a rise in the average level of prices of goods and services. The greater inflation expectations, then the greater the expected return (market return).

How does Inflation affects Real Return?

Let $i_m \triangleq$ the annual market interest rate

$f \triangleq$ the annual inflation rate

Then the real return (i_r) can be calculated as:

$$i_r = \frac{1 + i_m}{1 + f} - 1$$

- The difference between the market rate and the real return is considered as “inflation premium”.