

rmanual Management Overview

C-214

Comprehensive Discussion of Concepts & Calculations

Covers entire course in concise, easy-to-understand format

Session 1: Sections 1-5 in E-Text

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Focus of Course:

Financial Decision-Making Process for Corporations

Financing:

Fund operations of the firm with *stocks* & *bonds Market prices* & *yields* of stocks & bonds

Cost of financing for the firm

Profit-Risk Management:

Capital Structure: Mix of bonds & stock Balance profits versus risk

Capital Budgeting:

Evaluate potential investment projects Based on *expected future cash flows*

Bonds: Loan from Investor to Firm Stock: Sale of Ownership share to Investor

The Goal of a Corporation

Enhance Long-Run Stock Value

Balance Risk versus Profit

Essentials for Success

- **Equity:** Competitive return to shareholders
- > Productive Employees and Capital Equipment
- Customer Demand: Products, Prices, Service

"Firms sit on a 3-leg stool"



Corporations are simply "passthrough" legal entities: benefits and costs are shared by shareholders, employees, and customers

Agency Cost: Management makes self-interest decisions to the detriment of the firm

The Logic of Financial Decision-Making

Principles of Financial Decision-Making:

- 1. Efficient Markets
- 2. Risk Aversion
- 3. Time Value of Money
- 4. Uncertainty

1. Efficient Financial Markets

Effective decision-making depends on market efficiency

Efficiency Requirements:

Competitive: Many buyers and sellers

Liquid: Sell/buy quickly; small bid/ask spread

Transparent: Informed investors

Standardized: Standard security

Efficient Markets impact:

Well-managed firms have lower cost of financing

Investor transactions cost are minimized

2. Return Must Compensate for Risk: Risk Aversion

Required Return Line:

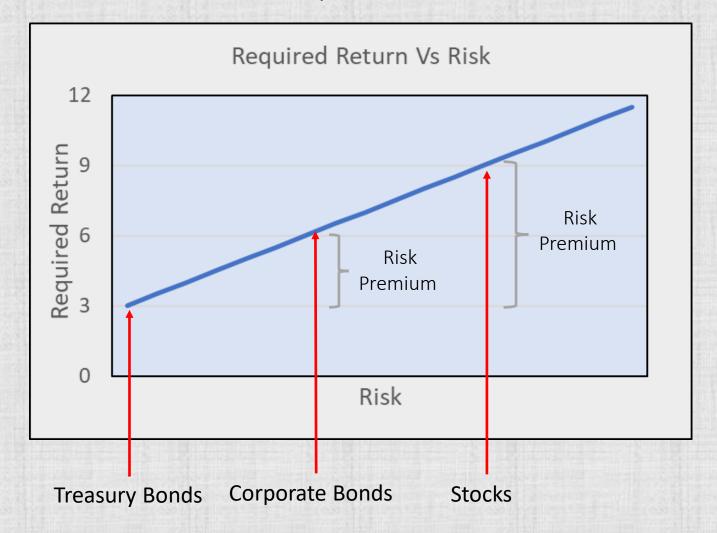
Determined

by

Supply & Demand

Risk Premiums: Investor perception of risk

Degree of riskaversion varies among investors



Risk?
Firm may go bankrupt!
Stock price might fall!

Required Return:

The minimum "yield" or "profit" necessary to induce investors to buy the security

Investors require higher returns to compensate for higher risk: a "risk premium"

3. Time Value of Money





Which Pot of Gold do you prefer?

The Value of Money depends upon <u>size</u>, <u>timing</u> & <u>certainty</u> of <u>cash flows</u>.

4. Decision-Making Under Uncertainty

Finance versus Accounting

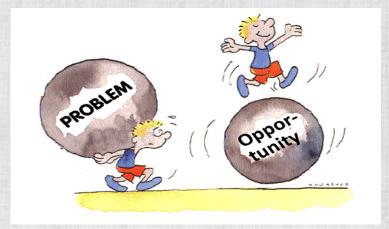
Accounting: Measure previous activity

Finance: Future transactions

Finance <u>requires</u> decision-making under <u>uncertainty</u>
Requires projections of future
Inputs may be estimates

"Correct" decision depends on degree of risk aversion

How does the manager view risk?





Financial Market Structure



Types of Corporations

Symbiotic Relationship

Products & Services

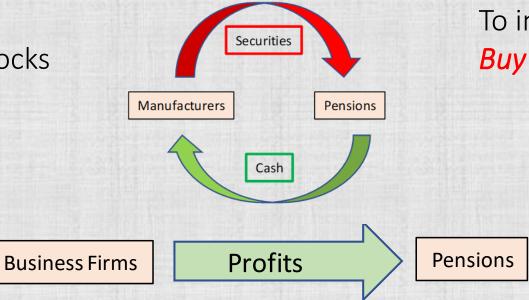
e.g., Walmart, GM, Microsoft produce products & services

To raise cash: **Sell** bonds & stocks

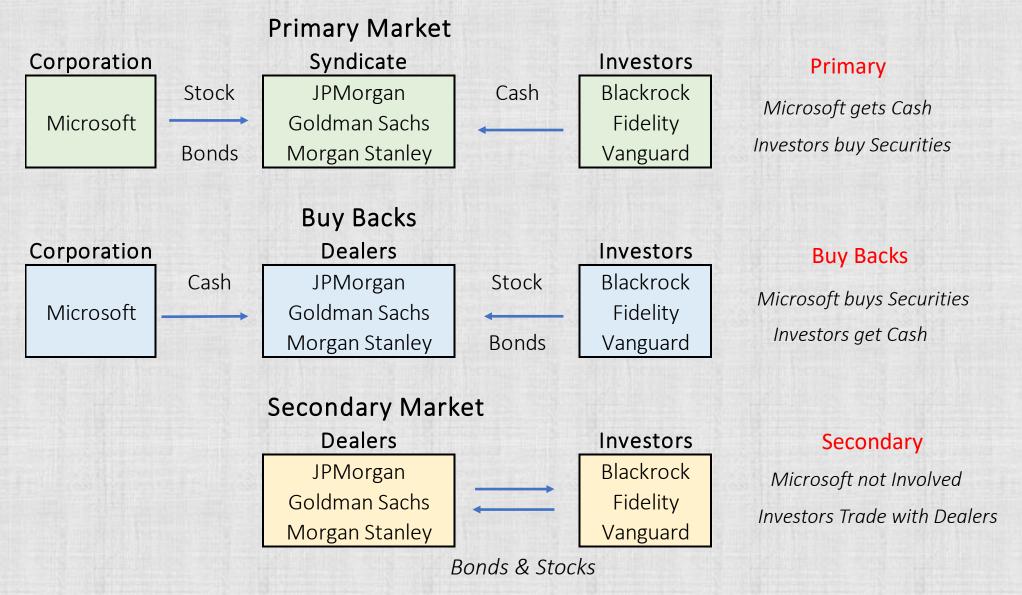
e.g., BlackRock, Fidelity, Schwab vices manage pensions, 401-K, endowments

To invest cash: **Buy** bonds & stocks

Investment Managers



Financial Markets Trades



Stock Trading: Auction Markets

The New York Stock Exchange (NYSE) is just one of **13** "auction markets" for trading stocks.

Virtually all stock trading is computer-executed



NYSE trade floor on Wall Street



NYSE ARCA in Mahwah, New Jersey

Stock markets are very efficient - - very large volume of secondary market trades each day.

Bond Trading: Dealer Markets

Bond trading is mostly executed in the "dealer market"

Trades stem from 1-to-1 negotiation between investor & dealer



A firm may have 100 different bonds outstanding, each with different terms

Financial Statements

Section 2 & 3 in E-Text Review of Accounting



Snapshot: At year end

Flow: During last year

Financial Statements – 10K Reports

BALANCE SHEET				
ASSETS		LIABILITIES & NW		
Cash	210	Accounts Payable	290	
Acc. Rec.	180	Accrued Expenses	30	
Inventory	150	Other	20	
Current Assets	540	Current Liabilities	340	
Gross PPE	1200	Long Term Debt	670	
Acc. Depreciation	200	Total Liabilities	1010	
Net PPE	1000	Stock	400	
LT Securities	0	Retained Earnings	130	
Total Assets	1540	Total L & E	1540	

P&L STATEMENT				
Sales	386			
Cost of Sales	235			
Gross Profit (margin)	151			
Operating Expense	15			
Depreciation	6			
EBIT (Oper. Income)	130			
Interest Expense	50			
EBT	80			
Taxes	15			
Net Income	65			

CASH FLOW					
Cash from Operations: CFO					
Net Income					
Depreciation					
Net Working Capital					
Cash from Investing: CFI					
Gross PPE					
Cash from Financing CFF					
Debt					
Stock					
Dividends					

The SEC requires <u>all public</u> corporations to file audited financial reports - - 10K

Stringent required financial transparency supports efficient financial markets

10-K reports are available at: https://www.sec.gov/edgar.shtml

Balance Sheet, Dec 31, 2020

ASSETS

LIABILITIES & EQUITY

Daily Operations

aka Operating Assets

Buying Equipment

Accumulated
From
Income
Statement
Each Year
in the past

Cash & ST Securities	210	Accounts Payable	270
Accounts Receivable	180	Accrued Expenses	70
Inventory	150	Notes Payable	0
Current Assets	540	Current Liabilities	340
Long Term Assets		Long Term Debt	670
Gross PPE	1200	Total Liabilities	1010
Accumulated Depreciation	200	Stock	400
Net PPE	1000	Retained Earnings 👡	130
LT Securities	0	Total Equity	530
Total Assets	1540	Total Liabilities & Equity	1540

Daily Operations

aka Operating Liabilities

Raising Cash:
Issue bonds & stock

Accumulated
From
Income
Statement
Each Year
in the past

Uses of Funds

Increase in Asset = Cash Outflow

Buy machine = Pay Cash

Asset Cash

Sources of Funds

Increase in Liability/Equity = Cash Inflow

Sell Bonds to Investors = Receive Cash

Debt & Equity Cash

Revenue recognized when product "shipped," not when cash is received

Income Statement, for the year 2020

Accrual Accounting, not Cash Accounting

Expense
"matched"
to Revenue,
not when
cash paid

Sales Revenue minus Cost of Goods Sold

= Gross Profit

minus Operating Expense minus Depreciation

= EBIT

minus Interest

= EBT

minus Taxes (@25%)

= Net Income

Sales of product to customer

Amount paid to suppliers for products

Marketing, HR, utilities, etc.

Wear-and-tear on machines

Earnings before Interest & Taxes

Interest paid on bonds and other debts

Earnings before Taxes

Taxes

Sales Revenue minus Expenses

What is "depreciation"?

Wear-and-tear on machines, thus reducing the value of the machine An expense deduction to reduce taxes

It is not a cash flow; it is just a subjectively-based accounting number

Income Statement, for the year 2020

Sales Revenue	500	
minus Cost of Goods Sold	200	
= Gross Profit	300	Gross Margin = Gross Profit/Sales
minus Operating Expense	50	Added to Acc. Dep.
minus Depreciation (non-cash)	<u>100</u> <	on Balance Sheet
= EBIT	150	Operating Margin = EBIT/Sales
minus Interest	<u>50</u>	
= EBT	100	Pre-Tax Profit 75/500=15%
minus Taxes (@25%)	25	
= Net Income	75	Net Margin = Net Income / Sales

Net Income = Dividends Paid + Added to Retained Earnings

Payout Ratio = Dividends Paid / Net Income

Added to RE on Balance Sheet

Income statements for SEC follow <u>GAAP</u>, but income for tax purposes follow <u>IRS</u> rules

IRS: Recognition of revenues & expenses may occur in <u>different</u> time periods

IRS: Actual taxes paid will be <u>less</u> than GAAP taxes

Problem: Solve for Net Income & Retained Earnings

A firm has \$600 in sales, operating expenses of \$300, depreciation expense of \$100, and a 25% tax rate.

What is net income?

Sales \$600 ← Revenue

minus Operating Expense 300

minus Depreciation Expense 100

EBT 200

minus Taxes (25% rate) 50

Net Income \$500 ← Net Profit

Pay 25% Keep 75% Net Income =

Net Income = (1-tax rate) x EBT

If the Payout Ratio is 40%, how much is added to Retained Earnings?

Dividends = Payout Ratio x Net Income = $40\% \times 150 = 60$

Addition to RE = Net Income – Dividends = 150 - 60 = 90

Statement of Cash Flows

Cash Balance at <u>Beginning</u> of Year

+ Cash <u>flow</u> from *Operations* (CFO)

+ Cash <u>flow</u> from *Financing* (CFF)

+ Cash <u>flow</u> from *Investing* (CFI)

= Cash Balance at End of Year

What is Net Inflow of Cash to the firm during the year?

<u>Add</u> the Inflows & <u>Subtract</u> the Outflows = Net Cash Flow

Changes impact Cash Flow

Statement of Cash Flows

ASSETS		LIABILITIES & EQUI	TY	INCOME STATEMENT		
Cash	210	Accounts Payable	270	Sales	386	
Acct.Rec.	180	Accrued Expenses	70	Cost of Sales	235	
Inventory	150	Notes Payable	0	Gross Profit (margin)	151	Not a Cash Flow
Current Assets	540	Current Liabilities	340	Operating Expense	15	
Long Term Assets		Long Term Debt	670	Depreciation	6	
Gross PPE	1,200	Total Liabilities	1,010	EBIT (Oper. Income)	130	
Acc. Depreciation	200	Stock	400	Interest Expense	50	
Net PPE	1,000	Retained Earnings	130	EBT	80	Add Depreciation
LT Securities	0	Total Equity	530	Taxes	15	
Total Assets	1,540	Total Liab. & Equity	1,540	Net Income	65	
	e with the			Establishment Establish		
CFO Daily Operations		Cash Flow = Net Income + Depreciation				
	CFF	Raising Cash				
	CFI	Buying Equipment		Dividends Paid	15	

CFO, CFI, and CFF are calculated from various sections of the balance sheet and income statement.

Cash Flows from Operations (CFO)

Cash "earned" by producing and selling the firm's product

CFO = Net Income + Depreciation Expense - Increase in Net Working Capital

Net Working Capital = Current Assets – Current Liabilities

Current Assets: Accounts Receivable + Inventory (Excludes cash)

Current Liabilities = Accounts Payable + Accrued Expenses

Increase in Asset = Reduces CFO Increase in Liability = Increases CFO

Decrease in Asset = Increases CFO Decrease in Liability = Decreases CFO

Increase in Net Working Capital = Reduces CFO

Accrual Accounting

Why Subtract Increase in NWC?

Results from non-cash accrual revenues & expenses

Cash Flow

Non-Cash Expense

CFO = Net Income + Depreciation Expense - Increase in Net Working Capital

Cash Flow Operations (CFO)					
Cash Sales	500				
Credit Sales	200				
Sales Revenue	700				
minus Oper. Expenses	200				
minus Depreciation	<u>100</u>				
equals Net Income	400				
plus Depreciation	<u>100</u>				
Cash Flow	500				
minus Increase in NWC	200				
CFO	300				

NWC: adjusts for non-cash items in Net Income

Revenue Recognition: When product shipped, not when cash received.

Accounts Receivable: +200

No Cash received from Credit Sales

Accounts Receivable: Cash owed to the firm

Must subtract increased A/R to avoid overcounting

Non-Cash

CFO Calculation Problem

CFO = Net Income + Depreciation Expense - Increase in Net Working Capital

Net Working Capital = Current Assets *minus* Current Liabilities

What is CFO given the following information: Net Income 350,000 100,000 Depreciation Balance Sheet CFO Increase in A/R 100,000 *Increase in asset:* Decrease Assets Net Decrease in Inventory 60,000 Decrease in asset: Increase Working Increase in A/P 80,000 Increase in liability: Increase Liabilities Capital Decrease in Accrued 35,000 Decrease in liability: Decrease

CFO = 350,000 + 100,000 - 100,000 + 60,000 + 80,000 - 35,000 = 455,000

Add CFO Increases

Cash Flows from Financing (CFF)

Cash "raised" by selling bonds and stock:

CFF = Increase in Stock + Increase in Bonds - Dividends Paid

Example:

Increase in Stock = 50,000

Increase in Bonds = 200,000

Dividends Paid = 25,000

CFF = 50,000 + 200,000 - 25,000 = 225,000

Increase in Stock = Stock Issued minus Stock Buy Backs
Increase in Bonds = Bonds Issued minus Bond Buy Backs minus Bond Maturities

Cash Flows from Investment (CFI)

Cash "spent" for investment projects:

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CFI = Change in Gross PPE x (-1)

or

CFI = (Change in Net PPE + Depreciation Expense) x (-1)
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	2018	2019	Change	CFI	
Gross PPE	500	525	25	(25)	Depreciation Expense
- Accum. Depreciation	100	120	20←		Equals Change in Acc. Depre.
Net PPE	400	405	5		
			25	(25)	

Change in Gross PPE = Change in Net PPE + Depreciation Expense

Depreciation Expense = Change in Accumulated Depreciation

Financial Ratios

Section 4 in E-Text



Financial Ratios are a rough, simplified approach to evaluating firm performance.

Comparison of two numbers from Balance Sheet and/or Income Statement

Not GAAP

Not Required by SEC

Financial Ratios

Liquidity: Bill-paying capacity

Current Ratio: Current Assets/Current Liabilities

Quick Ratio: (Current Assets – Inventory)/Current Liabilities

Efficiency: Revenue per Asset

Total Asset Turnover: Sales/Total Assets

Fixed Asset Turnover: Sales/Fixed Assets

Financing: Reliance on Debt

Debt Ratio: Liabilities/Assets

Financial Leverage: Assets/Equity

Profitability: Net Income

Return on Equity: Net Income/Equity

Return on Assets: Net Income/Assets

Calculating Ratios: Inserting values in formula & solving

Interpretating Ratios: What does a higher/lower value mean?

Financial Ratio Analysis

Main Types of Analyses

Trend Analysis: Compares ratios of a firm over time

Cross-Sectional: Compares firm to competitor or industry average

Main Pitfalls

Timing Issues: Fiscal years of firms may differ

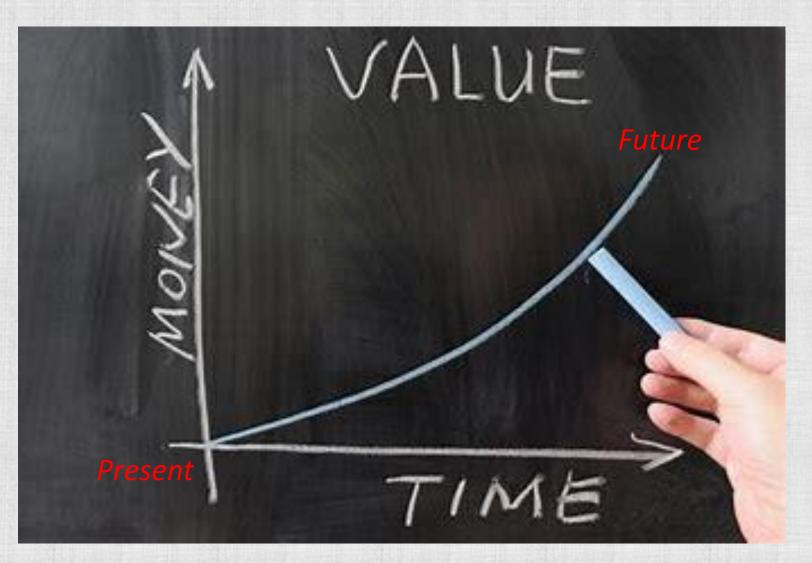
Seasonal: Some firms have seasonal sales

Accounting: Inventory valuation methods may differ

Ratio analysis is a rough tool that is just the first step of deeper analysis

Time Value of Money

Section 5 in E-Text



Time Value of Money (TVM) Calculations

Why study TVM calculations??

Three Key Areas of Corporation Finance

Valuation of Bonds

Valuation of Stock

Evaluation of Investment Projects

All three are based on the TVM principle

Present Value (PV) vs Future Value (FV)

PV: Cash Today FV: Cash in Future

If you deposit \$100 in a savings account earning 5% *interest*, how much money would you have in 1 year?

Basic TVM equation —

 $100 \longrightarrow 105 = 5\%$ increase in value

Interest = Yield = Required Return = Expected Return = Profit per period

"Back to the Present" FV ——— PV

If my goal is to have \$105 at the end of the year, how much need I deposit today if I will earn 5% interest?

$$PV = $105 / 1.05 = $100$$

or generally
 $PV = FV / (1 + interest rate)$

The interest rate "translates" FV between and PV

$$FV \longrightarrow PV$$
: Divide by $(1 + interest rate)$

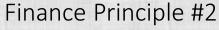
Price of Stocks & Bonds: Based on TVM

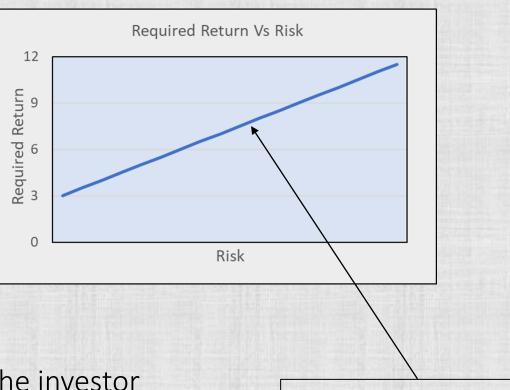
Finance Principle #3

TVM

PV = FV / (1 + interest rate)

aka discount rate





PV = Price of the security

FV = Cash flows received by the investor

Interest Rate = Required return +

Required Return: Yield necessary to induce investors to buy security

TVM: based on the Size, Timing, and Certainty of receipt.



Solving Problems with Calculator

To set decimal places:

2nd, Format, 4, Enter, Off, On Result: 0.0000

To clear calculator:

2nd, CLR Work, 2nd CLR TVM, Off, On

Change Mode (End/Begin):

2nd, BGN, 2nd, Set, Off, On Result: 0.0000

Using the 5 White Keys

N : number of payment periods

interest rate per payment period

present value of cash

PMT: the dollar payment per payment period

future value of cash FV:

Elements of Time Value of Money

Meaning of the white function keys

Present Value (PV) = a single lump of cash today

Future Value (FV) = a single lump of cash in the future

Payment (PMT) = a <u>series</u> of lumps of cash (i.e., per <u>period</u>)

Periods (N) = number of payment <u>periods</u>

Interest Rate (I/Y) = is the interest rate per payment period

TVM Problems: Question will provide 3 inputs, must solve for the 4th variable

Not necessarily years

Must adjust if not annual

Steps to Solve

Step 1: Write numbers in question on white board

Step 2: Interpret:

Set Up

Solve

Solving for what?

Step 3: Assign numbers to white keys

Step 4: Clear the calculator 2nd CLR Work 2nd CLR TVM Off On

Step 5: Input numbers in calculator

Time Value of Money: Problem #1

Single Cash

If \$1,000 is invested today that earns 5% interest, what is the dollar value of the investment in 10 years?

Assign Numbers PV = cash today = \$1,000	Calculator Keys 1000 PV
I/Y = interest rate per period = 5%	5 I/Y
N = number of periods = 10	10 N
FV = future value = ?	CPT FV (1,629) Ignore the negative sign

N, I/Y, and PMT must have same periodicity

Semi-Annual: Quarterly:

N = 20, I/Y = 2.5, PMT = not used N = 40, I/Y = 1.25, PMT = not used

Time Value of Money: Problem #1a

Single Cash

If an investment that earns 5% interest is worth \$1500 at the end of 10 years, how much was the original investment?

Assign Numbers FV = cash in future = \$1,500	Calculator Keys 1500 FV
	게 등로 제도 등록 중심도 보이면 등로 제도 등 등 보신 보이면 등로 제도 등록 출시되고 하면 등로 제도
I/Y = interest rate per period = 5%	5 I/Y
N = number of periods = 10	10 N
PV = present value = ?	CPT PV (921) Ignore the negative sign

N, I/Y, and PMT must have same periodicity

Semi-Annual:

Quarterly:

$$N = 20$$
, $I/Y = 2.5$, $PMT = not used$

N = 40, I/Y = 1.25, PMT = not used

Time Value of Money: Problem #2

Ordinary Annuity: Payments received at end of period

If \$1,000 is received at the <u>end</u> of each year for 10 years that earns 5% interest, what is the dollar value of the investment in 10 years?

Assign Numbers PMT = payments = \$1,000	<u>Calculator Keys</u>
PMT = payments = \$1,000	1000 PMT
I/Y = interest rate per period = 5%	5 I/Y
N = number of periods = 10	10 N
FV = future value = ?	CPT FV (12,578) Ignore the negative sign

N, I/Y, and PMT must have same periodicity

Semi-Annual: Quarterly: PMT = 500, N = 20, I/Y = 2.5 PMT = 250, N = 40, I/Y = 1.25

Time Value of Money: Problem #3

Annuity Due: Payments received at beginning of period

If \$1,000 is received at the <u>beginning</u> of <u>each year</u> for 10 years that earns 5% interest, what is the dollar value of the investment in 10 years?

Change Calculator to the Begin Mode:	2nd, BGN, 2 nd , Set, Off, On	Result: 0.0000

$$N = number of periods = 10$$
 10 N

Change Calculator back to End Mode 2nd, B

2nd, BGN, 2nd, Set, Off, On Result: 0.0000

Bgn

Valuation of a Perpetual Annuity: Problem #4

Endless stream of payments: Perpetuity

Key word: Forever

PV = Payment / Interest Rate

Assume \$100 payment per year forever with a 10% interest rate:

This analytic will be used to value preferred stock (i.e., preferred stock has fixed dividend & no maturity)

Growth Perpetual Annuity: Problem #5

Endless stream of **Increasing** payments:

Key words:
Forever
&
Grows

PV = First Payment / (Interest Rate - Growth rate)

Assume a \$100 payment that grows by 3% per year with a 10% interest rate.

$$PV = 100 / (.10 - .03)$$

This analytic will be used in determining the value of common stock (i.e., common stock has no maturity and growing dividend over time)

Two-Step: Problem #6

Typically involves a future goal such as retirement pension or child's future college expense

A person wants to have a \$500,000 401-K account at retirement in 20 years. Assuming a 7% return, how much should be saved out of the <u>year-end</u> bonus <u>each year</u> to meet that target? At retirement, how much could the person withdraw at beginning of each year for 10 years?

Step 1 in 2021: Solve for annual savings

How much to save to accumulate \$500,000 by end of 2041?

End Mode: 500,000 FV 20 N 7 I/Y CPT PMT = 12,196

Step 2 in 2042: Solve for beginning-of-year pension on Jan 1, 2042

From \$500,000 401-K account at year-end 2041, annual payment for 10 years?

Begin Mode: 500,000 PV 10 N 7 I/Y CPT PMT = 66,532

End of Session 1



Financial Management Overview

C-214

Coverage of Concepts & Calculations

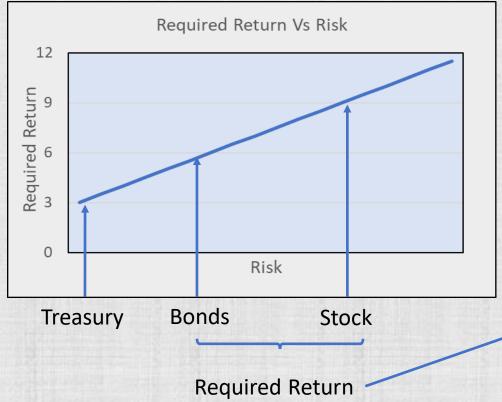
Session 2: Sections 6-9 in E-Text

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Bond & Stock Prices

Risk vs Required Return



Investors must be compensated for risk

Time Value of Money

Interest Rate = Required Return (%)
$$FV = Cash flows to Investor ($)$$

$$PV = Price ($)$$

Price = PV of Future Cash Flows, discounted at the Required Return

Financing the Firm: Bonds & Stock

Bonds: A "loan" from Investor Stock: Investor becomes part Owner

Principal: \$1,000 usually Principal: Price of stock

Interest: Legal obligation of Firm Dividends: At discretion of Firm

Maturity: Principal repaid to investor Maturity: None

Secondary Market Trading

Price: Varies with market Price: Varies with market

Bond Valuation

Section 6 in E-Text

Face Value

Face Value

Denomination



Coupon Rate



Interest Rate

Coupons

Interest Rate

Legal Provisions of a Bond: Indenture

Face Value: Dollar amount of the corporate debt to Investor (usually \$1,000)

Coupon Rate: Interest rate used to calculate <u>annual</u> interest payments to investor

(Coupon Rate x Face Value = Annual Interest Payment)

Interest Payment Dates: Schedule of days for interest payments (usually semi-annually)

Maturity: Date at which bond matures and Face Value is repaid to Investor

All are <u>fixed legal obligations</u> of the corporation that must be met to avoid bankruptcy.

A bond's price & yield are set by supply & demand in secondary market trading.

Prices & Yields change continuously - - Coupon Rate is <u>fixed</u>

What is "Yield to Maturity"?

Bond: 1-year, 5% Coupon, \$1,000 Face Value

<u>Price Paid</u> <u>Cash Received</u>

Par

Indenture

\$1,000 50+1000=\$1050

Yield

(1050-1000)/1000 = 5.00%

Buy Bond for: \$1,000

Cash at Maturity: \$1,050

\$ Profit: \$50

% Profit: 50/1000 = 5%

<u>Yield</u> = investor profit per period OR

Yield = rate of increase in value per period

> At Par price: Yield = Coupon Rate

What If Price Rises to \$1,005?

Bond: 1-year, 5% Coupon, \$1,000 Face Value

	Price Paid	Cash Received	<u>Yield</u>
Premium	\$ 1005	50+1000=\$1050	(1050-1005)/1005 = 4.48%
Par	1000	50+1000=1050	(1050-1000)/1000 = 5.00%
	Buy Bond for:	\$1,005	
Indenture —	Cash at Matur	rity: \$ <u>1,050</u>	Price Yield
	\$ Profit:	\$45	
	% Profit:	45/1005 = 4.48%	

What If Price Drops to \$995?

Bond: 1-year, 5% Coupon, \$1,000 Face Value

	<u>Price Paid</u>	Cash Received	<u>Yield</u>
Par	1000	50+1000=1050	(1050-1000)/1000 = 5.00%
Discount	\$995	50+1000=\$1050	(1050-995)/995 = 5.53%
	Buy Bond for	r: \$995	
Indenture —	→ Cash at Matu	urity: \$ <u>1,050</u>	Price Yield
	\$ Profit:	\$55	
	% Profit:	55/995 = 5.53%	

What is "Yield to Maturity"?

Bond: 1-year, 5% Coupon, \$1,000 Face Value

	Price Paid	Cash Received	<u>Yield</u>
Premium	1005	50+1000=1050	(1050-1005)/1005 = 4.48%
Par	1000	50+1000=1050	(1050-1000)/1000 = 5.00%
Discount	995	50+1000=1050	(1050-995)/995 = 5.53%

- > At Par price: Yield = Coupon Rate
- Inverse Relationship between Price and Yield
 If price increases, yield decreases
 If price decreases, yield increases

Yield = investor
profit per period

OR
Yield = rate of
increase in value
per period

Bond Valuation: A Time Value of Money Problem

Value of bond:

PV of <u>series</u> of interest payments

+

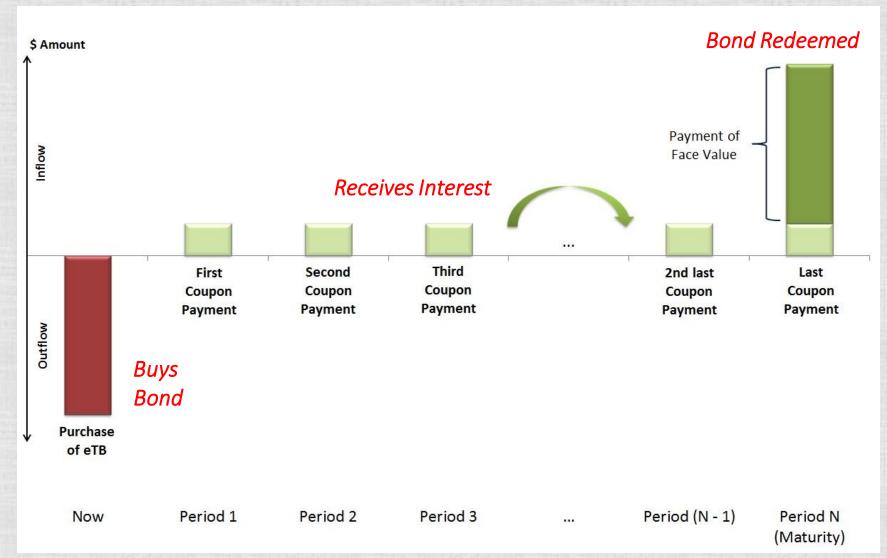
PV of return of principal at maturity

=

Value of bond, i.e., the price

Using the "Required Return" as the interest rate

Bond Cash Flows to Investor



PV = Future Cash Flows / (1 + yield)

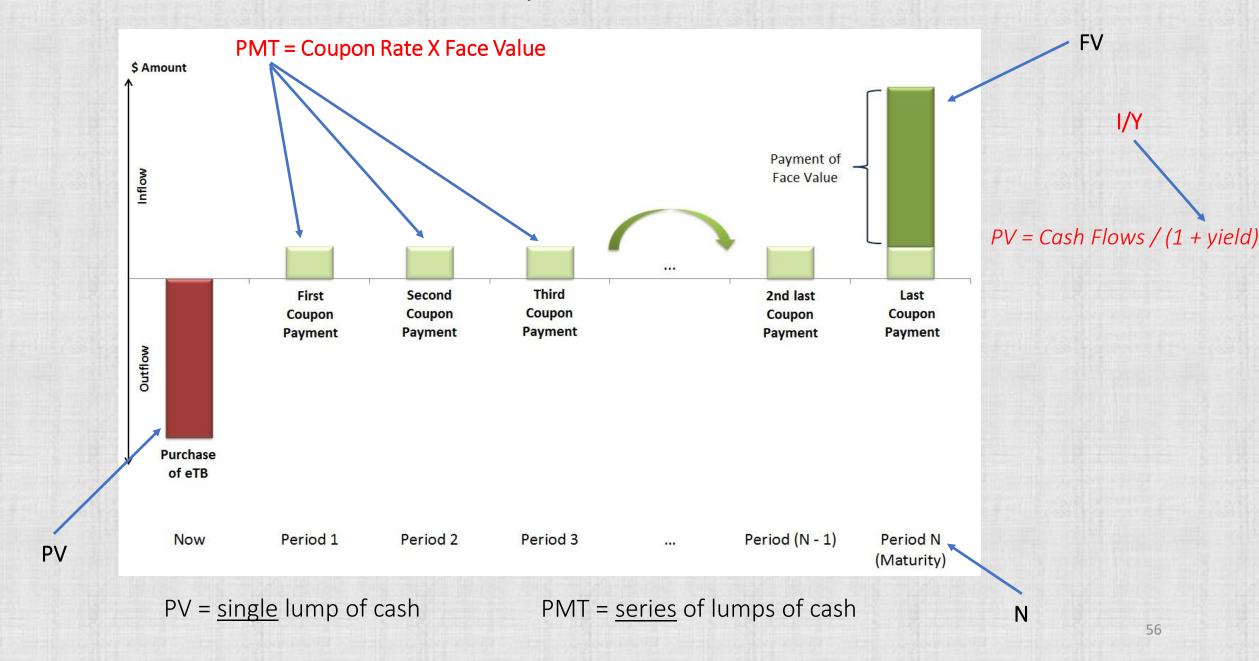
What interest rate makes the PV of the cash inflows equal to the Purchase Price?

That is the "yield"

Yield = investor profit per year, over multiple time periods

The PV of the green inflows, discounted by the "yield", equals the red cash outflow

Financial Function Keys: N I/Y PV PMT FV



Bond Valuation: Problem #1

Expressed as annual rate

Value of \$1,000 5-year, 4% coupon, semi-annual pay bond, at 6% yield?

N = number of payments =
$$5 \times 2 = 10$$

I/Y = periodic yield = $6 / 2 = 3$

PMT = payments = $(4\% \times \$1,000) / 2 = 20$

FV = face value = $\$1,000$

PV = ?

Calculator Keys

10 N

Not annual?

Aust adjust PMT, N, & I/Y

20 PMT

CPT PV = (914.70)

Note: PV is negative because it is the price paid for the bond

Bond problems: Question provides 4 inputs, must solve for the 5th variable

Bond Valuation: Problem #2

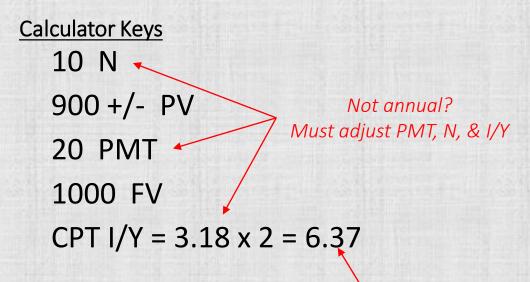
Yield of 5-year, 4% coupon, semi-annual pay bond, at 900 price?

N = number of payments = $5 \times 2 = 10$ PV = price paid = (900)

PMT = payments = (4% X \$1,000) / 2 = 20

FV = face value = \$1,000

I/Y = ?



Note: PV is negative because it is the price paid

Answer is annual rate

Calculator "Error #5"? you forgot to enter PV as negative number

Bond Valuation: Impact of Increased Yield

Value of 5-year, 4% coupon, semi-annual pay bond, at 6% yield?

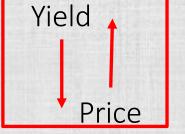
$$10 = N$$
, $20 = PMT$, $FV = 1000$, $I/Y = 6/2 = 3.0$

What if required yield increases to 7%?

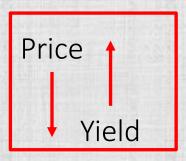
$$10 = N$$
, $20 = PMT$, $FV = 1000$, $I/Y = 7/2 = 3.5$

$$CPTPV = 875$$

<u>Increase</u> in yield causes bond price to <u>decrease</u>. <u>Increase</u> in price causes yield to <u>decrease</u>.



Inverse relationship between price and yield



Coupon Rate vs Bond Yield

Premium Price: Bond Yield < Coupon Rate

Bond price increase lowers bond yield

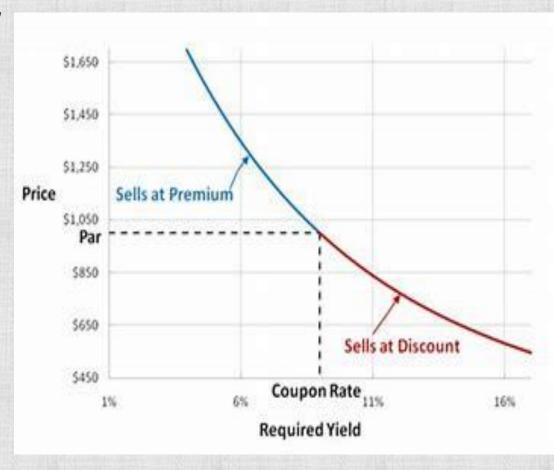
Par Price: Bond Yield = Coupon Rate

Discount Price: <u>Bond Yield > Coupon Rate</u>

Bond price drop increases bond yield

- ➤ At Par Price: Yield = Coupon Rate
- > Inverse relationship between Price & Yield

Remember: Coupon rate never changes



Bond Valuation: Duration

What if bond yield increases from 4% to 5%? How much will price drop?

5-Year Bond: Price drops from 1000 to 956.

Price drops by 4.4%: Duration = 4.4

10-Year Bond: Price drops from 1000 to 922.

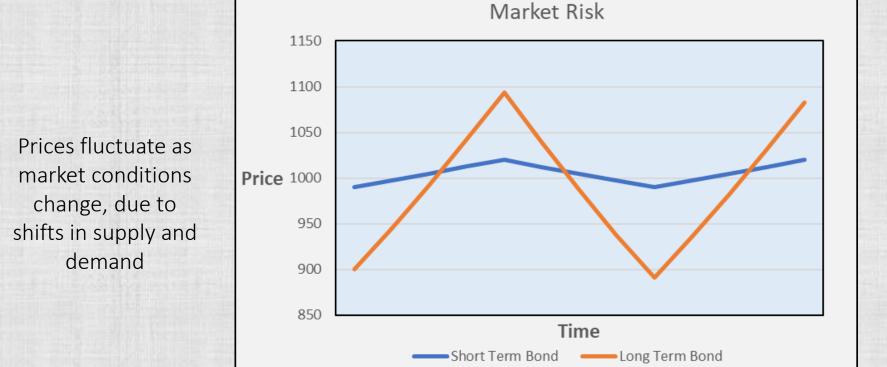
Price drops by 7.8%: Duration = 7.8

Long-Term bond:
Greater duration than
Short-Term bond

> <u>Duration</u>: The percentage drop in price caused by 1% increase in yield.

Duration measures the <u>Market Risk</u> of a bond i.e., how volatile are prices as market interest rates change over time

Market Risk = Price Volatility



Why is price volatility risk?

Held to maturity, investor receives interest & face value

BUT,

What if sold <u>before</u> maturity - - <u>at what price</u>??

Principle of Finance #4:
Uncertainty

- ➤ Long Term Bond = Greater Price Volatility over time
- > Over time as term-to-maturity decreases, Volatility Decreases

Bankruptcy Risk = Credit Rating

Bond ratings measure only risk of default, not market risk

Corporate Bond Credit Ratings

AAA: Close to 0% probability of default *i.e., Microsoft*

BBB: Roughly 5% probability of default *i.e., Ford*

S&P	Moodys	Grade	Credit Quality
AAA	Aaa		Highest
AA	Aa		High
Α	Α	Investment	Strong
BBB	Baa		Medium
BB,B	Ba, B		Speculative
CCC,CC,C	Caa, Ca, C	Junk	Highly Speculative
D	C		In Default

What if the firm's financial condition changes?

Credit Down-Grade? Price drops as Required Return increases

Credit Up-Grade? Price rises as Required Return decreases

Factors affecting a Bond's Required Yield

Treasury Yields: Required Return includes a "risk premium" over Treasury

Credit Risk: AAA-rated bonds are less risky than BBB-rated bonds

Economy: Probability of bankruptcy is greater in recession.

Market Risk: Long-term bonds have more price volatility

Collateral: Secured bonds have lower yields due to less risk

Subordinated debentures: last claim in bankruptcy

Taxes: Tax-exempt Municipal bonds have lower yields

Amortizing Bond Problem

\$100,000, 30-year, mortgage loan with a 6% mortgage rate:

What is the monthly payment? \$100,000 PV 360 N 6/12= 0.5 I/Y O FV CPT PMT = (599.55)

Mortgage securities are "amortizing secured bonds" in financial markets.

Mortgage loans are used as collateral for "secured" bonds

Ordinary Bond
Interest paid semi-annually
Principal returned at maturity

Amortizing Bond
Monthly payments include:
Interest + partial Principal

APR versus APY

APR is the "quoted" annual rate

APY: the "effective yield," incorporating periodicity of interest payments

$$APY = (1 + APR/n)^n - 1$$
, $n = periods per year$

Example: Semi-Annual interest payments

APR =
$$6.0\%$$
 Periods = 2
APY = $(1 + .06/2) ^2 = 1.0609 - 1 = 6.09\%$

Calculator keystrokes: $.06/2 + 1 y^x 2 = 1.0609 - 1 = .0609$

> The more compounding periods there are, the higher the APY

APR = 6.0% with Daily Interest

APY =
$$.06/365 + 1 y^x 365 = 1.0618 - 1 = .0618$$

APY is <u>not</u> used in corporate bond markets

APY: consumer finance

Stock Valuation Sections 7-9 in E-Text



67

Legal Provisions of Stock

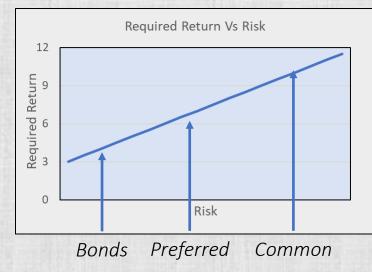
Common Stock:

Ownership of EPS (earnings per share)
Receive dividends at discretion of the corporation
Voting rights to elect Board of Directors
No Maturity Date

Preferred Stock:

Priority of claims in bankruptcy Fixed \$ Dividend No voting rights No Maturity Date

Preferred stock is a <u>hybrid</u> of bonds and common stock



Risk & Required Return: half-way between bonds and common stock

Stock Value: PV of Expected Cash Flow

Value of a bond is:

PV of Interest Payments

+

PV of return of Principal at Maturity

=

Price of bond

Value of Stock is:

PV of Dividend Payments

+

PV of Sell Price in Future

=

Price of Stock

Value of Stock, value of bonds, is a PV problem

Price = Expected Cash Flows, discounted at Required Return

Big Difference: Uncertainty

Dividend Payments are not "guaranteed" like bond interest payments

No Redemption at Face Value: What is the Future Selling Price????

Four Analytical Frameworks for Stock

#1: Actual Return to Investor
Dividend plus capital gain

Realized Profit on past investment

#2: Single Holding Period Stock Value Dividend is constant

Price = PV of expected cash flows

#3: Gordon Growth Model Stock Value
Dividend increases over time

#4: Capital Asset Pricing Model (CAPM)
Risk adjusted required return

Interest rate used to calculate PV

Stock questions are an "interpretation" challenge!
Which framework do I use?

Stock Calculations

Type of Problem	Key Word	How to Solve
	The second first control of the second first of the second first of the second first of the second first of the	

Actual Return Buy & Sell 5 White Keys

Single Holding Period One Year 5 White Keys

If not Growth or Beta, 5 white keys

Gordon Growth Growth Sidebar Formula

CAPM Beta Sidebar Formula

Look for the "key word" in the question to identify the type of stock problem

If you do not see "Growth" or "Beta", use the 5 white keys

#1 Actual Return to Stock Investor

Key Words: Not Growth or Beta

Sources of Return:

Dividends paid to the Investor

Capital Gain/Loss: Sales price minus purchase price

Example:

An investor expecting a 15% return buys a stock for \$40, receives a \$2 dividend, and sells the stock for \$50 after a year. What is the actual return?

OR

Return % = (Dividend + Capital Gain) / Purchase Price

Dividend = 2

Capital Gain = (50 - 40) = 10

Purchase Price = 40

Return % = (2 + 10) / 40 = 30%

Calculator Keys

2 PMT

1 N

40 +/- PV

50 FV

CPT I/Y = 30%

#2 Single Holding Period

Value of stock with \$2 dividend, \$90 price in 1 year, & 12% yield?

	<u>Calculator Keys</u>
N = number of periods = 1	1 N
I/Y = yield = 12	12 I/Y
PMT = dividend = 2	2 PMT
FV = future value = 90	90 FV
PV = price = ?	CPT PV = (82.14)

#3 Gordon Growth Model

Assumes that Dividends <u>Increase</u> over Time <u>Forever</u>

Stock Price = Expected Dividend / (Required Return – Growth Rate)

Expected Dividend = Last Dividend x (1 + growth rate)

Re-Arranged Stock Price formula

Required Return = (Expected Dividend / Price) + Growth Rate

"Expected Dividend" is the <u>one</u> to be paid at the end of this year "Last Dividend" is the <u>one</u> that has already been paid

Price: PV of expected flow of increasing dividends for years into the future

Gordon Growth Model

Stock Price = Expected Dividend / (Required Return – Growth Rate)

Stock Price = PV of expected Dividends

Assumes dividends increase at a steady growth rate forever

Uncertainty: Growth Rate of Dividends???

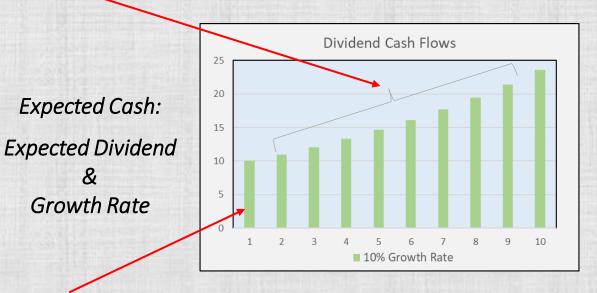
Rate of increase: Growth Rate

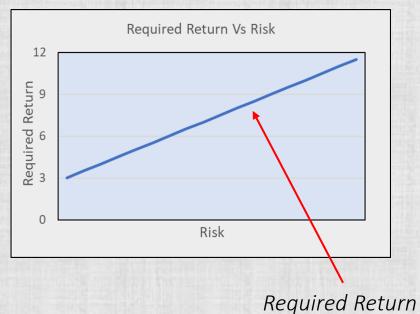
Expected Cash:

&

Growth Rate

Expected Dividend





Gordon Growth Model: Problem #1

Stock Price = Expected Dividend / (Required Return – Growth Rate)

Expected Dividend = Last Dividend X (1 + Growth Rate)

If a stock <u>recently</u> paid a \$2 dividend, has a required return of 12%, and dividends are expected to **grow** by 3%, what is the stock <u>price</u>?

Expected Dividend =
$$2 \times 1.03 = 2.06$$

Stock Price = $2.06 / (.12 - .03)$
= $2.06 / .09 = 22.89$

Gordon Growth Model: Problem #2

Required Return = (Expected Dividend / Price) + Growth Rate Expected Dividend = Last Dividend X (1 + growth rate)

If a stock is <u>expected</u> to pay a \$2 dividend, has a price of \$20, and dividends are expected to **grow** by 3%, what is the <u>required return</u>?

Required Return = (2/20) + .03 = 13%

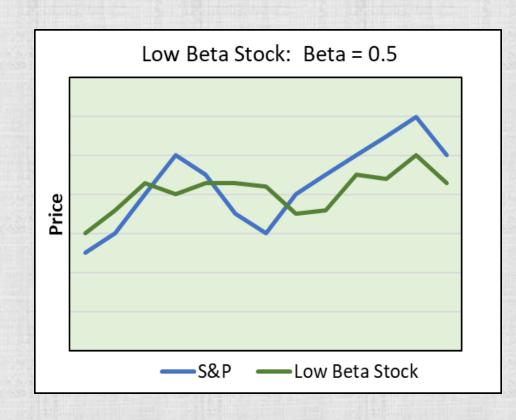
#4 Capital Asset Pricing Model (CAPM)

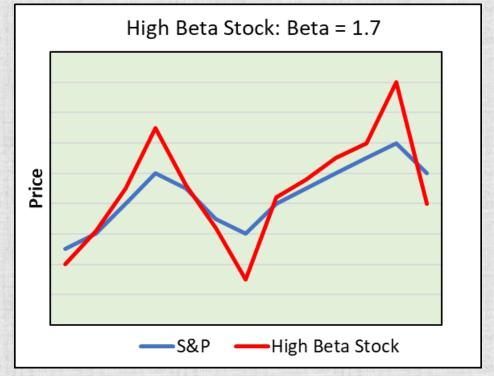
Required Return for a **Specific** Stock



Beta: Relative Volatility of Stock Price = Market Risk

Beta = Standard deviation of stock price / Standard deviation of S&P 500 price





Low Beta stocks fluctuate less that S&P

High Beta stocks fluctuate more that S&P

Capital Asset Pricing Model (CAPM) Required Return to Stock Investors

Required Return = Risk-Free Rate + (Beta x Market Risk Premium)

Market Risk Premium = Market Return – Risk-Free Rate

If the Acme Corp has a Beta of 1.5, the Market Return is 12%, and the

Treasury rate is 3%, what is the required return?

Market Risk Premium = 12% - 3% = 9%

Required Return = 3% + [1.5 * 9%] = 16.5%



Risky firms have a higher market risk premium and higher required yield

Stock Valuation in the Real World

Gordon Flaws: Must project dividend growth rate "forever"

What about firms that do not pay dividends?

Operating
Earnings adjusted
for "one-time"
GAAP items.

Solution: Project "Operating" EPS for next 5 years

Assume long term growth rate after 5 years - - e.g. 5%

Stock Value:

PV of projected EPS first 5 years plus

PV of perpetual growth annuity after 5 years discounted at:

E(R)= Treasury Rate + Beta*(Market Risk Premium)

The future stock price

<u>Intrinsic value</u> is what the market price "should be" - - risk-adjusted PV of expected flows

Which Stock Should You Buy?

Supra Technology

Great product

Dominant market share

Steady profitability

Intrinsic value = 25

Market price = 35

Knock-Off Imports

Low priced clothing Small market share Profitability: Low Intrinsic value = 12 Market price = 6

There is no such thing as a "good" stock or a "bad" stock!

There are "good" prices and "bad" prices!

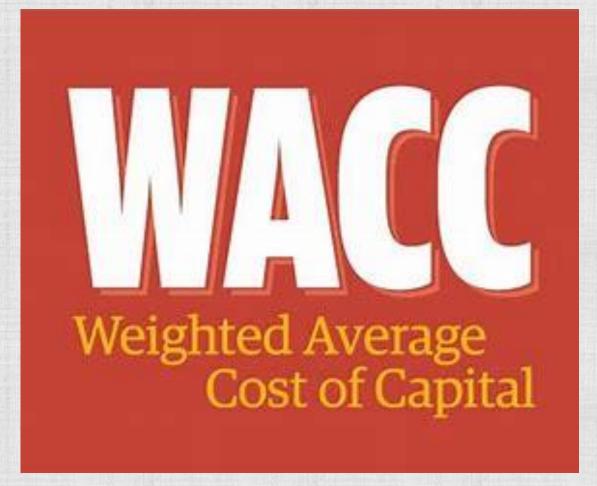
If market price < intrinsic value: Buy

Price expected to **rise**

If market price > intrinsic value: Sell

Price expected to fall

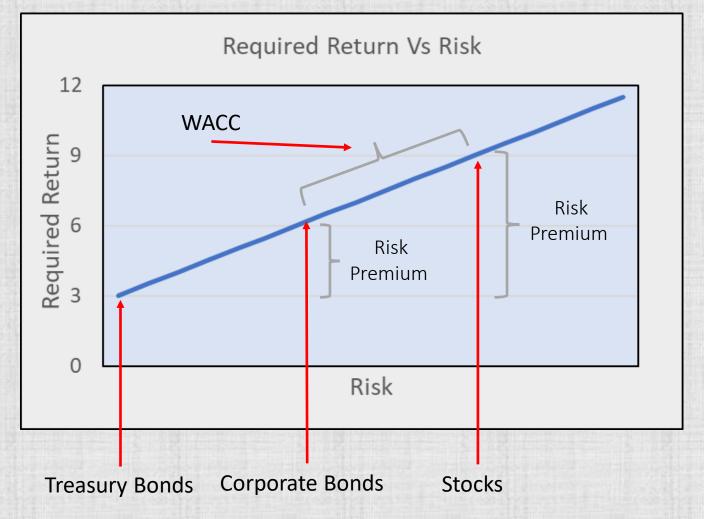
In an efficient market, prices will fluctuate, but will converge towards intrinsic value



aka: Cost of Capital

Average of Debt Cost & Equity Required Returns

WACC is the Average Required Return for a Firm



WACC depends on the Bond-Stock proportion

Proportions

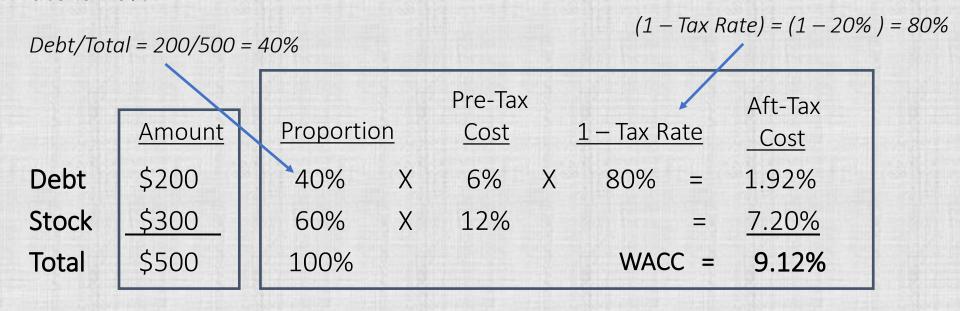
All stock: 9%

All bonds: 6%

50/50 Mix: 7.5%

WACC depends upon the proportions of bonds & stock
WACC is the overall average cost of financing for the firm

If a firm's debt is valued at \$200 million and has a market yield of 6% while the firm's equity has a market value of \$300 million and an expected yield of 12%, what is WACC if the tax rate is 20%?



WACC = (0.60*.12) + (0.40*.06*.80) = 9.12%

Factors Affecting WACC

A firm's WACC affected by:

Treasury Yields: Required Return: Risk Premiums over Treasury

Debt-Equity Mix: Debt is cheaper than Equity

Tax Rate: Tax *increase decreases* after-tax debt cost

Riskiness of Firm: Risk Premiums on debt & equity

Credit Risk: Chance of Bankruptcy

Bonds: Rating by S&P, Moody's

Stock: Low Equity & EPS

Market Risk: Price Volatility

Bonds: Measured by "Duration"

Stock: Measured by "Beta"

Investment Managers: Buyers of Stocks & Bonds

Investors are "Risk-Averse": Must be compensated for taking risk

Investors: Restrain risk-taking by security-issuing corporations







Expected Return on a Stock Investment

	<u>Economy</u> <u>P</u>	robability	<u>Return</u>	<u>Expected</u>
	Recession	40% >	〈 3%	= 1.20%
Uncertainty, i.e., risk	Expansion	<u>60%</u>	< <u>12%</u>	= <u>7.20%</u>
	Probabilities must sum to 100%	100%		8.40% Expected Return

E[R]=Prob(recession)*Return(recession) + Prob(expansion)*Return(expansion)

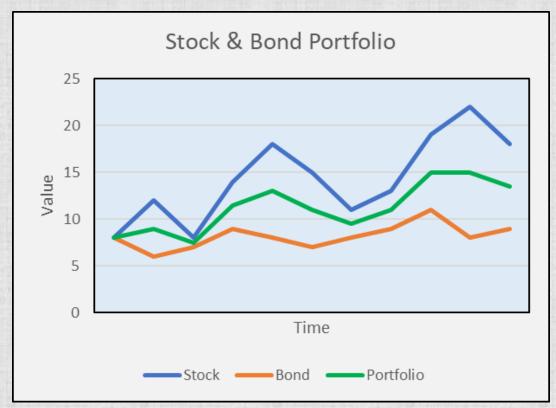
If bonds are held to maturity, return to investor is "certain"

Stocks: return to the investor is "uncertain", depends on the market scenario

Expected Return = 8.40% Range of Possible Returns = 9% i.e., (12% - 3%)

How to reduce risk???

Diversification Reduces Market Risk





Bond prices are less volatile than stock prices Stock prices are not perfectly correlated

Diversified portfolios have less value volatility i.e., risk

Diversification: Eliminates Idiosyncratic Risk

Idiosyncratic Risk: events that impact only a <u>single</u> firm Systematic Risk: events that impact <u>all</u> firms



Number of stocks in portfolio

As the number of stocks increase, idiosyncratic risk decreases.

Firm's <u>Beta:</u> Impact of <u>systematic</u> risk

Idiosyncratic Risk: Fire destroys factory Systematic Risk: Economy in Recession

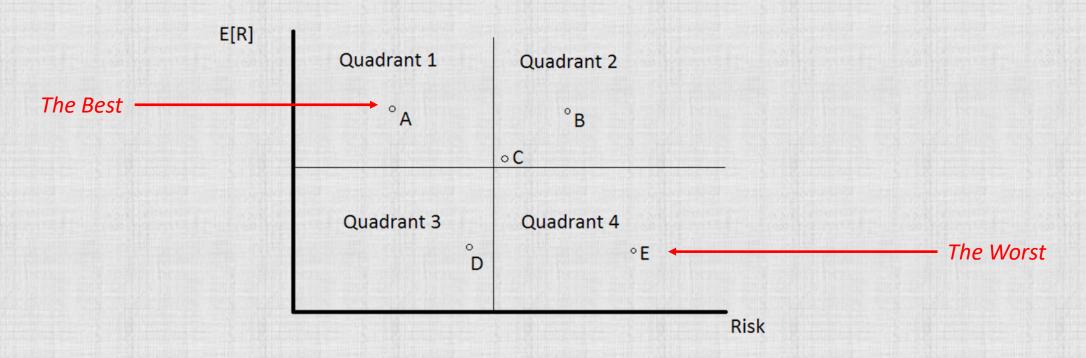
Stock Investment Principles

Risk Aversion Maximize Return-to-Risk



Maximize the "Return-to-Risk" Ratio

For a given level of risk, investors will pick the investment with the highest Expected Return

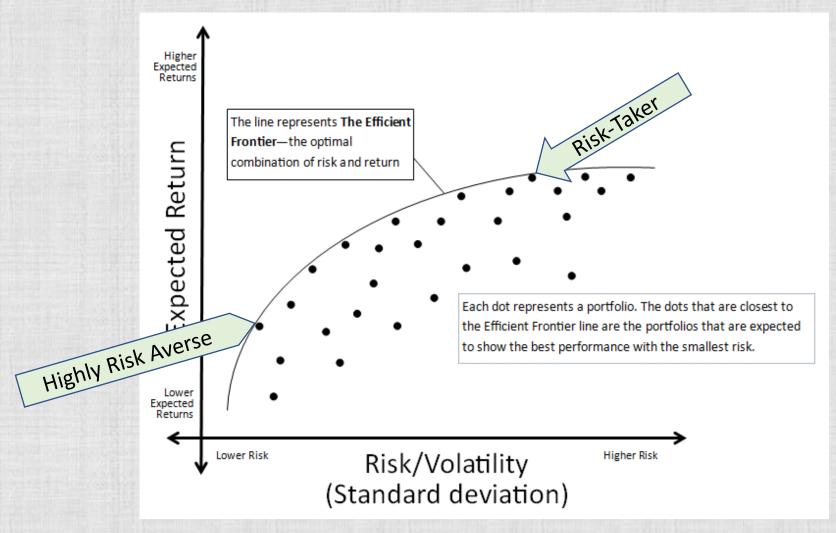


Best choice: A, highest ratio of Return-to-Risk

Worst choice: E, lowest ratio of Return-to-Risk

Investors will always choose the upper-left quadrant

Efficient Frontier



Efficient Frontier:

Diversified portfolios with no Idiosyncratic risk.

Points below the Frontier: Insufficient Diversification

Prudent Investors select a portfolio on the Efficient Frontier that is consistent with their risk preferences, (degree of risk aversion)

The mix of Risk and Return depends upon investor risk aversion.

Risk Averse: Portfolio of **Bonds** & **Low Beta** stocks

Risk Taker: Portfolio of **High Beta** stocks

End of Session 2



Financial Management Overview

C-214

Coverage of Concepts & Calculations

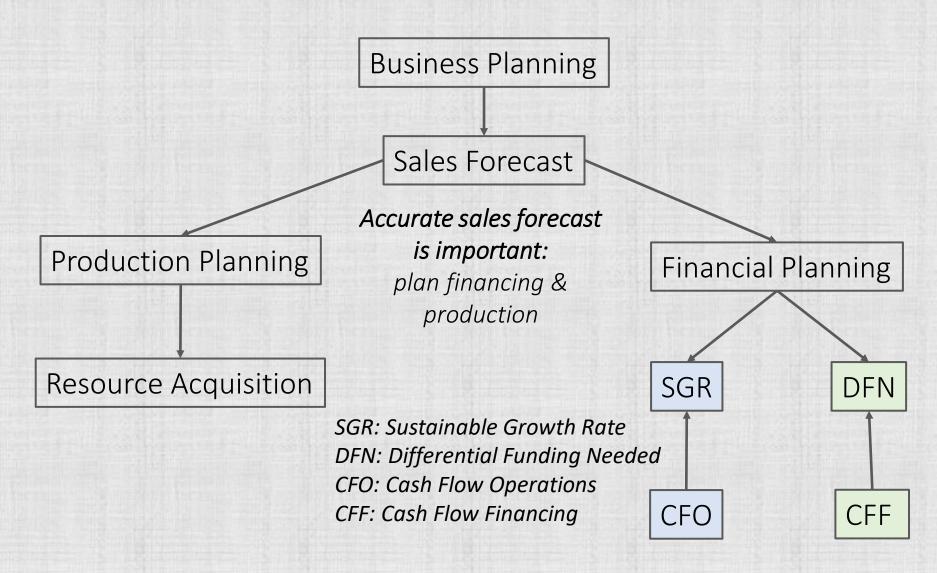
Session 3: Sections 10-16 in E-Text

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Financial Forecasting

Section 10 in E-Text



Sustainable Growth Rate (SGR)

SGR is the growth rate of sales that can be funded without external financing

SGR is supported by CFO (cash flow operations)

If a firm has \$10 million of net income, \$50 million of equity, and pays \$3 million in dividends, what is its SGR?

ROE =
$$10/50 = 20\%$$

Payout Ratio = $3/10 = 30\%$
SGR = $0.20 * (1 - 0.30) = .20 * .70 = .14$ or 14%

Discretionary Funding Needed (DFN)

If projected Sales growth is > SGR:

Project the need for <u>additional</u> funding: Issue bonds & stock

DFN = Assets minus (Liabilities + Equity)

Or

DFN = Assets minus Liabilities minus Equity

→ Balance Sheet must "balance"

Pro Forma Balance Sheet: Projection based on Sales Forecast

Spontaneous Accounts: vary with sales

e.g. Current assets and current liabilities

Discretionary Accounts: changed by management decision

e.g. Equipment purchases & bond issuance

Discretionary Funding Needed (DFN)

A firm forecasts sales to be \$200 million, Current Assets to be 25% of sales, and PPE to be \$25 million. Its sources of funds include bonds of \$30 million and equity of \$25 million. What is its DFN?

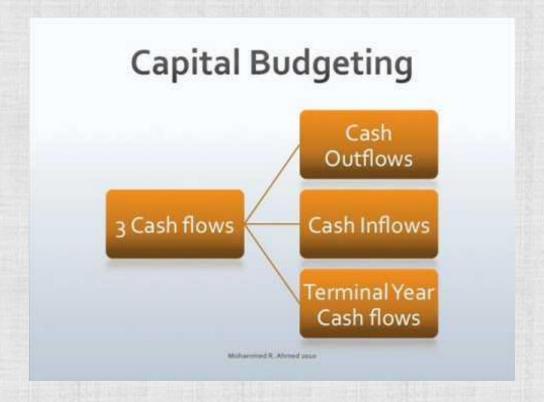
Firm would need \$20 million <u>additional external financing - - thru CFF</u>

Balance Sheet must "Balance": Assets = Liabilities + Equity

Capital Budgeting: Long Term Assets Section 11 in E-Text

Evaluation: PV of Expected Cash Flows

PV = FV / (1 + interest rate)



Capital Budgeting: Evaluating Investment Projects

Expected Cash Flows for a Potential Investment

Long Term Assets

Non-Financial Firm: Machines Financial Firm: Bonds or Stock

Cash Flow Components:

Initial Cash Out-Flow: Up-front cost to buy and install equipment

Differential Cash In-Flows: Yearly cash flows (profit) generated

Terminal Cash In-Flows: End-of-project salvage value

Capital Budgeting:

Initial Cash Out-Flow (ICF)

Initial Cash Out-Flow = Cost of Asset + Shipping & Installation + Increase NWC

Assume:

Equipment purchase price: 400,000

Shipping & Installation: 50,000

Net Working Capital Increase: 100,000

ICF = 400,000 + 50,000 + 100,000 = 550,000 outflow

ICF is a negative cash flow

GAAP defined

Cash Outflow

Capital Budgeting: Differential Cash Flows (DCF)

Differential Cash In-Flows = (Net Income + Depreciation Expense)

Assume:

Revenue = 200,000

Operating Expenses = 50,000

Depreciation = 25,000

Tax Rate = 20%

EBT

(1 - Tax Rate) = % of EBT <u>kept</u> by <u>firm</u>

Net Income = $(200,000 - 50,000 - 25,000) \times (1 - .20) = 100,000$

DCF = 100,000 + 25,000 = 125,000 per year over life of project

Net Income

Depreciation

Capital Budgeting:

Terminal Cash Flows (TCF)

Terminal Cash In-Flows = Salvage Value - Taxes Paid + NWC "Recapture"

Assume:

= Net PPE

Equipment Sale: 100,000

Book Value:

20,000

Tax Rate:

40%

Net Working Capital Recapture: 100,000

Profit or Loss

Taxes = (Sales Price - Book Value) * Tax Rate

Taxes Paid = (100,000 - 20,000) * 40% = 32,000

TCF = 100,000 - 32,000 + 100,000 = 168,000

Cash Inflow

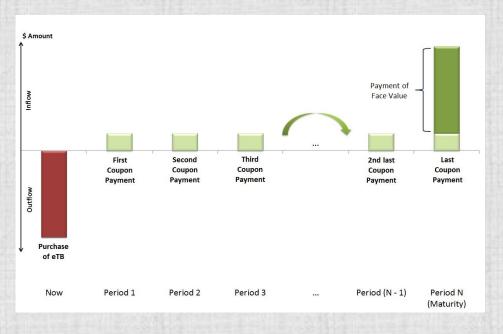
Reversal of Increase in NWC in ICF

Note: If Salvage sale is a "loss", there is a tax refund, i.e. cash inflow.

Evaluation of Investment Projects

From previous slides, we have the following info:

Year	Cash	Inflow
0	(550,000)	First
1	125,000	Coupon Payment
2	125,000	Purchase of eTB
3	125,000	Now Period 1
4	125,000	
5	125,000+168,000 (TCF ac	dded to last year DCF)



Internal Rate of Return (IRR) & Net Present Value (NPV)

> IRR = Yield

> NPV = PV of inflows *minus* Initial Cash Outflow

What interest rate makes the PV of the cash inflows equal to the Purchase Price?

That is the "yield"

Evaluating Investment Projects

Internal Rate of Return (IRR) & Net Present Value (NPV)

Project evaluation is analogous to bond valuation:

IRR is the "yield" PV is the "price"

Year	<u>Cash</u>	
0	(550)	Price = Initial Cash Flow: 550
1	125	
2	125	
3	125	PMT = Differential Cash Flow: 125
4	125	
5	125 + 168	FV = Terminal Cash Flow: 168
		V

IRR: Interest rate that discounts cash flows to the price

PV: PV of cash flows

Viewed as a bond:

```
125,000 PMT 5 N (550,000) PV 168,000 FV CPT I/Y = 11.74
125,000 PMT 5 N 11.74 I/Y 168,000 FV CPT PV = (550,000)
```

Evaluating Investment Projects With <u>Unequal</u> Differential Cash Flows

Initial Cash Flow

(500,000)

Differential Cash Flows

Year 1: 125,000

Year 2: 225,000

Year 3: 200,000

Terminal Cash Flow 100,000

Calculate the IRR and the NPV

New Illustration

Calculating NPV & IRR of Unequal Cash Flows

Initial Investment = 500,000

46,792

CF	500,000	+/-	ENTER	
1	125,000		ENTER	
1				
1	225,000		ENTER	
1				
1	300,000		ENTER	
1	1		IRR	
			СРТ	12.46
用的技术也是所谓。19 ex 19 技术也是所谓。19 ex 19 技术也是所谓。19 ex 19 th				

T.	CF	500,000	+/-	ENTER
	1	125,000		ENTER
	+			
	+	225,000		ENTER
ľ	1			
	\	300,000		ENTER
	↓			NPV
			8.0	ENTER
			1	СРТ

PV of cash inflows = 546,792

Last cash flow = / Last DCF + TCF

Discount Rate = WACC

Blue cells are the exact calculator keystrokes to solve for IRR and NPV

Before calculations, clear CF register: CF 2nd CLR Work

PV of cash inflows minus initial investment

Rules for Adopting Potential Investments:

Internal Rate of Return (IRR) & Net Present Value (NPV)

WACC = Minimum Required Return of Investment

IRR > WACC

IRR = revenue from asset WACC = cost of funds Profit (%) = IRR minus WACC

NPV > 0, using WACC as the discount rate

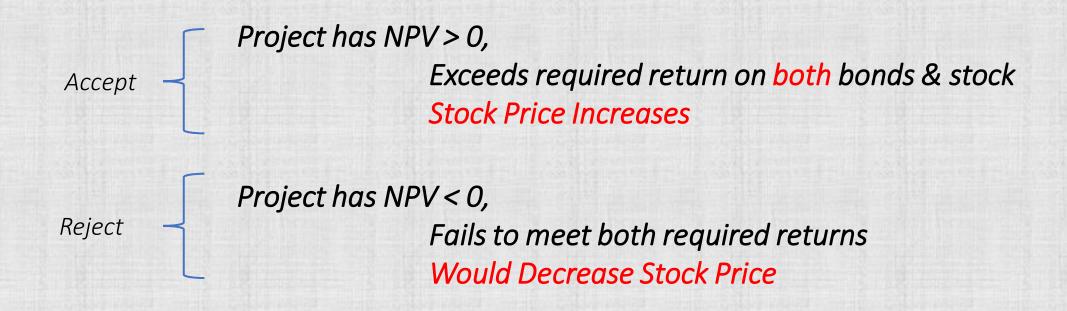
NPV = PV of Cash Inflows — Initial Cash Outflow NPV (\$) = Profit

WACC: Includes Required Return on Bonds and Required Return on Stock

Best Method

Investment Valuation

NPV > 0, using WACC as the discount rate



NPV > 0 means that the project increases the value of the firm

Decision-Making Under Uncertainty

Scenario Analysis

aka
Sensitivity analysis
Simulation analysis
Stress Test

"Forecasts" are error-prone:
Scenario Analysis tests for impact of
forecast error.

What could go wrong?

Year	Pessimistic	Forecast	Optimistic
0	(500,000)	(500,000)	(500,000)
1	100,000	125,000	137,500
2	100,000	125,000	137,500
3	100,000	125,000	137,500
4	100,000	125,000	137,500
5	254,400	293,000	312,300
WACC	8.14%	8.64%	9.14%
IRR	5.22%	11.74%	14.85%
NPV	(47,794)	51,792	95,771
Probability	20%	65%	15%

Expected NPV = 38,472

Accept or Reject???

Depends upon the Risk-Return preferences of the firm

Highly Risk Averse? - or - Risk Tolerant?

Capital Structure

Section 12 in E-Text



Leverage

aka business risk

Operating Leverage (DOL):

Fixed Operating Costs

Automated production:

High fixed cost

Labor Intensive production:

Low fixed cost

aka financial risk

Financial Leverage (DFL):

Fixed Interest Expense

High Debt/Equity ratio:

High fixed interest expense

Low Debt/Equity ratio:

Low fixed interest expense

Combined Leverage (DCL): Operating Leverage X Financial Leverage

Firms increase leverage to increase profitability

Low Leverage versus High Leverage



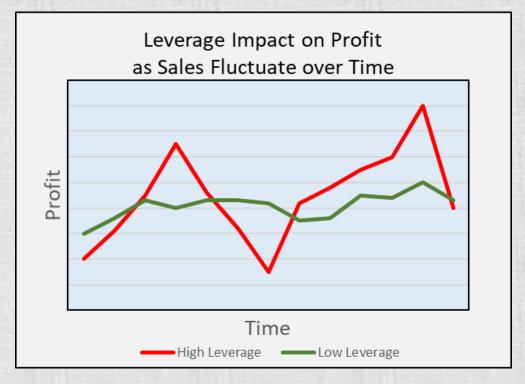


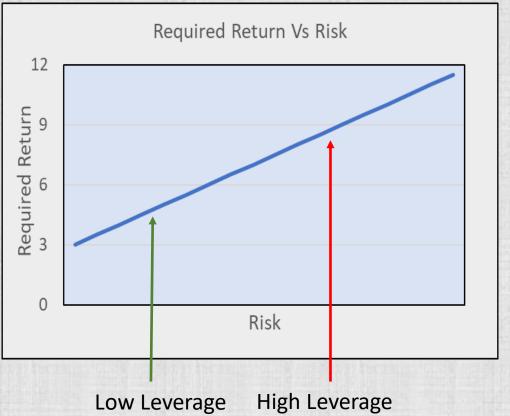




> Leverage also increases the volatility of profits

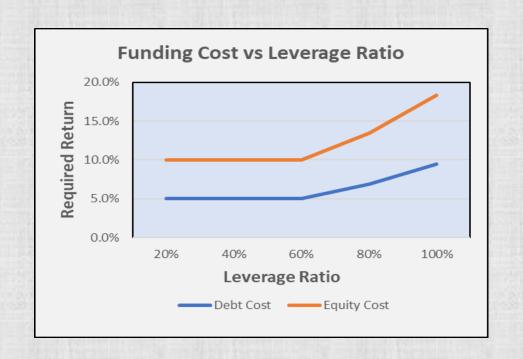
Leverage Impact on Required Return

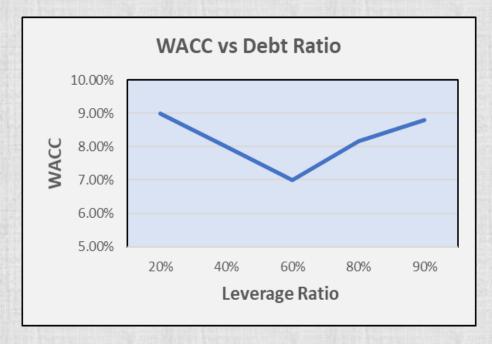




- Firms increase leverage to increase profit, but it also increases profit volatility - - increased risk!
- Profit volatility increases the required return

Impact of Leverage on WACC





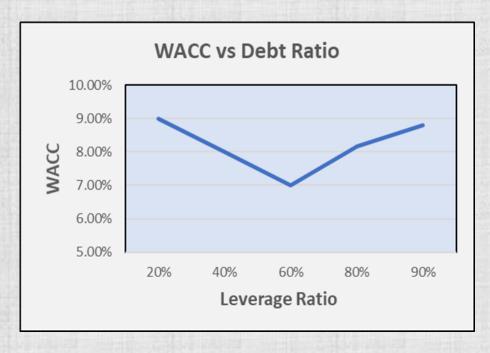
As the Leverage increases: more cheap debt & less expensive equity

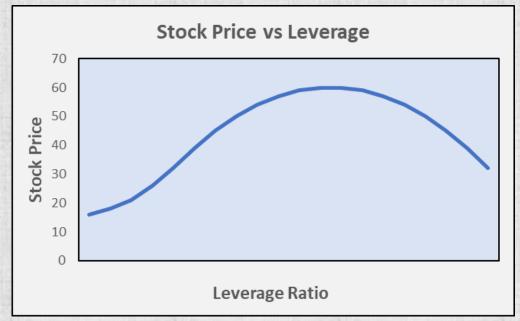
If Leverage becomes excessive, the firm is viewed as increasingly risky

Required returns on bond & equity rise and eventually increase WACC

Leverage & Max Shareholder Value

Higher profits may <u>not</u> mean higher stock price! Does the incremental profit justify the extra risk?





WACC = Required Return

Price = Flow of Profits / (1 + Required Return)

Firms must risk & profit to maximize stock value.

Working Capital Management Section 13 in E-Text

Managing Current Assets & Current Liabilities

Management Decisions:

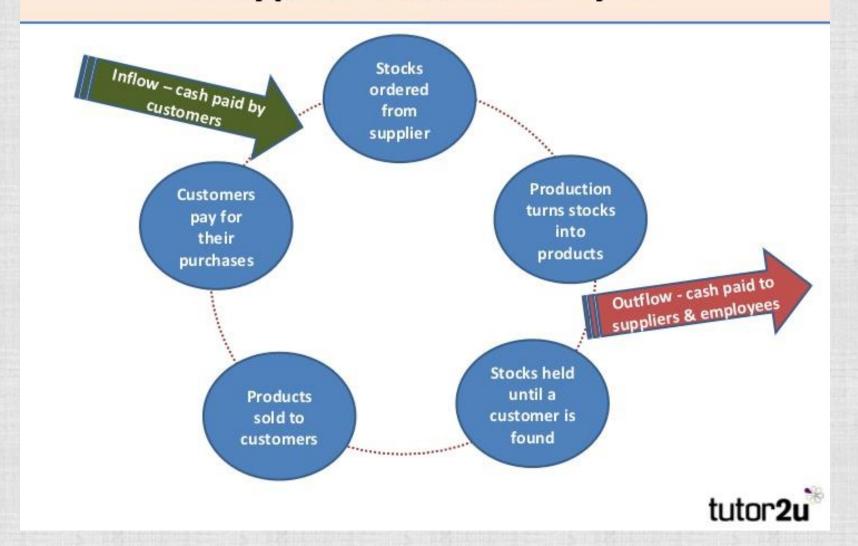
Cash

Accounts Receivable

Inventory

Accounts Payable

A Typical Cash Flow Cycle



Working Capital Management Decisions

Cash:

Operating Balance: Pay Bills

Reserve Balance: Unforeseen Needs

Accounts Receivable:

Cash Only Sales

Credit Standards & Terms

Inventory:

Lean to minimize costs

Ample to avoid shortages

Accounts Payable:

Supplier Discounts

Trade Credit

Firm Valuation: Market Cap Section 14 in E-Text

Valuation of Private Firms

Valuation of a <u>Public</u> Corporation

Go to Markets.WSJ.com:

Price: price per share of stock

EPS: earnings per share

PE: Price-earnings ratio: Price/EPS

Shares: shares of stock outstanding

Market Cap: Price x Shares Outstanding = Value of firm

Market Cap (i.e., Market Capitalization) is the term for the value of a firm.

For Private corporations, there is no data on share price

Firm Valuation based on Market Prices

Valuation of a Private Firm

Comparable Multiples Method



Use the PE of a public firm that is very similar to the private firm

Note: PE is the ratio of the stock price to earnings-per-share

PE ratio used to value a private firm

Government Regulation

Section 15 in E-Text



Key Legislative & Regulatory Factors

Securities Markets:

- Securities Act of 1933 Requires *Prospectus* for security issuance
- SEC requires audited financial statements; regulates security trading
- Sarbanes Oxley Act transparency, audit of financial controls
- FINRA check sales practices; bar unethical persons; competency test
- Rule 144A Sell private securities in U.S. to U.S. investors
- Reg S Sell private securities off-shore to foreigner investors

Banking Regulations:

- Dodd Frank addresses "too big to fail" banks; enhanced supervision
- FSOC Financial Stability Oversight Council regulates "systemic" risk
- Volker Rule Limits proprietary/hedge fund trading by banks

Transparency

Protect Investors

"unregulated" markets

Limit Risk

Global Financial Management

Section 16 in E-Text

Multi-National Corporations (MNC)



Largest BMW Plant in the World: Greer, South Carolina

Imported Parts: China, Malaysia, Germany

70% of Production is Exported, 1/3 to China



Is International Business Good?

Comparative Economic Advantage

Each country produces where it is *relatively efficient*

U.S. produces & exports farm products to China

China produces & exports manufactured goods to U.S.

Both countries benefit

Key Issues in International Trade

U. S. Outsourcing: Using Foreign Suppliers
Fewer U.S. jobs
Cheaper consumer goods

Foreign Competition: Compete with Domestic Firms
Fewer U.S. jobs

Cheaper consumer goods

Tariffs: Tax on Imported Goods

More U.S. jobs & profits More expensive consumer goods

Tariffs:

Good for protected firms Bad for the economy

Exchange Rate: U.S. Dollar vs Eurodollar



Imports: For U.S. firms to buy foreign products, must convert U.S. dollar to foreign currency.

Exports: For foreign firms to buy U.S. products, must convert their currency to U.S. dollars

Hedging FX Risk

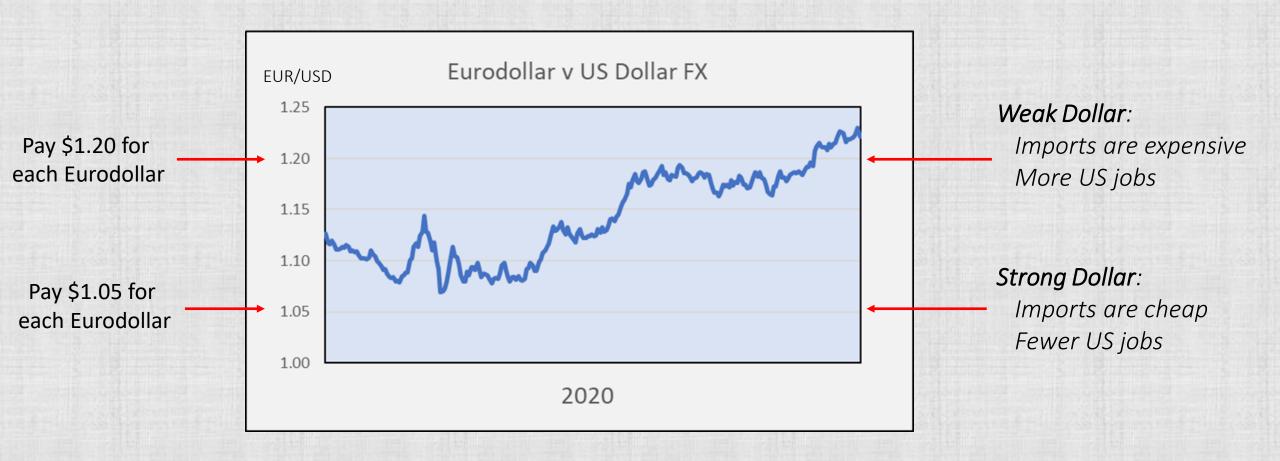
Hedging: transaction to reduce risk

Firms hedge that risk through 2 types of transactions:

- FX forward contracts (trade between 2 companies)
- FX futures contracts (trade executed on exchange)

Execute FX hedge with FX Dealer to eliminate risk FX risk is eliminated, for a fee!

Strong Dollar vs Weak Dollar U.S. Dollar vs Eurodollar



Strong Dollar: Can buy imported products cheaply

Re-Cap of Key Points in the Overview Webinar

The Logic of Financial Decision-Making

Goal:

Enhance Long-Run Shareholder Value by Balancing Profit and Risk

Principles of Financial Decision-Making:

- 1. Efficient Markets
- 2. Risk Aversion
- 3. Time Value of Money
- 4. Uncertainty

1. Efficient Financial Markets

Efficiency Requirements:

Competitive: Many buyers and sellers

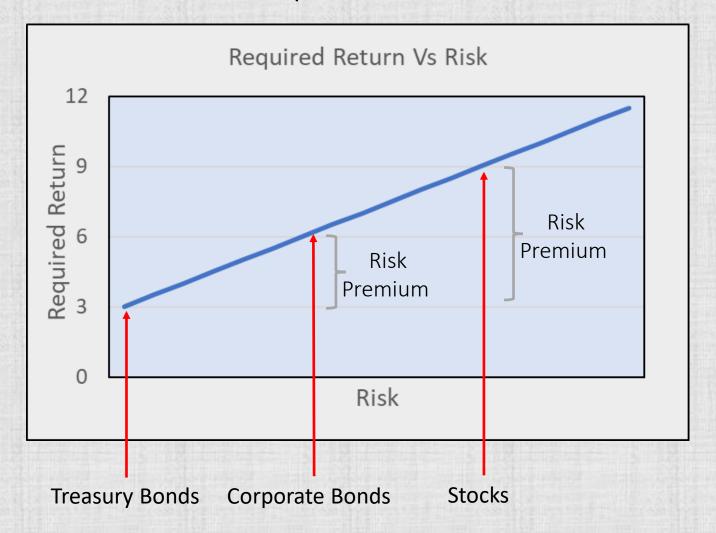
Liquid: Can sell/buy quickly

Transparent: Informed investors

Standardized: Standard security

- > Reduces cost of financing for well-managed firms
- More efficient allocation of resources in the economy

2. Return Must Compensate for Risk: Risk Aversion



Investors require <u>higher returns to compensate for higher risk</u>

Risk Premiums: Credit Risk & Market Risk

Credit Risk: Chance of Bankruptcy

Bonds: Rating by S&P, Moody's

Stock: Low Equity, CFO, & EPS

Market Risk: Price Volatility

Bonds: Measured by "Duration"

Stock: Measured by "Beta"

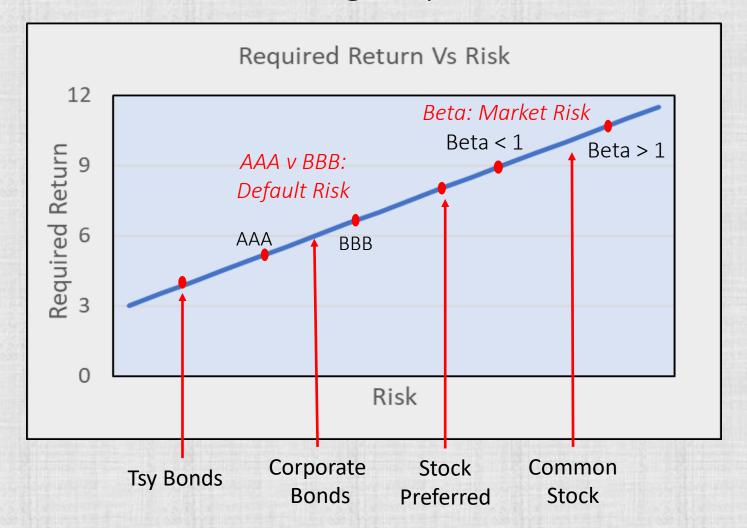
WACC

Average of Required Returns on Stock & Bonds

Overall cost of financing the firm

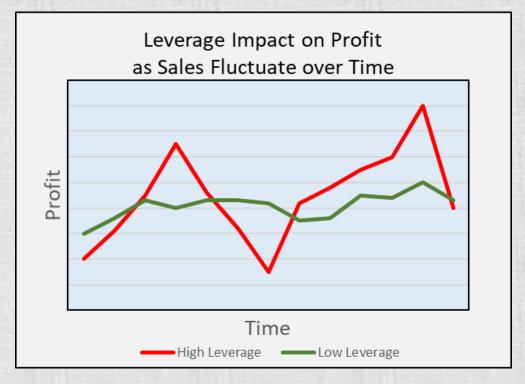
Minimum Required Return on Investment Projects

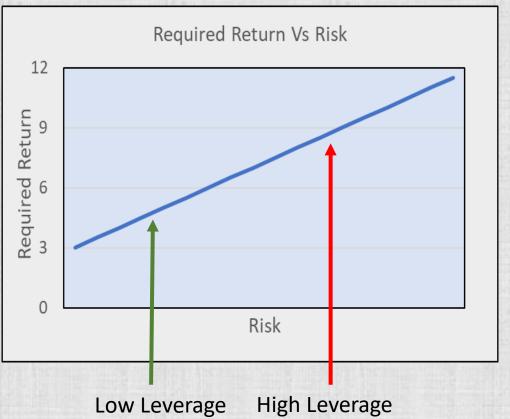
Factors affecting Required Return



Not all bonds or stocks are the same Risk differences matter.

Leverage Impact on Required Return





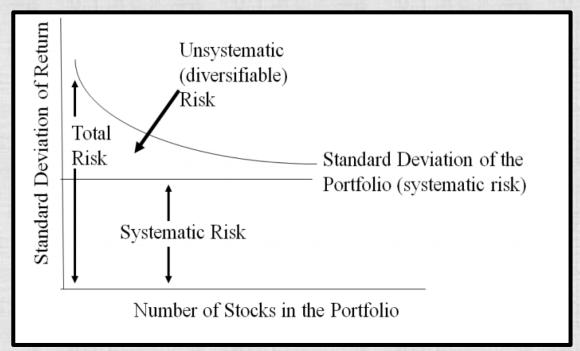
- Firms increase leverage to increase profit, but it also increases profit volatility
 - Profit volatility increases the required return

Inducement to buy <u>average</u> stock

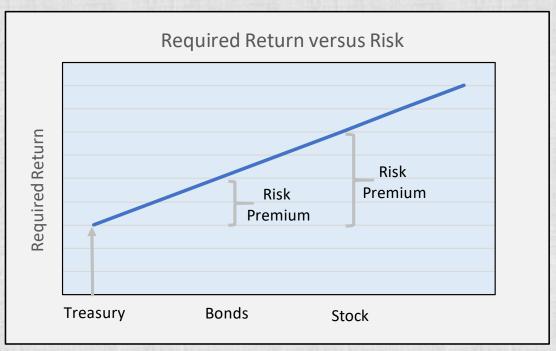
Required Return = Risk-Free Rate + (Beta * Market Risk Premium)



Diversification eliminates idiosyncratic risk



Systematic Risk



[Beta * Market Risk Premium]: Risk Premium of a specific stock

3. TVM: Bonds, Stocks, & Capital Budgeting

All three are the same PV problem; just different words

PV = FV / (1 + Required Return)

Yea	ır <u>Cash</u>	Bonds	Stocks	Capital Budgeting
0	(550)	Price	Price	Initial Cash Flow
1	125			
2	125	Interest	Dividends	Differential Cash Flows
3	125			
4 5	125 125 + 168	Face Value	Sale Price	Terminal Cash Flow
Disco	ount Rate	Yield	Required Return	WACC
	PV	Price	Price	Net Present Value

Present Value of expected cash flows, discounted at Required Return

4. Uncertainty & Risk Aversion

Financial Decisions are impacted by:

- > Uncertainty
- > Risk Aversion

Uncertainty:

Some inputs are forecasts Some inputs are estimates

Forecasted future cash flows
Growth rate of profits

Risk Aversion:

Reaction to Uncertainty
Degree of risk aversion varies

Conflicting decisions may both be "right"

Finance formulas express conceptual frameworks - - "first step in wise decision-making."

Firm Goal: Maximizing Shareholder Value



Firms must balance risk & return to maximize stock value.



Success supports Success



Products & Services

e.g., Walmart, GM, Microsoft produce products & services

Sell bonds & stocks

Investment Managers

e.g., BlackRock, Fidelity, Vanguard manage pensions, 401-K, endowments

Buy bonds & stocks

- Successful profitable business firms mean rising stock prices
 - Rising stock prices mean successful pensions & endowments

Manufacturers Success Pensions

End of Session 3