FOUNDATIONS OF FINANCIAL MARKETS

PROF. K. @ EAST CHINA NORMAL UNIVERSITY

WHO AM I?

Submit assignments to this address.

Nicholas Krapels (Prof. K) – nickrapels@yahoo.com

- EDUCATION
- Bard College (NY), B.A. Asian Studies
- University of South Carolina, IMBA Finance
  studied at Tsinghua University, Corporate Risk Management & China Strategy
- East China Normal University, Ph.D. Politics (in progress)

- CONSULTANT

GlobInvest, PwC, Business Connect China

- WRITER

VICE News, Seeking Alpha contributor, blog at LowBetaPortfolio.com

Myanmar 2014: New Information and Cultural Insights Entrepreneurs Need to Start a Business in Myanmar, co-author w/ Derek Sivers

WHY DO I LOVE FINANCE?

1989

2001

2009

Apple Inc. (AAPL) - NasdaqGS
Follow
101.66 0.23 (0.23%) Sep 12, 4:15PM EDT
Pre-Market : 101.67 0.01 (0.01%) 4:26AM EDT - Nasdaq Real Time Price
Beat the market
Get the app
36.78
Enter name(s) or symbol(s)
GET CHART
COMPARE
EVENTS
TECHNICAL INDICATORS
CHART SETTINGS
RESET
Week of Sep 24, 2001: AAPL 1.1079
100
80
60
40
20
© 2014 Yahoo! Inc.
2002
2004
2006
2008
2010
2012
2014
Volume: 92,504,440
0.40B
0.20B
1D 5D 1M 3M 6M YTD 1Y 2Y 5Y Max
FROM: Sep 17 2001
TO: Sep 2 2014
+8,708.29%

WHAT IS FINANCE?

Derived from Latin *finis*, which means “boundary, end.”

In English, *finance* has been used as a noun since 1739 and as a verb since 1866.

As a verb, *finance* describes the method of getting money to pay for things.

As a noun, *finance* relates to all the various ways that people can manage money:

- personal finance
- corporate finance
- public finance

The study of finance lies at the confluence of economics, accounting, and math.

Contrary to popular belief, financial math is not that difficult. Only a few applications require high-level algebra and even fewer require an understanding of calculus.

ABOUT THIS CLASS

Textbooks:

- Bodie, Kane, & Marcus. *Essentials of Investments*. McGraw-Hill.
- Ross, Westerfield, & Jordan. *Fundamentals of Corporate Finance*. McGraw-Hill.

Topics:

- Markets, Investors, & Investment Theory
- Principles of Security Valuation: Top-Down Analysis
- Principles of Security Valuation: Bottom-Up Analysis
- Asset Allocation
- Time Value of Money (TVM) & Finance Math
- Introduction to Fixed Income
- Investment Vehicles & Alternative Assets
- Discounted Cash Flow (DCF) Analysis
- Capital Asset Pricing Model (CAPM)
- Introduction to Portfolio Management

MARKETS, INVESTORS, & BASIC INVESTMENT THEORY

PROF. K. @ EAST CHINA NORMAL UNIVERSITY

WHAT IS A MARKET?

A *market* is anywhere that buyers and sellers of a particular good or service can meet and exchange these goods or services at a mutually agreed upon price.

A *financial market* restricts this activity to securities, commodities, and other financial assets that are fungible i.e. the assets are infinitely divisible and therefore interchangeable.

NASDAQ-100 (^NDX) - Nasdaq GIDS Follow
4,028.26 40.97 (1.01%) 11:41AM EDT
Beat the market
Get the app
36.78
^FCHI
GET CHART
COMPARE
EVENTS
TECHNICAL INDICATORS
CHART SETTINGS
RESET
Week of Aug 10, 2009: ^NDX 1611.58 ^GSPC 1004.09 ^N225 10412.09 ^FTSE 4714.00 ^FCHI 3521.14
^HSI 20375.37 ^STI 2549.35
250%
200%
150%
100%
50%
0
© 2014 Yahoo! Inc.
2002
2004
2006
2008
2010
2012
2014
Volume: 1,981,639,936
3B
2B
1B
1D 5D 1M 3M 6M YTD 1Y 2Y 5Y Max
FROM: Sep 17 2001
TO: Sep 8 2014
+261.08%

WHO NEEDS FINANCIAL MARKETS?

- households or individuals
- firms or companies
- governments or public institutions
- *financial intermediaries*, any of the variety of entities (including *financial markets*) that advise, analyze, negotiate, and organize the flow of funds between these 3 principal actors

WHY INVEST?

Exact motivations for investing depend on which entity is investing (households, firms, governments, or financial institutions). But there seem to be some overarching goals:

- Store of value:

Inflation is a fact of life in modern economic capitalist structures. If your rate of return on your savings does not exceed inflation, you are actually losing money.

- Shift of consumption patterns:

During your career, you will hopefully earn a lot more money than you actually need for day-to-day life. Investments allow people to enjoy a stable quality of life both in their younger years (by borrowing) and in their retirement years (via investments)

- Risk sharing:

The separation of ownership & management allows a stable & liquid platform that promotes financial growth, but also leads to *agency problems*.

Can you think of any other reasons?

WHAT IS RISK?

The dictionary definition of risk is “to expose someone to danger, harm, or loss.”

But is it the same when it comes to finance and investment?

And if so, how do we quantify risk?

<u>Student Response:</u>

1. Carlos – Risk is a constant daily phenomenon that is both good and bad. We all need opportunity and with opportunity comes risk.
2. Robert – In finance, there are different types of risk – personal, ethical, risk of loss, risk of default
3. Finance – In all financial theories and models, risk is equated to volatility.

WHO INVESTS?

There are different types of investors:

- **Individual investors**
- **Other businesses**
- **Professional investors**
  - Personal trusts
  - Hedge funds
  - Mutual funds
  - Pension funds
  - Private equity
  - Venture capital
  - Life insurance companies
  - Non-life insurance companies
  - Banks
  - Endowment funds

WHAT IS AN INVESTMENT?

An *investment* is the commitment of current **resources** in the expectation of realizing greater **gains** in the future.

- ✓ Resources could be time, labor, money, etc. Anything that is limited.
- ✓ Gains can be knowledge, experience, money, etc. Anything that provides benefit.

However, we must distinguish between investments in human capital and investments in financial capital.

Examples:

- Education
- Internship

human capital

- Startup business
- Asset

financial capital

FINANCIAL CAPITAL INVESTMENTS

There are 3 types of financial capital investments:

Key Questions that Distinguish these Assets:

- ***Ownership***
  - Businesses
  - Real Estate
  - Precious Objects
  - Stocks

"Do you have a chance to profit when you sell your ownership stake?"

- ***Lending***
  - Savings account
  - Bonds

"What is your interest rate?"

- ***Cash Equivalent***
  - Money Market Funds

"Is your investment liquid?"

We will discuss the differences between these two approaches in more detail in Week 2 (top-down) and Week 3 (bottom-up).

WHAT IS CAPITAL?

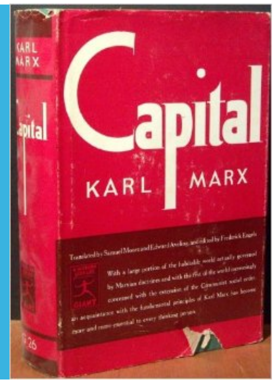
There is nothing so fundamental, and yet somehow also infinitely obscure, to finance and economics as the concept of *capital*.

The historical usage (pre-Smith) of the term that arose in 13th century England is “a fund of money to be invested by a person or firm in some enterprise.”

Adam Smith broadened the meaning from its original simplicity by applying the term *capital* not only to the money used to acquire assets but also, rather, the assets themselves because they provided “a revenue or profit without circulating or changing masters.” To Smith, capital included not only machines, buildings, and land but also “the acquired and useful abilities” of individuals.

Karl Marx literally wrote 3 volumes on the subject. His definition of capital is a variation on Smith’s, with the added caveat that it is used as a productive factor to pay workers who do not own the material means of production.

Modern accountants can’t even agree on an exact definition. It can refer to funds raised to support a particular business/project, or accumulated business wealth as represented by its assets less liabilities (equity), or just plain stock or ownership in a company.



PROF K ON “CAPITAL”

For this class, we will use the definition of capital as “the money you use to try and make more money.”

I use the term “money” instead of ”assets” because one connotes liquidity, while the other typically entails tying up that money in a comparatively non-liquid asset for an unspecified, and usually long-term, period of time.

Moreover, “money” can be invested at any risk-appropriate rate of return, while an “asset” is typically restricted to a rate of return that 1. typically declines over time and 2. is determined in large part by the time at which the investment was made.

WHAT IS AN ASSET?

Based on the **basic accounting equation**, assets are just the sum of a company's liabilities and equity.

Is this definition the same as the dictionary definition of asset as "property owned by a person or company, regarded as having value and available to meet debts, commitments, or legacies"?

1. No, it assumes that the liability is accretive to value creation (earnings), which is not necessarily the case as you can see by the following examples:
   - mortgage on a house in a depreciating neighborhood
   - student loan for a major in a declining industry
   - loan on the purchase of an outdated machine
2. No, retained earnings are a part of owner's equity but are not necessarily real assets or financial assets.

Basic Accounting Equation

REAL ASSETS V. FINANCIAL ASSETS

Real Assets

real estate

precious metals

canned food, ammunition, guitars, memorabilia

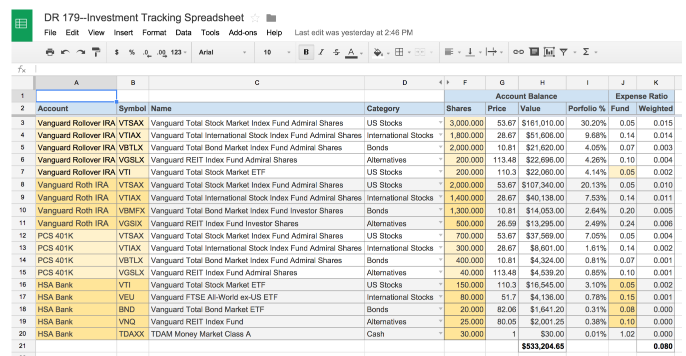
Financial Assets

stocks

bonds

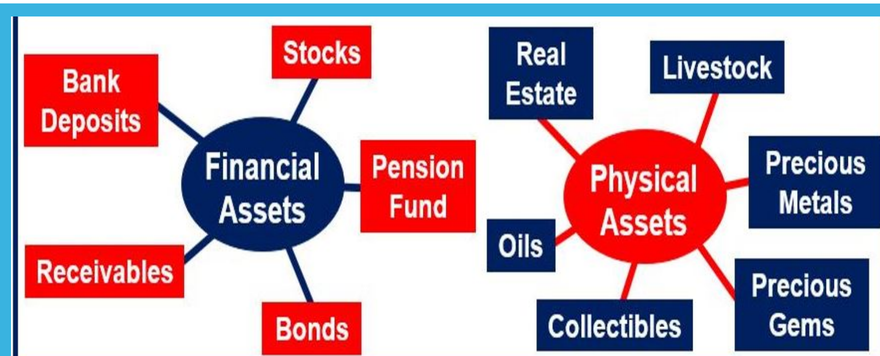
mutual funds

derivatives



DR 179--Investment Tracking Spreadsheet

Account	Symbol	Name	Category	Shares	Price	Value	Porfolio %	Fund	Weighted
				Account Balance				Expense Ratio	
Vanguard Rollover IRA	VTSAX	Vanguard Total Stock Market Index Fund Admiral Shares	US Stocks	3,000.000	53.67	$161,010.00	30.20%	0.05	0.015
Vanguard Rollover IRA	VTIAX	Vanguard Total International Stock Index Fund Admiral Shares	International Stocks	1,800.000	28.67	$51,606.00	9.68%	0.14	0.014
Vanguard Rollover IRA	VBTLX	Vanguard Total Bond Market Index Fund Admiral Shares	Bonds	2,000.000	10.81	$21,620.00	4.05%	0.07	0.003
Vanguard Rollover IRA	VGSLX	Vanguard REIT Index Fund Admiral Shares	Alternatives	200.000	113.48	$22,696.00	4.26%	0.10	0.004
Vanguard Rollover IRA	VTI	Vanguard Total Stock Market ETF	US Stocks	200.000	110.3	$22,060.00	4.14%	0.05	0.002
Vanguard Roth IRA	VTSAX	Vanguard Total Stock Market Index Fund Admiral Shares	US Stocks	2,000.000	53.67	$107,340.00	20.13%	0.05	0.010
Vanguard Roth IRA	VTIAX	Vanguard Total International Stock Index Fund Admiral Shares	International Stocks	1,400.000	28.67	$40,138.00	7.53%	0.14	0.011
Vanguard Roth IRA	VBMFX	Vanguard Total Bond Market Index Fund Investor Shares	Bonds	1,300.000	10.81	$14,053.00	2.64%	0.20	0.005
Vanguard Roth IRA	VGSIX	Vanguard REIT Index Fund Investor Shares	Alternatives	500.000	26.59	$13,295.00	2.49%	0.24	0.006
PCS 401K	VTSAX	Vanguard Total Stock Market Index Fund Admiral Shares	US Stocks	700.000	53.67	$37,569.00	7.05%	0.05	0.004
PCS 401K	VTIAX	Vanguard Total International Stock Index Fund Admiral Shares	International Stocks	300.000	28.67	$8,601.00	1.61%	0.14	0.002
PCS 401K	VBTLX	Vanguard Total Bond Market Index Fund Admiral Shares	Bonds	400.000	10.81	$4,324.00	0.81%	0.07	0.001
PCS 401K	VGSLX	Vanguard REIT Index Fund Admiral Shares	Alternatives	40.000	113.48	$4,539.20	0.85%	0.10	0.001
HSA Bank	VTI	Vanguard Total Stock Market ETF	US Stocks	150.000	110.3	$16,545.00	3.10%	0.05	0.002
HSA Bank	VEU	Vanguard FTSE All-World ex-US ETF	International Stocks	80.000	51.7	$4,136.00	0.78%	0.15	0.001
HSA Bank	BND	Vanguard Total Bond Market ETF	Bonds	20.000	82.06	$1,641.20	0.31%	0.08	0.000
HSA Bank	VNQ	Vanguard REIT Index Fund	Alternatives	25.000	80.05	$2,001.25	0.38%	0.10	0.000
HSA Bank	TDAXX	TDAM Money Market Class A	Cash	30.000	1	$30.00	0.01%	1.02	0.000
						$533,204.65			**0.080**



TYPES OF FINANCIAL ASSETS

- *bonds*, otherwise known as debt

Bonds can be structured in an almost infinite number of ways in order to cater to the specific needs of a variety of potential investors.

fixed/floating; short/long term; domestic/international; senior/secured/subordinated

- *stocks*, otherwise known as equity

Each share represents a fractional claim to the cash flows of an actual business.

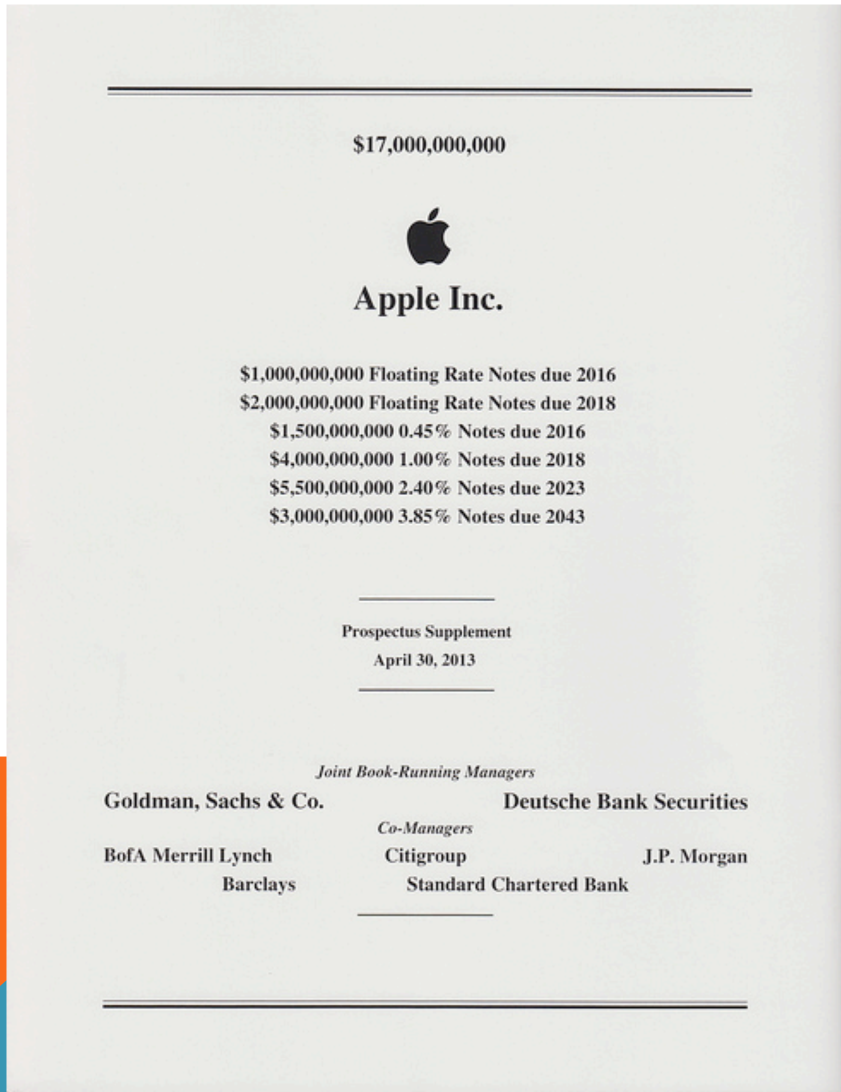
Equity is more risky than debt because its success is tied to the firm's fortunes.

- *derivatives,* any security of a variety of types that derive its price from the price of another financial asset (stock, bond)

Examples are options (calls & puts), futures, & swaps.

EXAMPLE: 2013 APPLE BOND PROSPECTUS

Stocks and bonds are issued according to terms outlined in a *prospectus.*



$17,000,000,000

Apple Inc.

$1,000,000,000 Floating Rate Notes due 2016
$2,000,000,000 Floating Rate Notes due 2018
$1,500,000,000 0.45% Notes due 2016
$4,000,000,000 1.00% Notes due 2018
$5,500,000,000 2.40% Notes due 2023
$3,000,000,000 3.85% Notes due 2043

Prospectus Supplement
April 30, 2013

Joint Book-Running Managers

Goldman, Sachs & Co. Deutsche Bank Securities

Co-Managers

BofA Merrill Lynch Citigroup J.P. Morgan
Barclays Standard Chartered Bank

<u>Structure of the Offer:</u>

<u>Short-Term:</u>

$1m floating due 2016

$2m floating due 2018

$1.5m fixed @ 0.45% due 2016

$4m fixed @ 1.00% due 2018

<u>Long-Term:</u>

$5.5m fixed @ 2.40% due 2023

$3m fixed @ 3.85% due 2043

financial intermediaries

PRIMARY V. SECONDARY MARKETS

Primary Markets

New securities (stocks & bonds) trade on primary markets.

The *prospectus* markets the issue to buyers.

An equity offering is called an IPO (*initial public offering*).

Secondary Markets

All of the trading that occurs in a security after its IPO or bond issue.

Example: Because my broker is not an *underwriter* of its IPO, I cannot participate in the *primary market* for Snapchat (SNAP), but the instant that it has a price that fluctuates by the second, I can buy it on the *secondary market*.

IS THE MARKET EFFICIENT?

Our textbook (Bodie Kane & Marcus' *Essentials of Investments* or just BKM) is predicated on the theory that "security markets are *nearly* efficient."

Here, BKM refers to *Efficient Market Theory* or the *Efficient Market Hypothesis*.

The idea has long dominated thought about financial markets:

- 1863 - Jules Regnault published his theories about the *random walk model*.
- 1900 - Louis Bachelier earned his PhD by using the mathematical theory of *Brownian motion* to evaluate stock prices.
- 1970 - University of Chicago professor Eugene Fama formalized the efficienct market theory (EMT) in his May 1970 article in the *Journal of Finance*, "Efficient Capital Markets: A Review of Theory and Empirical Work."

WHAT IS EFFICIENT MARKET THEORY (EMT)?

According to Fama:

- The basic idea of EMT is No Free Lunch or You Can’t Beat the Market.
- Why? Because current share prices mostly accurately reflect all of the available relevant information about a particular security at a given time.
- Competition between financial intermediaries ensures that EMT is accurate.
- Capital inevitably flows to its most productive use.

FAMA'S 3 LEVELS OF MARKET EFFICIENCY

Weak Form

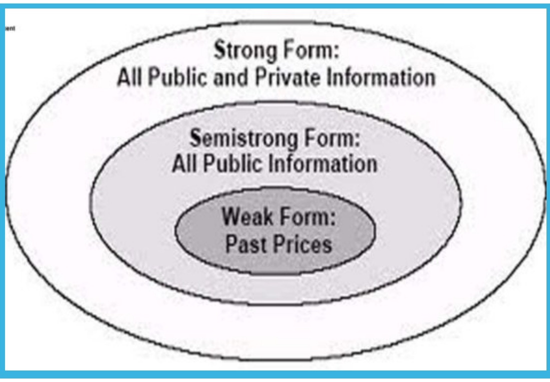
Prices merely reflect the sum of historical market data, generally just the price and volume information of all publicly traded securities.

Semi-Strong Form

Prices reflect all market data AND all publicly available information.

Strong Form

Prices reflect all market data AND BOTH public information AND private information.



WHAT'S WRONG WITH EMT?

- Corporate governance is not always good.
- Different countries have different systems and market regulations. For instance, some countries do not explicitly prohibit insider trading, like China.
- The rise of Electronic Communication Networks (ECNs) has meant that some investors have access to information before others. This disturbing phenomenon was the theme of Michael Lewis' most recent book, *Flash Boys*.
- Stock market analysts are not incentivized to issue accurate reports.
- There is a revolving door between corporations and their regulators.
- The Great Recession demonstrated that ratings agencies can be bought.
- The existence of exceptional investors (Buffett, Soros, Icahn) disproves EMT.

WHAT IS A PORTFOLIO?

The word derives from the Italian *portafoglio*, which in 1719 meant a type of briefcase specifically created to carry (*porta*) loose sheets of paper.

The word *folio* is even older, derived from the Latin for “leaf,” and hence came to mean a single sheet of paper.

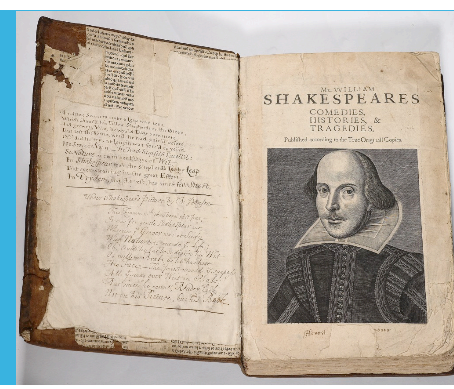
The Gutenberg Bible and Shakespeare’s First Folio were printed in “folio format,” leading to the connotation of folio with the idea of “collection.”

Not until 1929 did *portfolio* come to mean “a collection of securities held.” (Remember that initially stock certificates were single sheets of paper.)

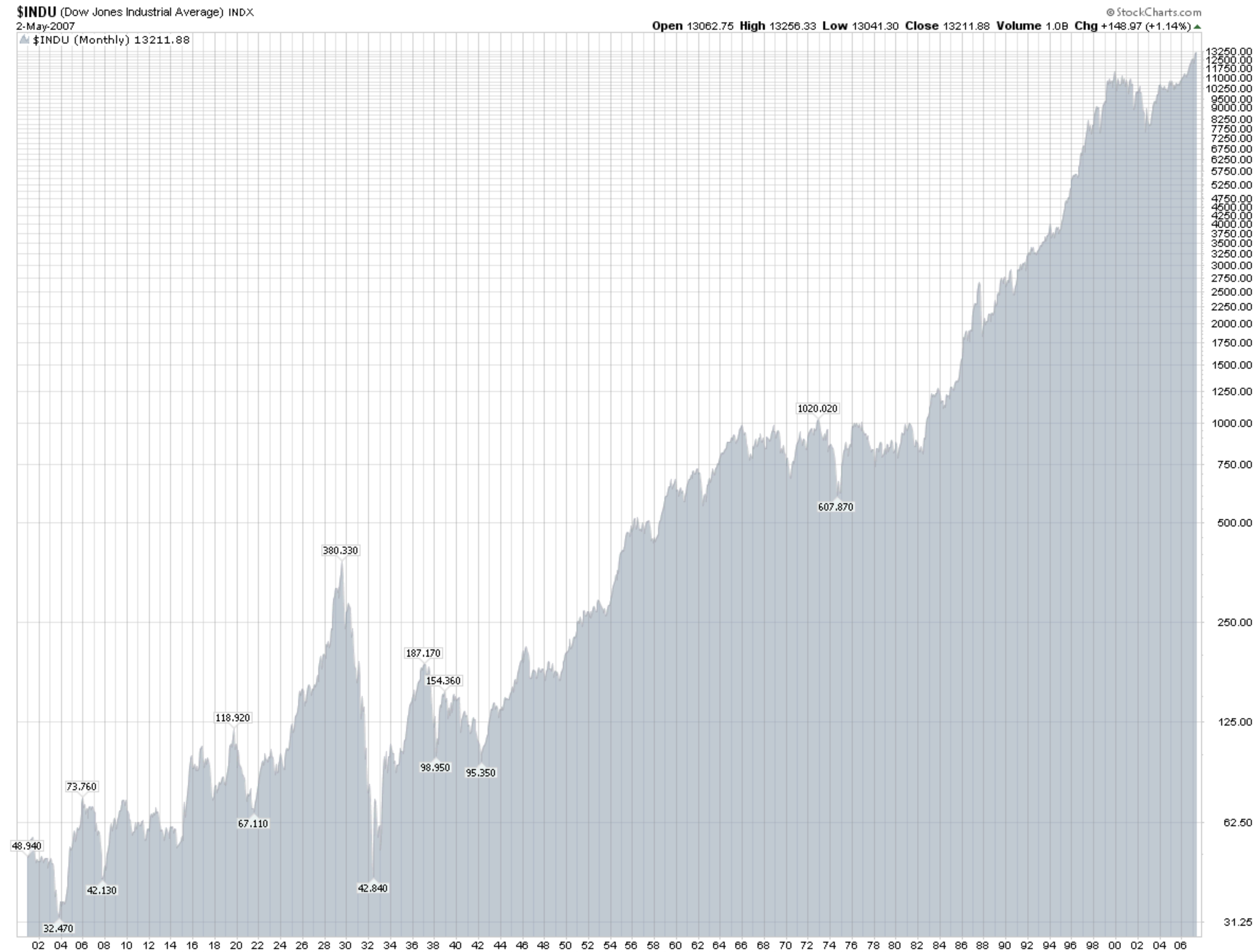
In 1955, “portfolio investment” came into the lexicon, just a year after the market had regained its 1929 high and right about the time two guys at the RAND Corporation (a government think tank) were developing *Modern Portfolio Theory*.

However, your “portfolio” is not just the securities you may hold in a retirement or other brokerage account. It is all the financial assets you hold: savings and checking accounts, life insurance policies, debt, real estate, employment, business interests, pensions, etc.

A portfolio is all-inclusive and is only limited in scope by the person(s) invested in it.



107 YEARS OF THE DOW (1900-2007)



ACTIVE V. PASSIVE MANAGEMENT

Passive Management

This style of investment management passively invests in an index or list of securities according to a specified criteria. The portfolio or fund then attempts to mirror the movement in the security selection of the index. As a result, this style is usually more diversified and results in lower investment turnover because indexes stay invested in the same securities for much longer periods of time.

If the efficient market hypothesis is indeed correct, then this style of investing should produce the best possible financial return in most cases.

Active Management

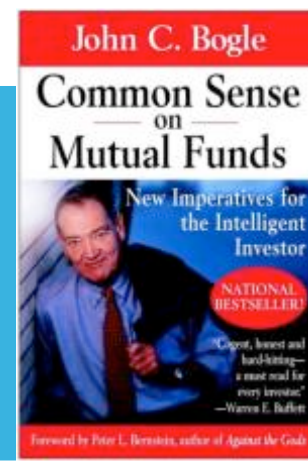
Stock pickers believe they can beat the market either by identifying mispriced securities or trying to time the market. There are a variety of strategies that people use to outperform the S&P 500 but they are rarely persistently effective.

JOHN BOGLE

John Bogle and his Vanguard Group popularized the passive management style of investing (sometimes referred to as index investing) in the 1980s.

Bogle's undergraduate Princeton thesis found that nearly 80% of all active managers did not outperform the result of simply investing in all 500 stocks of the S&P 500 Index, a separately managed measure of general stock market return.

He opened his first *no-load* index fund in 1976 called the Vanguard 500. Other *load* funds charge 1-2% per year in fees. The Vanguard 500 charges 0.15%. Today, the fund alone manages over $100 billion and has outperformed most other mutual funds of similar size and history.



BUFFETT ON INDEX FUNDS

"My advice to the trustee could not be more simple: Put 10% of the cash in short-term government bonds and 90% in a very low-cost S&P 500 index fund. (I suggest Vanguard's.) I believe the trust's long-term results from this policy will be superior to those attained by most investors – whether pension funds, institutions or individuals – who employ high-fee managers."

- Warren Buffett, 2013 Berkshire Hathaway Annual Report

Figure 1. **Growth of a $10,000 Investment Based on All-In After-Tax Costs, Assuming a 7% Gross Annual Return on Stocks**

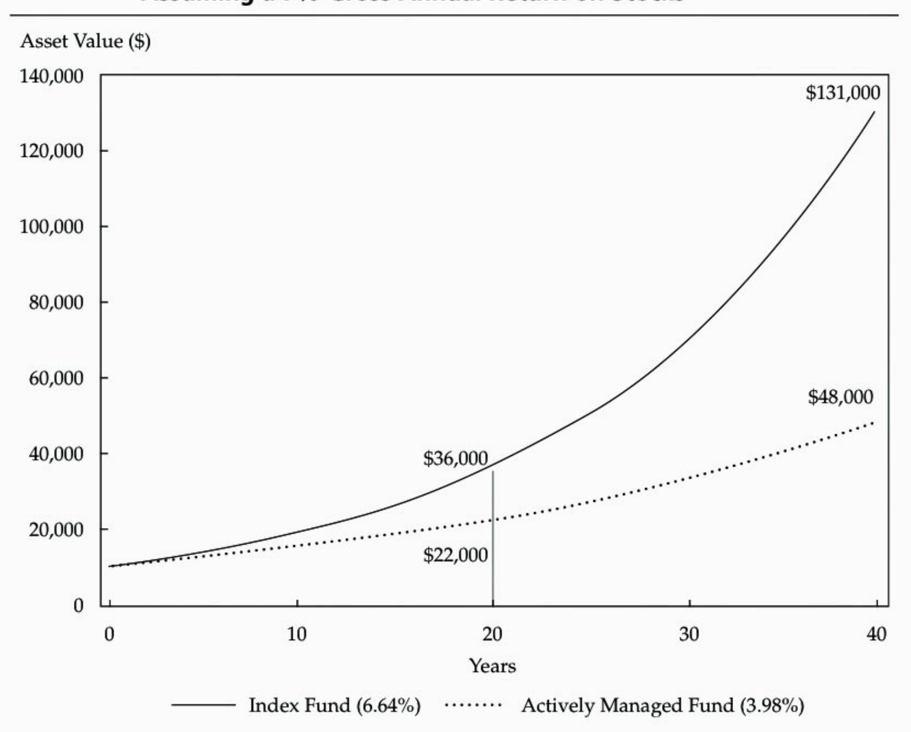


chart from a 2014 Bogle study

MODERN PORTFOLIO THEORY (MPT)

Harry Markowitz introduced his idea of "Portfolio Theory" in the 1950s. When it later began to gain traction in finance, he said "There's nothing modern about it."

William Sharpe extended this idea with his development of the *capital asset pricing model* (CAPM). Markowitz was his mentor. They both worked at RAND in the 50s.

In 1990, Markowitz and Sharpe earned the Nobel Prize for their early work in MPT.

BASIC FEATURES OF MPT

- Risk-return trade-off: The more risk you take, the higher your expected return and vice versa. Less risk, less return.
- Diversification: A collection of investment assets (portfolio) should have less risk as a whole than any individual asset.
- Low Correlation: In order for these statements to be true, our portfolio assets should have independent drivers of their return i.e. low correlation.

We will discuss the CAPM in more detail in Week ???

RAND
CORPORATION

MPT ASSUMPTIONS

1. Portfolio risk is based on the *variability* of portfolio returns.
2. Investors are *risk averse*.
3. Investors prefer to consume more.
4. Investors are rational.
5. Analysis is based on a single period model of investment.
6. An investor either maximizes his portfolio return for a *given* level of risk OR maximizes his return for the *minimum* risk.
7. The investor's *utility function* is concave and increasing, due to his risk aversion and consumption preference.

Application

First, we determine an *efficient set* of portfolios in relation to an *efficient frontier*.

Then, we select the most appropriate portfolio for our needs from the *efficient set*.

RISK PREFERENCES

- <u>risk tolerance</u>: the willingness to accept higher risk to attain higher expected returns
- <u>risk aversion</u>: its opposite, an investor's unwillingness to accept risk

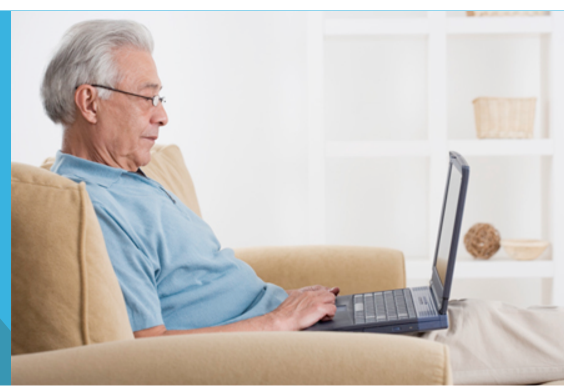
TABLE 21.1

Amount of risk investors said they were willing to take by age

	Under 25	35–54	55 and Over
No risk	54%	55%	71%
A little risk	30	28	21
Some risk	14	16	8
A lot of risk	2	1	1

Source: From Market Facts, Inc., Chicago, IL. Reprinted by permission of Market Facts, Inc.

Do these prevailing attitudes make any sense? If we remove emotion, what should these numbers look like? What is the most likely way for us to end up the retirees on the right and not the guy on the left?

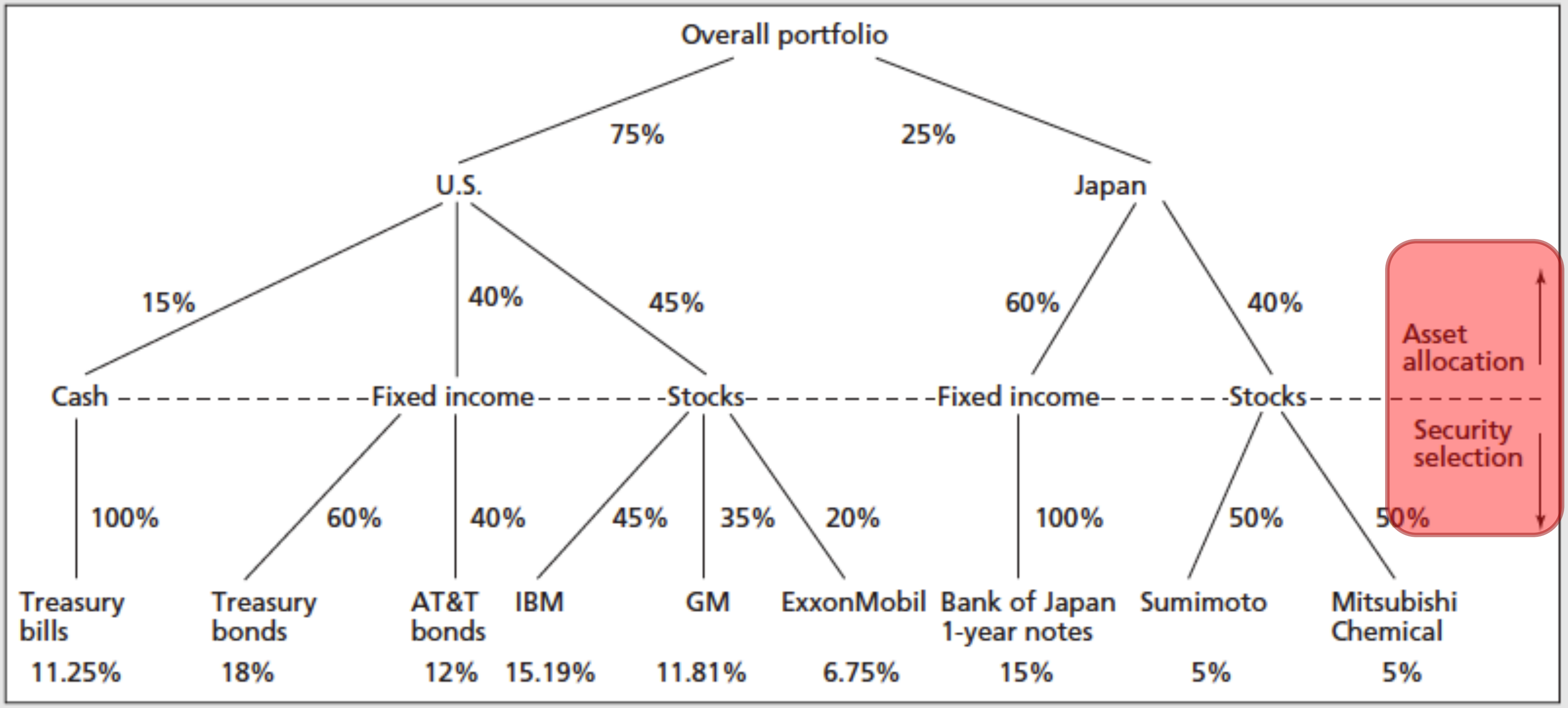


A JOKE. NOT A JOKE.

HOW SHOULD I CONSTRUCT A PORTFOLIO?

1. *Risk and return objectives* should be defined according to the needs and tolerances of the investor (individual/company/government/intermediary)
2. *Constraints* must be established, according to the TUTLL mnemonic.
   - **T**ime Horizon
   - **U**nique Needs
   - **T**axes
   - **L**iquidity
   - **L**egal & Regulatory
3. Create an *Investment Policy Statement* (IPS) that recognizes 1 and 2 and outlines preferred *asset allocation* for broad categories of dissimilar financial asset types.
4. Begin *security selection* according to these parameters.

ASSET ALLOCATION V. SECURITY SELECTION



This example is from your BKM textbook. We can also use this graphic to explain the difference between top-down and bottom-up approaches to investing.

Can you guess the difference?

TOP-DOWN V. BOTTOM-UP APPROACHES

Top-down approach (Macro)

Because of the huge risks involved with managing millions of dollars, a large infrastructure of bureaucracy governs investing choices at institutional investors.

An *investment committee* of various officials oversee the creation of an investment policy statement (IPS) for various funds and clients, approving an acceptable *asset universe* from which a *portfolio manager* can select specific securities.

Bottom-up approach (Micro)

This approach emphasizes a significant level of analysis, usually of the “boots on the ground” variety, at the level of the individual corporation.

By first choosing individual securities to go into the portfolio, these types of *portfolio managers* believe they can generate superior returns that avoid the impact of the economic cycle. They believe they can identify value where the market does not currently reflect it.

We will discuss the differences between these two approaches in more detail in Week 2 (top-down) and Week 3 (bottom-up).

NEXT WEEK: PRINCIPLES OF SECURITY VALUATION

PROF. K. @ EAST CHINA NORMAL UNIVERSITY