

# 1

- Structure we do things on a large scale
- allocating resources through time and space
- incentivizing people to do productive things
- sponsoring ventures, fairly treated
- managing risk

banking, insurance, securities, futures, derivatives, financial curr., future

not adapt  $\Rightarrow$  CUTE

diversify

portfolio theory  $\Rightarrow$  diversify no crisis

# 2 mathematical & probability theory oriented thought:  $\exists$  time horizon before we forecast the financial crisis

$$\text{Return rate}_t = \frac{P_{t+1} - P_t + \text{Dividends}}{P_t} \in (-1, \infty)$$

$$\text{Gross Return rate}_t = 1 + \text{Return rate}_t \in (0, \infty)$$

$$\rho_{XY} = \frac{\text{Cov}(X,Y)}{\sqrt{\text{Var}(X) \text{Var}(Y)}} \leftarrow \text{unitless} \quad -1 \leq \rho_{XY} \leq 1$$

$$\text{Cov}(X,Y) = E[(X - E(X))(Y - E(Y))]$$

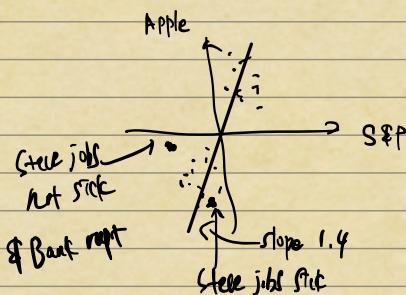
VaR (Value at Risk)  $\leq 1\%$  loss from in a year (optimistic, too optimistic)

LLN

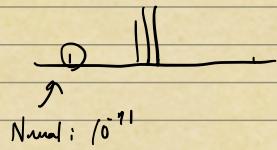
$$\boxed{X_1 \text{ vs. } \frac{X_1 + X_2}{2}}$$
$$\sigma \Rightarrow \frac{\sigma_1 + \sigma_2}{2}$$

GARCH (Alternative to VaR)

$$\text{Return}_t = \underbrace{\text{Market return}_t}_{\beta \cdot R_{S&P}} + \underbrace{\text{idiosyncratic return}}_{\Rightarrow (\infty) \text{ yr 2008 - Steve Jobs Sicks}}$$



Random shock is NOT normal distribution



indep't across stock, time  $\rightarrow$  diversify

$\xrightarrow{\text{LN}}$  safe

#3 Beta  $\Rightarrow$  slope  $\Rightarrow$  "Alpha"

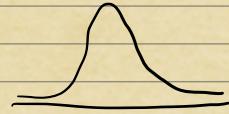
Market return and idiosyncratic return are uncorrelated by construction

( $X$ ) ( $\varepsilon$ )

$$\text{CLT} \quad \frac{\bar{X}-\mu}{\frac{\sigma}{\sqrt{n}}} \xrightarrow{d} N(0,1) \Leftrightarrow \lim_{n \rightarrow \infty} P\left(\frac{\bar{X}-\mu}{\frac{\sigma}{\sqrt{n}}} \leq a\right) = \Phi(a)$$

(given  $E(X^2), E(X) < \infty, X_i$  iid)

Observe  $\Rightarrow$  average of some sets  $\rightsquigarrow$  can present bell-shape curve



Fat tail distributed by Paul Pierre Lévy

1970 No option exchanges

No futures

No swap

finance  $\begin{cases} \text{manage risk} \rightarrow \text{equity} \\ \text{opportunity} \rightarrow \text{inequality} \end{cases}$

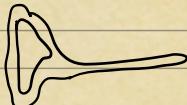
[ (progressive) Tax  
Welfare ]  $\Rightarrow$  important risk management devices

+

finance What we do in class

$\left. \begin{array}{l} \text{Risk theme} \\ \text{Funding theme} \\ \text{Contract variation we have w. something} \\ \text{device theme} \end{array} \right\}$

Gintek



wheeled suitcase - Bernard Sadler 1972

Robert Plott 1991

Invention process is slow.

\* Corporation  $\hookleftarrow$  Latin word: "Share owned mutually by people in the company"

\* Limited Liability: 1811 New York  
David Hume  
"you can't sue shareholder" ( $\Leftrightarrow$  even if you can demand shareholder's house, car, etc)

$\hookrightarrow$  Massachusetts opposite law

Result: No one did business in Massachusetts

psychologically appealing gamble (no upper limit), like gambling

\* Township Village Enterprise (TVE)

↳ permission from mayor & share profit

$\Rightarrow$  led to success

\* Inflation risk

· Most debts nominal (framing)

1980 Massachusetts government

$\longrightarrow$  1997

: indexed bond (like CPI in British pound)

Why so long after? Maybe psychological barrier?

↑ return: war in the US; lack of inflation in the US

New 6% of US debt

\* Chile

Peso  $\rightarrow$  Escudo (1960)  $\rightarrow$  Peso (1975)

Invention: "Unit of Development" (1969): reflect inflation  
(UF)

Merco: UDI

1979 1 UF  $\frac{450 \text{ pesos}}{1 \text{ UF}}$   $\frac{5 \text{ mil}}{21468 \text{ pesos}}$

Why not index to inflation? IDK.

\* SWAP. 1980  
(by David Sorenson)

ISDA (International Swap and Derivatives Association) - lobby lawmakers for laws that permit swaps to work efficiently & effectively

(ex) Currency swap: decide rate for every month for the next 5 yrs.

Like if Americans doing business in Europe: want EUR  $\rightarrow$  Dollar

(ex) Credit default swap

Protection buyer  $\rightarrow$  Protection seller  
money  
regularly

Bankruptcy:  $\leftarrow$  money

more like  
business

(ex) Credit Insurance 19th century  $\leftarrow$  regulatory limited  
 like cartels. (insure losses, avoid bad terms, etc.)

2008 : Failure of CDS market

## #4 Portfolio

Vereenigde Oost-Indische Compagnie 1602 - Limited liability Corporation (19th NY & make all expenses limited liability)

Amsterdam Stock Exchange (VOC)



stock brokers  $\Rightarrow$  facilitate trading

Broker started selling stocks they didn't own (short selling)

the person who reports to the exchange  
 (street name)

Isaac Le Maire 1609 sold more than he has (Broker agrees)

$\rightarrow$  price ↓

$\rightarrow$  buy at cheaper price

1609-1611  $\rightarrow$  burned short selling

\* Leverage Equity premium puzzle (going)

Signal: 1891-2006 6.8% / yr. currency inflation

(10% / yr nominal vs. 2.8% short-term bond)

Standard Answer: Risk

Markowitz 1952 : portfolio management  $\rightarrow$  "diversify" (Before him, people said "Don't put eggs in one basket" but they didn't solve it completely)

Myron J. Scholes, 2000

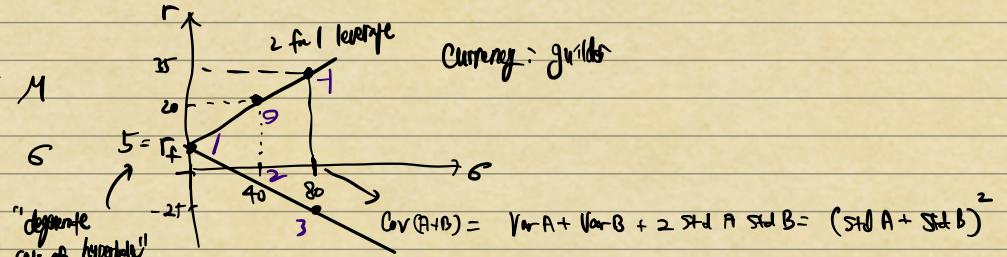
$r_f$   
 riskless rate  
 (ex: 5%)

$$VOL = 20\% \cdot M$$

40%, 6

"degenerate case of hyperbole"

debt 100  $\rightarrow$  buy 100 guilder: 35% expected return



(ex) Short 200 guilders of VOC stock.

: sell VOC stock by borrowing from broker.

broker  $\xrightarrow{\text{Stock}} \text{Me} \xrightarrow{\text{sell}} \text{Person}$

A	B
+30 (300)	-200

Sure Percent Money

lose 40 by selling 200 guitars

$$(100 + 200) \times 0.05 = 15$$

$$ER = 15 - 40 = -25$$

\* There is no optimal portfolio: it's a matter of trade-off

$r_i$  for Asset I,  $r_f$  for riskless asset

$$r = r_i x + r_f (1-x) \rightarrow x = \frac{r - r_f}{r_i - r_f}$$

$$\text{Var}(\text{return}) = x^2 \text{Var}(r_i)$$

$$\sigma(\text{return}) = \sqrt{\frac{r - r_f}{r_i - r_f}} \sigma(\text{return}_i)$$

$$(a) \sigma \approx \infty \approx r$$

$$r = r_i x + r_f (1-x)$$

↗ .2      ↘ -200      ↘ .05      ↘ 300       $\Rightarrow 25 - 40 = -15$   
 ↗ 200      ↘ -100       $\Rightarrow 40 - 5 = 35$

allowing \$1 instead of 100 guitars before

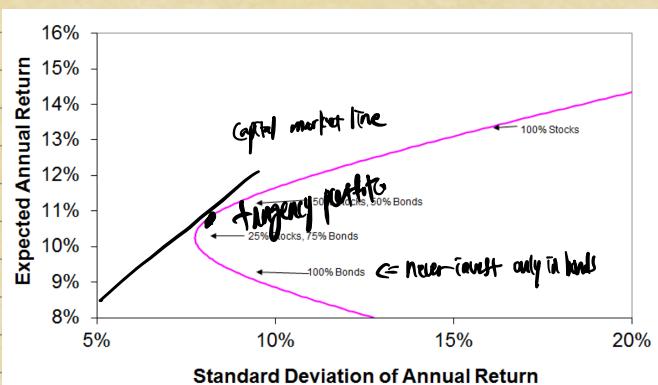
\* Now, two assets

$$\text{Var}(r) = x_1^2 \sigma_1^2 + (1-x_1)^2 \sigma_2^2 + 2x_1(1-x_1) \sigma_{12}$$

$$r = x_1 r_1 + (1-x_1) r_2$$

$$\Rightarrow x_1 = \frac{r - r_2}{r_1 - r_2}$$

$$\sigma^2 = \frac{(r - r_2)^2}{r_1 - r_2} \sigma_1^2 + \frac{(r - r_1)^2}{r_1 - r_2} \sigma_2^2 + 2 \frac{(r - r_2)(r - r_1)}{r_1 - r_2} \sigma_{12}$$



Avg stock market from S&P from 1971 to 1991 (1 yr investment)

\* 3 assets

### Merton's Capital Allocation Theorem

Investment company aimed at a retail audience

if investors follows Markowitz model

$\Rightarrow$  Market portfolio = Tangency portfolio

CAPM: Covariate of Asset & Market is important.

$$r_i = r_f + \beta_i (r_m - r_f)$$

$\nwarrow$  market portfolio

$$\text{Sharpe Ratio} = \frac{R(\text{portfolio}) - R_f}{\sigma(\text{portfolio})} \quad ( \underbrace{\quad}_{\sigma(\text{portfolio})} \quad \underbrace{\quad}_{R(\text{portfolio}) - R_f} )$$

Don't be fooled by "average return" Need to check Sharpe Ratio. (might have high leverage)

### #5. Risk management (Institutions) - Insurance (separate from finance?)

"Risk pooling" Ancient Rome - death insurance

1609 - document  $\rightsquigarrow$  collect 1% money in case of fire

Maturity document  $\rightsquigarrow$  sell death insurance

$$\sigma = (P(1-P)/n)^{\frac{1}{2}} \quad \text{assuming independence}$$

$\uparrow \rightarrow$  uncertainty  $\downarrow$  = risk pooling

$\frac{X}{n}$  proportion of success

Marl hazard  $\Rightarrow$  fire insurance - burn down

Solution  $\rightarrow$  Not insure more than its worth

Selection bias Create clause etc.

\* AIG 1919 - started in Shanghai

Greenberg 1962

Real estate failure assumed to be independent. But they were correlated

\$ 182 billion  $\rightsquigarrow$  bailout

Paid it from TARP (Troubled Asset Relief Program)

Systemic risk  $\downarrow$  (lots of insurance disappearing, banks are failing)

But stock price ↓

July 2009 1:20 split (reverse: combine 20 into 1 share)

\* \$25000 limit : Federal deposit insurance corporation (FDIC)

\* Insurance guarantee funds (insure when insurance company goes down)  
State

↳ like FDIC, only protect little amount, NY bank

\* McCarran-Ferguson Act in 1945 - insurance regulation is entirely for state governance

\* National Association of Insurance Commissioners (NAIC)

↳ each state governors meet and discuss legislation

\* Dodd-Frank Act (2010)

\* Federal insurance office → look at systemic risk of insurance

doesn't really involve in insurance itself.

→ collect info about insurance company to prevent AIG type problem

(Maybe Non-independent)

\* Financial Stability Oversight Commission (F-SOC)

→ get the federal government involved if systemic risk is happening (Not the way AIG)

\* China Insurance protection fund (like state guarantee fund)

(limit: CNY 50000 (1 form))

Health insurance, one problem: doctors get incentives to take many procedures.

\* HMO 1973 (Health maintenance organization)

- Doctors not incentivized for procedure, - HMO plans for more than 27 employees.

EMTALA - any emergency should be taken care of "unfunded mandate"

→ didn't really solve the problem; still expensive

\* 2010

- \$700 /yr if you don't get into insurance

- Cannot say for preexisting conditions

\* Earthquake, terrorism/war risk; it's people worry most about  
(The Hostile) not indent

\* TRIA (terrorism risk insurance Act), 2002

\* catastrophe Bond (Mexico, repaid if no catastrophe)

- potential problem: not inferior to inflation, change in probability

## # Guest Talk

- ① Asset Allocation - diversification (equity oriented)
  - ② Market timing (electing portfolio: buy and sell too late) — don't want to do it
  - ③ Security Selection - negative zero sum game
    - backfill bias, Survival bias
    - (adding good record) (remove bad record)
- fund average 9.6% Wilshire index 9.9%
- 0.3%? No, survivorship bias: +∞
- (ex) 331 (1996) → 75% disappeared in 2001

Ineffortlessly priced asset classes → enormous reward (versus bond...)

Yale  
11% domestic equity  
14% foreign equity  
4% bond  
23% hedge fund (unlevered...)  
28% real assets (timber, oil, real estate...)  
14% private equity (venture capital...)

15% per annum return

Q. Hedge fund who? obsessed with beating the market

- \* { worries top down  
invest bottom up}
- \* Extend time horizon for investment opportunity

## # 7 Efficient Markets (half true)

Efficient Market theory - "Market efficiently incorporates all public information"

\* Sharpe ratio =  $\frac{\text{excess return}}{\text{std deviation of return}}$  Not used

\* Swanson : "Measuring std deviation of return is hard"

private equity, real estate (appraisal every 10 yrs...)

\* Goetzmann : can artificially raise sharpe ratio



If market is bad, for investor, much worse

## Integral Investment management

\* George Gibon 1899 "price = inflation - happens very fast."

\* Charles Conant 1904 "no stock market  $\Rightarrow$  blind, not a gambling"

\* Reuters  $\leftarrow$  carrier pigeon to speed up the information

\* Now, beeper, Internet  $\Rightarrow$  matter of 10 minutes  $\rightarrow$  Can't routinely beat the market

## Efficient Market theory - Harry Roberts (referred by Eugene Fama)

CRSP : organize the data (relation in finance), started

1969 Fama reviewed

1970's Schiller: no way to beat the market.

It died down

New Yorker article: Maybe enthusiasm caused such hype.

\* Technical analysis (McGee)  $\leftarrow$  analyst  $\Leftarrow$  David Swanson doesn't do it at all. (perhaps)

Resistance level : 1000

Head and shoulders

\* Random walk : only depend on news

news is unpredictable

so it's a random walk.

$\Leftarrow$  look like stock market

$$x_t = x_{t-1} + \varepsilon_t$$

$\sim$  noise (unforecastable)

(but still since very long for several dist.,  
there is no step decline/upward)

\* First order autoregressive : below trend sell, above trend buy  $\Leftarrow$  don't look like stock market

$$\hat{x}_t = 100 + \rho(x_{t-1} - 100) + \varepsilon_t$$

$-1 < \rho < 1$

$\rho = 0.5 \Rightarrow$  half as much elasticity less

$\rho = 0.99?$  Drunk w. looks erratic

# Bond etc.

\* 19th Century - theory of interest rate by Boehm-Bawerk

Why increase?

1) technological progress

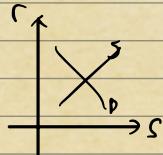
2) advantage to roundabout

3) time preference

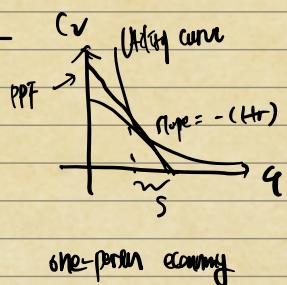
(labor economics)

\* Irving Fisher 1930

Theory of interest



Two period theory



technology

taste

PPF

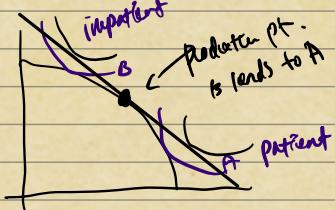
indifference curve

Interest rate

tangency btwn indiff & PPF

implication: interest charges  $\rightarrow$  tangency changes

$\Rightarrow$  all 3 Boehm-Bawerk causes



two-person economy

$$* (1+r)^T = \frac{b_0}{P}$$

YTM

$$P = \frac{b_0}{(1+r)^T} \quad T = 2T$$

\* Compounding Usually  $z = \frac{r}{2}$  half yr is more natural since you get coupon in that interval

$$\$1 \rightarrow 1 + \frac{r}{2}$$

$$1 + \frac{3}{4}r$$

$$1 + \frac{r}{2}$$

$$(1 + \frac{r}{2})(1 + \frac{r}{4})$$

compounding every 6 months

$$(1+r)(1 + \frac{r}{2})$$

$(1+r)^2$  annual compounding

i

\* Payment in T yrs

$\Rightarrow$  6 months

$$PDV = \frac{x}{(1+r)^T} \quad \text{or} \quad \frac{x}{(1+2)^t} \quad t=2T$$

$\underbrace{1\text{yr}}_{1\text{yr}} \quad \underbrace{1\text{year}}_{6\text{months}}$

\* Continuous compounding

$$e^{rt}$$

$$PDV = \sum_{t=1}^{\infty} \frac{x_t}{(1+r)^t} \quad \text{annual payment}$$

$$PDV = \sum_{t=1}^{\infty} \frac{x_t}{(1+\frac{r}{n})^t}$$

$$PPV = \int_0^{\infty} x_t e^{-rt} dt$$

\* Consist (perpetuity)

Contra £1

$$PDV = \frac{\mathcal{L}1}{r} \quad \mathcal{L}1 = r \cdot PDV$$

\* Annuity

$$\sum x_t \quad t=1, \dots, T$$

$$PDV = \frac{1}{r} \left( 1 - \frac{1}{(1+r)^T} \right)$$

Conventional bond pays contra C every 6 months

and principal plus at the end.

\* Forward interest rate (1939, "Value in Capital")

Term Structure 1925

1 yr expect to have £100 1926

2 yr Buy in 1925  $\frac{(1+r_2)}{1+r_1}$  bond

3 yr  
⋮

Short one 1-period bond

$$1+f = \frac{(1+r_2)}{(1+r_1)}$$

1.00:28

expectational theory:

forward rate = expected spot rate

- There's an abuse of interest rate.

## #9 Corporate Stocks

"Fraction of GDP"

Health vs. Stock market

\* Not that big \$4000 billion in US = US stocks ; don't buy & trade < housing market

\* Increasing very few percentage ; family company  $\Rightarrow$  doesn't have stocks

\* Equity = shares (each share is equal)

\* even if you redistribute stocks , not solve that much

\* "Shareholder democracy" - elect. based on shares

\* Company  $\rightarrow$  chose state  $\rightarrow$  follow state corporate law

\* CEO - "Chairman of the board" in the US

not in Europe

### A Board of director

[ for profit

run profit  $\rightarrow$  no shareholders

$\Rightarrow$  Board of directors

\* Value of the share =  $\frac{\text{Total Value}}{\# \text{of shares}}$  Market cap (Iatization)  $\leftarrow$  Share "outstanding"

\* Dividend : when  $\frac{\text{the}}{\text{the}}$  Board of directors decide to do it  $\leftarrow$  the goal of for-profit  
if not, it's like Yale run by endowment

\* Young company - no dividend

Well... Microsoft  $\rightarrow$  never paid dividend

pay dividend  $\rightarrow$  share price falls (ex) - \$2.00 (Ex-dividend adjustment)

\* Some stock brokers alarm about dividend payment. "Hurry up and buy so you get dividend"  
 $\uparrow$  unethical.

It doesn't matter

since share price will be adjusted

\* Equity financing (alternative to financing by debt)

- Big companies? Not so much. Why?

Marx: "Stock = gravity"

\* Stuart Myers 1984 article

1973-1982

62% from retained earnings

6% from equity

Rest Debt

Maybe misleading

• Pecking order: own Money > bond > share

\* E. Fama k. French article (2005) ← Journal of financial economics

Well... shares above = new sales - repurchases  $\Rightarrow$  has to be low

- 1973-82 67% Company issued new shares  $\Rightarrow$  yes, corporate DCF's equity financing  
1993-2002 86%

# stock↑  $\rightarrow$  (share↑) for reason shareholder tax↑  
New different.

Terminology: Dilution ( $\Leftarrow$ ) Repurchase  
(very common)

kind ] Common Stock - Real ownership

Preferred Stock - Set dividend, don't have a vote. Like bond but can go bad, bankruptcy, etc.

"only when dividend is paid for preferred, common stock then can be paid"

US government bailed out GM by buying preferred shares

(Not want to be voter)

... later bought back

John Lintner: when does company pay dividend?

- if you stop paying dividend, it looks bad.

$$Div_t - Div_{t-1} = \varphi (\underbrace{\tau EPS_{tf}}_{\text{if you earn a lot you increase dividend but generally, conservative}} - Div_{t-1}) + \varepsilon_t$$

$$0 < \tau < 1$$

$\varphi < 1$  if you earn a lot you increase dividend but generally, conservative

## # Real estate

Mortgage lending, commercial real estate finance, residential real estate finance ...

- \* Mortgage : Mortgagor Vadium (debtors pledge) ← origin  
borrows "age" later
- (ex) Middle East → China 1m yrs ago
  - used to mortgage sheep/property when borrowing money
- \* In the past law of ownership & terminology wasn't clear enough for property to do the mortgage (property rights)
- \* 1892 Grundbuch law : central book about ownership in practice

May be reason why it's still under developed in less advanced cities

Hartford Courant anecdote

### \* Commercial real estate

real estate partnership ←→ Corporation

only available to accredited investors

Securities and Exchange Commission

↓  
Ppl who don't need a protection of SEC are allowed

= wealthy people

→ can invest DPP (Direct participation program)

New income flows to you & a personal income

(Not corporate income ⇒ so taxed only once)

There is DPP end date (versus stocks which is permanent)

{ general partners - run the business : can get sued  
limited partners - passive investors : limited liability

\* subject to criticism. Why benefits for wealthy ppl

\* Real Estate Investment Trusts (REIT, 1961) - can invest in building

- not subject to the corporate profit tax

↳ 75% of the asset has to be real estate or cash

75% of income has to be from real estate

:

1960s boom

1980s Estimate lots of advantages of partnership → second REIT boom

1990s real estate boom ⇒ lots of new REIT appeared

① Financial Innovation takes long time

② Trend toward democratization of finance

\* Residential real estate

Great Depression 1930 → housing crisis

Homeowners loan corporation: to bail people out

Before GD, [ 2-5 yrs ]  
balloon payment  
 $1000 = \frac{5000}{5} + \frac{5000}{5} \times r$

Pay interest rate for 2-3 yrs, and then at  
last month you pay four dollars  
If not you may renew

④:  $u \uparrow$   
House price  $\downarrow$  ⇒ declare bankruptcy  
lost \$5000 downpayment  
renew refused

1934 Federal Housing Administration — started insuring mortgages (government will make it up)  
— Introduce long-term mortgage (15 yr Amortizing)  
→ Balloon payment

1950: 30 yr mortgage

1st type: Mortgage balance  $\frac{X}{r/2} \left( 1 - \frac{1}{(1+r/2)^n} \right)$

Called conventional fixed rate mortgage

Now used heavily in US & Denmark

Why not? ① public resistance

② Risk for bank (can't liquidate fast enough)

\* Mortgage Securitization business:

\* 1938 Federal National Mortgage Association (government backstop mortgage market)

1968 Government privatized Fannie Mae

Buy mortgage from the bank & encourage mortgage market

1970 Freddie Mac: repurchase mortgage & sell → prevent the bubble

Private but end up guaranteed by financial crisis.

\* Canada Housing Mortgage Corporation (government-owned Mortgage Securitization business)

↳ smaller, didn't have heavy bubble

(CMO/CDO)  
\* Collateralized Mortgage / debt obligations sold off over the world

Mortgage Servicer

→ Strictly

Dodd Frank Act : remove moral hazard problem and reform Mortgage Securitization process

(ex) cannot sell mortgage to bad credit risk

originator keep 5% when they sell

:

## # 11 Behavioral Finance & Psychology

\* People sometimes behave stupidly.

\* Business doesn't treat people terribly, generally...

\* Motivation is also important, so you don't necessarily exploit people generally  
(Moral, impulse)

→ about psychology, morality

- Adam Smith "The Theory of Moral Sentiments" 1759

"Wealth of Nations" 1776

- firms derive far more from the desire for praise than from

\* Antisocial disorder (ASD)

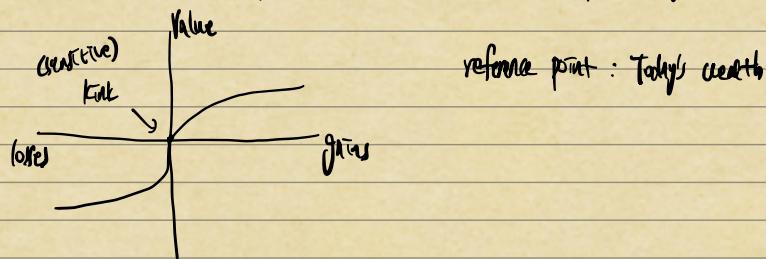
\* Manipulative (ex) \$9.99 trailers

→ Finance is manipulative to this scale

### Behavioral Finance / Behavioral Economics

Prospect Theory : Kahneman & Tversky → How people form decisions about prospects (gamble)

① Value function



Can manipulate very easily (ex) funeral insurance, airline flight insurance, wedding ring insurance, ...

Limited

② Weighting function



(ex) Airport vending machine

- \* Regret theory - very much hate it.. behave in a way to avoid it.
- \* Gambling behavioral (every society has had it) - how to do w. self-image / competence [ I made it! - win  
I was unlucky - lose
- Stock market  
⇒ channeling gambling like treat into something productive

### \* Overconfidence

$$\begin{array}{lll} 5.5b - 8b & 6.901330881b & 80\% \\ 10^{20} \text{ kg} - 10^{40} \text{ kg} & 5.974 \times 10^{27} & 10\% \\ 8000 - 200000 & 6900 & 10\% \end{array}$$

⇒ anomalies & opportunities for manipulation

### \* Rakesh Khurana "Search for the characteristic CEOs"

tend to think CEO → genius. Most of them are lucky. Overconfidence

### \* Nassim Taleb "Fooled by Randomness": Most things in life are just chance

#### \* Cognitive Dissonance (Leon Festinger)

- Judgmental bias to not admit they're wrong can car ad experiment after buying a car deliberately avoid car not buying

(ex) Mutual fund performs badly - hang on

Interview → did not even know how badly they did (blocked out)

(ex) Financial advisor - don't challenge bad portfolio since they know cognitive dissonance

(or know from experience that challenging them will drive away)

### \* Anchoring: Stick to opinion that captures your attention

(ex) UK question → wheel: Give up with numbers close to the one on the wheel

### \* Representativeness heuristic (ex) head and shoulder

### \* Social categorization (subconsciously)

"Collective consciousness" → huge financial impact

Zerlegeit

maybe due to desire for  
perceived uniqueness

Many manipulation tactics have been outlawed now (securities of financial institutions)

### \* Michael Porter, HBR

"shared value" - long term management of company

\* Anne Bernick

"Economics of integrity" — Integrity does much more in business than what we thought  
too much disregard for the fact people do things because they're right

people failings  $\hookleftarrow$  overexaggeration

## #12 Misbehavior... etc regulation

- No exploitation + externality, monopoly, etc
- \* Big financial institution knows they'll get bailed out  $\rightarrow$  tendency to take more risk  $\Rightarrow$  problem

regulation ("too big to fail")

- + Microprudential - individual
- Macroprudential - system

\* Regulation is like referee for the sports game

$\rightarrow$  If regulation is bad, it's inevitable everyone does bad practice to survive in competition

### \* 5 levels of regulation

- (oldest)  $\rightarrow$  ① Within firm
- ↓
- ② trade groups
  - ③ local government (city, province, state, ...)
  - ④ National
  - ⑤ International

① Board of Directors — Impose regulatory standards

[ Inside Directors

[ Outside Directors (nothing to do w. firm)

For-profit: Tunneling (money from stockholder in the pocket of employee)

(a) Asset sales - low price to brother-in-law

Contracts - pay too much

executive compensation

expropriation of corporate opportunities

insider trading

BOD  $\Rightarrow$  moral obligation to avoid all these things

- { Duty of Care - duty to act as a rational person
- { Duty of loyalty - loyalty to the shareholders  $\leftarrow$

## ② Trade Groups

1792 Stock market crash in US

NYSE - Buttonwood agreement: Deceit encourage people to buy stock on margin (borrow)  
→ created a bubble → crash  
→ ppl agreed to not trade w. him  
→ bad guys out but created monopoly profits

1915 Mayday: SEC "no more fixed commission, impose competitive one"

↳ beginning of the national market system: any broker can participate in any exchange  
→ broke the monopoly

1986 Big Bang (British counterpart to Mayday)

still regulate stock deals, etc.

## ③ Local regulator

Early 1900s Blue Sky laws - state level security law (later federal level)

Telephone in 1920s (thing between national level) → problem

National level: 1934 SEC (Securities and Exchange Commission) ↗ Wall Street was very antagonistic  
↳ William Dugan first director (3x bank)

SEC wanted disclosure "Sunshine is disinfectant"

Edgar system (online information system) SEC.gov ↗ all info on public companies

② Arthur Levitt ("Take on the Street")  
↳ bank

\* protect small investors by managing the distinction b/w public / private securities

→ rules of IPO (Initial Public offering) & stay in private

Hedge fund: investment company for wealthy individuals only

Small individuals need to be protected ⇒ lots of regulations for fund that's offered to the public

3C1 funds: ~99 investors (Accredited)

3C7 funds: ~500 investors (5m for individuals, 25m for institutions)

\* 2 and 20: 2% of assets under management goes to managers every yr  
20% of trading profit go to managers

\* Market Surveillance: SEC & stock exchanges ↗ prevent manipulative behavior

\* FASB (Financial accounting Standards Board) - improve reporting

→ defined GAAP (Generally accepted accounting principles) - how financial statement is prepared and presented in the US  
↳ in Edgar

\* SIPC (Securities Investor Protection Corporation, 1970)

- insure small investors from broker failure

FDIC company that insures bank account

\* Franklin, failed in 1990

↳ brokerage firm

④ National

US 2010 Dodd Frank Act FSOC (Financial Stability Oversight Council) - systemic risk

↳ BCFP (Bureau of Consumer financial protection) - put

more

Small Investors

↑

previously, more on disclosure

Europe

ESF (European Supervisory Framework, 2010)

1. ESRB (European Systemic Risk Board) → like FSOC

2. EBA (European Banking Authority)

3. ESMA (European Securities Market Authority)

4. EIOPA (European Insurance and occupational pension authority)

⑤ International ↗ important ppl can upgrade if they don't like particular regulators

\* BIS (Bank for International Settlements), 1930

↳ central banks, meet regularly in Basel (can't mandate, but can suggest)

\* Basel committee, 1974

Basel I 1988

Basel II 2004

Basel III 2010

\* 1970: F6

1976: F7

2008: G20 discuss financial regulation

report ↗ FSB Financial Stability Board (Basel)

## # 13 Banks

Important invention in the history

{ not investment bank: no deposit, underwriting securities  
not central banks

Bank: spread income margin (borrow lower rate, loan higher rate)

note issue (UK, Hong Kong) → in the past

① liquidating - borrow short & lend long → crisis (potentially)

Origin 1) [ Silversmith - bank  
Sug. Money - paper money

⇒ Italy - Renaissance time: Banca Monte dei Paschi, first bank

(1472)

→ deposit insurance

no interest rate

⇒ Goldsmith bank (England) - 17th century: gold in the vault. Issue "note" to specific lender → note to bearer  
↓ start lending gold as well

- Types of banks

US

• Commercial bank - business loans  
2010 \$ 14.6 Trillion total assets

↑ not - bank

(\$ 10.1T US chartered banks, rest foreign)

create & let of mortgage loans  
• Savings bank \$ 1.2 T. - old, grew very large over time  
• Credit Union \$ 0.9 T

① - ③ Role of bank!

Diamond-Dybvig model (Journal of political economy, 1982)

⇒ multiple equilibrium (good equilibrium, bad equilibrium: bank run)

⇒ Bank run can occur ⇒ impose deposit insurance

Bank run can occur from random shocks (ex) Real estate bubble

④ \* Adverse Selection problem - Plagued by security asymmetric info., for corporate bond vs commercial bank three investment bank  
→ bank runs who's better

⑤ \* Moral hazard - constant monitoring, officially short-term / effectively long-term loans  
so that they don't do dangerous investment

\* Deposit insurance 1933 FDIC (Never failed.)

\* FSLIC (Federal savings and loan insurance corporation) → did fail in 1980s → no longer exists

S & L crisis 1980s \$ 150B tab from government

→ now insured by FDIC

Northern Rock bank run → long time → British Government bailed them out

Full £ 3000

90% £ 27,00

(No bank run since 1866 in UK)

Germany IKB Deutsche Industriebank  $\Rightarrow$  trouble in 2007  $\Rightarrow$  bailed out

\* Bank regulation (so bank does not do risky business)

Basel I 1988

Basel II 2004 - right after financial crisis

Basel III 2010

- Basel I

Risk weighted Assets

Capital requirements (cannot take too much risk) 3.3% Fazilität

0% 20%, 50%, 100%, weight (risk)

0% OECD government bond

US government bond

20% municipal bond

Fannie & Freddie

50% mortgages

100% Loans (for businesses)

Ex \$ 400

\$ 100 Govt  
\$ 100 Fannie  
\$ 100 Mortgage  
\$ 100 Commercial bank

$\Rightarrow$  RWA: \$ 170  $\Rightarrow$  RWA %, amount of capital bank has to hold

- Basel II

Common equity must be 4.5% of RWA at all times + 2.5% capital conservation buffer

= 7%

↑  
dividend

+ countercyclical buffer (2.5%)

stop bubble before they burst!

$\rightarrow 9.5\%$

$$100 \times 0.07 = 11.9 \text{ m}$$

Say everything - liability - preferred equity = 12.9 m

$$\frac{1}{0.2 \times 0.07} = 70 \quad \text{so you can buy 70 m Fannie.}$$

or lend 14 m commercial loans

If chose Fannie, it was like giving loans to bad-credit ppl very much (criticism on Bush II)  
instead of encouraging small businesses

- Mexican crisis 1994-5

1988 lending 10% of GDP

1994 lending 40% of GDP (forgot to regulate bank)

→ Bubble / Boom & ppl thought government would bail out anyway

→ Mexican banking system destroyed, taken over by foreign banks

Recovered though

- Asian crisis 1997

International banks lent a lot of money to Asian states

They suddenly wanted to withdraw money from Asian states (the bank run)

Russian Debt Crisis

Brazil

↓  
Contagion effect

- Argentine crisis 2002

↳ shadow banking systems (not bank → not regulated, but not the bank)

Lehman Brothers, Bear Stearns

Innovation → harder and harder to understand

Trend: Instead of shutting down, regulate.

FF 15 Futures. & Forward → more specialized, not clear/easy

↳ more precise/developed concept, standardized. Prof: Why not more important?

## Futures

↓ } derivatives (price derived from some other market)  
forwards

{ primary/underlying market: has its own market  
derivative market: future's price

Charles Gann "Wall Street and the Country"

Q. Store grain, anticipate selling at higher price. grain shortage or not?

NY: 66% shortage will be more common (very anchor)

Moscow: 44% ↓

Well ... speculation enabled ppl to consume grain at downturn!

• Started in Osaka in 1600s

Rice warehouse - contract w. local merchant → problem is that contract must be honored if price ↑  
↓ forward market price ↓

Trading floor in Osaka: Standardized contract mediated by exchange

↑ trading hours

hand signals (too bad)

Sociopath

⇒ Becomes a market. ppl even quote future market price as their price now

rice futures (price anticipated to rise)      ↗ Speculators  
"cartago"      ⇒ ppl might store & try to sell later.  
↓      ⇒ bad for society

delivery future price "backwardation"

Athas Smith: Self-interest can do more in welfare than any other benevolent ppl combined

Forward → Counterparty RISK!

Futures market gets rid of counterparty risk - standardized retail market that anyone can be in  
BUT you have to post margin

Margin account \$500 initially ± daily: "daily settlements"

Buy/sell futures ~ broker take out/put money in your account

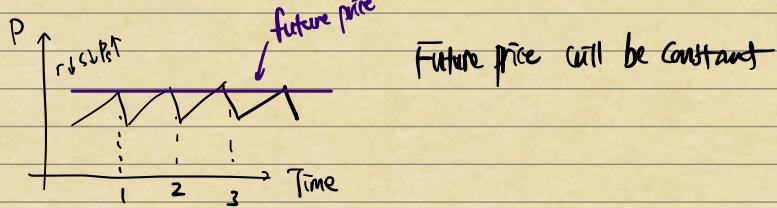
futures market = storage market

$$P_F = (1+r+s) P_s$$

↑ interest rate      ↑ spot price (price today)

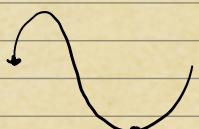
before now      storage  
and maturity cost %  
of contract %

↑ future price      ↓ generally  
for value      → maturity date  
w.o. uncertainty w. maturity at the peak.



\* oil sale is through long term contract

\* spot price is quoted future price



$$P_F = (1+r+s) P_s \rightarrow \text{"only holds when commodity in storage"}$$

$$P_F < P_s ; \text{ what happened?}$$

Convenience yield ; storage cost can get negative in some sense

Nationalization of oil      Mexico 1938  
Iran 1951

1st oil crisis 1973-1974  $\Rightarrow$  prompted to creation of futures market (hedge the price fluctuation)  
due to OPEC (1961 Qatar, 1962, Libya, etc) - a new monopoly (US x)

2nd oil crisis 1979-1980      Iranian revolution

Iran-Iraq war

$\rightarrow$  Worldwide recession

2nd Iraq war - surge in mid 1980. (Futures backdated)

S&P 500 Index futures

Cash Settlement      dividend yield %

$$P_F = (1+r-g) P_s$$

↑ interest rate %  
↓

$\Rightarrow$  Futures curve is not very interesting

short term  $P_F < P_s$  ( $r > g$ )

long term (?)

\* S&P 500 is very hard to forecast

\* Gold futures curve is not interesting similarly.

Buy to store

## # 16 public sector

## # 17. Options

[ Call - right to buy at Exercise / Strike price  
put - → sell ]

Exercise date

American option : any time until exercise date

VI (better)

European option : only on exercise date

(ex)

home mortgage : price drops → walk away (not exercise)

Stock market : → exercise price

Role of option

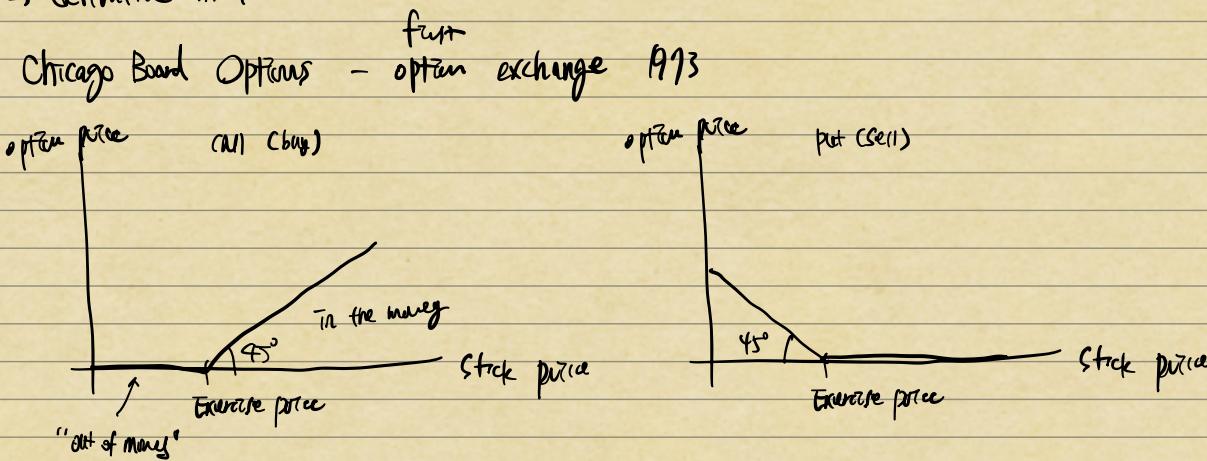
1) Theoretical : give "price" → make business work.

2) Behavioral : attention & salience

(ex) Incentive options , insurance (house burned down - put)  
↳ price of mind

\* Naked seller of an option - don't have to own

⇒ derivative market



[ buy call  
write put ] = 1 call - 1 put



$$\text{option price} = \text{Stock price} - \text{exercise price}$$

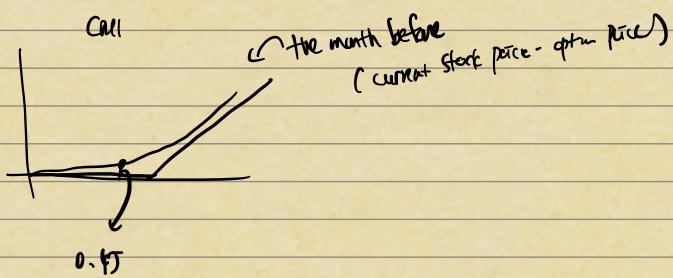
\* put-call parity (exercise date)

$$\text{Stock price} = \text{Call price} - \text{Put price} + \text{Exercise price}$$

, how much you'll get if price = 0

Stock price: call price - put price + pdv(exercise price) + pdv(dividends)

↳ arbitrage opportunity x



Want to get money off  $\Rightarrow$  sell option, don't exercise early

European - American option not that different

### Binomial option pricing

$S$  = stock price (today)

$u = 1 + \text{fraction up}$

$d = 1 + \text{fraction down}$

$C$  price of call  $\begin{cases} C_u & \text{if price } \uparrow \\ C_d & \text{if price } \downarrow \end{cases}$

$E$  exercise price

$H$  Hedge ratio = shares/options

write 1 call buy  $H$  shares

if up  $uHs - C_u$ )

if down  $dHs - C_d$

$$H = \frac{C_u - C_d}{(u-d)s}$$

$$(1+r)(Hs - C) = uHs - C_u = dHs - C_d$$

Solve for  $C$

$$C = \frac{1+r-d}{u-d} \frac{C_u}{1+r} + \frac{u+1-r}{u-d} \frac{C_d}{1+r}$$

↳ option price formula

(derived from no arbitrage condition)

↳ worthless profit opportunity

Implied Volatility ( $\sigma^2$  in Black Scholes)  $\Rightarrow$  can be calculated from Black Scholes

options market's opinion as to how volatile stock prices will be between now and exercise date

(Appendix)

$$\lim_{n \rightarrow \infty} \left(1 + \frac{r}{n}\right)^{nT} \Rightarrow e^{-rT} \text{ instead of } \frac{1}{(1+r)^T}$$
$$= e^{-rT}$$

## #18 Central banks

Föllmisch - gold standard (this system until 1970)

Bank of England 1694 bank  $\neq$  sell / issue shares

could force any banks to bankruptcy (had notes for other banks)

"If you are a bank in the UK, you need to keep a deposit with us"

$\Rightarrow$  Stability (keep deposit, sometimes lend money) to the banking system

BOE finally ended to follow in 1997.

In the US, Suffolk bank, 1819, Boston. acted just like BOE ~ 1860

1863 National Banking Act (try to get benefit of CB w/o. actually funding one)

NYC, "first national bank of" anyone: they had to keep deposit on the Treasury Capital to back their National Bank Notes Currency

$\Rightarrow$  lent well (no discount for currency from another eg.)

Yet, currency stable x, bank runs, etc.

Banking crisis in 1893, 1907, ...

$\Rightarrow$  Copy Bank of England

\* Federal Reserve System (by Congress in 1913)

Washington DC, BOG (board of governors) + 12 regional banks

require currency in their vaults + deposit in Federal Reserve

\* Lender of last resort, discount window (special window at the Federal Reserve Bank for banks to come)

$\nearrow$  if bank got in trouble, visit discount window & show securities as collateral.  
less than face value of security

[ reserve requirements  
capital requirements ]

< 1929, bank started to fail  $\Rightarrow$  peak at 1933

catastrophic bank run

\* FDIC established

no massive banking failure since then

Now CB takes a role as economy stabilizer as well.

\* Treaty in Maastricht, 1992 → EU

\* creation of euro (2002 ~) currency

\* ECB (1998~) : CB in each European countries' original purpose gave  
↳ biggest CB

\* Bank of Japan (1997) became independent from government

\* FOMC (Federal Open Markets Committee) - meet every month

→ decide Federal Funds Rate (range) Range: 0~0.25% → 0.12%

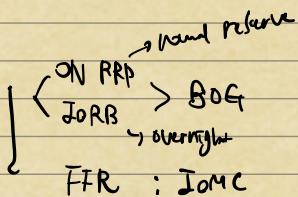
(overnight interest rate for unsecured loans between banks & financial institutions)

2008 EESA (Emergency Economic Stabilization Act)

Federal Reserve gives interest rate Now 0.25% ↗ in the website

↳ encourage the holding of reserve => New tool to affect economy instantly

0.25 > 0.12 ... Banks like might do FFR since they're not eligible for Federal Reserve



\* Reserve requirements

Regulation D : How much banks have to hold as a % of liabilities

10% of transaction accounts ↗ checking

0% of Time Deposits ↗ savings

⇒ money multiplier: 10

high powered money = currency + Reserves

Now bank has excess reserves. ⇒ due to incentive in reserve (interest rate)

\* Capital Requirements

• Risk-weighted asset

Bank II - credit ratings

Dodd-Frank act in 2010 reduces credit ratings

SEC 1975 NRSRO (nationally recognized statistical ratings organization)

(ex) Moody's, S&P ...

Challenge for US to respect Basel II while addressing adequacy for rating given

My bank

A	L	
\$80 deposits	\$100	RWA = 0 (Cash weight=0)
Corporate loans	\$100 cash in safe	+ 4.5% Common equity requirement
\$20	\$20 common equity	+ 2.5% Capital conservation buffer
120	\$0	7%
		↑ no risk of problem causing bank run
		only way: bring in new shareholders... (RWA=0 too in this case)

$$RWA = 100$$

$$100 \times 0.07 = 7 < 20$$

$$20 > 12$$

Response by selling corporate loans or issuing new shares  $\rightsquigarrow$  hard to do in crisis

(everyone doing it at the same time)

$\Rightarrow$  Central bank sells them (the lender of last resort)  $\leftarrow$  But maybe we can't / shouldn't ...

Basel allows for another 2.5% by CB if they think there's a bubble

DODD ACT: CB won't bail out for free. On a discount window basis.

## #1A Investment Banking

like consulting business

\* Underwriting securities & contact potential people who might invest

\* First time new shares = IPO

?

Secured offering

\* Bought Deal : we buy your shares and resell to others

{ Best efforts : doesn't buy. just place the offering

\* regulated by SEC

\* Solve moral hazard problem (ex) Soon-to-bankrupt company issue shares / IPO etc.

$\Rightarrow$  establish trust

\* Usually well-spoken, dressed well... some reputation built around

## Charles Ellis "partnership"

↳ Goldman Sachs was investment bank until recently  
now commercial bank ~~still not~~

Most highly respected / esteemed investment bank in the world

John Whitehead's principles (about customer, reputation, service  
fairness  
(charisma))

## 1933. Glass - Steagall Act

- investment bank can't do commercial banking, and vice versa
- created FDIC

J.P. Morgan had to decide → became commercial bank

Rebranded and form Morgan Stanley (investment bank)

## 1999 Gramm - Leach - Bliley Act

- can do both

Q. Did crisis in 2008 possibly due to  
Gramm - Leach ??

Outside of U.S. : Universal banking

✓ so ...

\* Paul Volcker : Volcker Rule at Dodd Frank Section 619

before: investment  
bank

=> prohibit proprietary trading (under pure investment bank)

↳ Goldman Sachs officially a commercial bank  
proprietary trading was huge part of profits  
=> could devalue rule to continue  
doing it

\* Blanche Lincoln at Dodd Frank Section 716

=> Swap dealers are banned access to the Fed discount window

## \* Shadow banking

- . Act like commercial bank but they're not so not regulated

e.g.) Lehmann Brothers (pure investment bank)

Repos (repurchase agreement) ← proprietary investment

- . a way to borrow money by selling securities or the promise of repurchasing later

→ heavy investments in subprime securities by borrowing through the Repo market (from big investors)

- acting like banks

Value of Security ↓ ⇒ runs ↑ ⇒ govt already saved Bear Stearns so couldn't save Lehmann

Now by Dodd Frank Act, investment bank is very much regulated

## # Institutional Investors

- \* part of the governance of the world
- \* Financial Advisor, Financial planner & ppl who manage money
- \* Household Assets / Liabilities
- \* Human capital

US National Income \$13T / yr

3% growth in real terms  
13T → 13T → ...  
↓ discount rate

$$\text{National Wealth} \frac{13T}{.05-.03} = 260T \rightarrow 30 \sim 40T \text{ Institutional investing}$$

World GDP \$62T

→ World wealth \$1.2T

(More will be managed by institutional investors)

- \* Investment managers, risk managers

Fiduciary duty - should act in the interest of ppl

prudent person rule (ERISA, Act of Congress in 1974)

what other ppl think is smart

N usual ppl

No risk tolerance

⇒ affect conservative strategy - buy lots of bonds

⇒ Definition of "prudent" has changed - ppl like David Swanson

→ part of the factors that led to crisis / bubble

Dodd Frank 2010

"prudential standards" - regulators decide what to invest for institutional investors

FSOC (financial stability oversight commission) - recommend leverage, standard

(Power shifting individual investor → Institutional Investor  
government)

- \* Financial Advisors - don't directly manage portfolios

but give advice what to do

SEC requires advisors to be approved by FINRA

(non government organization that administers an examination

- \* Organization of financial advisors : NAPFA (manage the relationship between advisor & public) → \$75 ~ \$700 an hour and education program for advisors)

- Financial planner (type of advisor)

- Mortgage brokers - until 2008, no license needed
  - help getting mortgage

Why kinds of institutional investing?

Mutual fund - investing companies owned mutually by participants

(ex) Massachusetts Investors Trust (MIT). (1920s - portfolio open to public

→ explosive (run off w. the money)

ICA, 1940 → set the stage for the growth of mutual funds

(Investment Company Act)

UCITS (EU, 1985, revision in 2001) - regulating act for EU version of mutual fund.

\* Trust - Money held on behalf of another individual (legal arrangement) <sup>c important invention</sup>

Trust company - manage assets on behalf of a person (ex) handicapped child in case

Protected  
by law

spendthrift trust

I die.

So we can't

take stuff in their interest

\* pension   
 delivery company

1875 American express set up pension plan for employees

(50% of avg of last 10 yrs pay)

1901 : Carnegie Steel

Collapse in 1929

GM 1950 Trust managing the pension fund (So doesn't matter if GM goes down)

Studebaker (went down in 1963 → employees left pension)

→ leads to ERISA, 1974 → make pension plan work well

Employment Retirement Income Security Act

Defined Benefit

(problem - hard to hit the target)

↳ set up PBGC (Pension Benefits Guaranty Corporation)

: insures the pension plan

1980's Defined Contribution 401(k) - doesn't have to worry about hitting targets

\* Endowment (manage a portfolio for some purpose)

• Eagle Bank 1825 → 0 (Yale)

## \* Family offices

manage portfolio of wealthy family

## \* Family Foundations - 36,000

- charitable organization created by a family

- get tax deduction

## #21. Exchanges, Clearing houses

Kenneth Boulding, 1969 : Economics = study of exchange

Karl Polanyi "Great Transformation" 1944

↳ Exchange

Broker : trade for others as an agent w. commission (ex) real estate broker

Dealer : trade for himself/herself acting as a principle & profits from a markup (ex) antique dealer

• Why no real estate dealer in the US?

- higher tax

- too risky

NYSE Broker (Auction) market 1792 ~

NASDAQ Dealer market 1971 ~

(National Association of Securities Dealers automatic quotation system)

Origin: Ancient Rome

long gap

↓

Amsterdam, 1602

↓

NYSE, 1792

↓

China Shanghai 1990

Shenzhen

Sao Paulo 1890

Mexico 1894

\* OTC : over the counter = not on exchange (1970's, startups)

pink sheets (traditionally printed on pink paper)

⇒ NASDAQ system modernized OTC by using computer-based (fully, AI opposed to NYSE, which also used physical system)

NASDAQ created order book which is visible for traders

\* order

① market order Q (price unknown, they'd tell me "you should've told me the cap amount")

→ ② limit order Q.P (sell at price higher than certain amount)

③ stop order Q.P (sell at price lower than certain amount)

④ buy stop order Q.P (shortly & buy if price exceeds certain amount)

:

subscription

NASDAQ I

II

\* High Frequency Trading (HFT)

algorithmic trading electronic communication networks

\* Origin of electronic trading: ECN (arex...) archipelago

NYSE merged w. arex in 2005

Euronext in 2006 (briefly)

:

\* 1987 Oct 19. stock market fell over 20% in one day

Brady commission investigated → "portfolio insurance sell strategy is problem"

Circuit breakers introduced

\* "payment for order flow" - brokers give info to market makers

1995, National Market System (NMS)

Intermarket Trading System (ITS)

=) { BBBO (Best bid, Best offer)

CQS (Consolidated Quotation System)

Trade system for a broker to look for & treat to give best offer/bid.

\* May 6, 2010 ↓ brief huge fluctuation (HFT?)

\* HFT → requires physical closeness

\* Frustration as a dealer

Theory of Bid-Ask Spread

Gambler's ruin: \$5 now \$1 on each game P. prob. of win

$$\text{prob of losing all: } \left(\frac{1-p}{p}\right)^s \quad \text{if } p > 0.5$$

$\Rightarrow$  never going to be 0

ask-bid spread wide enough to get profit  
narrow enough to get losses

(attique dealer buys from Yale student, won't want to be picked off by smart guys  
 $\Rightarrow$  have to make spread wide enough & still make a profit)

## #22 Public and Non-Profit Finance

- Non-profit - no owners (shareholders)
- 1.6m in the US (in 2010)  $\leftarrow$  U.S. culture (tried working on their own, not government)
- Around for 4% of GDP

(ex)

- Peter Tufano - HBS
  - promote saving (maybe this is against government so hard to believe you can convince government to do it)
  - Dan Kerton
  - Innovation for poverty action
  - Bill Drayton
  - Ashoka Foundation (non-violence)
  - Wendy Kopp
  - Student, raised 2.5m for teaching

### \* Government influence in for-profits

Corporate profit tax (sort of partial nationalization of private capital)

US 35% Fed

$\sim 12\%$  local (can say that almost half is nationalized)

Canada 18.5% 16%  
40+ provinces 6 provinces

Japan 40.6%  
 $\hookrightarrow$  national government

Brazil 39%  $\rightarrow$  too much  $\Rightarrow$  leave the country

China 25%

India 33%

(ex) TEPCO (4th largest electrical company in the world)

why profit-tax?

25 → J due to earthquake

Taxed by Japan, Regulated by Japan. Tax money goes to help them why they have profit-tax

ex) GM : Chapter 11 bankruptcy

⑦ 11 important → Salvageable

Liquidation : sell off all the assets

GM Corporation → GM Company

(government-owned now)

60.8% US

12% Canada

11.5% UAW (US Auto Workers)

Rest debt holders, etc

You can declare bankruptcy (personal bankruptcy)

For-profit & Non-profit difference is subtle.

\* 12% of non profits pay bonuses to executives - got to give incentives!

Social entrepreneurs - people who do stuff out of course of mission (both for & own profit)

\* Municipal, state & local Finance

\* X is larger than Fed. Gov.

\* Get things done ↗  
Non-profits  
OK to local government

\* In the US, & State has balance budget rule (not allowed to go debt)

↳ operating budget - what has to be balanced ⇒ cannot plan to run a deficit

Capital budget - can borrow, potential to go bankrupt  
(build sth.)

ex) build new farm ⇒ initially budget goes to capital budget

only 20 ppl, need 100 m

wrong plan ⇒ bankrupt

Chapter 9 Municipal bankrupt

\* 1990s, NYC was about to go bankruptcy → bailed out (Fed, State)

\* Rainy Day Fund - accumulate assets to help over troubled times

\* Municipal bond - tax-free in the US (Interest of bond - not subject to income-tax)

↳ federal can't tax the state!

Tate - municipal bond issuer

\$16 b endowment - debt of 2.5 b = \$13.5 b assets after debt

Q. Why Yale has debt?

Not tax-free issuing — invest in high yielding things that are toxic (but not applied to Yale, either)

\* No capital budget for Federal Government ( $\rightarrow$  less sophisticated)

\* Renewing calls for balanced budget amendment

\* Government social insurance (help possible failure)  $\curvearrowleft$  fairly recent, need information technology

① progressive tax (rich ppl high tax)

Analogies to EITC (Earned income tax credit)

$\curvearrowleft$  negative tax for poor ppl

② public service (education)

③ Social Security System

DASDI

(old Age, Survivors & Disability Insurance)

(private sector): pension / life insurance

$\hookrightarrow$  selection bias problem

④ Health Insurance

⑤ Workers Compensation

$\underbrace{\text{accidents that happened at work}}$

Germany

1880s { Accident       $\Rightarrow$  successful  
          Health  
          Retirement

Factor: Technology advancing, paper made from wood (not cotton)

Carbon paper (make a copy)

Typewriter (1870s)

Standardized forms

Filing cabinets

Bureaucracy (management school)

Postal Service

#23 Finance = tool, not purpose

① Morality of finance

② Hopelessness

③ Financial Theory

④ Wealth & Poverty

⑤ Democratization of finance

⑥ Carew

① Upper "Living High and Letting Die" (1996) - UNICEF, motivation for not being moral

Simler, 1883 - what the social classes owe each other

First real economist

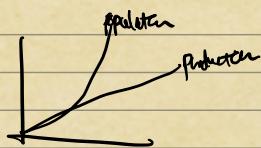
(Entrepreneur  $\rightarrow$  evil? Not probably...)

- Started conservative economics, drifted to liberal later

② Hopelessness

Malthus 1798 Essay on the principle of population  $\Rightarrow$

Wyman Open Yale "Global problem of population growth"



$\rightarrow$  Foundations to combat population greater extensities (ex) environment

(ex) Nature Conservancy, 1951 \$5.6B

{ principle: Conservation by design (fence, guard, etc...) }

ist Scientists specializing in environment & biology

ask which species are in danger & what can we do?

$\rightarrow$  protect 0.33% of world land

Financial arrangements are capable of rendering wars / catastrophes ...

1) After WWI Germany was asked to pay huge reparation payments

$\Rightarrow$  obligation was to German Government

$\Rightarrow$  by taxing its own people (not confiscation)

2) Iran - Shah (secular ruler) overthrown by Ayatollah  $\Rightarrow$  financial contracts still preserved

3) South Africa 1994 white government replaced by black majority government

$\Rightarrow$  pension etc preserved

A lot of exceptions though

### ③ Financial Theory

↳ Behavioral Finance  
↳ mathematical Finance

### ④ Wealth and poverty

Hacker & Pearson Winner-Take-all politics

: Companies are more and more sophisticated at lobbying governments

Robert K. Merton: - Cosmopolitan  $\Rightarrow$  focus on outside

local  $\Rightarrow$  talk about their town only

### ⑤ Diversification of finance

- a) Lawyer x
- b) financial advisor x
- c) Accountant x

If you're in huge debt, you can declare bankruptcy (using chapter 9)

people w.o. knowledge:

Elsbeth Warren - suggest limiting the abuse of lower income, less educated ppl (via Dodd Frank Act)

(Subprime Solution 2008)  $\rightarrow$  Not punitive but expansively/creatively  
(New financial Order 2003) : Livelihood insurance  $\Rightarrow$  protect ppl's livelihood (not medical reason)

home equity insurance  $\Rightarrow$  protect from home price  $\downarrow$

Continuous market mortgage

cost  $\downarrow$  when the mortgage is too difficult due to unemployment, etc --

### ⑥ Career

(ex) Yunus: founded Grameen Bank in Bangladesh  
"of the village"

loan to groups, can't go start business)

- Nobel peace prize in 2006

Advice:

Maintain Centrally bank outlook  
agent to help develop society

governments come and go

financial contracts & institutions & people who manage them continue

Joshua Angrist: lottery draft to Vietnam based on birthdate (experiment)

Random event affects the whole life

History awareness matters a lot