

# Lecture 3

## From Chicago to Chicago

- Reading: *CRM* chapter 1
- Futures and the Chicago Board of Trade
- The Spread of Derivative Exchanges
- Abusive Derivatives during the Great Depression
- The Renaissance of Derivative Securities
- Exchange Demutualization and Consolidation
- Recent Derivative Debacles



# Derivative Trading Before Chicago

- ❑ Much trading was short dated and directly connected with the underlying goods markets, e.g., forward trading of milk and flour in NYC
- ❑ Though primary sources are scarce, likely that some form of derivative security trading in US and Canada was present from the 18<sup>th</sup> century beginnings of trade in securities, perhaps earlier in the produce markets
- ❑ Trading for forward delivery developed differently from Europe due to differing settlement practices. In the US, “each day is a settling day and a clearing day for transactions of the day before ... This is a marked difference from European practice” where “trading for the account” involves monthly or fortnightly settlement periods with allowance for continuation of the position until the next settlement date



# Early 19<sup>th</sup> century New York Meat Market



# Emergence of the Chicago Board of Trade

- During the 19th century, exchange trading of derivative securities experienced a revolution that can be attributed to the subtle impact American culture had on specific business practices.
- Emery (1896, p.7) captures the main theme: “The American people are regarded by foreigners as the greatest of all speculators.”
- This drive to speculate facilitated American innovations in derivative securities. “It was not until the (19th) century ... that the system (of dealings for time) became widely developed and not until the great expansion of foreign trade in the last fifty years that it became of great importance.”



# Emergence of the Chicago Board of Trade

- The beginning of exchange trading of derivative security contracts in the US commences with futures contracts traded on the Chicago Board of Trade (CBOT)
- Mid-19th century Chicago: a city first incorporated as a village in 1833 growing into a city of 4,107 by 1837. In order to promote commerce, the Board of Trade of the City of Chicago was founded on April 3, 1848 with 82 members
- Such Boards of Trade were not uncommon and were found in most commercial centers



# Preconditions for Futures Trading

- The CBT initially served as a marketplace for members of the grain trade.
- A system of wheat standards was developed together with a system of inspecting and weighing grain.
- In 1859, the Board of Trade was authorized by Illinois state to engage in the measuring, weighing and inspecting of grain, effectively corn and wheat
- These changes – inspection and quality control and warehousing/elevators -- were essential in providing for standardization of the deliverable

# The first steps to exchange traded futures

- While there was ad hoc OTC style forward trading of grains previously, the first “time contract” in Chicago was made on March 13, 1851 calling for delivery of 3000 bushels of corn in June at one cent below the March 13 cash price.
- The time contracts called for delivery of a standardized grade at a later delivery date. Similar contracts for wheat appeared in 1852.
- Futures trading still required: a clearing mechanism → the contracts were specific to the original parties to the transaction and created with the objective of delivery.



# The First Futures Trades

- 1863 CBOT introduced a rule which suspended the membership of anyone failing to comply with a contract, either written or verbal.
- On Oct. 13, 1865 the General Rules of the Board of Trade explicitly acknowledged futures trading and adopted rules which included all the essential elements of an exchange traded futures contract:
  - standardized contract terms; restriction of futures contract trading to exchange members; margin deposits to guarantee performance; standardized delivery procedures; and, the essential participation of speculators not concerned with completing the underlying commodity transaction.
  - Prior to this date, individual traders had been responsible for establishment and enforcement of the terms of the contract.



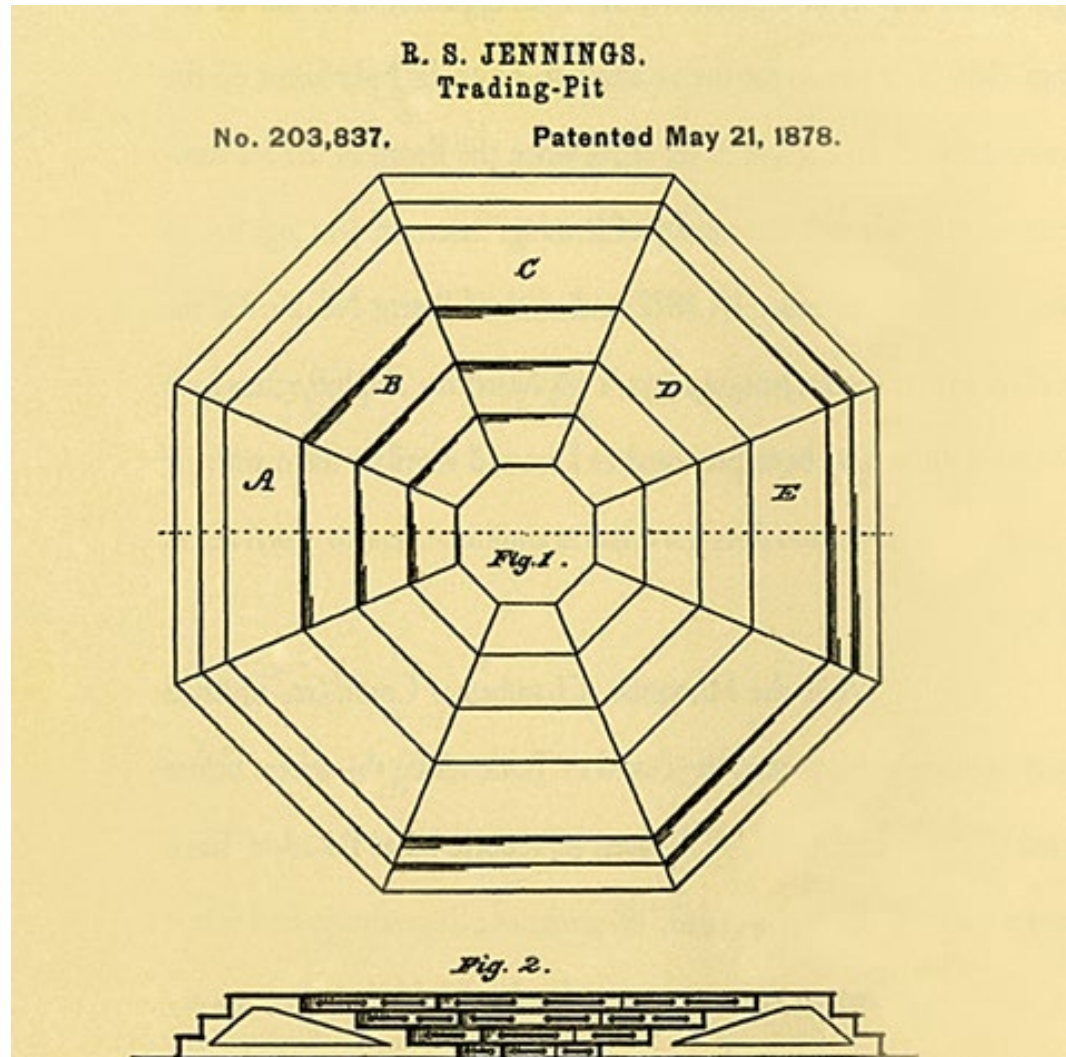


# The Spread of Derivative Exchanges

- Many other futures exchanges emerged in the period between the Civil War and World War I.
- The New York Cotton exchange was formed in 1870 and the New Orleans Cotton Exchange in 1871, though time contracts did not play an important role on the latter exchange for almost a decade.
- In 1874, the Chicago Produce Exchange was formed by dealers trading in produce of various kinds.  
The Coffee, Sugar and Cocoa Exchange (→ NYBT) was initially founded in 1882 as the Coffee Exchange of New York City with the specific intent of trading in time contracts for coffee.
- Initially founded in 1872 to trade in butter, eggs and cheese, a decade later the exchange acquired its current name, the New York Mercantile Exchange (NYMEX)
- The CME was founded in 1898 as the Chicago Butter and Egg Board, an agricultural commodities exchange.



Developed in 1878 by Ruben Jennings, the octagonal trading pit brought order to the often-chaotic trading environment. By organizing traders on sides and steps, this simple yet vital innovation facilitates easy communication through clear sightlines, delivery-month sections and defined trader positions. (from CME Group website)



# CBOT trading floor 1905 (CME website)



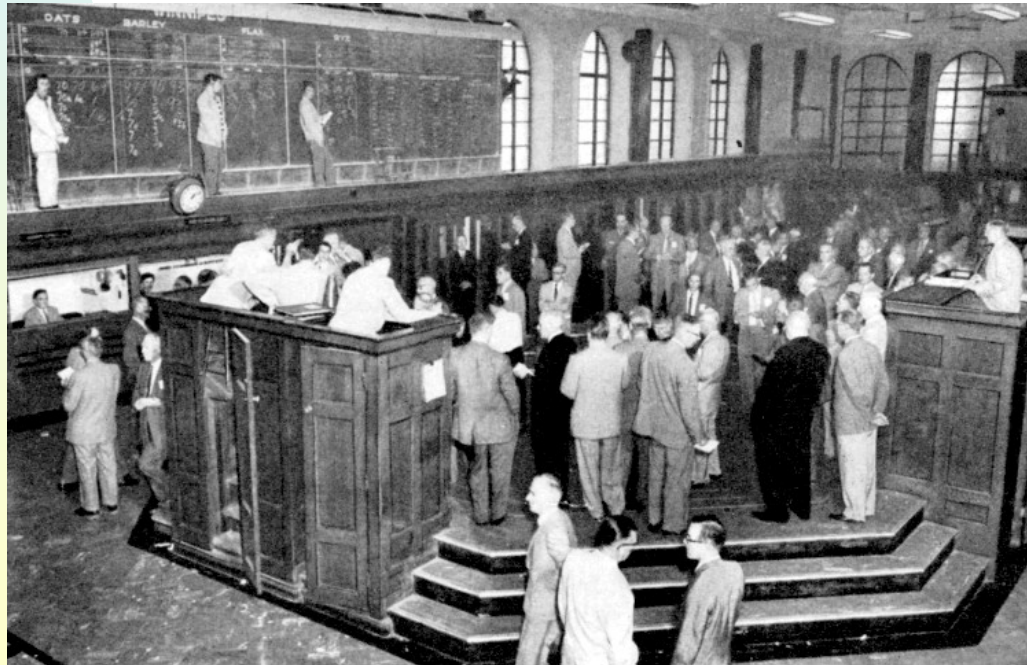
# First Stanza of poem by Carl Sandburg 'Chicago' (1916)

HOG Butcher for the World,  
Tool Maker, Stacker of Wheat,  
Player with Railroads and the Nation's Freight Handler;  
Stormy, husky, brawling,  
City of the Big Shoulders:



# The Canadian History

- The Winnipeg Exchange began as the Winnipeg Grain & Produce Exchange in 1887. In 1904, it introduced its first futures contracts, became Winnipeg Grain Exchange in 1908 → Canada's only commodity futures exchange



# The WCE versus the Canadian Wheat Board

- The development of commodity derivative trading in Canada has much of the agrarian discontent observed in the US in the late 19th and early 20th centuries, sometimes the agrarian views were more extreme in Canada
  - the distrust of monopoly elements and speculators on the grain exchange even more deeply rooted.
- The marketing solutions chosen in Canada differed dramatically from those in the US → a government sanctioned and controlled monopoly emerged to dominate the marketing of **Canadian wheat** (not the only grain but easily the most important).
  - Initially 1917-20 Board of Grain Supervisors set wheat price
  - 1923 the Cooperative Grain Pools introduced and very successful until
  - Collapse of wheat prices led in 1935 to the monopoly control of wheat marketing by the Canadian Wheat Board → lasted until the 21<sup>st</sup> century

# The Chicago Board of Trade Building



- The Chicago Board of Trade building is the tall building at end of LaSalle St. on Jackson Ave.
- The building was initially constructed in 1930 and is a classic example of Art Deco architecture
- Building was constructed on the site of a previous famous CBT building which opened in 1885.



# Abuse of Derivatives during the Great Depression

- Perception of Derivative Abuses follows two tracks:
  - Use of options to manipulate price of stocks
  - Continuation of agrarian resistance to the ‘speculators’ on the commodity exchanges that drive down prices
    - By end of 19<sup>th</sup> century, all US produce exchanges had banned commodity option trading, though some OTC trade did take place in other venues and other various guises
    - Social resistance to commodity option trading propelled by farm based “populist” political movements which associated erratic commodity price behavior with excessive exchange speculation
    - Populists believed brokers used the exchange process to extract money from farmers. This view was carried forward into the first federal effort to regulate futures trading -- Grain Futures Act (1922) -- contained a section maintaining derivative security “prices are extremely sensitive to speculation and manipulation”





# Example of an Abusive Option Pool (see RSD chp.1)

## The Sinclair Option Pool of 1929

One of the most profitable pools was the Sinclair Consolidated Oil option pool of 1929. While Sinclair stock was selling in the \$28 to \$32 range, a contract was obtained from Sinclair granting the pool an option to buy 1,130,000 shares at \$30 per share. The pool then purchased 634,000 shares in the open market to bid up prices. The pool exercised its option, then liquidated all its holdings while the stock was selling in the \$40 range. The pool also sold 200,000 shares short as the price fell. The pool's total profit was approximately \$12.5 million from the following sources: \$10 million profit from optioned shares purchased at \$30 per share, \$500,000 profit from shares purchased in the market, and \$2 million profit from the short sales.

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"Stock Exchange Practices," Senate Report 1455, 73rd Congress, 2nd Sess., p.63, quoted in Teweles and Bradley (1985).

# Regulation of US Stock Options

- Regulatory response to the market abuses that contributed to the financial market turbulence of 1929-33 determined abuses associated with option pools would become illegal.
- However, there were other, more legitimate reasons for stock option trading that warranted some protection.
- Stock brokerage industry was able to avoid the outright ban associated with commodity options.
- Initial legislation aimed at regulating the securities markets, the Fletcher-Rayburn bill (1934), called for a total ban on stock options, the brokerage industry was able to prevent this result.
- The Securities Act (1934) empowered the newly created Securities and Exchange Commission (SEC) to regulate the market and introduced the Put and Call Brokers and Dealers Association (1934) that was designed to act as a self-policing agency.



# The Evolution of US Regulations

- Despite past abuses of stock options, e.g., the use of option pools, the PCBDA (Put and Call Broker and Dealers Asso.) was able to continue a small OTC stock options market that eventually morphed into the CBOE
- Regulation focused on the hard hit agricultural sector with passage of the Commodity Exchange Act (1936)
- Though the trade in commodity options continued under different guises with trading outside the exchanges, e.g., calling the contracts “indemnity of sale or purchase” (Markham 1987, p.9) and in London, the trade in commodity options was banned by the Commodity Exchange Act – major piece of legislation subject to regular update and amendment → ban continued until the emergence of the Renaissance of Derivative Securities



# The Renaissance of Derivative Securities

- Significant change in US regulation with creation of the Commodity Futures Trading Commission (CFTC) in 1974 to regulate trading of commodity futures contracts (and later options) on derivative exchanges: replaces USDA of commodity derivatives oversight under CEA
  - (see <http://www.cftc.gov/About/HistoryoftheCFTC/index.htm>)
- CFTC authority aimed at commodity derivatives, **SEC maintained regulatory authority over equity derivatives.**
- Historical restriction on a range of derivative trading started changing with the formation of International Monetary Market (IMM, division of CME) and CBOE (by CBoT) in early 1970's → start of introduction of a range of financial futures products



# Emergence of New Contracts and Exchanges

- Early 1970's IMM starts with currency and interest rate futures; CBOE starts with 16 equity options, followed by equity option on some exchanges
- Over next two decades rapid expansion in number and type of contracts traded, e.g., NYMEX crude oil + platinum and palladium, S&P index futures on numerous exchanges; gold and aluminum on COMEX
  - 1981-2 CFTC allows trading in commodity options
- Volume of derivative security trading (and emergence of new exchanges) throughout world, e.g., Singapore, Australia, Canada, Great Britain, France
- Division of US authority for derivatives between CFTC (commodities) and SEC remained → played a roll in the collapse of the OTC CDO swap market in 2008 (see next slide)





雪球：饭统戴老板



The Men Who Sold the World

From 1996-1999, Brooksley Born was head of the CFTC and lobbied Congress to end the 'wild west' in the largely unregulated OTC trading of credit default swaps and related securities – to bring this trading under CFTC authority. Born was stifled in the effort by Alan Greenspan (Fed chair), SEC chair Arthur Levitt and US Treasury Secretaries Robert Rubin and Lawrence Summers. Timothy Geithner, later US Treasury Secretary was Under Secretary of Treasury at this time.



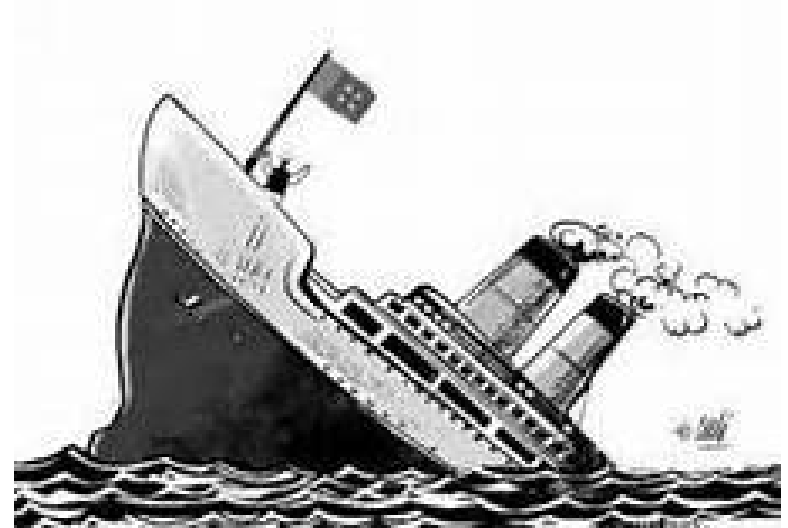


# Exchange Demutualization and Consolidation

- Historically, stock exchanges and derivative exchanges were 'owned' by the members who had 'seats' on the exchange → this is a 'mutual' form of ownership → created a 'club' atmosphere but made the raising of capital and exchange governance difficult
- Demutualization is the process of converting from a 'mutual' form to a corporate form of ownership with publicly traded shares → this change permitted the exchanges to merger → consolidation of exchanges started around turn of century (CME demutualized in 2000)
  - CME Group → CME, CBOT, COMEX, NYMEX
  - ICE → IPE, SIMEX, NYSE-Euronext, WCE, NYBT, LIFFE + +



# Derivative Debacles



- What is a Debacle?
  - A great disaster or complete failure (list available at [https://en.wikipedia.org/wiki/List\\_of\\_trading\\_losses](https://en.wikipedia.org/wiki/List_of_trading_losses))
- Derivative Debacles are situations where the use of derivative securities was involved in a complete failure of risk management or speculation → what was the source of failure? → what aspect of risk management was involved?



# Types of Risks to be Managed (see Lecture 6)

- **general business risks**, risks specific to the industry or market of interest also referred to as *commercial risk*
- financial and commodity **market risks** associated with changes in prices for equities, exchange rates, interest rates and commodities
- **credit and liquidity risks**
- **operational risks**, that can include inadequate management control systems
- **legal risks**, e.g. contract enforcement
- → Which of these was the cause of the Debacle?

# Some Earlier examples of Derivative Debacles

(from RSD, ch.1)

*Figure 1.2 Some Recent Corporate Losses arising from Derivatives Trading*

<i>Time</i>	<i>Company</i>	<i>Losses</i>	<i>Transactions</i>
1979	Minpeco S.A., Peru	\$100 million	silver futures
1980	The Hunt Bros. Cos.	\$1.1 billion (est.)	silver futures
1988	Hammersmith and Fulham	£500 million	swaps
1993	Showa Shell Sheikyu	¥165 billion	currency options and forwards
1993	Metallgesellschaft	\$1.3 billion	energy derivatives
1994	Codelco, Chile	\$200 million	Copper futures
1994	Kashima Oil	\$1.5 billion	currency derivatives
1994	Proctor and Gamble	\$157 million	leveraged swaps
1994	Piper Jaffrey Cos.	\$700 million	mortgage derivatives
1994	Sears	\$237 million	swaps
1994	Orange County, CA	\$1.8 billion	reverse repos
1995	Barings Bank PLC	£900 million	stock index futures and options
1996	Sumitomo Corporation	\$1.8 billion	copper futures
1998	Yokult Honsha, Japan	\$523 million	stock index futures and options
1998	Long Term Capital Mgmt.	\$4.4 billion	numerous positions in different mkts.
1999	Ashanti, Ghana	\$570 million	gold exotic derivatives

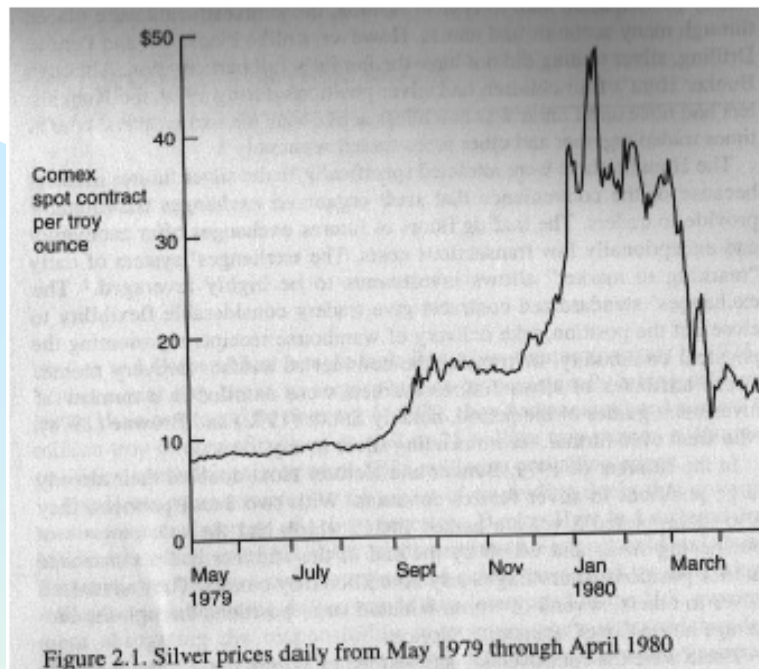
Source: Chance (1998), Jorion (2000), Williams (1995), McCarthy (2000).



# The Hunt Silver Crisis

- At the time of his death the father of the Hunt Bros. was the richest person in the US
- Mechanics of a Short Squeeze (see Lecture 2)
- Hunt Silver Crisis was an ‘old school’ short squeeze
- Events in the Silver Market involved a group of speculators Including the Hunt’s cornering the supply of deliverable silver on the COMEX



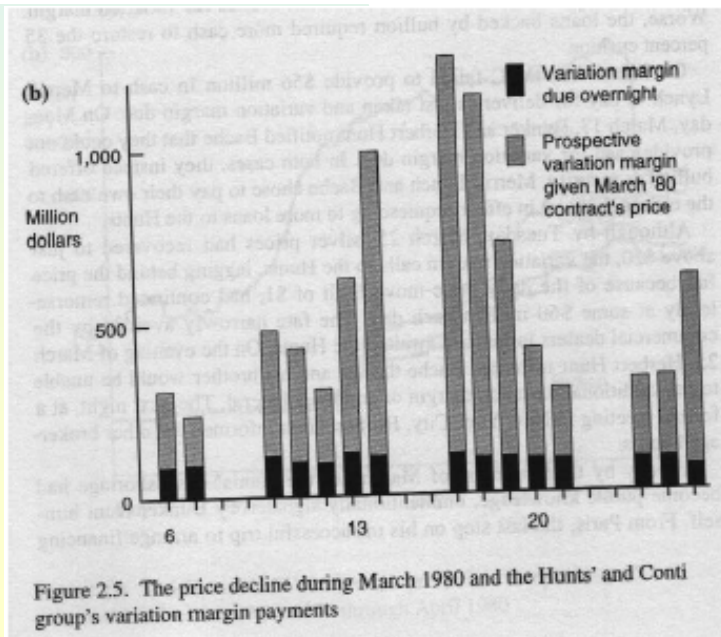


Hunts combined with a group of mostly Middle Eastern speculators to corner the market in silver  
(information about the manipulation mostly from court cases and Congressional hearings)

Manipulation underway by summer of 1979 – group had taken long positions in about 1/3 of open interest (value of hunt's physical silver long neared \$1.3 billion)

By Dec. the shorts were largely out of silver to deliver → EFPs for settlements (Bache and ML advanced funds for purchases)

Scheme collapsed when COMEX suspended silver futures trading in Jan. 1980. → est. **\$1.1B** losses



# Portfolio Insurance and the Crash of '87

- The beginning of debacles caused not by greedy speculators but by traders trying to improve status within a larger organization
  - DPI problems created by inadequate assessment of market risk
- The Mechanics of Dynamic Portfolio Insurance
  - To be discussed in Lecture 12
- Demand for DPI driven by lack of OTC and exchange traded options with long enough time to expiration, coverage across stocks, absence of index coverage.

# The Collapse of Long Term Capital Management (market risk problem)

- What is a Hedge Fund?
- Derivatives and Hedge Fund Strategies
  - Hedge funds can follow a wide range of strategies.
- When Genius Failed (book on LTCM failure)
  - Two of the principles in LTCM were Nobel Prize winners in Economics— Robert Merton and Myron Scholes
  - Won the Prize while participating as LTCM principals



# If your so smart – why did genius fail?



# LTCM Debacle Details

- ❑ LTCM founded in 1994 and collapsed in Sept. 1998 requiring **\$3+ billion** bailout
- ❑ LTCM used a bundle of different trading strategies including on-the-run/off-the-run Treasury arbitrages and liquidity provider in various markets (e.g., European equity index options).
- ❑ Firm was initially successful: annualized return year 1 21% (after fees), 43% year 2 and 41% in the year 3
- ❑ After an ill-advised distribution of capital in 1998 lost **\$4.6 billion** in less than four months following financial crises of 1997 in Asia and 1998 in Russia
  - ❑ The latter was a killer as the firm was long Russian debt and short Italian debt.





# Nick Leeson and Barings Bank (operational risk)

- Leeson is one of a number of 'modern' debacles due to **operational risk** (failure to adequately supervise employees trying to gain status within firm)
  - Started in 1992 as a back room general manager shipped from UK to Singapore to the new Barings Bank futures trading operation on SIMEX → Leeson soon also became involved in floor trading
- The Leeson Strategy -- selling straddles to generate premium income to cover previous losses
  - Initially involved with inter-market arbitrage of Nikkei 225 stock index futures between Osaka Securities Exchange and SIMEX
  - Trading strategy eventually morphed into an unbalanced position which was initially successful but eventually lost big when Kobe/Osaka earthquake hit → est. **\$1 billion** in losses



# From Trading Star to Criminal

Nick Back in Singapore

November 1995

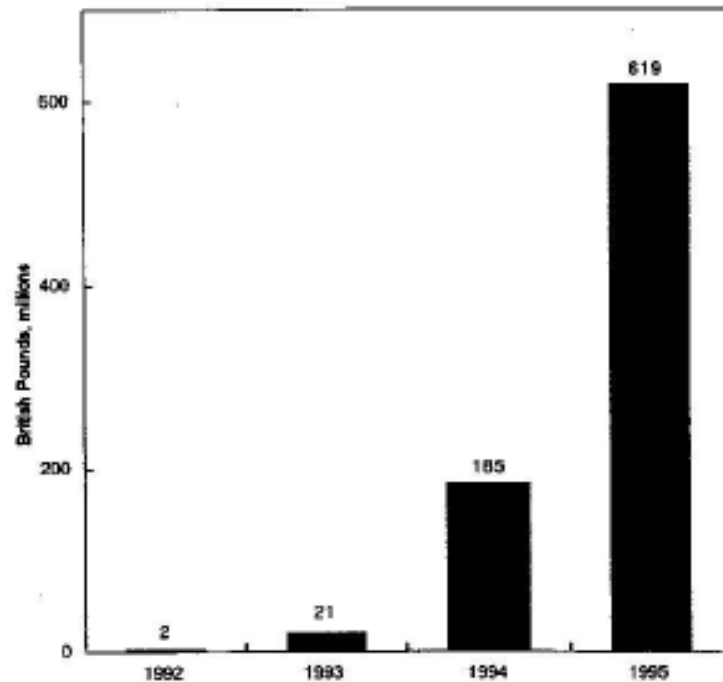


Nick as a Star Trader 1993



# The Collapse of Barings Bank – one of the oldest UK banking companies, banker to the monarchy

Figure 4 Concealed Trading Losses



Source: Bank of England, Board of Banking Supervision

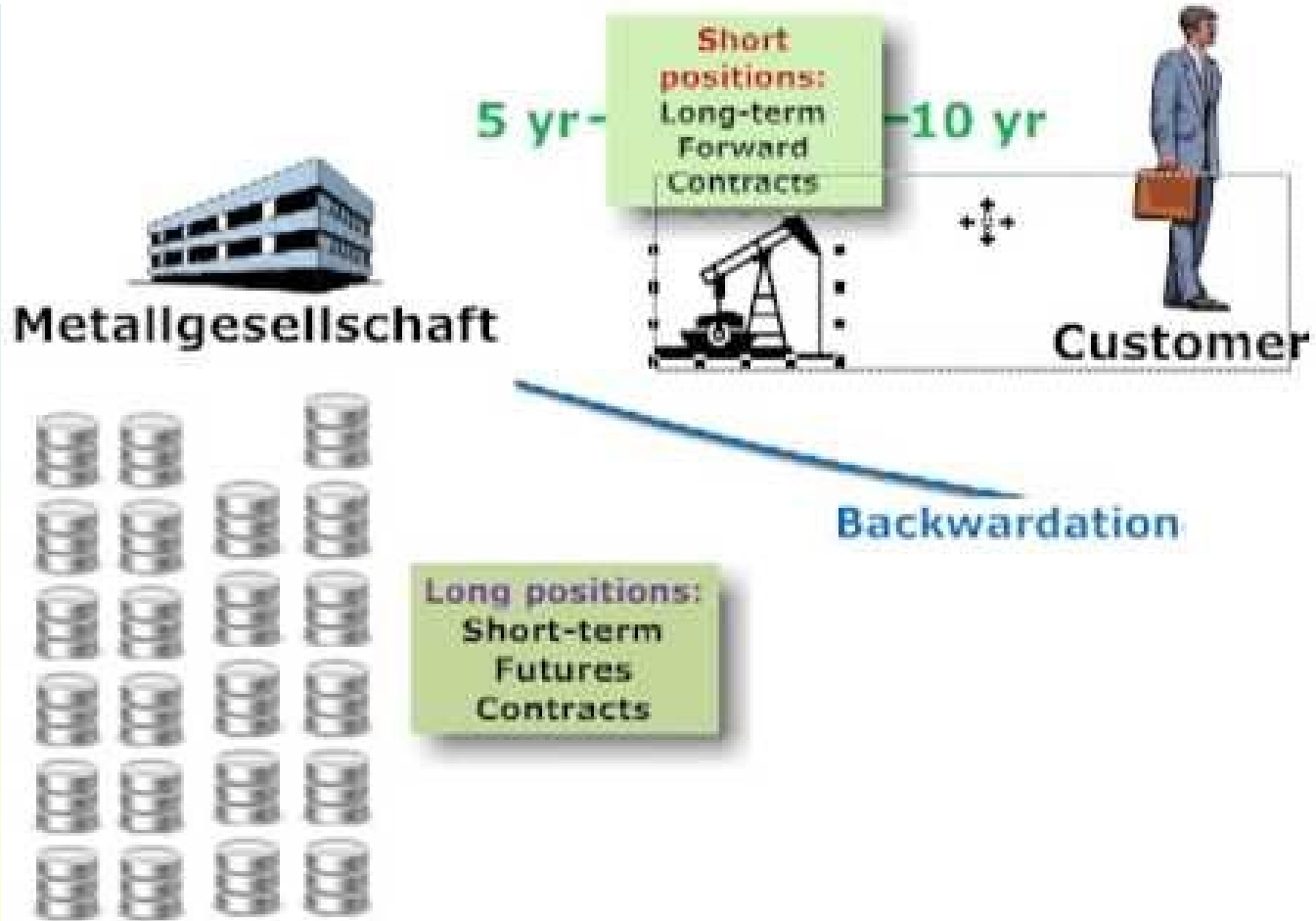
- Leeson was able to hide trading losses in an account used for trading errors → knowledge and oversight of backroom operations by individual also involved in trading was essential
- Why management of the Bank was willing to continue to make increasingly larger variation margin payments is unclear
- Scheme collapsed when Leeson began to access customer funds to cover losses → main part of criminal case

# *Metallgesellschaft AG (1993)* (market/operational risk)

- Circa 1994, *Metallgesellschaft AG* (MG) 14th largest corporation in Germany, involved in mining, engineering and financial services. In December 1993, MG reported immense losses on positions in energy futures and swaps incurred by its US affiliate, MG Refining and Marketing (MGRM). These losses were later determined to be around **\$1.3 billion**
  - MGRM agreed to a long term contract to purchase output from a refinery at guaranteed crack spread margins of 10% and, in turn, entered into long term forward contracts to sell that output to end users of gasoline, jet fuel and heating oil.
  - MGRM was involved in intermediating the spot market for oil products with the long term forward market. Though some of the risk could be captured with longer dated OTC products, to accurately handle the risk it was assuming for customers, MGRM also had to use oil complex futures contracts. Due to limited liquidity in longer dated delivery dates, MGRM had to implement a rolling stack hedging strategy, involving short dated futures contracts.



# Illustration of the MGRM trades



# Lessons from the MGRM Debacle

- The perils of rolling stack hedges
  - A rolling stack hedge is used because of limited liquidity in long-dated contacts → \$25 June + \$25 Sep + \$25 Dec + \$25 Mar deliveries → not able to match cash deliveries with long dated hedge contract expirations (only near term deliveries have liquidity) → use \$100 near delivery contracts to start → \$75 in 3 months → \$50 in 6 months → \$25 in 9 months → Possible basis risk issues
- Accounting rules are important
  - Variation margin costs required cash payments that were, in theory, offset by potential gains on cash positions that would be realized when deliveries were made → Senior management was not aware that this would create serious problems under German accounting rules
  - MG closed out long term delivery contracts letting customers off the hook!!



# Yasuo Hamanaka and the Sumitomo Copper Manipulation (operational risk)

- The Sumitomo copper manipulation is noteworthy both for the size of the losses (est. **\$1.8 billion**) and for the length of time the manipulations went undetected (1986-1995)
- The centerpiece of the manipulation was Yasuo Hamanaka, the assistant general manager of the nonferrous metals division at Sumitomo, the fourth largest trading company in Japan during the period of the manipulation.
  - Prior to the manipulation being uncovered, Hamanaka was apparently well respected within the company. Between 1985 and 1996, Hamanaka worked as a head of a team trading on copper cash and futures markets, obtaining market recognition with the nickname of 'Mr. Five Percent', the approximate size of Sumitomo demand within the global copper market.

# Mr. 5% at work and leaving court





# Why engage in illegal trading?

- Main tactic used by Hamanaka was a subtle short squeeze that caused a backwardation in copper
  - Hamanaka was not greedy, edged the price up.
- At Hamanaka's trial his former boss, Saburo Shimizu, confirmed Hamanaka's claim that his motive for engaging in speculation in the commodities and futures market was simply the desire to recoup losses that he had already incurred
  - In defence of his action, Hamanaka claimed he was only following orders -- like an ordinary salaried man. However, once Hamanaka set out to recoup the initial losses a transformation took place.



# Jiulin Chen and China Aviation Oil (2004-5)

(operational risk)

## □ Speculation, hedging and Accounting

- Unlike the copper trading activities of the Qibing Liu and the SRCSR, the trading activities of China Aviation Oil (Singapore) Corporation Ltd (CAO) that led to an estimated **\$557 million** loss in oil derivatives in 2004 have been exposed to the glare of public scrutiny
- Headquartered in Singapore, CAO was initially a joint venture between three companies: China Aviation Oil Supply Corporation (CAOSC), an important state owned Chinese enterprise; the China Foreign Trade Transport Corporation; and, Neptune Orient Lines Ltd, a Singapore government-linked corporation.
- CAO was incorporated in 1993 and, in 1995, became a wholly owned subsidiary of CAOSC following the company's acquisition of the shareholdings of the joint venture partners. CAOSC is responsible for the construction of jet fuel infrastructure, the procurement of jet fuel supply equipment, the supply of jet fuel to airports in the People's Republic of China and also the provision of refueling services to airplanes at airports in the People's Republic of China



# Jiulin Chen in better times

- Following an IPO in 2001 on the SGX, CAO adopted a “Three-pronged Business Model” involving: strategic oil related investment; international oil trading; and, jet fuel procurement.
- The oil-related investment has a long term goal of acquiring significant possession of foreign oil-related assets, consistent with objectives of Chinese government.



# What went wrong?

- Jet fuel procurement component of CAO activities was the source of the large losses.
- The company's jet fuel procurement business was heavily dependent on the parent group as CAOSC the sole entity authorized by the PRC government to import jet fuel into the PRC
- Before 2002, CAO only used derivatives for hedging purposes, employing crude oil futures and swap contracts to hedge the price risk exposure associated with the jet fuel and fuel oil cargoes.
- Starting in 2002, CAO began to use option contracts with the objective of increasing firm profitability. An audit conducted by PricewaterhouseCooper found substantial evidence that CAO did not have enough knowledge and ability to do the option trading which later caused considerable losses.
  - Not only was it not reported that options were used for speculative purposes, the size of the losses was worsened by the inadequate risk management and corporate governance in place at CAO during that time.



# Qibing Liu, and the Copper Market (2005-6)

(operational risk)

- The State Reserve Bureau of China
  - From September 23, 2005 to March 31, 2006 the near month COMEX copper futures price jumped from US\$1.7985 per pound to US\$2.488 per pound, an increase of almost 40% in a relatively short period of time → est. **\$150 million** in losses
  - Mr. Qibing Liu, an employee of the Import and Export Department of China's State Regulation Centre for Supply Reserves, the trading agency for the State Reserve Bureau of China
    - (SRB). Mr. Liu built a substantial short position in one to 3 month copper forward contracts traded on the London Metal Exchange (LME), betting on a downward trend for the copper price.

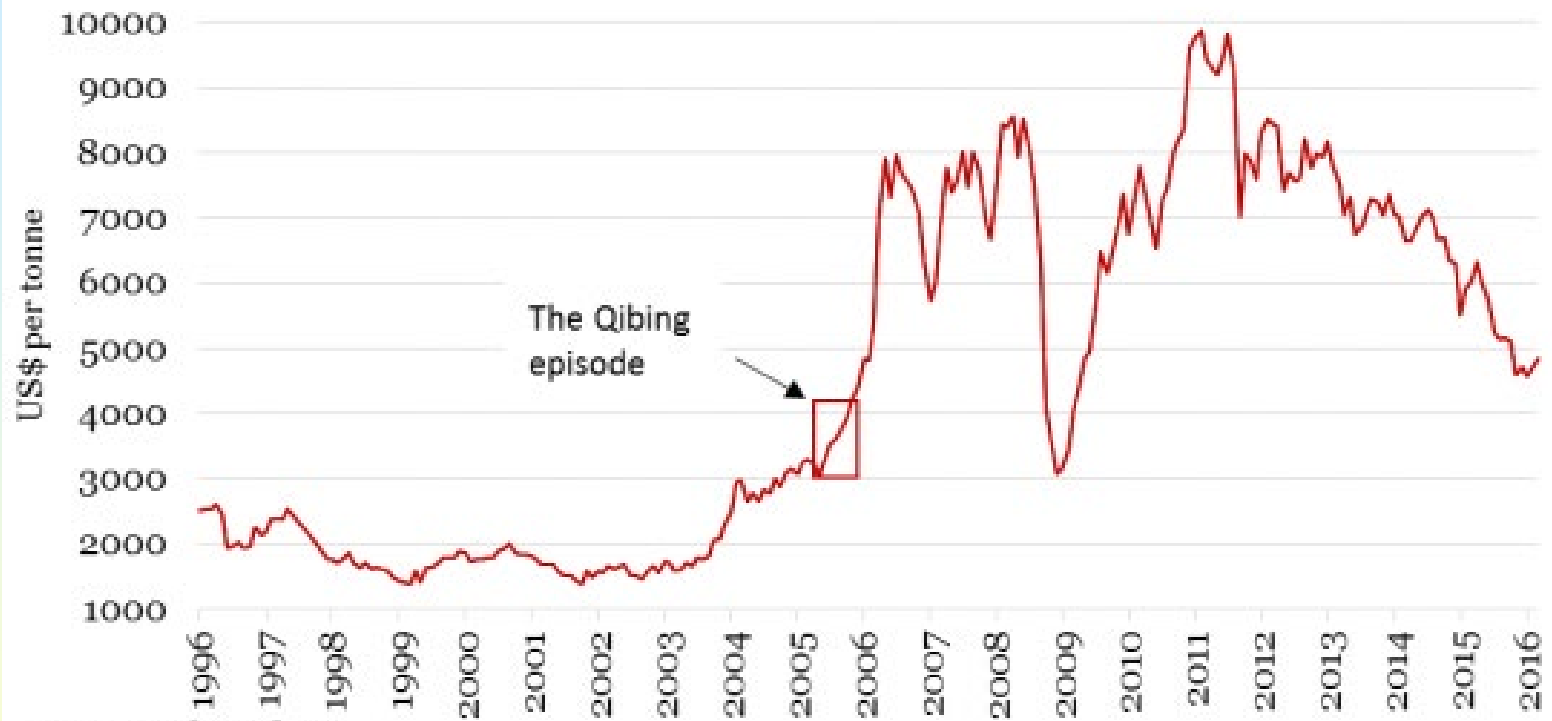


# Chinese Government Entities and Commodity Trading

- The State Reserve Bureau is not a corporate business entity but an internal department in the National Development and Reform Commission of China (NDRC)
- As a government agency, the SRB is responsible for managing national strategic material stockpiles that are reserved for national defence purposes, for safeguarding the stability of the society, and for mitigating unexpected disasters or catastrophes.
- One byproduct of the SRB's operations is the stabilization of market prices for reserved materials such as oil, cotton and copper → Liu worked for a corporate entity associated with a Chinese Government Entity.



## Copper price\*



Source: Bloomberg

\*London Metal Exchange, 3-month forward contract

[www.truewealthpublishing.asia](http://www.truewealthpublishing.asia)

# Amaranth Advisors LLC (2005-6) (market risk/operational risk)

- The perils of hedge fund speculation
  - Amaranth lost approx. **\$6 billion** mostly on bad bets on natural gas futures and OTC natural gas forward spreads
    - Trades were initially very profitable due to the impact of hurricane Katrina, attempts to replicate these trades in subsequent years failed → firm was prosecuted for violating speculative reporting requirements (FERC and CFTC)
- Amaranth Advisors LLC was a hedge fund founded in 2000
  - Amaranth employed a multi-strategy approach to investing that allowed fund managers to seize opportunities in whatever markets seemed to be most promising at the time Prior to the debacle, the fund had been involved in merger arbitrage, long/short equity trading, leveraged loans, blank check companies, and energy trading
    - As of June 30, 2006, energy trades accounted for about half of fund capital and generated about 75% of profits





# What went wrong at Amaranth?

The head office of Amaranth was in Greenwich with the energy trading division was in Calgary, Alberta.

- From 2005 Brian Hunter was co-head with Matthew Donohoe of the firm's energy desk with authority to make trades without immediate oversight.
- Hedge fund management was blinded by the previous profits and gave too much latitude to a largely unqualified trader.



Brian Hunter was fiercely opposed to having his picture taken and was reluctant to be publicly interviewed

# Jerome Kerviel and Societe General (2008)

(operational risk?)

- **\$6.1 billion** dollar loss €(4.9 billion) from unauthorized trading of European equity index futures
- In 2010, Kerviel convicted for breach of trust, forgery and unauthorized use of the *Soc. Gen.* computers.
- Unauthorized, sophisticated trading began in 2005 following promotion to the *Soc. Gen.* Delta One products team in Paris as a junior trader.
- Delta One business includes program trading, ETFs, swaps, index futures and quant. trading.
  - These strategies are usually trading intensive allowing the Kerviel trades to be more easily disguised.



# Is the Rogue Trader a Self-Serving Myth?

- Kerviel told investigators that his trading practices were widespread at *Soc. Gen.* → management would look the other way as long as the trading practices made a profit
- Kerviel joined *Soc. Gen.* in 2000 at 23 → 2005 promoted to the Delta One products team in Paris as a junior trader → in 2008 Kerviel generated €1.4 billion in **profit** → losses created by dramatic drop in equity index combined with mgmt. closing out the 'unauthorized' trades when discovered.



# Kweku Adeboli and rogue trading at UBS (2011) (operational risk)

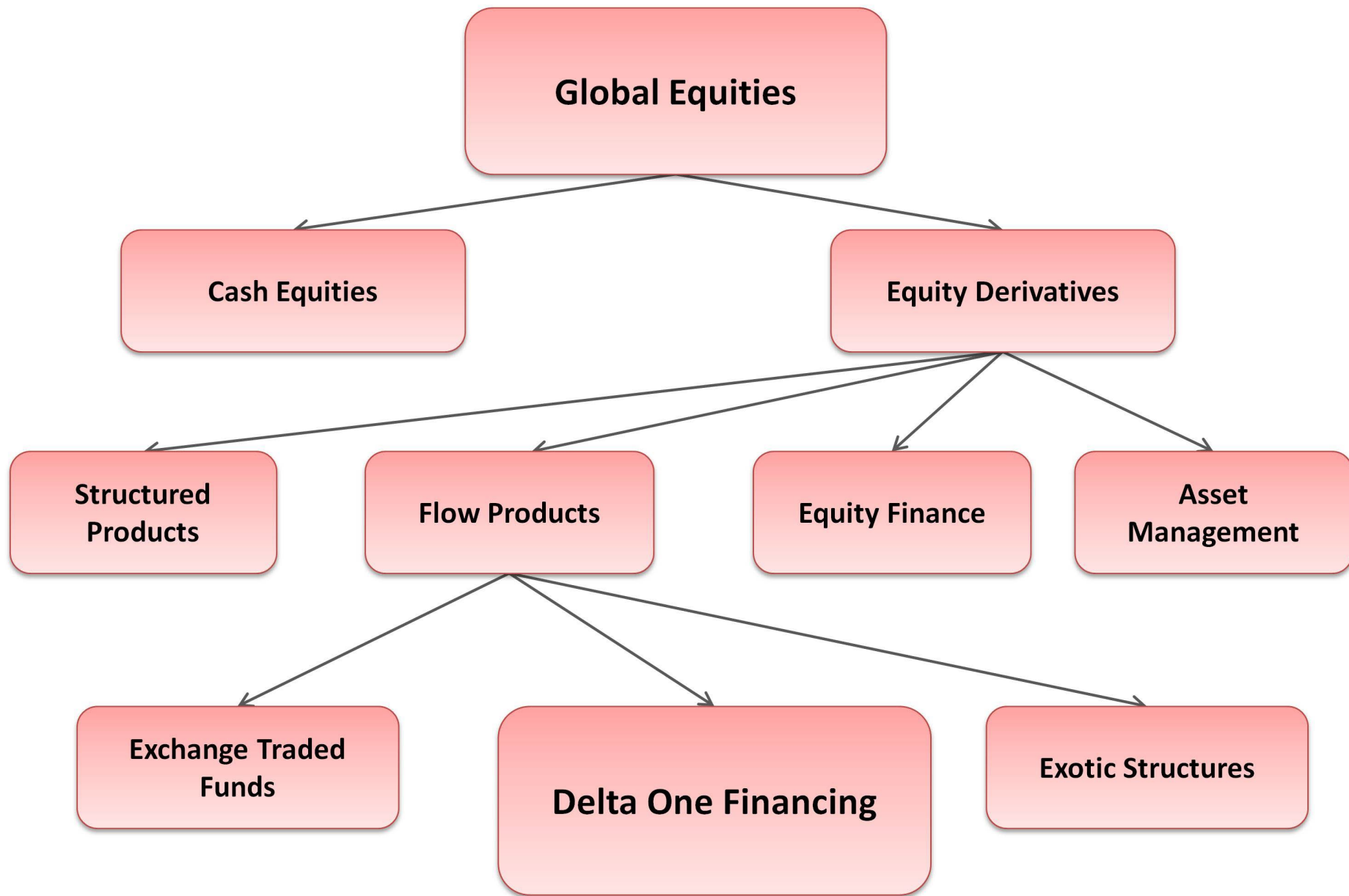
- Derivative securities involved were Forward settling European and US Equity Index ETFs
- See the Synthetic derivatives and Delta 1 chart
- Adeboli was part of Swiss bank UBS Global Synthetic Equities Trading team in London
  - Engaged in unauthorized trading resulting in a loss of **US\$2 billion** (£1.3 billion).
  - Beginning in 2008, Adeboli started using the bank's money for unauthorized trades entering false information into UBS's computers to hide unauthorized trades exceeding UBS's per-employee daily trading limit of US\$100 million → failed to hedge unauthorized trades against risk.



- Sept. 2006 joined UBS as a graduate trainee at 26 years old
- In 2008, becomes a director on the ETF desk
- In 2010, promoted to director, with a total annual salary of almost £200,000

15 September 2011, Adoboli was arrested by London police and charged with fraud and false accounting  
→ sentenced to seven years in prison





# ‘London Whale’ trader and JP Morgan Chase (2012) (operational risk/market risk)

- Aggressive Trading of Credit Default Swaps by the ‘London Whale’ trader Bruno Iksil → loss of **at least \$6.2 billion** for JPMorgan Chase & Co. in 2012 (JP Morgan made a record profit of \$21.3 billion in 2012)
- Two former traders face criminal charges, JP Morgan admitted violating securities laws and agreed to pay fines of more than \$1 billion
- Iksil’s former boss and a junior trader were indicted in 2013 → charges not about the trades — U.S. prosecutors charged the pair with committing securities fraud by deceiving the extent of losses from bank management.



The Myth of Jamie Dimon – the ‘rock star’ US commercial banker – first individual to earn more than \$1 billion in compensation – had to take a pay cut after the losses were revealed





# AIMCo and the VOLTS losses (2020)

(see paper on class webpage)

- Alberta Investment Management Corporation (AIMCo; [www.aimco.ca](http://www.aimco.ca)) is responsible for the investments of 32 pension, endowment and government funds in Alberta
- AIMCo suffered a **\$2.1B** loss associated with a Volatility Trading Strategy (VOLTS) undertaken by the public equities group
  - Strategies initially undertaken in 2013 involved trading OTC derivative contracts based on the degree of daily volatility in various global public equities markets
  - Losses were incurred due to the extreme market volatility brought on by the COVID equity market impact
  - Losses exposed the limitations of using a 'plain vanilla' VaR methodology for measuring risk exposure for trades that aim to exploit 'tail risk'



# The AIMCo VOLTS Strategies

- Initially, in 2013 VOLTS involved: a one-month variance swap to capture the implied versus actual volatility risk premium; a volatility term structure risk premium strategy; and a downside risk component to mitigate deep tail risk implemented across various geographical markets.
- In 2018 VOLTS was expanded to include capped/uncapped variance swaps that typically have a relatively fixed return during typical to moderately high volatility conditions → from 2018 to 2020 the VOLTS portfolio became more heavily weighted to these riskier swap
  - More steeply tilted and non-linear loss function during high to very high volatility conditions carry the risk of greatly magnified losses from extreme volatility events,
  - Despite the non-linear of the risk profile, AIMCo continued to use conventional VaR to monitor the risk of these positions



# Bill Hwang and Archegos Equity Swaps (2021)

- Archegos was a “family office” involved in managing the portfolio – when organized as a ‘hedge fund’ a family office avoids filing requirements as the funds originate from closely held ‘family’ Investments

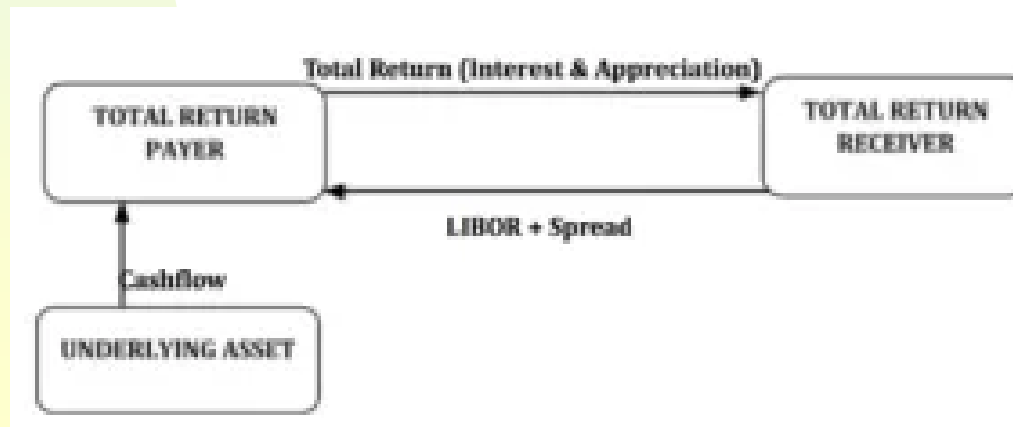


Bill Hwang, previously an investment manager for the ‘Tiger Asia fund’, pled guilty to wire fraud related to insider trading in 2012 → ability to use personal funds (est. \$200 to \$500 million) leveraged using equity swaps to grow to \$10 billion – collapse in March 2021 led to loss of this amount \$10B to prime brokers involved in the swaps → est. **\$20 billion** losses



# Total Return Equity Swaps (TRES)

- TRES's have origins in the rise of the interest rate swap market in the 1980's → tax treatment of notional principal contracts favorable for off-shore investors to avoid US withholding taxes
- Advantage of TRES for hedge fund investors is leverage, no need to purchase equity directly – only margin required
- For prime brokers TRES is revenue enhancing by generating fees and higher interest income → position is hedged by purchasing the underlying equity



# The Collapse of Archegos (see paper on webpage)

- Serious regulatory questions as to why an individual convicted of financial crime able to get prime brokers to take such large positions in TRES
  - Major prime brokers involved were Goldman and Morgan Stanley – able to avoid large losses – with Nomura (\$2.9B) and Credit Suisse (\$5.5B) suffering the worst
- Archegos was able to generate large returns using TRES by taking positions in a select group of stocks, esp. ViacomCBS (now Paramount), Discovery Comm. and two China small cap stocks RLX Tech. and Gaotu Techedu
  - When a 3/21 secondary offering of Viacom stock did not go as expected the subsequent stock price decline generated margin calls that Archegos could not meet → prime brokers struggled to unload large blocks of stock that were the underlying hedge positions for the TRES → losses by prime brokers were associated with losses on these sales.

