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Class: TY BSc

Subject : Risk Management & Investment Management -1

Chapter: Unit 3 Chapter 1 Part 4

Chapter Name: Case Studies – Financial Disasters

Topics to be covered

1. Financial Disasters

2. Operational Risk
    1. Chase Manhattan & Drysdale Securities
    2. Kidder Peabody
    3. Barings
    4. Harshad Mehta Case
    5. Ketan Parekh Case
    6. PNB Bank
    7. PMC Bank
    8. NSEL Case

1. Model Risk
    2. Long Term Capital Management (LTCM)
    3. JPMorgan Chase London Whale

Topics to be covered

4. Business Risk
    1. Metallgesellschaft Refining and Marketing (MGRM)
    2. Banker's Trust
    3. JP Morgan, Citigroup and Enron

4. Liquidity Risk

4. Summary

3 Model Risk

Model risk is a type of risk that occurs when a financial model is used to measure quantitative information such as a firm's market risks or value transactions, and the model fails or performs inadequately and leads to adverse outcomes for the firm.

- Sophisticated financial products use mathematical models to determine their current value. These models could be theoretical (e.g., capital asset pricing model [CAPM]) or statistically based (e.g., term structure of interest rates).
- The use of models introduces model risk, which potentially involves the following:
  i. Using the wrong model for estimation
  ii. Incorrectly specifying a model
  iii. Using incomplete data
  iv. Deploying the wrong estimators
  v. Making the wrong assumptions

3.1 Long Term Capital Management (LTCM)

What Happened?

- Long-Term Capital Management (LTCM) ,founded in 1994, was a hedge fund founded by very reputed people in the financial industry.
- LTCM's downfall was triggered by an action of the Russian government in August of 1998. In a surprise move, the Russians defaulted on their own debt and devalued their currency. This created a flight to quality (i.e., an extreme movement to assets perceived as safe) where investors rushed to buy the exact assets that LTCM had been shorting (i.e., U.S. Treasuries and German bunds). The result was a decline in the value of LTCM's assets by just over 40% ($2 billion of their $4.8 billion in equity) in one month.

What was the cause?

- The failure of LTCM was due to model error. Management did not properly anticipate increased correlations in the event of a global crisis. They actually adjusted correlations higher in their models, but the adjustment did not go anywhere close to the actual correlation spike caused by the cascading external economic shocks.
- They also did not properly forecast the volatility that actually appeared in the markets. The margin calls that resulted from the evaporation of their equity drove LTCM to the point of collapse. In fairness, it was (and is) very difficult to forecast extreme tail risk events like the Russian devaluation scenario.
- The fund was highly over-leveraged, at the ratio of 26:1 at the time of their default which also resulted in unheard of amounts of losses. The illiquidity faced near the end also played a decisive role in it's demise.

3.1 Long Term Capital Management (LTCM)

What could have been done better?

- Correlations should have been managed better, especially for tail-risk events. Also, loss assumptions should have been better set. LTCM relied heavily on value-at-risk (VaR) modeling using a 10-day time horizon. Its calculated VaR was $320 billion and reality played out much more severely. A 10-day horizon is far too short of a window to survive a short-term market shock.
- Based on the reputations of the founders, initial margins were often waved off by the investment banks dealing with LTCM. That exception should be avoided.
- Lack of oversight in the hedge fund industry(which is a continuing problem) should have been tackled.

Result:

- LTCM failed in the late 1990s following the Russian devaluation.
- The turmoil that ensued spilled over into the broader U.S. financial markets and nearly caused a systematic crash. It probably would have if the Federal Reserve Bank of New York had not stepped in to broker a deal where a group of banks would inject $3.5 billion of new equity in LTCM in exchange for 90% of the firm's shares and complete control of management
- Many banks took a substantial write-off as a result of losses on their investments. UBS took a third-quarter charge of $700 million, Dresdner Bank AG a $145 million charge, and Credit Suisse $55 million.

3.2 JPMorgan Chase London Whale

What Happened?

- Trader Bruno Iksil, a JP Morgan employee, nicknamed the London Whale, accumulated outsized CDS positions in the market. It was part of a series of derivative transactions involving credit default swaps (CDS) which were entered, reportedly as part of the bank's "hedging" strategy.
- It eventually resulted in mammoth trading losses for the bank.

What was the cause?

- Chief investment officer (CIO), Ina Drew, was tasked with managing $350 billion in excess demand deposits. Her office used this money to make massive bets on synthetic credit derivatives.
- In early 2011, the bank realized that it needed to reduce risk in order to satisfy regulatory capital requirements. Rather than downshifting the volume of its short bets, the CIO's leadership decided to double down with long bets to conceptually offset the risk in short holdings.
- Doing so effectively negated much of the risk management goals involved with taking the short positions in the first place. Instead of decreasing risk exposure (i.e., the stated objective from upper management), this strategy actually expanded risk exposure in pursuit of profit.
- The CIO was routinely breaching (and disregarding) internally established risk limits.

3.2 JPMorgan Chase London Whale

What could have been done better?

- When calendar year 2012 opened with losses in the CIO's strategies, rather than adjust the economic impact of their trades, leadership decided to adjust the valuation methodology of their synthetic derivatives. Best practice is to use the midpoint of the daily trading range as the valuation anchor. By the end of January 2012, the CIO was now using an assigned price (i.e., cherry picking) from anywhere within the daily range that made the position appear less risky for internal controls. This was amended after being flagged by the deputy chief risk officer which happened quite late.
- The CIO ignored 330 breaches of its VaR-established risk limits between January 1, 2012 and April 30, 2012 . The CIO devised a series of revised VaR assumptions that decreased calculated VaR by 50%.

Result:

- Investigations to examine the firm's risk management systems and internal controls were launched.
- JPMorgan Chase agreed to pay $920 million in fines & suffered $6 billion trading loss.
- It's CIO, Ina Drew stepped down and CEO, Jamie Dimon's pay was cut in half.
- The Volcker Rule was implemented in July 2015 as a result of this case.

4 Business Risk

Business risk is the exposure a company or organization has to factor(s) that will lower its profits or lead it to fail. Anything that threatens a company's ability to achieve its financial goals is considered a business risk.

- Companies may not be able to completely avoid business risk but they can take steps to mitigate its impact, including the development of a strategic risk plan.
- A company with a higher amount of business risk may decide to adopt a capital structure with a lower debt ratio to ensure that it can meet its financial obligations at all times.
- Business risk is influenced by a number of different factors including:
    i. Consumer preferences, demand, and sales volumes
    ii. Per-unit price and input costs
    iii. Competition
    iv. The overall economic climate
    v. Government regulations

4.1 Metallgesellschaft Refining and Marketing (MGRM)

What Happened?

- Metallgesellschaft Refining and Marketing (MGRM), an American subsidiary of an international conglomerate, deployed a rolling hedge strategy (a type of dynamic hedging). In 1993, it implemented a marketing strategy designed to insulate customers from price volatility in the petroleum markets, for a fee.
- In late 1993, spot oil prices declined sharply. The result of this contango was a $1.3 billion margin call to offset unrealized losses. The company did not have cash to cover this substantial paper loss (because its customer contracts were all long-term in nature), and the parent company directed the MGRM to close out all hedging positions. This move essentially turned an unrealized loss into a realized one.

What was the cause?

- There was a maturity mismatch between MGRM's short position in long-term fixed-rate contracts with customers and its long position in near-term futures contracts, though many economists believe this hedging strategy is fundamentally sound.
- While deploying rolling hedge, the firm should have taken into consideration accounting limitations, (MGRM, the German parent company follows IFRS) which led it to report paper losses but not paper gains which could result in a ratings downgrade and hence increasing cost of funds.
- Trading liquidity risk also contributed to the loss for the size of trades MGRM was undertaking.

4.1 Metallgesellschaft Refining and Marketing (MGRM)

What could have been done better?

- The futures being used to hedge were exchange-traded instruments requiring daily cash settlement. The long-term contracts with customers involved no such cash settlement. So no matter how effective the hedging strategy was, the consequence of a large downward move in gas and oil prices would be to require MGRM to pay cash against its futures positions that would be offset by money owed to MGRM by customers who would be paid in the future. A better hedge would have taken care of this issue.
- Regardless of a firm's conclusions about probable return, its assessment of risk should include valuation reserves (from an accounting perspective), and volume limits based on reasonable stress testing of assumptions.

Result:

- The company lost $1.3 billion in 1993.
- It also became involved in a key European Court of Justice case (based on the tax treatment of dividends).
- It didn't go bankrupt as a group because of the massive size of the conglomerate which MGRM was a part of.

4.2 Banker‘s Trust (BT)

What Happened?

- Banker’s Trust (BT), an American banking organization, was sued by Procter & Gamble (P&G) and Gibson Greetings in 1994. Both P&G and Gibson claimed that they had suffered large losses in derivatives trades they had entered into with BT due to being misled by BT as to the nature of the positions.
- These were trades on which BT had little market or credit risk, since it had hedged the market risk on them with other derivatives and there was no credit issue of P&G or Gibson being unable to pay the amount they owed.

What was the cause?

- After discussion with BT, P&G decided to bet on an interest rate decline using complex leveraged swaps. At one point, it was leveraged 20:1 in a series of swaps where BT would pay P&G a fixed rate in return for a floating-rate payment from P&G. Things went just fine at first, but then the Federal Reserve began to raise interest rates (by 250 basis points) in 1994. This unexpected change cost P&G a substantial sum of money, in part, because it chose to be speculators and not just hedge risk exposures. Its leverage amplified the losses.
- Several other firms had a similar experience with BT.
- The derivatives were not well-tailored to the specific needs of organizations like P&G and Gibson but rather were just intended to reduce funding costs.

4.2 Banker‘s Trust (BT)

What could have been done better?

- The legal contracts should’ve been better set from BT’s standpoint.
- Tailoring of risk management instruments is a very important step which BT’s management seems to have entirely skipped.
- The complexity of the structures used to hedge by BT also raised suspicions of foul play so that clients couldn’t really understand the instruments and thus couldn’t compare it with other competitors of BT making them highly dependent on it.

Result:

- The company’s reputation was dealt a huge blow due to this series of scandals which resulted in it being eventually taken over by Deutsche Bank.
- Both the magnitude of losses and the litigation by well-known companies caused market regulators to intervene. Concerns motivated by the particular Bankers Trust case eventually extended to the OTC derivatives market in general. The US CFTC (Commodity Futures Trading Commission) embarked on a failed attempt to take over part of the bank regulators' role in regulating the OTC derivatives market in the late 1990s.

4.3 JP Morgan, Citigroup & Enron

What Happened?

- Enron, for years, engaged in dubious accounting practices to hide the size of it's borrowings from investors and lenders (it was this event which brought an end to the major accounting firm Arthur Andersen).
- Enron disguised borrowings as oil futures contract. It eventually lead to bankruptcy in 2001.

What was the cause?

- As a major player in the energy markets, it was expected that Enron would be heavily engaged in futures contracts on oil. But these particular futures contracts did not involve taking any position on oil price movements.
- Enron sold oil for future delivery, getting cash, and then agreed to buy back the oil that it delivered for a fixed price. So, in effect no oil was ever delivered. When you canceled out the oil part of the trades, what was left was just an agreement for Enron to pay cash later for cash it had received up front, in practice, if not in legal terms, a loan.
- The advantage was that Enron appeared more desirable to both investors and lenders due to the misreporting of technical loans as futures instruments.

4.3 JP Morgan, Citigroup & Enron

What could have been done better?

- After the BT incident, investment banks like JP Morgan (now JP Morgan Chase & Co) & Citigroup, put in controls to guard against exploitation of customers. But it was not seen as a part of a bank's responsibility to safeguard others from the actions by the customer.
- Both the banks treated these transactions as loans in their own books so they didn't deceive their own lenders or investors.
- But they were fully aware of Enron's intent for entering into such suspicious transactions and should've had alerted the regulators regarding the same.

Result:

- JP Morgan and Citigroup agreed to pay a combined $286 million for "helping to commit a fraud" on Enron's shareholders. They also agreed to put new controls in place to ascertain that their clients were accounting for derivative transactions transparently.
- Enron filed for bankruptcy in early 2001 with 4000 of it's employees losing their jobs. About 9000+ employees who's savings depended on Enron's stock price were also badly hit.
- Arthur Andersen closed following the scandal and Sarbanes-Oxley Act was passed as a direct result of it.

5 Liquidity Risk

Liquidity risk occurs when an individual investor, business, or financial institution cannot meet its short-term debt obligations. The investor or entity might be unable to convert an asset into cash without giving up capital and income due to a lack of buyers or an inefficient market.

- Investors, managers, and creditors use liquidity measurement ratios when deciding the level of risk within an organization. They often compare short-term liabilities and the liquid assets listed on a company's financial statements.
- As we've seen through a lot of these case studies, non-availability of capital at required times caused a lot of these firms to fail. Even if fundamentals for such firms were strong, they didn't take into consideration the liquidity risk associated when large contracts are signed in real-life scenarios and how difficult it is to execute them successfully.

6 Summary

- We've talked about Operational Risk, Model Risk, Business Risk and Liquidity Risk regarding case studies. When we study them carefully, we realize it's more often than not an interplay of various factors which causes these disasters to occur.
- Business and Operational Risk seem to be unavoidable due to the greed or avarice of humans but well designed corporate and compensation structures along with a tailored set of checks and balances and occasional reviews can help keep these in check.
- Financial Disaster Case studies are studied in order to avoid mistakes that have occurred in the past from recurring in the future.
- From an Indian standpoint, a lot of mistakes that western organizations have committed are avoidable for Indian organizations. This saves tremendous resources while also avoiding unnecessary shocks to the financial system. The PMC case in India was very similar to a SWIFT transactions case which occurred in the western world before. We should take those as case studies to avoid such disasters.