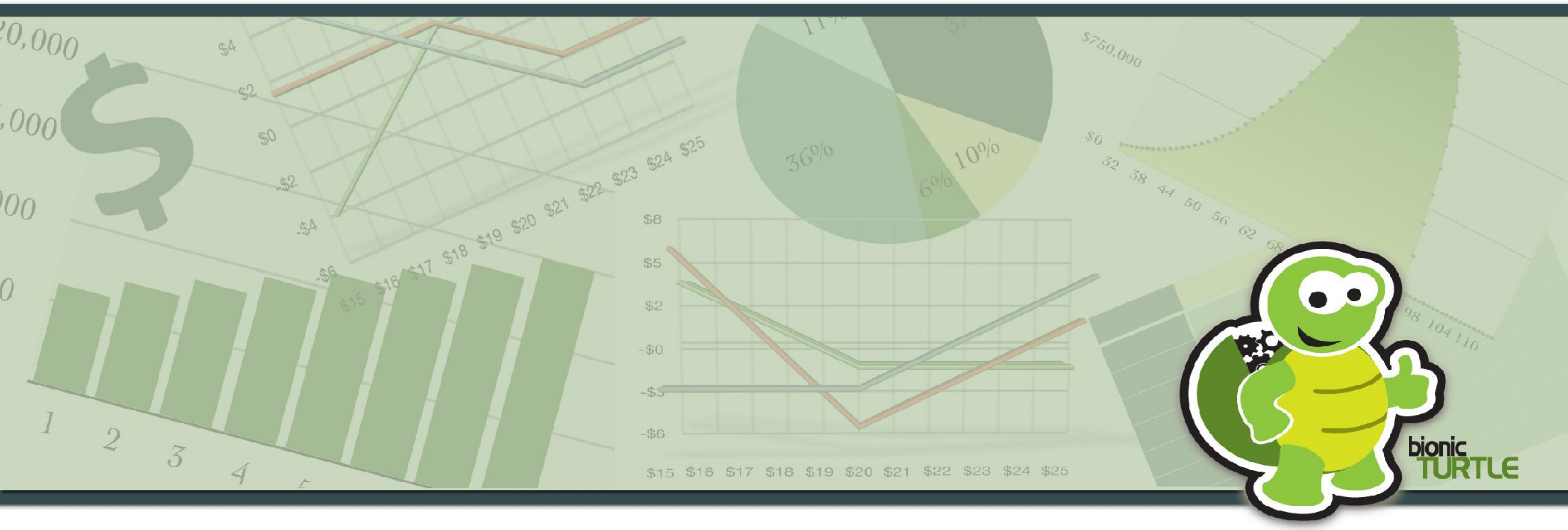

P1.T1. Foundations of Risk Management

Chapter 9. Learning From Financial Disasters

Bionic Turtle FRM Study Notes

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Chapter 9. Learning From Financial Disasters

- **Analyze the key factors that led to and derive the lessons learned from case studies involving the following risk factors:**
- **Interest rate risk, including the 1980s savings and loan crisis in the US**
- **Funding liquidity risk, including Lehman Brothers, Continental Illinois, and Northern Rock**
- **Implementing hedging strategies, including the Metallgesellschaft case**
- **Model risk, including the Niederhoffer case, Long Term Capital Management, and the London Whale case**
- **Rogue trading and misleading reporting, including the Barings case**
- **Financial engineering and complex derivatives, including Bankers Trust, the Orange County case, and Sachsen Landesbank**
- **Reputational risk, including the Volkswagen case**
- **Corporate governance, including the Enron case**
- **Cyber risk, including the SWIFT case**

Analyze the key factors that led to and derive the lessons learned from case studies involving the following risk factors:

Various risk factors can lead to financial disasters. If ignored, these risk factors can materialize and escalate to major disasters. The various risk factors and the relevant case studies include:

- Interest rate risk – The Savings and Loan Crisis
- Funding Liquidity risk – Lehman Brothers, Continental Illinois, Northern Rock
- Hedging Risk – Metallgesellschaft
- Model Risk – Niederhoffer, LTCM, The London Whale
- Corporate Governance - Enron
- Rogue Trading and Misleading Reporting – Barings
- Risk of using complex derivatives – Orange County, Sachsen
- Reputation Risk – Volkswagen Scandal
- Cyber Risk - SWIFT

Interest rate risk, including 1980s savings and loan crisis in the US

Interest rate risk has emerged in the last century as major risk responsible for firm failures in the financial services sector. The collapse of U.S. Savings and Loan crisis in 1980s is a notable example.

Firms must mitigate interest rate risk by managing the asset liability mismatch on their balance sheet. The effect of interest rate movement on assets must be highly correlated to interest rate movement effect on liabilities even during high volatile interest rate environments. This can be partially done using duration matching tools or by using sophisticated derivative products such as caps, floors and swaps.

The Savings and Loan Crisis

The Savings and Loan industry in US prospered mainly because of two factors:

- Regulations related to interest paid on deposits (i.e. regulation Q)
- Upward sloping yield curve: S&Ls borrowed at short-term maturity savings and term deposits and lent typically at ten-year residential mortgage. In banking industry term, S&Ls simply had to “ride the yield curve” to make profits.

Inflation in late 1970s rose leading Fed to implement a restrictive monetary policy. This led to a significant rise in the interest rates. The funding costs for S&Ls rose because there was an increase in the short-term rates (main source of funding for S&Ls). It led to negative net interest margins on many of the long-term residential mortgage portfolios.

To improve their balance sheets S&Ls started with new businesses which had higher margins but riskier lending. However, the industry lost more money due to poor credit controls and business risks. About one-third S&Ls failed during 1986 and 1995. Finally, the industry was supported by the one of the world’s most expensive banking system bailout of USD 160 billion fully funded by the American taxpayers.

Funding liquidity risk, including Lehman Brothers, Continental Illinois, and Northern Rock

Funding liquidity risk is the risk that the Bank cannot fund its liabilities. Such risk can arise due to external market conditions or the Bank’s own Balance sheet problems. Generally, it is the combination of both that causes the collapse of the firm. The collapse of Bear Stearns, Lehman Brothers and the Long-term Capital management (LTCM) are examples of funding liquidity crises caused due to both the external market conditions and the issues with the Bank’s inherent Business model.

Liquidity Crisis at Lehman Brothers

Facts

- Lehman Brothers was a 150-year-old Investment bank which invested heavily in the securitized U.S. real estate market during 1990s and early 2000s.
- The Bank sold mortgages to residential customers, converted the loan portfolios into high rated securities and then sold these securities to investors.
- In 2006 real estate market in US saw a decline in housing prices after a year-long boom.
- The Bank increased the amount of mortgage related assets for its own account and started making outsized bets on U.S. commercial real estate as well.

Key factors:

- While the Bank's business model was risky, its leverage ratio and funding strategy turned investment position into a disaster. In 2007, the Bank had an asset to equity ratio of nearly 31:1. The bank borrowed short-term funds (e.g. daily borrowing from repo markets) to make long term illiquid real estate investments.
- The US housing bubble burst in second half of 2007 and subprime mortgage market was in deep trouble. Lehman Brothers and other highly leveraged firms with investments into subprime securities started to lose confidence. In march 2008, Bear Sterns (highly leveraged Bank) collapsed and J.P. Morgan bought it at one-tenth of the prior market value.

The final collapse

- In the following month after the collapse of Bear Sterns, investors started questioning the accuracy of value of Lehman's real estate assets. The Bank's counterparties started to lose confidence and demanded more collateral, began reducing their exposure and some refused to deal with the Bank.
- On September 15, 2008 Lehman Brothers filed for Bankruptcy after failed attempts for funds or sell off to a larger Bank.

Liquidity crisis at Continental Illinois

Continental Illinois Bank is an example of funding liquidity risk created by internal credit portfolio problems and exacerbated by weaknesses in institutions funding strategy.

Facts:

- Continental Illinois was once the largest bank in Chicago.
- The Bank pursued an aggressive growth strategy in late 1970s which saw a great jump in its commercial and industrial lending from USD 5 billion to USD 14 billion in 5 years.
- The Bank's asset grew from USD 21.5 billion to USD 45 billion during the same time.
- A small Bank, Penn Square closed down in 1982. Penn Square issued loans to oil and natural gas companies during the boom period of late 1970s.
- Being a small Bank, Penn Square would pass on large loans to the big banks like Continental Illinois.