1. INTRODUCTION

Market risk is an inevitable part of the capital market. Broadly, ‘Market Risk’ means changes in the market prices of underlying. In commercial business, the market risk may be a consequence but in the capital market, it forms an organization’s core business. Market risk can arise in different stages of services or different timing, say during a hour, a day or a week. Generally, the primary concern in assessing the market risk is to assess it in absolute terms or relative changes in comparison of any benchmark, say interest rates, etc.

As we have studied in the chapter of Portfolio Risk Management that unsystematic risk can be diversified but systematic risk cannot be diversified and systematic risk is the market related risk. Hence, market risk is closely associated with various financial products. This risk is also associated with the subset of financial products called ‘Derivative’.

Derivatives are generally used to hedge the market risk and even they are used to make speculative gains. However, though derivative has been proved to be a hedging instrument but in some cases it has proved to be disastrous to the existence of an organization.

2. TYPES OF MARKET RISKS

The market risk can be broken down into different classes:
2.1 Interest Rate Risk

This risk arises due to change in the yield curve. Since, interest dictates the returns and costs achieved in the business of lending and borrowing it affects not only current value of items of Balance Sheet of a financial institution but also the Off the Balance Sheet items.

The various sources of interest rate risk are as follows:

a) Yield Curve Risk: - This risk arises from shift in the fixed income securities due to change in the interest rate. This lead to change in the value of fixed income securities. Sometimes this loss may be so vital that the existence of any organization can also be at stake.

b) Basis Risk: - Also called spread risk. This risk arises due to possible change in spreads. In the context of fixed income securities this risk arises due to change in relationship between interest rates based on different benchmarks. Suppose if a bank has lent money on PLR basis which is currently 10% and borrowed money on Repo basis which is 7%. Thus, it may be possible that due to change in interest rate of any basis this gap may be skewed.

c) Repricing Risk: - This risk arises on reset date, and mainly affects the fixed income securities which are due for maturities or whose rates are to be reset at some time in near future.

d) Optionality Risk: - This risk arises due to embedded optionality, feature in a financial product which gives either party (lender or borrower) an option to call or repay the money lent/borrowed.

This option is normally exercised in case of change of interest rate to which the borrowed/lent amount is linked. Suppose current floating interest is 8% at which a person deposit money with bank for a period of 24 years. If after 6 months interest rate goes upto 9%, then if depositor has option to claim refund before due period, then certainly he will claim refund of fixed deposit so that he can reinvest the money at a better rate.

This can also be possible from banks point of view, had the bank has option to refund money than if interest rate goes down then it can refund money already borrowed at higher rate and again borrow money at lower rate.

2.2 Foreign Exchange Risk

As discussed in the Paper of Strategic Financial Management, this arises on account of change in the price of foreign currency. Although it does not affect all financial institutions but mainly affects the organization involved in trading foreign exchange i.e. Buying and Selling forex or Institutions whose assets and liabilities are denominated in foreign exchange.

2.3 Commodity Risk

This risk mainly arises due to change in price of commodities, commodity prices index etc. This risk mainly affects those financial institutions whose main parties are supplier, consumers, and
traders of such commodities. A hedge fund which has invested a huge amount in and oil company's share shall adversely affected by falling oil prices.

2.4 Equity Risk

This risk normally occurs when there is a fall in equity indices or most of the equity shares. This kind of risk normally results from any unprecedented events say sovereign default etc. In case if the Government of any country defaults in its debt repayment then its equity market is likely to be adversely affected.

3. EARLY SIGNALS

Effective risk management starts with identification and understanding of the various types of risks. It involves the establishment of risk limits, monitoring mechanisms, and the adoption of risk mitigating and other prudent practices.

To test whether a firm is facing market risk or not there are some signals which may be indicated that firm is facing the same risk.

a) Applying Wrong Models: - It might be possible that the models used to assess the risk are not adequately tested and may not be in position to perceive a big or rare or unforeseen events contributing to huge loss.

b) Weak Internal Control: - Company may not have adequate internal control due to which it may be more exposed to market as action of speculation by one may be unchecked.

c) Speculaitve Aptitude: - Treasury departments in companies involved in non financial business are meant for hedging the risk. However, it might be possible that they may be instructed to generate revenue and becomes profit centre.

d) Non – Core Business:- As mentioned above a company may be involved in non core business activities such as making large profit from the sale and purchase of foreign exchange, which may not be questioned by the management nor any limits were set for the person involved in treasury dealings.

In such a situation, it might be possible that company may incur a huge loss on account of market risk.

e) Inexperience:- In some cases, it has been observed that a company may have exposure to those instruments or financial products for which it has no or very little experience. This type of exposure is normally undertaken to earn huge profit in short span of time.
14.4 FINANCIAL SERVICES AND CAPITAL MARKET

f) Sovereign Default: - Sovereign debt crisis is one of the major signal of market risk as it will urge the investors to shift to more secure financial instrument. Further, sovereign debt crisis also lead to loss of confidence in other type of financial instruments.

g) Style Drift: - In some cases it has been observed that to cover the loss some manager may divert fund to more speculative transaction and thus pushing the company to severe market risk.

h) Superstar: - Sometimes one person may be titled as superstar to which even management may be reluctant to question about his/her actions because of their his/her perceived ability to generate huge profits. In such a situation, it might be possible that there may be huge or unanticipated losses because these so-called superstars may cross their limits.

i) Inadequate Supervision: - Inadequate supervision may be another strong signal that highlight the company’s exposure to market risk.

4. CREDIT RISK

Credit is the basis of business though it is difficult to define but it can be termed as amount of money that will be paid later in exchange of some goods or services received earlier.

Since, it involves a commitment to pay in future period and future is uncertain it involves the risk. Hence, credit risk can be defined as refusal or inability of credit customer to pay the owed sum partially or in full or in time.

Credit Risk is also known as counterparty risk.

While in non-banking businesses the credit risk is related to promised payment for goods and services supplied, in the context of banking business it means failure or refusal to refund the loan account by the borrower in full or partially in time.

4.1 Two Way Risk

The definition of credit risk can also be viewed from other angle or other side i.e. receiver of goods or borrower in case of banking. This risk lies in not supplying the committed supply of goods by the seller leading to production halt or other results for the buyer.

Similarly in banking business the borrower faces the risk of withdrawing of lending facilities by the bank.

4.2 Risk – Return Trade Off

As discussed earlier credit is the basis of business and accordingly, while decision to give credit to be taken there should be a tradeoff between the risk and return (reward) for the supplier or lender.
In case of banking business risk is greater when larger amount of credit is granted or when credit is granted for longer periods.

The optimal credit decision would maximize return. The trade-off between risk and return in the context of Credit Risk calls for following decisions:

i) How much Credit Risk should be accepted in return of increase in sale or business in case of banking?

ii) How much compensation should be added while pricing the product?

iii) Placing of Credit Cap or limit for each customer.

iv) Acceptance or rejection of customer’s request.

4.3 Credit Risk in Capital Market

Credit Risk analysis from Bank’s point of view will be an umbrella covering credit risk of other financial institutions. A bank acts as intermediate between provider of funds and seeker of funds. Bank accepts deposits from one group and provides funds to other group. Since bank grants credit it accepts the risk on regular basis. Hence, banks evaluate their experience and incorporate lessons from failure in a routine manner.

Banks caters both segments wholesale as well as retail segments. The main distinction between these two segments is complexities of financial products involved. For example, in case of retail segments the banking product may generally range from credit card to housing loans, in case of wholesale segment there are ‘n’ number of financial products. Main sources of seeker of bank’s fund are corporates, ranging from small to large capitalization.

4.3.1 Categories of Credit Risk

Broadly, credit risk can be divided into following categories:

(i) Default Risk – This risk means the missing a payment obligation (of principal or interest or both). Default Risk can be measured by probability of default. It depends on credit worthiness of a borrower which in turn depends upon various factors such as management of organization, size of business, strength and reputation of promoters etc.

(ii) Exposure Risk – This implies the uncertainty associated with future level or amount of risk. In other words, this risk is mainly associated with unexpected action of other party say prepayment of loan before due date or request for refund of deposit before due date.

In some cases, say for amortized credit such risks does not exists as period of receipt is known with greater certainty. Due to uncertainty generally off balance sheet items create such risks. However, in such cases, the exposure is not associated with client’s behavior rather behaviors of market which keeps on changing constantly. In case value of derivative position
turns out to be positive there is credit risk as it will lose money, if other party defaults. To overcome such risk normally derivative instrument are used.

(iii) **Recovery Risk** – This risk is related to recoveries in the event of default, which in turn depends upon various factors such as quality of guarantee provided by borrower, and other surrounding circumstances. This risk can be minimized through Collateral and Third Party Guarantee. However, existence of these two risk management tool also carries risk.

(a) **Collateral Risk:** Although collateral reduces the credit risk but it happens only if collateral is sold at a significant value. The quickness in realization of collateral depends upon its nature and prevailing market conditions. In normal course, fixed asset collateral normally carries low realizable value than cash collateral. However, if in buoyant market say in case of a property even a fixed asset in the form of a house property carries a higher value. With the use of collateral, the credit risk becomes twofold:

(i) Uncertainty related to access it and disposing encumbrances which may be legal in some cases.

(ii) Uncertainty related to the value realizable from the collateral which may be subject to various factors. To some extent the 2008 crisis was due to overvaluation of collateral against which borrowers were granted hefty loan and at the time of realisation the collateral value was very less.

(b) **Third Party Guarantee Risk:** This collateral is a kind of simple transfer of risk on Guarantor and in case guarantor defaults then risk again comes back to lender.

### 4.3.2 Measurement of Credit Risk in Banking Transactions

To measure random loss, following formula can be used:

\[ D \times A \times (1 - r) \]

- **D** = Default %
- **A** = Amount of Exposure
- **R** = Recovery Rate %

This default % can also be computed through probability.

### 4.3.3 Factors Affecting the Credit Risk

The factors affecting the credit risk of a bank can be divided into following two categories:

(i) **Internal Factors:** These factors are internal to the bank, some of these are as follows:

(a) Concentration of credit in particular geographical locations or business segments.
(b) Excessive lending to particular industry is subject to cyclical fluctuations.
(c) Ignoring the purpose for which loan was sought by the customer.
(d) Poor Quality or Liberal Credit Appraisal while granting the loan.
(e) Absence of efficient recovery mechanism.

(ii) External Factors: These factors are external to the bank and beyond its controls. These factors not only impact the profitability of borrower but also effects their repayment capability. Some of such external factors are as follows:
(a) Fluctuation in Exchange Rate.
(b) Change in Govt. Policies.
(c) Fluctuation in Interest Rates.
(d) Change in Political Environment of the own country.
(e) In case of Foreign project change in Country Risk profile.

4.3.4 Credit Risk Management in Banks

In order to implement appropriate Credit Risk Management system in bank, Reserve Bank of India (RBI) expects every bank to take specific measures. The broad disclosures on the following to be made:

1. Policy Framework
2. Credit Rating Framework
3. Credit Risk Models
4. Portfolio Management and Risk Limits
5. Managing Credit Risk in Inter-bank Exposure
6. Credit Risk in Off-Balance Sheet Exposure
7. Country Risk
8. Loan Review Mechanism/ Credit Audit
9. RAROC Pricing/ Economic Profit
10. New Capital Accord: Implications for Credit Risk Management

Now let us discuss some of these guidelines in some more details.
1. **Policy Framework:** Based on broad management framework bank should have credit risk measurement and monitoring procedures.

2. **Credit Rating Framework:** Such a rating framework is the basic module for developing a Credit Risk Management System and all advanced models/approaches are based on this structure.

3. **Credit Risk Models:** A credit risk Model seeks to determine (quantify) the risk that the promised cash flow will not be forthcoming. Some of the following techniques can be used:
   (a) Econometric Indicators
   (b) Neural Network
   (c) Optimisation Model
   (d) Rule based or Expert System
   (e) Hybrid System

4. **Portfolio Management and Risk Limits:** The need of credit portfolio management emanates from the necessity to optimize the benefits associated with diversification and reduce the potential adverse impact of concentration of exposure to particular borrower and sector or industry.

5. **Managing Credit Risk in Interbank Exposure:** During the course of its business with other banks, a bank may be exposed to credit risk and therefore it is important to determine proper evaluation of credit risk.

   The key parameters to be evaluated for any bank are as follows:
   a. Capital Adequacy
   b. Asset Quality
   c. Liquidity
   d. Profitability

6. **Credit Risk in Off Balance Sheet Exposure:** For reducing Credit Risk on account of such credit, banks can take many steps.

7. **Country Risk:** In the context of banking business, this risk arises on account of cross border lending and investment. Country risk may comprise the following:
   - **Transfer Risk** – Due to restriction on external transfer of funds.
   - **Sovereign Risk** – Sovereign entities may claim immunity in case of default.
• **Non Sovereign Risk** – It is also called political risk or expropriation risk. This risk implies taking over control by the government of a country.

• **Currency Risk** – Possibility of change in the exchange rate between the currencies of the countries.

• **Macroeconomic and Structural Fragility Risk** – This risk arises on account of poorly developed and weak enforcement in court of law.

For more details, students may refer RBI Guidelines on Risk Management by Banks.