CHAPTER 2

RISK MANAGEMENT

LEARNING OUTCOMES

After going through the chapter student shall be able to understand:

- Identification of types of Risk faced by an organization
- Evaluation of Financial Risks
- Value at Risk (VAR)
- Evaluation of appropriate method for the identification and management of financial risk.

1. IDENTIFICATION OF TYPES OF RISK FACED BY AN ORGANIZATION

A business organization faces many types of risks. Important among them are discussed as below:

1.1 Strategic Risk

A successful business always needs a comprehensive and detailed business plan. Everyone knows that a successful business needs a comprehensive, well-thought-out business plan but it's also a fact of life that, if things changes, even the best-laid plans can become outdated if it cannot keep pace with the latest trends. This is what is called as strategic risk. So, strategic risk is a risk in which a company's strategy becomes less effective and it struggles to achieve its goal. It could be due to technological changes, a new competitor entering the market, shifts in customer demand, increase in the costs of raw materials, or any number of other large-scale changes.

We can take the example of Kodak which was able to develop a digital camera by 1975 but it considers this innovation as a threat to its core business model, and failed to develop it. However, it paid the price because when digital camera was ultimately discovered by other companies, it failed to develop it and left behind. Similar example can be given in case of Nokia when it failed to upgrade its technology to develop touch screen mobile phones. That delay enables Samsung to become a market leader in touch screen mobile phones.

However, a positive example can be given in the case of Xerox which invented photocopy machine. When laser printing was developed, Xerox was quick to lap up this opportunity and changes its business model to develop laser printing. So, it survived the strategic risk and escalated its profits further.

1.2. Compliance Risk

Every business needs to comply with rules and regulations. For example with the advent of Companies Act, 2013, and continuous updating of SEBI guidelines, each business organization has to comply with plethora of rules, regulations and guidelines. Non-compliance leads to penalties in the form of fine and imprisonment.

However, when a company ventures into a new business line or a new geographical area, the real problem then occurs. For example, a company pursuing cement business likely to venture into sugar business in a different state but laws applicable to the sugar mills in that state are different. So, that poses a compliance risk. If the company fails to comply with laws related to a new area or industry or sector, it will pose a serious threat to its survival.

1.3 Operational Risk

This type of risk relates to internal risk. It also relates to failure on the part of the company to cope with day to day operational problems. Operational risk relates to 'people' as well as 'process'. We will take an example to illustrate this. For example, an employee paying out ₹ 1,00,000 from the account of the company instead of ₹ 10,000.

This is a people as well as a process risk. An organization can employ another person to check the work of that person who has mistakenly paid ₹ 1,00,000 or it can install an electronic system that can flag off an unusual amount.

1.4 Financial Risk

Financial Risk is referred as the unexpected changes in financial conditions such as prices, exchange rate, Credit rating, and interest rate etc. Though political risk is not a financial risk in direct sense but same can be included as any unexpected political change in any foreign country may lead to country risk which may ultimately may result in financial loss.

Accordingly, the broadly Financial Risk can be divided into following categories.

1.4.1 Counter Party Risk

This risk occurs due to non-honoring of obligations by the counter party which can be failure to deliver the goods for the payment already made or vice-versa or repayment of borrowings and interest etc. Thus, this risk also covers the credit risk i.e. default by the counter party.

1.4.2 Political Risk

Generally this type of risk is faced by and overseas investors, as the adverse action by the government of host country may lead to huge loses. This can be on any of the following form.

- Confiscation or destruction of overseas properties.
- Rationing of remittance to home country.
- Restriction on conversion of local currency of host country into foreign currency.
- Restriction as to borrowings.
- Invalidation of Patents
- Price control of products

1.4.3. Interest Rate Risk

This risk occurs due to change in interest rate resulting in change in asset and liabilities. This risk is more important for banking companies as their balance sheet's items are more interest sensitive and their base of earning is spread between borrowing and lending rates.

As we know that the interest rates are of two types i.e. fixed and floating. The risk in both of these types is inherent. If any company has borrowed money at floating rate then with increase in floating the liability under fixed rate shall remain the same. This fixed rate, with falling floating rate the liability of company to pay interest under fixed rate shall comparatively be higher.

1.4.4 Currency Risk

This risk mainly affects the organization dealing with foreign exchange as their cash flows changes with the movement in the currency exchange rates. This risk can affect cash flow both adversely or favorably. For example, if rupee depreciates vis-à-vis US$ receivables will stand to gain vis-à-vis to the importer who has the liability to pay bill in US$. The best case we can quote Infosys (Exporter) and Indian Oil Corporation Ltd. (Importer).

1.4.5 Liquidity Risk

Broadly liquidity risk can be defined as inability of organization to meet it liabilities whenever they become due.

This risk mainly arises when organization is unable to generate adequate cash or there may be some mismatch in period of cash flow generation.

This type of risk is more prevalent in banking business where there may be mismatch in maturities and receiving fresh deposits pattern.

2. EVALUATION OF FINANCIAL RISK

The financial risk can be evaluated from different point of views as follows:

(a) From stakeholder's point of view: Major stakeholders of a business are equity shareholders and they view financial gearing i.e. ratio of debt in capital structure of company as risk since in event of winding up of a company they will be least prioritized.

Even for a lender, existing gearing is also a risk since company having high gearing faces more risk in default of payment of interest and principal repayment.

(b) From Company's point of view: From company's point of view if a company borrows excessively or lend to someone who defaults, then it can be forced to go into liquidation.

(c) From Government's point of view: From Government's point of view, the financial risk can be viewed as failure of any bank or (like Lehman Brothers) down grading of any financial institution leading to spread of distrust among society at large. Even this risk also includes wilful defaulters. This can also be extended to sovereign debt crisis.

3. VALUE-AT-RISK (VAR)

As per Wikipedia, VAR is a measure of risk of investment. Given the normal market condition in a set of period, say, one day it estimates how much an investment might lose. This investment can be a portfolio, capital investment or foreign exchange etc., VAR answers two basic questions -

(i) What is worst case scenario?

(ii) What will be loss?

It was first applied in 1922 in New York Stock Exchange, entered the financial world in 1990s and become world's most widely used measure of financial risk.

3.1 Features of VAR

Following are main features of VAR

(i) *Components of Calculations:* VAR calculation is based on following three components :

(a) Time Period

(b) Confidence Level – Generally 95% and 99%

(c) Loss in percentage or in amount

(ii) *Statistical Method:* It is a type of statistical tool based on Standard Deviation.

(iii) *Time Horizon:* VAR can be applied for different time horizons say one day, one week, one month and so on.

(iv) *Probability:* Assuming the values are normally attributed, probability of maximum loss can be predicted.

(v) *Risk Control:* Risk can be controlled by setting limits for maximum loss.

(vi) *Z Score:* Z Score indicates how many standard Deviations is away from Mean value of a population. When it is multiplied with Standard Deviation it provides VAR.

3.2 Application of VAR

VAR can be applied

(a) to measure the maximum possible loss on any portfolio or a trading position.

(b) as a benchmark for performance measurement of any operation or trading.

(c) to fix limits for individuals dealing in front office of a treasury department.

(d) to enable the management to decide the trading strategies.

(e) as a tool for Asset and Liability Management especially in banks.

3.3 Example:

The concept of VAR can be understood in a better manner with help of following example:

Suppose you hold worth ₹ 2 crore shares of X Ltd. whose market price standard deviation is 2% per day. Assuming 252 trading days a year, determine maximum loss level over the period of 1 trading day and 10 trading days with 99% confidence level.

Answer

Assuming share prices are normally distributed for level of 99%, the equivalent Z score from Normal table of Cumulative Area shall be 2.33.

Volatility in terms of rupees shall be:

2% of ₹ 2 Crore = ₹ 4 lakh

The maximum loss for 1 day at 99% Confidence Level shall be:

₹ 4 lakh x 2.33 = ₹ 9.32 lakh,

and expected maximum loss for 10 trading days shall be:

√10 x ₹ 9.32 lakh = 29.47 lakhs

4. APPROPRIATE METHODS FOR IDENTIFICATION AND MANAGEMENT OF FINANCIAL RISK

As we have classified financial risk in 4 categories, we shall discuss identification and management of each risk separately under same category.

4.1 Counter Party risk

The various hints that may provide counter party risk are as follows:

(a) Failure to obtain necessary resources to complete the project or transaction undertaken.

(b) Any regulatory restrictions from the Government.

(c) Hostile action of foreign government.

(d) Let down by third party.

(e) Have become insolvent.

The various techniques to manage this type of risk are as follows:

(1) Carrying out Due Diligence before dealing with any third party.

(2) Do not over commit to a single entity or group or connected entities.

(3) Know your exposure limits.

(4) Review the limits and procedure for credit approval regularly.

(5) Rapid action in the event of any likelihood of defaults.

(6) Use of performance guarantee, insurance or other instruments.

4.2 Political risk

From the following actions by the Governments of the host country this risk can be identified:

1. Insistence on resident investors or labour.

2. Restriction on conversion of currency.

3. Expropriation of foreign assets by the local govt.

4. Price fixation of the products.

Since this risk mainly relates to investments in foreign country, company should assess country risk

(1) By referring political ranking published by different business magazines.

(2) By evaluating country's macro-economic conditions.

(3) By analysing the popularity of current government and assess their stability.

(4) By taking advises from the embassies of the home country in the host countries.

Further, following techniques can be used to mitigate this risk.

(i) Local sourcing of raw materials and labour.

(ii) Entering into joint ventures

(iii) Local financing

(iv) Prior negotiations

4.3 Interest Rate Risk

Generally, interest rate Risk is mainly identified from the following:

1. Monetary Policy of the Government.
2. Any action by Government such as demonetization etc.
3. Economic Growth
4. Release of Industrial Data
5. Investment by foreign investors
6. Stock market changes

The management of Interest risk has been discussed in detail in separate chapter later on.

4.4 Currency Risk

Just like interest rate risk the currency risk is dependent on the Government action and economic development. Some of the parameters to identity the currency risk are as follows:

(1) Government Action: The Government action of any country has visual impact in its currency. For example, the UK Govt. decision to divorce from European Union i.e. Brexit brought the pound to its lowest since 1980's.

(2) Nominal Interest Rate: As per interest rate parity (IRP) the currency exchange rate depends on the nominal interest of that country.

(3) Inflation Rate: Purchasing power parity theory discussed in later chapters impact the value of currency.

(4) Natural Calamities: Any natural calamity can have negative impact.

(5) War, Coup, Rebellion etc.: All these actions can have far reaching impact on currency's exchange rates.

(6) Change of Government: The change of government and its attitude towards foreign investment also helps to identify the currency risk.

So far as the management of currency risk is concerned, it has been covered in a detailed manner in a separate chapter.

TEST YOUR KNOWLEDGE

Theoretical Questions

1. Explain the significance of VAR.
2. The Financial Risk can be viewed from different perspective. Explain.

Practical Questions

1. Consider a portfolio consisting of a ₹ 200,00,000 investment in share XYZ and a ₹ 200,00,000 investment in share ABC. The daily standard deviation of both shares is 1% and that the coefficient of correlation between them is 0.3. You are required to determine the 10-day 99% value at risk for the portfolio?

ANSWERS/ SOLUTIONS

Answers to Theoretical Questions

1. Please refer paragraph 3.2.

2. Please refer paragraph 2.

Answers to the Practical Questions

1. The standard deviation of the daily change in the investment in each asset is ₹ 2,00,000 i.e. 2 lakhs. The variance of the portfolio's daily change is

$$V = 2^2 + 2^2 + 2 \times 0.3 \times 2 \times 2 = 10.4$$

$$\sigma \text{ (Standard Deviation)} = \sqrt{10.4} = ₹ 3.22 \text{ lakhs}$$

Alternatively, it can also be computed as follows:

$= (1)^2(0.50)^2 + (1)^2(0.50)^2 + 2(1)(1)(0.3)(0.50)(0.50)$

$= 0.25 + 0.25 + 0.15 = 0.65\%$

σ (Standard Deviation) = $\sqrt{0.65} = 0.80623\%$

σ (Standard Deviation) in Amount = ₹ 400 lakhs x 0.80623% = ₹ 3.22 lakhs

Accordingly, the standard deviation of the 10-day change is

$$₹ 3.22 \text{ lakhs} \times \sqrt{10} = ₹ 10.18 \text{ lakh}$$

From the Normal Table we see that z score for 1% is 2.33. This means that 1% of a normal distribution lies more than 2.33 standard deviations below the mean. The 10-day 99 percent value at risk is therefore

$$2.33 \times ₹ 10.18 \text{ lakh} = ₹ 23.72 \text{ lakh}$$