LES S5:
RISK MANAGEMENT: CONCEPT, SOURCES & TYPES OF RISK

Risk in a Traditional Sense
Risk in holding securities is generally associated with possibility that realized returns will be less than the returns that were expected. The source of such disappointment is the failure of dividends (interest) and/or the security's price to materialize as expected.

Forces that contribute to variations in return price or dividend (interest) constitute elements of risk. Some influences are external to the firm, cannot be controlled, and affect large numbers of securities. Other influences are internal to the firm and are controllable to a large degree. In investments, those forces that are uncontrollable, external and broad in their effect are called sources of systematic risk. Conversely, controllable internal factors somewhat peculiar to industries and/or firms are referred to as sources of unsystematic risk.

Systematic risk refers to that portion of total variability in return caused by factors affecting the prices of all securities. Economic, political, and sociological changes are sources of systematic risk. Their effect is to cause prices of nearly all individual common stocks and/or all individual bonds to move together in the same manner. For example, if the economy is moving toward a recession and corporate profits shift downward, stock prices may decline across a broad front. Nearly all stocks listed on the New York Stock Exchange (NYSE) move in the same direction as they NYSE Index. On the average, 50 percent of the variation in a stock's price can be explained by variation in the market index. In other words, about one-half the total risk in an average common stock is systematic risk.

Unsystematic risk is the portion of total risk that is unique to a firm or industry. Factors such as management capability, consumer preferences, and labor strikes cause systematic variability of returns in a firm. Unsystematic factors are largely independent of factors affecting securities markets in general. Because these factors affect one firm, they must be examined for each firm.

Systematic Risk
Market Risk
Finding stock prices falling from time to time while a company's earnings are rising, and vice versa, is not uncommon. The price of a stock may fluctuate widely within a short span of time even though earnings remain unchanged. The causes of this phenomenon are varied, but it is mainly due to a change in investors' attitudes toward equities in general, or toward certain types or groups of securities in particular. Variability in return on most common stocks that is due to basic sweeping changes in investor expectations is referred to as market risk.

Market risk is caused by investor reaction to tangible as well as intangible events. Expectations of lower corporate profits in general may cause the larger body of common to fall in price. Investors are expressing their judgement that too much is being paid for earnings in the light of anticipated events. The basis for the reaction is a set of real, tangible events political, social, or economic.

Intangible events are related to market psychology. Market risk is usually touched off by a reaction to real events, but the emotional instability of investors acting collectively leads to a snowballing over reaction. The initial decline in the market can cause the fear of loss to grip investors, and a kind of her instinct builds as all investors make for the exit. These reactions to reactions frequently culminate in excessive sellings, pushing prices down far out of live with fundamental value. With a trigger mechanism such as the assassination of a politician, the threat of war, or an oil shortage, virtually all stocks are adversely affected. Likewise, stocks in a particular industry group can be hard hit when the industry goes “out of fashion.”

This discussion of market risk has emphasized adverse reactions. Certainly, buying pains also occur as reactions to real events, however, investors are not likely to think of sharp price advances as risk.

Two other factors, interest rates and inflation, are an integral part of the real forces behind market risk and are part of the larger category of systematic or uncontrollable influences. Let us turn our attention to interest rates. This risk factor has its most direct effect on bond investments.

Interest-Rate Risk
Interest-rate risk refers to the uncertainty of future market values and of the size of future income, caused by fluctuations in the general level of interest rates.

The root cause of interest-rate risk lies in the fact that, as the rate of interest paid on U.S. government securities (USGs) rises or falls, the rates of return demanded on alternative investment vehicles such as stocks and bonds issued in the private sector, rise or fall. In other words, as the cost of money changes for nearly risk-free securities (USGs), the cost of money to more risk-prone issuers (Private sector) will also change.

Investors normally regard USGs as coming closest to being risk-free. The interest rates demanded on USGs are thought to approximate the “pure” rate of interest, or the cost of hiring money at no risk. Changes in rates of interest demanded on USGs will permeate the system of available securities, from corporate bonds down to the riskiest common stocks.

Interest rates on USGs shift with changes in the supply and demand for government securities. For example, a large operating deficit experienced by the U.S. government will require financing. Issuance of additional amounts of USGs will increase the available supply. Potential buyers of this new supply may be induced to buy only if interest rates are somewhat higher than those currently prevailing on outstanding issues. If rates on USGs advance from, say, 9 percent to 9½ percent, investors holding outstanding issues that yield 9 per cent will notice a decline in the price of their securities. Because the 9 percent rate is fixed by contract on these “old” USGs, a potential buyer would be able to realize the competitive 9½ percent rate only if
the current holder "market down" the price. As the rate on USG's advances, they become relatively more attractive and other securities become less attractive. Consequently, bond purchasers will buy governments instead of corporates. This will cause the price of corporates to fall and the rate on corporates to rise. Rising corporate bond rates will eventually cause preferred- and common-stock prices to adjust down ward as the chain reaction is felt through out the system of security yields. (The exact nature and extent of this mark down process and the relationships between rates, prices, and maturity will be explored in Chapter 9.)

Thus, a rational, highly interconnected structure of security yields exists. Shifts in the "pure" cost of money will ripple through the structure, the direct effect on increases in the level of interest rates is to cause security prices to fall across a wide span of investment vehicles. Similarly, falling interest rates precipitate prices markups on outstanding securities.

In addition to the direct, systematic effect on bonds, there are indirect effects on common stocks. First, lower or higher interest rates make the purchase of stocks on margin (using borrowed funds) more or less attractive. Higher interest rates, for example, may lead to lower prices because of a diminished demand for equities by speculators who use margin. Ebulient stock markets are at times propelled to some excesses by margin buying when interest rates are relatively low.

Second, many firms such as public utilities finance their operations quite heavily with borrowed funds. Others, such as financial institutions, are principally in the business of lending money. As interest rates advance, firms with heavy doses of borrowed capital find that more of their income goes toward paying interest on borrowed money. This may lead to lower earnings, dividends, and share prices. Advancing interest rates can bring higher earnings to lending institutions whose principal revenue sources is interest received on loans. For these firms, higher earnings could lead to increased dividends and stock prices.

**Purchasing-Power Risk**

Market risk and interest-rate risk can be defined in terms of uncertainties as to the amount of current dollars to be received by an investor. Purchasing-power risk is the uncertainty of the purchasing power of the amounts to be received. In more everyday terms, purchasing-power risk refers to the impact of inflation or deflation on an investment.

If we think of investment as the postponement of consumption, we can see that when a person purchases a stock, he has foregone the opportunity to buy some good or service for as long as he owns the stock. If, during the holding period, good or services rise, the investor actually loses purchasing power. Rising prices on goods and services are normally associated with what is referred to as inflation. Falling prices on goods and services are termed deflation. Both inflation and deflation are covered in the all-encompassing term purchasing power risk.

Generally, purchasing-power risk has come to be identified with inflation (rising prices); the incidence of declining prices in most countries has been slight.

Rational investors should include in their estimate of expected return an allowance for purchasing-power risk, in the form of an expected annual percentage change in prices. If a cost-of-living index begins the year at 100 and ends at 103, we say that the rate of increase (inflation) is 3 percent \([103/100] - 100\). If from the second to the third year, the index changes from 103 to 109, the rate is about 5.8 percent \([109/103 - 1] = 5.8\%

Just as changes in interest rates have a systematic influence on the prices of all securities, both bonds and stocks, so too do anticipated purchasing-power changes manifest themselves. If annual changes in the consumer price index of other measures of purchasing power have been averaging steadily around 3.5 percent and prices will apparently spurt ahead by 4.5 percent over the next year, required rates of return will adjust upward. This process will affect government and corporate bonds as well as common stocks.

Market, purchasing-power and interest-rate risk are the principle sources of systematic risk in securities; but we should also consider another important category of security risk a unsystematic risks.

**Unsystematic Risk**

Unsystematic risk is the portion of total risk that is unique or peculiar to a firm or an industry, above and beyond that affecting securities markets in general. Factors such as management capability, consumer preferences, and labor strikes can cause unsystematic variability of returns for a company's stock. Because these factors affect one industry and/or one firm, they must be examined separately for each company.

The uncertainty surrounding the ability of the issuer to make payments on securities stems from two sources: (1) the operating environment of the business, and (2) the financing of the firm. These risks are referred to as business risk and financial risk, respectively. They are strictly a function of the operating conditions of the firm and the way in which it chooses to finance its operations. Our intention here will be directed to the broad aspects and implications of business and financial risk. In-depth treatment will be the principal goal of later chapters on analysis of the economy, the industry, and the firm.

**Business Risk**

Business risk is a function of the operating conditions faced by a firm and the variability these conditions inject into operating income and expected to increase 10 percent per year over the foreseeable future, business risk would be higher if operating earnings could grow as much as 14 percent or as little as 6 percent than if the range were from a high of 11 percent to a low of 9 percent. The degree of variation from the expected trend would measure business risk.

Business risk can be divided into two broad categories: external and internal. Internal business risk is largely associated with the efficiency with which a firm conducts its operations with in the broader operating environment imposed upon it. Each firm has its own set of internal risks, and the degree to which it is successful in coping with them is reflected in operating efficiency.

To a large extent, external business risks result from operating conditions imposed upon the firm by circumstances beyond its control. Each firm also faces its own set of external risks, depending upon the specific operating environmental factors with which it must deal. The external factors, from cost of money to defense-budget cuts to higher traffic to a down swing in the business cycle, are far too numerous to list in detail, but the most pervasive external risk factor is probably the business

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Financial Risk

Financial risk is associated with the way in which a company finances its activities. We usually gauge financial risk by looking at the capital structure of a firm. The presence of borrowed money in the capital structure creates fixed payment in the form of interest that must be sustained by the firm. The presence of these interest commitments fixed interest payments due to debt of fixed-dividend payments on preferred stock causes the amount of residual earnings available for common-stock dividends to be more variable than if no interest payments were required. Financial risk is avoidable risk to the extent that managements have the freedom to decide to borrow or not to borrow funds. A firm with no debt financing has no financial risk.

By engaging in debt financing, the firm changes the characteristic of the earnings stream available to the common-stock holders. Specifically, the reliance on debt financing, called financial leverage, has at three important effects on common-stock holders. Debt financing (1) increases the variability of their returns, (2) affects their expectations concerning their returns, and (3) increases their risk of being ruined.

Assigning Risk Allowances (Premiums)

One way of quantifying risk and building a required rate of return (r), would be to express the required rate as comprising riskless rate plus compensation for individual risk factors previously enunciated, or as:

\[ r = i + p + b + f + m + o \]

Where:

- \( i \) = real interest rate (riskless rate)
- \( p \) = purchasing-power-risk allowance
- \( b \) = business-risk allowance
- \( f \) = financial-risk allowance
- \( m \) = market-risk allowance
- \( o \) = allowance for “other” risks

The first step would to determine a suitable risk less rate of interest. Unfortunately, no investment is risk-free. The return on U.S. Treasury bills or an insured savings account, which ever is relevant to an individual investor, can be used as an approximate risk less rate. Savings accounts possess purchasing-power risk and are subject to interest-rate risk of income but not principal. U.S. government bills are subject to interest-risk of principal. The risk less rate might by 8 percent.

Using the rate on U.S. government bills and assuming that interest-rate-and-risk compensation is already included in the U.S. government bill rate, we see in Figure 3-1 the process of building required rate of return for alternative investments.

To quantify the separate effects of each type of systematic and unsystematic risk is difficult because of overlapping effects and the sheer complexity involved. In the remainder of the chapter, we will examine some proxies for packaging into a single measure of risk all those qualitative risk factors taken together that perhaps cannot be measured separately.

Can we Reduce the Risk Exposure?

Every investor wants to guard himself from the risk. This can be done by understanding the nature of the risk and careful planning. Let’s see how can we protect ourselves as an investor from the different types of risks.

Market Risk Protection

a. The investor has to study the price behaviour of the stock. Usually history repeats itself even though it is not in perfect form. The stock that shows a growth pattern may continue to do so for some more period. The Indian stock market expects the growth pattern to continue for some more time in information technology stock and depressing conditions to continue in the textile related stock. Some stocks may be cyclical stocks. It is better to avoid such type of stocks. The standard deviation and beta indicate the volatility of the stock.

b. The standard deviation and beta are available for the stocks that are included in the indices. The National Stock Exchange News bulletin provides this information. Looking at the beta values, the investor can gauge the risk factor and make wise decision according to his risk tolerance. Further, the investor should be prepared to hold the stock for a period of time to reap the benefits of the rising trends in the market. He should be careful in the timings of the purchase and sale of the stock. He should purchase it at the lower level and should exit at a higher level.

Protection Against Interest Rate Risk

a. Often suggested solution for this is to hold the investment sells it in the middle due to fall in the interest rate, the capital invested would experience tolerance.

b. The investors can also buy treasury bills and bonds of short maturity. The portfolio manager can invest in the treasury bills and the money can be reinvested in the market to suit the prevailing interest rate.

c. Another suggested solution is to invest in bonds with different maturity dates. When the bonds mature in different dates, reinvestment can be done according to the changes in the investment climate. Maturity diversification can yield the best results.

Protection Against Inflation

a. The general opinion is that the bonds or debentures with fixed return cannot solve the problem. If the bond yield is 13 to 15% with low risk factor, they would provide hedge against the inflation.
b. Another way to avoid the risk is to have investment in short-term securities and to avoid long-term investment. The rising consumer price index may wipe off the real rate of interest in the long term.

c. Investment diversification can also solve this problem to a certain extent. The investor has to diversify his investment in real estates, precious metals, arts and antiques along with the investment in securities. One cannot assure that different types of investments would provide a perfect hedge against inflation. It can minimise the loss due to the fall in the purchasing power.

Protection Against Business and Financial Risk

a. To guard against the business risk, the investor has to analyse the strength and weakness of the industry to which the company belongs. If weakness of the industry is too much of government interference in the way of rules and regulations, it is better to avoid it.

b. Analysing the profitability trend of the company is essential. The calculation of standard deviation would yield the variability of the return. If there is inconsistency in the earnings, it is better to avoid it. The investor has to choose a stock of consistent track record.

c. The financial risk should be minimised by analysing the capital structure of the company. If the debt equity ratio is higher, the investor should have a sense of caution. Along with the capital structure analysis, he should also take into account of the interest payment. In a boom period, the investor can select a highly levered company but not in a recession.

Notes