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**Q1. (a) If the expected return is 9% and the standard deviation is 8.38%, what is the probability that return will be more than 10 percent? Also find the probability for return to be less than 40 percent. (7 marks)**

# DATA

Expected Return = 9%

Standard Deviation = 8.38%

Find probability for return more then 10%?

Find probability for return less then 40%?

## SOLUTION

Formula

$$Z=\frac{R-\overbar{R}}{S}$$

For the return that will be 10 or more

 $z\_{1}=$ $\frac{10\%-9\%}{8.0838}$

 $z\_{1}=\frac{0.10-0.090}{0.0838}$

 $z\_{1}=\frac{0.10}{0.0838}$

 $z\_{1}=0.1193$

For the return that will be less then 40%

 $z\_{2}=\frac{40\%-9\%}{8.38}$

 $z\_{2}=\frac{0.40-0.09}{0.0838}$

 $z\_{2}=$ 3.69928

After looking the values in the table V

Z1= 0.1193 0.4602

Z2=3.69928 0.0003

**(b) Keeping the current pandemic in mind, which type of risk i.e. systematic or unsystematic risk is faced by stocks traded on Pakistan Stock Exchange and why? (3 marks)**

# SYSTEMATIC RISK

Systematic risk refers to the risk inherent to the entire market or market segment.

# UNSYSTEMATIC RISK

Unsystematic risk is unique to a specific company or industry.

Therefore, from the definitions of systematic and unsystematic risk it is clear that current pandemic falls under systematic risk

# COVID-19 as a systemic risk

The Coronavirus, now commonly known as COVID-19, emerged in December 2019 and has quickly become a global crisis that threatens the health of individuals and the welfare of societies on a vast scale, including its impact on global economic activity and growth.

**Q3. (a) Keeping the pros and cons of different goals in mind, what should be the ultimate goal of a firm? Give reasons for your answer. (5 marks)**

The four main goals of business firm are

1. Profit Maximization
2. Wealth Maximization
3. Value Maximization
4. Others like (Sales Maximization, Growth Maximization, Maximization on ROI, Social goals etc)

Keeping the pros and cons of different goals in mind in my opinion the Wealth Maximization Goal should be the ultimate goal of a firm because

* 1. It takes into consideration long-run survival and growth of the firm.
	2. It is consistent with the object of owner’s economic welfare.
	3. It suggests the regular and consistent dividend payments to the shareholders.
	4. The financial decisions are taken with a view to improve the capital appreciation of the share price.
	5. It considers the risk and time value of money.
	6. It considers all future cash flows, dividends and earnings per share.
	7. Maximization of firm’s value is reflected in the market price of share, since it depends on shareholders’ expectations as regards profitability, long-run prospects, timing differences of returns, risk, distribution of returns etc. of the firm.
	8. The shareholders always prefer wealth maximization rather than maximization of inflow of profits.

**(b) Why do agency problems arise? How can they be avoided? (5 marks)**

# Agency Problem

In corporate finance, the agency problem usually refers to a conflict of interest between a company's management and the company's stockholders. The manager, acting as the agent for the shareholders, or principals, is supposed to make decisions that will maximize shareholder wealth even though it is in the manager’s best interest to maximize his own wealth.

# Why agency problems arises?

The agency problem arises due to an issue with incentives and the presence of discretion in task completion. An agent may be motivated to act in a manner that is not favorable for the principal if the agent is presented with an incentive to act in this way.

# How to avoid agency problems?

While it is not possible to eliminate the agency problem, principals can take steps to minimize the risk of agency costs.

## Regulations

Principle-agent relationships can be regulated, and often are, by contracts, or laws in the case of fiduciary settings. The Fiduciary Rule is an example of an attempt to regulate the arising agency problem in the relationship between financial advisors and their clients. The term fiduciary in the investment advisory world means that financial and retirement advisors are to act in the best interests of their clients. In other words, advisors are to put their clients' interests above their own. The goal is to protect investors from advisors who are concealing any potential conflict of interest.

## Incentives

The agency problem may also be minimized by incentivizing an agent to act in better accordance with the principal's best interests. For example, a manager can be motivated to act in the shareholders' best interests through incentives such as performance-based compensation, direct influence by shareholders, the threat of firing or the threat of takeovers.

Principals who are shareholders can also tie CEO compensation directly to stock price performance. If a CEO was worried that a potential takeover would result in being fired, the CEO might try to prevent the takeover, which would be an agency problem. However, if the CEO was compensated based on stock price performance, the CEO would be incentivized to complete the takeover. Stock prices of the target companies typically rise as a result of an acquisition. Through proper incentives, both the shareholders' and the CEO's interests would be aligned and benefit from the rise in stock price.

**Q2. Consider two investment opportunities, A and B, whose normal probability distributions of one-year returns have the following characteristics:**

|  |  |  |
| --- | --- | --- |
|  | **Investment A** | **Investment B** |
| Expected Return | 0.09 | 0.20 |
| Standard Deviation | 0.05 | 0.10 |

Calculate coefficient of variation for both investment A and B. Identify which of the two investments is more risky and why? (7 marks)

# Answer

|  |  |  |
| --- | --- | --- |
|  | Investment A | Investment B |
| Expected Return(R) | 0.09 | 0.20 |
| Standard Deviation  | 0.05 | 0.10 |
| Coefficient Of Variation=Standard Deviation÷ Expected Return $Cv=Sd/R$ | $$0.05÷0.09$$$$=0.555$$ | $$0.10÷0.20$$$$=0.5$$ |

So, as we know high coefficient of variation means high risk and low coefficient of variation means low risk So in this case of Investment(A) and Investment(B) the investment(A) has his higher Cv that is 0.555 which means it is more risky then investment(B) which has CV of 0.5

**(b) Briefly explain the difference between the characteristic line and security market line. (3 marks)**

|  |  |
| --- | --- |
| Security Market Line | Characteristic Line |
| It represents the relationship between**return and risk** (measured in terms of systematic risk) of a security or portfolio. | It represents the relationship between the **returns of 2 securities** or a security and the market return, over a period of time. |
| The nature of the graph is **cross sectional**(observations coming from different individuals or groups at a single point in time). |

|  |
| --- |
| Characteristic line is a **time series graph**(observations collected at usually discrete and equally spaced time intervals). |
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|  |  |

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| SML graphs beta versus expected return. | SCL graphs time series of security returns versus Index returns. |
| It is used for estimating the expected return for a security relative to its beta risk. | It helps to estimate beta and also determine how a security return correlates to a market index return. |