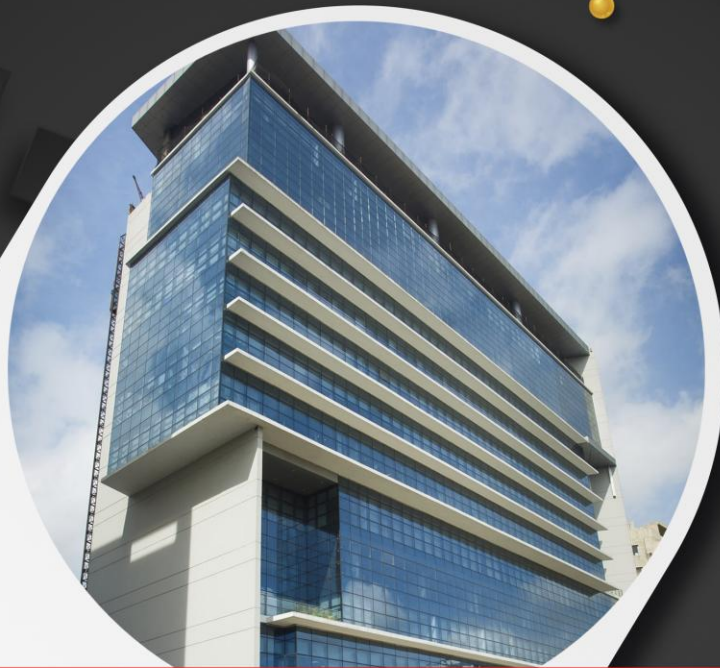


# INVESTMENT BANKING (IB)

AIBB (OPTIONAL SUBJECT)



**THE INSTITUTE OF BANKERS, BANGLADESH (IBB)**

DR Tower (12th Floor), 65/2/2 Bir Protik Gazi Golam Dostogir Road, (Box Culvert Road) Purana Paltan, Dhaka-1000

Phone: 02-55112857-60, Fax : (8802) 55112856, E-mail : [ibb.diploma@gmail.com](mailto:ibb.diploma@gmail.com)

Web : [www.ibb.org.bd](http://www.ibb.org.bd) & [www.online.ibb.org.bd](http://www.online.ibb.org.bd)

## Acknowledgement

As we stand here, proudly presenting this comprehensive reading material on Investment Banking, we are filled with a profound sense of gratitude and accomplishment. This material has been a labor of love, a culmination of tireless efforts, and an embodiment of the collective wisdom and support of numerous individuals whom we would like to acknowledge with deep appreciation.

First and foremost, we are deeply honored and filled with immense gratitude as we take a moment to express our heartfelt thanks and appreciation to the esteemed members of the **IBB Syllabus & Examination Review Committee**. Their trust in our abilities to share our insights and knowledge on this subject has been both encouraging and inspiring.

We would also like to extend our sincere thanks and regards to the IBB Secretary General, **Mrs. Laila Bilkis Ara** for her unwavering commitment to fostering academic excellence and creating platforms for intellectual growth. Her vision and leadership have been instrumental in providing us with this remarkable chance to participate in this endeavor.

Special appreciation goes to our mentor and advisor, **Dr. Toufic Ahmad Choudhury, Former Director General, BIBM**, whose guidance and encouragement have been instrumental in shaping our understanding of investment banking principles and practices. Your patience and willingness to share your expertise have been indispensable in bringing this project to fruition.

We are also grateful to the editorial and publishing team who worked diligently to polish and refine the manuscript, ensuring that the final product meets the highest standards of clarity and coherence.

Last but not least, we want to acknowledge the readers of this book – the dedicated bankers of Bangladesh who will engage with these pages. Their pursuit of knowledge and commitment to professional growth make them the true beneficiaries of this effort.

With great hope and anticipation, we present this book to the esteemed bankers of Bangladesh, hoping that it serves as a guiding light in their journey towards success in the dynamic world of Investment Banking.

Thank you.

**Md. Rizvy Ahmed, Co- Author**

**Mohammad Abu Kausar, Co-Author**

# Table of Contents

<i>Acknowledgement</i> .....	<i>i</i>
<i>Table of Contents</i> .....	<i>ii</i>

<b>Module A: Investment Banking</b> .....	<b>1</b>
1.1 Introduction .....	1
1.1.1 Definition .....	1
1.1.2 Functions and Activities .....	1
1.1.3 Investment Banking versus Commercial Banking .....	2
Glass-Steagall Act (1933):.....	3
Gramm-Leach-Bliley Act (1999):.....	3
Financial Crisis (2007-2008):.....	3
Dodd-Frank Wall Street Reform and Consumer Protection Act (2010): .....	3
Post-Dodd-Frank Landscape: .....	3
Key Differences: .....	4
1.2 Investment Return and Risk .....	5
1.2.1 Asset Allocation .....	6
1.2.3 Structuring a Deal .....	6
1.3 Business Valuation Techniques .....	7
1.3.1 Types of Valuation Multiples .....	8
1.4 Hurdle Rate .....	9
1.5 Payback Period .....	10
1.6 Cost of Capital.....	11
1.6.1 Cost of Debt .....	13
1.7 Enterprise Value.....	14
1.7.1 Equity Value.....	16
1.8 Cash Flow Modeling.....	17
1.8.1 Operating Cash Flows .....	17
1.8.2 Investing Cash Flows.....	17
1.8.3 Financing Cash Flows.....	17
1.8.4 Discounted Cash Flow (DCF) Analysis .....	18
1.8.5 Forecasting Expenses.....	19
1.8.6 Forecasting Capital Assets and Changes in Working Capital .....	19
1.8.7 Forecasting Capital Structure .....	20
1.8.8 Terminal Value.....	20
1.8.9 DCF Enterprise Value .....	21
1.8.10 DCF Equity Value.....	21
1.8.11 DCF Example .....	23
1.8. 12 Alternative Definition of DCF .....	25
1.8.13 The Tax Shield Approach.....	26
1.8.14 Types of DCF Analysis .....	27
1.8.15 Drivers and Assumptions .....	27
1.9 Modeling and Projecting Financial Statements.....	28
1.9.1 Financial Statement Modeling: An Overview .....	29
1.9.2 Income Statement Modeling: Revenue.....	29
1.9.3 Modeling Operating Costs: Cost of Goods Sold and SG&A.....	30
1.10 Modeling Non-Operating Costs and Other Items .....	31
1.10.1 Financing Expenses.....	31
1.10.2 Corporate Income Tax.....	32
1.10.3 Income Statement Modeling: Other Items .....	32
1.11 Balance Sheet Modeling .....	33
1.11.1 Sensitivity Analysis.....	34
1.11.2 Scenario Analysis .....	34
1.11.3 Historical Trend Analysis.....	34

1.11.4 Cash Flow Forecasting .....	34
1.11.5 Capital Structure Analysis .....	34
1.11.6 Debt Financing Analysis .....	34
1.11.7 Capital Expenditure Planning.....	34
1.12 Cash Flow Statement Modeling .....	35
1.12.1 Direct Method Cash Flow Statement Model.....	35
1.12.2 Indirect Method Cash Flow Statement Model.....	35
1.12.3 Project-based Cash Flow Statement Model.....	35
1.12.4 Sensitivity Analysis.....	35
1.12.5 Monte Carlo Simulation .....	36
1.13 Stress Testing a Financial Model versus a Business.....	36
1.14 Overview of Scenario, Sensitivity Analysis Tools and Methods .....	36
1.14.1 Manual Drop-Downs.....	37
1.14.2 Scenario Manager.....	38
1.14.3 Using Data Tables for Sensitivity Analysis .....	41
1.14.4 Limitations of Data Tables.....	44
1.15 Module End Questions.....	45
<b>Module B: Primary and Secondary Market Operations .....</b>	<b>47</b>
2.1 Introduction .....	47
2.1.1 The Terminology of the Salient Point.....	47
2.2 IPO and allotment Mechanism of Securities Issued.....	49
2.2.1 The Process of Fund raising and listing with Exchanges through IPO .....	49
2.2.2 Eligibility Criteria for being listed at DSE .....	49
2.2.3 Direct Listing .....	51
2.2.4 IPO Approval Process .....	52
2.2.5 Apply to the BSEC for approval of Public Offer .....	52
2.2.6 Submission of Bid by eligible investors or EIs (for Book Building only) .....	53
2.2.7 Approval of IPOs .....	53
2.2.8 Subscription and Distribution of Shares.....	53
2.2.9 Allocation Share and Reimbursement of Additional Fund.....	54
2.2.10 Listing Approval by the Exchanges .....	54
2.2.11 Credit Share/ Units.....	54
2.2.12 Commencement of Trading of Scripts on the Bourse .....	54
2.3 Underwriting.....	54
2.4 Private Placement.....	55
2.5 Mutual Fund .....	55
2.6 Dematerialization (Demat) .....	56
2.7 Valuation of Bond .....	56
2.7.1 Value of Bond with Annual Interest Payment.....	57
2.7.2 Valuation of Debt with Semi-annual Interest .....	58
2.8 Valuation of Common Stock .....	59
2.8.1 The Gordon Growth Model.....	60
2.8.2 The Price-Earnings Valuation Method.....	62
2.9 Module End Questions.....	64
<b>Module C: Portfolio Management and Analysis .....</b>	<b>66</b>
3.1 Introduction .....	66
3.2 Definition of Portfolio Management.....	66
3.3 Key Elements of Portfolio Management.....	66
3.4 Portfolio Management Techniques .....	68
3.5 Types of Portfolio Management .....	69
3.5.1 Passive Management Portfolio.....	69
3.5.2 Active Management Portfolio.....	70
3.5.3 Aggressive Management Portfolio .....	70

3.5.4 Assets classes in Portfolio Management .....	71
3.6 Derivatives and Portfolio Management .....	71
3.6.1 Futures .....	72
3.6.2 Options.....	72
3.7 Traditional Approaches for Portfolio Management .....	73
3.7.1 The Bottom-up Approach.....	74
3.7.2 The Top-down Approach.....	74
3.8 Portfolio Management: Discretionary vs. Non-Discretionary.....	74
3.9 Key Elements of Portfolio Management .....	74
3.9.1 Asset Allocation .....	74
3.9.2 Diversification .....	75
3.9.3 Rebalancing .....	75
3.9.4 Tax-Efficiency.....	75
3.10 Some Background Assumptions of Portfolio Theory.....	76
3.10.1 Risk Aversion .....	76
3.10.2 Definition of Risk.....	77
3.11 Tools to Measure Portfolio Returns .....	77
3.11.1 Arithmetic Return .....	77
3.11.2 Logarithmic Return .....	77
3.11.3 Geometric Return.....	77
3.11.4 Portfolio Return .....	77
3.11.5 Relative Return .....	77
3.11.6 Variance on Return in a Portfolio .....	78
3.12 Asset Pricing Models.....	78
3.12.1 The Capital Asset Pricing Model (CAPM) .....	78
3.12.2 Calculation of the CAPM .....	79
3.12.3 Implications of the CAPM .....	80
3.12.4 Limitations of CAPM .....	80
3.13 The Arbitrage Pricing Theory (APT).....	82
3.13.1 APT Equation .....	82
3.13.2 Limitations of APT.....	83
3.14 The Fama-French Three-Factor Model .....	85
3.14.1 Equation of Fama-French Three-Factor Model.....	85
3.14.2 Empirical Evidence of Fama-French Three-Factor Model .....	86
3.14.3 Limitation of Fama-French Three-Factor Model.....	87
3.15 Efficient Capital Market.....	87
3.15.1 Types of Efficiency.....	88
3.15.2 The Value of an Efficient Market .....	88
3.15.3 The Levels of Market Efficiency.....	89
3.15.4 Efficient Market Hypothesis.....	90
3.16 Economic Analysis.....	90
3.16.1 Key Macroeconomic Variables.....	90
3.16.2 Effects of Macroeconomic Variables on Different Asset Classes .....	91
3.16.3 Economic Forecasting and its tools .....	93
3.17 Industry Analysis.....	94
3.17.1 Types of Industry Analysis.....	94
3.18 Broad Factors Analysis (PEST Analysis).....	96
3.19. SWOT Analysis .....	97
3.19.1 Importance of Industry Analysis .....	97
3.19.2 How to do Industry Analysis?.....	97
3.20 Company Analysis.....	98
3.20.1 How to do a Company Analysis .....	98
3.21 Financial Statement Analysis .....	99
3.21.1 PurposesandObjectivesofFinancialStatements.....	100
3.22 Major Financial Statements.....	102

3.22.1 Generally Accepted Accounting Principles.....	102
3.22.2 Balance Sheet .....	103
3.22.3 Income Statement.....	103
3.22.4 Statement of Cash Flows .....	103
3.23 Analysis of Financial Ratios.....	106
3.23.1 Importance of Relative Financial Ratios .....	106
3.23.2 Computation of Financial Ratios.....	108
3.23.3. Growth Analysis.....	131
3.24 The Value of Financial Statement Analysis.....	133
3.25 Module End Questions.....	134
<b>Module D: Corporate Finance.....</b>	<b>136</b>
4.1 Introduction .....	136
4.2 Debt and Equity Instruments .....	136
4.3 Understanding Capital Structure of an Entity.....	136
4.4 Project Finance.....	137
4.5 Net Present Value (NPV) .....	137
4.6 Internal Rate of Return (IRR).....	138
4.7 Structured Export Finance.....	138
4.8 Asset-Backed Securitization (ABS) .....	139
4.9 Mortgage-Backed Securities (MBS).....	139
4.10 Sustainable Bonds.....	140
4.10.1 Purposes of Sustainable Bond.....	140
4.10.2 Use of Proceeds.....	140
4.10.3 Certification and Reporting.....	140
4.10.4 Types of Sustainable Bonds .....	140
4.10.5 Growing Market of Sustainable Bonds .....	141
4.11 Sukuk Bond (Islamic Financial Instruments) .....	141
4.11.1 Key features of Sukuk Bonds.....	142
4.11.2 Types of Sukuk .....	142
4.12 Zero Coupon Bond (ZCB) .....	143
4.12.1 Key features of Zero Coupon Bonds.....	143
4.13 Tire II Bonds .....	144
4.13.1 Key features and characteristics of Tier II Bonds .....	144
4.14 Corporate Advisory Services .....	145
4.15 Merger .....	145
4.16 Acquisition .....	146
4.17 Merger and Acquisition in Bangladesh.....	146
4.17 Leveraged Buyouts.....	147
4.18 Module End Questions.....	148
<b>Module E: Investment Banking Structure in Bangladesh.....</b>	<b>149</b>
5.1 Introduction .....	149
5.2 Structure and Legal Framework of Capital Market in Bangladesh.....	150
5.2.1 Bangladesh Securities and Exchange Commission (BSEC).....	150
5.2.2 Dhaka Stock Exchange (DSE) .....	151
5.2.3 Chittagong Stock Exchange (CSE) .....	156
5.2.4 Central Depository Bangladesh Limited (CDBL).....	156
5.2.5 Investment Corporation of Bangladesh (ICB) .....	158
5.2.6 Merchant Banking .....	158
5.2.7 Brokerage House (TREC Holders).....	159
5.2.8 Settlement of Trade .....	160
5.2.9 Asset Management Company (AMC) and Operation of Mutual Fund .....	160
5.2.9 Other Market Intermediaries.....	161
5.3 Legal, ethical, and governance issues in Investment Banking in Bangladesh .....	162

5.3.1 Regulatory Compliance.....	162
5.3.2 Insider Trading.....	162
5.3.3 Conflicts of Interest.....	162
5.3.4 Market Manipulation.....	162
5.3.5 Money Laundering and Terrorist Financing.....	162
5.3.6 Cyber Security Risks .....	163
5.3.7 Board Governance .....	163
5.3.8 Client Confidentiality .....	163
5.3.9 Ethical Conduct .....	163
5.3.10 Consumer Protection .....	163
5.4 Problems and prospect of Bangladesh Capital Market .....	164
5.4.1 Problems of Bangladesh Capital Market .....	164
5.4.2 Prospects of Capital Market in Bangladesh.....	165
5.5 Growth of Capital Market in Bangladesh .....	166
5.6 Conclusion.....	168
5.7 Module End Questions.....	169

# Module A: Investment Banking

## 1.1 Introduction

At a very macro level, 'Investment Banking' as the term suggest, is concerned with the primary function of assisting the capital market in its function of capital intermediation, i.e., the movement of financial resources from those who have them (the Investor), to those who need to make use of them for generating GDP (the Issuers). In the Financial Market, banking and financial institutions on the one hand and the capital market on the other are the two broad platforms of institutional intermediation for capital flows in the economy. Investment banks are those institutions that are the counterparts of banks in the function of intermediation in resource allocations.

### 1.1.1 Definition

Unlike conventional bank, Investment Banks specialize in large and complex financial transactions such as underwriting, acting as an intermediary between a securities issuer and the investing public, facilitating mergers and other corporate reorganizations, and acting as a broker and/or financial adviser for institutional clients. Investment bank is also known as Merchant Banks around the world. Some of the world-renowned major investment banks include Barclays, UBS, Credit Suisse etc. Some Investment Banks specialize in particular industry sectors. Many investment banks also have retail operations that serve small and individual customers.

### 1.1.2 Functions and Activities

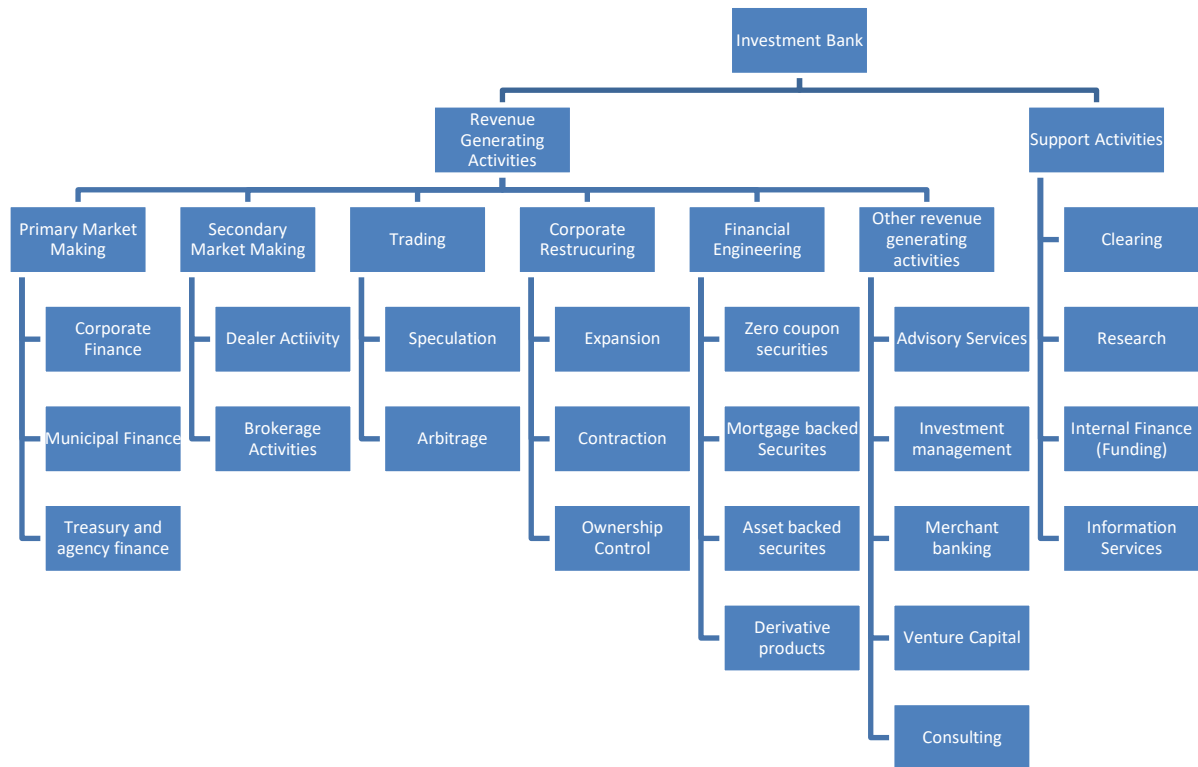
Investment banks are institutions that serve as intermediaries for a variety of purposes. Their activities usually vary from one institution to another. Most of the services in which they engage tend to be large and complex financial transactions. Investment banking clients are normally governments and other financial institutions as well as institutional clients such as hedge funds, pension funds, and large companies.

Pure investment banks are chiefly responsible for raising funds for businesses, governments, and municipalities by registering and issuing debt or equity and selling these investments on an open market through initial public offerings (IPOs). Investment banks traditionally underwrite and sell these securities in large blocks. Small boutique investment banking firms may narrow their focus



to a small area of expertise. They also facilitate mergers and acquisitions (M&A) of companies through share sales and provide research and financial consulting to companies.

Investment banking activities can be summarized as follows:



### 1.1.3 Investment Banking versus Commercial Banking

Commercial and Investment Banks are both critical financial institutions in a modern economy, but they perform very different functions. The Glass-Steagall Act of 1933 was a landmark piece of legislation that sought to address perceived conflicts of interest in the financial industry by separating commercial banking activities from investment banking activities. The act was enacted in response to the Great Depression and aimed to prevent the kind of speculative trading that contributed to the market crash of 1929. Over the years, however, the regulatory landscape evolved, leading to changes in the roles of investment banks and commercial banks.

### **Glass-Steagall Act (1933):**

The Glass-Steagall Act established a clear separation between commercial banks, which were responsible for traditional banking activities such as taking deposits and making loans, and investment banks, which engaged in underwriting and trading securities. The goal was to prevent conflicts of interest, protect depositors, and maintain the stability of the financial system.

### **Gramm-Leach-Bliley Act (1999):**

The Gramm-Leach-Bliley Act, also known as the Financial Services Modernization Act, marked a significant departure from the principles of Glass-Steagall. It repealed the restrictions on affiliations between commercial banks, securities firms, and insurance companies. This allowed for the creation of financial conglomerates that could engage in a broad range of financial activities. The act reflected a belief that the modern financial system required greater flexibility and that the previous separation was outdated.

### **Financial Crisis (2007-2008):**

The financial crisis of 2007-2008 brought renewed attention to the activities of large financial institutions and raised questions about the effectiveness of existing regulatory frameworks. Lehman Brothers, a major investment bank, collapsed, and other financial institutions faced severe challenges. The crisis prompted regulatory responses aimed at addressing systemic risks and improving oversight.

### **Dodd-Frank Wall Street Reform and Consumer Protection Act (2010):**

In the aftermath of the financial crisis, the Dodd-Frank Act was enacted to reform financial regulation. While it did not reinstate the Glass-Steagall separation, it introduced measures to enhance financial stability and protect consumers. The Volcker Rule, part of Dodd-Frank, aimed to restrict proprietary trading by commercial banks and limit their relationships with hedge funds and private equity funds.

### **Post-Dodd-Frank Landscape:**

The regulatory environment has continued to evolve, with ongoing discussions about the appropriate balance between risk-taking and stability in the financial system. While the Glass-Steagall separation has not been fully reinstated, there is ongoing debate about whether such a separation is necessary to prevent conflicts of interest and protect against systemic risks.

## **Key Differences:**

### **1. Activities:**

Commercial Banks: Primarily engaged in traditional banking activities such as accepting deposits, making loans, and providing basic financial services to individuals and businesses.

Investment Banks: Involved in activities such as underwriting securities, facilitating mergers and acquisitions, and trading financial instruments.

### **2. Risk Profiles:**

Commercial Banks: Tend to have a more stable business model, focusing on traditional banking services with a lower risk profile.

Investment Banks: Engage in riskier activities such as trading and underwriting, making their earnings more volatile.

### **3. Regulation:**

Commercial Banks: Subject to regulatory frameworks aimed at ensuring the safety and soundness of the banking system, with a focus on protecting depositors.

Investment Banks: Regulated to ensure market integrity and prevent excessive risk-taking, especially after the financial crisis.

### **4. Consumer Services:**

Commercial Banks: Provide a range of consumer-oriented services, including savings accounts, mortgages, and other retail banking products.

Investment Banks: Primarily serve institutional clients and engage in wholesale financial activities.

### **5. Evolution:**

The regulatory landscape has evolved over time, with a trend toward greater integration of financial services within individual institutions.

It's important to note that the distinctions between commercial and investment banking have become less clear-cut over the years, with many large financial institutions offering a combination of services. The ongoing challenge for regulators is to strike a balance that allows for financial innovation and economic growth while safeguarding against excessive risk and conflicts of interest.

## **1.2 Investment Return and Risk**

Investment return and risk are two crucial concepts in Investment Banking. Investment return refers to the profit or loss earned by an investor from an investment over a specific period. In contrast, investment risk refers to the likelihood that an investor will lose some or all of their invested capital.

Investment Banking involves helping clients to make investments, and therefore, it is essential to understand the relationship between investment return and risk. Generally, investments that offer high returns come with high risk, while low-risk investments provide lower returns. Investment Banks help clients to evaluate the potential risks and returns of different investment options to make informed investment decisions.

Investment Banks use various financial models and tools to assess investment returns and risk, such as the Capital Asset Pricing Model (CAPM), Value at Risk (VaR), and Monte Carlo simulations. These tools help to estimate the expected return on an investment and identify the potential risks associated with it.

Investment Banks also offer various services to help clients manage their investment risk, such as diversification, hedging, and asset allocation. Diversification involves spreading investments across different assets, sectors, and regions to reduce risk. Hedging involves using financial instruments such as options and futures to offset potential losses in an investment. Asset allocation involves selecting a mix of investments that balances risk and return based on an investor's objectives and risk tolerance.

In summary, investment return and risk are essential concepts in investment banking, and investment banks help clients to evaluate and manage these factors to make informed investment decisions.

### **1.2.1 Asset Allocation**

Asset allocation in investment banking refers to the process of dividing an investment portfolio among different asset classes such as stocks, bonds, and cash equivalents, based on the investor's financial goals, risk tolerance, and investment horizon.

Asset allocation is a crucial aspect of investment banking because it helps investors diversify their portfolio and reduce the risk of losses. For example, if an investor only invests in stocks, they will be more exposed to market volatility, whereas if they allocate some of their portfolio to bonds, they can reduce the impact of market fluctuations on their overall returns.

Investment Banks typically offer asset allocation services to their clients as part of their wealth management services. They will analyze the client's financial situation, risk tolerance, and investment goals to develop a customized asset allocation plan that suits their needs. The plan may include a mix of stocks, bonds, mutual funds, and other investment vehicles.

Investment Banks may also use sophisticated financial models and analysis tools to determine the optimal asset allocation strategy for their clients. They may consider factors such as asset correlations, historical performance, and economic forecasts to develop a diversified portfolio that maximizes returns while minimizing risk. Overall, asset allocation is an essential part of investment banking, as it allows investors to achieve their financial goals while managing risk effectively.

### **1.2.3 Structuring a Deal**

Structuring a deal in Investment Banking involves designing the most appropriate financial arrangement to meet the needs of both the buyer and the seller. The goal is to create a mutually beneficial transaction that maximizes value and minimizes risk.

Here are some key steps involved in structuring a deal:

- i. **Understanding the Client's Needs:** The first step is to understand the client's business and their objectives in the deal. This includes understanding their financial situation, their industry, and their goals for the transaction.
- ii. **Identifying Potential Targets:** Once the client's needs are clear, the investment banker will identify potential targets that meet those needs. This may involve conducting market research and evaluating potential acquisition targets.
- iii. **Valuation:** The next step is to determine the value of the potential targets. This involves evaluating the financial statements and other relevant data to estimate the target's worth.
- iv. **Negotiation:** Once a suitable target has been identified and valued, the Investment Banker will negotiate the terms of the deal. This involves agreeing on a purchase price, the structure of the transaction, and any contingencies or conditions that must be met.
- v. **Due Diligence:** Before finalizing the deal, the Investment Banker will conduct due diligence to verify the accuracy of the information provided by the target. This involves a thorough review of the target's financial statements, legal documents, and other relevant data.
- vi. **Closing the Deal:** Once all contingencies have been met and due diligence is complete, the deal can be closed. This typically involves transferring funds and assets, signing legal documents, and finalizing any outstanding details.

Overall, structuring a deal in investment banking is a complex process that requires a deep understanding of finance, business, and the legal aspects of transactions. By carefully considering each step of the process, Investment Bankers can help their clients achieve their goals while minimizing risk and maximizing value.

### 1.3 Business Valuation Techniques

Investment Bankers use a variety of business valuation techniques to determine the value of a company, including:

- i. **Comparable Company Analysis (CCA):** This technique involves analyzing the financial metrics of publicly traded companies that are similar to the target company, such as revenue, earnings, and growth rates. The valuation is then based on the multiples of these metrics.

- ii. **Discounted Cash Flow (DCF):** This technique involves forecasting the future cash flows of the company and discounting them to their present value using a discount rate that reflects the risk of the investment.
- iii. **Precedent Transactions Analysis (PTA):** This technique involves analyzing the valuations of similar companies that have been acquired or merged in the past, and applying those valuations to the target company.
- iv. **Asset-based Valuation:** This technique involves estimating the value of the company's assets and subtracting its liabilities. This is particularly useful for companies with significant tangible assets, such as real estate or equipment.
- v. **Leveraged Buyout (LBO) Analysis:** This technique is used when the buyer is considering acquiring the company through a leveraged buyout. It involves calculating the returns on the investment based on the amount of debt used to finance the acquisition.

These techniques can be used in combination with one another to arrive at a comprehensive valuation of the company. Investment Bankers may also consider other factors such as industry trends, competitive landscape, and management quality when determining the value of a company.

### 1.3.1 Types of Valuation Multiples

There are several types of valuation multiples that are commonly used to assess the value of a company. These multiples compare a company's financial metrics to those of its peers or to industry averages, providing a way to gauge its relative value.

Here are some of the most common types of valuation multiples used in investment banking:

- i. **Price-to-Earnings (P/E) Ratio:** The P/E ratio compares a company's stock price to its earnings per share (EPS). It is calculated by dividing the current market price per share by the EPS. A high P/E ratio may indicate that investors have high expectations for the company's future earnings growth.
- ii. **Price-to-Book (P/B) Ratio:** The P/B ratio compares a company's stock price to its book value per share. It is calculated by dividing the current market price per share by the book

value per share. The book value is the value of a company's assets minus its liabilities, as shown on its balance sheet.

- iii. **Enterprise Value-to-EBITDA (EV/EBITDA) Ratio:** The EV/EBITDA ratio compares a company's enterprise value (EV) to its earnings before interest, taxes, depreciation, and amortization (EBITDA). It is calculated by dividing the EV by the EBITDA. This multiple is often used to value companies in capital-intensive industries, where the level of debt and depreciation can significantly impact earnings.
- iv. **Price-to-Sales (P/S) Ratio:** The P/S ratio compares a company's stock price to its revenue per share. It is calculated by dividing the current market price per share by the revenue per share. This multiple is often used to value companies that are not yet profitable or have inconsistent earnings.
- v. **Dividend Yield:** The Dividend Yield compares the dividends paid by a company to its stock price. It is calculated by dividing the annual dividend per share by the current stock price. This multiple is often used to value companies that are mature and have a history of paying dividends.

These valuation multiples are just a few examples of the many tools used in investment banking to assess the value of a company. Different multiples may be more appropriate for different industries or companies, depending on their financial metrics and growth prospects.

## 1.4 Hurdle Rate

The Hurdle Rate is an important concept in investment banking, as it helps investment bankers to make informed decisions about where to invest their capital and which projects to pursue.

In Investment Banking, the hurdle rate is the minimum rate of return that an investment must earn in order to be considered acceptable. It is also known as the "required rate of return" or "minimum acceptable rate of return."

The Hurdle Rate is typically determined by the Investment Bank's management, and it reflects the bank's cost of capital and its risk tolerance. It is used to evaluate investment opportunities and to compare the returns of different investments.



To calculate the hurdle rate in investment banking, several factors must be taken into consideration:

- i. **Risk-free Rate:** The Risk-free Rate is the rate of return that an investor would earn on a completely risk-free investment, such as a government bond. This rate is typically used as a baseline for calculating the hurdle rate.
- ii. **Market Risk Premium:** The Market Risk Premium is the additional return that an investor expects to earn from investing in the stock market, above the risk-free rate. It reflects the compensation that investors demand for bearing the risk of investing in equities.
- iii. **Beta:** Beta is a measure of the systematic risk of an investment, which is the risk that cannot be diversified away. It measures the degree to which the investment's returns are correlated with the returns of the overall market.
- iv. **Company-specific Risk:** Company-specific Risk refers to risks that are unique to a particular investment, such as the risk of regulatory changes or competitive pressures.

Once these factors have been taken into account, the Hurdle Rate can be calculated using the following formula:

$$\text{Hurdle rate} = \text{Risk-free Rate} + \text{Beta} \times \text{Market Risk Premium} + \text{Company-specific Risk}$$

The Hurdle Rate can be used to evaluate the potential return on an investment and to determine whether or not it is worth pursuing. If the expected return on the investment is higher than the hurdle rate, then the investment may be worthwhile. If the expected return is lower than the hurdle rate, then the investment may not be worth pursuing.

## 1.5 Payback Period

The payback period is a commonly used metric in investment banking to evaluate the time it takes for an investment to generate enough cash flows to recover the initial investment cost.

The payback period is calculated by dividing the initial investment amount by the expected annual cash flows generated by the investment. The resulting number represents the number of years it will take to recover the initial investment.

Example: Let's say a company is considering investing in a new project that costs Tk. 1,000,000. The project is expected to generate cash inflows of Tk. 300,000 per year for 5 years.

To calculate the payback period, you need to determine how long it will take for the project's cash inflows to cover the initial investment of Tk. 1,000,000.

Year 1 Cash Inflow = Tk. 300,000

Year 2 cash inflow = Tk. 300,000

Year 3 cash inflow = Tk. 300,000

Year 4 cash inflow = Tk. 300,000

Year 5 cash inflow = Tk. 300,000

Total cash inflows = Tk. 1,500,000

To determine the payback period:

Payback period = Tk. 1,000,000 / Tk. 300,000 per year = 3.33 years

Therefore, the payback period for this project is 3.33 years. This means it will take approximately 3.33 years for the project's cash inflows to cover the initial investment.

Investment Bankers often use the Payback Period as a quick and easy way to compare different investment opportunities and to assess the risks associated with each investment. The shorter the payback period, the quicker the investment will generate returns, which is generally viewed as a positive factor. However, the payback period does not take into account the time value of money or the potential for future cash flows beyond the payback period. Therefore, it should be used in conjunction with other financial metrics such as Internal Rate of Return (IRR) and Net Present Value (NPV) to make informed investment decisions.

## **1.6Cost of Capital**

The cost of capital is the rate of return that a company must earn on its investments to satisfy its investors' expectations and to provide the necessary funding for future growth. It represents the

minimum rate of return that an investment project must generate to compensate investors for the time value of money, risk, and opportunity cost of capital.

The cost of capital is calculated by weighting the cost of debt and the cost of equity based on the company's capital structure. The cost of debt is the interest rate a company pays on its debt, while the cost of equity is the return that investors require to invest in the company's stock.

The cost of capital calculation involves determining the weighted average cost of all sources of financing that a company uses to fund its operations, including debt and equity. The following steps can be used to calculate the cost of capital:

- i. **Determine the Company's Capital Structure:** The capital structure is the proportion of debt and equity that the company uses to finance its operations. This can be calculated by dividing the total debt by the total equity.
- ii. **Calculate the Cost of Debt:** The cost of debt is the interest rate that the company pays on its debt. This can be calculated by taking the average interest rate of all the company's outstanding debt.
- iii. **Calculate the Cost of Equity:** The cost of equity is the return that investors require to invest in the company's stock. This can be calculated using the Capital Asset Pricing Model (CAPM) or other methods.
- iv. **Calculate the Weighted Average Cost of Capital:** Once the cost of debt and the cost of equity have been determined, they can be weighted based on the company's capital structure. The weighted average cost of capital is calculated by multiplying the cost of debt by the proportion of debt in the capital structure, adding it to the cost of equity multiplied by the proportion of equity, and then summing the two results.

The formula for calculating the Weighted Average Cost of Capital (WACC) is:

$$\text{WACC} = (E/V \times R_e) + (D/V \times R_d \times (1 - T))$$

where:

E = Market Value of Equity

D = Market Value of Debt

$V = \text{Total Value of the Firm} = (E + D)$

$R_e = \text{Cost of Equity}$

$R_d = \text{Cost of Debt}$

$T = \text{Tax Rate}$

In this formula, the Cost of Equity ( $R_e$ ) and the Cost of Debt ( $R_d$ ) are both components of the WACC. The Cost of Debt is adjusted for Taxes because interest payments on debt are tax deductible, which reduces the effective Cost of Debt.

For example, if a company has a capital structure of 60% debt and 40% equity, and its cost of debt is 5% and its cost of equity is 10%, the weighted average cost of capital would be:

$$(0.6 \times 0.05) + (0.4 \times 0.1) = 0.03 + 0.04 = 0.07, \text{ or } 7\%$$

The cost of capital is a critical concept in corporate finance because it helps companies determine the feasibility of potential investments and decide which investment projects to pursue. By comparing the cost of capital to the expected return on investment, companies can evaluate the potential profitability of their investments and make informed decisions about how to allocate their resources.

### 1.6.1 Cost of Debt

Cost of Debt refers to the interest rate that a company pays on its borrowed funds. It is an important financial metric that helps companies understand the cost of financing their operations through debt.

There are several methods for calculating the cost of debt, including:

- i. **Yield to Maturity:** This method involves calculating the interest rate that would make the present value of all future payments on a debt instrument equal to its current market price. This method assumes that the debt will be held until maturity and that all interest and principal payments will be made on time.

- ii. **Coupon Rate:** The Coupon Rate is the stated interest rate on a debt instrument, which is typically fixed for the life of the instrument. This method assumes that the company will pay interest at the stated rate for the entire term of the debt.
- iii. **Effective Interest Rate:** This method takes into account any fees or costs associated with borrowing, such as origination fees or closing costs. It calculates the interest rate that makes the present value of all future payments equal to the amount borrowed, taking into account these additional costs.
- iv. **Credit Spread:** This method compares the interest rate on a company's debt to the interest rate on a similar debt instrument with no credit risk. The difference between the two rates is the credit spread, which reflects the additional cost of borrowing due to the company's credit risk.
- v. **Credit Rating Method:** The Credit Rating method uses the company's credit rating to estimate the cost of debt. Companies with higher credit ratings typically pay lower interest rates on their debt, while those with lower credit ratings pay higher interest rates to compensate for the increased risk of default.
- vi. **Bond Spread Method:** The bond spread method compares the interest rate on a company's debt instrument to a benchmark rate, such as the Treasury Rate. The difference between the two rates is known as the bond spread, which reflects the company's credit risk. The higher the bond spread, the higher the cost of debt. This method is similar to credit spread method discussed earlier.

In general, the cost of debt is calculated as follows:

$$\text{Cost of Debt} = (\text{Interest Rate} \times (1 - \text{Tax Rate}))$$

Where, the interest rate is the rate at which the company borrows funds, and the tax rate is the company's effective tax rate. The tax rate is subtracted from the interest rate because interest payments are tax-deductible, which reduces the company's overall cost of debt.

For example, if a company borrows Tk. 100,000 at an interest rate of 5% and has an effective tax rate of 25%, the cost of debt would be:

$$\text{Cost of Debt} = (0.05 \times (1 - 0.25)) = 0.0375, \text{ or } 3.75\%$$

In this case, the company's cost of debt is 3.75%, which means it will pay Tk. 3,750 in interest each year on its borrowed funds of Tk.100,000.

## 1.7 Enterprise Value

In Investment Banking, Enterprise Value (EV) is a commonly used valuation metric that represents the total value of a company's operations, including both its equity and debt. It is calculated by adding the company's market capitalization (the total value of its outstanding shares of stock) and its debt (both short-term and long-term debt) while subtracting its cash and cash equivalents.

The formula for calculating enterprise value is:

**Enterprise Value = Market Capitalization + Total Debt - Cash and Cash Equivalents**

**Or**

**Enterprise Value = Market Capitalization + Net Debt**

In this formula, Market Capitalization refers to the total value of a company's outstanding shares of stock, which is calculated by multiplying the company's share price by the number of outstanding shares. Total debt includes all forms of debt, including short-term and long-term debt, as well as any other financial obligations such as lease payments. Cash and Cash equivalents refer to the cash that a company has on hand or in highly liquid investments.

Enterprise Value is considered a more comprehensive measure of a company's value than market capitalization alone, as it takes into account the company's debt and cash balances. This is important because a company with a high level of debt will have a lower market capitalization relative to its enterprise value, reflecting the fact that it has significant obligations to repay its debt.

Enterprise value is often used in Mergers and Acquisitions (M&A) and other corporate finance transactions to determine the value of a company, as it provides a more complete picture of the company's financial position. It is also used in financial ratios such as the EV/EBITDA ratio, which compares enterprise value to earnings before interest, taxes, depreciation, and amortization (EBITDA) and is commonly used to evaluate the relative value of different companies. This ratio is

calculated by dividing a company's enterprise value by its EBITDA, and a lower EV/EBITDA ratio is generally seen as indicating a better value for investors.

In summary, enterprise value is a financial metric that provides a more comprehensive measure of a company's value than market capitalization alone, taking into account both equity and debt. It is an important tool for financial analysis and is commonly used in M&A transactions and other corporate finance transactions to determine the relative value of different companies.

### 1.7.1 Equity Value

Equity value (EV) in investment banking is a measure of the market value of a company's equity or ownership stake, also known as market capitalization. Equity Value represents the total value of a company's outstanding shares of stock, and it is calculated by multiplying the company's share price by the number of outstanding shares.

The formula for calculating equity value is:

$$\text{Equity Value} = \text{Share Price} \times \text{Number of Outstanding Shares}$$

The share price used in this calculation is the market price of the company's Common Stock, which can be obtained from a stock exchange or financial website that tracks stock prices. The number of outstanding shares represents the total number of shares that have been issued by the company and are currently owned by investors.

For example, let's say a company has a Share Price of Tk. 50 and outstanding shares of this company is 10 million. The calculation of Equity Value would be:

$$\text{Equity Value} = \text{Tk. } 50 \times 10,000,000$$

$$\text{Equity Value} = \text{TK. } 500,000,000$$

In this example, the equity value of the company would be Tk. 500 million.

Equity value is an important metric for investors because it represents their ownership stake in the company and the potential returns they can receive from it. It is also used in financial analysis to compare the value of different companies.

However, Equity Value does not take into account a company's debt and cash balances, which can have a significant impact on its overall value. Therefore, when evaluating a company's worth, it is important to consider both equity value and enterprise value, which includes debt and cash.

In summary, Equity Value in investment banking represents the Market Value of a company's ownership stake, calculated by multiplying the share price by the number of outstanding shares. It is an important metric for investors, but it should be considered in conjunction with enterprise value to get a more comprehensive picture of a company's worth.

## **1.8 Cash Flow Modeling**

Cash Flow Modeling is a critical tool used by investment bankers to analyze the financial performance of a company or project. Cash Flow Modeling involves forecasting the future cash flows of a business or project over a specific period, usually several years. The model is typically used to analyze the impact of various business decisions, including financing and investment decisions, on a company's financial performance.

The Cash Flow Model typically consists of three primary sections: Operating Cash Flows, Investing Cash Flows, and Financing Cash Flows. Each section is used to analyze different aspects of a company's financial performance.

### **1.8.1 Operating Cash Flows**

This section includes cash inflows and outflows related to the company's core operations. These cash flows are typically related to revenues, operating expenses, and changes in working capital.

### **1.8.2 Investing Cash Flows**

This section includes cash inflows and outflows related to investing activities, such as capital expenditures, acquisitions etc.

### **1.8.3 Financing Cash Flows**

This section includes cash inflows and outflows related to financing activities, such as debt and equity financing, dividends, and share repurchases.



To build a cash flow model, an investment banker typically starts with historical financial statements, including the Income Statement, Balance Sheet, and Cash Flow Statement. They then make assumptions about the future financial performance of the company or project, including revenue growth, operating expenses, capital expenditures, and financing activities.

Once the model is built, an investment banker can use it to perform various types of financial analysis, including Discounted Cash Flow (DCF) analysis, which is a valuation method that estimates the present value of future cash flows. Other types of analysis that can be performed with a cash flow model include sensitivity analysis, scenario analysis, and break-even analysis.

The cash flow modeling process typically involves the following steps:

- i. **Collecting and Analyzing Historical Financial Data:** The first step in cash flow modeling is to collect and analyze a company's historical financial data, including income statements, balance sheets, and cash flow statements. This data is used to identify trends and patterns in the company's cash flow and to establish a baseline for future projections.
- ii. **Developing Assumptions:** The next step is to develop assumptions about the company's future operations, such as revenue growth, cost of goods sold, operating expenses, and capital expenditures. These assumptions are based on a variety of factors, including market conditions, industry trends, and the company's strategic objectives.
- iii. **Building a Cash Flow Model:** Using the historical financial data and assumptions, a cash flow model is built using a spreadsheet program like Excel. The model typically includes multiple sections, including revenue, cost of goods sold, operating expenses, EBIT, operating cash flow, capital expenditures, and financing activities.
- iv. **Sensitivity Analysis:** Once the cash flow model has been built, sensitivity analysis is performed to test the impact of changes in key assumptions on the company's cash flow projections. This helps identify potential risks and opportunities that could impact the company's future financial performance.
- v. **Presenting the Analysis:** The final step is to present the cash flow modeling analysis to investors, clients, or other stakeholders. The analysis typically includes charts and graphs that highlight key trends and projections, as well as a detailed narrative explaining the assumptions and conclusions.

In summary, cash flow modeling is an important tool used in investment banking to forecast a company's future cash flows based on its historical data and assumptions about future operations. This helps investors and analysts evaluate the financial health and potential of a company and make informed investment decisions.

#### **1.8.4 Discounted Cash Flow (DCF) Analysis**

Discounted Cash Flow (DCF) analysis is a financial method used to estimate the intrinsic value of an investment opportunity by discounting its future cash flows to their present value. It is based on the principle that the value of an asset is the sum of the present value of all its expected future cash flows, discounted at a rate that reflects the time value of money and the risks associated with the investment.

The DCF analysis involves the following steps:

- i. Forecast the expected revenue of the investment over a certain period of time, typically five to ten years. There are several ways to build a revenue forecast, but broadly speaking, they fall into two main categories: Growth-based and Driver-based.
- ii. A Growth-based forecast is simpler and makes sense for stable, mature businesses, where a basic year-over-year growth rate can be used. For many DCF models, this is sufficient.
- iii. A Driver-based forecast is more detailed and challenging to develop. It requires disaggregating revenue into its various drivers, such as price, volume, products, customers, market share, and external factors. Regression analysis is often used as part of a driver-based forecast to determine the relationship between underlying drivers and top-line revenue growth.

#### **1.8.5 Forecasting Expenses**

Building an expense forecast can be a very detailed and granular process, or it can also be a simple year-over-year comparison. The most detailed approach is called a Zero-Based Budget and requires building up the expenses from scratch without giving any consideration to what was spent last year. Typically, each department in the company is asked to justify every expense they have, based on activity. This approach is often used in a cost-cutting environment or when financial controls are being imposed. It is only

practical to be performed internally by managers of the company and not by outsiders such as investment bankers or equity research analysts.

#### **1.8.6 Forecasting Capital Assets and Changes in Working Capital**

Once most of the income statement is in place, then it's time to forecast the capital assets. PP&E is often the largest balance sheet item, and capital expenditures (CapEx), as well as depreciation, need to be modeled in a separate schedule. The most detailed approach is to create a separate schedule in the DCF model for each of the major capital assets and then consolidate them into a total schedule. Each capital asset schedule will include several lines: opening balance, CapEx, depreciation, dispositions, and closing balance. The change in working capital, which includes accounts receivable, accounts payable, and inventory, must be calculated and added or subtracted depending on their cash impact.

#### **1.8.7 Forecasting Capital Structure**

The way this section is built will depend largely on what type of DCF model you're building. The most common approach is to simply keep the company's current capital structure in place, assuming no major changes other than things that are known, such as debt maturity. Since we're using unlevered free cash flow, this section is actually not that important to the DCF model. It is, however, important if you are looking at things from the perspective of an equity investor or equity research analyst. Investment bankers typically focus on enterprise value, as it's more relevant for M&A transactions, where the entire company is bought or sold.

#### **1.8.8 Terminal Value**

The terminal value is a very important part of a DCF model. It often makes up more than 50% of the net present value of the business, especially if the forecast period is five years or less. There are two ways to calculate the terminal value: the Perpetual Growth Rate Approach and the Exit Multiple Approach.

The Perpetual Growth Rate Approach assumes that the cash flow generated at the end of the forecast period grows at a constant rate forever. So, for example, the cash flow of the business is Tk.10 million and grows at 2% forever, with a cost of capital of 15%. The Terminal Value is  $\text{Tk.10 million} / (15\% - 2\%) = \text{Tk.77 million}$ .

With the Exit Multiple Approach, the business is assumed to be sold for what a “reasonable buyer” would pay for it. This typically means an EV/EBITDA multiple at or near current trading values for comparable companies. As you can see in the example below, if the business has Tk.6.3 million of EBITDA and similar companies are trading at 8x, then the Terminal Value is Tk.6.3 million x 8 = Tk.50 million. That value is then discounted back to the present to get the NPV of the terminal value.

### 1.8.9 DCF Enterprise Value

When building a DCF model using unlevered free cash flow, the NPV that we arrive at is always the Enterprise Value (EV) of the business. This is what we need if we’re looking to value the entire business or compare it with other companies without taking into account their capital structures (i.e., an apples-to-apples comparison). For most investment banking transactions, the focus will be on Enterprise Value.

### 1.8.10 DCF Equity Value

If we are looking for the Equity Value of the business, we take the Net Present Value (NPV) of the unlevered free cash flow and adjust it for cash and equivalents, debt, and any minority interest. This will give us the equity value, which can be divided by the number of shares and arrive at the share price. This approach is more common for institutional investors or equity research analysts, both of whom are looking through the lens of buying or selling shares.

- i. **Determine the Discount Rate**, which is the rate of return required by the investor to compensate for the risks associated with the investment.
- ii. **Discount the Forecasted Cash Flows** to their present value using the discount rate. The present value of a cash flow is calculated by dividing the cash flow by  $(1 + \text{discount rate})$  raised to the power of the number of years from the present when the cash flow is expected to occur.
- iii. **Sum the Present Value of all Expected Cash Flows** to arrive at the estimated intrinsic value of the investment.

The formula for calculating the present value of future cash flows is as follows:

$$PV = CF_1 / (1+r)^1 + CF_2 / (1+r)^2 + \dots + CF_n / (1+r)^n$$

Where PV is the present value of the cash flows, CF is the cash flow in a given year, r is the discount rate, and n is the number of years.

Here is an example of a Discounted Cash Flow (DCF) analysis:

Let's say you're considering investing in a new project that requires an initial investment of Tk.100,000. You expect the project to generate Tk.25,000 in cash flows per year for the next five years. To evaluate the project's profitability, you can perform a DCF analysis by discounting the future cash flows back to their present value using a discount rate of 10%.

To calculate the present value of the cash flows, you can use the following formula:

$$PV = CF_1 / (1 + r)^1 + CF_2 / (1 + r)^2 + \dots + CF_n / (1 + r)^n$$

Where:

PV = Present Value of the Cash Flows

CF = Cash Flow for each year (in this case, Tk.25,000 per year)

r = Discount Rate

n = Number of years (in this case, 5 years)

Using this formula, we can calculate the present value of the cash flows as follows:

$$PV = Tk.25,000 / (1 + 0.10)^1 + Tk.25,000 / (1 + 0.10)^2 + Tk.25,000 / (1 + 0.10)^3 + Tk.25,000 / (1 + 0.10)^4 + Tk.25,000 / (1 + 0.10)^5$$

$$PV = Tk.25,000 / 1.10 + Tk.25,000 / 1.21 + Tk.25,000 / 1.33 + Tk.25,000 / 1.46 + Tk.25,000 / 1.61$$

$$PV = Tk.22,727.27 + Tk.20,661.16 + Tk.18,796.90 + Tk.17,110.25 + Tk.15,587.30$$

$$PV = Tk.94,882.88$$

So the present value of the future cash flows is Tk.94,882.88. To determine if the investment is worthwhile, we need to compare this value to the initial investment of Tk.100,000. Since the

present value of the cash flows is less than the initial investment, the project is not profitable when using a discount rate of 10%.

However, if we were to use a lower discount rate, such as 8%, the present value of the cash flows would increase and could potentially make the project profitable. Similarly, if we were to increase the expected cash flows or extend the project's timeframe, the present value of the cash flows could also increase, making the investment more attractive.

The DCF analysis is widely used in corporate finance, investment banking, and private equity to evaluate investment opportunities, such as stocks, bonds, real estate, and business projects. It is a powerful tool for investors to assess the potential risks and returns of an investment and make informed investment decisions. However, DCF analysis has some limitations and potential drawbacks. For example, it requires accurate projections of future cash flows, which can be difficult to estimate. It also relies on assumptions about the discount rate, which can have a significant impact on the results of the analysis. As with any financial valuation method, DCF analysis should be used in conjunction with other analysis tools and techniques to make informed investment decisions.

#### 1.8.11 DCF Example

Let's say you're considering investing in a startup that's developing a new software product. You estimate that the company will generate Tk.1 million in revenue in its first year, and that this will grow by 20% per year for the next five years. After that, you expect the growth rate to slow to 5% per year.

You also estimate that the company's operating expenses will be Tk.600,000 in its first year, and that these will increase by 10% per year for the next five years. You expect the company to have a tax rate of 25%, and you assume a discount rate of 10% to account for the time value of money.

To calculate the DCF of the investment, you would first calculate the free cash flow (FCF) for each year, which is the cash generated by the business after accounting for operating expenses and taxes:

$$\text{Year 1 FCF} = \text{Tk.1 million} - \text{Tk.600,000} = \text{Tk.400,000}$$

$$\text{Year 2 FCF} = \text{Tk.1.2 million} - (\text{Tk.600,000} \times 1.1) = \text{Tk.540,000}$$

$$\text{Year 3 FCF} = \text{Tk.1.44 million} - (\text{Tk.600,000} \times 1.1^2) = \text{Tk.732,000}$$

$$\text{Year 4 FCF} = \text{Tk.1.73 million} - (\text{Tk.600,000} \times 1.1^3) = \text{Tk.981,000}$$

$$\text{Year 5 FCF} = \text{Tk.2.08 million} - (\text{Tk.600,000} \times 1.1^4) = \text{Tk.1,309,000}$$

$$\text{Year 6 FCF} = \text{Tk.2.18 million} - (\text{Tk.600,000} \times 1.1^5) = \text{Tk.1,266,000}$$

Next, you would discount each year's FCF back to its present value using the discount rate:

$$\text{Present value of Year 1 FCF} = \text{Tk.400,000} / (1 + 10\%)^1 = \text{Tk.363,636}$$

$$\text{Present value of Year 2 FCF} = \text{Tk.540,000} / (1 + 10\%)^2 = \text{Tk.438,017}$$

$$\text{Present value of Year 3 FCF} = \text{Tk.732,000} / (1 + 10\%)^3 = \text{Tk.536,152}$$

$$\text{Present value of Year 4 FCF} = \text{Tk.981,000} / (1 + 10\%)^4 = \text{Tk.683,743}$$

$$\text{Present value of Year 5 FCF} = \text{Tk.1,309,000} / (1 + 10\%)^5 = \text{Tk.1,007,930}$$

$$\text{Present value of Year 6 FCF} = \text{Tk.1,266,000} / (1 + 10\%)^6 = \text{Tk.833,563}$$

Finally, you would sum up the present values of all the FCFs to arrive at the DCF of the investment:

$$\text{DCF} = \text{Tk.363,636} + \text{Tk.438,017} + \text{Tk.536,152} + \text{Tk.683,743} + \text{Tk.1,007,930} + \text{Tk.833,563} = \text{Tk.3,862,041}$$

If the startup is currently valued at less than Tk.3,862,041, then the investment would be considered a good opportunity according to the DCF analysis. However, this is just one method of valuation, and there are many other factors that should be considered when making investment decisions.

In the above example the free cash flow (FCF) can be calculated using the following formula:

$$\text{Free Cash Flow} = \text{Operating Cash Flow} - \text{Capital Expenditures}$$

where:

**Operating Cash Flow = Net Income + Depreciation and Amortization - Changes in Working Capital**

**Capital Expenditures = Cash paid for Property, Plant and Equipment (PPE) + Cash paid for Intangible Assets**

To calculate the operating cash flow, the net income of the company is adjusted by adding back non-cash expenses such as depreciation and amortization, and then adjusting for changes in working capital. Changes in working capital are the differences between the current assets and current liabilities of the company from one period to another.

Capital expenditures represent the amount of cash spent by the company on long-term assets such as property, plant, and equipment (PPE), and intangible assets such as patents or trademarks.

Once the operating cash flow and capital expenditures are calculated, the free cash flow can be determined by subtracting the capital expenditures from the operating cash flow.

Positive free cash flow indicates that a company has generated more cash than it has invested in capital expenditures, and therefore has cash available for other purposes such as paying dividends, reducing debt, or reinvesting in the business. Negative free cash flow indicates that a company has invested more in capital expenditures than it has generated in cash, and may need to raise additional capital or cut back on investments to avoid a cash crunch.

#### **1.8. 12 Alternative Definition of DCF**

The analysis we went through in the previous section is quite general and can be adapted to just about any capital investment problem. In the next section, we illustrate some particularly useful variations. Before we do so, we need to discuss the fact that there are different definitions of project operating cash flow that are commonly used, both in practice and in finance texts.

**OCF = EBIT + Depreciation – Taxes**

Where,

EBIT = Sales - Costs – Depreciation and



$$\text{Taxes} = \text{EBIT} * \text{Tax Rate}$$

### **The Bottom-Up Approach**

Because we are ignoring any financing expenses, such as interest, in our calculations of project OCF, we can write project net income as:

$$\text{Project Net Income} = \text{EBIT} - \text{Taxes}$$

### **OCF = Net Income + Depreciation**

This is the bottom-up approach. Here, we start with the accountant's bottom line (net income) and add back any noncash deductions such as depreciation. It is crucial to remember that this definition of operating cash flow as net income plus depreciation is correct only if there is no interest expense subtracted in the calculation of net income.

### **The Top-Down Approach**

Perhaps the most obvious way to calculate OCF is:

$$\text{OCF} = \text{Sales} - \text{Costs} - \text{Taxes}$$

This is the top-down approach, the second variation on the basic OCF definition. Here, we start at the top of the income statement with sales and work our way down to net cash flow by subtracting costs, taxes, and other expenses. Along the way, we simply leave out any strictly noncash items such as depreciation.

#### **1.8.13 The Tax Shield Approach**

The third variation on our basic definition of OCF is the tax shield approach. The Tax Shield definition of OCF is:

$$\text{OCF} = (\text{Sales} - \text{Costs}) * (1 - T) + \text{Depreciation} * T, \text{ whereas } T \text{ is again the Corporate Tax Rate.}$$

This approach views OCF as having two components. The first part is what the project's cash flow would be if there were no depreciation expense. The second part of OCF in this approach is the depreciation deduction multiplied by the tax rate. This is called the depreciation tax shield. We

know that depreciation is a noncash expense. The only cash flow effect of deducting depreciation is to reduce our taxes, a benefit to us.

Now that we've seen that all of these approaches are the same, you're probably wondering why everybody doesn't just agree on one of them. One reason is that different approaches are useful in different circumstances. The best one to use is whichever happens to be the most convenient for the problem at hand.

#### 1.8.14 Types of DCF Analysis

DCF (Discounted Cash Flow) analysis is a valuation method used to estimate the value of an investment based on its expected future cash flows. There are several types of DCF analysis, including:

**Single-Period DCF:** This type of DCF analysis estimates the value of an investment based on its expected cash flow for a single period, typically one year.

**Multi-Period DCF:** This type of DCF analysis estimates the value of an investment based on its expected cash flows for multiple periods, typically three to five years or more.

**Dividend Discount Model (DDM):** This type of DCF analysis is used to value stocks that pay dividends. The DDM estimates the present value of all future dividend payments.

**Terminal Value DCF:** This type of DCF analysis estimates the value of an investment beyond the forecasted period, typically by applying a terminal growth rate to the final year's cash flow.

**Adjusted Present Value (APV):** This type of DCF analysis adjusts the value of an investment by adding the value of any financing benefits, such as tax shields.

**Real Options DCF:** This type of DCF analysis applies options pricing theory to value an investment that has the option to expand, contract, or abandon at various points in the future.

Each type of DCF analysis has its own unique advantages and disadvantages, and the choice of method will depend on the specific circumstances of the investment being analyzed.

### 1.8.15 Drivers and Assumptions

To perform a DCF analysis, a number of drivers and assumptions need to be identified and estimated. These include:

- i. **Cash Flows:** The first driver is the expected cash flows of the investment. This involves estimating the amount and timing of future cash flows that the investment is expected to generate.
- ii. **Discount Rate:** The second driver is the discount rate, which is used to calculate the present value of the expected future cash flows. The discount rate reflects the time value of money, the risk of the investment, and the opportunity cost of capital.
- iii. **Growth Rate:** The third driver is the growth rate of the cash flows. This reflects the rate at which the cash flows are expected to grow over time.
- iv. **Terminal Value:** The fourth driver is the terminal value, which represents the value of the investment at the end of the forecast period. This is calculated using a multiple of the last year's cash flow or by perpetuity growth method.

Assumptions used in a DCF analysis include:

- i. **Market Conditions:** The future market conditions are assumed to be similar to the current conditions. Any changes in the market conditions could impact the cash flows and the discount rate.
- ii. **Operating Expenses:** The operating expenses are assumed to remain constant or grow at a certain rate. Any unexpected increases in operating expenses could impact the cash flows and the valuation.
- iii. **Capital Expenditures:** The capital expenditures required to maintain or grow the business are assumed to be constant or grow at a certain rate. Any unexpected changes in the capital expenditures could impact the cash flows and the valuation.
- iv. **Tax Rates:** The tax rates are assumed to remain constant or change at a certain rate. Any unexpected changes in the tax rates could impact the cash flows and the valuation.

It is important to note that these drivers and assumptions are estimates and may not reflect the actual performance of the investment. Therefore, it is important to conduct sensitivity analysis to test the impact of changes in the drivers and assumptions on the valuation.

## **1.9 Modeling and Projecting Financial Statements**

Financial statement modeling is a key step in the process of valuing companies and the securities they have issued. We focus on how analysts use industry information and corporate disclosures to forecast a company's future financial results. An effective financial statement model must be based on a thorough understanding of a company's business, management, strategy, external environment, and historical results. Thus, an analyst begins with a review of the company and its environment—its industry, key products, strategic position, management, competitors, suppliers, and customers. Using this information, an analyst identifies key revenue and cost drivers and assesses the likely impact of relevant trends, such as economic conditions and technological developments. An analyst's understanding of the fundamental drivers of the business and assessment of future events provide the basis for forecast model inputs. In other words, financial statement modeling is not merely a quantitative or accounting exercise; it is the quantitative expression of an analyst's expectations for a company and its competitive environment.

### **1.9.1 Financial Statement Modeling: An Overview**

Financial statement modeling generally begins with the Income Statement. The Income Statement is a logical starting point because most companies derive most of their value from future cash flow generation, determined primarily by the amount of future operating income generated by the business. Exceptions include banks and insurance companies, for which the value of existing assets and liabilities on the balance sheet might be more relevant to the companies' overall value than projected future income. The income statement also provides a useful starting point for modeling a company's balance sheet and cash flow statement.

### **1.9.2 Income Statement Modeling: Revenue**

Companies receive revenue from multiple sources and can be analyzed by

- Geographical Source,
- Business Segment, or

- Product Line.

**In a Geographic Analysis**, the analyst places a company's revenue into various geographic groupings. A geographic analysis can be particularly useful for companies operating in multiple countries with different underlying growth rates or competitive dynamics. For example, a company's sales might be experiencing relatively slow growth in one region of the world and relatively fast growth in other regions. By examining each region of the world separately, analysts can enhance their understanding of overall growth.

**In a Breakdown by Segment**, the analyst classifies a company's revenue into various business segments. Many companies operate in more than one industry or market niche with widely differing economics. Although information is often available for the different business segments, analysts should make an independent judgment about whether management's segmentation is relevant and material. Sometimes analysts can regroup reported information in a manner that helps make important points.

**Finally, a Product Line Analysis** provides the most granular level of detail. A product line analysis is most relevant for a company with a manageably small number of products that behave differently but when combined, account for most of the company's sales.

Once the analyst understands the important components of a company's revenue, they must decide whether to use a **top-down**, **bottom-up**, or **hybrid approach** to projecting future revenue. **A top-down approach** usually begins at the level of the overall economy. Forecasts can then be made at lower levels, such as sector, industry, and market for a specific product, to arrive at a revenue projection for the individual company. In contrast, **a bottom-up approach** begins at the level of the individual company or a unit within the company, such as individual product lines, locations, or business segments. Analysts then aggregate their projections for the individual products or segments to arrive at a forecast of total revenue for the company. Moreover, analysts also aggregate their revenue projections for individual companies to develop forecasts for a product market, industry, or the overall economy. **A hybrid approach** combines elements of both top-down and bottom-up analysis and can be useful for uncovering implicit assumptions or errors that could arise from using a single approach.

### 1.9.3 Modeling Operating Costs: Cost of Goods Sold and SG&A

Modeling Operating Costs is an important task for any business. Two of the main components of operating costs are the Cost of Goods Sold (COGS) and Selling, General, and Administrative (SG&A) expenses. COGS refer to the direct costs associated with producing and selling a product, such as materials, labor, and manufacturing overhead. SG&A expenses, on the other hand, refer to the indirect costs associated with running a business, such as marketing, rent, utilities, and salaries.

To model COGS, you will need to identify the cost drivers of your production process, such as the quantity and cost of materials used, the amount of labor required, and the overhead expenses associated with production. You can then use this information to create a cost of goods sold formula, such as:  $\text{COGS} = (\text{direct materials} + \text{direct labor} + \text{manufacturing overhead})$

To model SG&A expenses, you will need to identify the different categories of expenses that make up your selling, general, and administrative costs. You can then use this information to create an SG&A formula, such as:  $\text{SG\&A} = (\text{marketing expenses} + \text{rent} + \text{utilities} + \text{salaries})$

Once you have developed your COGS and SG&A formulas, you can use them to forecast your operating costs for the upcoming year, quarter, or month. This will allow you to create a budget and make informed decisions about pricing, marketing, and other business strategies.

### 1.10 Modeling Non-Operating Costs and Other Items

Line items on the income statement that appear below operating profit, such as interest income, interest expense, income taxes, non-controlling interest, income from affiliates, and shares outstanding, also need to be modeled. The two most significant non-operating expenses in income statement modeling are financing expenses (i.e., interest) and taxes.

#### 1.10.1 Financing Expenses

Interest income is a key component of revenue for banks and insurance companies, but it is generally less significant to non-financial companies. Interest expense depends on the level of debt on the balance sheet as well as the interest rate associated with the debt. Interest expense is typically presented net of interest income on the income statement, with the individual components disclosed in the notes to financial statements. Analysts should be aware of the effect

of changing interest rates on the net interest expense and market value of company's debt. When forecasting financing expenses, the capital structure of a company is a key determinant. For practical purposes, the debt level in combination with the interest rate are the main drivers in forecasting debt financing expenses. Usually, the notes to the financial statements provide detail about the maturity structure of the company's debt and the corresponding interest rates. This information can be used to estimate future financing expenses.

### 1.10.2 Corporate Income Tax

Modeling non-operating costs such as corporate income tax can be a complex task, but it is an important aspect of financial analysis and planning. Here are some key steps to consider when modeling non-operating costs:

- i. **Understand the Tax Regulations:** The first step in modeling corporate income tax is to understand the tax regulations in the relevant jurisdiction. This includes knowing the tax rates, tax deductions, and any other tax-related factors that may impact the business.
- ii. **Identify Taxable Income:** Once you understand the tax regulations, the next step is to identify the taxable income of the business. This includes all revenue generated by the business, as well as any deductions or exemptions that may apply.
- iii. **Calculate the Tax Liability:** Once the taxable income has been identified, the next step is to calculate the tax liability. This involves multiplying the taxable income by the applicable tax rate, and then subtracting any deductions or exemptions that apply.
- iv. **Consider Tax Planning Strategies:** There are many tax planning strategies that businesses can use to minimize their tax liability. For example, they may be able to defer income or accelerate expenses to reduce taxable income in a given year.
- v. **Incorporate Tax into Financial Projections:** Finally, it is important to incorporate corporate income tax into financial projections for the business. This can help to ensure that the business has adequate cash flow to cover its tax obligations, and can also help to identify opportunities for tax optimization.

Overall, modeling non-operating costs such as corporate income tax requires a deep understanding of tax regulations and the business's financial situation. It is important to take a

strategic approach to tax planning and incorporate tax considerations into financial projections to ensure that the business is well positioned to manage its tax obligations.

### **1.10.3 Income Statement Modeling: Other Items**

A company's stated dividend policy helps in modeling future dividend growth. Analysts will often assume that dividends grow each year by a certain dollar amount or as a proportion of net income. If a company shares an ownership interest in a business unit with a third party, the company might report minority interest expense or income from consolidated affiliates on its income statement. If a company owns more than 50% of an affiliate, it will generally consolidate the affiliate's results with its own and report the portion of income that does not belong to the parent company as minority interest. If a company owns less than 50% of an affiliate, it will not consolidate results but will report its share of income from the affiliate under the equity method. If the affiliate is profitable, minority interest would be reported as deduction from net income, whereas if a consolidated affiliate generates losses, minority interest would be reported as an addition to net income to shareholders. In either case, income or expense from these jointly owned businesses can be material. Share count (shares issued and outstanding) is a key input in the calculation of an intrinsic value estimate and earnings per share. Share count changes for three primary reasons: dilution related to stock options, convertible bonds, and similar securities; issuance of new shares; and share repurchases. The market price of a stock is an important determinant of future share count changes, which can complicate their estimation. Projections for share issuance and repurchases should fit within the analyst's broader analysis of a company's capital structure. Finally, unusual charges can be almost impossible to predict, particularly past the next couple of years. For this reason, analysts typically exclude unusual charges from their forecasts. But if a company has a habit of frequently classifying certain recurring costs as "unusual," analysts should consider some normalized level of charges in their model.

### **1.11 Balance Sheet Modeling**

Balance sheet modeling is an important technique used in financial analysis and forecasting. The balance sheet is a snapshot of a company's financial position at a given point in time, while the cash flow statement shows the inflows and outflows of cash over a period of time.



Balance sheet modeling involves projecting a company's balance sheet into the future based on assumptions about the company's future financial performance. This can help to identify potential issues with liquidity, solvency, and working capital, and can also be used to evaluate the impact of different financing and investment decisions on the company's financial position.

Here are a few examples of balance sheet modeling:

#### **1.11.1 Sensitivity Analysis**

This involves testing the effects of various assumptions made about a company's future financial performance, such as revenue growth rates, operating expenses, and capital expenditures, on its balance sheet.

#### **1.11.2 Scenario Analysis**

This involves creating different scenarios of a company's financial performance and analyzing the impact of each scenario on its balance sheet. For example, analyzing the impact of a recession on the company's balance sheet.

#### **1.11.3 Historical Trend Analysis**

This involves analyzing the company's past financial performance to identify trends and patterns that can be used to forecast future performance and update the balance sheet model accordingly.

#### **1.11.4 Cash Flow Forecasting**

This involves analyzing a company's expected cash inflows and outflows to forecast its future cash position and update the balance sheet model accordingly.

#### **1.11.5 Capital Structure Analysis**

This involves analyzing a company's debt and equity structure to forecast its future financial position and update the balance sheet model accordingly.

#### **1.11.6 Debt Financing Analysis**

This involves modeling the impact of different levels of debt financing on a company's balance sheet. This can help managers determine the optimal amount of debt to take on and evaluate the impact of different interest rates and repayment schedules.

### **1.11.7 Capital Expenditure Planning**

This involves creating a model to evaluate the impact of different capital expenditure plans on a company's balance sheet. This can help managers prioritize investments and ensure that the company has sufficient funds to support its growth plans.

### **1.12 Cash Flow Statement Modeling**

Cash flow statement modeling involves projecting a company's cash flows over a given period of time based on assumptions about future operating, investing, and financing activities. This can help to identify potential issues with cash flow management and to evaluate the impact of different financing and investment decisions on the company's ability to generate cash.

Here are some examples of cash flow statement modeling:

#### **1.12.1 Direct Method Cash Flow Statement Model**

This involves estimating cash inflows and outflows directly from each line item on the income statement and balance sheet. For example, to estimate cash inflows from sales, the model would multiply forecasted revenue by the historical cash conversion ratio to arrive at the expected cash received from customers. Similarly, cash outflows would be estimated by analyzing each expense line item and projecting future payments.

#### **1.12.2 Indirect Method Cash Flow Statement Model**

This involves starting with net income from the income statement and adjusting for non-cash items and changes in working capital accounts to arrive at the expected cash flow from operations. This model is typically easier to build than the direct method as it requires fewer line items to be estimated, but it may not provide as much granularity.

#### **1.12.3 Project-based Cash Flow Statement Model**

This involves creating a cash flow model for a specific project or investment. This model would estimate the cash inflows and outflows associated with the project, such as construction costs, revenue from sales, and operating expenses. This type of model can be useful in evaluating the potential return on investment for a specific project.

#### 1.12.4 Sensitivity Analysis

This involves modeling different scenarios based on changes in key assumptions, such as changes in sales growth rates, margins, or working capital levels. Sensitivity analysis can help identify potential risks and opportunities associated with the business or investment.

#### 1.12.5 Monte Carlo Simulation

This involves using statistical analysis to model a range of potential outcomes based on different probabilities. This type of analysis can be useful in assessing the potential range of outcomes for a business or investment, and in evaluating the impact of different risks or uncertainties.

Both balance sheet and cash flow statement modeling are important tools for financial analysts and investors, as they provide valuable insights into a company's financial position and help to inform investment and financing decisions. However, they require a thorough understanding of financial accounting principles and the ability to make informed assumptions about future financial performance.

### 1.13 Stress Testing a Financial Model versus a Business

Following the global financial crisis, there was quite a lot of discussion on the importance of stress testing businesses, and I need to point out that this is quite different from stress testing a financial model. Stress testing a business involves putting the business's financial forecasts through scenario modeling. Stress testing a financial model is more about testing the technical inner workings of the model (i.e., varying the inputs to see how much the outputs change).

Strategies to stress test a model include:

- i. Set inputs to zero and check that the outputs respond as you would expect. For example, by setting the price to zero, you would expect revenue to also be zero.
- ii. Double your units sold. Does your revenue double?
- iii. If you are indexing costs, try setting the indexation percentage to zero and see if the costs remain flat.

Stress testing your financial model by way of scenario and sensitivity analysis will help you be prepared for varying outcomes as a result of fluctuating external factors. Once you have

completed your financial model, you should stress test the workings of the model to ensure that it is robust and accurate.

#### 1.14 Overview of Scenario, Sensitivity Analysis Tools and Methods

Many people will create a financial model and save it as a base case. Then they change all the numbers and save it as a worst case. Then they change all the numbers again and save it as a best case. Whilst this method will work, it's not a very efficient way of performing scenario analysis. If a subsequent change needs to be made to the model, it will need to be made several times, and there is a high possibility that an error will be made between the different versions. Let's take a look at the technical methods available in Excel for creating scenarios and sensitivities, which will provide a much better way of building models. Essentially, there are three ways:

##### i. Manual Drop-downs

(a) In-cell drop-downs (using data validation)

(b) Object drop-downs (using combo boxes)

##### ii. Scenario Manager

##### iii. Data Tables

#### 1.14.1 Manual Drop-Downs

Creating scenario analysis using manual drop-down boxes means that you can only view one scenario at a time.

##### **(a) In-Cell Drop-Downs (Using Data Validation)**

In an in-cell drop-down, the value sits within the cell of data validation drop-down box. See Figure 1.1 In this case, the modeller has limited the valid entries to this cell to one of three options: Best Case, Base Case, or Worst Case. This is the easiest and most commonly used type of drop-down box.

##### **(b) Object Drop-Downs (Using Combo Boxes)**

There is very little difference from the user perspective with a combo box drop-down, but it's built very differently. This type of box is an object that sits on top of the sheet, rather than within the cell itself. If you look very closely, you can see that the box is sitting across several cells instead of within a single cell. This type of box is a little more difficult to build, but is easier for the user, as the drop-down arrow appears all the time, rather than only when the cell is selected.

#### 1.14.2 Scenario Manager

Scenario Manager is an Excel tool in which you can create multiple scenarios. Once it is set up, the user can select a scenario, and input cells will change automatically. Scenario Manager is fairly limited and is not particularly helpful in large and complex models. It is therefore not a very widely used tool for scenarios in financial modeling.

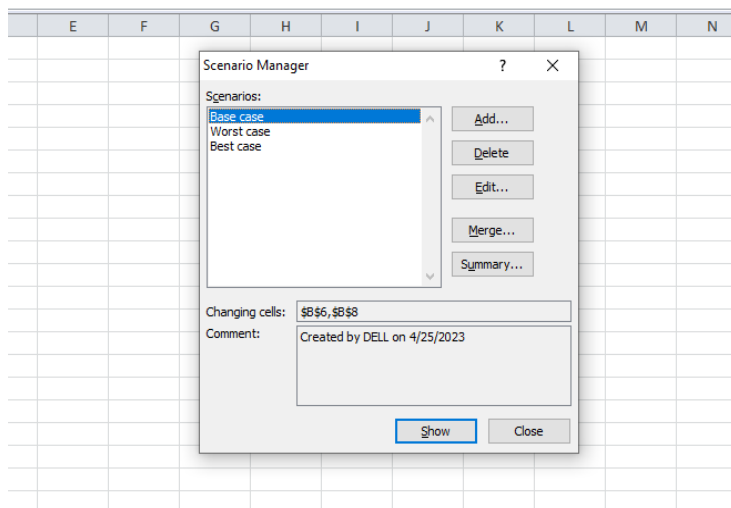


Figure 1.1

Scenario Manager is a tool that has been grouped together with Goal Seek and Data Tables in the What-if Analysis section of the Data tab in MS Excel. Being grouped with other tools that are so useful would lead the aspiring modeler to believe that Scenario Manager is also a critical tool to know. However, despite its useful-sounding name and the good company it keeps, Scenario Manager is quite limited in its functionality and is not particularly helpful in large and complex financial models. It is therefore not commonly used by expert financial modelers; however, for the sake of completeness, we will cover it very briefly in this chapter.

Let's take a very simple example of a person creating her personal budget for next year. Let's assume that she does not know what her mortgage payments will be, due to the changing rate of interest, or how much her travel railcard will cost. You can define different scenarios and then switch between them to do what-if analysis to see if she will end up in debt or be able to afford a holiday. Scenarios work best on complex spreadsheets where there is a large knock-on effect from changes in the variable data.

Scenarios are created and managed using the Scenario Manager in the following 13 steps:

- i. Create and format the spreadsheet as shown in Figure 1.2. You can leave the input variable cells in B6 and B8 empty.
- ii. On the Data tab, in the Data Tools section, click on the What-if analysis icon, and select Scenario Manager from the drop-down list.
- iii. This will bring up the Scenario Manager dialog box.
- iv. Click on the Add button to create a new scenario.
- v. This will bring up the Add Scenario dialog box.
- vi. Enter a name for the first scenario into the Scenario Name box (i.e., Base Case).
- vii. Enter the cell references for the variable cells into the Changing Cells box. Use absolute references and separate each reference with a comma (if there is more than one), but don't use spaces. You can actually hold down the Control key and click on each cell in the spreadsheet to insert the references into the box. Click OK.
- viii. This will bring up the Scenario Values dialog box.
- ix. Enter the variables' values for this scenario (i.e., Base Case). For example, Tk.15,000 for mortgage and Tk.2,000 for travel. Click OK.

D14				
	A	B	C	D
1				
2	Budget 2023			
3	Income	36,000		
4				
5	Expenditure			
6	Mortgage	15,000		
7	Bills	8,000		
8	Travels	2,000		
9	Food	6,000		
10	Total Expenditure	31,000		
11				
12	Savings	5,000		
13				

Figure 1.2

- x. j. This will take you back to the Scenario Manager dialog box.
- xi. k. Follow the previous steps again to create each scenario (i.e., Worst Case: Tk.20,000 for mortgage and Tk.3,000 for travel; Best Case: Tk.10,000 for mortgage and Tk.1,500 for travel).
- xii. l. When you have created all the scenarios, you can use the Scenario Manager to view each scenario. See figure 1.3
- xiii. m. Scenarios are sheet-specific, meaning they only exist in the sheet where you created them.

Scenario Summary				
	Current Values:	Base case	Worst case	Best case
<b>Changing Cells:</b>				
\$B\$6	15000	15000	20000	10000
\$B\$8	2000	2000	3000	1500
<b>Result Cells:</b>				
\$B\$12	5000	5000	-1000	10500

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

Figure 1.3

As we can see, Scenario Manager is a rudimentary tool, which simply changes hardcoded numbers. It's not very easy to see, display, or print the different options unless we go into the Scenario Manager tool. Using the summary tool creates a summary report of the scenarios created, but they are not dynamic or interactive and are therefore of little use as a modeling tool. The biggest downfall of Scenario Manager is that the user cannot see the results on the sheet unless she actually goes in to view the scenarios.

### 1.14.3 Using Data Tables for Sensitivity Analysis

Data tables are one of the more advanced and complex financial modeling tools. They can be used for scenarios and sensitivity analysis, but they are not as commonly used as drop-down scenarios, mostly because users don't know much about them. Because data tables use array formulas, they are unlike most other formulas in that you cannot trace dependents, and they are very difficult to follow unless you are familiar with them. Note that a modeler who is not familiar with data tables will be unable to edit the table, or make any changes. Let's create an interest rate calculator upon which we can test the sensitivity of monthly repayments to changes in interest rates and loan terms.

- i. First, set up the model with the hardcoded input assumptions, as shown in Figure 1.4.
- ii. In cell B12, use a PMT formula to calculate the monthly repayments.



- iii. Your formula should be =  $\text{PMT}(\text{B8}/12, * \text{B10}, \text{B6})$ . The function returns a negative value because this is an expense. For our purposes, change it to a positive value by preceding the function with the minus symbol.

	A5		$f_x$
	A	B	C
1			
2			
3			
4	Interest rate Calculator		
5			
6	Loan amount	350000	
7			
8	interest rate	7.50%	
9			
10	Years	25	
11			
12	Monthly repayment	\$2,586.47	
13			
14			

Figure 1.3

#### 1.14.3.1 One-Variable Data Table

The data table presents a body of data derived from a function. The rows and columns of the table are drawn from one or two of the inputs or variables fed to the function. In this case, the data comes from the results of the PMT function, using the interest rate variable (cell B8).

- i. We will decide what the column elements will be by entering them in cells E7 to E12. For this exercise, use 6.00 to 8.50 percent in increments of half a percent, as shown in Figure 1.5.
- ii. Merge cells D7 to D12 and change the orientation under the Alignment tab under Format Cells if you wish to have the interest rate title oriented vertically, as shown in cell D6 of Figure 1.5.
- iii. Enter in cell F6 the formula =  $\text{B12}$ , which is the cell containing the PMT function. The table, when created, will use the PMT function to populate the table according to the values in the input column (this will become clearer once the table is populated).

- iv. Highlight cells E6:F12 as shown in Figure 11.6. You must highlight all the cells for it to work. Select What-if Analysis from the Data tab. Choose Data Table from the options that appear.
- v. The Data Table dialog box will appear. Because we are only doing a one variable data table, we only need to enter data for one of the interest rate or term variables, but which one depends on whether our input variable is arranged in a row or a column. Because it is in a column, we should use the Column input cell field. Link this field to the input field for the interest rate (cell B8).

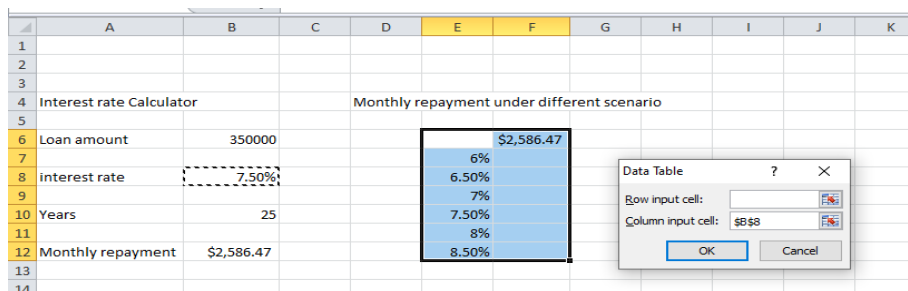


Figure 1.4

- vi. Your dialog box should look like Figure 1.5.
- vii. Click OK, and your data table will populate. Note that the formula in the
- viii. cells will have curly brackets around it, denoting that it is an array formula:
- ix. `{=TABLE(B8)}`. You will not be able to edit the cells.
- x. Your sheet should look something like Figure 1.6.

	A	B	C	D	E	F	G	H
1								
2								
3								
4	Interest rate Calculator							
5								
6	Loan amount	350000				\$2,586		
7					6%	\$2,255		
8	interest rate	7.50%			6.50%	\$2,363		
9					7%	\$2,474		
10	Years	25			7.50%	\$2,586		
11					8%	\$2,701		
12	Monthly repayment	\$2,586.47			8.50%	\$2,818		
13								
14								

Figure 1.5

### 1.14.3.2 Two-Variable Data Table

- i. Now, let's change this to a two-variable data table. Clear cells F7:F12. You will need to highlight and clear them all at once, as you cannot change or delete part of a data table.
- ii. With a two-variable table, the output cell needs to be at the top left of the table, at the intersection of the row and column variables. Therefore, cut and paste cell F6 to cell E6.

Figure 1.6

- iii. In cells F6:I6, enter the number of years you wish to test in your data table. For this exercise, enter the values 20, 25, 30, and 35 across the table. Change the formatting as necessary. We now have the makings of a table with the term across the top row and the interest rate down the left-hand column, as shown in Figure 1.7.
- iv. Now highlight the table area cells E6:I12 as shown. You must highlight all the cells for it to work.
- v. Select Data Table from the drop-down list under the What-if Analysis icon in the Data Tools section on the Data tab.
- vi. Your row input cell will be the entry field for the values shown in the row (the term in years), and the column input cell will be the entry field for the values shown in the column (the interest rate). Your dialog box should look like Figure 1.7.
- vii. Once you press Ok, your table should now look like Figure 1.8.

1									
2									
3									
4	Interest rate Calculator								
5									
6	Loan amount	350000			\$2,586	20	25	30	35
7					6%	\$2,508	2255.055	2098.427	1995.664
8	Interest rate	7.50%			6.50%	\$2,610	2363.225	2212.238	2114.54
9					7%	\$2,714	2473.727	2328.559	2235.997
10	Years	25			7.50%	\$2,820	2586.469	2447.251	2359.849
11					8%	\$2,928	2701.357	2568.176	2485.913
12	Monthly repayment	\$2,586.47			8.50%	\$3,037	2818.295	2691.197	2614.012
13									
14									

Figure 1.7: Completed Two variable Data Table

- viii. You might wish to change the font in cell E6 to white; while it is required for the data table to work, it does not add any value visually (and is simply confusing).

#### 1.14.4 Limitations of Data Tables

We can see from the example above that data tables are a great way to look at multiple scenarios or sensitivity analyses one at a time. Instead of manually changing the interest rate or the term of the loan, we can display at a glance the impact of these changes.

However, data tables have a few limitations that make them inappropriate for some scenarios or sensitivity analysis situations. These three limitations are:

- a. The inputs and outputs need to be on the same page.
- b. You have a limitation of showing only two inputs and one output at a time. This is not a restriction with other forms of scenario analysis.
- c. Formula auditing (trace precedents and trace dependents) doesn't work very well in data tables.

Data tables are extremely useful when, as in the example shown above, you want to see the incremental change of one or two inputs on a single output. For example, how much does my profit margin change if I change my price from Tk.450 to Tk.460, Tk.470, Tk.480, Tk.490, or Tk.500? A data table would not be an appropriate solution if the output of your financial model were a full set of financial statements, for example. In this situation, a drop-down scenario would be most appropriate.

### 1.15 Module End Questions

1. Briefly explain different functions and activities of Investment Banking.
2. Distinguish investment Banking from Commercial/Conventional Banking.
3. What are the different steps in structuring a deal in Investment Banking?
4. Briefly explain different Business Valuation Techniques that Investment Bankers use.
5. What are the different types of Valuation Multiples? Explain.
6. What is Hurdle Rate? How it is calculated? Why it is important?
7. Company XYZ is considering investing in a new project that requires an initial investment of Tk.1,500,000. The project is expected to generate cash flows of Tk.400,000 in Year 1, Tk.600,000 in Year 2, Tk.800,000 in Year 3, Tk.900,000 in Year 4, and Tk.1,200,000 in Year 5. However, due to the uncertain market conditions, the cash flows beyond Year 5 cannot be estimated accurately.  
  
The company has a maximum acceptable payback period of 3 years. Assuming the project's cash flows are received evenly throughout each year and there are no other cash inflows or outflows, determine whether the project meets the payback period criterion. If it does not meet the criterion, what additional information or analysis could be considered to make a more informed decision regarding the project's viability?
8. Company XYZ has a cost of equity of 12%, a cost of debt of 5%, and a tax rate of 25%. The company's equity is valued at Tk.10 million, and its debt is valued at Tk.5 million. What is the WACC for Company XYZ?
9. ABC Corporation is considering a new project and needs to calculate its Weighted Average Cost of Capital (WACC). The company has the following information:  
  
The Market Value of equity is Tk.40 million, consisting of 2 million outstanding shares priced at Tk.20 per share. The market value of debt is Tk.60 million, and the company pays an annual interest rate of 8% on its debt. The Corporate Tax Rate is 30%. The Beta of the company's stock is 1.2, and the risk-free rate is 4%. The market risk premium is 6%. Now, calculate the WACC for ABC Corporation based on the provided information.
10. Company XYZ has issued several bonds with different coupon rates and market values. The company wants to calculate its Weighted Average Cost of Debt (WACC) by considering the cost of each bond. Here are the details of the bonds:  
  
Bond A: Face value of Tk.1,000, coupon rate of 4%, market value of Tk.950, and 3 years remaining until maturity.  
  
Bond B: Face value of Tk.500, coupon rate of 6%, market value of Tk.550, and 5 years remaining until maturity.

Bond C: Face value of Tk.1,500, coupon rate of 3.5%, market value of Tk.1,450, and 2 years remaining until maturity.

The company's tax rate is 25%. To calculate the Cost of Debt, determine the yield to maturity (YTM) for each bond based on its market value and remaining years until maturity. Finally, calculate the Weighted Average Cost of Debt (WACC) by considering the market value weights of each bond.

11. How can cash flow modeling be used to analyze and predict the financial performance of a business?
12. What is the process and significance of conducting a Discounted Cash Flow (DCF) analysis to determine the intrinsic value of an investment or business?
13. Briefly explain the different types of DCF analysis.
14. How can Balance Sheet Modeling assist in evaluating a company's financial position, assessing liquidity and solvency, and making informed decisions regarding Capital Structure, Debt Financing, and Capital Expenditure planning?
15. How can Cash Flow Statement modeling be used to evaluate the financial health of a company and inform investment decisions?
16. Write Short Note on:
  - a. Asset Allocation
  - b. Hurdle Rate
  - c. Pay Back Period
  - d. Cost of Capital
  - e. Stress Testing
  - f. Sensitivity Analysis

## **Module B: Primary and Secondary Market Operations**

### **2.1 Introduction**

At some points of the business operation, each company has to raise funds. To do this, businesses can either borrow or issue shares- common or preferred. When a company raises funds through the issuance of stock for the first time, it is known as Initial Public Offering (IPO). The IPO approval process starts with submitting the application to Bangladesh Securities and Exchange (BSEC). For helping the company to issue the common stock (known as issuing firm), the issuing firm appoints an issue manager from the registered firms registered with BSEC. There are two methods in IPO process in our country. One is Fixed Price Method and the other is Book Building Method. In Fixed Pricing method, the shares are offered at par value. If the issuing firm wants to issue shares at a premium, it has to follow the Book Building process. In Book Building method, the price of the share is determined following a Road Show. In the Road Show, Red Herring Prospectus is distributed among all eligible investors and discussed all aspects of the company that willing to issue shares. After that, it is requested to submit share price of the impending issue. From the prices submitted by eligible investors, the IPO price is fixed. After getting the approval of the BSEC, the issuing firm has to invite subscription from the public. This is done through publication of prospectus in at least two national newspapers. Interested investors are asked to submit their subscription through their brokerage houses within the specified subscription period. If the issue is oversubscribed, IPO share is allotted on a pro-rata basis among all valid applicants. If the issue is undersubscribed, the underwriters would take up the unsubscribed portion of the issue. The IPO ends after the allocation of the shares to the winning subscribers. Then the listed process starts. The shares that are sold through IPO process, must be listed in at least one of the two stock exchanges – the Dhaka Stock Exchange (DSE) or the Chittagong Stock Exchange (CSE). The listing is registered for the IPO shares to be traded in the stock exchange. There are certain processes to be followed to list the security. Both the IPO and listing processes are discussed in detail in this section.

#### **2.1.1 The Terminology of the Salient Point**

- a. "Initial Public Offering or IPO" means the first offer of securities by an issuer to the general public;

b. IPO methods: -

- a. "Fixed Price Method" means the process by which an issuer offers its securities at face value.
- b. Book-Building method, when offered above face value.
- c. "Book-Building method" means the process by which an issuer attempts to determine the offering price of its securities based on the demand of eligible investors;
- d. "Limit Price" means the lowest price offered by bidders for which the portion of the total eligible investors (EI) could be exhausted;
- e. "Road Show" means the presentation by an issuer and an issue manager to Eligible Investors (EI) of the issue of securities disclosing all characteristics;
- f. "Direct Registration of Securities" means the listing of any unlisted security or the re-listing of any security delisted, including over-the-counter securities, the Exchange discharging its existing securities without issuing other securities.
- g. "Bidders" means the eligible investors who participated in the bid solicitation;
- h. "Eligible Investor or EI" means the following institution that has a commercial activity / investment in Bangladesh and that is registered with the electronic subscription system (ESS):
  - i. Merchant Bankers and Portfolio Managers;
  - ii. Asset Management Companies;
  - iii. Mutual Funds and Collective Investment System (CIS);
  - iv. Stock Traders;
  - v. Banks;
  - vi. Financial Institutions;
  - vii. Insurance Companies;
  - viii. Alternative Investment Fund Managers;
  - ix. Alternative Investment Funds;



- x. Foreign investors with an account with any securities depository registered with the Commission;
  - xi. Recognized Provident Funds, registered Pension Funds and approved Gratuity Funds; and
  - xii. Other institutions approved by the Commission.
- i. “Prospectus” means any document, including a Red Herring Prospectus, draft Prospectus, Information Memorandum and Offer Document, prepared for the purpose of communicating to the investors an issuer’s plan to offer for sale of its securities.

## **2.2 IPO and allotment Mechanism of Securities Issued**

### **2.2.1 The Process of Fund raising and listing with Exchanges through IPO**

The public issuance of any security and its eligibility criteria are governed primarily by the rules of the Bangladesh Securities and Exchange Commission (Public Issue) Rules, 2015. The Dhaka Stock Exchange (Listing) Regulations, 2015 provide guidance on conformity.

There are two possible ways to be listed with exchanges in Bangladesh:

- i. Quotation via Initial Public Offering (IPO):
  - (a) Fixed Price Method, when offered at Face Value; or
  - (b) Book-Building Method, when offered above Face Value with premium.
- ii. Unloading Shares by Direct Registration under the Dhaka Stock Exchange (Listing) Regulations, 2015.

### **2.2.2 Eligibility Criteria for being listed at DSE**

There are some criteria for being listed as a company which are given below:

#### **2.2.2.1 General Requirements**

An issuer may apply for a public offering of its securities, if -

- It offers an amount at least equivalent to 10% of its paid-up capital (including the envisaged offer) or Tk. 15 cores at Face Value, whichever is greater;
- It has a minimum Paid-up Capital of Tk. 15 core;

- It made no material changes, including the increase in Paid-up Capital after the date of the audited financial statements as included in the prospectus;
- The issue manager is in no way connected to the fact that the issuer does not hold any of its securities;
- It has prepared its financial statements in accordance with the requirements of the Securities and Exchange Rules, 1987; the provisions of IFRS/ IAS as adopted in Bangladesh and audited in the same manner as the Bangladesh Auditing Standards (BSA) and the law of the Companies Act, 1994 and other applicable legal requirements;
- He had the costs audited by professional accountants in accordance with the Companies Act, 1994; if applicable;
- Its most recent financial statements have been audited by the panel auditors, as stated by the Commission from time to time;
- It regularly participated in the Annual General Meeting (AGM);
- It has complied with the provisions of the Governance Guidelines issued periodically by the Board;
- It has complied with all the requirements of these rules in the preparation of the prospectus;
- It has no accumulated retained loss at the time of the application;
- It has complied with the provisions of the asset valuation guidelines if any, as published by the Commission from time to time; and
- The Issuer or any of its directors is not a bank defaulter.

#### **2.2.2.2 Additional Requirements for Fixed Price Method**

- If it has been commercially operated for at least the last 3 (three) years, it has a net after-tax profit and a net operating cash flow of at least the last 2 (two) years; if it has been commercially exploited for less than 3 (three) years, it has net income after tax and net operating cash flow at least for the last fiscal year; if it has not yet started commercial activity or has not yet completed a fiscal period, after-tax net income and net operating cash flow are positive; and
- At least 35% of the issue was underwritten on a firm commitment basis.

### 2.2.2.3 Additional Requirements for Book Building methods

- It has been commercially exploited for at least the last 3 (three) years;
- It achieved a net profit after tax for at least the last 2 (two) years;
- It has a positive net operating cash flow of at least the last 2 (two) fiscal years;
- It appointed separate persons as an issue manager and registrar to the issue of managing the issue;
- The issuer / issue has been rated by a credit rating company registered with the Commission;
- At least 35% of the issue has been underwritten on a firm commitment basis by the underwriter(s).

### 2.2.3 Direct Listing

Prerequisites of an issuer to become eligible for direct registration:

- Must have the minimum paid up capital of Tk. 30.00 (thirty) crore;
- Must not have any accumulated loss;
- Will be in commercial operation for at least the last 5 (five) years;
- Have a Profit over 3 (three) years over the last 5 (five) accounting / financial years ended with steady growth;
- Is regular in holding the Annual General Meeting (AGM);
- Did not raise any capital (excluding the bonus issue) in the last 2 (two) years;
- Did not issue the same class of securities as the issuance of premiums in the last 3 (three) years prior to the submission of the registration;
- Must have positive net current assets (current assets less current liabilities) at the end of the previous 3 (three) accounting / financial years;
- Must have positive net cash flows from operating activities for the last 3 (three) accounting / financial years;
- Must comply with the provisions of Corporate Governance guidelines as prescribed by the Board from time to time;
- Any of its sponsors / administrators is not a bank defaulter;
- Has been awarded a rating by a credit rating company;

- Prepared its financial statements in accordance with the requirements of the Securities and Exchange Regulations, 1987 and the provisions of International Financial Reporting Standards (IFRS) and International Accounting Standards (IAS) adopted in Bangladesh and verified in the same manner as International Standards on Auditing (ISA) as adopted in Bangladesh.

#### **2.2.4 IPO Approval Process**

According to Bangladesh Securities and Exchange Commission (Public Issue) Rules, 2015; IPO approval process are given below:

##### **2.2.4.1 Decision to go Public**

- Make the decision of the Board of the company to offer its shares to public.
- Appoint an Issue Manager(s) registered with the Bangladesh Securities Commission (BSEC).
- Determine the public offering method with the help of the Issue Manager - Fixed Price or Book Building or Direct Listing.
- Obtain audited accounts by a group of auditors approved by the BSEC.
- Launch the solvency assessment process - Mandatory for the Bank, Insurance, NBFIs and any problem with the offer price at the premium (Book Building Method).
- Develop a corporate website.
- Preparing a Draft Prospectus/ Red-Herring Prospectus/ Draft Memorandum.
- Assist the issue manager in preparing the draft prospectus in accordance with the rules of the Bangladesh Securities and Exchange Commission (Public Issue) Rules, 2015.
- Appoint Underwriters.

##### **2.2.4.2 IPO of Book Building Method**

- Prepare a Red Herring Prospectus.
- Send an invitation to Eligible Investors (EI) for participating in the Road Show.
- Driving Road Show.
- Collect the comments and observations of the EIs who participated in the Road Show in accordance with the rules of the Bangladesh Securities Commission (Public Issue) Rules, 2015.
- Finalize the Red-Herring Prospectus.

#### **2.2.5 Apply to the BSEC for approval of PublicOffer**

- Ask the BSEC for the IPO under the rules of the Bangladesh Securities and Exchange Commission (Public Issue), 2015.
- Simultaneously submit copies of the Prospectus/ Prospect together with the relevant documents on the stock exchanges.
- Assist the issue manager in updating the draft prospectus in order to comply with or fill gaps identified by BSEC/ Exchanges.
- Post the Proposed Draft Prospectus/ Red-Herring Prospectus on the Company's website and the Issue Manager's website.

#### **2.2.6 Submission of Bid by eligible investors or EIs (for Book Building only)**

- Obtain BSEC's consent for the auctions.
- Apply to exchanges for holding bidding with BSEC consent for bidding.
- Sign an agreement with the Book Building Software (ESS) for the tender and the payment of its fees;
- Determine the basic price via ESS;
- At the end of the call for tenders, draw up the list of EI allowances and the price of the Stock Exchange;
- Submit the tender details and the draft Prospectus to the BSEC for approval.

#### **2.2.7 Approval of IPOs**

- Collect the consent letter issued by BSEC.
- Print an abridged version of the approved and vetted prospectus in one Bengali newspapers and one widely distributed English newspapers.
- Print the final Prospectus.
- View the verified prospectus on the website of the issuer, the issue manager, the commission and the exchange.
- Apply for listing with Exchanges in accordance with the Bangladesh Securities & Exchange Commission (Public Issue) Rules, 2015 & the listing regulation of the Exchanges.

#### **2.2.8 Subscription and Distribution of Shares**

- Start subscribing to the IPO through designated stock brokers/ merchant bankers.

- Assist the issue manager and the registrar with the issuance and post-IPO Manager of the numbers to complete the formalities relating to the underwriting, lottery, repayment, and credit granting actions to the beneficiaries.
- After the subscription period, submit the subscription status to BSEC and the stock exchanges where the issuer wishes to be registered.
- Organize the distribution in case of over subscription under general public category.
- Distribute the securities on a pro rata basis in case of over-subscription.
- Distribute the securities to the underwriting in case of under-subscription.

#### **2.2.9 Allocation Share and Reimbursement of Additional Fund**

- Distribute the award letter electronically and complete the refund process.
- After distribution of award letters/ completion of the reimbursement, submit a compliance report to the Commission and Exchanges.
- If the issue has not been subscribed by the minimum quantity required, refund the subscribers.

#### **2.2.10 Listing Approval by the Exchanges**

- After distribution of award letters/ refund orders and compliance with other requirements, the issuer's application for registration is subject to registration approval.
- Application for registration is Approved or Rejected.

#### **2.2.11 Credit Share/ Units**

- If the listing is approved by the Exchange, the issuer must request the CDBL to credit the transferable shares / units according to the attribution.

#### **2.2.12 Commencement of Trading of Scripts on the Bourse**

The commencement date of trading is announced by the respective exchange when the shares or units are credited and confirmed by the CDBL.

### **2.3 Underwriting**

Underwriting is an unequivocal and irrevocable commitment by an eligible under writer (banks or other financial institutions) to take up the un-subscribed shares against a public offers. For underwriting, underwrites get specified underwriting commission from Issuer Company. Suppose,

a company offered shares of Tk.100.00 Crore under Fixed Price Method. Some 04 (four) eligible underwriters underwrite full amount of Tk.100.00 Crore. General Public and Eligible Investors jointly subscribed Tk.72.50 Crore of this issue. As per commitment, underwriters have to subscribe and take up the rest amount of Tk.27.50 Crore proportionately according to their underwriting amount. Recently, IPO shares of a company undersubscribed by General Public and Eligible Investors. Thus unsubscribed amount duly took up and subscribed by the underwriters.

## **2.4 Private Placement**

A Private Placement is a Sale of Shares or Bonds to pre-selected investors and institutions rather than publicly on the open market. Generally, these investors include family and friends of owners of the company, accredited investors, and institutional investors. In our country, certain portion of shares can be sold through private placement before going to Initial Public Offer (IPO) to General Public. Shares distributed through private placement are lock-in (block) for certain time to trade in Secondary Market.

## **2.5 Mutual Fund**

A typical mutual fund is an investment fund that pools money from unit holders through public offer and invests in a diversified portfolio of securities. The mutual fund industry has a long history tracing as far back as the early 1800's with its modest beginnings generally considered to be in Europe. Today flourished globally, mutual funds are widely considered as an investment tool to offer investors attractive risk adjusted returns by pooling assets for various investment purposes.

Mutual funds through its diversified pool of investments will provide small investors access to returns of the wider market, which will be very costly for retail investors to achieve individually. Mutual funds generally lower investment risks for small and retail investors through diversification into multiple sectors, companies, securities, and via investing in various asset classes. The fund manager will attempt to maximize return for a given level of risk and will always conduct a balance in its risk-return tradeoff. Moreover, investors can enjoy certain tax benefits, offered by Government, by investing in mutual funds. There are 02 (two) types of Mutual Funds in our country: Open-end Mutual Fund and Close-end Mutual Fund. Open-end mutual funds have perpetual life and unlimited size. Open-end mutual funds can presently buy and sell through BO account at the specified counter of the Asset Management Company. Moreover, the price of the Open-end mutual fund is not determined by supply and demand, rather it's

determined by NAV. The unit can be surrendered easily in the counter of the Asset Management Company and its agents.

On the other hand, Close-end mutual funds have specific lifespan and limited size. Close-end mutual funds can presently buy and sell through Stock Exchanges. The price of the Close-end mutual fund is determined by supply and demand of the public in secondary market. The unit can be buy and sell depending upon availability of the seller and buyer of the secondary market.

## **2.6 Dematerialization (Demat)**

Dematerialization is a process of converting physical shares and securities into digital or electronic form. The basic objective is to smoothen the process of buying, selling, transferring and holding shares and about making it cost-effective. Once a security is eligible for holding in depository, then all stock exchange trade must be settled through the depository. This means that sellers must have securities in dematerialization form.

So far, Central Depository Bangladesh Limited (CDBL) is one and only depository in Bangladesh. Before starting operation of digitalized depository, all shares and securities were in paper based. Since paper based shares could not transfer and hold in depository system, those paper shares must be converted into dematerialization form. For converting paper shares into dematerialization form, investors take their shares certificate to a depository participant (DP). The DP will request the investors to complete a dematerialization form. The DP will take the documents to the issuer who, if the certificate is valid, will update the register by moving the securities from the paper certificate to dematerialized form and confirm it to the DP for crediting the same in investor's Beneficiary Owner (BO) account. This process is called the dematerialization.

## **2.7 Valuation of Bond**

When Government or companies borrow money, they often issue bond or debenture (hereafter referred to only bond). A bond is a financial instrument simply a long-term debt of issuer. If an investor owns a bond, he will receive a fixed set of cash flow as per terms of the bond. Each year until the maturity, the investor will receive an interest payment and then at maturity, he will also get back the face value of the bond.

If you want to invest in bond, you need a basic understanding of the framework of security valuation, which is essentially based on the concepts of time value of money and risk-return relationship. From a



financial point of view, the value of an asset is equal to present value of the benefits associated with it. Symbolically,

$$V_0 = \frac{C_1}{(1+k)^1} + \frac{C_2}{(1+k)^2} + \dots + \frac{C_n}{(1+k)^n}$$

$$V_0 = \sum_{t=1}^n \frac{C_t}{(1+k)^t}$$

Where,

$V_0$  = Value of the Asset at Time Zero

$C_t$  = Expected Cash Flow at the End of Period  $t$

$k$  = Discount Rate applicable to the Cash Flows

$n$  = Expected Life of the Asset

### 2.7.1 Value of Bond with Annual Interest Payment

Any Bond can be valued as a package of an annuity (the coupon payments or annual interest) and a single repayment of principal (the final payment).

Suppose, for example, an investor bought a 7-years 8% coupon bearing bond of Face Value of Tk.1,00,000/- in May 2023 issued by a corporation. This means that the investor will receive an interest of Tk.1,00,000 X 8% = Tk.8,000/- each year until 2030. The bond will mature in May 2030, at that time the investor will get final interest, plus face value of Tk.100,000/-. Hence, the cash flows from owning the bond are as follows:

2024	2025	2026	2027	2028	2029	2030
8,000	8,000	8,000	8,000	8,000	8,000	1,08,000

What is the present value of these payoffs? To determine that, we need to look at the return provided by similar securities (opportunity cost of this investment). Suppose, medium term Government Sanchaya patra issued in 2023 offered return of about 11.00%. That is what investor was giving up then he bought

the bond of corporation. Therefore, to value the 8% bond of corporation, we need to discount the cash flows at 11.00%:

$$V_0 = \frac{8,000}{(1 + 0.11)^1} + \frac{8,000}{(1 + 0.11)^2} + \frac{8,000}{(1 + 0.11)^3} + \frac{8,000}{(1 + 0.11)^4} + \frac{8,000}{(1 + 0.11)^5} + \frac{8,000}{(1 + 0.11)^6} + \frac{1,08,000}{(1 + 0.11)^7}$$

$$V_0 = \text{Tk. } 87,936$$

We may also find-out a shortcut way for valuation of bond. The bond is like a package of two investments: The first investment consists of 7 annual coupon payments of Tk.8,000/- each, and the second investment is the payment of the face value of Tk.1,00,000/- at maturity. Hence, we can use the annuity formula to value the coupon payments and add on the present value of the final payment:

$$\begin{aligned} \text{PV(Bond)} &= \text{PV(coupon payments)} + \text{PV(final payment)} \\ &= (\text{coupon} \times 7\text{-year annuity factor}) + (\text{final payment} \times \text{discount factor}) \\ &= \text{Tk. } 8,000 (\text{PVIFA}_{11\%, 7\text{yrs}}) + \text{Tk. } 1,00,000 (\text{PVIF}_{11\%, 7\text{yrs}}) \\ &= \text{Tk. } 8,000 \times 4.967 + \text{Tk. } 1,00,000 \times 0.482 \\ &= \text{Tk. } 39,736 + \text{Tk. } 48,200 \\ &= \text{Tk. } 87,936 \end{aligned}$$

### 2.7.2 Valuation of Debt with Semi-annual Interest

In practice, most of the bonds pay interest semi-annually. To value such bonds, we have to work with a unit period of six months, not one year. In that case, the bond valuation equation has to be modified along the following lines:

- i. The annual interest rate must be divided by 2 to obtain the semi-annual interest rate.
- ii. The number of years to maturity must be multiplied by 2 to get the number of half-yearly periods.
- iii. The discount rate has to be divided by 2 to get the semi-annually discount rate.

With the above modifications, the basic bond valuation equation stands:

$$V_0 = \sum_{t=1}^{2n} \frac{I/2}{(1+kd/2)^t} + \frac{F}{(1+kd/2)^{2n}}$$

where  $V_0$  = Value of the Bond

$I/2$  = Semi-annual Interest Rate

$Kd/2$  = Discount Rate applicable for Semi-annual Period

$F$  = Par Value of the Bond repayable at Maturity

$2n$  = Maturity Period expressed in terms of Semi-annual periods.

From the previous example, we got value of the Bond,

$$V_0 = \sum_{t=1}^n \frac{I/2}{(1+kd/2)^t} + \frac{F}{(1+kd/2)^{2n}}$$

$$V_0 = \sum_{t=1}^{14} \frac{\text{Tk.4,000}}{(1+0.055)^t} + \frac{\text{Tk.1,00,000}}{(1+0.055)^{14}}$$

$$V_0 = \text{Tk.4,000 (PVIFA}_{5.50\%, 14 \text{ yrs}}) + \text{Tk. 1,00,000 (PVIF}_{5.50\%, 14 \text{ yrs}})$$

$$= \text{Tk. 4,000 X 9.597} + \text{Tk. 1,00,000 X 0.4726}$$

$$= \text{Tk. 38,388} + \text{Tk. 47,260} = \text{Tk. 85,648.}$$

## 2.8 Valuation of Common Stock

From a financial point of view, the value of an asset is equal to the value of the benefit associate with it. Similarly, we value common stock as the value in today's Taka of all future cash flows. The cash flows a stockholder may earn from stock are dividends, the sales price or both.

To discuss the issue of stock valuation, we begin with the simplest possible scenario. This cash flows of one dividend payments plus a final sales price that we discounted back to the present, leads to the following equation that computes the current price of the stock.

$$P_0 = \frac{Div_1}{(1 + Ke)} + \frac{P_1}{(1 + Ke)}$$

where,

$P_0$  = the Current Price of the stock. The zero subscript refers to time period zero, or the present.

$Div_1$  = the Dividend Paid at the end of year 1.

$Ke$  = the Required Return on Investment in Equity.

$P_1$  = the Price at the end of the first period. This is the assumed sales price of the stock.

Find the price of the Square Pharma given the figures reported below.

Next year Dividend may be 120% ; i.e. Tk.12.00 from each stock.

Expected price at the end of one year may be Tk.220.00.

We have to know the required return on equity to find the present value of the cash flows. Since a stock is more risky than a bond, we expect a higher return than offered in the bond market. Assume that after careful consideration we decide that we would be satisfied to earn return of 10% on the investment.

**Example:** Putting the numbers into equation, we yield the following:

$$P_0 = \frac{12.00}{(1 + 0.10)} + \frac{220.00}{(1 + 0.10)}$$

$$= 10.91 + 200.00 = 210.91$$

Based on our analysis, we find that the stock worth is Tk.210.91. If the current market price is less than Tk.210.91, we may choose to buy it. Other investors may place a different return expectation on the cash flows (more than 10% return) or estimate the

cash flows may be less than our estimate, the valuation of the same stock will be different.

There are lots of stock valuation model available in the financial literature. Some of them are described below:

### 2.8.1 The Gordon Growth Model

The generalized dividend valuation model requires that we compute the present value of an infinite stream of dividends, a process that could be difficult, to say the least. Therefore, simplified models have been developed to make the calculations easier. One such model is the Gordon Growth Model that assumes constant dividend growth.

Many firms strive to increase their dividends at a constant rate each year. The following equation reflects this constant growth in dividends;

$$P_0 = \frac{D_0(1+g)}{(1+K_e)^1} + \frac{D_0(1+g)^2}{(1+K_e)^2} + \dots + \frac{D_0(1+g)^n}{(1+K_e)^n}$$

where,

$D_0$  = the most recent Dividend Paid.

$g$  = the Expected Constant Growth Rate in Dividends.

$K_e$  = the Required Return on Investment in Equity.

The above equation has been simplified as follows:

$$P_0 = \frac{D_0 (1 + g)}{(K_e - g)} = \frac{D_1}{(K_e - g)}$$

This model is useful for finding the value of stock, given few assumptions:

1. Dividends are assumed to continue growing at a constant rate forever.
2. The growth rate is assumed to be less than the required return on equity.

**Example:** Find the current market price of GP stock assuming dividends grow at a constant rate of 10.00%,  $D_0$  is Tk.22.00, and the required return is 15%,

$$P_0 = \frac{D_0 \times (1 + g)}{(K_e - g)}$$

$$P_0 = \frac{22 \times (1 + 0.10)}{(0.15 - 0.10)}$$

$$P_0 = \frac{24.20}{(0.05)}$$

$$P_0 = \text{Tk. 484}$$

GP stock should be traded for Tk.484 if the assumption regarding the constant growth rate and required return are expected.

### 2.8.2 The Price-Earnings Valuation Method

Theoretically, the best method of stock valuation is the dividend valuation approach. Sometimes it is difficult to apply. If a firm is not paying dividends or has a very erratic growth rate, the results may not be satisfactory. Many other approaches to stock valuation are sometimes applied. Among them, the more popular is the price/earnings multiple. According to the price-earnings ratio approach, the intrinsic value of a share is its price-earning ratio multiplied by expected earnings per share. Algebraically, the product of PE ratio times expected earnings is the firm's stock price,

$$\frac{P}{E} \times E = P$$

The price earnings ratio is widely watched measure of how the market is willing to pay for Taka 1 earnings from a company. A high PE has two interpretations:

- i. A higher than average PE may mean that the market expects earnings to rise in the future. This would return the PE to more normal level.

- ii. A high PE may alternatively indicate that the market feels the firm's earnings are very low risk and is therefore willing to pay a premium for them.

Companies in the same industry are expected to have similar PE ratios in the long run. The value of a firm's stock can be found by multiplying the average PE times the expected earnings per share.

**Example:** Find the price of stock of Navana Pharmaceuticals Limited assuming Diluted EPS based on weighted average of Net Profit After Tax is Tk. 2.516 and overall Sector PE of Pharmaceutical Industry is 20.16.

Using equation and available information, we find,

$$P_a = \frac{P}{E} \times E$$

$$P_a = 20.16 \times 2.516 = \text{Tk.} 50.72$$

The PE Ratio approach is especially useful for valuing privately held companies and companies that do not pay dividends. The weakness of the PE approach to valuation is that by using an industry average PE ratio, company-specific factors that might contribute to a long-term PE ratio above or below the average are ignored in the analysis. A skilled analyst will adjust the PE ratio up or down to reflect unique characteristics of a company when estimating its stock price.

## 2.9 Module End Questions

1. What is 'Initial Public Offering (IPO)'? Why does a company go to offer Primary Shares in Capital Market? In which methods, a Company can offer Primary Shares in Bangladesh?
2. Describe elaborately the process of offering Primary Shares in Capital Market in Bangladesh.
3. Discuss the Role of Issue Manager and Underwriter in offering of Primary Shares in Capital Market.
4. Who are the 'Eligible Investors'? What is the role of Eligible Investors in determining price of share in Book-Building method? How Eligible investors get benefits from IPO?
5. What is 'Book Building Method'? How does 'Price of a Share' determine through Book Building method?
6. What is the 'Private Placement'? Should private placement continue in our capital market? Explain your answer with proper justification.
7. What is Secondary Market of Financial Instruments? Why does Secondary Market needed for Capital Market?
8. "Bond Prices and the market interest rates are inversely related" - Explain the statement.
9. Discuss the securities valuation technique using Price-Earning (PE) and Dividend Discount Method (DDM).
10. What is a Mutual Fund? Explain how the Mutual funds are different from Shares and Bond.
11. Distinguish between Open-end and Close-end Mutual Fund.
12. How Mutual Fund generate returns for their investors?
13. Write down difference of Bonus Share and Right Share.
14. A Tk.1,00,000/- Par Value Bond, bearing a Coupon Rate 11% will mature after 5 years. What is the value of the Bond, if the Discount Rate is 14%?
15. A Tk.1,00,000/- Par Value Bond bears a coupon rate of 12% and matures after 6 years. Interest is payable semi-annually. Find the value of the Bond if the required rate of return is 14%, compounded semi-annually.



16. Suppose, a company will earn about Tk.2.75 during the coming year and its Dividend Payout Ratio over time is 40%. Analyzing from Dividend Discount Model (DDM), you project the Sale Price of this Stock a year from now to be Tk.22.00. Present Market Price of this Stock is Tk.19.40. Considering Expected Rate of Return 14%, will you buy this stock now? Explain your answer with proper calculation.

**17. Write Short Note on:**

- i. IPO
- ii. Book-Building method
- iii. Eligible Investors
- iv. Underwriting
- v. Pre-IPO Placement
- vi. Mutual Fund
- vii. Demat
- viii. DDM
- ix. P/E Ratio.

## Module C: Portfolio Management and Analysis

### 3.1 Introduction

Portfolio Management is a very generic term used to refer to the manager's style of managing a portfolio of assets. In the financial markets, there are many assets available, such as Stocks and Corporate Bonds, Mutual Funds, Treasury Bills, Commodities, Currencies, Indices, Options, REIT and much more. It is, therefore, necessary to apply management techniques to manage portfolios of assets that can delimit some key aspects such as risk and expected return. Unfortunately, we cannot get infinite returns with zero risks, as one depends on the other and if we want to increase the portfolio return, it will usually be at the expense of taking more risk.

### 3.2 Definition of Portfolio Management

Portfolio management refers to the process of creating and managing a collection of financial assets, such as Stocks, Bonds, Cash, and other investment instruments, with the goal of achieving specific investment objectives while considering the investor's risk tolerance and time horizon. It involves strategic decision-making to optimize the risk-return trade-off and ensure the investor's financial goals are met.

### 3.3 Key Elements of Portfolio Management

Key elements of Portfolio Management are discussed below:

#### **i. Diversification:**

Diversifying a portfolio involves spreading investments across different asset classes and securities to reduce risk. By diversifying, investors aim to minimize the impact of individual asset fluctuations on the overall portfolio performance.

#### **ii. Risk Assessment:**

Portfolio Managers evaluate the risk associated with each investment in the portfolio. This includes analyzing factors like volatility, liquidity, credit risk, and market conditions to make informed decisions.

### **iii. Asset Allocation:**

Asset allocation involves determining the appropriate proportion of different asset classes in the portfolio based on the investor's financial objectives, risk tolerance, and investment horizon.

### **iv. Rebalancing:**

As market conditions and individual asset performances change, the portfolio may deviate from its original asset allocation. Portfolio managers periodically rebalance the portfolio to bring it back in line with the desired allocation.

### **v. Performance Monitoring:**

Regularly assessing the performance of the portfolio is essential. This involves comparing the portfolio's returns to relevant benchmarks and tracking progress toward meeting financial goals.

### **vi. Investment Strategy:**

Portfolio Managers develop an investment strategy aligned with the investor's objectives. They may follow various strategies, such as value investing, growth investing, or income investing, to achieve the desired outcomes.

### **vii. Cost Management:**

Minimizing costs is crucial in portfolio management. Transaction fees, management expenses, and taxes can erode returns over time, so portfolio managers strive to optimize expenses.

### **viii. Risk Management:**

Besides diversification, risk management involves the use of hedging techniques and other risk mitigation strategies to protect the portfolio from adverse market movements.

### **ix. Long-Term Perspective:**

Successful portfolio management often requires a long-term perspective, focusing on consistent, sustainable growth rather than short-term speculative gains.

Overall, effective portfolio management aims to maximize returns while managing risk to help investors achieve their financial goals over time. It requires a combination of analytical skills, market knowledge, and a deep understanding of the investor's financial situation and objectives. Many individuals seek professional assistance from financial advisors or portfolio managers to navigate the complexities of portfolio management effectively.

### 3.4 Portfolio Management Techniques

Portfolio Management Techniques encompass a variety of strategies and approaches used by investors and portfolio managers to build, optimize, and maintain investment portfolios. These techniques help investors achieve their financial goals while managing risk. Here are some common portfolio management techniques:

- i. **Modern Portfolio Theory (MPT):** MPT, developed by Harry Markowitz, is a fundamental framework for portfolio construction. It emphasizes diversification and the relationship between risk and return. MPT seeks to optimize the portfolio by selecting assets that offer the best risk-adjusted returns, creating an efficient frontier.
- ii. **Asset Allocation:** Asset allocation involves dividing the portfolio's investments among different asset classes, such as stocks, bonds, cash, real estate, and commodities. The goal is to balance risk and return based on the investor's risk tolerance and investment objectives.
- iii. **Diversification:** Diversifying the portfolio across various assets and sectors helps reduce overall risk. By investing in uncorrelated or negatively correlated assets, losses in one area may be offset by gains in another.
- iv. **Rebalancing:** Regularly rebalancing the portfolio involves adjusting the asset allocation back to its original target. This ensures that the portfolio remains aligned with the investor's risk profile and long-term objectives, especially as market conditions change.
- v. **Tactical Asset Allocation:** Unlike strategic asset allocation, tactical asset allocation involves actively adjusting the portfolio's allocation based on short-term market trends and conditions. It seeks to capitalize on market opportunities and manage risk dynamically.
- vi. **Factor Investing:** Factor investing involves selecting securities based on specific factors, such as value, growth, size, momentum, or quality. These factors have

historically shown to influence returns, and investors use them to construct portfolios with specific risk and return characteristics.

- vii. **Risk Management Techniques:** Portfolio Managers use various risk management techniques, including Hedging with Derivatives, setting stop-loss orders, and using options or futures contracts to protect the portfolio from adverse market movements.
- viii. **Performance Measurement:** Portfolio Managers regularly monitor and assess the portfolio's performance using metrics like Return on Investment, Sharpe Ratio, Alpha, and Beta. This helps evaluate the portfolio's success in achieving the desired objectives.
- ix. **Tax Optimization:** Portfolio Managers aim to minimize Tax Liabilities by strategically harvesting losses, using Tax-efficient Investment Vehicles, and considering Tax Implications when rebalancing.
- x. **Scenario Analysis and Stress Testing:** Evaluating the portfolio's performance under various market scenarios and stress tests helps assess its resilience to extreme market conditions and identify potential weaknesses.

These techniques can be used individually or in combination to design portfolios tailored to specific investment goals and risk tolerances. Successful Portfolio Management often requires a comprehensive understanding of the investor's financial situation, time horizon, and risk appetite, along with a thoughtful application of these techniques.

### 3.5 Types of Portfolio Management

We, therefore, see that a classification of management styles is necessary, which can be divided, for example, into the following groups:

#### 3.5.1 Passive Management Portfolio

Normally the managers of Passive Portfolios consider that it is practically impossible to obtain more performance than the market itself and therefore they limit themselves to tracking it.

Passive Portfolio Management, also referred to as index fund management, aims to duplicate the return of a particular market index or benchmark. Managers buy the same stocks that are listed on the index, using the same weighting that they represent in the index.

A passive strategy portfolio can be structured as an Exchange-Traded Fund (ETF), a Mutual Fund, or a unit Investment Trust. Index funds are branded as passively managed because each has a portfolio manager whose job is to replicate the index rather than select the assets purchased or sold.

The Management Fees assessed on Passive portfolios or funds are typically far lower than Active Management Strategies.

### **3.5.2 Active Management Portfolio**

These portfolio Managers consider that if it is possible to obtain a higher return than the market and therefore with more active portfolio management, in theory, they are able to obtain Alpha (Alpha is the excess return with respect to the market). For comparative purposes, it is also interesting to know the Beta of the portfolio, as this indicates the deviation it has had with respect to the market. An actively managed investment fund has an individual portfolio manager, co-managers, or a team of managers actively making investment decisions for the fund. The success of an actively managed fund depends on a combination of in-depth research, market forecasting, and the expertise of the portfolio manager or management team.

Portfolio Managers engaged in active investing pay close attention to market trends, shifts in the economy, changes to the political landscape, and news that affects companies. This data is used to time the purchase or sale of investments in an effort to take advantage of irregularities. Active managers claim that these processes will boost the potential for returns higher than those achieved by simply mimicking the holdings on a particular index.

Trying to beat the market inevitably involves additional market risk. Indexing eliminates this particular risk, as there is no possibility of human error in terms of stock selection. Index funds are also traded less frequently, which means that they incur lower expense ratios and are more tax-efficient than actively managed funds.

### **3.5.3 Aggressive Management Portfolio**

They are portfolio managers capable of finding and exploiting market inefficiencies who speculate with market biases.

It is also necessary to classify the different types of assets into manageable groups, for this we have already mentioned some possible groups of assets, but they can also be classified by risk, capitalization, country, sector, value or growth and so on.

Faced with such a variety of styles and assets, portfolio management techniques allow us to standardize management techniques and have adequate measures of performance and risk and, therefore, create different portfolios suitable for each type of investor.

Since any portfolio is made up of assets, let's try to define some of the most common assets we can find in a portfolio.

#### 3.5.4 Assets classes in Portfolio Management

The classic components of a portfolio are:

- Stocks or Equities
- Bonds
- Cash

**Stocks or Equities:** These assets are considered high risk and therefore offer opportunities for high returns. They can also be sub classified by country, sector and/or by the asset of value or growth, the former tend to offer dividends, while the latter tend not to offer dividends but the return is usually higher than the market. In addition, they offer rights at shareholders' meetings, since in fact, the shareholders own the company. (Sometimes there are exceptions with class A and class B shares where the latter do not offer voting rights.)

**Bonds:** These assets are considered low risk and therefore offer moderate returns, the advantage is that from the beginning, the investment return is known. These assets are loans that are made to governments and companies, the maturity date and fixed return or coupon payment at a certain frequency is pre-fixed. They can also be sub-classified as corporate or government bonds, maturity date, rating, etc.

**Cash:** We must foresee the money of our portfolio because it will not always be invested 100% and sometimes the cash can be used to make operations in the money market, the risk can vary from very low to very high, depending on the chosen currency.

## 3.6 Derivatives and Portfolio Management

On the other hand, there are derivative products which, as their name implies, the value (and therefore the return) is derived from an underlying product.

Some of the best-known derivatives are:

- Futures
- Options

### 3.6.1 Futures

A Future is a contract between two parties, where one party buys/sells an asset with a certain future delivery date and the other party sells/buys the asset. This contract is guaranteed by the clearinghouse.

At maturity, both parties are obliged; one to deliver the good, regardless of the current market price, and the other is obliged to receive the good, regardless of the current market price, as the price was fixed at the transaction time.

Although it should be made clear that traders do not usually leave the contract open until the maturity date as they generally have speculative positions.

The future price is derived from an underlying asset such as a stock index, commodities, etc.

Here we can find:

- Indices (Dow Jones, S&P 500, Nasdaq, Russell 2000, etc.)
- Precious Metals (Gold, Platinum, etc.)
- Industrial Metals (Copper, Lead, etc.)
- Energy (Oil, Natural Gas, Ethanol, etc.)
- Agriculture (Soybeans, Beans, Corn, Wheat, etc.)
- Soft (Meat, Live Cattle, Orange Juice, Sugar, Cotton, etc.)

Note that you can also gain exposure to these products through ETFs as if they were Stocks, although ETFs deserve a separate study.



### 3.6.2 Options

Options are instruments where one party buys the right to buy/sell an asset at a fixed price on a certain date and the other party sells that right committing to it, this operation is guaranteed by the clearinghouse. The option price is derived from an underlying asset such as Stocks, Stock Index, Commodities, etc.

Finally, there are other less common investment instruments but which, depending on the portfolio being designed may be attractive for diversification, and these instruments maybe:

- REIT (Real Estate Investment Trusts),
- OTC (Over the Counter) operations like
  - Warrants,
  - Venture Capital Companies, and
  - ad-hoc products that may be created for specific clients, etc.

As you may suppose, this list is neither complete nor exhaustive, but it contains the most popular instruments commonly found in portfolio management.

We have also seen that instruments can be classified in different ways in order to help you select the instruments that best suit your management strategy.

In addition to the enormous variety of financial instruments available, other factors must be taken into account when deciding on one or the other instrument, such as volatility, liquidity, information availability and transaction costs.

With all these elements, it seems clear that we need a framework that facilitates portfolio management and helps us select the best assets for a given moment, delimiting the level of risk to be supported, as well as establishing a return objective.

From the industry's point of view, it is also important to have established standard indicators that allow the performance of a portfolio to be compared with the rest of the industry.

### 3.7 Traditional Approaches for Portfolio Management

A portfolio is composed of assets and it is the responsibility of the portfolio manager to decide which assets to incorporate into the portfolio. For this, there are two traditional approaches

- the Bottom-up Approach
- Top-down Approach

### **3.7.1 The Bottom-up Approach**

This approach makes asset selection based on criteria defined by the analyst as P/E, relative strength, by sectors and so on. This technique is usually known as stock-picking.

### **3.7.2 The Top-down Approach**

In the Top-down Approach where the analyst divides the task of selecting actions into filters that, quantitatively, reduce the number of options available for inclusion in the portfolio.

For example, an analysis can be made to decide on which markets or countries we want to invest, then the sectors are decided and finally, stock-picking is done based on some criterion of, for example, relative strength.

## **3.8 Portfolio Management: Discretionary vs. Non-Discretionary**

Another critical element of portfolio management is the concept of discretionary and non-discretionary management. This portfolio management approach dictates what a third-party may be allowed to do relating to your portfolio.

A discretionary or non-discretionary management style only pertains to if you have an independent broker managing your portfolio. If you only want the broker to execute trades that you have explicitly approved, you must opt for a non-discretionary investment account. The broker may advise on strategy and suggest investment moves. However, without your approval, the broker is simply an adviser that must follow your discretion.

On the other hand, some investors would prefer placing all of the decision-making in the hands of their broker or financial manager. In these situations, the financial adviser can buy or sell securities without the approval of the investor. The adviser still has a fiduciary responsibility to act in their client's best interest when managing their portfolio.

## **3.9 Key Elements of Portfolio Management**

### **3.9.1 Asset Allocation**

The key to effective portfolio management is the long-term mix of assets. Generally, that means stocks, bonds, and cash equivalents such as certificates of deposit. There are others, often referred to as

alternative investments, such as real estate, commodities, derivatives, and crypto currency. Asset allocation is based on the understanding that different types of assets do not move in concert, and some are more volatile than others. A mix of assets provides balance and protects against risk. Investors with a more aggressive profile weight their portfolios toward more volatile investments such as growth stocks. Investors with a conservative profile weight their portfolios toward stable investments such as bonds and blue-chip stocks. Rebalancing captures recent gains and opens new opportunities while keeping the portfolio in line with its original risk/return profile.

### **3.9.2 Diversification**

The only certainty in investing is that it is impossible to consistently predict winners and losers. The prudent approach is to create a basket of investments that provides broad exposure within an asset class. Diversification involves spreading the risk and reward of individual securities within an asset class, or between asset classes. Because it is difficult to know which subset of an asset class or sector is likely to outperform another, diversification seeks to capture the returns of all of the sectors over time while reducing volatility at any given time. Real diversification is made across various classes of securities, sectors of the economy, and geographical regions.

### **3.9.3 Rebalancing**

Rebalancing is used to return a portfolio to its original target allocation at regular intervals, usually annually. This is done to reinstate the original asset mix when the movements of the markets force it out of kilter. For example, a portfolio that starts out with a 70% equity and 30% fixed-income allocation could, after an extended market rally, shift to an 80/20 allocation. The investor has made a good profit, but the portfolio now has more risk than the investor can tolerate. Rebalancing generally involves selling high-priced securities and putting that money to work in lower-priced and out-of-favor securities. The annual exercise of rebalancing allows the investor to capture gains and expand the opportunity for growth in high-potential sectors while keeping the portfolio aligned with the original risk/return profile.

### **3.9.4 Tax-Efficiency**

A potentially material aspect of portfolio management relates to how your portfolio is shaped to minimize taxes in the long-term. This pertains to how different retirement accounts are used, how long securities are held on for, and which securities are held.

For example, consider how certain bonds may be tax-exempt. This means that any dividends earned are not subject to taxes. On the other hand, consider how the IRS had different rules relating to short-term or long-term capital gains taxes. For individuals earning less than Tk.41,675 in 2023, their capital gains rate

may be Tk.0. On the other hand, a short-term capital gains tax of 15% may apply if your income is above this IRS limit.

### 3.10 Some Background Assumptions of Portfolio Theory

We begin by clarifying some general assumptions of portfolio theory. This includes not only what we mean by an optimum portfolio but also what we mean by the terms risk aversion and risk. One basic assumption of portfolio theory is that investors want to maximize the returns from the total set of investments for a given level of risk. To understand such an assumption requires certain ground rules. First, your portfolio should include all of your assets and liabilities, not only your marketable securities but also your car, house, and less marketable investments such as coins, stamps, art, antiques, and furniture. The full spectrum of investments must be considered because the returns from all these investments interact, and this relationship among the returns for assets in the portfolio is important. Hence, a good portfolio is not simply a collection of individually good investments.

#### 3.10.1 Risk Aversion

Portfolio theory also assumes that investors are basically risk averse, meaning that, given a choice between two assets with equal rates of return, they will select the asset with the lower level of risk. Evidence that most investors are risk averse is that they purchase various types of insurance, including life insurance, car insurance, and health insurance. Buying insurance basically involves an outlay of a known dollar value to guard against an uncertain, possibly larger, outlay in the future. Further evidence of risk aversion is the difference in promised yield (the required rate of return) for different grades of bonds with different degrees of credit risk. Specifically, the promised yield on corporate bonds increases from AAA (the lowest risk class) to AA to A, and so on, indicating that investors require a higher rate of return to accept higher risk.

This does not imply that everybody is risk averse, or that investors are completely risk averse regarding all financial commitments. The fact is, not everybody buys insurance for everything. Some people have no insurance against anything, either by choice or because they cannot afford it. In addition, some individuals buy insurance related to some risks such as auto accidents or illness, but they also buy lottery tickets and gamble at race tracks or in casinos, where it is known that the expected returns are negative (which implies that participants are willing to pay for the excitement of the risk involved). This combination of risk preference and risk aversion can be explained by an attitude toward risk that depends on the amount of money involved. Researchers such as Friedman and Savage (1948) speculate that this is the case for people

who like to gamble for small amounts (in lotteries or slot machines) but buy insurance to protect themselves against large losses such as fire or accidents. While recognizing such attitudes, we assume that most investors with a large investment portfolio are risk averse. Therefore, we expect a positive relationship between expected return and expected risk

### **3.10.2 Definition of Risk**

Although there is a difference in the specific definitions of risk and uncertainty, for our purposes and in most financial literature the two terms are used interchangeably. For most investors, risk means the uncertainty of future outcomes. An alternative definition might be the probability of an adverse outcome. In our subsequent discussion of portfolio theory, we consider several measures of risk that are used when developing and applying the theory.

## **3.11 Tools to Measure Portfolio Returns**

Other tools, simple but yet powerful, are to measure the return, among these tools we can find:

### **3.11.1 Arithmetic Return**

The exact return on an asset can be measured by the price in time 't', minus price in time 't-1' plus dividends (if any) divided by price in 'time-1'.

### **3.11.2 Logarithmic Return**

The return on an asset can be measured as  $\ln$  which is the price in time 't' plus dividends (if any) divided by price in 'time-1'. This measure is aggregated and allows us to compute any return length simply by adding simple periods.

### **3.11.3 Geometric Return**

The compound geometric rate of return, to compute the real growth rate of the investment over the whole period.

### **3.11.4 Portfolio Return**

Here there are several approaches since the portfolio can have simple or complex management and the assets that compose it can offer dividends, payment in shares, splits, capital flow, leverage, etc. although we can use the arithmetic return measure to calculate portfolio performance over a given period. We would take the initial value of the portfolio in time t minus

the value of the portfolio in time 't-1' added to dividends (if any) and divided by the value of the portfolio in time 't-1'.

#### **3.11.5 Relative Return**

Knowing the performance of a portfolio is an indicator that by itself, only offers a data on the manager's ability to generate a return, but this data becomes much more relevant if we put it into perspective with respect to other returns of the same kind. For example, if our portfolio is made up of NYSE shares we can compare the performance against the S&P 500 index or we can compare it with the performance of other managers with portfolios and styles with similar characteristics.

#### **3.11.6 Variance on Return in a Portfolio**

Finally, the simplest tool to measure the risk on an asset is the variance on return which gives us an idea of the dispersion with respect to the average, but certainly, the assets in the portfolio are subject to other risks that need to be quantified.

One of the first studies on risk and its characterization was carried out by Markowitz who developed the modern portfolio theory and demonstrates the benefit of diversification although he assumes that returns follow a normal distribution which, as we shall see, is not the real behavior of the market.

### **3.12 Asset Pricing Models**

Asset pricing models are a cornerstone of finance and economics. They help to explain the behavior of asset prices and the relationships between different asset classes. Asset pricing models attempt to quantify the risk and return of different investment opportunities, which is critical to making informed investment decisions. There are several different asset pricing models, each with its own assumptions and implications. Here, we will provide a comprehensive overview of asset pricing models, their key assumptions, and their implications.

#### **3.12.1 The Capital Asset Pricing Model (CAPM)**

The Capital Asset Pricing Model (CAPM) is a widely used tool in finance that helps investors determine the expected return of an investment based on its level of risk. The model was first introduced in the 1960s by William Sharpe, John Lintner, and Jan Mossin and has since become a

cornerstone of modern financial theory. Here, we will discuss the assumptions of the CAPM, how it is calculated, its implications and Limitations for investors.

### **Assumptions of the CAPM:**

The CAPM is built on a number of assumptions, some of which are:

- i. **Investors are rational:** The CAPM assumes that investors are rational and will always make decisions that maximize their expected utility.
- ii. **Investors are risk-averse:** The model also assumes that investors are risk-averse and will always prefer a less risky investment to a more risky one with the same expected return.
- iii. **The market is efficient:** The CAPM assumes that the market is efficient and that all information is quickly and fully reflected in the prices of securities.
- iv. **There is only one risk-free rate:** The model assumes that there is only one risk-free rate in the economy, and that all investors can borrow and lend at this rate.
- v. **Investors have homogeneous expectations:** The CAPM assumes that all investors have the same expectations for the future performance of the securities they invest in.

#### **3.12.2 Calculation of the CAPM**

The CAPM formula is as follows:

$$E(R_i) = R_f + \beta_i[E(R_m) - R_f]$$

Where:

$E(R_i)$  is the expected return on asset i

$R_f$  is the risk-free rate of return

$\beta_i$  is the asset's beta, which measures the asset's sensitivity to market risk

$E(R_m)$  is the expected return on the market portfolio

The first part of the equation ( $R_f$ ) represents the minimum return an investor should expect for a risk-free investment, such as a Treasury bill.

The second part of the equation ( $\beta_i[E(R_m) - R_f]$ ) represents the additional return an investor should expect for taking on the risk of investing in asset i.

The beta ( $\beta$ ) is a measure of the systematic risk of an asset, or the risk that cannot be diversified away. It measures how much the return of an asset is expected to move in response to changes in the market as a whole. A beta of 1 means that the asset's return will move in line with the market, while a beta greater than 1 means the asset is more volatile than the market, and a beta less than 1 means the asset is less volatile than the market.

### 3.12.3 Implications of the CAPM

The CAPM has several important implications for investors:

- i. **Required Return:** The CAPM helps investors determine the required return for an investment based on its level of systematic risk. This allows investors to compare the expected return of an investment to the required return and make informed investment decisions.
- ii. **Systematic Risk:** The CAPM also identifies two types of risks: systematic and unsystematic. Systematic risks are those that affect the entire market, such as changes in interest rates or geopolitical events. Unsystematic risks are those that affect specific companies or industries, such as poor management or regulatory changes. The CAPM suggests that investors can diversify their portfolios to minimize unsystematic risks, but they cannot eliminate systematic risks.
- iii. **Beta:** Beta is a measure of an asset or portfolio's sensitivity to changes in the market. The CAPM suggests that assets with higher betas should provide higher returns to compensate for the increased risk. Investors can use beta to determine the appropriate level of risk for their portfolios and adjust their investments accordingly.
- iv. **Portfolio Management:** The CAPM can be used to build efficient portfolios that maximize expected returns for a given level of risk. This involves selecting securities with different betas to create a diversified portfolio that reduces unsystematic risk while maximizing expected returns.
- v. **Cost of Capital:** The CAPM can be used to calculate the cost of capital for a firm, which is the minimum return a company must earn on its investments to satisfy its investors. This is important for companies when making investment decisions, as they need to ensure that the return on their investments is sufficient to cover their cost of capital.



#### 3.12.4 Limitations of CAPM

While the CAPM has been useful in some applications, it has several limitations that investors and financial analysts need to consider when using this model. here, we will outline the main limitations of the CAPM.

- i. **Market Assumptions:** The CAPM assumes that all investors have access to the same information and share the same expectations about the future. This assumption is unrealistic as investors have different information, expectations, and investment goals. In addition, the CAPM assumes that there are no transaction costs, taxes, or market frictions. This assumption can lead to inaccurate predictions of expected returns.
- ii. **Beta as a Measure of Risk:** The CAPM uses beta as a measure of risk. Beta is a measure of the volatility of a security or portfolio compared to the market. However, beta only captures systematic risk or market risk and ignores unsystematic risk or company-specific risk. This can lead to inaccurate estimates of expected returns for individual stocks.
- iii. **Single-factor Model:** The CAPM is a single-factor model that only considers the market risk factor. However, there are other factors that can affect expected returns such as size, value, momentum, and liquidity. Ignoring these factors can lead to a mispricing of securities and a failure to capture the full range of risks that investors face.
- iv. **Empirical Evidence:** There is mixed empirical evidence on the CAPM's ability to explain expected returns. Some studies have found that the CAPM does not explain the cross-section of expected returns, while others have found that the CAPM is a reasonable approximation of expected returns. This inconsistency in empirical results suggests that the CAPM has limitations and should not be relied upon solely.
- v. **Assumptions about Investor Behavior:** The CAPM assumes that investors are rational and risk-averse. However, investors have been shown to exhibit behavioral biases such as overconfidence, herding, and loss aversion. These behavioral biases can affect investment decisions and lead to a deviation from CAPM's predictions.

In conclusion, the CAPM is a useful financial model that has some limitations. Investors and financial analysts need to be aware of these limitations when using the CAPM and consider alternative models that better capture the full range of risks and investor behaviors.

### 3.13 The Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory (APT) is a financial theory that attempts to explain the relationship between risk and expected return in financial markets. The APT is based on the principle of no-arbitrage, which states that in a perfect market, there should be no opportunity for investors to make riskless profits by exploiting price discrepancies. The APT is a multifactor model that considers various sources of risk that affect asset prices, such as changes in interest rates, inflation, and economic growth.

The APT was first proposed by Stephen Ross in 1976 as an alternative to the Capital Asset Pricing Model (CAPM), which had become the dominant financial theory at the time. The CAPM is a single-factor model that assumes that the expected return of an asset is solely determined by its beta, which measures the asset's sensitivity to the market portfolio. The APT, on the other hand, is a multi-factor model that assumes that the expected return of an asset is determined by a linear combination of various macroeconomic factors.

#### 3.13.1 APT Equation

The APT equation is as follows:

$$E(R_i) = R_f + \beta_1 f_1 + \beta_2 f_2 + \dots + \beta_k f_k$$

Where:

$E(R_i)$  = the expected return on asset  $i$

$R_f$  = the risk-free rate

$\beta_1, \beta_2, \dots, \beta_k$  = the sensitivities of asset  $i$  to factors 1, 2, ...,  $k$

$f_1, f_2, \dots, f_k$  = the expected excess returns on factors 1, 2, ...,  $k$

The APT formula suggests that the expected return of an asset is a function of the risk-free rate and the asset's sensitivity to various macroeconomic factors. The APT assumes that investors are risk-averse and will demand a higher return for taking on more risk. The APT also assumes that the market is efficient and that all relevant information is reflected in asset prices.

The APT has several important assumptions. First, the APT assumes that investors are rational and have access to all relevant information. Second, the APT assumes that the market is efficient and that asset prices reflect all available information. Third, the APT assumes that there are no transaction costs, taxes, or other market frictions. Finally, the APT assumes that the factors used in the model are the only sources of systematic risk.

One of the main implications of the APT is that investors can use it to identify mispriced assets by comparing the expected return implied by the APT formula to the actual market price. If the expected return is higher than the actual market price, the asset is undervalued, and vice versa. The APT can also be used to construct portfolios that are well-diversified across various macroeconomic factors, which can reduce the overall risk of the portfolio. The APT has several other implications too.

- It implies that there are multiple sources of risk that affect asset returns.
- It implies that the sensitivity of an asset to each factor determines its risk premium.
- It implies that the risk premium on an asset is proportional to its exposure to the various factors.
- It implies that the APT can be used to price assets that are not included in the market portfolio.

### 3.13.2 Limitations of APT

Unlike other pricing models, such as the Capital Asset Pricing Model (CAPM), APT assumes that the relationship between an asset's expected return and its risk is not linear but rather depends on several factors. Despite its popularity in academic research and its practical applications, APT suffers from several limitations.

Firstly, one of the main limitations is the difficulty in identifying and measuring the factors that affect an asset's expected return. Additionally, the APT model assumes a linear relationship between expected returns and factors, which may not always hold in real-world scenarios. Additionally APT requires a vast amount of data to work effectively. The model needs information on multiple macroeconomic variables to predict asset returns accurately. These variables could include economic indicators such as inflation, interest rates, GDP growth, and other market-specific factors such as supply and demand. Gathering such data can be a challenging task,

particularly for smaller firms or companies that do not have access to a comprehensive range of financial data sources. Furthermore, even if all the data is available, the APT model requires sophisticated mathematical tools and statistical software, which may not be accessible to everyone.

Secondly, APT's reliance on macroeconomic variables could be seen as a limitation in itself. While it is true that macroeconomic factors can affect asset returns, other more subtle factors such as company-specific news, political developments, or technological advancements may also have an impact. Therefore, APT may miss some of the nuances and intricacies of the market and its underlying assets. Additionally, the use of macroeconomic variables may not be enough to capture the entire range of risks faced by investors. For example, the model may not capture market volatility, which can cause significant fluctuations in asset prices.

Thirdly, APT's assumptions about the relationship between risk and return are not universally accepted. The model assumes that investors are rational and risk-averse, which means they will demand a higher expected return for a higher risk asset. However, some researchers argue that investors may behave differently, depending on the market conditions, and may not always demand a higher expected return for a higher risk asset. In other words, the relationship between risk and return may not be constant, as APT assumes.

Fourthly, APT's model is sensitive to changes in its underlying assumptions. The model's output can vary significantly, depending on the variables used and the weighting given to each factor. This sensitivity can lead to a lack of consistency in the model's predictions and make it difficult for investors to rely on it when making investment decisions.

Finally, APT's model assumes that markets are efficient, which means that asset prices reflect all available information. However, empirical evidence suggests that markets are not always efficient and that some investors may have access to private information that is not available to others. This assumption could lead to erroneous predictions and prevent investors from accurately assessing the expected returns of assets.

Arbitrage Pricing Theory is a financial theory that seeks to explain the pricing of assets in a market by analyzing the relationship between expected returns and various factors that affect those

returns. The theory assumes that investors are rational, the market is efficient, and there are no arbitrage opportunities available. While APT has some limitations, it is a valuable tool for investors looking to diversify their portfolio and make informed investment decisions.

### 3.14 The Fama-French Three-Factor Model

The Fama-French Three-Factor Model is a financial model developed by Eugene Fama and Kenneth French. The model explains stock returns based on three factors, which are market risk, size, and value. The Fama-French Three-Factor Model is widely used in academic research and investment management.

The Fama-French Three-Factor Model states that the expected return of a stock is based on three factors: market risk, size, and value. The model assumes that investors require a premium for holding stocks with higher risk, smaller stocks, and value stocks.

The first factor is market risk, which is the risk that an investor faces by investing in the stock market. This risk is also known as systematic risk, and it cannot be diversified away by holding a diversified portfolio. The Fama-French Three-Factor Model assumes that stocks with higher market risk have higher expected returns than stocks with lower market risk.

The second factor is size, which is the size of the company. The Fama-French Three-Factor Model assumes that smaller stocks have higher expected returns than larger stocks. This is because smaller stocks are riskier than larger stocks, and investors require a premium for holding them.

The third factor is value, which is the ratio of the stock's price to its book value. The Fama-French Three-Factor Model assumes that stocks with lower price-to-book ratios have higher expected returns than stocks with higher price-to-book ratios. This is because value stocks are riskier than growth stocks, and investors require a premium for holding them.

#### 3.14.1 Equation of Fama-French Three-Factor Model

The Fama-French Three-Factor Model is usually expressed as follows:

$$r_i = r_f + \beta_i (r_m - r_f) + s_i * SMB + h_i * HML + \epsilon_i$$

Where:

$r_i$  = the expected return of stock  $i$

$r_f$  = the risk-free rate

$\beta_i$  = the beta of stock  $i$

$r_m$  = the expected return of the market

SMB = the size premium, which is the difference in returns between small and large stocks

HML = the value premium, which is the difference in returns between value and growth stocks

$\epsilon_i$  = the error term, which represents the portion of the return that is not explained by the model.

The Fama-French Three-Factor Model suggests that a portfolio's returns can be explained by the portfolio's exposure to market risk, size, and value. The model assumes that a portfolio's returns will increase if the portfolio has a higher exposure to market risk, small stocks, and value stocks.

#### 3.14.2 Empirical Evidence of Fama-French Three-Factor Model

The Fama-French Three-Factor Model has been extensively tested in academic research, and the evidence suggests that it is a useful tool for explaining stock returns. The model has been shown to explain a significant portion of the variation in stock returns, and it has been shown to be a better predictor of stock returns than other models, such as the Capital Asset Pricing Model (CAPM).

One of the most significant pieces of evidence supporting the Fama-French Three-Factor Model is the size effect. The size effect suggests that small stocks have higher returns than large stocks, even after controlling for other factors. The size effect has been shown to be robust across different time periods and different countries.

Another significant piece of evidence supporting the Fama-French Three-Factor Model is the value effect. The value effect suggests that value stocks have higher returns than growth stocks, even

after controlling for other factors. The value effect has also been shown to be robust across different time periods and different countries.

#### 3.14.3 Limitation of Fama-French Three-Factor Model

The Fama-French three-factor model is a widely used asset pricing model that attempts to explain the variation in stock returns based on three factors: market risk, size, and value. However, there are several criticisms of the model:

- i. **Lack of Economic Intuition:** Some critics argue that the model lacks economic intuition. For example, the size factor is based on the assumption that small firms have higher expected returns than large firms, but it is unclear why this would be the case.
- ii. **Data Mining:** Some critics argue that the model is the result of data mining. The Fama-French researchers tested hundreds of variables before settling on the three factors, which could lead to overfitting and unreliable results.
- iii. **Misidentification of Risk Factors:** Critics argue that the model misidentifies risk factors. For example, some studies suggest that the momentum factor, which is not included in the Fama-French model, is a more significant risk factor than size or value.
- iv. **Limited Applicability:** The Fama-French model was developed using U.S. data, and its applicability to other countries or regions may be limited. Some studies have found that the model does not perform as well in non-U.S. markets.
- v. **Lack of Consideration for Macroeconomic Factors:** The Fama-French model does not take into account macroeconomic factors such as inflation, GDP growth, or interest rates, which could have an impact on stock returns.
- vi. **Not fully Capturing all sources of Risk:** Critics argue that the Fama-French model does not capture all sources of risk. For example, it does not account for the impact of political risk or the potential for fraud or mismanagement within companies.

#### 3.15 Efficient Capital Market

It can be defined as a market in which current market prices fully reflect available information. That is, one in which costless trading rules does not consistently beat the market. Capital Market Efficiency is the degree to which the present asset price accurately reflects current information in

the market place or a market in which new information is very quickly reflected accurately in share prices.

### 3.15.1 Types of Efficiency

There are three types of efficiency;

- **Operational Efficiency** – refers to the cost to buyers and sellers of transactions in securities on the exchange. It is desirable that the market carries out its operations at as low a cost as possible.
- **Allocation Efficiency** – Stock Markets help in the process of allocating society's resources between competing real investments. For example, an efficient market provides vast funds for fast-growth sectors such as electronics, pharmaceuticals and biotechnology industries (through new issues, rights issues, etc.) but allocates only small amounts for slow growth industries.
- **Pricing Efficiency** – in a pricing efficient market the investor can expect to earn merely a risk-adjusted return from an investment as prices move instantaneously and in an unbiased manner to any news.

### 3.15.2 The Value of an Efficient Market

It is important that stock/share markets are efficient for at least three reasons:

- To encourage Share Buying** – accurate pricing is required if individuals are going to be encouraged to invest in private enterprise. If shares are incorrectly priced many savers will refuse to invest because of a fear that when they come to sell the price may be perverse and may not represent the fundamental attractions of the firm. This will seriously reduce the availability of funds to companies and inhibit growth.
- To give correct signals to Company Managers** – Since the maximization of shareholder wealth can be represented by the share price in an efficient market, sound financial decision-making relies on the correct pricing of the company's shares. In implementing a shareholder wealth-enhancing decision the manager will need to be assured that the implication of the decision is accurately signaled to shareholders and to management through a rise in the share price. It is important that managers receive feedback on their decisions from the share market so that they are encouraged to pursue shareholder wealth strategies.



- iii. **To help Allocate Resources** – allocation efficiency requires both operating efficiency and pricing efficiency. If a poorly run company in a declining industry has highly valued shares because the stock market is not pricing correctly then this firm will be able to issue new shares, and thus attract more of society's savings for use within its business.

### 3.15.3 The Levels of Market Efficiency

Three levels of market efficiency can be identified.

- **Weak-form Efficiency** –In this weak form of EMH ,past prices provide a weak test of market efficiency because prices are readily available to everyone and these prices do not contain any detailed information about the underlying investment .For these reason it seems unlikely that past prices can be used to reap abnormally large returns. This suggests that technical analysis is useless, as the knowledge of the past patterns of the stock prices do not help investor in forecasting the security prices. In weakly efficient market the degree of variance between prices and value of security is larger.

- **Semi-strong form Efficiency** –This form of EMH holds that the current prices of stock not only reflect past behavior of stock prices but also reflect all publicly available information such as accounting statements, detailed analysis of statement and of the economy and published forecasts. In such a case prices that are actually arrived would invariably represents the best interpretation of the information .It would be futile exercise for investors to enter into bargains on the basis of analysis of past data and published information. In semi strong efficient market the variance between and value of security is relatively less. The semi strong form of efficiency implies that there is no advantage in analyzing publicly available information after it has been released, because the market has already absorbed it into the price.

- **Strong-form Efficiency** – In the strong form of efficient market, even the knowledge possessed by company officials and directors would be valueless in buying and selling investments. Share prices reflect not only published information but also all relevant information including data not yet publicly available i.e. inside information. Thus even an insider cannot earn a return larger than what could be earned with a motive buy and hold strategy. In strongly efficient market variance between price and value of security is nil and thus prices are in continuous equilibrium with intrinsic worth of the security. All relevant information, including that which is privately held, is

reflected in the share price. Here the focus is on insider trading, in which a few privileged individuals.

#### **3.15.4 Efficient Market Hypothesis**

The Efficient Market Hypothesis (EMH) states that large and free financial markets are efficient. Thus, there is no arbitrage opportunity, as any return anomaly, or any newly known event, is supposed to be immediately taken into account in prices. It states that all relevant information is fully and immediately reflected in a security's market price, thereby assuming that an investor will obtain an equilibrium rate of return. In other words, an investor should not expect to earn an abnormal return (above the market return) through either technical analysis or fundamental analysis. And also EMH implies that if new information is revealed about a firm it will be incorporated into the share price rapidly and rationally, with respect to the direction of the share price movement and the size of that movement. It asserts that financial markets are “Informationally efficient” or that price on traded assets, example stocks, bonds or property already reflect all known information. The EMH states that it is impossible to consistently outperform the market by issuing any information that the market already knows, except through luck. EMH can also be defined as anything that may affect prices that is unknowable in the present thus appears randomly in the future.

#### **3.16 Economic Analysis**

Macroeconomics is the branch of economics that studies the behavior of the economy as a whole. It focuses on the performance of the economy in terms of key variables such as GDP, inflation, unemployment, and interest rates. Macroeconomic analysis is important for portfolio managers because it provides insights into the overall health of the economy, which can have a significant impact on the performance of different asset classes.

For example, if the economy is in a recession, portfolio managers may want to reduce their exposure to stocks and increase their exposure to bonds, which are generally less risky. Similarly, if interest rates are rising, portfolio managers may want to reduce their exposure to bonds and increase their exposure to stocks, which may benefit from a stronger economy.

### 3.16.1 Key Macroeconomic Variables

There are several key macroeconomic variables that are important for portfolio managers to consider when making investment decisions. These include GDP, inflation, interest rates, and exchange rates.

#### **GDP**

Gross Domestic Product (GDP) is the total value of goods and services produced within a country in a given period of time, usually a year. GDP is an important indicator of the overall health of the economy, as it measures the level of economic activity. A strong GDP growth rate is generally seen as a positive sign for the economy and can be a good indicator for the performance of the stock market.

#### **Inflation**

Inflation is the rate at which prices for goods and services are increasing over time. High inflation can be harmful to the economy as it reduces the purchasing power of consumers, which can lead to lower spending and lower economic growth. Portfolio managers need to consider inflation when investing in different asset classes, as high inflation can lead to lower returns on certain assets.

#### **Interest Rates**

Interest rates are the cost of borrowing money and are set by central banks. High interest rates can lead to lower economic growth, as they can make borrowing more expensive for businesses and consumers. In addition, high interest rates can make certain assets, such as bonds, more attractive to investors, as they offer higher yields.

#### **Exchange Rates**

Exchange rates refer to the value of one currency in relation to another. Changes in exchange rates can have a significant impact on the performance of different asset classes. For example, if the value of the US dollar strengthens relative to other currencies, US-based companies may see lower revenues from foreign sales, which can lead to lower stock prices.

### 3.16.2 Effects of Macroeconomic Variables on Different Asset Classes

Changes in macroeconomic variables, such as GDP growth, inflation, interest rates, and geopolitical events, can have significant effects on different asset classes. Here are some examples:

**Stocks:**

The stock market is influenced by a variety of macroeconomic variables, including GDP growth, inflation, interest rates, and geopolitical events. When GDP growth is strong, corporate profits tend to increase, which can boost stock prices. Inflation can also impact stock prices, as rising prices can hurt corporate profits and reduce investor confidence. Interest rates can also impact the stock market, as higher interest rates can increase borrowing costs for companies and reduce consumer spending, which can negatively impact corporate earnings and stock prices. Geopolitical events such as trade disputes, wars, and political unrest can also impact stock prices, as they can create uncertainty and disrupt global markets.

**Bonds:**

Macroeconomic variables also impact the bond market. When interest rates rise, bond prices tend to fall, as investors demand higher yields to compensate for the increased risk. Inflation can also impact bond prices, as rising prices can reduce the purchasing power of the bond's fixed income stream. Additionally, changes in government policies, such as tax reform or changes in regulatory policies, can also impact the bond market.

**Real Estate:**

Macroeconomic variables such as interest rates, inflation, and GDP growth can also impact the real estate market. When interest rates are low, it becomes more affordable for individuals and companies to borrow money to invest in real estate. Inflation can also impact the real estate market, as rising prices can increase the cost of building and maintaining properties. GDP growth can also impact the real estate market, as strong economic growth can increase demand for commercial and residential properties.

**Commodities:**

Macroeconomic variables such as inflation, interest rates, and geopolitical events can also impact commodity prices. Inflation can increase the prices of commodities such as oil, gold, and other precious metals, as these commodities are often seen as a hedge against inflation. Interest rates can also impact commodity prices, as higher interest rates can increase the value of the US dollar,

making commodities more expensive for buyers using other currencies. Geopolitical events can also impact commodity prices, as disruptions to global supply chains or conflicts in key producing countries can lead to supply shortages and higher prices.

Overall, it is important for investors to understand how macroeconomic variables can impact different asset classes in order to make informed investment decisions.

### 3.16.3 Economic Forecasting and its tools

In order to perform economic analysis, it is essential to forecast economic performance with the help of some of the economic factors discussed in the previous section. Depending upon the duration the forecasting can be made for short term, intermediate and long term. Short term refers to a period up to three years. Sometimes it can also refer to much shorter period, such as quarter or few quarters. Intermediate period refers to a period of three to five years period. Long term forecasting refers to the forecasting made for more than five years. This may mean a period of ten years or more.

Economic forecasting is an essential tool for policymakers, businesses, and individuals to anticipate and plan for future economic trends. Forecasting techniques of economic analysis can provide insight into economic growth, inflation, interest rates, and other key economic indicators. Here are some points to consider when discussing economic forecasting techniques:

- i. **Time Series Analysis:** This technique involves analyzing past economic data to identify patterns and trends that can be used to forecast future trends. Time series analysis uses statistical methods to examine historical data on variables such as GDP, inflation, and employment. It helps to identify seasonal patterns and trends that may repeat in the future.
- ii. **Leading Indicators:** These are economic variables that have been found to predict future economic activity. Leading indicators can include measures of consumer confidence, stock prices, and housing starts. By tracking leading indicators, economists can anticipate changes in the economy before they occur.
- iii. **Econometric Models:** Econometric models are mathematical models that use statistical techniques to analyze the relationships between different economic variables. These models can be used to forecast future economic conditions and to evaluate the effects of

policy changes on the economy. They can also be used to estimate the impact of external shocks, such as changes in oil prices or natural disasters.

- iv. **Survey-Based Forecasts:** This technique involves surveying businesses, consumers, and economists to gather information on their expectations for future economic conditions. These surveys can provide valuable insights into consumer and business sentiment, which can be used to anticipate changes in economic activity.
- v. **Scenario Analysis:** Scenario analysis involves creating hypothetical situations to evaluate the potential impact of different economic events. For example, an economist might consider the impact of a recession, a natural disaster, or a major policy change on the economy. By evaluating these scenarios, economists can develop contingency plans to prepare for potential economic disruptions.

Economic forecasting is a critical tool for understanding and anticipating economic trends. By using a variety of forecasting techniques, economists can provide policymakers, businesses, and individuals with valuable insights into future economic conditions.

### 3.17 Industry Analysis

Industry analysis means assessing a market/industry to understand its competitive dynamics. It helps investors understand a company's position compared to its peers. It helps gauge the overall attractiveness of the industry and the factors that determine a company's success.

Industry analysis tells what is happening in an industry in terms of demand-supply, competition within the industry and with other industries, prospects considering technological changes, and the influence of macroeconomic factors. All in all, it helps identify opportunities and threats for a company in the current scenario and future. This, in turn, gives you cues as to how well a company is positioned compared to its peers now.

#### 3.17.1 Types of Industry Analysis

There are three common types of industry analysis:

- i. Porter's Five Forces Analysis (Competitive Forces Model)
- ii. Broad Factors Analysis (PEST Analysis)
- iii. SWOT Analysis.

### **i. Porter's Five Forces Analysis (Competitive Forces Model)**

This is one of the most famous models developed for industry analysis. It was introduced by Michael Porter in his book "Competitive Strategy: Techniques for Analyzing Industries and Competitors" in 1980. According to Porter, there are five forces that help in doing accurate industry analysis. They are as follows:

#### **a. The level of competition in the industry**

Intense competition in an industry forces companies to battle against each other to gain dominance. Competitive battles can take the form of anything from price wars to new products and advertising campaigns or an expanded product portfolio. Additionally, government restrictions, labour union norms, and a lack of product/service differentiation also tend to intensify competition among the companies. Together, these reduce the profit potential of the company in the industry.

#### **b. Threat of substitutes of products or services**

Most companies in an industry compete with each other as they produce substitute products. Such substitutes limit the earning potential of the company when the industry imposes a ceiling on the prices. Substitution can be fought by product differentiation.

#### **c. Bargaining power of buyers**

In an industry with more competitors and a single buyer constituting a large share of the market sales, the bargaining power lies with customers. They are in a position to negotiate lower prices for better quality or ask for additional discounts. This can impact the prices of products and services significantly.

#### **d. Bargaining power of suppliers**

A company enjoys bargaining power if the industry has only a few sellers/suppliers. If there are more suppliers, they have the bargaining power and can quote prices, quality, and discounts according to their needs.

For instance, the aviation industry has only two significant airplane manufacturers—Airbus and Boeing. Thus, the bargaining power of suppliers in the aviation industry is very high, and the companies can't do much to negotiate favorable terms for them.

#### **e. Barriers to entry**

This indicates the ease of entry into the industry. If it is easy to enter the industry, companies constantly face the risk of new competitors. As more companies enter, the availability of substitute products limits the scope of increasing prices. If the entry is difficult, the company with a competitive advantage enjoys the benefits for a longer period.

For instance, an entry barrier in the aviation industry are high, given it is an asset-heavy space and is subject to immense legal and regulatory requirements. Therefore, any company that enjoys a competitive advantage stand to benefit for a longer period of time in this industry.

### **3.18 Broad Factors Analysis (PEST Analysis)**

Commonly called the PEST Analysis, this type of industry analysis evaluates the impact of Political, Economic, Social and Technological factors on an industry. PEST analysis helps analyze the macro environment in which the industry operates.

1. **Political Factors** include government policies and regulations relating to taxes, tariffs, environment, labour laws, trade, ease of doing business, and overall political stability. Unfavorable policies can adversely impact a company's business. For instance, the increase in windfall taxes on oil companies will most likely reduce their profits.
2. **Economic Factors** include inflation, interest rates, exchange rates, GDP growth rates, capital market conditions, etc. In case the capital market conditions are not good, companies may find difficulty in raising finance for their operations. This could hamper their growth.
3. **Social Factors** are the trends in society, like demographics, population growth, and behavior in terms of health and fashion, etc. The young population in any area is bound to get older in a few years. If a company is catering to the younger generation now, it will have to offer products for older generations in a few years to stay relevant. If not, it will be forced to shut shop and relocate elsewhere.



4. **Technological Factors** are the developments that change the way a company operates and the way of living life. For example, the advent of the internet. A washing machine company cannot survive if it doesn't offer innovative products and keep up with rivals in technologically-advanced times.

### 3.19. SWOT Analysis

SWOT stands for Strengths, Weaknesses, Opportunities, and Threats. SWOT analysis helps summarize various industry forces and determine their impact on the company.

#### 3.19.1 Importance of Industry Analysis

Industry analysis helps an investor understand the market factors that tend to impact the company in question. These factors can be the industry's demand-supply forces, demographics, competitiveness, entry and exit costs, and so on.

Industrial analysis also helps understand if the industry has reached the saturation point or if there is growth potential. If there's no growth in the industry, the company can also become saturated unless it ventures into newer sub-industries.

You can compare a company with its peers to understand how it is performing versus them. Do this by comparing financial ratios and other key metrics of the stock in question with the industry average (the average of all companies in the industry/competitors).

#### 3.19.2 How to do Industry Analysis?

- i. **Review information about the industry:** You can find white papers, reports, analyses, research reports, and presentations about the industry online and offline. Read these materials to get to know the industry.
- ii. **Dissect the industry:** Some industries like the real estate industry, can be huge, and have sub-industries like residential properties, commercial properties, hotels, etc. So identifying the right sub-industry is key to accurate analysis.
- iii. **Forecast the potential of the company's growth:** Try to gauge what the future demand and supply in the industry look like. Additionally, assess the health of each company based on its growth rate and product portfolio of the last 5 yrs. Then compare it with peers. You would come to know where the company stands versus its rivals.

- iv. **Note the recent developments:** Make a note of the recent developments within the industry and how they have impacted or may impact the constituent companies presently and in the future.

### 3.20 Company Analysis

Company analysis is a process carried out by investors to evaluate securities, collecting info related to the company's profile, products and services as well as profitability. It is also referred as fundamental analysis.' A company analysis incorporates basic info about the company, like the mission statement and apparition and the goals and values. During the process of company analysis, an investor also considers the company's history, focusing on events which have contributed in shaping the company.

Also, a company analysis looks into the goods and services proffered by the company. If the company is involved in manufacturing activities, the analysis studies the products produced by the company and also analyzes the demand and quality of these products. Conversely, if it is a service business, the investor studies the services put forward.

In company analysis analysts consider the basic financial variables for the estimation of the intrinsic value of the company. These variables contain sales, profit margin, tax rate, depreciation, asset utilization, sources of financing and other factors. The conduction of further analysis of company include the competitive position of the company in the industry, technological changes, management, labor relations, foreign competition and so on.

#### 3.20.1 How to do a Company Analysis

It is essential for a company analysis to be comprehensive to obtain strategic insight. Being a thorough evaluation of an organization, the company analysis provides insight to rationalize processes and make revenue potentials better.

The process of conducting a company analysis involves the following steps:

- i. The primary step is to determine the type of analysis which would work best for your company.
- ii. Research well about the methods for analysis. In order to perform a company analysis, it is important to understand the expected outcome for doing so. The analysis should

provide answer about what is done right and wrong on the basis of a thorough evaluation. It is, therefore, important to make the right choice for the analysis methods.

- iii. The next step involves implementing the selected method for conducting the financial analysis. It is important for the analysis to include internal and external factors affecting the business.
- iv. As a next step, all the major findings should be supported by use of statistics.
- v. The final step involves reviewing the results. The weaknesses are then attempted to be corrected. The company analysis is used in concluding issues and determining the possible solutions. The company analysis is conducted to provide a picture of the company at a specific time, thus providing the best way of enhancing a company, internally as well as externally.

Company analysis actually provides the indication of the estimated value & potential of the company along with the comprehension of its financial variables. Common stock can be valued by the investors by using dividend discounted model. Similarly earnings multiplier model can be used for estimation of intrinsic value for a short run. Intrinsic value (or estimated value) is the product of expected multiplier or P/E ratio and the estimated earnings per share (EPS).

**Estimated Value of Stock =  $V_0$  = Estimated EPS x Expected P/E Ratio**

Relative valuation techniques are used by many investors in which comparison of P/E ratio, P/S ratio and P/B ratio of the company is made with many benchmarks in order to ascertain the relative value of the company. Another effective way adopted by investors is to find out whether the stock is properly valued, undervalued or overvalued without being much exact about the absolute amount.

### **3.21 Financial Statement Analysis**

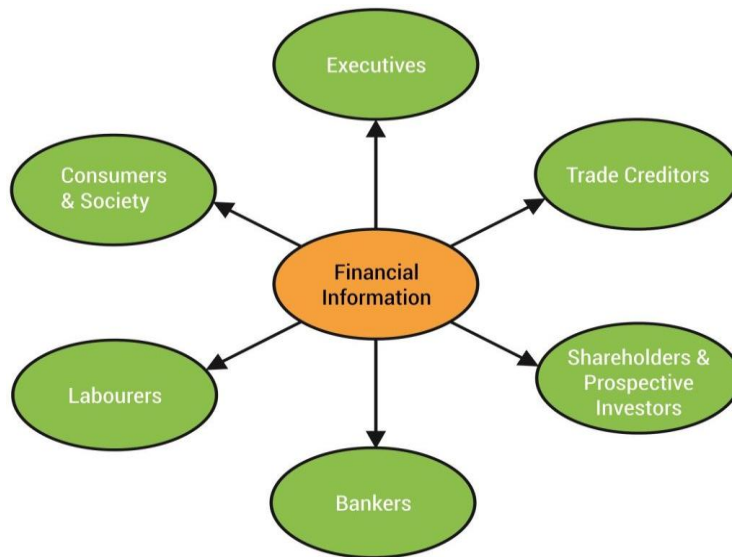
Financial statement analysis is a judgmental process which aims to estimate current and past financial positions and the results of the operation of an enterprise, with primary objective of determining the best possible estimates and predictions about the future conditions. It essentially involves regrouping and analysis of information provided by financial statements to establish

relationships and throw light on the points of strengths and weaknesses of a business enterprise, which can be useful in decision-making involving comparison with other firms (cross-sectional analysis) and with firms' own performance, over a time period (time series analysis).

### 3.21.1 Purposes and Objectives of Financial Statements

Financial statements are very useful as they serve varied affected group having an economic interest in the activities in the business entity. Let us analyze the purpose served by financial statement.

- i. The basic purpose of financial statement is communicated to their interested users, quantitative and objective information is useful in making economic decisions.
- ii. Secondly, financial statements are intended to meet the specialized needs of conscious creditors and investors.
- iii. Thirdly, financial statements are prepared to provide reliable information about the earning of a business enterprise and its ability to operate at profit in future. The users who are interested in this information are generally the investors, creditors, suppliers and employees.
- iv. Fourthly, financial statements are intended to provide the base for tax assessments.
- v. Fifthly, financial statements are prepared in a way to provide information that is useful in predicting the future earning power of the enterprise.
- vi. Sixthly, financial statements are prepared to provide reliable information about the changes in economic resources.
- vii. Seventhly, financial statements are prepared to provide information about the changes in net resources of the organization that result from profit directed activities. Thus, financial statements satisfy the information requirements of a wide cross-section of the society representing corporate managers, executives, bankers, creditors, shareholders, investors, laborers, consumers, and government institutions.



a) **Executives:** Financial statements provide sufficient accounting information to the executives and managers to enable them to decide on important issues facing them. The common issues facing corporate managers today, like efficient capital utilization, maintaining the profitability through cost control, dividend paying capacity of the company and observing credit standards, can be tackled effectively, if the executives have a proper understanding of analysis of the financial statement.

b) **Bankers:** Bankers take precautions before advancing loans to their constituents. Every banker, before sanctioning credit, wishes to be assured the borrower's ability to repay the loans when they become due; to ascertain the company's ability to pay interest charges on loans and their respective due dates. Therefore, they scrutinize and study the financial statements in depth and analyze them to ascertain the borrower's liquidity, solvency, profitability of his business and his financial strength.

c) **Trade Creditors:** A manufacturer or a wholesaler would not provide credit facilities indiscreetly to everyone. Before opening an account for the trade, the manufacturer and wholesaler studies the financial statements of the traders, supplemented by various trade and bank references, to ascertain his credit worthiness. This information could be obtained from the financial statement.

d) **Shareholders and Prospective Investors:** Shareholders, who have permanent interest in the life and operations of the company, are ever desirous of knowing about their company's year to year performance. Shareholders are particularly interested in the future of the company. The financial statements

provide the shareholders all the information they require. What is said for the shareholders holds equally good for the prospective investors.

e) **Laborers:** Laborers contribute to the earnings of the company and they are the people who work on raw materials with the aid of capital goods to produce wealth. They are also interested in their wages and salaries, bonus and working conditions. As far as bonus, working conditions and other incentives are concerned, they largely depend on the company's profitability and liquidity. The laborers are also interested in the business as a going concern as it only ensures their permanent employment.

f) **Consumers and Society:** Consumers attempt to find out whether they are being exploited by the producers. Society is interested in enterprises that result in the increase of employment opportunities, wealth and standard of living of the people. They are also concerned about the enterprise's contribution to social welfare, environment and national wealth and prestige. Study of financial statements enables the consumers and the society to gain knowledge on these matters.

### 3.22 Major Financial Statements

Financial statements are intended to provide information on the resources available to management, how these resources were financed, and what the firm accomplished with them. Corporate shareholder annual and quarterly reports include three required financial statements: the balance sheet, the income statement, and the statement of cash flows. In addition, reports that must be filed with the Securities and Exchange Commission (SEC) (e.g., the 10-K and 10-Q reports) carry detailed information about the firm, such as information on loan agreements and data on product line and subsidiary performance. Information from the basic financial statements can be used to calculate financial ratios and to analyze the operations of the firm to determine what factors influence a firm's earnings, cash flows, and risk characteristics.

#### 3.22.1 Generally Accepted Accounting Principles

Among the input used to construct the financial statements are generally accepted accounting principles (GAAP), which are formulated by the Financial Accounting Standards Board (FASB). The FASB recognizes that it would be improper for all companies to use identical and restrictive accounting principles. Some flexibility and choice are needed because industries and firms within

industries differ in their operating environments. Therefore, the FASB allows companies some flexibility to choose among appropriate GAAP. This flexibility allows the firm's managers to choose accounting standards that best reflect company practice. On the negative side, this flexibility can allow firms to appear healthier than they really are. Given this possibility, the financial analyst must rigorously analyze the available financial information to separate those firms that appear attractive from those that actually are in good financial shape.

Fortunately, the FASB requires that financial statements include footnotes that indicate which accounting principles were used by the firm. Because accounting principles frequently differ among firms, the footnote information assists the financial analyst in adjusting the financial statements of companies so that the analyst can better compare "apples with apples."

### **3.22.2 Balance Sheet**

The balance sheet shows what resources (assets) the firm controls and how it has financed these assets. Specifically, it indicates the current and fixed assets available to the firm at a point in time (the end of the fiscal year or the end of a quarter). In most cases, the firm owns these assets, but some firms lease assets on a long-term basis. How the firm has financed the acquisition of these assets is indicated by its mixture of current liabilities (accounts payable or short-term borrowing), long-term liabilities (fixed debt and leases), and owners' equity (preferred stock, common stock, and retained earnings).

### **3.22.3 Income Statement**

The income statement contains information on the operating performance of the firm during some period of time (a quarter or a year). In contrast to the balance sheet, which is at a fixed point in time, the income statement indicates the flow of sales, expenses, and earnings during a period of time.

### **3.22.4 Statement of Cash Flows**

The statement of cash flows integrates the effects on the firm's cash flow of income flows (based on the most recent year's income statement) and changes on the balance sheet (based on the two most recent annual balance sheets). Analysts use these cash flow values to estimate the value of a firm and to evaluate the risk and return of the firm's bonds and stock. The statement of cash flows has three sections: cash flows from operating activities, cash flows from investing activities,

and cash flows from financing activities. The total cash flows from the three sections is the net change in the cash position of the firm that should equal the difference in the cash balance between the ending and beginning balance sheets.

### **Cash Flows from Operating Activities**

This section of the statement lists the sources and uses of cash that arise from the normal operations of a firm. The net cash flow from operations is computed as the net income reported on the income statement including changes in net working capital items (i.e., receivables, inventories, and so on) plus adjustments for noncash revenues and expenses (such as depreciation), or:

Cash Flows from Operating Activities = Net Income + Noncash Revenue and Expenses

+ Changes in Net Working Capital Items

### **Cash Flows from Investing Activities**

A firm makes investments in both its own noncurrent and fixed assets and the equity of other firms (which may be subsidiaries or joint ventures of the parent firm; they are listed in the “investment” account of the balance sheet). Increases and decreases in these noncurrent accounts are considered investment activities. The cash flow from investing activities is the change in gross plant and equipment plus the change in the investment account. The changes are positive if they represent a source of funds (e.g., sale of some plant and/or equipment); otherwise they are negative. The dollar changes in these accounts are computed using the firm’s two most recent balance sheets. Most firms experience negative cash flows from investments due to significant capital expenditures.

### **Cash Flows from Financing Activities**

Cash inflows are created by increasing notes payable and long-term liability and equity accounts, such as bond and stock issues. Financing uses (outflows) include decreases in such accounts (that is, paying down liability accounts or the repurchase of common shares). Dividend payments are a significant financing cash outflow.



The total cash flows from operating, investing, and financing activities are the net increase or decrease in the firm's cash.

### **Measures of Cash Flow**

There are several cash flow measures an analyst can use to determine the underlying health of the corporation. You should become familiar with these alternative measures.

- Traditional Cash Flow
- Free Cash Flow
- EBITDA

### **Traditional Cash Flow**

The "traditional" measure of cash flow equals net income plus depreciation expense and the change in deferred taxes. But as we have just seen, it is also necessary to adjust for changes in operating (current) assets and liabilities that either use or provide cash. These changes can add to or subtract from the cash flow estimated from the traditional measure of cash flow: net income plus noncash expenses.

### **Free Cash Flow**

Free cash flow modifies cash flow from operations to recognize that some investing and financing activities are critical to the firm. It is assumed that these expenditures must be made before a firm can use its cash flow for other purposes such as reducing debt outstanding or repurchasing common stock. Two additional items are considered: (1) capital expenditures (an investing expenditure), and (2) the disposition of property and equipment (a divestment source of cash). For firms involved in leveraged buyouts, this free cash flow number is critical because the new owners typically want to use the firm's free cash flow as funds available for retiring outstanding debt. It is not unusual for a firm's free cash flow to be a negative value.

### **EBITDA**

The widely-used EBITDA (earnings before interest, taxes, depreciation, and amortization) measure of cash flow is extremely liberal. This very generous measure of operating earnings does not

consider any of the adjustments noted previously. Specifically, it adds back depreciation and amortization (as in the traditional measure) along with both interest expense and taxes, but does not consider the effect of changes in working capital items (such as additions to receivables and inventory) or the significant impact of capital expenditures. Some analysts have used EBITDA as a proxy for cash flow and a metric for valuation similar to earnings—that is, they refer to EBITDA multiples as other analysts would refer to priceearnings (P/E) multiples. Yet given what this measure does not consider, this is a very questionable practice, and the authors do not recommend using EBITDA

Financial statement analysis seeks to evaluate management performance in several important areas, including profitability, efficiency, and risk. Although we will necessarily analyze historical data, the ultimate goal of this analysis is to provide insights that will help us to project future management performance, including pro forma balance sheets, income statements, cash flows, and alternative risk measures. It is the firm's expected future performance that determines whether we should lend money to a firm or invest in it.

### **3.23 Analysis of Financial Ratios**

Analysts use financial ratios because numbers in isolation typically convey little meaning. For example, knowing that a firm earned a net income of Tk100,000 is not very informative unless we also know the sales figure that generated this income (Tk1 million or Tk10 million) and the assets or capital committed to the enterprise. Thus, ratios are intended to provide meaningful relationships between individual values in the financial statements. Because the major financial statements report numerous individual items, it is possible to produce a vast number of potential ratios, many of which will have little value. Therefore, we limit our examination to the most relevant ratios and group them into categories that will provide information on important economic characteristics of the firm.

#### **3.23.1 Importance of Relative Financial Ratios**

Just as a single number from a financial statement is of little use, an individual financial ratio has little value except in relation to comparable ratios for other entities. That is, only relative financial ratios are relevant. Therefore, it is important to compare a firm's performance relative to:

- The aggregate economy

- Its industry or industries
- Its major competitors within the industry
- Its past performance (time-series analysis)

The comparison to the aggregate economy is important because almost all firms are influenced by economic fluctuations. For example, it is unreasonable to expect an increase in the profit margin for a firm during a recession; a stable margin might be encouraging under such conditions. In contrast, a small increase in a firm's profit margin during a major business expansion may be a sign of weakness. Thus, this analysis that considers the economic environment helps investors understand how a firm reacts to the business cycle and should improve an estimate of the future performance of the firm during subsequent business cycles.

Probably the most significant comparison relates a firm's performance to that of its industry. Different industries affect the firms within them differently, but this relationship is always significant. The industry effect is strongest for industries with homogeneous products such as steel, rubber, glass, and wood products, because all firms within these industries experience coincidental shifts in demand. In addition, these firms employ fairly similar technology and production processes. As a result, even the best-managed steel firm experiences a decline in sales and profit margins during a recession. In such a case, the relevant question is not whether sales and margins declined, but how bad was the decline relative to other steel firms? In addition, investors should examine an industry's performance relative to the economy to understand how the industry responds to the business cycle. When comparing a firm's financial ratios to industry ratios, investors may not want to use the average (mean) industry value when there is wide variation among firms in the industry. Alternatively, if we believe that a firm has a unique component, a cross-sectional analysis, in which we compare the firm to a subset of industry firms comparable in size or characteristics, may be appropriate. As an example, we would compare the performance of Kroger to that of other national food chains rather than regional food chains or specialty food chains.

Another practical problem with comparing a firm to its industry is that many large firms are multi-industry. Inappropriate comparisons can arise when a multi-industry firm is evaluated against the

ratios from a single industry. To mitigate this problem, an alternative is to use a cross-sectional analysis that compares the firm with a rival that operates in many of the same industries. Alternatively, we can construct composite industry average ratios for the firm. To do this, we use the firm's annual report or 10-K filing to identify each industry in which the firm operates and the proportion of total firm sales and operating earnings derived from each industry. The composite industry ratios would be the weighted-average ratios based on the proportion of firm sales and operating earnings derived from each industry.

Finally, time-series analysis, in which we examine a firm's relative performance over time to determine whether it is progressing or declining, is helpful when estimating future performance. Calculating the 5- or 10-year average of a ratio without considering the time-series trend can result in misleading conclusions. For example, an average rate of return of 10 percent can be the result of rates of return that have increased from 5 percent to 15 percent over time, or the result of a series that declined from 15 percent to 5 percent. Obviously, the difference in the trend for these series would have a major impact on our estimate for the future. Ideally, an analyst should examine a firm's time series of relative financial ratios compared to its industry and the economy.

### **3.23.2 Computation of Financial Ratios**

In the following discussion, we divide the financial ratios into five major categories that underscore some important economic characteristics of a firm. The five categories are

- i. Common Size Statements
- ii. Internal Liquidity (Solvency)
- iii. Operating Performance
  - a. Operating Efficiency
  - b. Operating Profitability
- iv. Risk Analysis
  - a. Business Risk
  - b. Financial Risk
  - c. External Liquidity Risk
- v. Growth Analysis

## i. Common Size Statements

Common size statements normalize balance sheet and income statement items to allow easier comparison of different sized firms. A common size balance sheet expresses all balance sheet accounts as a percentage of total assets. A common size income statement expresses all income statement items as a percentage of sales. Common size ratios are useful to quickly compare two different sized firms and to examine trends over time within a single firm. Common size statements also give insight into a firm's financial condition, for example, the proportion of liquid assets or the proportion of short-term liabilities, and the percentage of sales consumed by production costs or interest expense.

	2010	2009	2008	2007	2006
<b>Current Assets:</b>					
Cash and cash equivalents	7.16%	8.30%	1.98%	1.32%	5.37%
Short-term investments	0.00%	1.99%	0.00%	0.00%	2.42%
Accounts receivable, net	9.32%	9.93%	11.28%	11.58%	12.04%
Inventories	28.08%	27.00%	32.35%	35.16%	35.32%
Other current assets	0.81%	0.70%	0.95%	1.18%	1.50%
<b>Total Current Assets</b>	<b>45.37%</b>	<b>47.92%</b>	<b>46.56%</b>	<b>49.24%</b>	<b>56.65%</b>
Property and equipment, at cost, less accumulated depreciation and amortization	42.57%	42.96%	43.62%	42.46%	40.56%
Goodwill	7.18%	5.81%	6.42%	5.49%	0.98%
Other noncurrent assets	4.88%	3.30%	3.41%	2.81%	1.80%
<b>Total Noncurrent Assets</b>	<b>54.63%</b>	<b>52.08%</b>	<b>53.44%</b>	<b>50.76%</b>	<b>43.35%</b>
<b>Total Assets</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
<b>Current Liabilities:</b>					
Short-term borrowings	0.05%	0.06%	0.37%	4.55%	0.00%
Trade accounts payable	17.45%	17.13%	19.14%	19.33%	23.58%
Accrued expenses and other liabilities	10.52%	9.57%	10.14%	10.90%	10.00%
Income taxes	0.28%	0.16%	0.00%	0.15%	0.02%
<b>Total Current Liabilities</b>	<b>28.29%</b>	<b>26.92%</b>	<b>29.65%</b>	<b>34.92%</b>	<b>33.60%</b>
Long-term debt	9.09%	9.29%	5.97%	0.00%	0.00%
Deferred income taxes	1.21%	1.05%	0.67%	0.82%	0.82%
Other noncurrent liabilities	6.60%	5.55%	6.29%	6.77%	6.53%
<b>Total Noncurrent Liabilities</b>	<b>16.91%</b>	<b>15.90%</b>	<b>12.93%</b>	<b>7.59%</b>	<b>7.36%</b>
<b>Shareholders' Equity:</b>					
Common stock, \$.078125 par value; authorized 3.2 billion shares; issued 1,025,400,000 shares in 2006-2010	0.30%	0.32%	0.36%	0.41%	0.47%
Paid-in capital	2.60%	2.41%	2.57%	2.89%	3.26%
Employee stock loan receivable	-0.33%	-0.56%	-0.16%	-0.27%	-0.41%
Retained earnings	64.12%	60.96%	61.54%	62.27%	60.19%
Accumulated other comprehensive (loss) income	-0.09%	0.15%	0.04%	-0.02%	0.00%
Treasury stock at cost (million shares): 86.79 in 2010, 36.84 in 2009, 35.24 in 2008, 34.76 in 2007, 17.54 in 2006	-11.80%	-6.10%	-6.92%	-7.80%	-4.46%
<b>Total Shareholders' Equity</b>	<b>54.80%</b>	<b>57.18%</b>	<b>57.43%</b>	<b>57.49%</b>	<b>59.05%</b>
<b>Total Liabilities and Shareholders' Equity</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

Source: Reprinted with permission from Walgreen Co., Deerfield, IL.

	2010	%	2009	%	2008	%	2007	%	2006	%
Net sales	\$67420	100.00%	\$63335	100.00%	\$59034	100.00%	\$53762	100.00%	\$47409	100.00%
Cost of sales	48444	71.85	45722	72.19	42391	71.81	38518	71.65	34240	72.22
Gross Profit	18976	28.15	17613	27.81	16643	28.19	15244	28.35	13169	27.78
Selling, general and administrative expenses	15518	23.02	14366	22.68	13202	22.36	12093	22.49	10467	22.08
Operating Income	3458	5.13	3247	5.13	3441	5.83	3151	5.86	2702	5.70
Interest expense, net	-85	-0.13	-83	-0.13	-11	-0.02	-38	-0.07	-53	-0.11
Earnings Before Income Tax Provision	3373	5.00	3164	5.00	3430	5.81	3189	5.93	2754	5.81
Income tax provision	1282	1.90	1158	1.83	1273	2.16	1148	2.13	1004	2.12
Net Earnings	2091	3.10	2006	3.17	2157	3.65	2041	3.80	1751	3.69

Source: Reprinted with permission from Walgreen Co., Deerfield, IL.

In the case of Walgreens, the common size balance sheet shows a significant decline in the percent of current assets from over 56 percent to 45 percent (due to a strong decline in accounts receivable and inventory, partially offset by a small increase in cash).

Alternatively, the common size income statement shows that Walgreen Co.'s cost of goods sold was quite stable from 2006 to 2010 as a proportion of sales. In contrast, the firm's selling and administrative expense as a percent of sales increased by about 1 percent from 2006 to 2010, and this reduction in operating earnings as a percent of sales carried down to a reduction in the net profit margin.

#### x. Evaluating Internal Liquidity

Internal liquidity (solvency) ratios are intended to indicate the ability of the firm to meet future short-term financial obligations. They compare near-term financial obligations, such as accounts payable or notes payable, to current assets or cash flows that will be available to meet these obligations.

#### Current Ratio

Clearly, the best-known liquidity measure is the current ratio, which examines the relationship between current assets and current liabilities as follows:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

From the Balance sheet, Walgreens current ratios (in thousands of dollars) were:

2010: 11,922 / 7,433 = 1.60

2009: 12,049 / 6,769 = 1.78

2008: 10,433 / 6,644 = 1.57

	2010	2009	2008	2007	2006
<b>Current Assets:</b>					
Cash and cash equivalents	1880.00	2087.00	443.00	254.80	919.90
Short-term investments	0.00	500.00	0.00	0.00	415.10
Accounts receivable, net	2450.00	2496.00	2527.00	2236.50	2062.70
Inventories	7378.00	6789.00	7249.00	6790.50	6050.40
Other current assets	214.00	177.00	214.00	228.70	257.30
<b>Total Current Assets</b>	<b>11922.00</b>	<b>12049.00</b>	<b>10433.00</b>	<b>9510.50</b>	<b>9705.40</b>
Property and equipment, at cost, less accumulated depreciation and amortization	11184.00	10802.00	9775.00	8199.90	6948.90
Goodwill	1887.00	1461.00	1438.00	1060.20	168.40
Other non-current assets	1282.00	830.00	764.00	543.00	308.40
<b>Total Non-Current Assets</b>	<b>14353.00</b>	<b>13093.00</b>	<b>11977.00</b>	<b>9803.10</b>	<b>7425.70</b>
<b>Total Assets</b>	<b>26275.00</b>	<b>25142.00</b>	<b>22410.00</b>	<b>19313.60</b>	<b>17131.10</b>
<b>Current Liabilities:</b>					
Short-term borrowings	12.00	15.00	83.00	878.50	0.00
Trade accounts payable	4585.00	4308.00	4289.00	3733.30	4039.20
Accrued expenses and other liabilities	2763.00	2406.00	2272.00	2104.40	1713.30
Income taxes	73.00	40.00	0.00	28.10	2.80
<b>Total Current Liabilities</b>	<b>7433.00</b>	<b>6769.00</b>	<b>6644.00</b>	<b>6744.30</b>	<b>5755.30</b>
Long-term debt	2389.00	2336.00	1337.00	0.00	0.00
Deferred income taxes	318.00	265.00	150.00	158.20	141.10
Other non-current liabilities	1735.00	1396.00	1410.00	1306.80	1118.90
<b>Total Non-Current Liabilities</b>	<b>4442.00</b>	<b>3997.00</b>	<b>2897.00</b>	<b>1465.00</b>	<b>1260.00</b>
<b>Shareholders' Equity:</b>					
Common stock, \$.078125 par value; authorized 3.2 billion shares; issued 1,025,400,000 shares in 2006-2010	80.00	80.00	80.00	80.00	80.00
Paid-in capital	684.00	605.00	575.00	558.80	558.50
Employee stock loan receivable	-87.00	-140.00	-36.00	-51.60	-70.30
Retained earnings	16848.00	15327.00	13792.00	12026.80	10311.70
Accumulated other comprehensive (loss) income	-24.00	37.00	9.00	-3.90	0.00
Treasury stock at cost (million shares) 86.79 in 2010, 36.84 in 2009, 35.24 in 2008, 34.76 in 2007, 17.54 in 2006	-3101.00	-1533.00	-1551.00	-1505.90	-764.20
<b>Total Shareholders' Equity</b>	<b>14400.00</b>	<b>14376.00</b>	<b>12869.00</b>	<b>11104.20</b>	<b>10115.80</b>
<b>Total Liabilities and Shareholders' Equity</b>	<b>26275.00</b>	<b>25142.00</b>	<b>22410.00</b>	<b>19313.50</b>	<b>17131.10</b>

Source: Reprinted with permission from Walgreen Co., Deerfield, IL.

## Balance Sheet

	2010	2009	2008	2007	2006
<i>Net Sales</i>	67,420.00	63,335.00	59,034.00	53,762.00	47,409.00
<i>Cost of sales</i>	48,444.00	45,722.00	42,391.00	38,518.10	34,240.40
<i>Gross Profit</i>	18,976.00	17,613.00	16,643.00	15,243.90	13,168.60
<i>Selling, general and administrative expenses</i>	15,518.00	14,366.00	13,202.00	12,093.20	10,467.10
<i>Operating Income</i>	3,458.00	3,247.00	3,441.00	3,150.70	2,701.50
<i>Interest expense, net</i>	(85.00)	(83.00)	(11.00)	(38.40)	(52.60)
<i>Earnings before Income Tax Provision</i>	3,373.00	3,164.00	3,430.00	3,189.10	2,754.10
<i>Income tax provision</i>	1,282.00	1,158.00	1,273.00	1,147.80	1,003.50
<i>Net Earnings</i>	2,091.00	2,006.00	2,157.00	2,041.30	1,750.60
<i>Net earnings per common share – basic</i>	2.13	2.03	2.18	2.04	1.73
<i>Net earnings per common share – diluted</i>	2.12	2.02	2.17	2.03	1.72
<i>Average shares outstanding (millions)</i>	981.70	990.00	990.60	998.60	1,010.30
<i>Dilutive effect of stock options</i>	6.20	1.30	4.90	7.70	9.10
<i>Average shares outstanding assuming dilution (millions)</i>	987.90	991.30	995.50	1,006.30	1,019.40

**Source:** Reprinted with permission from Walgreen Co., Deerfield, IL.

## Income Statement

These current ratios were relatively constant during the three years and are consistent with the typical current ratio. As always, it is important to compare these values with similar figures for the firm's industry and the aggregate market. If the ratios differ from the industry results, we need to determine what might explain the difference in terms of specific current assets and liabilities.

## Quick Ratio

Some observers question using total current assets to gauge the ability of a firm to meet its current obligations because inventories and some other current assets might not be very liquid. They prefer the quick ratio, which relates current liabilities to only relatively liquid current assets (cash items and accounts receivable) as follows:

$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Short-term Investments} + \text{Receivables}}{\text{Current Liabilities}}$$

Walgreens quick ratios were:

$$2010: 4,330 / 7,433 = 0.58$$

$$2009: 5,083 / 6,769 = 0.75$$



2008:  $2,970 / 6,644 = 0.45$

These quick ratios were respectable and relatively stable over the three years. As before, we should compare these values to other firms in the industry and to the aggregate economy.

### **Cash Ratio**

The most conservative liquidity ratio is the cash ratio, which relates the firm's cash and short-term marketable securities to its current liabilities as follows:

$$\text{Cash Ratio} = \frac{\text{Cash and Marketable Securities}}{\text{Current Liabilities}}$$

Walgreens cash ratios were:

2010:  $1,880 / 7,433 = 0.25$

2009:  $2,587 / 6,767 = 0.38$

2008:  $443 / 6,644 = 0.07$

The cash ratio was clearly unacceptable in 2008 but increased to reasonable values in 2009 and 2010, given the firm's very stable growth of sales and earnings along with significant operating cash flows. In addition, the firm has strong bank lines of credit.

### **Receivables Turnover**

In addition to examining total liquid assets, it is useful to analyze the quality (liquidity) of the accounts receivable by calculating how often the firm's receivables turn over, which implies an average collection period. The faster these accounts are paid, the sooner the firm gets the funds to pay off its own current liabilities.

Receivables turnover is computed as:

$$\text{Receivables Turnover} = \frac{\text{Net Annual Sales}}{\text{Average Receivables}}$$

The average receivables figure is typically equal to the beginning receivables figure plus the ending value divided by two. Receivables turnover ratios for Walgreens were:

$$2010: \frac{67,420}{(2,450 + 2,496)/2} = 27.25 \text{ times}$$

$$2009: \frac{63,335}{(2,496 + 2,527)/2} = 25.20 \text{ times}$$

$$2008: \frac{59,034}{(2,527 + 2,236)/2} = 24.78 \text{ times}$$

Given these annual receivables turnover figures, the average collection period is:

$$\text{Average Receivables Collection Period} = \frac{365 \text{ Days}}{\text{Annual Receivables Turnover}}$$

For Walgreens,

$$2010: 365 / 27.25 = 13.39 \text{ days}$$

$$2009: 365 / 25.20 = 14.48 \text{ days}$$

$$2008: 365 / 24.78 = 14.73 \text{ days}$$

These results indicate that Walgreens currently collects its accounts receivable in about 14 days, on average. To determine whether these account collection numbers are good or bad, it is essential that they be related to the firm's credit policy and to comparable numbers for other firms in the industry. The point is, the receivables collection period value varies dramatically for different firms (e.g., from 10 to over 60), and it is mainly due to the firm's product and its industry. An industry comparison would indicate similar rapid collection periods for other drugstore chains, since most sales are for cash. While these collection periods appear relatively short, they actually have increased since 2000 because a significant change has occurred in pharmacy sales. Specifically, a growing proportion of pharmacy sales (currently about 92 percent) are now to a third party, so they are reimbursed with a lag by a managedcare or insurance company, which has caused the increase in receivables and the collection period. The receivables turnover is one of the ratios in which a firm does not want to deviate too much from the industry norm. In an industry where the norm is 40 days, a collection period of 80 days would indicate slow-paying customers, which increases the capital tied up in receivables and the possibility of bad debts. Therefore, the firm wants to be somewhat below the norm (e.g., 35 days vs. 40 days). At the same time, a figure substantially below the norm (e.g., 20 days) might indicate overly

stringent credit terms relative to the competition, which could be detrimental to sales in the long-run.

### Inventory Turnover

We should also examine the liquidity of inventory based on the firm's inventory turnover (i.e., how many times is the inventory sold during a year) and the implied processing time. Inventory turnover can be calculated relative to sales or to cost of goods sold. The preferred turnover ratio is relative to cost of goods sold (COGS) or cost of sales (COS), which does not include the profit implied in sales.

$$\text{Inventory Turnover} = \frac{\text{COGS}}{\text{Average Inventory}}$$

For Walgreens, the inventory turnover ratios were:

$$2010: \frac{48,444}{(7,378 + 6,789)/2} = 6.84 \text{ times}$$

$$2009: \frac{45,722}{(6,789 + 7,249)/2} = 6.51 \text{ times}$$

$$2008: \frac{42,391}{(7,249 + 6,790)/2} = 6.04 \text{ times}$$

Given these turnover values, we can compute the average inventory processing time as follows:

$$\text{Average Inventory Processing Period} = \frac{365}{\text{Annual Inventory Turnover}}$$

For Walgreens,

$$2010: 365 / 6.84 = 53.4 \text{ days}$$

$$2009: 365 / 6.51 = 56.1 \text{ days}$$

$$2008: 365 / 6.04 = 60.4 \text{ days}$$

Although this seems like a low turnover figure, it is encouraging that the inventory processing period has been gradually declining. Still, it is essential to examine this turnover ratio relative to an industry norm and/or the firm's prime competition. Notably, this ratio will also be affected by

the products carried by the chain—for instance, if a drugstore chain adds high profit margin items, such as cosmetics and liquor, these products may have a lower turnover. As with receivables, a firm does not want an extremely low inventory turnover value and long processing time because this implies that capital is being tied up in inventory and could signal obsolete inventory (especially for firms in the technology sector). Alternatively, an abnormally high inventory turnover and a short processing time could mean inadequate inventory that could lead to outages, backorders, and slow delivery to customers, which would eventually have an adverse effect on sales.

### Cash Conversion Cycle

A very useful measure of overall internal liquidity is the cash conversion cycle, which combines information from the receivables turnover, the inventory turnover, and the accounts payable turnover. Cash is tied up in assets for a certain number of days. Specifically, cash is committed to receivables for the collection period and in inventory for the inventory processing period. At the same time, the firm receives an offset to this capital commitment from its own suppliers who provide interest-free loans to the firm by carrying the firm's payables. Specifically, the payables' payment period is equal to 365 divided by the payables' turnover ratio. In turn, the payables turnover ratio is:

$$\text{Payables Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Trade Payables}}$$

For Walgreens, the payables turnover ratios were:

$$2010: \frac{48,444}{(4,585 + 4,308)/2} = 10.9 \text{ times}$$

$$2009: \frac{45,722}{(4,308 + 4,289)/2} = 10.6 \text{ times}$$

$$2008: \frac{42,391}{(4,289 + 3,733)/2} = 10.6 \text{ times}$$

The payables payment period is:

$$\text{Payables Payment Period} = \frac{365 \text{ days}}{\text{Payable Turnover}}$$

For Walgreens, the payables payment periods were:

2010:  $365 / 10.9 = 33.5$  days

2009:  $365 / 10.6 = 34.4$  days

2008:  $365 / 10.6 = 34.4$  days

Therefore, the cash conversion cycle for Walgreens (with components rounded) equals:

Year	Receivables Collection Days	+	Inventory Processing Days	-	Payables Payment Period	=	Cash Conversion Cycle
2010	13	+	53	-	34	=	32 days
2009	14	+	56	-	34	=	36 days
2008	15	+	60	-	34	=	41 days

Walgreens has experienced small declines in its receivables days and in its inventory processing days and is constant in paying its bills. The overall result is a consistent decline in its cash conversion cycle. Although the overall cash conversion cycle appears to be quite good (currently about 32 days), as always we should examine the firm's long-term trend and compare it to other peers.

### iii. Evaluating Operating Performance

The operating performance ratios can be divided into two subcategories: (1) operating efficiency ratios and (2) operating profitability ratios. Efficiency ratios examine how the firms generate the level of output from the given level of input, which means how the management uses its assets and capital to generate sales. Profitability ratios analyze the profits as a percentage of sales and as a percentage of the assets and capital employed.

#### Operating Efficiency Ratios

**Total Asset Turnover** The total asset turnover ratio indicates the effectiveness of the firm's use of its total asset base (net assets = gross assets - depreciation on fixed assets).

It is computed as:

$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Net Assets}}$$

Walgreens total asset turnover values were:

$$2010: \frac{67,420}{(26,275 + 25,142)/2} = 2.62 \text{ times}$$

$$2009: \frac{63,335}{(25,142 + 22,410)/2} = 2.66 \text{ times}$$

$$2008: \frac{59,034}{(22,410 + 19,314)/2} = 2.83 \text{ times}$$

This ratio, which has experienced a small steady decline for Walgreens, must be compared to that of other firms within an industry because it varies substantially between industries. For example, total asset turnover ratios range from less than 1 for large, capital-intensive industries (steel, autos, and heavy manufacturing companies) to over 10 for some retailing or service operations. It also can be affected by the use of leased facilities, which could impact the ratios for Walgreens.

Again, we must consider a range of turnover values consistent with the industry. It is poor management to have an exceedingly high asset turnover relative to the industry because this might imply too few assets for the potential business (sales), or it could be due to the use of outdated, fully depreciated assets. It is equally poor management to have an extremely low asset turnover because this implies that the firm is tying up capital in excess assets relative to the needs of the firm and compared with its competitors.

Beyond the analysis of the firm's total asset base, it is insightful to examine the utilization of some specific assets, such as receivables, inventories, and fixed assets. This detailed analysis is especially important if the firm has experienced a major decline in its total asset turnover because we want to know the cause of the decline, that is, which of the component turnovers (receivables, inventories, fixed assets) contributed to the decline. We have already examined the very stable receivables and inventory turnover as part of our liquidity analysis; we now examine the fixed asset turnover ratio.

## Net Fixed Asset Turnover

The net fixed asset turnover ratio reflects the firm's utilization of fixed assets. When analyzing asset turnover it is important to be aware of intangible assets such as goodwill or patents that can be substantial items. In such cases, analysts will often consider only "total tangible" assets or "operating" assets.

$$\text{Fixed Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Net Fixed Assets}}$$

$$\text{Tangible Fixed Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Net Tangible Fixed Assets (Goodwill not included)}}$$

Walgreens fixed asset turnover ratios were:

Average Net Fixed Assets

$$2010: \frac{67,420}{(14,353 + 13,093)/2} = 4.91 \text{ times}$$

$$2009: \frac{63,334}{(13,093 + 11,997)/2} = 5.05 \text{ times}$$

$$2008: \frac{59,034}{(11,997 + 9,803)/2} = 5.42 \text{ times}$$

Average Net Tangible Fixed Assets

$$2010: \frac{67,420}{(12,466 + 11,632)/2} = 5.60 \text{ times}$$

$$2009: \frac{63,334}{(11,632 + 10,539)/2} = 5.71 \text{ times}$$

$$2008: \frac{59,034}{(10,539 + 8,743)/2} = 6.12 \text{ times}$$

These turnover ratios, which indicate a decrease for Walgreens during the last few years, with and without goodwill, must be compared with those of industry competitors and should consider the impact of leased assets (this is especially significant for retail firms, as will be discussed subsequently). Again, an abnormally low turnover implies capital tied up in excessive fixed assets. An abnormally high asset turnover ratio can indicate a lack of productive capacity to meet sales

demand, or it might imply the use of an old, fully depreciated plant or equipment that may be obsolete.

### **Equity Turnover**

In addition to specific asset turnover ratios, it is useful to examine the turnover for capital components. An important one, equity turnover, is computed as:

$$\text{Equity Turnover} = \frac{\text{Net Sales}}{\text{Average Equity}}$$

Equity includes preferred and common stock, paid-in capital, and total retained earnings.<sup>6</sup> This ratio differs from total asset turnover in that it excludes current liabilities and long-term debt. Therefore, when examining this series, it is very important to consider the firm's capital structure ratios, because the firm can increase (or decrease) its equity turnover ratio by increasing (or decreasing) its proportion of debt capital.

Walgreens equity turnover ratios were:

$$2010: \frac{67,420}{(14,400 + 14,376)/2} = 4.69 \text{ times}$$

$$2009: \frac{63,335}{(14,376 + 12,869)/2} = 4.65 \text{ times}$$

$$2008: \frac{59,034}{(12,869 + 11,104)/2} = 4.93 \text{ times}$$

This ratio has declined slightly during the past several years. In our subsequent analysis of sustainable growth, we examine the variables that affect the equity turnover ratio to understand what variables might cause changes. Following an analysis of the firm's operating efficiency; the next step is to examine its profitability in relation to its sales and capital.

### **Operating Profitability Ratios**

There are two facets of profitability: (1) the rate of profit on sales (profit margin) and (2) the percentage return on capital employed. The analysis of profitability of sales actually entails several component profit margins that consider various expense categories. These component



margins provide important information relative to the final net profit margin. Thus, if we determine that a firm has experienced a significant increase or decrease in its net profit margin, the analysis of the component profit margins will help us to determine the specific causes of the change.

### **Gross Profit Margin**

Gross profit equals net sales minus the cost of goods sold. The gross profit margin is computed as:

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Net Sales}}$$

This ratio indicates the basic cost structure of the firm. An analysis of this ratio over time shows the firm's relative cost-price position. As always, we must compare these margins to comparable industry results and to major competitors. Notably, this margin can also be impacted by a change in the firm's product mix toward higher or lower profit margin items, which is why an analyst would ideally want to know the breakdown of sales by divisions and also the relative profitability of each division.

### **Operating Profit Margin**

Operating profit is gross profit minus sales, general, and administrative (SG&A) expenses. It is also referred to as EBIT—earnings before interest and taxes

$$\text{Operating Profit Margin} = \frac{\text{Operating Profit}}{\text{Net Sales}}$$

The variability of the operating profit margin over time is a prime indicator of the business risk for a firm. Again, this volatility should be compared to similar volatility measures for competitors and the industry.

There are two additional deductions from operating profit—interest expense and net foreign exchange loss. After these deductions, we have income before income taxes. Some investors add back to the operating income value (EBIT) the firm's depreciation expense and compute a profit margin that consists of earnings before interest, taxes, depreciation, and amortization (EBITDA).

This alternative operating profit margin has been used by some analysts as a proxy for pretax cash flow. As noted earlier, we do not recommend the use of this series because it is a biased cash flow estimate.

### **Net Profit Margin**

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Net Sales}}$$

This ratio should be computed using sales and earnings from continuing operations, because our analysis seeks to derive insights about future expectations. Therefore, we do not want to consider earnings from discontinued operations, or the gain or loss from the sale of these operations. Likewise, you do not want to include any nonrecurring income or expenses.

### **Return on Total Invested Capital**

The return on total invested capital ratio (referred to as ROIC) relates the firm's earnings to all the invested capital involved in the enterprise (debt, preferred stock, and common stock). Therefore, the earnings figure used is the net income from continuing operations (before any dividends) plus the interest paid on debt. While there might be a tendency to equate total capital with total assets, most analysts differentiate due to the term invested capital, which does not include non-interest-bearing liabilities such as trade accounts payable, accrued expenses, income taxes payable, and deferred income taxes. In contrast, short-term debt such as bank borrowings and principal payments due on long-term debt are interest bearing and would be included as invested capital. Therefore, the ratio would be:

$$\text{Return on Total Invested Capital} = (\text{Net Income} + \text{Interest Expense}) / \text{Average Total Invested Capital}^*$$

\*Interest-bearing debt plus shareholders' equity

### **Return on Owner's Equity**

The return on owner's equity (ROE) ratio is extremely important to the owner of the enterprise (the common stockholder) because it indicates the rate of return that management has earned on

the capital provided by stockholders after accounting for payments to all other capital suppliers. If we consider all equity (including preferred stock), this return would equal:

$$\text{Return on Total Equity} = \text{Net Income} / \text{Average Total Equity}$$

If we are concerned only with owner's equity (the common stockholder's equity), the ratio would be:

$$\text{Return on Owner's Equity} = (\text{Net Income} - \text{Preferred Dividend}) / \text{Average Common Equity}$$

#### **iv. Risk Analysis**

Risk analysis examines the uncertainty of income flows for the total firm and for the individual sources of capital (that is, debt, preferred stock, and common stock). The typical approach examines the major factors that cause a firm's income flows to vary. More volatile income flows mean greater risk (uncertainty) facing the investor. The total risk of the firm has two internal components: business risk and financial risk. We first discuss the concept of business risk: how to measure it, what causes it, and how to measure its individual causes. Then we consider financial risk and the several ratios by which we measure it. Following this analysis of a firm's internal risk factors, we discuss an important external risk factor, external liquidity risk—that is, the ability to buy or sell the firm's stock in the secondary equity market.

##### **Business Risk**

Business risk is the uncertainty of operating income caused by the firm's industry. In turn, this uncertainty is due to the firm's variability of operating earnings caused by its products, customers, and the way it produces its products. Specifically, a firm's business risk is measured by the volatility of the firm's operating income over time. In turn, this volatility of operating earnings is due to two factors: (1) the volatility of the firm's sales over time, and (2) how the firm produces its products in terms of its mix of fixed and variable costs—that is, its operating leverage. Specifically, a firm's operating earnings vary over time because its sales and production costs vary. As an example, the earnings for a steel firm will probably vary more than those of a grocery chain because (1) over the business cycle, steel sales are more volatile than grocery sales; and (2) the steel firm's large fixed production costs (high operating leverage) make its operating earnings vary

more than its sales. Business risk is generally measured by the variability of the firm's operating income over time, which is measured by the standard deviation of the historical operating earnings series. The resulting ratio of the standard deviation of operating earnings divided by the average operating earnings is the coefficient of variation (CV) of operating earnings:

Business Risk =  $\int$  (Coefficient of Variation of Operating Earnings)

$$= \frac{\text{Standard Deviation of Operating Earnings (OE)}}{\text{Mean Operating Earnings}}$$

$$= \frac{\sqrt{\sum_{i=1}^n (OE_i - \overline{OE})^2 / n}}{\sum_{i=1}^n OE_i / n}$$

The CV of operating earnings allows comparisons between standardized measures of business risk for firms of different sizes. To compute the CV of operating earnings, you need a minimum of 5 years up to about 10 years. Less than 5 years is not very meaningful, and data more than 10 years old are typically out of date. Besides measuring overall business risk, it is very insightful to examine the two factors that contribute to the variability of operating earnings: sales variability and operating leverage.

### **Sales Variability**

Sales variability is the prime determinant of operating earnings variability. In turn, the variability of sales is mainly caused by a firm's industry and is largely outside the control of management. For example, sales for a firm in a cyclical industry, such as automobiles or steel, will be quite volatile over the business cycle compared to sales of a firm in a noncyclical industry, such as retail food or hospital supplies. Like operating earnings, the variability of a firm's sales is typically measured by the CV of sales during the most recent 5 to 10 years. The CV of sales equals the standard deviation of sales divided by the mean sales for the period.

Sales Volatility =  $f$  (Coefficient of Variation of Sales)

$$= \frac{\sqrt{\sum_{i=1}^n (S_i - \bar{S})^2 / n}}{\sum_{i=1}^n S_i / n}$$

### **Adjusting Volatility Measures for Growth**

Besides normalizing the standard deviation of EBIT and sales for size by computing the CV, it is also important to recognize that the standard deviation is measured relative to the mean value for the series—that is, it computes deviations from “expected value.” The problem arises for firms that experience significant growth that will create very large deviations from the mean for the series even if it is constant growth. The way to avoid this bias due to growth is to measure deviations from the growth path of the series.

### **Operating Leverage**

The variability of a firm’s operating earnings also depends on its mixture of production costs. Total production costs of a firm with no fixed production costs would vary directly with sales, and operating profits would be a constant proportion of sales. In such an example, the firm’s operating profit margin would be constant and its operating profits would have the same relative volatility as its sales. Realistically, firms always have some fixed production costs such as buildings, machinery, or relatively permanent personnel. Fixed production costs cause operating profits to vary more than sales over the business cycle. Specifically, during recessions, operating profits will decline by a larger percentage than sales, while during an economic expansion; operating profits will increase by a larger percentage than sales. The employment of fixed production costs is referred to as operating leverage. Clearly, greater operating leverage (caused by a higher proportion of fixed production costs) makes the operating earnings series more volatile relative to the sales series (see Lee, Finnerty, and Norton, 2006). This basic relationship between operating profit and sales leads us to measure operating leverage as the average of the annual percentage change in operating earnings relative to the percentage change in sales during a specified period as follows:

$$\text{Operating Leverage} = \frac{\sum_{i=1}^n \left| \frac{\% \Delta OE}{\% \Delta S} \right|}{n}$$

We compute the absolute value of the percentage changes because the two series can move in opposite directions. The direction of the change is not important, but the relative size of the change is relevant. By implication, the more volatile the operating earnings as compared to the volatility of sales, the greater the firm's operating leverage.

### **Financial Risk**

Financial risk is the additional uncertainty of returns to equity holders due to a firm's use of fixed financial obligation securities. This financial uncertainty is in addition to the firm's business risk. When a firm sells bonds to raise capital, the interest payments on this capital precede the computation of common stock earnings, and these interest payments are fixed contractual obligations. As with operating leverage, during an economic expansion, the net earnings available for common stock after the fixed interest payments will experience a larger percentage increase than operating earnings. In contrast, during a business decline, the earnings available to stockholders will decline by a larger percentage than operating earnings because of these fixed financial costs (i.e., interest payments). Notably, as a firm increases its relative debt financing with fixed contractual obligations, it increases its financial risk and the possibility of default and bankruptcy.

### **Relationship between Business Risk and Financial Risk**

A very important point to remember is that the acceptable level of financial risk for a firm depends on its business risk. If the firm has low business risk (i.e., stable operating earnings), investors are willing to accept higher financial risk. For example, retail food companies typically have stable operating earnings over time, which implies low business risk, and means that investors and bond-rating firms will allow the firms to have higher financial risk. In contrast, if a firm is in an industry that is subject to high business risk (i.e., it experiences high sales volatility and it has high operating leverage), such as steel, auto, and airline companies, an investor would

not want these firms to also have high financial risk. The two risks would compound, and the probability of bankruptcy could be substantial.

In our analysis, we employ three sets of financial ratios to measure financial risk, and all three sets should be considered. First, **balance sheet ratios** indicate the proportion of capital derived from debt securities to equity capital. Second, there are ratios that compare the earnings or cash flows available relative to the required fixed financial charges. The third set of ratios considers the cash flows available and relates these cash flows to the book value of the outstanding debt.

### **Consideration of Lease Obligations**

Many firms lease facilities (buildings) and equipment rather than borrow the funds and purchase the assets. For these firms, it is basically a lease or borrow decision since the lease contract is like a bond obligation. The accounting for the lease obligation depends on the type of lease. If it is a capital lease, the value of the asset and the lease obligation is included on the balance sheet as an asset and liability. If it is an operating lease, it is included in the footnotes but is not specifically included on the balance sheet. Because operating leases are a form of financing used extensively by retailers (such as Walgreens, Sears, and McDonald's) and airlines that tend to lease their aircraft, it is necessary to recognize this obligation. The appropriate treatment is to capitalize estimated future lease payments and include this capitalized lease value on the balance sheet as both an asset and a long-term liability.

### **Proportion of Debt (Balance Sheet) Ratios**

The proportion of debt ratios indicate what proportion of the firm's capital is derived from debt compared to other sources of capital, such as preferred stock, common stock, and retained earnings. A higher proportion of debt capital compared to equity capital makes earnings more volatile (i.e., more financial leverage) and increases the probability that a firm could default on the debt. Therefore, higher proportion of debt ratios indicates greater financial risk. The following are the major proportion of debt ratios used to measure financial risk.

#### **Debt-Equity Ratio**

The debt-equity ratio is:

Debt-Equity Ratio = Total Long-Term Debt / Total Equity

The debt figure includes all long-term fixed obligations, including subordinated convertible bonds. The equity typically is the book value of equity and includes preferred stock, common stock, and retained earnings. Some analysts prefer to exclude preferred stock and consider only common equity. Total equity is preferable if some of the firms being analyzed have preferred stock.

Notably, debt ratios can be computed with and without deferred taxes. Most balance sheets include an accumulated deferred tax figure. There is some controversy regarding whether these deferred taxes should be treated as a liability or as part of permanent capital. Some argue that if the deferred tax has accumulated because of the difference in accelerated and straight-line depreciation, this liability may never be paid. That is, as long as the firm continues to grow and add new assets, this total deferred tax account continues to grow. Alternatively, if the deferred tax account is caused by differences in the recognition of income on long-term contracts, there will be a reversal, and this liability must eventually be paid. As suggested by White, Sondhi, and Fried (2003), to resolve this question the analyst must determine the reason for the deferred tax account and examine its long-term trend.

A second consideration when computing debt ratios is the existence of operating leases. A firm with extensive leased facilities it is necessary to include an estimate of the present value of the lease payments as long-term debt. To show the effect of these two significant items on the financial risk, we define the ratios to include both of these factors, but they will be broken out to identify the effect of each of the components of total debt. Thus, the debt-equity ratio is:

$$\text{Debt-Equity Ratio} = \frac{\text{Total Long-Term Debt}}{\text{Total Equity}}$$
$$= \frac{\text{Noncurrent Liabilities} + \text{Deferred Taxes} + \text{PV of Lease Obligations}}{\text{Total Equity}}$$

### **Long-Term Debt-Total Capital Ratio**

The long-term debt-total capital ratio indicates the proportion of long-term capital derived from long-term debt capital. It is computed as:



$$\frac{\text{Long-Term Debt}}{\text{Total Capital}} = \frac{\text{Total Long-Term Debt}}{\text{Total Long-Term Capital}}$$

The total long-term debt values are the same as above. The total long-term capital would include all long-term debt, any preferred stock, and total equity.

### Earnings and Cash Flow Coverage Ratios

In addition to ratios that indicate the proportion of debt on the balance sheet, investors are very conscious of ratios that relate the flow of earnings or cash flows available to meet the required interest and lease payments. A higher ratio of available earnings or cash flow relative to fixed financial charges indicates lower financial risk.

**Interest Coverage Ratio** The standard interest coverage ratio is computed as:

$$\begin{aligned} \text{Interest Coverage} &= \frac{\text{Income before Interest and Taxes (EBIT)}}{\text{Debt Interest Charges}} \\ &= \frac{\text{Net Income} + \text{Income Taxes} + \text{Gross Interest Expense}}{\text{Gross Interest Expense}} \end{aligned}$$

This ratio indicates how many times the fixed interest charges are earned, based on the earnings available to pay these expenses.<sup>15</sup> Alternatively, 1 minus the reciprocal of the interest coverage ratio indicates how far earnings could decline before it would be impossible to pay the interest charges from current earnings. For example, a coverage ratio of 5 means that earnings could decline by 80 percent (1 minus 1/5), and the firm could still pay its fixed financial charges.

To consider the impact of the lease obligations on this ratio

$$\text{Fixed Financial Cost Coverage} = \frac{\text{Net Income} + \text{Income Taxes} + \text{Interest Expense} + \text{Implied Lease Interest}}{\text{Gross Interest Expense} + \text{Implied Lease Interest}}$$

These fixed financial cost coverage ratios show a substantially different picture than the coverage ratios that do not consider the impact of the lease obligations. These coverage ratios are clearly not large, but they are not unreasonable for a firm with very low business risk.

## Cash Flow Coverage Ratio

The motivation for this ratio is that a firm's earnings and cash flow typically will differ substantially. The cash flow value used is the cash flow from operating activities contained in the cash flow statement. As such, it includes depreciation expense, deferred taxes, and the impact of all working capital changes. Again, it is appropriate to specify the ratio in terms of total fixed financial costs including leases, as follows:

Cash Flow Coverage of Fixed Financial Cost =

$$\frac{\text{Net Cash Flow from Operating Activities} + \text{Interest Expense} + \text{Implied Lease Interest}}{\text{Interest Expense} + \text{Implied Lease Interest}}$$

We use the values given in the cash flow statement, since we are specifically interested in the cash flow effect.

## Cash Flow-Outstanding Debt Ratios

- **Cash Flow-Long-Term Debt Ratio**
- **Cash Flow-Total Debt Ratio**

### Cash Flow-Long-Term Debt Ratio

The cash flow-outstanding debt ratios are unique because they relate the flow of earnings plus noncash expenses to the stock of outstanding debt. These ratios have been significant variables in numerous studies concerned with predicting bankruptcies and bond ratings. The cash flow figure we use is the cash flow from operating activities. Obviously, the higher the percent of cash flow to long-term debt, the stronger the company—that is, the lower its financial risk.

$$\frac{\text{Cash Flow}}{\text{Long-Term Debt}} = \frac{\text{Cash Flow from Operating Activities}}{\text{Book Value of Long-Term Debt} + \text{Present Value of Lease Obligations}}$$

### Cash Flow-Total Debt Ratio

Investors also should consider the relationship of cash flow to total debt to check that a firm has not had a significant increase in its short-term borrowing.

$$\frac{\text{Cash Flow}}{\text{Total Debt}} = \frac{\text{Cash Flow from Operating Activities}}{\text{Total Long-Term Debt} + \text{Interest-Bearing Current Liabilities}}$$

## External Market Liquidity Risk

External market liquidity as the ability to buy or sell an asset quickly with little price change from a prior transaction. Investors should know the liquidity characteristics of the securities they currently own or may buy because liquidity can be important if they want to change the composition of their portfolios. Although the major determinants of market liquidity are reflected in market trading data, several internal corporate variables are good proxies for these market variables. The most important determinant of external market liquidity is the number of shares or the dollar value of shares traded (the dollar value adjusts for different price levels). More trading activity indicates a greater probability that one can find someone to take the other side of a desired transaction. A very good measure that is usually available is **trading turnover** (the percentage of outstanding shares traded during a period of time), which indicates relative trading activity. The specific measure of trading turnover is:

Trading Turnover = Number of Shares Traded during the Year / Average Number of Shares Outstanding during the Year

Another measure of market liquidity is the bid-ask spread, where a smaller spread indicates greater liquidity. In addition, certain corporate variables are correlated with these trading variables: 1. Total market value of common shares outstanding. 2. Number of security owners.

### 3.23.3. Growth Analysis

The analysis of sustainable growth potential examines ratios that indicate how fast a firm should grow. Analysis of a firm's growth potential is important for both lenders and owners. Owners know that the value of the firm depends on its future growth in earnings, cash flows, and dividends. Creditors also are interested in a firm's growth potential because the firm's future success is the major determinant of its ability to pay obligations, and the firm's future success is influenced by its growth. Some credit analysis ratios measure the book value of a firm's assets relative to its financial obligations, assuming that the firm can sell these assets to pay off the loan in case of default. Selling assets in a forced liquidation will typically yield only about 10 to 15 cents on the dollar. Currently, it is widely recognized that the more relevant analysis is the ability of the firm to pay off its obligations as an ongoing enterprise, which is impacted by its growth potential. This analysis of growth is also relevant to changes of bond ratings.

## Determinants of Growth

The growth of business, like the growth on any economic entity, including the aggregate economy, depends on:

1. The amount of resources retained and reinvested in the entity.
2. The rate of return earned on the reinvested funds.

The more a firm reinvests, the greater its potential for growth. Alternatively, for a given level of reinvestment, a firm will grow faster if it earns a higher rate of return on the funds reinvested. Therefore, the growth rate of equity earnings and cash flows is a function of two variables: (1) the percentage of net earnings retained (the firm's retention rate), and (2) the rate of return earned on the firm's equity capital (the firm's ROE), because when earnings are retained they become part of the firm's equity.

$$g = \text{Percentage of Earnings Retained} \times \text{Return on Equity} = RR \times ROE$$

Where:

$g$  = potential (i.e. sustainable) growth rate

$RR$  = the retention rate of earnings

$ROE$  = the firm's return on equity

The retention rate is a decision by the board of directors based on the investment opportunities available to the firm. Theory suggests that the firm should retain earnings and reinvest them as long as the expected rate of return on the investment exceeds the firm's cost of capital.

According to the DuPont System, a firm's ROE is a function of three components:

- Net Profit Margin
- Total Asset Turnover
- Financial Leverage (total assets/equity)

Therefore, a firm can increase its ROE by increasing its profit margin, by becoming more efficient (increasing its total asset turnover), or by increasing its financial leverage (and its financial risk).

The retention ratio can be calculated as of following

$$\text{Retention Rate} = 1 - (\text{Dividends Declared} / \text{Net Earnings})$$

## The Sustainable Growth Rate

The sustainable growth rate is the maximum growth rate a firm can achieve without external equity financing while maintaining a constant debt–equity ratio. It is the maximum rate of growth a firm can maintain without increasing its financial leverage.

$$\text{Sustainable growth rate} = \frac{\text{ROE} \times b}{1 - \text{ROE} \times b}$$

### 3.24 The Value of Financial Statement Analysis

Financial statements, by their nature, are backward-looking. They report the firm's assets, liabilities, and equity as of a certain (past) date; they report a firm's revenues, expenses, or cash flows over some (past) time period. An efficient capital market will have already incorporated this past information into security prices, so it may seem, at first glance, that analysis of a firm's financial statements and ratios is a waste of the analyst's time. The fact is, the opposite is true. Analysis of financial statements allows the analyst to gain knowledge of a firm's operating and financial strategy and structure. This, in turn, assists the analyst in determining the effects of future events on the firm's cash flows. Combining knowledge of the firm's operating and financial leverage, its strategy, and possible macro- and microeconomic scenarios is necessary to determine an appropriate market value for the firm's stock. Combining the analysis of historical data with potential future scenarios allows analysts to evaluate the risks facing the firm and then to develop an expected return and cash flow forecast based on these risks. The final outcome of the process is the determination of the firm's current intrinsic value based on expected cash flows, which is compared to the stock's current market price to determine your investment decision. The point is, the detailed analysis of the historical results ensures a better estimation of the expected cash flows and an appropriate discount rate, which in turn leads to a superior estimate of the intrinsic value of the firm.

### 3.25 Module End Questions

1. Explain the concept of portfolio management. What are the different management styles of portfolio management? Explain with example.
2. Briefly explain different asset classes in portfolio management.
3. What are the traditional approaches for portfolio management?
4. Distinguish Discretionary from Non-Discretionary Portfolio Management.
5. What are the Key Elements of Portfolio Management?
6. Define risk and return.
7. Briefly explain the concept of CAPM, its key assumptions and implication as asset pricing model.
8. What are the limitations of CAPM?
9. What is Arbitrage Pricing Theory? Explain.
10. What are the limitations of APT (Arbitrage Pricing Theory)?
11. Briefly explain the Fama-French Three-Factor Model.
12. In the context of capital market efficiency, discuss the implications of operational efficiency, allocation efficiency, and pricing efficiency for investors and the overall functioning of the financial markets. How do these types of efficiency impact investment decisions and the allocation of resources in the economy?
13. Write Short notes: Weak-form efficiency, Semi-strong form efficiency, Strong-form efficiency.
14. What are the key macroeconomic variables that are important for portfolio managers to consider when making investment decision?
15. Briefly explain different types of economic forecasting techniques.
16. How can industry analysis, specifically Porter's Five Forces Analysis, PEST Analysis, and SWOT Analysis, be used to evaluate the competitive dynamics and overall attractiveness of an industry? Discuss the key components and considerations involved in each of these industry analysis techniques and their implications for assessing a company's position within its industry.
17. When conducting a comprehensive company analysis, what are the key factors that need to be considered in evaluating both the internal and external aspects of a company?

Discuss how these factors contribute to gaining strategic insights and identifying areas for improvement within the organization.

18. How does a comprehensive company analysis play a crucial role in investment banking decision-making and why is it essential for investors and financial institutions?
19. How can financial statement analysis be used by investors and financial analysts to achieve specific objectives and purposes in evaluating a company's financial health and performance?
20. When conducting financial analysis, explain the differences between traditional cash flow, free cash flow, and EBITDA as measures used by analysts to assess the financial health and performance of a corporation.
21. How does common sizing of financial statements facilitate meaningful financial analysis, and what are the key benefits and limitations of using this technique to compare and interpret financial data across different periods or companies?
22. Write Short Note On:
  - a. Derivatives
  - b. Futures
  - c. Options
  - d. Call and Put Option
  - e. CAPM
  - f. APT
  - g. Ratio Analysis
  - h. SWOT Analysis.

## Module D: Corporate Finance

### 4.1 Introduction

For running the business, companies need an almost endless verity of real assets. Many of these assets are tangible, such as machinery, factories and offices; other are intangible, such as technical expertise, trademarks and patents. All of them need to be paid for. To obtain the necessary money, the company may use owners' capital or bank loan. For example, if the company borrows money from the bank, the bank has a financial claim to a stream of interest payments and to repayment of the principal. For smooth running of the company, real assets of a company need to produce enough cash to satisfy these claims. There are lots of sources and instruments to raise fund by a company such as shares of stock, bonds, lease financing, and so on. In this chapter, we will discuss some ideas and instruments of fund-raising opportunities for a company or corporation.

### 4.2 Debt and Equity Instruments

An individual, government entity or business entity need fund for day-to-day activities or expanded activities or operations. Those individuals or entities may use equity or debt instruments to raise fund. A debt instrument is a tool for raising capital or fund, which must be repaid over time. Credit Card, all type of loans (Personal Loan, Home Loan, Short Term Loan, Long Term Loan etc.), lines of credit, and bonds and debentures can all be types of debt instruments. Debt instruments is a binding obligation for borrower to the lender or investor of fund to repay that lender or investor in accordance with terms of a contract. Debt contract details the provision of the deal including terms and conditions, rate of interest, schedule of repayment of interest and principal.

Equity instrument represents an ownership interest in an entity by its shareholder who collectively own this entity or company. The shareholders enjoy the rewards as well as bear the risks of ownership. They enjoy certain rights, such as rights to get income, rights to control (voting rights), pre-emptive right, and rights to get information and some rights in liquidation. However, their liability is limited to their capital contributions only and legal status of the entity is separated from its shareholders. Common Shares, Preference Shares, Share Premium and Retain Earnings can be treated as equity instruments.

### 4.3 Understanding Capital Structure of an Entity

Earlier we discussed, the two principal sources of loan-term finance for a business entity are debt and equity capital. Company may use full portion of equity or combination of debt and equity for its operations



and growth. Capital structure is the particular combination of debt and equity used by a company to finance its overall operations and growth.

What should be the proportion of equity and debt in capital structure of a company? This is a very difficult as well as debatable question. Answer of this question must be based on an understanding of the ratio of debt to equity which provides insight into how risky a company's borrowing practices are. Usually, a company that is heavily financed by debt has a more aggressive capital structure and therefore poses a greater risk to investors. Equity Capital is more expensive than debt, when interest rates are low. However, unlike debt, equity does not need to be paid back by a fixed schedule.

Companies that use more debt than equity to finance their assets and fund operating activities have a high leverage ratio and an aggressive capital structure. Companies that pay for assets with more equity than debt have a low leverage ratio and a conservative capital structure. So, it is said, a high leverage ratio and an aggressive capital structure can also lead to higher growth rates, whereas a conservative capital structure can lead to lower growth.

#### 4.4 Project Finance

Project finance is the funding of long-term infrastructure, industrial projects, and public services using a fixed financial structure. Project finance can be generated from debt fund or equity fund. Basically, the debt and equity that are used to finance the project are paid back from the cash flow generated by the projects. So, costs and benefits of the project is main concern for assessing viability of that project through various aspects. Viability of a project is analyzed in management aspect, economic aspect, social aspect, environmental aspect and financial aspect. If a project is viable in all aspects, then the project finance may be approved and disbursed, then the project may be started.

Project finance may be approved for a small project, like a Home Loan for constructing a building or it may be for a big project like constructing Metro-rail or Padma Bridge.

#### 4.5 Net Present Value (NPV)

Net Present Value (NPV) of a project is equal to the sum of the present value of all future cash inflows and outflows associated with a project or investment, discount all those future cash flows to the present day, and then add them together. Symbolically,

$$NPV = \frac{CF_0}{(1+k)^0} + \frac{CF_1}{(1+k)^1} + \dots + \frac{CF_n}{(1+k)^n} = \sum_{t=0}^n \left( \frac{CF_t}{(1+k)^t} \right)$$

Where,

NPV = net present value

CF<sub>t</sub> = cash flow occurring at the end of year t (t= 0, 1,2.....n)

n = life of the project

k = discount rate

The time value of money is represented in the NPV formula by the discount rate, which might be an expected rate for a project based on a project's cost of capital or opportunity cost. So the net present value represents the net benefit over and above the compensation for time and risk. Hence the decision rule with the NPV criteria is: accept the project if the NPV is positive and reject the project if the NPV is negative.

#### 4.6 Internal Rate of Return (IRR)

Internal Rate of Return (IRR) of a project is the discount rate which makes its net present value equal to zero. In equation,

NPV = 0

$$= \frac{CF_0}{(1+k)^0} + \frac{CF_1}{(1+k)^1} + \dots + \frac{CF_n}{(1+k)^n} = \sum_{t=0}^n \left( \frac{CF_t}{(1+k)^t} \right) = 0$$

CF<sub>t</sub> = Cash Flow at the End of year t

r = Discount Rate

n = Life of the Project

In the net present value calculation, we assume that the discount rate (cost of capital or opportunity cost) is known and determine the net present value of the project. In the internal rate of return calculation, we set the net present value equal to zero and determined the discount rate or IRR.

#### 4.7 Structured Export Finance

Structured Export Finance is a transactional funding solution to allow an exporter to acquire goods or materials for producing products for an importer that confirmed through purchase order.

The advantage of Structured Export Finance is that gives an exporter the ability to source and sell goods without necessarily having the cash or capital to procure the products from its supplier. In a typical Structured Export Finance transaction, finance is provided by buying a trade financier to the exporter either by making a payment to supplier of exporter, buying the goods for the exporter, guaranteeing payment to the supplier or lending money to the exporter to pay the supplier's payment. Back to Back L/C, Packing Credit, Bill Discounting etc. are best suited example of Structured Export Finance. The transaction is structured in a way as the proceeds of export items are applied to repay the loan and export proceeds are usually assigned to the trade financier.

#### **4.8 Asset-Backed Securitization (ABS)**

An Asset-backed Security (ABS) is a type of financial investment that is collateralized by an underlying pool of assets- usually ones that generate a cash flow from debt, such as home loans, auto loans, credit card receivables, leases and other receivables. A Special Purpose Vehicles (SPV) is created for pooling assets into an ABS through a process that is called Securitization. Suppose, a home loan lender has loan outstanding portfolio of Tk.1,000 Crore. They want to invest in SME market for higher return in a specific area but they have no fund at this moment. They may create a SPV backed by their home loan portfolio and sell this SPV among a group of people or institutes. This SPV is paying income at a fixed rate for a set amount of time, until its maturity. In some market, these SVP is traded in secondary market like share or bond. For income-oriented investors, asset backed securities may be a better alternative than other debt instruments, like bonds or debenture.

#### **4.9 Mortgage-Backed Securities (MBS)**

A Mortgage-backed Securities is an investment product which is secured by a mortgage or collection of mortgages. It is also an asset-backed securities but it is a variation of asset-backed securities that are formed by pooling together mortgages exclusively. The investor who buys a mortgage-backed security is essentially lending money to home loan borrowers. Mortgage-backed securities (MBS) turn a bank into an intermediary between the homebuyer and the investment industry. The bank handles the loans and then sells them at a discount rate to be packaged as MBSs to investors as a type of collateralized bond. For the investor, an MBS is as safe as the mortgage loans that back it up.

## 4.10 Sustainable Bonds

Sustainable bonds, also known as green bonds, social bonds, or sustainability bonds, are financial instruments that are specifically designed to fund projects with positive environmental or social impacts. These bonds are issued by governments, municipalities, corporations, and other entities seeking to raise capital for projects that promote sustainable development.

Here are some key details about sustainable bonds:

### 4.10.1 Purposes of Sustainable Bond

The primary purpose of sustainable bonds is to finance projects that address environmental or social challenges, such as renewable energy generation, energy efficiency improvements, clean transportation, affordable housing, access to education or healthcare, and initiatives that promote gender equality or social inclusion.

### 4.10.2 Use of Proceeds

The proceeds raised from sustainable bond issuances are allocated exclusively to finance or refinance eligible projects. Issuers must provide a clear framework or guidelines outlining how the funds will be used to promote sustainability and achieve specific environmental or social objectives.

### 4.10.3 Certification and Reporting

To ensure transparency and credibility, many sustainable bonds are certified by independent third-party organizations. These certifications, such as the Climate Bonds Initiative's Climate Bond Standard or the International Capital Market Association's (ICMA) Green Bond Principles, provide investors with assurance that the bonds meet specific environmental or social criteria. Issuers are also expected to provide regular reporting on the use and impact of the proceeds.

### 4.10.4 Types of Sustainable Bonds

There are different types of sustainable bonds, each targeting specific sustainability objectives:

- i. **Green Bonds:** These bonds finance projects with clear environmental benefits, such as renewable energy installations, energy-efficient buildings, sustainable agriculture, waste management, and clean transportation infrastructure.

- ii. **Social Bonds:** Social bonds raise funds for projects that address social issues, including affordable housing, healthcare facilities, education programs, job creation, and initiatives promoting social equality and inclusion.
- iii. **Sustainability/Transition Bonds:** These bonds fund projects that address both environmental and social aspects, supporting a broader sustainable development agenda. They may finance projects related to renewable energy, energy efficiency, social infrastructure, or sustainable agriculture.

#### 4.10.5 Growing Market of Sustainable Bonds

The market for sustainable bonds has experienced significant growth in recent years as investors increasingly focus on environmental, social, and governance (ESG) factors. According to various reports, the issuance of sustainable bonds has reached record levels, with governments, corporations, and municipalities from around the world participating in this market.

**Benefits for Issuers:** Sustainable bonds provide issuers with several benefits. They attract a broader base of investors, including those with specific ESG investment mandates. Additionally, these bonds can enhance an issuer's reputation by demonstrating a commitment to sustainable practices, leading to improved access to capital and potentially lower borrowing costs.

**Benefits for Investors:** Sustainable bonds offer investors an opportunity to align their investments with their environmental or social values. These bonds provide a measurable impact by financing projects that contribute to a more sustainable future. They can also diversify investment portfolios and mitigate risks associated with climate change and social issues.

Sustainable bonds play a crucial role in mobilizing capital for sustainable development and accelerating the transition to a more sustainable and inclusive global economy. They serve as a financial mechanism to support projects that address pressing environmental and social challenges while generating attractive investment opportunities.

#### 4.11 Sukuk Bond (Islamic Financial Instruments)

A sukuk bond is an Islamic financial instrument that represents ownership or a proportional interest in an underlying asset or business activity. It is structured to comply with Islamic

principles, which prohibit the charging or payment of interest (riba). Instead of paying interest, sukuk bonds provide returns to investors through the sharing of profits or cash flows generated by the underlying asset.

The word 'Sukuk' refers to a financial instrument governed by Islamic Shariah law. Islamic Sukuk Bonds are a new investment vehicle for different categories of investors in Bangladesh. The word 'Sukuk' refers to a financial instrument governed by Islamic Shariah law. Many developed markets have been utilizing sukuk bonds for financing because of its unique features and Bangladesh has now also begun launching products under this alternate investment tool so it is important for investors and issuers to understand how Sukuk works.

#### 4.11.1 Key features of Sukuk Bonds

**Asset-Backed Sukuk:** Sukuk bonds are typically backed by tangible assets, such as real estate, infrastructure projects, or business ventures. Investors in sukuk hold beneficial ownership of the underlying assets.

**Sharia-compliant Structure:** Sukuk bonds are structured to adhere to Islamic principles, such as the prohibition of interest. The structure often involves the creation of a special purpose vehicle (SPV) that holds the assets and issues the sukuk to investors.

**Profit and Risk Sharing:** Instead of earning interest, sukuk investors participate in the profits and risks associated with the underlying assets. The returns may be based on a predetermined profit-sharing ratio or a share of cash flows generated by the assets.

**Tradability:** Sukuk can be traded on secondary markets, allowing investors to buy or sell their ownership interests. However, it's important to note that the underlying assets may have certain restrictions or conditions on their transfer.

#### 4.11.2 Types of Sukuk

There are different types of sukuk structures, including Mudaraba, Musharaka, Ijarah, and Murabaha etc. Each structure has its own characteristics and contractual arrangements, providing investors with various options.

Sukuk bonds have gained popularity in Islamic finance as an alternative to conventional interest-bearing bonds. They offer a way for investors to participate in economic activities while adhering to Islamic principles. Governments, corporations, and financial institutions can issue sukuk to raise capital for various projects, including infrastructure development and business expansion, while attracting a broader range of investors from Islamic markets.

Bangladesh issued first sovereign investment Sukuk for raising funds aiming at implementing a project titled 'Safe Water Supply for the Whole Country' on December 28, 2020. The maiden Sukuk was over-subscribed by nearly four times, signaling that investing in such Sukuk is a new potential avenue for the financial markets of Bangladesh.

#### 4.12 Zero Coupon Bond (ZCB)

ZCB stands for Zero Coupon Bond. A zero coupon bond is a type of bond that does not pay periodic interest (coupon payments) to the bondholder. Instead, it is issued at a discount to its face value and provides the investor with a return through the appreciation of the bond's price over time. The bond is initially sold at a discount, and upon maturity, the investor receives the full face value of the bond.

##### 4.12.1 Key features of Zero Coupon Bonds

**No Coupon Payments:** Unlike traditional bonds, zero coupon bonds do not make regular interest payments to investors. Instead, they are issued at a discounted price and provide a return when they reach maturity.

**Discounted Issuance:** Zero coupon bonds are typically issued at a price below their face value, reflecting the absence of coupon payments. The discount represents the interest that will accrue over the life of the bond.

**Maturity Date:** Zero coupon bonds have a predetermined maturity date, at which point the bondholder receives the full face value of the bond. The maturity period can range from a few months to several years, depending on the terms of the bond.

**Capital Appreciation:** The return on zero coupon bonds comes from the appreciation of the bond's price over time. As the bond approaches maturity, its value gradually increases, reflecting the discounted issuance price converging towards the face value.

**Tax Implications:** Even though zero coupon bonds do not provide regular interest payments, investors may still have tax obligations on the accrued interest. The imputed interest is generally subject to taxation each year, even though the investor does not receive the cash flows until maturity.

Zero coupon bonds are often used by investors seeking long-term capital appreciation or those with specific financial goals set for a particular future date. They can also be utilized in financial planning strategies, estate planning, or retirement planning. However, since they do not provide regular income, investors should carefully consider their liquidity needs and overall investment objectives before investing in zero coupon bonds.

#### 4.13 Tire II Bonds

Tier II bonds are a type of debt instrument issued by financial institutions, particularly banks, to raise capital. They are considered a form of subordinated debt, meaning they have a lower priority of repayment compared to other forms of debt in the event of the issuer's bankruptcy or liquidation.

##### 4.13.1 Key features and characteristics of Tier II Bonds

- i. **Capital Adequacy Requirements:** Tier II bonds are issued to meet regulatory capital requirements imposed by banking authorities, such as the Basel III framework. These requirements mandate that banks maintain a certain level of capital to absorb potential losses and ensure the stability of the financial system.
- ii. **Subordinated Ranking:** Tier II bonds rank below Tier I capital (common equity and preferred shares) in the hierarchy of repayment. In case of a bank's default or liquidation, Tier II bondholders will be paid only after Tier I capital and other senior debt holders are fully satisfied.
- iii. **Fixed Maturity:** Tier II bonds have a fixed maturity date, typically ranging from 5 to 15 years. At maturity, the issuer repays the principal amount to bondholders.
- iv. **Interest Payments:** Tier II bonds pay a fixed or floating interest rate, typically semi-annually or annually, throughout the bond's tenure. The interest rate may be fixed for the entire term or periodically reset based on a benchmark rate plus a spread.



- v. **Call option:** Tier II bonds may include a call option, allowing the issuer to redeem the bonds before their maturity date. This feature provides flexibility to the issuing bank in managing its capital structure.
- vi. **Non-convertible:** Unlike Tier I bonds, Tier II bonds are typically non-convertible, meaning they cannot be converted into equity shares of the issuing bank.
- vii. **Regulatory restrictions:** Tier II bonds often come with specific regulatory requirements and restrictions. For example, regulatory authorities may impose limits on the amount of Tier II capital that can be counted towards a bank's capital adequacy ratios.

Investors who purchase Tier II bonds are primarily seeking fixed-income investments with relatively higher yields compared to other debt securities. However, it's important to note that Tier II bonds carry a higher level of risk compared to senior debt, as bondholders have a lower priority of repayment in case of default. Therefore, investors should carefully assess the creditworthiness of the issuing institution before investing in Tier II bonds.

#### 4.14 Corporate Advisory Services

Corporate Advisory Service is an umbrella term that encompasses specialized advices rendered to corporate houses by professional advisers such as accountants, investment bankers, law practitioners and host of similar service providers. Corporate Advisory services are spread over a vent spectrum of corporate activity related to starting of a business to wind-up of that business. Some firms provide corporate advisory services in the form of complete solution; these services can be taxation advice, legal vetting, statutory compliance work, evaluating business proposal etc. The essence of corporate advisory services for investment related to Business Advisory, Project Advisory and Merger & Acquisition advisory.

#### 4.15 Merger

A merger is an agreement that unites two existing companies into one new company. On the other term, a merger is the voluntary fusion of two companies on broadly equal terms into one new legal entity. The firms that agree to merge are roughly equal in terms of size, customers, and scale of operations. Mergers are most commonly done to gain market share, reduce costs of operations, expand to new territories, unite common products, grow revenues, and increases profits, which ultimate objective to grow shareholder's benefits. After a merger, shares of the new company are distributed to existing shareholders of both original business as per pre-agreed ratio. There are many types of merger such as conglomerate, congeneric, market extension, horizontal, vertical etc. In recently, Summit Uttaranchal Power Company,

Summit Purbanchol Power Company and Summit Narayangonj Power Company merged with Summit Power Limited.

#### 4.16 Acquisition

An acquisition is a business combination when one company (acquire) purchases most or all shares of another company (target) to gain control of that company. If a firm buys more than 50% shares of Target Company, it effectively gains control of that company. Acquisition may occur friendly with the approval of the target company or it may be hostile takeover without approval of Target Company. Like Merger, companies acquire other companies for various reasons, such as economies of scale, diversification, greater market share, increased synergy, cost reduction, or new niche offerings etc. In the early of this century, Standard Chartered Bank acquired Assets, Liability and Operation of ANZ Grindlays Bank in Asia Pacific regions. Acquisitions are closely related to mergers and takeovers.

#### 4.17 Merger and Acquisition in Bangladesh

Between 2018 and 2019, Bangladesh experienced some of the largest FDIs in the country's history through acquisition. The US\$1.47 billion (equivalent to 124 billion Bangladesh taka) acquisition of Dhaka Tobacco by Japan Tobacco Inc was at the forefront of notable M&A activities. Bangladesh has witnessed some of the largest intra-group, private and public M&A deals in the country's history in 2020 despite the worldwide Covid-19 pandemic. This includes Unilever's acquisition of GSK Bangladesh, with a record trade value of 20.2075 billion Bangladeshi taka, and Akij Group's acquisition of Janata Jute Mills for approximately 7.00 billion Bangladesh taka.

Mergers and acquisitions in Bangladesh are governed by a combination of some commercial laws and industry-specific laws. The key set of laws that govern M&A transactions in Bangladesh include the Contract Act, 1872, the Companies Act, 1994 and the Competition Act, 2012. Additionally, public limited companies including listed companies are required to ensure compliance with some Securities and Exchange related Laws and Rules including the Securities and Exchange Commission (Substantial Acquisition of Shares and Takeover) Rules, 2018.

So far, there has not been any specific law or regulation that can regulate M&A transactions and it can fairly be said that the laws and regulations in relation to M&A are rather scattered in Bangladesh. Guidance in relation to M&A is a much-needed initiative that should be undertaken by the government as soon as possible. Until then, comprehensive due diligence, legal and financial, is utmost important before embarking on a deal.

#### 4.17 Leveraged Buyouts

A Leveraged Buyout (LBO) occurs when the buyer of a company takes on a significant amount of debt as part of the purchase. The buyer will use assets from the purchased company as collateral and plan to pay off the debt using future cash flow. In a leveraged buyout, the buyer takes a controlling interest in the company. This lets the buyer set new goals for the business and restructure the management team to achieve them.

Two common forms of leveraged buyout are:

- **Management Buyout (MBO)**- when a company's senior management team purchases all or part of the business.
- **Buy-in-management buyout (BIMBO)**- when external buyers partner with senior management to purchase the business.

#### 4.18 Module End Questions

1. How do you differentiate between Debt Instrument and Equity Instrument in Capital Market?
2. Briefly discuss the Capital Structure of an entity. How does capital structure of entity maximize shareholders wealth?
3. What is capital Budgeting? Which tools are used in Capital Budgeting?
4. Is there any difference between Sukuk and Conventional Bond? Is Sukuk a debt instrument or an equity instrument? Explain your opinion with considering characteristics of Sukuk?
5. Describe key features of Sukuk. Write on various types of Sukuk.
6. How Zero Coupon Bond differ from Coupon Bearing Bond?
7. Describe status of legal frame work of Merger and Acquisition in Bangladesh.
8. Describe various features of Zero Coupon Bond.
9. What is Sustainable Bond? How could its impact positively in socially or environmentally?

Write Short Note on

10. Write Short Note on:

- a) Pay Back Period
- b) NPV
- c) IRR
- d) Structure Export Finance
- e) Zero Coupon Bond (ZCB)
- f) Sustainable Bond
- g) Tire II Bonds
- h) Asset-Backed Securitization (ABS)
- i) Mortgage-Based Securities (MBS)
- j) Corporate Advisory Services
- k) Mergers and Acquisitions
- l) Leverage Buyouts.

## Module E: Investment Banking Structure in Bangladesh

### 5.1 Introduction

Capital Market is one of the key determinants of economic development through the mobilization of dispersed resources and their allocation to appropriate areas. The liquidity, solvency, and efficiency of a country's economic system can be better ensured by a well-organized capital market. It acts as an intermediary between investors and companies seeking additional capital financing. The securities market allows listed companies to raise additional capital quickly and cheaply because they enjoy a good reputation. A dynamic and liquid securities market encourages increased savings by offering attractive and rewarding securities in terms of higher yield, systematic risk, and easy cash conversion option. As a result, a dynamic capital market is likely to signal of a robust economy.

Capital Markets deal with long-term government securities, corporate bonds, municipal bonds, equities issued by companies and local & state governments, and mortgages. A capital market is a market for debt and equity securities, where businesses and governments can raise long-term funds. It is defined as a market in which money is lent for periods longer than one year, because obtaining short-term funds takes place in other markets, for example, the money market. The capital market includes the stock market (equity securities) and the bond market (debt).

Capital Markets include primary and secondary markets. The primary markets are those where new issues of shares and bonds are sold by subscription to investors. Secondary markets are the places where existing securities are sold and purchased from one investor or dealer to another, usually on a stock exchange, over-the-counter or elsewhere.

Industry and commerce, as well as government and local authorities, mobilizing capital in the capital market, which performs several important functions in the economic development process. The most important of these is the promotion of savings and investment and the efficient allocation of funds between competing uses.

Capital market participants are numerous. They include commercial banks, savings and loan associations, savings banks, banks, financial corporations, investment bankers, leasing companies, investment banks, merchant banks, investment companies, investment banking, investment clubs, asset management companies and pension funds, stock exchanges, security companies, underwriters, portfolio managers and insurance companies and the individual investors. In nut shell, every activities related to fund raising and investment broadly called Investment Banking.

## **5.2 Structure and Legal Framework of Capital Market in Bangladesh**

Capital Market activities and investment decisions are guided, shaped, and circumscribed by a fairly comprehensive regulatory framework which seeks to (i) define avenues of investment available to business firms, (ii) induce investment along certain lines by providing incentives, concession, reliefs , and (iii) impose restrictions on the ways and means by which business firms can raise and deploy funds. On the other hand, Legal Framework provides incentives and restriction for the investors. Our Capital Market also runs and operates with various Laws, Rules and Regulations framed and formulated time to time. Here, we will discussed structure, framework and various laws and regulations related with our Capital Market.

### **5.2.1 Bangladesh Securities and Exchange Commission (BSEC)**

Bangladesh Securities and Exchange Commission (BSEC) is the watchdog regulator of capital market of Bangladesh. The Bangladesh Securities and Exchange Commission (BSEC) was establish on 8<sup>th</sup> June, 1993 under the provision of Bangladesh Securities and Exchange Commission Act, 1993. The purpose of the Commission is to protect the interest of the investors in securities, develop the securities market and make rules for matters connected therewith or ancillary thereto. The Commission consists of the Chairman and four Commissioners who are appointed for full time by the Government. The Chairman acts as the Chief Executive of the Commission. The Commission is a statutory body and attached to the Ministry of Finance. BSEC is an 'A' category member of International Organization of Securities Commission (IOSCO) since 22 December 2013.

The Commission's main functions are:

- Regulating the business of the Stock Exchanges or any other securities market.
- Registering and regulating the business of stock-brokers, sub-brokers, share transfer agents, merchant bankers and managers of issues, trustee of trust deeds, registrar of an

issue, underwriters, portfolio managers, investment advisers and other intermediaries in the securities market.

- Registering, monitoring and regulating of collective investment scheme including all forms of mutual funds.
- Monitoring and regulating all authorized self-regulatory organizations in the securities market.
- Prohibiting fraudulent and unfair trade practices relating to securities trading in any securities market.
- Promoting investors' education and providing training for intermediaries of the securities market.
- Prohibiting insider trading in securities.
- Regulating the substantial acquisition of shares and take-over of companies.
- Undertaking investigation and inspection, inquiries and audit of any issuer or dealer of securities, the Stock Exchanges and intermediaries and any self-regulatory organization in the securities market.
- Conducting research and publishing information.

#### 5.2.2 Dhaka Stock Exchange (DSE)

The Dhaka Stock Exchange was established on April 28, 1954, as the East Pakistan Stock Exchange Association Limited after the realization of the necessity of establishing such bourse by the then Government in 1952. In 1956, the formal trading of the bourse began. And it was renamed as East Pakistan Stock Exchange Limited on June 23, 1962. And the name of the stock exchange was once again changed to Dacca Stock Exchange Limited on May 13, 1964.

If we go back to the beginning, we learned that the Calcutta Stock Exchange prohibited trading in Pakistani stocks and shares. Shortly thereafter, the province's Industrial Advisory Council created an organizing committee for the formation of a stock exchange in East Pakistan. The then central Government's proposal to open a branch in Karachi by the Karachi Stock Exchange was not welcomed by the meeting, which estimated that East Pakistan should have an independent stock

exchange. It has been suggested that the Dhaka Chamber of Commerce and Industry should approach its members for the purchase of membership cards. The location of the exchange was supposed to be Dhaka, Narayanganj or Chittagong. An organizing committee was appointed composed of commercial and industrial personalities of the province with Mr. Mehdi Ispahani as an animator to organize the exchange.

It was also decided that the subscription would be RS. 2000 and the subscription rate RS 15 per month. The Exchange was to have no more than 150 members. A meeting of the promoters took place in the chamber on 03.09.1953. It was decided to appoint Or Dignam & Co., lawyers to draft Memorandum and Articles of Exchange of the Stock Exchange based on stock exchange rules existing in other countries and taking into account local conditions.

In 1958 he was moved to Dhaka and started working in the Narayanganj House Building at Motijheel Commercial Area. On October 1, 1957, the Stock Exchange bought from the government a piece of land at 9F Motijheel C/A and transferred the stock market to its own location in 1959. The service on the stock market continued uninterrupted until 1971. The trading was suspended during the war of liberation and resumed in 1976 with the change of economic policy of the government. Since then, the stock market has not looked back and has continued its journey contributing to the nation's development activities. On August 10, 1998, the DSE launched an automated real-time hands-on trading system over the local area network (LAN) and wide area network (WAN). DSE upgraded its automated trading system on August 21, 2005. The Central Depository System (CDS) for electronic trading of stocks started in the DSE. Later, the Exchange became a Full Depository Participant (CD) of the CDBL to facilitate the trading of its non-PD members. Government Bonds debuted on the DSE on January 1, 2005.

The SEC has approved the Dhaka Stock Exchange Direct Dedication Regulations, 2006, as proposed by the DSE, which has paved the way for the direct registration of large profitable Companies to the DSE. A new registration regulation is also in the final stages to meet the changing needs of the economy. Following the introduction of automation on August 21, 2005, DSE brokers started trading securities of all over the country. Thus, during its 70-year journey, the Dhaka Stock Exchange made a significant contribution to Bangladesh's economy by providing a unique venue to increase investment by members of the public.



## **Owners of DSE**

Members are the owners of DSE. DSE has 238 members who are also shareholders of the Exchange. Members are authorized by the SEC to transact business as a broker or dealer. There is a provision for 500 members. After demutualization, the Chinese Consortium of Shenzhen Stock Exchange and Shanghai Stock Exchange is the strategic partner of DSE and holds 25% Shares of DSE.

## **Functions of DSE**

- Listing of companies (according to the regulations of registration).
- Provide the market for trading of listed securities.
- Publication of the daily and monthly index etc.
- Follow-up of the activities of listed companies(in accordance with the registration regulations).
- Provide automated trading based on screen of listed securities.
- Settlement of Transactions (in accordance with the Settlement of Transactions Regulations).
- Share donations/ granting of approval to the transaction/ transfer of shares outside the trading system of the stock exchange (in accordance with the regulations on listings 42).
- Administration and control of the market as primary regulator.
- Market Surveillance.
- Publication of the monthly magazine.
- Handling of the Grievance of the investor (Disposition of the complaint by laws 1997).
- Investor Protection Fund (in accordance with the 1999 Investor Protection Fund Regulations).
- The Announcement of price sensitive or other information on listed companies in online.
- The clearing and settlement module manages trade from the point of entry into the settlement pool database until it has been delivered and settled and removed from the settlement pool. It consists of three major business processes.

## **Divisions of DSE**

Basically, there are six divisions of Dhaka Stock Exchange Ltd. The divisions are:

- Information and Communication Technologies (ICT) Division,
- Finance and Accounts Division,
- Human Resources and Administration Division,
- Market Development Division,
- Business Division of the company,
- Regulatory Affairs Division

There are 35 departments in these six divisions. Among them, some large departments and their functions are as follows:

### **Market-oriented Targets**

- Increase the market capitalization to 30 billion US dollars.
- The ratio of market capitalization to GDP should be increased to 35%.
- The volume of daily exchanges will be raised to BDT 2000 core.
- To develop trading facilities at the door of investors.
- By facilitating the process of introducing the book building method, healthy and good companies should be encouraged to list on the stock exchange.
- Financial presentation to broaden and deepen the capital market.
- Bond market to be activated to increase the depth and size of the capital market.

### **Institutional Internal Visions**

- Create a trained and qualified human resources team for the DSE who will assume the responsibilities and who will be in charge of all kinds of tasks to discharge with efficiency and professionalism.
- Advanced technology in IT infrastructure to facilitate seamlessly automated trading activities, which will ensure accountability and visible transparency.
- Establish an effective national online clearinghouse; to bring more transparency to trade in financial instruments and to reduce delays.
- Revise the necessary rules and regulations (in particular the 1998 regulations and the statutes of the CDBL).

### **Protection of Investor Interests**

- Focus on time to protect investors' interest in bringing dynamism and more dynamic market participants.
- Focus more on the investor education program to educate them properly.
- Dissemination of information and active strategies to reduce the degree and size of rumors.

### **Types of Market in DSE**

There are four types of market in DSE that are described below,

#### **Public Market**

The public market is the market where the instruments (shares, bonds, etc.) are traded at normal volume. This is the general market where the trading of the investor's securities and the place where the new investor will likely start trading in his desired actions.

#### **Spot Market**

In this market, the instruments are traded in normal volume (as part of a securities transaction, if any) without the settlement process as the transactions and payments occur at the same time.

#### **Block Market**

The block market is the market where instruments are traded wholesale (very large volumes). All large transaction volumes are in the block market, where the minimum limit has been set at Tk. 5 lakh, i.e. transactions on the block market, must exceed Tk. 5 lakh to be a valid block trade. Bulk trades are not self-matched but rather open to trading between participants who can decide on a price that differs from the current market value.

#### **SME Market**

Small Capital Platform is a dedicated growth market for small and medium sized companies. Small Capital Platform's regulatory structure, tailored to the needs of growing companies, allows businesses to cost-effectively raise capital at admission and throughout

their life on Small Capital Platform. Small and Medium Enterprises (SME) having a Paid-up Capital between Tk.5.00 Crore and Tk.30.00 Crore could raise Fund under this Platform.

### **5.2.3 Chittagong Stock Exchange (CSE)**

The Chittagong Stock Exchange (CSE) began its journey on 10th October of 1995 from Chittagong City through the cry-out trading system with the promise to create a state-of-the art bourse in the country.

Founder members of the proposed Chittagong Stock Exchange approached the Bangladesh Government in January 1995 and obtained the permission of the Securities and Exchange Commission on February 12, 1995 for establishing the country's second stock exchange. The Exchange comprised of 13 (thirteen) Board members, presided by its Chairman and run by an independent secretariat from the very first day of its inception.

CSE was formally opened by then Honorable Prime Minister of Bangladesh on November 4, 1995. Chittagong Stock Exchange is one of the highly automated and sophisticated bourses of Bangladesh. CSE commenced its operation in 1995 and it was converted into a demutualized Exchange in 2013.

#### **Legal Basis of CSE**

After demutualization, the Chittagong Stock Exchange Ltd (CSE) is registered as a Public Limited Company under Companies Act, 1994. The Board, headed by an elected Chairman from the Independent Directors, consist of 13 members comprising 7 Independent Directors, 5 Shareholder Directors including 1 Strategic Investor and the Managing Director.

#### **Activities and Operation of CSE**

CSE activities are regulated by its own Memorandum & Articles of Association, regulations and by laws along with the rules, order and notifications of the Bangladesh Securities and Exchange Commission (BSEC). However, the role, activities and operations of CSE are same as DSE.

#### 5.2.4 Central Depository Bangladesh Limited (CDBL)

Central Depository Bangladesh Limited (CDBL) was incorporated on 20th August 2000 sponsored by the country's Nationalized Commercial Banks (NCBs), Investment Corporation of Bangladesh (ICB), Private Commercial Banks (PCBs), Foreign Banks, Merchant Banks, Publicly listed Companies, Insurance Companies and Dhaka & Chittagong Stock Exchanges with the collaboration of the Asian Development Bank (ADB). Legal basis for CDBL's operations is set out in the Depositories Act, 1999; Depositories Regulations, 2000; Depository (User) Regulations, 2003; and the CDBL By-Laws.

CDBL's core services cover the efficient delivery, settlement and transfer of securities through computerized book entry system i.e. recording and maintaining securities accounts and registering transfer of securities; changing the ownership without any physical movement or endorsement of certificates and execution of transfer instruments. The Central Depository System (CDS) operated by CDBL has proved to be a convenient and reliable means to settle securities transaction. The investor has been freed from the hassles of physical handling of certificates, errors in paper work and the risks associated with damaged, lost and forged certificates.

CDBL's operations are carried out in its Main Data Centre which is linked to a remote Disaster Recovery Centre operating as a backup with data update taking place simultaneously. Network connectivity to Depository Participants, Issuers, Banks and Stock Exchanges is through Front End interfaces accessed by WAN link.

Live operations of the CDS commenced with the inauguration of the Electronic Government Securities Registry (EGSR) by the Governor of Bangladesh Bank on 20th October 2003. The EGSR also serves as a platform for secondary market sale/purchase as well as Repo transactions of government securities to commercial banks linked online to the CDS. Equity market securities dematerialization process i.e. eliminating physical certificate as record of security ownership by substituting it as an electronic book entry record in the CDS commenced on 24th January 2004 with the entry of Square Pharmaceuticals Limited into the CDS.

Since 14th February 2003 CDBL has been acting as National Numbering Agency for International Securities Identification Number (ISIN) as partner in Bangladesh of Association of National

Numbering Agencies (ANNA) based in Germany. CDBL is a member of Asia Pacific CSD Group (ACG) and an associate member of South Asian Federation of Exchanges (SAFE).

CDBL has achieved an ISO/IEC 27001:2013 certificate on Information Security Management System conforming to the specifications of ISO/IEC 27001:2013 and the best practices adopted in ISO/IEC 27002:2013.

#### **5.2.5 Investment Corporation of Bangladesh (ICB)**

One of the major investment banks in Bangladesh, the Investment Corporation of Bangladesh (ICB), plays a leading role in developing the capital market in the country. ICB is a statutory corporation of Government of the People's Republic of Bangladesh, established on October 01, 1976 under No. 40 of Investment Corporation of Bangladesh Ordinance, 1976. Major functions of ICB include Merchant Banking, operations of Unit Funds and Mutual Funds. It has an Investors' Account Scheme, which provides small investors with credit facilities for buying and selling shares listed with the Dhaka and Chittagong Stock Exchanges. It also helps investors achieve reasonable returns on investment in sound shares and provides institutional support to small investors for purchase and sale of shares. Under the scheme, small investors are to hold accounts with ICB for loans for purchase of securities. On behalf of account holders, ICB purchases and sells securities and maintains the profit and loss accounts. An investor has the option of taking or not taking the loan. If no loan is taken, the investor can withdraw funds from the account to the extent in excess of the margin requirement. When an investor takes a loan, he/she can withdraw the amount appearing in the account as unutilised balance. Also, an investor can withdraw securities when his/her account is closed after clearing dues outstanding in the account. Under the scheme, ICB gives the custodian service in safekeeping securities of the account holders, and also collects dividends.

ICB launched its Unit Fund Scheme on 10 April 1981. This is an open-end mutual fund, through which small and medium savers get an opportunity to invest their savings at any time of the year. The fund is divided into units known generally as ICB units, each of which bears a certain value in the assets of the fund. These units are sold to the public. Bangladeshi citizens living abroad and foreigners residing in the country can also purchase ICB units. Unit holders are the owners of the fund, while ICB takes the responsibility of managing the fund and loading and unloading securities

in their interest. ICB floated its first mutual fund in 1980 and the number of its mutual funds increased to 15.

#### **5.2.6 Merchant Banking**

In addition to ICB, a number of commercial banks and non-bank financial institutions also carry out merchant banking functions in Bangladesh. Merchant Banking activities and operations are guided by the Securities and Exchange Commission (Merchant Banker & Portfolio Manager) Rules, 1996 in Bangladesh. A company or statutory body must be registered by the commission under the rules and no person will act as a Merchant Banker without such registration. For obtaining Merchant Banking License, it must be a company or statutory body having minimum Paid-Up Capital of Tk.25.00 Crore. Merchant Banker simultaneously works for Portfolio Management for its clients, Issue Manager for IPO and Underwriter of IPO Shares. Basically Merchant Banker provides advisory and technical support for bringing new issues in Capital Market. Merchant Banker also provides advisory services for merger and acquisition transactions.

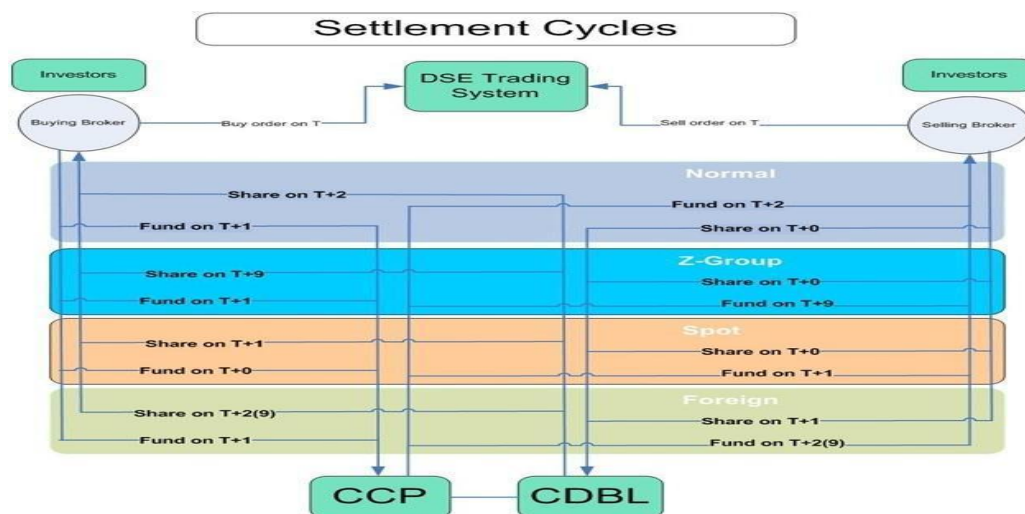
#### **5.2.7 Brokerage House (TREC Holders)**

Brokerage House are middleman for buy-sell of listed Shares, Securities and Mutual Fund in secondary market. In present CDS system, each Brokerage House must be a TREC holder of DSE or CSE and must be registered as Depository Participant (DP) with BSEC. Suppose, Dr. Taufiq Ahmed Chowdhury is a new investor of Capital Market in Bangladesh. He wants to purchase some shares of a company that offered its shares through IPO under Fixed Price method. According to existing rules and regulations of Bangladesh, he must open a Beneficiary Owner (BO) account with a Brokerage House (DP). After opening BO account, he applied and subsequently obtained 100 Shares of that company. Since all shares are issued in demetallized form, his 100 Shares will deposit in his BO account at CDBL. After some days of listing and transaction of this issue, Mr. Ahmed wants to sell his 50 Shares at market rate. He ordered his broker to sell this those shares. On the other hand, Ms. Laila Bilkis wants to buy 50 Shares of the same company. She ordered her broker to buy that Shares. Both Broker Houses executed both order in same day. After trade settlement day, those shares will debit from Mr. Ahmed's account and credited the same to Ms. Laila's BO account maintained with her Brokerage House. On the other hand, fund of those shares (after deducting commission) will be credited into Mr. Ahmed's BO account and debited

from Ms. Laila's account. On the other hand, if Mr. Ahmed wants to buy some shares from Secondary Market, he placed order to his Brokerage House and deposited required fund to his BO account. Broker executed his buy order in next day. Fund will be debited (with commission of broker) from Mr. Ahmed's BO account and credited to the seller's BO account. Simultaneously, relevant shares will be debited from seller's BO account and credited in Ahmed's BO account at Trade Settlement Day. So, every transaction of secondary market executed through brokerage house. Since Capital Market is a highly regulated market, broker/dealer has to comply all relevant laws, rules and regulation in each and every trade and transaction. Trade Settlement Cycle is discussed below:

### 5.2.8 Settlement of Trade

Trade settlement is a two-way process wherein the purchased securities are delivered to the buyer, and the seller receives cash. As investors buy or sell financial securities, the actual transfer of ownership occurs on the settlement date. In our country, share settlement cycle of different categories of share are different. Settlement cycle of shares of Category-A takes place T+1, which means settlement of securities and cash to be credited in respective account just next working day. On the other hand, settlement of cycle of Category- Z takes place T+3, which means settlement of securities and cash to be credited in respective account after 3 (three) working days. Settlement Cycle of various Category of shares shown in below picture:



### 5.2.9 Asset Management Company (AMC) and Operation of Mutual Fund

Asset Management Company manages mutual funds that pools fund from unit holders through public offer and invests in a diversified portfolio of securities. Formation, registration and



operation of Mutual Fund are guided by the Securities and Exchange Commission (Mutual Fund) Rules, 2001 in Bangladesh. A mutual fund must be constituted in the form of a trust under the Trust Act, 1882 and registered under the Registration Act, 1908. In formation and operation of a mutual fund, 04 (four) constituents are involved; they are (i) Sponsor, (ii) Trustee, (iii) Asset Manager, and (iv) Custodian.

Sponsor may be any Corporate Body, Provident Fund, Gratuity Fund etc. who provides seed money during formulation of a Mutual Fund. As per rule, at least 10% of initial fund size must be provided by sponsor.

Trustee is the supreme authority of a mutual fund. To work as trustee, any Bank or Financial Institution, Company or Statutory organization must be registered as Trustee with Securities and Exchange Commission. Sponsor recruits a Trustee of a mutual fund from any registered trustee through Trust Deed. Trustee over sees whole trust property of a mutual fund and ensures well-being of unit holders during whole life of the mutual fund. Trustee can seek out any information and report from Asset Manager related to operation of mutual fund. Trustee will ensure compliance of rules and regulations by Asset Manager. Trustee gets specific fees from mutual fund for providing Trustee services.

Asset Manager look after day-to-day operation of a mutual fund. To work as Asset Manager, any Company or Statutory organization must be registered as Asset Manager with Securities and Exchange Commission. With permission of Commission, Sponsor or Trustee in accordance with Trust Deed recruits an Asst Manager for managing activities and operations of a mutual fund from any registered Asset management company. Asset Manager is directly responsible to Trustee for any activities of a mutual fund. Asset Manager gets specific commission from mutual fund for providing Asset management services.

Custodian keeps trust property of a mutual fund in its custody. To work as Custodian, any Company or Statutory organization must be registered as Custodian with Securities and Exchange Commission. With permission of Commission, the Sponsor of a mutual fund may recruit custodian for keeping all property of a mutual fund from any registered custodian company registered with the commission. Custodian keeps and holds all assets of a mutual fund after completing day-to-day operations by Asset Manager. Custodian gets specific commission from mutual fund for providing custodial services.

Asset Management Company can also provide Advisory Services and Portfolio Management Services under the Securities and Exchange Commission (Mutual Fund) rules, 2001.

#### **5.2.9 Other Market Intermediaries**

There are many registered market intermediaries registered from Bangladesh Securities and Exchange Commission for performing specific roles and duties such as, Credit Rating Agencies, Custodians, Trustees, Alternative Fund Managers, Market Makers, and Listed Companies.

### **5.3 Legal, ethical, and governance issues in Investment Banking in Bangladesh**

Legal, ethical, and governance issues in investment banking in Bangladesh can have significant implications for the financial system, market participants, and the overall economy. Some key issues in this context include:

#### **5.3.1 Regulatory Compliance**

Investment banks in Bangladesh must adhere to various regulations set by the regulatory bodies such as the Bangladesh Securities and Exchange Commission (BSEC). Non-compliance with these regulations can lead to legal consequences and reputational damage.

#### **5.3.2 Insider Trading**

Insider trading involves the illegal use of non-public information for personal gain in trading securities. It undermines market integrity and fairness. Investment banks need to have robust systems and controls in place to prevent insider trading and ensure that employees are aware of their obligations in this regard.

#### **5.3.3 Conflicts of Interest**

Investment banks have a fiduciary duty to act in the best interest of their clients. Conflicts of interest can arise when investment banks engage in activities that compromise this duty, such as providing biased advice or prioritizing their own interests over those of their clients. Managing conflicts of interest is crucial for maintaining trust and integrity in the investment banking sector.

#### **5.3.4 Market Manipulation**

Manipulative practices, such as price manipulation, market rigging, or spreading false information, can distort market prices and harm investors. Investment banks should have stringent controls in place to prevent such activities and ensure fair and transparent markets.

#### **5.3.5 Money Laundering and Terrorist Financing**

Investment banks are required to implement effective anti-money laundering (AML) and counter-terrorism financing (CTF) measures to prevent their services from being misused for illicit purposes. They must have proper customer due diligence procedures, transaction monitoring systems, and reporting mechanisms in place to detect and report suspicious activities.

#### **5.3.6 Cyber Security Risks**

Investment banks handle sensitive financial information, making them attractive targets for cybercriminals. Robust cyber security measures are essential to protect client data and ensure the integrity and reliability of financial transactions.

#### **5.3.7 Board Governance**

Investment banks should have strong corporate governance practices to ensure transparency, accountability, and sound decision-making. This includes having independent directors on the board, effective risk management frameworks, and appropriate oversight of executive compensation.

#### **5.3.8 Client Confidentiality**

Investment banks are entrusted with confidential client information, and maintaining client confidentiality is of utmost importance. Adequate safeguards should be in place to protect client data from unauthorized access or disclosure.

#### **5.3.9 Ethical Conduct**

Investment banks should promote ethical behavior among their employees, including integrity, honesty, and fair dealing. Clear policies and codes of conduct should be established to guide employee behavior and prevent misconduct.

#### **5.3.10 Consumer Protection**

Investment banks must ensure that their products and services are suitable for their clients and provide clear and accurate information. They should have effective mechanisms for handling customer complaints and resolving disputes.

Addressing these legal, ethical, and governance issues is crucial for promoting trust, confidence, and stability in the investment banking sector in Bangladesh. Regulatory authorities play a

significant role in enforcing compliance and monitoring the industry to safeguard the interests of investors and the overall financial system.

## **5.4 Problems and prospect of Bangladesh Capital Market**

Development of the Capital Market is essential to Bangladesh future. Major industry investment creates, directly and indirectly from Capital Market of any country. But there are some problems regarding Bangladesh Capital Market and IPO approval process which are given below:

### **5.4.1 Problems of Bangladesh Capital Market**

There are some problems of Bangladesh Capital Market which are given below:

- **Lack of Liquidity**

Liquidity is the ability to absorb a large number of transactions without causing excessive price movements. In addressing the issue of our capital market, liquidity would be at the top of the list of challenges we currently have.

- **Lack of Confidence of New Investors**

The shocking fall of the stock market in 1996 and in 2010 crushed new investors. Thus, the challenge of the Bangladeshi stock market is to reorganize the stock market by restoring trust between investors.

- **Unusual Price Increase**

The stock market is working better in the current days. But rising prices are not compatible with the stock market and the fundamentals of the company.

- **The Complexity of the Tax Structure**

The tax structure of our country is complex. Sometimes businesses hide their real income because of high rate of tax. As a result, potential investors cannot make an appropriate decision because of hidden revenues.

- **The Volatility of the Market**

Inadequate reflection of the fundamentals of listed issues and insider trading can lead to market volatility.

### **Problems regarding the IPO Approval Process**

IPO can be a risky investment. For the individual investor, it is difficult to predict what the stock will do on its first trading day and in the near future, as there is often little historical data with

which to analyze the business. In addition, most IPOs involve companies experiencing a period of transitional growth, which is subject to additional uncertainty as to their future values. In our country there are major two methods are used to determine the price of IPO.

The major problems regarding IPO approval process are given below,

- **The Cost Aspect**

Going public is costly both in terms of money and time. Accounting, legal, printing, travel, manpower devoted to preparing for a public offering can be substantial. There are newer additional expenses annually, including audited financial reports, preparation and distribution of proxy materials, quarterly and annual reports to shareholders, fees for transfer agents, public relations and other costs, including to the time required by a company officer devoted to these matters.

- **The Time Aspect**

Floatation is also a time-consuming exercise. Because of red-herring and other lengthy processes, it might take six months to years to complete the IPO process fully.

- **Disclosure of Information**

When a company moves from private ownership to public, much information must be disclosed- for instance, Salaries, Transaction with management, Sales, Profits, Competitive Positions, Mode of Operations and other material information.

- **Losing Flexibility**

Management of companies may lose some flexibility in managing the company's affairs, particularly with actions which require shareholders' approval. The company may not have the ability to act quickly if approval is required by shareholders or outside directors.

- **Current IPO Process**

Due to the current IPO process, most companies do not get the real price of share for their shares. The companies also claim, and sometimes correctly, that it is the IPO hunters who benefit from the current system by selling the shares when they win the lottery and sell the shares at a much higher price in the secondary market.

#### 5.4.2 Prospects of Capital Market in Bangladesh

A strong capital market acts as a vehicle for the growth of the economy. Listing of companies with good fundamentals ensures this growth for the economy. So, proper steps should be taken to ensure the proper IPO pricing. The total IPO pricing procedures, as well as the measurement of the price of a new issue, have got some sort of problems.

The following recommendations can minimize the problems-

- The regulatory bodies can highlight the benefits of IPO such as the tax advantages, lower cost fundraising etc. so that more firms willing for listing in the stock market.
- The depth, breadth, and liquidity of the capital market should be increased, so that more firms willing to enter into the capital market through IPO.
- The entire IPO process should be organized quickly enough to allow new companies to raise the necessary funds in a timely manner.
- IPO outreach program should be organized after some internal by the direction of the DSE to send the registration message of benefits to entrepreneurs.
- The rules of direct listing regarding the disposal of shares needs modifications.
- To make the market more efficient, weak companies should be delisted by the listing authority.
- The number of Eligible Institutional Investors including some foreign investors should be increased for more transparent bidding.

#### 5.5 Growth of Capital Market in Bangladesh

Bangladesh stock market faced many ups and down from its inception in 1954. The trading was suspended during the war of liberation and resumed in 1976 with the change of economic policy of the government. The capital market of Bangladesh is growing, albeit at a slower pace than many would like, with market development still at a nascent stage. The market has seen a lot of developments since the inception of the Bangladesh Securities and Exchange Commission (BSEC) in 1993. After the bubble burst of 1996, the capital market has attracted a lot more attention, importance and awareness. But in 2010, DSE general index reached to the highest point. After climbing the highest point, it started to fall sharply and it had broken all previous records of decreasing index. After that, BSEC has taken some steps to protect the investors, which has led to the infrastructure we have in the market today.

The market has grown robustly in the last 20 years. However, the market capitalization to GDP ratio stands at around 11.40% in Bangladesh (as on December 2022). As such, we believe that here remains significant scope for development relative to many other markets, in term of increasing market turnover, depth and both local and foreign institutionalization of the market.

The Dhaka Stock Exchange (before 2013 'DGEN' & after 2013 'DSEX') rallied by 41.80% from the period 2005 to 2008. In 2007, the market rallied very strongly by 90.60%, and fell 7.10% in 2008. In 2009-10, the DSE enjoyed a strong bull rally, was up by 61.50% in 2009 and 81.50% in 2010. Subsequently, in 2011, 2012 and 2013 market provided a return of -36.70%, -21.70% and 5.20% respectively. In 2014, market gained some momentum with 13.50% return. In the year 2015 market generated a negative return of 6.30%. In 2016 market generated a positive return of 8.90% again in 2017-18, market generated a negative return of 4.43%. In 2018-19 financial year, market generated slightly positive return of 0.30% but in 2019-20, market faced negative return of 26.42% due to outbreak of Covid-19. In 2020-21, market regained 54.18% and in 2021-22, market generated 3.68% positive return (Source: DSE).

The market capitalization also rose due to listing of new companies. The total IPO amounted to TK. 10.50 billion during 2013 and TK. 9.90 billion during 2014. In the year 2015 and 2016 the amount raised through IPO were Tk. 7.50 billion and 8.49 billion respectively. In the financial year 2017-18, total IPO amounted to BDT 5.66 billion and fund raised through IPO were Tk. 6.04 billion during 2018-19. In the financial year, 2019-20 and 2020-21, the amount raised through IPO were Tk.3.27 billion and 12.86 billion respectively. In the financial year 2021-22, funds raised through IPO were 48.48 billion. General public and institutional investors have huge interest in IPO and almost each IPO oversubscribed by manifold. Numbers of listed securities were 625 and Market Capitalization was Tk. 5,177,816.91 million at the end of 2021-22.

The market has largely been dominated by local financial institutional and retail participation, with foreign investment estimated at between only 1-2% of the market and foreign turnover accounting currently for around 8.00% of total market turnover. As such the market remains uncorrelated with other international markets.

## 5.6 Conclusion

Our economy is hungry for a mature and stable capital market. Stability has come from a variety of sources, including sophisticated private investors, institutional investors, and financial market regulators. Bangladesh's capital market has gained the confidence of investors from all walks of life. In addition to this, the government has facilitated our capital market by structuring its monetary and fiscal policies in a manner that is favorable to capital market. Generally, the main reason for a business to get a listing is to get broader access to capital. The ability to raise funds remains the single most important resource of registration. Entrepreneurs and families from start-ups have benefited from the improved marketability of the shares offered as part of a public offering. The investment of mutual funds attracts more popularity. The managers of these funds are sensitive to the notion that lenders could cash in chips and leave them with overvalued stocks. Increased visibility and liquidity gives a company a certain prestige and allows it to attract and retain highly qualified personnel. Importantly, an exchange list helps track market perceptions of a company's performance and reinforces the purpose of shareholder value.



## 5.7 Module End Questions

1. What is Investment Banking? Explain its activities in Bangladesh. Differentiate between Invest Banking and Commercial Banking.
3. Discuss the organizational structure of Bangladesh Securities and exchange Commission (BSEC).
4. Briefly discuss the role of BSEC in developing security market of the country.
5. Discuss the regulatory framework of BSEC. How does BSEC exercise its regulatory functions in Capital Market?
6. Who is the Primary Regulator of Capital Market? Describe role of Primary Regulator in Capital Market? How does DSE and CSE play their regulatory roles in Capital Market?
7. Briefly discuss the main functions of DSE and CSE.
8. Briefly discuss the main functions of Central Depository of Bangladesh Limited (CDBL).
9. What are core services covered by CDBL? What types of benefits investors and listed companies get from CDBL?
10. Describe the major functions of ICB? What is main role of Investment Corporation of Bangladesh (ICB) for stabilizing price of Shares in Secondary Market?
11. Describe main functions of Merchant Banking. What are the minimum requirements for set-up a full-pledged Merchant Bank?
12. What are the main constituents of Mutual Fund? Describe role of each constituents for formation and operations of a Mutual fund.
13. Describe the role of Brokerage House in Share Trading. What is Trade Settlement? How do Trade Settlement execute in Secondary Market of Bangladesh? Illustrate your answer for Category-A shares.
14. Broadly discuss regulatory tools that are used by BSEC for protecting interest of the investors.
15. Briefly discuss about all intermediaries of Capital Market in Bangladesh.
16. Briefly discuss problems of our Capital Market. How to overcome these problems to reach in a sustainable market?
17. Briefly discuss prospects and growth of our Capital Market. How can these prospects utilize for our economic development?
18. What are the main challenges faced in IPO process in our Capital Market? How can these challenges overcome?
19. Is the growth of Capital Market of our country pair with our economic development? Explain your answer with proper justification.

20. Write Short Note On:

- a. BSEC
- b. DSE & CSE
- c. ICB
- d. CDBL
- e. AGM

## References

1. Aggarwal, R., Prabhala, N R., and Puri, M., (2002). "Institutional Allocation in InitialPublic Offerings: Empirical Evidence," *Journal of Finance*, 57, pp. 1421–1442.
2. Anand, A., (2005). "Is the Dutch Auction IPO a Good Idea"? *Expresso Preprint Series, Paper*, pp. 672-683.
3. C, David., (2011) ."IPOs on the London Stock Exchange since 1900". *Journal of Review*.
4. Brealey, Richard A., and Myers, Stewart C., (1997). "Principles of Corporate Finance." *Tata McGraw-Hill Edition 1997*.
5. Pandey, I. M."Financial Management". Third Edition, PP.....Vikas Publishing House PVT LTD, India.
6. Ross, S. A., Jordan, B. D., & Westerfield, R. (Year of Publication). "Corporate Finance". Publisher.
7. Reilly, F. K., & Brown, K. C. (Year of Publication). "Investment Analysis and Portfolio Management". Publisher.
8. Stress Testing, Scenarios, and Sensitivity Analysis in Financial Modelling, March 2019 (Chapter 11), DOI:10.1002/9781119520344.ch11
9. Wikipedia
10. Investopedia
11. Websites, various publications, rules and regulations of BSEC,DSE, CSE,ICB, and CDBL.

### **Profile of Md. Rizvy Ahmed**

Mr. Md. Rizvy Ahmed is a highly accomplished and dedicated academic professional with a strong background in Finance and Capital Markets. Currently serving as a faculty member at Bangladesh Academy for Securities Market, he focuses on training capital market intermediaries and is actively involved in the development of course content and training materials. Moreover, Mr. Ahmed conducts valuable research on various capital market issues, showcasing his commitment to advancing the field.

With an extensive academic career, Mr. Ahmed previously served as an assistant professor in Finance at Eastern University for a decade. During his tenure, he played a pivotal role in proposing the establishment of the Islamic finance department, ultimately gaining approval from the University Grants Commission (UGC). Additionally, he demonstrated exceptional administrative skills by serving as the university's proctor.

Mr. Ahmed's impressive academic journey began with his graduation from the Department of Finance at the University of Dhaka. He pursued both his BBA and MBA at the same department, cementing his expertise in the subject matter. Currently, he is further enhancing his academic prowess by pursuing a Ph.D. concurrently at the University of Dhaka and Swansea University in the UK.

In addition to his teaching and research endeavors, Mr. Ahmed has a remarkable publication record, boasting six publications in esteemed local and international journals. This highlights his contributions to the academic community and his commitment to knowledge dissemination.

### **Profile of Mohammad Abu Kausar**

Mr. Mohammad Abu Kausar is a self-made professional is engaged in the field of Banking in Bangladesh for over 24 years. He is a business graduate qualified from IBA, JU. He is also completed MBA with majoring in Finance from the same University. Mr. Kausar completed Post-Graduate Diploma in Islami Finance Practices certified from EduPro, UK. He is a Certified Shari'ah Advisor and Auditor (CSAA) certified by the Association of Accounting and Auditing of Islamic Financial Institution (AAOIFI), Bahrain.

Starting out as a Probationary Officer in Standard Bank in early 2000, he forwarded to Dhaka Bank Limited in 2001 and has actively contributed to the development & growth of the Bank's SME business. Having acquainted the necessary acumen, he gave leadership to The Premier Bank Limited in setting up their SME Banking Division as Head of SME Division in 2008. Then he moved forward to Dutch-Bangla Bank Limited (DBBL) as Head of SME Division in 2009. Presently, Mr. Kausar is working in Eastern Bank Limited (EBL) for about 10 years in different capacities for formulating policies and implementing these policies for the growth and development of the Bank.

Knowledge exchange and sharing is passion of Mr. Kausar. He is a certified Trainer of Banking and Finance qualified from INSPIRED Project of European Union (EU).