

Investment Analysis & Portfolio Management

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Course Description:

- Portfolio management: Characteristics, markets and traditional asset classes (Govt. Bonds, Corporate Bonds, equities and money market) payoff structures of derivatives and options. Portfolio theories, CAPM, APT, Markowitz efficient frontiers (Modern Portfolio Theory) and Downside Risk, Risk of investment markets.
- Pricing Techniques, continuous and discrete interest rate model solutions, option pricing, volatilities and correlation, behavior finance, limitations of various option, pricing techniques, execution time, impact of expenses & taxes, credit risk and other risks.
- Asset Liability Management: nature of liabilities, including insurance company obligations (life, health and property/casualty) bank liabilities, pension & benefit funds. Funding objectives, risk/return dynamics, (regulatory environment, asset-liability management framework).

Course Review:

- This course provides a thorough knowledge of portfolio management and its characteristics, markets and traditional asset classes (government bonds, corporate bonds, equities and money market), payoff structures of derivatives and options, portfolio theories, CAPM, APT, Markowitz efficient frontiers (Modern Portfolio Theory) and Downside Risk, Risk of investment markets, Pricing techniques, continuous and discrete interest rate model solutions, option pricing, volatilities and correlation, behaviour finance, limitations of various option, pricing techniques, execution time, impact of expenses & taxes, credit risk and other risks, Asset-Liability management (insurance companies obligations, bank liabilities, pension & benefit funds, funding objectives, risk/return dynamics, regulatory environment, asset-liability management framework).

'Would you tell me, please, which way I ought to go from here?'

'That depends a good deal on where you want to get to,' said the Cat.

'I don't much care where --' said Alice.

'Then it doesn't matter which way you go,' said the Cat.

'--so long as I get somewhere,' Alice added as an explanation.

**Lewis Carroll,
Alice's Adventures in Wonderland**

- Traditionally Investments is defined as the current commitment of resources in order to achieve later benefits
- Broader viewpoint – based on the idea of flow of receipt and expenditure spanning a period of time

Investment Science

Application of scientific tools to investment

BUT

There is an art to investments

knowing what to analyze and how
to go about it

Intuitive side

The Investment Environment

- Difference between Real Assets & Financial Assets
- Need for Financial System
- Clients of Financial System
- Environment Response to Clients' Demands
- Market Structure
- Ongoing Trends

Real Assets vs. Financial Assets

- Real Assets
- Productive Capacity of Economy (Land Buildings, Knowledge, Machines)
- Financial Assets
- Claims to Income produced by Real assets
- Allow separation of Ownership & Management
- Created and Destroyed in Ordinary course of business

Need for Financial Systems

- Allows individuals to control their consumption timings
- Allow the Risk that is inherent in investments to be borne by investor willing to take risk
- Allow easy separation of ownership and management (agency conflict)

Clients of Financial System

- Household sector
- Financial Decision: How to invest Money
- Interested in wide range of assets
however small funds
- Focus on after-tax income
- Consumption timing
- Diversification

- Business Sector
- Financial Decision how to raise money to finance a business
- Either borrow money or sell ownership
- Desire to get best prices

- Government Sector
- Need money to finance expenditure
- Source taxation, borrowing
- Borrow cheap since high credit worthiness
- Regulate financial environment

Environment response to clients' demands

- Financial intermediation
- Households want to invest, businesses want money
- Financial intermediaries such as banks, and investment companies bring the two sectors together
- Make profits from spread or fee
- Advantages
- Pool money from small investors and loan to large borrowers
- Diversification
- Expertise in borrowing money

- Investment Banking
- Design and Market Securities for the Business Sector since businesses do not directly tap the market
- Important to keep good reputation

- Financial Innovations and Derivatives
- Response to Taxation and regulation

Market Structure

- Direct search market
- Least organized; buyers and sellers must find each other eg. Ad. In newspaper
- Brokered market
- Broker brings buyer and seller together for a fee eg. Real estate market
- Dealer Markets
- Make money from bid-ask spread
- Buy and sell assets from their own inventory
- Auction markets
- Buyer and seller converge at one place
- Only efficient if sufficient volume eg. Stock exchange

Ongoing Trends

- Globalization
- Securitization
- Credit Enhancements
- Financial Engineering

Money Market

- Short Term sub-sector of Fixed Income Market
- Many in large denomination but also exist for small investors

Treasury Bills

- Most Liquid
- Sold at discount (no coupons)
- Bank discount yield = $(F-P) / F * (360 / n)$
- Problem with bank discount yield
- Use 360 days rather than 365 days
- Use simple interest
- Denominator is par value rather than price

Certificates of Deposits

- Time deposits with banks
- Interest and principal paid on maturity
- Negotiable

Commercial Papers

- Companies issue them directly
- Maturities generally one to two months
- Often backed by bank line of credit

Bankers' Acceptance

- Used in foreign trade for credit worthiness

Eurodollars

- Dollar denominated deposits outside USA
- Escapes regulation

Repos and Reverses

- Usually overnight borrowing
- For repo, dealer sells treasuries to investor and agrees to repurchase them at a set price the next day (dealer is borrowing money)

Federal Funds

- Banks are required to hold reserves at the federal reserve bank
- Banks with excess funds lend to banks that are short
- Usually overnight transactions

Brokers' Call

- Used when individuals buy stock on margin
- Individual borrows money from a broker
- The broker usually borrows from the bank and agrees to pay it back on request

KIBOR Market

- The rate at which banks lend to each other

Fixed Income Capital Market

- Treasury Notes and Bonds
- Yield to Maturity is quoted as Bond equivalent yield
- Bond Equivalent Yield = $(F - P) / P * (365/n)$
- $= 365 * r_{bd} / (360 - r_{bd} * n)$

- Federal agency debts (WAPDA Bonds)

- Municipal Bonds
- Issued by state and local governments
- Exempt from Federal Tax therefore investors willing to accept lower rates
- Equivalent Taxable yield = $r = r_m / (1 - t)$
- r_m = municipal bond rate & t = marginal tax rate

- Corporate bonds
- Similar to treasuries but with default risk
- Can be secured, unsecured or subordinated

- Mortgages and Mortgage backed securities

Equity Securities

- Common Stock as ownership share
 - Represent ownership in company
 - Vote to elect the board which oversees the management
 - Management are kept in check by board and threat of takeover
 - Publicly traded or privately held
- Characteristics
 - Residual claim
 - Limited liability

- Preferred Stock
 - Similar to Bond
 - Fixed interest payments
 - No voting rights
 - Could be callable or convertible
 - Similarities to Stock
 - Failure to pay interest does not cause default but interest is generally cumulative
 - Interest expense is not tax deductible

Derivative Markets

- Options
- Future
- Forward
- Swaps