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MANAGEMENT OF COMMERCIAL BANKING

PROF. JITENDRA MAHAKUD
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Module 02: Managing Investment Portfolios and Liquidity of Commercial Banks

Lecture 41: Managing Investment Portfolios-I

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CONCEPTS COVERED

- Objectives of Investment Portfolio Management
- Composition of investment portfolio

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Objectives of Investment Portfolio

- A bank's investment portfolio differs markedly from a trading account, as investment securities are held to meet one of six general objectives:
  1. Safety or preservation of capital
  2. Liquidity
  3. Yield
  4. Credit risk diversification
  5. Help in managing interest rate risk exposure
  6. Assistance in meeting pledging requirements
- Securities with different return and risk features meet each objective differently- average portfolio varies in terms of composition and price sensitivity
- Banks generally hold these securities for longer periods of time than trading account securities

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Objectives of Investment Portfolio Cont..

Safety or preservation of Capital	• Banks assume considerable default risk in their commercial and consumer loan portfolios; balance this by accepting much lower default risk in their investment • Primary objective is to preserve capital by purchasing securities with a small risk of principal loss
Liquidity	• Commercial banks purchase debt securities to help meet liquidity requirements • As securities are more marketable than most commercial and consumer loans, banks often designate a portion of their investment portfolio as a liquidity reserve
Yield	• Investment securities must pay a reasonable return for the risks assumed • Bank managers must evaluate each security to determine whether its yield is attractive given its other features and the overall profile of the bank's portfolio • Portfolio managers who actively trade securities generally look at total return, not yield to maturity, when evaluating the risk and return trade-off.

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Objectives of Investment Portfolio Cont..

Diversify Credit Risk	• Diversification objective is closely linked to safety objective & difficulties that banks have with diversifying their loan portfolios • Small bank's loans often concentrated in one industry, such as agriculture, energy, or real estate, which reflects the specific economic conditions of the bank's trade area ; loan portfolio not adequately diversified • Banks view the securities portfolio as an opportunity to spread credit risk outside their geographic region and across other industries
Help Manage Interest Rate Risk Exposure	• Investment securities are very flexible instruments for managing a bank's overall interest rate risk exposure • Banks can select terms that meet specific needs without fear of antagonizing borrower • They can readily sell security if their needs change
Pledging Requirements	• By law, commercial banks must pledge collateral against certain types of liabilities • Banks have some discretion in choosing what securities/loans to pledge at different entities

Accounting for Investment Securities

- Decisions regarding the types of securities that banks buy and the length of time they are held in portfolio are driven, in part, by market value accounting rules
- The Financial Accounting Standards Board's Statement 115 (FASB 115) requires banks to divide their securities holdings into three categories—Trading, HTM, and AFS
- Trading: Securities purchased with the intent to sell in the near term; carried at market value on the balance sheet with unrealized gains and losses included in income

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Accounting for Investment Securities

- Held-to-Maturity (HTM): Securities purchased with the intent to hold to final maturity; carried at amortized cost (historical cost adjusted for principal payments) on the balance sheet; unrealized gains and losses have no income statement impact
- Available-for-Sale (AFS): Securities that are not classified in either of the previous categories; carried at market value on the balance sheet with unrealized gains and losses included as a component of capital
- Distinction between motives is important because of accounting impact

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Compositions of Investment Portfolio

Money market instruments:	**Capital market instruments:**
Banks hold significant amounts of government and corporate securities that mature within one year, labelled *money market instruments*	**Banks own a larger amount of longer-term taxable securities, labelled *capital market instruments***
Example: Treasury bills Large negotiable CDs and Eurodollars Bankers acceptances Commercial paper Security Repos Tax and bond anticipation notes	**Example:** Long-term bonds Municipal bonds MBSs backed both by government and private guarantees Corporate bonds Foreign bonds Stocks Other asset-backed securities

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Compositions of Investment Portfolio: Money Market

Repurchase Agreements

- RPs involve a loan between two parties, with one party typically either a securities dealer or commercial bank
- Lender\investor buys securities from the borrower and simultaneously agrees to sell the securities back at a later date at an agreed-upon price plus interest
- Transaction represents a short-term loan collateralized by securities because the borrower receives principal in the form of immediately available funds, while the lender earns interest on the investment
- If the borrower defaults, the lender gets title to the securities

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Compositions of Investment Portfolio: Money Market Cont..

Treasury Bills:

- A Particular type of Finance Bill or Promissory note put out by the Govt. of the country to meet the needs of supplementary short-term Finance
- Treasury bills are zero coupon securities and pay no interest.
- Issued at discount and redeemed at par
- Banks are significant investors in both short-term Treasury bills and longer-term Treasury notes and bonds
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Compositions of Investment Portfolio: Money Market Cont..

- Banks find Treasuries attractive because they pay market rates of interest, are free of default risk, and can be easily sold in the secondary market
- Primary and secondary market for Treasury instruments is very competitive
- Dealers keep bid-ask spreads low & maintain substantial inventories
- Ease of purchase and sale lowers transactions costs ; makes Treasuries highly liquid

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Compositions of Investment Portfolio: Money Market Cont..

- **Certificate of Deposit (CD)**
  - A Particular type of Finance Bill or Promissory note put out by banks, thrift institutions and credit unions of the country to meet the needs of supplementary short-term Finance
  - Treasury bills are zero coupon securities and pay no interest.
  - Issued at discount and redeemed at par
  - Certificate of Deposits are attractive because they pay yields above Treasury bills and, if issued by a well-known bank, can be easily sold in the secondary market prior to maturity

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Compositions of Investment Portfolio: Money Market Cont..

- Banks have the freedom to issue CDs depending on their funding requirements.
- Minimum amount of a CD should be Rs.1 lakh, i.e., the minimum deposit that could be accepted from a single subscriber should not be less than Rs.1 lakh, and in multiples of Rs. 1 lakh thereafter.
- CDs can be issued to individuals, corporations, companies (including banks and PDs), trusts, funds, associations, etc. Non-Resident Indians (NRIs) may also subscribe to CDs
- The maturity period of CDs issued by banks should not be less than 7 days and not more than one year, from the date of issue.
- CDs may be issued at a discount on face value.

Compositions of Investment Portfolio: Money Market Cont..

Eurodollars

- Eurodollars are dollar-denominated deposits issued by foreign branches of U.S. banks or by foreign banks outside the United States
  - ✓Because only the largest banks can tap this market, the secondary market deep
  - ✓The Eurodollar market is less regulated than the domestic market ;perceived riskiness is greater
- Eurodollar rates subsequently exceed domestic CD rates for comparable banks

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Compositions of Investment Portfolio: Money Market Cont..

Commercial Paper

- Refers to unsecured promissory notes issued by corporations that use the proceeds to finance short-term working capital needs
- Most CP is rated by different rating agencies to help investors gauge default risk
- CPs can be issued on discount to face value basis or on a fixed interest basis.
- CPs are unsecured, negotiable by endorsement and normally have a buy-back facility
- CPs as a source of short-term debt regarded as highly safe, simple, flexible, and quality liquid instrument

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Compositions of Investment Portfolio: Money Market Cont..

- Issuers also typically obtain an irrevocable letter of credit from a bank that guarantees payment in case issuer defaults. This guarantee mitigates default risk and improves marketability
- Still, most investors hold commercial paper to maturity because secondary market is thin

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Compositions of Investment Portfolio: Money Market Cont..

Bankers Acceptances

- Is a "draft or bill of exchange … accepted by a bank or trust company, or a firm, company, or corporation engaged generally in the business of granting bankers acceptance credits."
- From an investor's perspective, a bankers acceptance is a short-term interest-bearing time draft created by a high-quality bank
- Because default risk is relatively low, the promised rate is only slightly above the rate on a comparable maturity T-bill.
- Exhibit low default risk, pay a premium over T-bills, and can be used as collateral against discount window borrowings.

CONCLUSION

- The objectives of investment portfolio management are to maximize return and to make the bank safe and stable.
- Broadly the instruments used for investments include money market instruments and capital market instruments
- In India instruments are divided as SLR and non SLR investments

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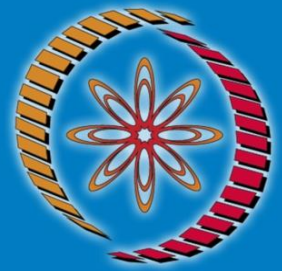
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Module 05: Managing Investment Portfolios and Liquidity of Commercial Banks

Lecture 42: Managing Investment Portfolios-II

CONCEPTS COVERED

- Long-term securities
- Securities used by commercial banks in India and USA
- Investment guidelines

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Compositions of Investment Portfolio: Long-term Securities (India)

- Central Government Dated Securities
  - Dated Government securities are longer term securities and carry a fixed or floating coupon (interest rate) paid on the face value, payable at fixed time periods (usually half-yearly)
  - The share of investments in these securities by the commercial banks is the highest
- State Government Securities
- Investments in other Trustee Securities
- Shares
  - Highly regulated
- Debentures (Corporate Bonds)
- PSU Bonds

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Compositions of Investment Portfolio: Capital Market

Treasury Notes and Bonds

- Long-term Treasury securities differ from Treasury bills in terms of original maturity and the form of interest payment
- Notes have original maturities of 1 to 10 years
- Bonds can carry any original maturity but typically are issued to mature well beyond 10 years
- Most notes and bonds pay coupon interest semi-annually
- T-bills, Treasury notes and bonds are sold via closed auctions with buyers submitting competitive or non-competitive bids

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Compositions of Investment Portfolio: Capital Market Cont..

U.S. Government Agency Securities

- Federal agencies can be separated into two groups
- Group one:
  - Represents organizations that are formally part of federal government
  - Obtain operating funds from the Treasury and borrow from the Federal Financing Bank, a political subdivision of the Treasury that borrows from the Treasury and lends to selected agencies
  - This intermediation function enables agencies to borrow at Treasury rate but also raises total Treasury financing requirements
  - These agencies, including the Federal Housing Administration, Export-Import Bank, and the Government National Mortgage Association (GNMA) (Ginnie Mae), are effectively owned by the U.S. government

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Compositions of Investment Portfolio: Capital Market Cont..

U.S. Government Agency Securities

- **Group two:**
  - Government agencies are Government Sponsored Enterprises (GSEs) that are quasi-public entities
  - Even though the agencies are federally authorized and chartered, they are privately owned and often have publicly traded stock ; operate like any private corporation
  - The U.S. government sponsors agencies by encouraging and often subsidizing activities in favoured markets such as housing and agriculture
  - GSE securities are not direct obligations of the Treasury ; NOT explicitly backed by the Treasury's tax and credit authority
  - Default risk is considered to be low, because investors believe that the U.S. Congress has a moral obligation to provide financial aid
  - Are active in the areas of housing, agriculture, education, and small business
  - Generally borrow in both the money and capital markets

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Compositions of Investment Portfolio: Capital Market Cont..

Callable Agency Bond

- One of the most popular bank investments
- Exhibit both call risk and market risk
  - ✓ While these are securities issued by GSEs such that credit risk is low, they have call risk because the issuer has the option to call, or redeem, the bonds prior to final maturity
  - ✓ The issuer offers a higher promised yield relative to comparable non-callable bonds; rate differential essentially represents call premium -the premium reflects call risk
  - ✓ Like other fixed-income securities, callables exhibit market risk by which the market value of the securities varies over time with changes in market interest rates.

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Compositions of Investment Portfolio: Capital Market Cont..

Conventional Mortgage-Backed Securities

- Banks have been aggressive buyers of mortgage-backed securities (MBSs)
  - ✓ Default risk is generally low
  - ✓ Offer higher promised yields than other instruments with comparable average maturities
- Problem: MBSs exhibit prepayment risk - underlying borrowers may choose to prepay their mortgages at far different speeds than anticipated at purchase

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Compositions of Investment Portfolio: Capital Market Cont..

- **Types of mortgage banked securitized assets**

1. **Pass through securities:**
   - ✓Lenders pool a group of similar home mortgages appearing in balance sheet, removes them from B/S into an account controlled by a legal trustee
   - ✓Issue securities using mortgage loans as collaterals
   - ✓As mortgage loan pool generates principal and interest payments, there payments "pass through" to investors holding mortgage backed securities
2. **Collateralized mortgage obligation:**
   - ✓Pass through security divided into multiple "tranches" or classes; each with different coupon rate & level of risk exposure
3. **Mortgage backed bonds:**
   - ✓Unlike pass through and CMOs, it remains in B/S

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Compositions of Investment Portfolio: Capital Market Cont..

Stripped Securities:

- Hybrid instrument; Treasury security with an original maturity of at least 10 years to be "stripped" into its component interest and principal pieces and traded via the Federal Reserve wire transfer system.
- Each component interest or principal payment thus constitutes a separate zero coupon security and can be traded separately from the other payments
  - ✓ Claims against only the principal payments are called PO(Principal Only) securities
  - ✓ Claims against only stream of promised interest payments are IO(Interest Only) securities
- Display a markedly different behavior from underlying securities
- Offer interest rate hedging possibilities to help protect an investment portfolio against loss from interest rate changes

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Compositions of Investment Portfolio: Capital Market Cont..

Municipal Notes and Bond:

- Long term debt obligations issued by state, cities, and other local government units
- Interest on majority of bonds is exempted from federal income tax provided they are issued to fund public, rather than private projects
- Capital gains on municipals are fully taxable, except for bonds sold at discounted price
- Two major categories of Municipal bonds:
  - ✓ General Obligations (GO) bonds: backed by full faith and credit of issuing government; they may be paid from any available sources of revenue
  - ✓ Revenue Bonds : used to fund long term revenue raising projects and payable only from stipulated sources of funds

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Compositions of Investment Portfolio: Capital Market Cont..

Corporate Notes and Bond:

- Long term debt securities issued by corporations are usually corporate notes when they mature within 5 years or *corporate bonds*, when they carry longer maturities
- Generally more attractive to insurance companies and pension funds than to banks because of their higher credit risk relative to government securities and limited resale market
- Offer significantly higher yields than government securities of the same maturity
- Yield spread over government securities widens when investors become more concerned about corporate credit quality

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Establishing Investment Policy Guidelines

- Each bank's asset and liability or risk management committee (ALCO) is responsible for establishing investment policy guidelines
- These guidelines define the parameters within which investment decisions help meet overall return and risk objectives
- Investment guidelines identify specific goals and constraints regarding the composition of investments, preferred maturities or durations, quality ratings, pledging requirements, and strategies underlying any portfolio adjustments

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Establishing Investment Policy Guidelines Cont..

Return Objectives

- Specifies overall return objectives in terms of return on equity, return on assets, and net interest margin
- Establish targets for the contribution of both taxable interest and tax-exempt interest to net income
- Guidelines also outline the potential costs and benefits of taking tax losses or gains on security sales

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Establishing Investment Policy Guidelines Cont..

Portfolio Composition

- Address the bank's targeted liquidity, credit risk, and interest rate risk position
- Specify the types of securities that can be purchased, target mix by security type, credit risk objectives (by rating and due diligence), acceptable maturity ranges at different stages of the interest rate cycle, and those securities that should be pledged as collateral against public deposits

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CONCLUSION

- Investment portfolios of commercial banks in India include government dated securities, state government securities, debentures, PSU bonds and stocks
- For USA the instruments used in the investment portfolio of banks are treasury notes and bonds, US government agency securities, callable agency bonds, stripped securities, municipal notes and bonds and corporate bonds.
- Each bank forms a investment policy guidelines for optimizing the return from the portfolio

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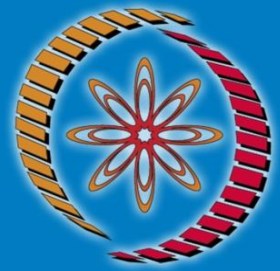
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Module 05: Managing Investment Portfolios and Liquidity of Commercial Banks

Lecture 43: Managing Investment Portfolios-III

CONCEPTS COVERED

- Factors Affecting Choice of Investment Securities
- Expected return and risk
- Pledging requirements

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Factors Affecting Choice of Investment Securities

The principal factors bearing on which investments are chosen include

1. Expected rate of return
2. Tax exposure
3. Interest rate risk
4. Credit or default risk
5. Business risk
6. Liquidity risk
7. Call risk
8. Prepayment risk
9. Inflation risk
10. Pledging requirements

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Factors Affecting Choice of Investment Securities Cont...

Expected Rate of Return

- Yield to Maturity (YTM) versus Holding Period Yield (HPY)
- Example
  - An investments officer is considering purchasing a $1,000 par-value Treasury note that promises an 8 percent coupon rate and matures in five years with a current of $900

$$\$900 = \frac{\$80}{(1 + \text{YTM})^1} + \frac{\$80}{(1 + \text{YTM})^2} + \cdots + \frac{\$80}{(1 + \text{YTM})^5} + \frac{\$1{,}000}{(1 + \text{YTM})^5}$$

$$\$900 = \frac{\$80}{(1 + \text{HPY})^1} + \frac{\$80}{(1 + \text{HPY})^2} + \frac{\$950}{(1 + \text{HPY})^2}$$

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Factors Affecting Choice of Investment Securities Cont...

Tax Exposure

- Interest and income on most investments held by banks are taxed as ordinary income for tax purposes
- Relatively high tax exposure: banks interested in after tax rate of return on loans and securities

$$\text{Before-tax gross yield} \times (1 - \text{Firm's marginal income tax rate}) = \text{After-tax gross yield}$$

$$\text{TEY} = \frac{\text{After-tax return on a tax-exempt investment}}{(1 - \text{Investing firm's marginal tax rate})}$$

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Factors Affecting Choice of Investment Securities Cont...

Tax Exposure: Tax Swapping Tool

- In years when loan revenues are high, it may be beneficial to engage in tax swapping
- In a tax swap, the lending institution sells lower-yielding securities at a loss in order to reduce its current taxable income, while simultaneously purchasing new higher-yielding securities in order to boost future returns

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Factors Affecting Choice of Investment Securities Cont...

Tax Exposure: Portfolio Shifting Tool

- Lending institutions also do a great deal of portfolio shifting in their holdings of investment securities, with both taxes and higher returns in mind
- Financial firms often sell a selected securities at loss in order to offset large amounts of loan incomes, thereby reducing their tax liabilities
- May also shift portfolio to substitute new higher yielding securities for old security holding whose yields can be below current market levels
- Results in substantial short run loss for prospect of higher long run profits

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Factors Affecting Choice of Investment Securities Cont...

Interest Rate Risk

- Rising interest rates lowers the value of previously issued bonds and notes
- Longest –term bonds suffer the greatest losses
- Periods of rising interest rate marked by surging loan demand
  - ✓ Lenders first priority is to make loans; many investments are sold off to generate cash for lending - at a time when their prices are moving downward
  - ✓ Result in substantial capital loss which bank hopes to counter via tax benefits and relatively higher yields on available loans

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Factors Affecting Choice of Investment Securities Cont...

Interest Rate Risk cont..

- It is the variability in return on security due to changes in the level of market interest rates
- Interest rate risk has two parts
  1. Price Risk resulting from the inverse relationship between the security price and interest rates
  2. Reinvestment Risk from uncertainty about the interest rate at which future coupon income or principal can be reinvested.
- These two parts of interest rate risk move in opposite directions
- Many interest rate risk tools including futures, options, and swaps exist today

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Factors Affecting Choice of Investment Securities Cont...

Credit or Default Risk

- Risk that the security issuer may default on the principal or interest owed
- Three major credit ratings agencies
  1. Moody's
  2. Standard & Poor's
  3. Fitch's Rating Service
- Default risk components:
  - Capital risk
  - Income risk
- It means not only complete failure to pay but also the delay in payment

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Factors Affecting Choice of Investment Securities Cont...

Business Risk

- Risk that the economy of the market area the financial institution serves may slow down
- Security portfolio can offset this risk
- Securities can be purchased from outside the market area served
- Business Risk Components:
  1. Internal: results from the operating conditions or operating efficiency of the firm, and it is manageable within or by the firm
  2. External: result of operating conditions which the firm faces but which are beyond its control

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Factors Affecting Choice of Investment Securities Cont...

Liquidity Risk

- Can a security be converted into cash quickly and easily without significant loss in value?
- A key issue – the breadth and depth of a security's resale market
- However, purchase of large volume of liquidity, readily marketable securities tends to lower the average yield from financial institution's earning assets and reduced profitability
- Tradeoff between liquidity and profitability

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Factors Affecting Choice of Investment Securities Cont...

Call Risk

- Many corporations and some governments that issue securities reserve the right to call in instruments in advance of maturity and pay them off
- Because such calls usually take place when market interest rates have declined (and the borrower can get lower interest costs), the financial firm investing in callable securities runs the risk of an earnings loss because it must reinvest its recovered funds at lower interest rates
- Minimize call risk by purchasing callable instruments bearing a longer call deferment or by simply avoiding purchase of callable securities

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Factors Affecting Choice of Investment Securities Cont...

Prepayment Risk

- A form of risk specific to asset-backed securities
- This form of risk arises because the realized interest and principal payments from a pool of securitized loans may be quite different from the cash flows expected originally
- Variations in cash flow to holders of the securities backed by these loans can arise from
  1. Loan refinancing: tends to accelerate when market interest rate falls
  2. Turnover of the assets behind the loans: borrowers may sell out and move away; some borrowers may default on loans

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Factors Affecting Choice of Investment Securities Cont...

Prepayment Risk

The market value of a loan-backed security depends not only upon the promised cash flows it will generate, but also on the projected prepayments and loan defaults that occur

$$\text{Market value (price) of a loan-backed security} = \frac{\text{Expected cash flows adjusted for any prepayments or defaults of existing loans in the pool in Period 1}}{(1 + y/m)^1} + \cdots + \frac{\text{Expected cash flows adjusted for any prepayments or defaults of existing loans in the pool in Period } n \times m}{(1 + y/m)^{n \times m}}$$

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Factors Affecting Choice of Investment Securities Cont...

Inflation Risk

- Purchasing power from a security or loan may be eroded by rising prices
- Recently developed inflation risk hedge – Treasury Inflation Protected Securities (TIPS)
  - Both coupon payments and principal adjusted annually for inflation based on Consumer Price Index
  - TIPS do not protect investors from all the effects of inflation, such as moving into higher tax brackets
  - Carry market risk like regular bonds
  - Tend to be less liquid

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Factors Affecting Choice of Investment Securities Cont...

Pledging Requirements

- Depository institutions cannot accept deposits from federal, state, and local governments unless they post collateral acceptable to these governmental units
- State and local government deposit pledging requirements differ widely from state to state, though most allow a combination of federal and municipal securities to meet government pledging requirements
- If a financial institution uses repurchase agreements (RPs) to raise money, it must pledge some of its securities (usually Treasury and federal agency issues) as collateral in order to receive funds at the lowest RP rate

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CONCLUSION

- The major factors affecting the investment portfolio of banks are expected return, tax exposure, interest rate risk, credit risk, business risk, liquidity risk, inflation risk and pledging requirements.

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Module 05: Managing Investment Portfolios and Liquidity of Commercial Banks

Lecture 44: Managing Investment Portfolios-IV

CONCEPTS COVERED

- Portfolio Management Strategies
- Passive Strategies

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Investment Strategies

- Investment strategies play an integral role in meeting overall asset and liability management goals regarding interest rate risk, liquidity risk, credit risk, the bank's tax position, expected net income, and capital adequacy
- What maturity of securities should the investing institution hold?
- Should it purchase mostly short term bills and notes, or only long term bonds, or combination of both?

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Types of Portfolio Management Strategies

- **Passive Strategy**
  - Strategy of holding a portfolio of securities without attempting to outperform other investors through superior market forecasting
- **Active Strategy**
  - Attempts to outperform a passive benchmark portfolio on a risk-adjusted basis

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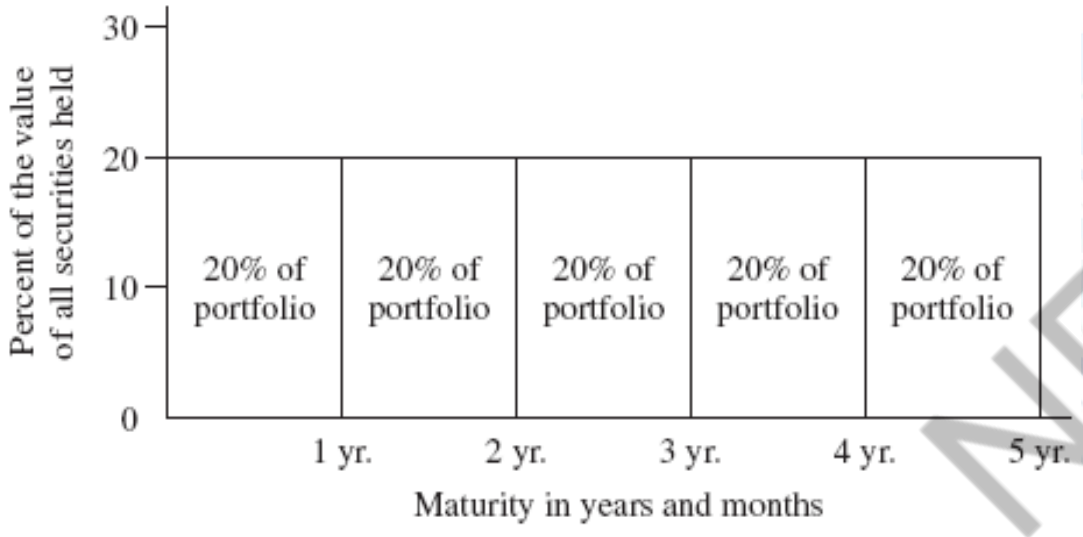
Buy and Hold Strategy

- Investors don’t trade actively to maximize the return
- Hold the bond with a maturity or duration close to their investment horizon
- Price risk elimination is the prime objective
- Return on security is controlled by coupon payments and reinvestment rate

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Alternative Maturity Strategies for Managing Investment Portfolios

The Ladder or Spaced-Maturity Policy

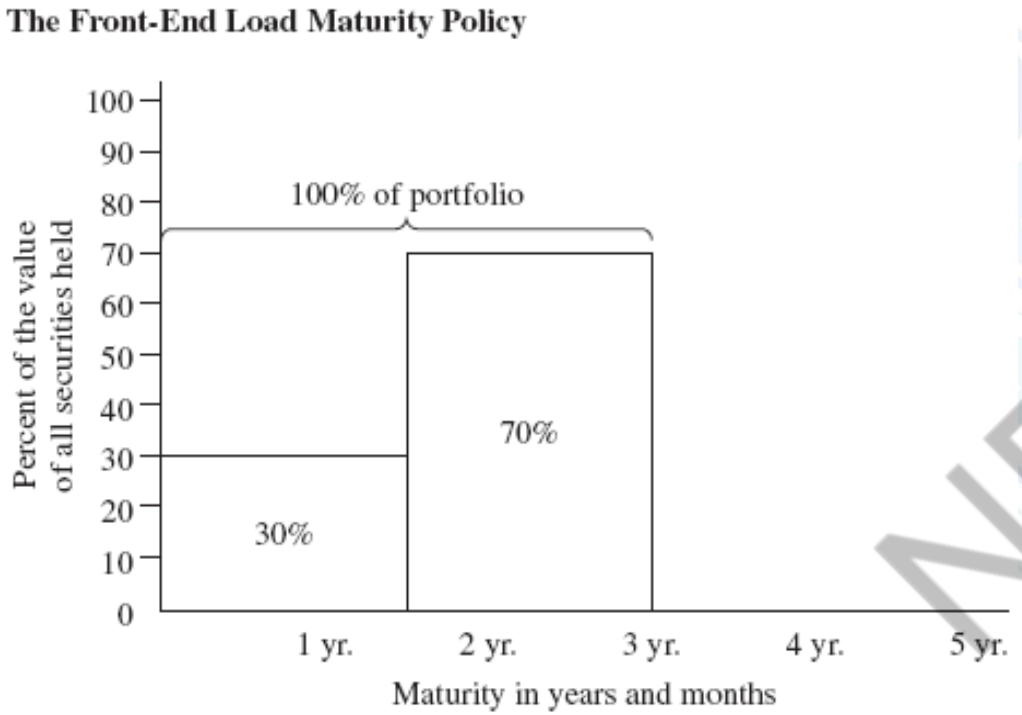


Ladder / Spaced-Maturity Policy

- Particularly popular among smaller institutions
- Choose a maximum acceptable maturity
- Invest in equal proportions of securities in each of several maturity intervals until maximum acceptable maturity is reached
- Strategy does not maximize investment income but has advantage of reducing income fluctuations
- Tends to build in investment flexibility
- Requires little management expertise

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Alternative Maturity Strategies for Managing Investment Portfolios



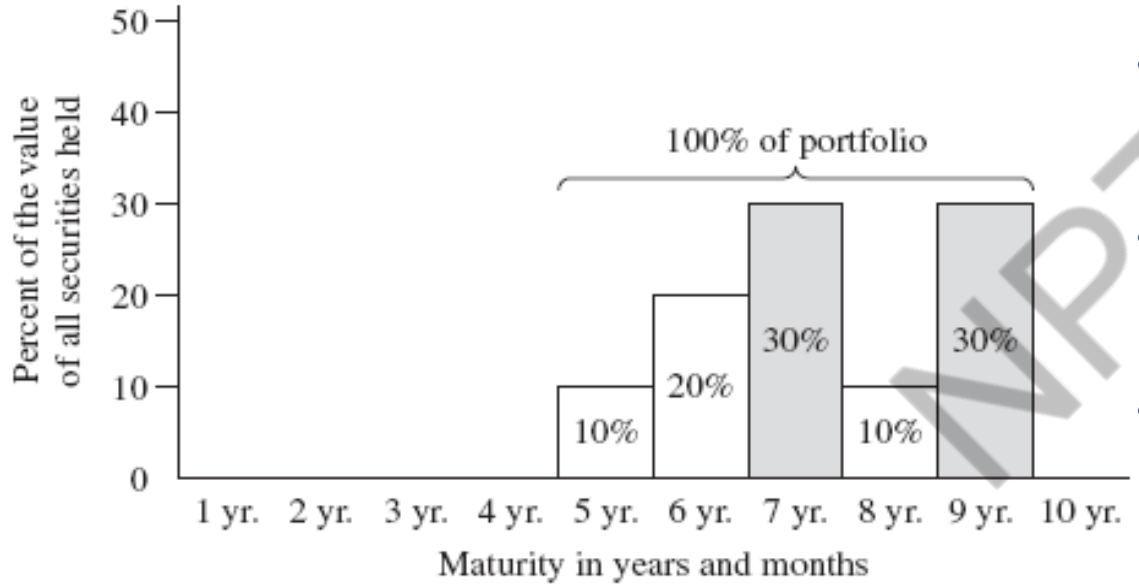
Front-End Load Maturity Policy

- Purchase only short term securities and place all investments within a brief interval of time
- Approach stresses using investment portfolio primarily as a source of liquidity rather than a source of income
- Avoids large capital losses if market interest rate rises

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Alternative Maturity Strategies for Managing Investment Portfolios

The Back-End Load Maturity Policy

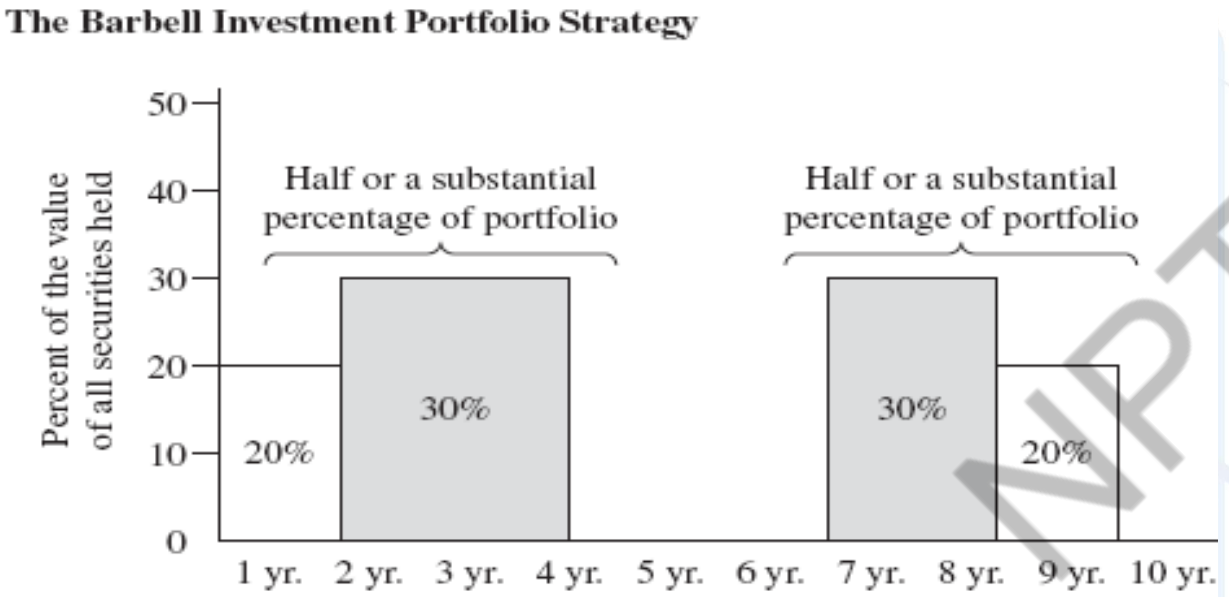


Back-End Load Maturity Policy

- Purchase only long term securities and place all investments within range of 5 to 10 years maturity range
- Rely heavily on borrowing in money market to help meet liquidity requirements
- Approach maximizes income potential from security investment if market interest rate falls

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Additional Maturity Strategies for Managing Investment Portfolios



Barbell Strategy

- Combination of front end and back end approach
- Investing institution places most of its fund in short term portfolio of highly liquid securities at one extreme and in a long term portfolio of bonds in the other extreme; minimal investment holding in intermediate maturities
- Short term portfolio provides liquidity; long term portfolio designed to generate income

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Indexing Strategy

- The objective is to construct a portfolio of bonds that will equal the performance of a specified index
- Performance is measured in terms of total return realized over the investment horizon
- Factors affecting the Selection of the Index
  - Investor's Risk tolerance
  - Objectives
  - Constraints imposed by the regulator

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Indexing Methodologies

- To minimize the tracking error
- Causes of Tracking Error
  - Transaction costs in construction of the index
  - Differences in the composition of the indexed portfolio and the index itself
  - Discrepancies between prices used by the organization constructing the index and the transaction prices paid by the index manager

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CONCLUSION

- Investment strategies are classified as passive and active strategies
- The passive strategies are buy and hold strategy, alternative maturity strategies, barbell strategy, indexing strategy etc.

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Lecture 45: Managing Investment Portfolios-V

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CONCEPTS COVERED

- Immunization Strategy
- Active Strategies

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Immunization Strategy

- A portfolio manager may decide that the optimal strategy is to immunize the portfolio from interest rate changes
- The immunization techniques attempt to derive a specified rate of return during a given investment horizon regardless of what happens to market interest rates
- When a bond's duration is equal to the liability's duration, the direct interest-on-interest effect and the inverse price effect exactly offset each other.
- As a result, the total return rate from the investment (TR) or the value of the investment at the horizon or liability date does not change because of an interest rate change.

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Example

1. A Bank has a *single* liability of Rs. 1,352 due in 3.5 years, D_L = 3.5 years

2. A current investment to cover the liability of Rs. 968.30
   - Note: Rs. $968.30(1.10)^{3.5}$ = Rs. 1,352

3. The current relevant yield curve is flat at 10%

4. There is 4-year, 9% annual coupon trading at YTM of 10% for P_0 = Rs. 968.30. This bond has a Macaulay duration of 3.5.

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Example Cont…

- *Immunization Strategy*: Buy bond with Macaulay's duration of 3.5 years to match the duration liability of 3.5 years

  - Buy 4-year, 9% annual coupon at YTM of 10% for P_0 = Rs. 968.30.
  - This bond has both a duration of 3.5 years and is worth Rs. 968.50, given a yield curve at 10%.
  - If the investor buys this bond, then any parallel shift in the yield curve in the very near future would have price and interest-on-interest rate effects that exactly offset each other.
  - As a result, the cash flow or ending wealth at year 3.5, referred to as the *accumulation value* or *target value*, would be exactly Rs. 1,352.

Example (Duration-Matching)

- **Ending Target Values at 3.5 Years Given Different Interest Rates for 4-Year, 9% Annual Coupon Bond with Duration of 3.5**

Duration = 3.5

Time (yr)	6%	10%	11%
1	Rs. $90(1.06)^{2.5}$ = Rs. 98.22	Rs. $90(1.10)^{2.5}$ = Rs. 114.21	Rs. $90(1.11)^{2.5}$ = Rs. 116.83
2	$90(1.06)^{1.5}$ = Rs. 104.11	$90(1.10)^{1.5}$ = Rs. 103.83	$90(1.11)^{1.5}$ = Rs. 105.25
3	$90(1.06)^{.5}$ = Rs. 92.66	$90(1.10)^{.5}$ = Rs. 94.39	$90(1.11)^{.5}$ = Rs. 94.82
3.5	$1090/(1.06)^{.5}$ = Rs. 1058.70	$1090/(1.10)^{.5}$ = Rs. 1039.27	$1090/(1.11)^{.5}$ = Rs. 1034.58
Target Value	Rs. 1,352	Rs. 1,352	Rs. 1,352

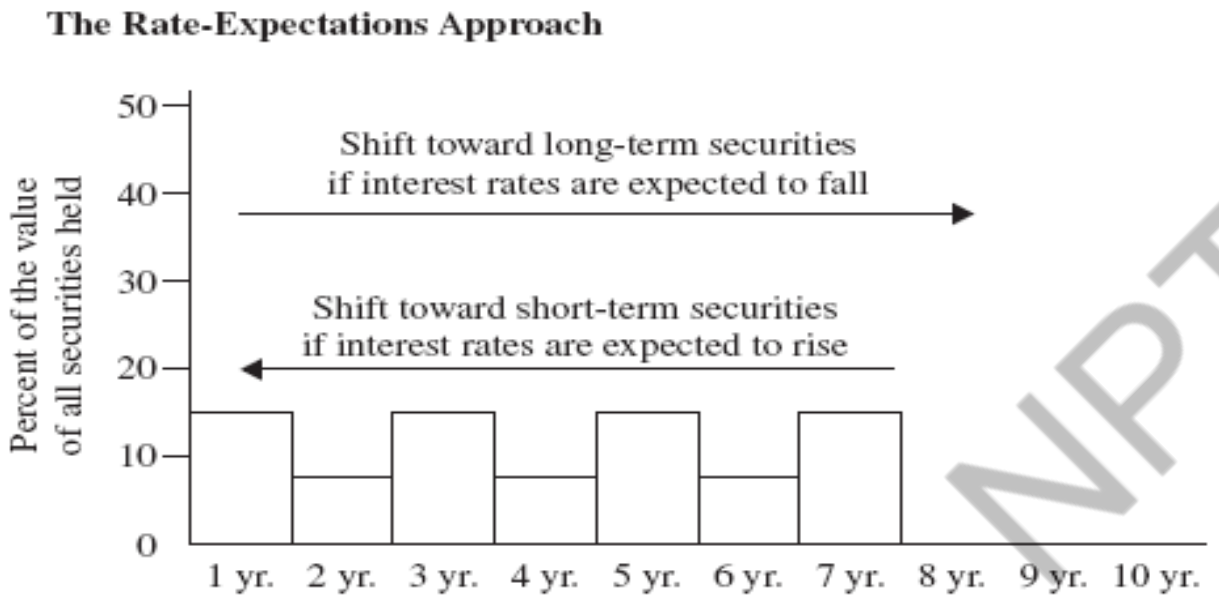
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Active Strategies

- Rate expectation approach
- Reading the yield curve
- Valuation Analysis
- Credit Analysis
- Bond Swaps

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Rate Expectation Approach



- Most aggressive of all management strategies
- Continually shifts maturities of securities in line with current forecasts of interest rates and the economy
- Calls for shifting of investments toward the short end of maturity spectrum when interest rates are expected to rise and towards the long end when interest rates are expected to fall
- Offers potential for large capital gains but also increases chances of substantial loss

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Maturity Management Tools: The Yield Curve

- Picture of how market interest rates differ across various maturities
- Yield curve contains an *implicit forecast of future interest rate changes*- their shapes have critical implications for investment decision
  - ✓ Positive sloped yield curves reflect the average expectation in the market that future short term interest rates will be higher than they are today; upward interest rate movement expected
  - ✓ Often translate this expectation into action; shift investment holdings away from longer term securities
  - ✓ Downward sloping yield curve points to investor expectations of declining short term interest rate; consider lengthening portfolio maturity since interest rates will fall and potential for substantial capital gains

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Maturity Management Tools: The Yield Curve Cont..

- **Provides information about under and over priced securities**
  - ✓ A security whose yield lies above the curve represents a tempting *buy* position; yield is temporarily too high and therefore price too low
  - ✓ Security whose yields lie below the curve represents a possible "sell" or "do not buy"; yield too low for maturity and price too high
- **Provides information about the risk-return trade-off**
  - ✓ Yield curve shape determines how much additional yield the investment officer can earn by replacing short-term securities with long-term securities and vice versa

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Valuation Analysis

- Select the bonds on the basis of their intrinsic values
- What are the factors which affect the bond's intrinsic values?
- Bond's Rating, call feature etc
- Buy the under valued bonds and sell the over valued bonds

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Credit Analysis

- It involves detailed analysis of the bond issuer to determine expected changes in its default risk
- What are the internal and external factors which affect the credit rating of the company?

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Bond Swap

- It involves liquidating a current position and simultaneously buying a different issue in its place with similar attributes but having a chance for improved return.
- The main purpose of the bond swap is portfolio improvement.
- Different Types of Bond Swap
  - Pure Yield Pickup Swap
  - Substitution Swap
  - Tax Swap

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Pure Yield Pickup Swap

- It involves swapping out of a low-coupon bond into a comparable higher coupon bond to realize an automatic and instantaneous increase in current yield and yield to maturity.
- **Advantages:**
  - No need for interest rate speculation
  - No need to analyze prices or overvaluation or under valuation
  - No specific work-out period needed because the investor is assumed to hold new bond to maturity
- **Disadvantages:**
  - Increased risk of call in the event interest rate decline
  - Reinvestment risk is greater with higher coupon bonds.

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Substitution Swap

- It is generally short-term
- It relies heavily on interest rate expectations
- It is subject to more risky than pure yield pickup swaps
- The procedure assumes a short-term imbalance in yield spreads between issues that are perfect substitutes
- The imbalance in yield spread is expected to be corrected in near future
- Advantage:
  - Realization of Capital Gain by switching out of your current position into higher yielding obligation
- Disadvantages:
  - Yield spread thought to be temporary in fact be permanent thus reducing capital gains advantages.
  - The market rate may change adversely.

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Tax Swap

- It does not involve any interest arte projections.
- The investor enters into tax swaps due to tax laws and realized capital gains in their portfolio.

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CONCLUSION

- The immunization techniques attempt to derive a specified rate of return during a given investment horizon regardless of what happens to market interest rates
- When a bond's duration is equal to the liability's duration, the direct interest-on-interest effect and the inverse price effect exactly offset each other.
- The active investment strategies include rate expectation approach, reading the yield curve, valuation analysis, credit analysis and bond swaps

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