**Chapter 24 Bond Portfolio Management Strategies**

First:

**How much of a portfolio invested in Bonds?**

* Markowitz model
* Rule of thumb
* Wilshire Report
  + Exhibits 5 and 6, page 6

**Types of strategies:**

* Absolute return strategies
  + Either income or return
  + Generate cash or highest return.
  + Often no restrictions on the type of bond held
  + Beyond investment vs non-investment grade
* Liability driven strategies
  + Build the portfolio as a function of liabilities’ duration
  + Such that ΔA = ΔL
  + Banks, insurance companies, Pension funds

**Go to Duration Liability Duration Matching Spreadsheet**

* Index Benchmark Strategies
  + Match to an index – like matching stocks to the S&P500
  + [List of bond indices](https://etfdb.com/indexes/bondfixed-income/)
* Types of Index Strategies
  + Pure index - Match everything about the index
    - Credit, Duration, Convexity, Sector, Subsector, Optionality
  + Relax certain risk factors
    - Credit, duration, convexity,…

**Go to Bloomberg: LUACTRUU <Index> <Go>**

* Note number of bonds in the index
* Members = 5,841

**Go to S&P US HY Corp 5 to 7 Index Fact Sheet**

* Note: Rebalanced Monthly – top of page 2

**Index Benchmarking**

* Build a portfolio of bonds such that ***ALL*** the Index criteria are matched
  + Credit, Sector, Subsector, Optionality, Yield, Duration, Convexity
* It is difficult to build an portfolio of bonds that ***exactly*** matches and index
  + Members = 5,841!
* So use ***derivatives*** to change a portfolio’s characteristics to match the selected index.
  + Example: Add an ***Interest Rate Swap*** to the portfolio to match the index duration

**First: Recall components of a corporate bond’s yield**

1. Pure TVM
2. Credit Spread
3. Liquidity Premium

* We are looking at ***matching*** the ***changes*** in the “***Pure TVM***” component.

**Second: Quick Review Interest Rate Swaps**

* Pay 2.80% APR-SA for LIBOR
* Since Swap is marked-to-market
  + If LIBOR goes up 🡺 receive an immediate cash payment
  + If LIBOR goes down 🡺 make an immediate cash payment
  + Payment equal to the PV of the expected future cash payments

**Third: Compare Change in Portfolio (∆PPort) to change in Index (∆PIndex) for a given ∆y**

* For both the portfolio and the Index:
* ∆PPort = -DPort x PPort x ∆y
* ∆PIndex = -DIndex x PIndex x ∆y
  + We will assume the same ∆y for both
* If D’s are different, then ∆P’s will be different
* So use an interest rate swap to match the ∆P’s for a given ∆y

**Go to Port+Swap vs Index Duration Match.xlsx**

* Now instead of just matching the index,
* The Bond Portfolio Manager can be paid to try to ***beat*** the index

**Credit**

* Buy bonds that you think will eventually have a lower credit spread
* Examples:
  + Increase EBITDA/Int Exp
    - EBITDA = Assets x Asset Turnover x Operating Margin
    - Increase sales (Increase AT)
    - Decrease costs (Increase OP Margin)
  + Decrease DOL
    - How?
* Index Description with show allocation weights in industry subsectors or sectors
  + Manager buys bonds in sectors or subsectors believed to improve relative to others
  + Overweight or underweight certain sectors or subsectors

**Duration - Interest Rate Risk**

* Shorten or lengthen portfolio duration
* Relative to the index
* Depending on interest rate forecast
* Use Swaps to increase or decrease Portfolio Duration relative to the index
  + Back to the **Port+Swap vs Index** spreadsheet
  + Often manager given a plus or minus range
  + Index’s Duration +/- 0.50

**Convexity**

* Review Convexity
  + Bullet
  + Barbell
  + Ladder
* Construct portfolio with greater or less convexity to take advantage of yield curve shifts
* **Review Convexity**
* **Cost of Convexity Examples**

**Bond Portfolio Definitions**

Total Return of a bond or bond portfolio

* Coupon yield
* plus capital gain or loss

Bond Portfolio Primary Risk Factors

* Systematic Risk Factors
  + risk factors that affect all bonds in a benchmark
* Non-Systematic Risk Factors
  + risk factors that affect individual bonds in a benchmark

**Systematic factors can be further divided into:**

1. Term Structure Factors:

Risks associated with changes in the absolute and relative levels of interest rates as a function of term to maturity (called the term structure of rates). These risks include parallel shifts in the yield curve or steepening, flattening (twisting) of the yield curve or combinations.

1. Non-Term Structure Systematic Risk Factors include:
2. Sector Risk
3. Credit Risk
4. Optionality Risk

**Bond portfolio management strategies based on the constraints faced by the manager**

1. Pure bond index matching

* Match portfolio to index across all risk factors.

1. Enhanced indexing: matching primary risk factors

* Match primary risk factors (such as duration, a measure of term-structure risk)
* Can make small changes to other risk factors.
  + For example, the individual bonds within a sector can vary from the bonds in the index.

1. Enhanced indexing: minor risk-factor mismatches

* Example: Manager can have minor mismatches to major factors (such as sector allocations or optionality) but duration must match the index.

1. Active management: larger risk-factor mismatches

* Manager can actively manage sector weights, credit or optionality, but must keep duration within plus or minus 10% of the index.

1. Active management: full-blown active

* Fully actively managed with no duration, sector weights or credit level or optionality restrictions.

1. Duration-matching strategy

* Active manager has chosen to match portfolio duration to the duration of index, but still changing other risks.

1. Core/Satellite strategy

* A blended strategy of indexed and active strategies.

1. Absolute return strategy

* Cash-flow based return strategies

**Liability-driven strategies**

1. Immunization Strategy

* Match asset duration to liability duration
* Ensures sufficient value cover a future liability regardless of interest rate changes

1. Cash Flow Matching

* Structured a portfolio to ensure there will be sufficient cash flows to cover future liabilities, regardless of interest rate changes.

**Portfolio Building Strategies**

* Top-Down
  + First allocate portfolio to sectors and then subsectors then individual bonds
* Bottom-Up
  + First choose bonds then subsectors then sectors

**Bullet strategy**

* A portfolio strategy that concentrates the maturities of securities (bonds) in a portfolio on a specific duration (or maturity).

**Barbell strategy**

* A portfolio strategy that concentrates the maturities of securities (bonds) in portfolio on two extreme durations (maturities on the yield curve) with the goal of creating a weighted average portfolio duration equal to the duration of an index (bullet strategy).

**Ladder**

* A portfolio strategy that allocates (in roughly equal weights) bonds to ***many different*** maturities with goal of creating a weighted average portfolio duration equal to the duration of an index.
* For example, the portfolio might allocate 1/10th to each maturity through 10 years
* The average maturity (duration) would be near 5 years.
* As time passes
* and all the bonds in the portfolio shorten
* and the shortest bonds (1/10th of the portfolio) mature
* This money can be reinvested in long bonds to easily maintain the average (duration) maturity.