

Class: M.Sc. Sem 3

Subject : Actuarial Practice 1

Chapter: Unit 3 Chapter 12

Chapter Name: Managing an Investment Portfolio

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1 Active and Passive Investment Management

Active investment management

Active management means that an investor, a professional money manager or a team of professionals is **tracking the performance** of an investment portfolio and making buy, hold and sell decisions about the assets in it, with the goal of **outperforming a designated benchmark** and enhancing investment returns.

The manager has few restrictions on the choice of investments, perhaps just a broad benchmark of asset classes. This enables them to make judgments regarding the future performance of individual investments, both in long term and short term.

Higher returns in active management are achieved by :

- Identifying **stocks** trading at lower prices than their value merits thus making stock selection profits
- Identifying **sectors** trading at lower prices than their value merits thus making sector selection profits

1 Active and Passive Investment Management

Active management is generally expected to produce **greater returns** due to the freedom to apply judgement and relying on investment analysis, research and forecasts, which can include quantitative tools.

However, this is likely to be offset by:

- The extra costs involved in more regular transactions, particularly when attempting to make short term gains, as well as the cost of paying fund managers their fees
- The risk that the manager's judgement is wrong and so the returns are lower

Active management does not support the **stronger forms of efficient market hypothesis**, and can be successful only when the market is inefficient



An efficient market hypothesis believes that it is impossible the market in the long run because all the public information has already been incorporated into stock prices.

1 Active and Passive Investment Management

Passive investment management

Passive investment management involves holding of assets that **closely reflect** those underlying a **certain index or specific benchmark**. The manager has little freedom to choose investments.

It is fundamentally based on the principle of **index tracking**, where investments that replicate a specific index are bought and sold, leaving no scope for outperforming or underperforming the index but giving **similar returns as the index**

Passive management believes in efficient market hypothesis, thus rendering individual stock picking futile. As a result, the best investing strategy is to invest in **index funds**, which have historically outperformed the majority of actively managed funds.

Passive investment is **not entirely risk free** as the index may perform poorly or there may be **tracking errors**.

The best investment strategy would be a combination of both active and passive strategies, with some asset classes being managed actively and some sectors passively

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2 Tactical Asset Allocation

Tactical asset allocation refers to an **active management portfolio strategy** that shifts **asset allocations** in a portfolio to take advantage of market trends or economic conditions. It involves **switching** between investments for higher returns.

An attempt to maximise returns may involve tactical asset allocation, which is a **departure** from the **benchmark position** and hence conflicts with the minimisation of risk. The size of the assets relative to the liabilities will determine the risk involved in such an action.

It is a shift from a **long-term strategic investment activity** to a short-term investment activity, to take advantage of under or over-pricing of assets. The success of this method lies on the fact that returns are greater than the risk incurred.

There needs to be a balance between choosing the **right time** to carry out the switch and the **time taken** for the switch. **Derivatives** can help with minimising this problem, where they can be used to gain exposure of the changing market trends immediately and then the gradual sale of the portfolio

2 Tactical Asset Allocation

Factors to be considered when making a tactical asset switch are:

- The **expected extra returns** to be made relative to the additional risk
- **Constraints** on the changes that can be made to the portfolio
- The **expenses** of making the switch
- The **problems of switching** a large portfolio of assets
- The **tax effect** on capital gains
- The issue of not carrying out the switch at a good time

2 Tactical Asset Allocation



Consider a typical portfolio and the weight of each asset class as follows

Cash = 10%

Bonds = 35%

Stocks = 45%

Commodities = 10%

Assuming that data suggests that there will be a substantial increase in demand for commodities over the next 18 months. It may be prudent for the investor to shift more investment into that asset class to take advantage of this opportunity. While the portfolio's strategic allocation remains the same, its tactical allocation may then become:

Cash = 5%

Bonds = 35%

Stocks = 45%

Commodities = 15%

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3 Risk Budgeting

The term **risk budgeting** refers to the process of establishing **how much risk** should be taken and establishing where it is most efficient to take the risk in order to maximise returns.

Unlike traditional asset allocation, which focuses on allocation of capital to different asset classes, risk budgeting focuses on how much **risk is allocated** to each **investment or asset class**. The primary goal of risk budgeting is to **balance risk within a portfolio** and align them with the investor's risk tolerance, risk appetite and risk capacity.

The risk budgeting process has two parts:

- Deciding how to allocate the **maximum permitted overall risk** between total fund **active risk** and **strategic risk**, i.e. the total risk managers are permitted to take, in order to out-perform their allocated benchmarks and till what extent one can deviate from the theoretically marked benchmark
- Allocating the total fund **active risk budget** across the component portfolios

The key focus when setting the strategic asset allocation is the risk tolerance of the stakeholders in the fund. This is the systematic risk they are prepared to take on in the attempt to enhance long-term returns.

3 Risk Budgeting

The key question on active risk is whether it is believed that active management generates positive excess returns.

Risk budgeting is therefore an investment style where asset allocations are based on an asset's risk contribution to the portfolio as well as on the asset's expected return.

A risk budgeting strategy can free the manager to look for **alternative investments** that might increase the expected returns on the portfolio. Because the constraint is that the total risk of the portfolio must stay at or below a targeted level, investments with low correlation are preferred as they reduce the total risk through diversification.

4 Portfolio Construction and Benchmarking

Strategic risk and active risk

Fund managers are often faced with two conflicting objectives:

- To ensure **security of assets** – which promotes a cautious approach, where the assets chosen follow a benchmark or target
- To achieve **high long term investment return** – which encourages moving away from the benchmark into assets that are expected to generate higher returns usually at the cost of being exposed to a higher risk.

The investment policy needs to reflect the extent to which the risks of lower stability and security are accepted in order to aim for higher returns. This will involve a two-stage process

1. Firstly, an appropriate **asset mix** must be established for the fund – the **strategic benchmark**

This is decided by taking into account the nature of liabilities, and any representation about the structure or asset mix of the fund that have been made to the investors.

The strategic risk is the risk of poor performance of the strategic benchmark relative to the value of liabilities

4 Portfolio Construction and Benchmarking

If a fund's liabilities are thought to be best matched with an asset mix of 80% equities and 20% bonds, then a strategic benchmark might be set equal to 90% equities and 10% bonds, because of the higher returns generated by equity.

2. Secondly, the strategy is implemented by the **selection of one or more managers**, and a decision on the appropriateness of the **level of risk** that the managers should take relative to strategic benchmark.

Within their guidelines, the investment managers have freedom over **stock selection**, and use their skills and research to maximise the return on the funds allocated to them.

The allocation of this part of the investment risk budget is known as the **active risk**.

A manager will be given a benchmark say an equity index for equities.

A **zero-active risk** approach would be to follow the index as it is. Although slight risk can be taken by the investment manager, in order to outperform.

Returns earned with respect to this benchmark are known as active returns. If the manager earns a return of 5% compared to the benchmark return of 4%, then he has achieved an active return of +1%

4 Portfolio Construction and Benchmarking

Active returns vary over time periods and are thus uncertain. Active risk can also be defined as the **standard deviation from the active return**.

Active risk is directly proportionate to the manager's activities. If he has a highly active and rigorous approach towards the fund's management, then the risk he undertakes is also high

Structural risk

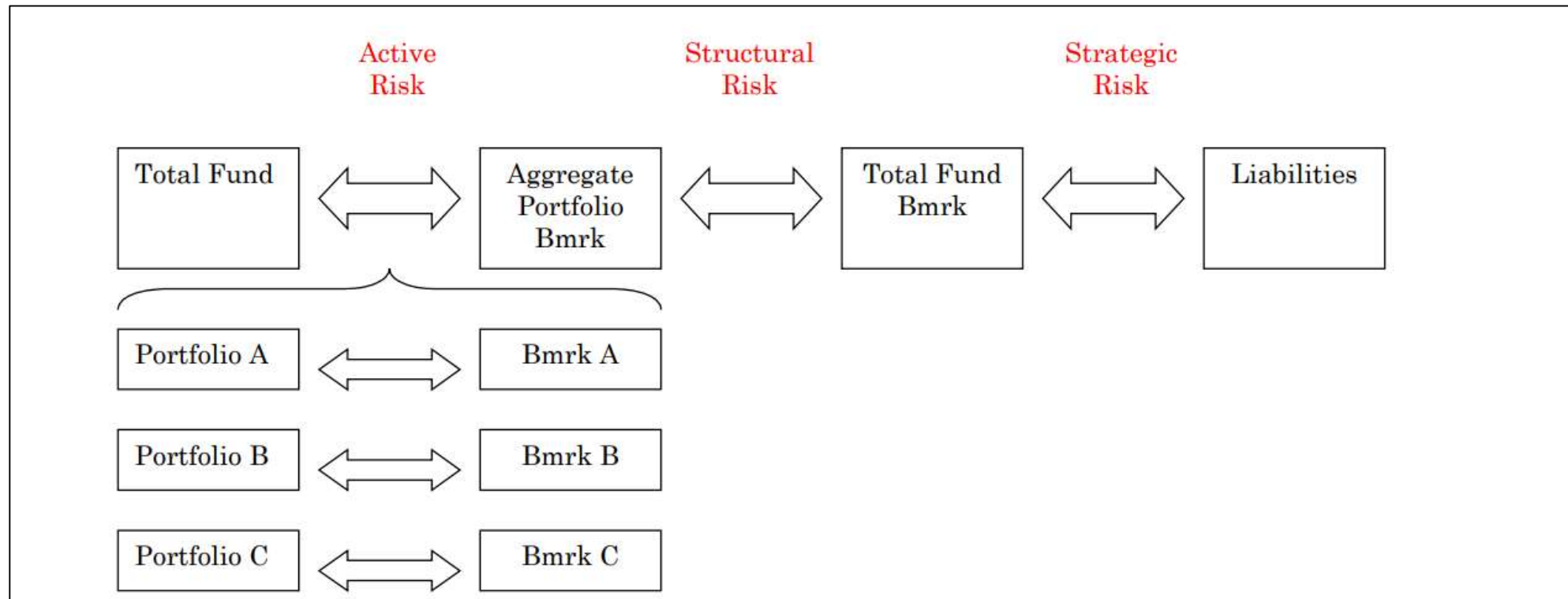
There may be some **structural risk** associated with any mismatch between the **aggregate of the portfolio benchmarks** and the **total fund benchmarks**.

The portfolio's benchmark can be associated to an index or another portfolio's benchmark. When investments of the index change, it is not always easy to change that the portfolio because of the time lag or the difficulty in understanding the change.

Overall risk

This is the sum total of **active, strategic and structural risk**.

4 Portfolio Construction and Benchmarking



Reference: <https://www.actuaries.org.uk/system/files/documents/pdf/practicalities-budgeting-managing-and-monitoring.pdf>

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5 Monitoring Investment Performance and Strategy

It is necessary to frequently **review** the **appropriateness of any investment strategy** at regular intervals because:

- The **liability structure** may have **changed** significantly. For example, the investor has paid off his fixed liabilities and now has inflation linked liabilities, which may increase his need for indexed linked assets such as equity over bonds, a takeover, benefit improvements or legislation
- The **funding or free asset position** may have changed significantly.
- The **manager's performance** may be significantly out of line with that of other funds. The manager may act reckless or unnecessarily prudent.



Explain who benefits if:

Investments held in a defined benefit scheme achieve higher than expected returns

A life insurance company achieves higher than expected returns

5 Monitoring Investment Performance and Strategy

Setting performance objectives

In some cases, an investment manager will work to a **performance objective** in which the return is judged relative to that achieved by other managers for similar funds.

The more severe the **restrictions** placed on the managers on the assets or asset classes that can be held, the **less appropriate** it is to set **performance targets** that can relate directly to the generality of funds.

The target returns should therefore be compared against that which will have been achieved by an index fund, which had maintained the asset allocation proportions set in the benchmark.

Some investment managers are given immense freedom in asset allocation across asset classes as well as in stock. Others are given a particular goal or norm, and they are required to increase returns, while working on the lines of the norm.

5 Monitoring Investment Performance and Strategy

Constraints on the manager's performance

It is also important to note any other **constraints** that may have affected the manager's performance, such as a **shortage of cashflow** within the provider

This may **restrict the funds** available for investment or lead to **disinvestments** that may not be timed as well as would otherwise be the case

The primary constraints may be **asset size, liquidity, time horizon**, and other **external considerations** such as taxes and regulations

Size of the investor's portfolio may limit the asset classes accessible to the owner

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6 Measuring Different Investment Risks

Tactical asset allocation risk

Tactical asset allocation risk is the risk of following an **active investment strategy** rather than **tracking the benchmark**. Its focus on short-term market movements may cause investors to over-look long term investment opportunities.

- Historic Tracking Error

The most usual measure adopted in the retrospective or backwards looking tracking error – the annualised standard deviation of the difference between portfolio return and benchmark return, based on observed relative performance

- Forward Looking Tracking Error

The equivalent prospective measure is the forward-looking tracking error – an estimate of the standard deviation of returns that the portfolio might experience in the future if its current structure were to remain unaltered. This measure is derived by quantitative modelling techniques.

6 Measuring Different Investment Risks

The forward predictions are generally based on **volatility** and **correlation** data that is derived from past performance, hence there is an element of **backward-looking** here too. However, it does allow us to model the current portfolio going forward, rather than the historical portfolio, which might have changed considerably over time.

Strategic asset allocation risk

Where an overall portfolio is managed by a single manager, the manager will normally be given a target range of asset allocation as a percentage of the fund. For example: equities 40% to 60%, government bonds 10% to 50%, corporate bonds 20% to 50%, etc. A target asset allocation which may not always be the centre point of the individual ranges will also be provided.

A strategic asset allocation risk can be measured using the **forward and backward looking** approaches as above, assuming that the relevant parts of the portfolio were invested in the **appropriate benchmark indices**, and the effects of the actual strategic allocation compared with the target allocation.

6 Measuring Different Investment Risks

Duration risk

A portfolio that needs to **closely match assets with liabilities**, will also have a target and an acceptable range for the duration of the fixed interest element.

If the income stream from these investments are received before the liability matures, then the issue of **reinvesting** arises, and income received after the liability matures, leads to insufficient funds in covering the liabilities, if the investors is highly dependent on this income. This forms the **duration risk**.

Counterparty, Interest Rate and Equity Market Risk

Some investment risks are difficult to **quantify**.

For example, a reasonably large corporate bond portfolio might only expect one default every 5 years. The above techniques of historic and forward-looking tracking errors would suggest that if no default has occurred in the most recent times, then no risk has been taken.

The best proxy to then quantify the risk being taken is to use the amount of capital that is necessary to hold against the risk

6 Measuring Different Investment Risks

This is relatively straightforward for financial product providers who have to carry out a capital requirements calculation. Firms subject to the European Solvency II regime can use their internal model or the standard formula as appropriate

It is then possible to calculate and compare the capital required for a target portfolio and the actual portfolio as measures of the risks taken.

Diversification benefits

When carrying out the calculations of the level of risks taken, one must also allow for diversification benefits, using the same techniques as diversification significantly reduces specific risks

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7 Analysis of Investment Performance against a Benchmark

Comparative performance

The simplest way of comparing the actual performance of a fund against its benchmark is to input all the **cashflows that went into or out of the funds** onto a spreadsheet that also holds the daily values of the benchmark.

Therefore, it is possible to calculate readily the value of the fund over a period if it had been **invested in the benchmark rather than in the actual assets held**

Care needs to be taken over the treatment of income; in particular whether a benchmark index includes reinvestment of income.

- If the index includes income reinvested, then dividends and interest on the actual portfolio are excluded as cashflows (but included in valuing the new end-period value of assets).
- If the benchmark is capital only then the actual income from the assets held needs to be included as cashflows.

7 Analysis of Investment Performance against a Benchmark

A decision will be taken as to how frequently the **performance needs to be reviewed**. This should be done on a regular basis so as to achieve the company's objectives; however, the costs of monitoring should be kept in mind such that they do not dilute any returns earned.

An analysis of reasons for **departures from the benchmark performance** could be sought from the manager. Performance of the overall fund could also be conducted with respect to the liabilities and how they grow.

Money Weighted and Time Weighted Rate of Return

Money weighted and time weighted rates of return are two methods of measuring the performance or the rate of return on an investment portfolio.

Money Weighted Rate of Return

A money weighted rate of return is identical in concept to an internal rate of return.

It is the discount rate at which the present value of inflows = the present value of outflows in a portfolio.

7 Analysis of Investment Performance against a Benchmark

The MWRR only considers the **amount invested and disinvested** into the fund. Any amount generated **by the fund** such as interest, dividend or capital gains is not accounted for.

The MWRR factors in all the cashflows, including contributions and withdrawals. Assuming a MWRR is calculated over many periods, the formula will tend to place a **greater weight** on the performance in periods when the account size is highest.

If the manager outperforms the benchmark for a long period when the account is small, and then (after the client invests more money into the fund) the manager has a short period of underperformance, the money weighted measure may not treat the manager fairly over the whole period.

The MWRR inherently assumes that all **positive cashflows** are reinvested at the same rate thus overinflating the expected profitability.



Explain why cashflows such as interest, dividend and capital gains, which are generated by the fund itself are ignored in the calculations, whereas cashflows in respect of new money into the fund or money disinvested from the fund may not be included

7 Analysis of Investment Performance against a Benchmark

Time Weighted Rate of Return

Deposits and withdrawals are usually **outside a manager's control**, thus a better performance measurement tool than MWRR is needed to judge a manager more fairly and allow for comparison between peers – a measurement tool that will isolate the investment actions, and not penalise for deposit/withdrawal activities. The **TWRR** is the preferred industry standard as it not sensitive to contributions or withdrawals.

It is defined as the **compound growth rate** of 1 over the period being measured. No account is taken of flows into or out of the portfolio.

The rationale here is to combine the growth in the funds between times of consecutive cashflows, and generate an individual overall growth rate.

The cashflows only include new money and any income generated by the funds, is taken as part of the fund itself

7 Analysis of Investment Performance against a Benchmark

Collective Investment Schemes

Collective Investment Schemes have a **daily pricing point**. This is the time of day at which the values of the underlying assets in the scheme are captured. It is commonly noon and is rarely at market close. Published market indices are normally quoted at close of business.

Intra-day movements in certain markets can be material and so to make a fair assessment of the scheme manager it is necessary to capture the relevant benchmark indices at the same time of the day as the pricing point.



A charity employs an investment manager to implement an investment strategy established by the charity's trustees. The trustees review the strategy at six-monthly intervals. Explain why it is important for the trustees to review the investment strategy

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