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FROM A SINGLE-PRODUCT TO OPEN-ARCHITECTURE: THE MULTI-MANAGER APPROACH IN THE ASSET MANAGEMENT INDUSTRY

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"Ai miei genitori, Antonio ed Anastasia, che con il loro amore e la loro fiducia mi hanno permesso di raggiungere questo traguardo. A mio fratello Matteo, cui ogni mio risultato è a lui dedicato. E infine ai miei amici, che con il loro supporto mi hanno spronato a dare il meglio di me stesso."

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INTRODUCTION

Until the beginning of the 21st century, it was virtually unheard of for financial institutions to use and distribute products managed by another asset manager. However, over the past few years the situation has been transformed through the development of open architecture and sub-advisory funds. Briefly, "open architecture" is where an institutional investor sells an existing fund managed by another institution to its own customers. "Sub-advisory" refers to asset managers, banks, or insurance companies which outsource the management of a specific fund to a third-party asset manager. On one hand open architecture allows banks to distribute proprietary as well as non-proprietary investment products on a single platform which can accommodate multiple investment vehicles and account structures. On the other hand, sub-advisory may enable you to invest in institutional managers who are not usually marketed to retail investors. Complete open architecture can be beneficial because it provides access to the best funds, fund managers, and aid diversification. The rationale for open architecture is that in a specialist market environment it is difficult to find a financial institution that can provide the best funds in every sector, region and asset classes.

Many banks and insurance companies have been recently adopting open architecture and sub-advisory by introducing "Multi-Managers": as investors buy single-products such as individual funds, they can also buy either portfolios that consist of different funds, like a fund-of-funds structure, or products of different asset managers, namely manager-of-managers structure.

The increasing demarcation of the set of core competences and skills required for the manufacturing and distribution of fund management products and the growing trend towards open architecture and specialization have boosted the blossom of multi-manager products.

This thesis attempts to set boundaries of the multi-manager business within the asset management industry. I am going to analyse the portfolio construction and implementation of a multi-manager fund, how these products can achieve a greater diversification than a single mutual fund, how the different style techniques are implemented.

I will develop the multi-manager approach giving an initial and generic overview of the asset management industry, highlighting the main characteristics of single-managed

products. Then, I will examine the main advantages and characteristics of the open-architecture through a deep analysis of the multi-manager universe.

The thesis is divided in four chapters: the first one is dedicated to the asset management industry, how the investment companies are structured and how they act in different financial markets. Focusing especially on the differences between passive and active management, the first chapter highlights the main characteristics of the ample range of single-managed products, starting from the basics of the mutual funds, passing through the analysis of the exchange-traded fund (ETF) and index mutual fund, arriving to the segment of the alternative asset classes by examining the characteristics of the hedge funds and their relevant strategies.

The second chapter introduces and delves the multi-manager approach. It focuses on the main advantages of investing in multi-manager products, and pinpoints the difference between fund-of-funds and manager-of-mangers funds in terms of structure and organization. The chapter will finish with the study of the portfolio construction and funds selection through the quantitative and qualitative analysis.

The third and the fourth chapter conclude the analysis of the multi-manager approach. The first concentrates on the performance characteristics of the multi-manager funds, by introducing the main important models of evaluation of the performance of funds, defining the impact of fees by the results analysis and also gives a method of comparison through the peer group analysis.

The last chapter examines the due diligence process in all the aspects of the multi-manager approach, starting from manager evaluation due diligence arriving to delve portfolio construction disciplines, highlighting how to manage the risks inside the multi-manager funds by implementing risk monitoring process. This chapter will conclude with the analysis of how to prevent and handle operational risk and how to manage currency risk in multi-manager funds.

CHAPTER 1: THE ASSET MANAGEMENT INDUSTRY

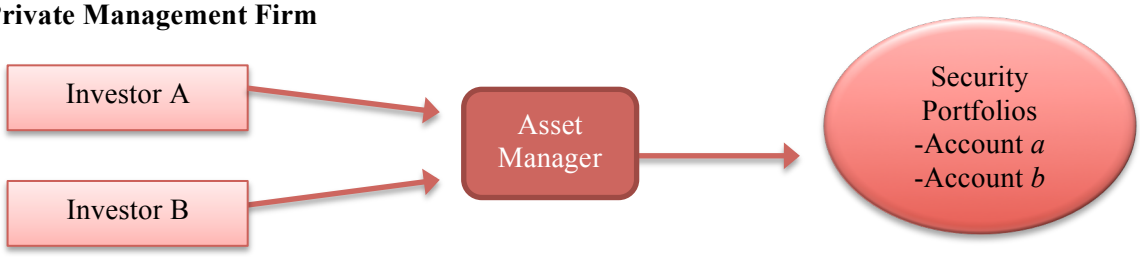
1.1 Structure of the Asset Management Industry

Traditional professional asset management firms are organized into structures. Individuals, as well as institutional investors, make contracts directly with a management and advisory firm for its service. These services can range from providing standard banking transactions (loans, and saving accounts) to advising clients on structuring their own portfolios and managing the investment funds themselves. In the recent decade, banks and financial advisors have carried out activities mainly following the *asset under management* (AUM) approach – the management firm becomes the custodian of the investor's capital, usually with full discretion as how those funds are allocated, and the AUM denotes the market value of all funds managed by the management firm on behalf of their clients. The main characteristic of this structure is that each client of the management firm has a *separate account*. An investor can select an investment company for its expertise in a particular niche – i.e. selecting large-cap, value stocks – and the assets of each client will be accounted *separately* regardless of whether the firm employs a single or other model portfolios. The situation above mentioned is illustrated in Panel 1 of Exhibit 1.1.

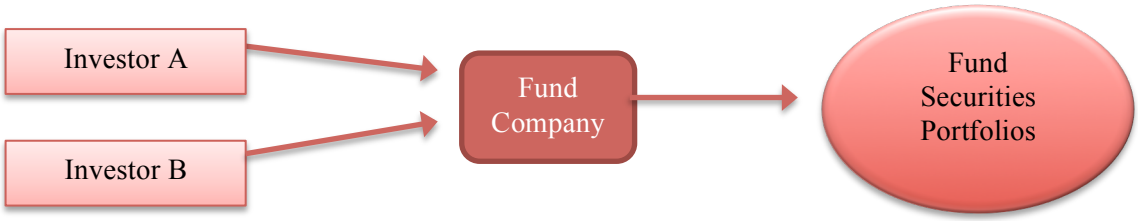
A second general approach to asset management involves the *commingling* of investment capital from various investors. An **investment company** invests a pool of funds belonging to many individuals in a single portfolio of securities. In exchange for this capital, the investment company issues to each investor new shares representing his or her ownership of the mutually held securities portfolio, which is commonly known as *fund*. This structure is illustrated in Panel 2 of Exhibit 1.1.

Exhibit 1.1

1. Private Management Firm



2. Investment Companies



This situation can be described by a simple example: an investment company sells 10 million shares to the public at €10 a share, thereby it can rise €100 million. Assuming that the fund's purpose is to emphasize large-cap common stocks, then, the manager would invest the proceeds of the fund share sale (€100 million less any brokerage fees) in the stock of such companies as Nestlé, Total and Volkswagen. When investors buy shares from an investment company, they own the appropriate and fair percentage of the overall fund, rather than any portion of the shares in the portfolio themselves.

There are notable differences to highlight regarding the two organizational forms. A mutual fund offered by an investment company is formed as a general investment purpose and marketed to the public. The primary clients who seek professional asset management through investment companies are individual investors with relatively small pools of capital. Conversely, private management and advisory firms develop a personal relationship with their clients, getting to know the specific investment objectives and constraints of them. The collection of assets held in separate accounts can also be tailored to these special needs. The primary clients of a private management firms are investors with substantial level of capital, such as pension fund sponsors and high net worth individuals.

1.2 The Asset Management Industry in Europe

Asset managers play a key role in helping their clients to reach their investment objectives as well as contributing to the financing of the overall European economy. Indeed asset management provides an important link among investors, corporations, banks and government agencies that have funding needs.

As reported in the 6th annual review (2013) of the Asset Management in Europe provided by EFAMA[1], the AUM in Europe amounts to €13.8 trillion suffered a slight decline compared to 2010 when AUM amounted to €14.0 trillion. The reduction in net assets is particularly due to the Eurozone crisis. The retail segment of the market was the sector that suffered most these challenging years. However, in relation to GDP, total AUM in Europe equated to 99% at end 2011. Europe, managing 31% of global AUM, ranks as the second largest market in the global asset management industry. More than 3,200 asset management companies were registered in Europe employing about 90,000 people directly and over 500,000 indirectly at the end 2011.

Regarding the actors of the Europe Asset Management industry, institutional investors, acting on behalf of millions of households, represented the largest client category accounting for 75% of total AUM. Insurance companies and pension funds accounted for 42% and 33% respectively of the total AUM in Europe as shown in Exhibit 1.2.

The pool of professionally managed assets in Europe remained concentrated in few countries. Indeed, the combined AUM in France, Germany, and UK amounted to €9,171 billion which represented approximately the two-thirds of the total at the end 2011. UK remained the largest asset-management market with a market share that had increased to 36% in 2011. The second one was France, which held a relatively stable market since 2007 and had reached a market share of 20%. Other centres where significant asset management operations were carried out include Italy (4%) and Netherlands (4%). Exhibit 1.3 shows the AUM in Europe with a country breakdown.

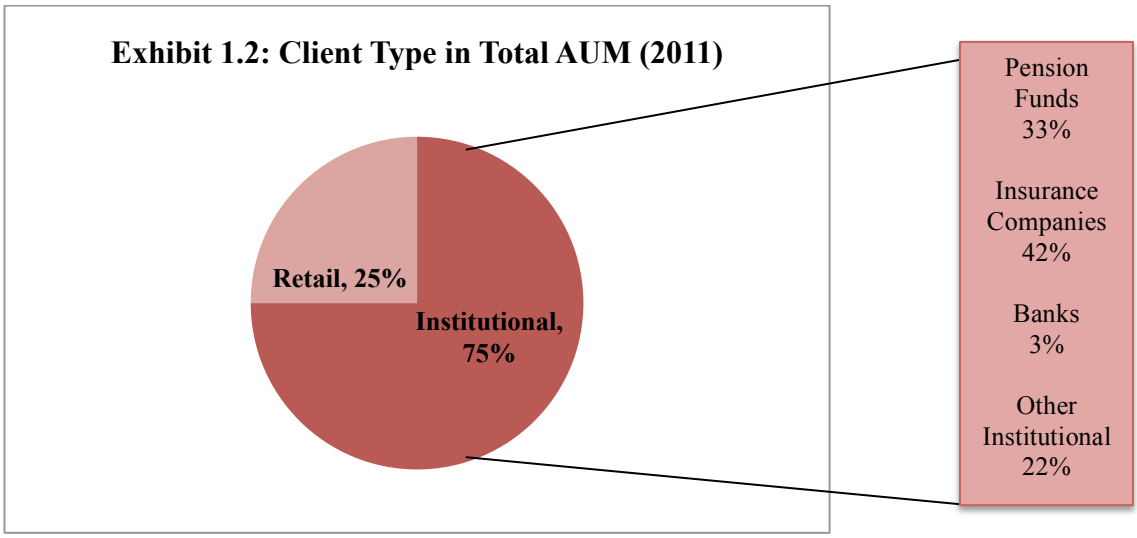
Holdings of bond and equity assets remained the preferred asset classes at the end of 2011, with 46% and 29% of total AUM respectively. However, equity holders have suffered the crisis given the turmoil on financial market and the uncertainty regarding the

[1] EFAMA (European Fund and Asset Management Association) is the representative association for the European investment management industry.

economic outlook. Such uncertainty helped to boost the asset allocation of bonds in asset managers' portfolios. Exhibit 1.4 shows the asset allocation of European AUM.

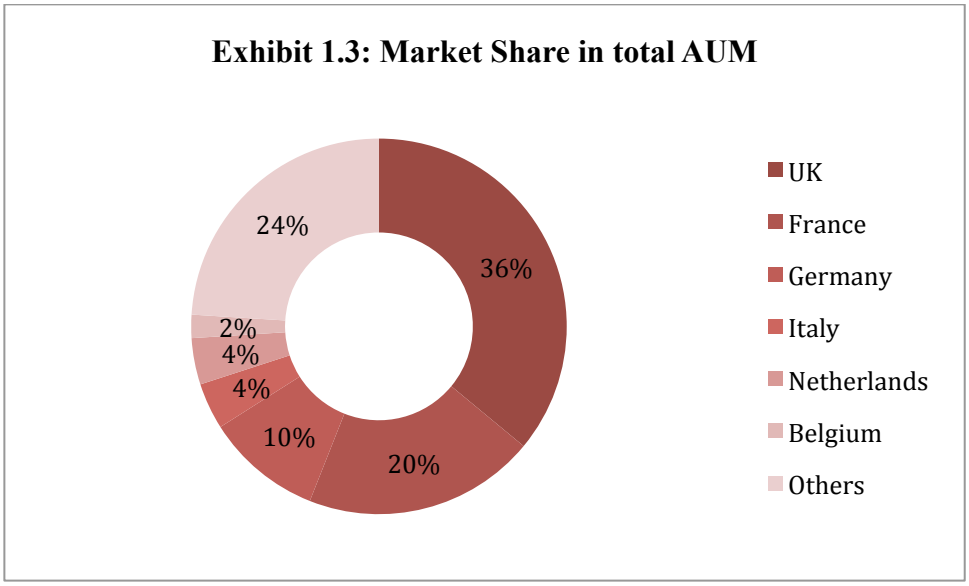
Investment funds and discretionary mandate are the main categories professionally managed in Europe's AUM. Discretionary mandate assets represent €7,275 billion or 52.8% of AUM at the end of 2011 experiencing an increase of 3.3% compared to 2010. On the other hand, investment fund assets accounted for the remaining €6,515 billion or 47.2% of AUM at the end of 2011 and had experienced a decrease of 7% compared to the previous year. This decrease was perhaps due to different clients assisting. Typically asset managers received mandates from institutional investors and high-net-worth individuals, which employed large amounts of capital, whereas investment funds served institutional clients and especially retail investors.

Exhibit 1.2: Client Type in Total AUM (2011)



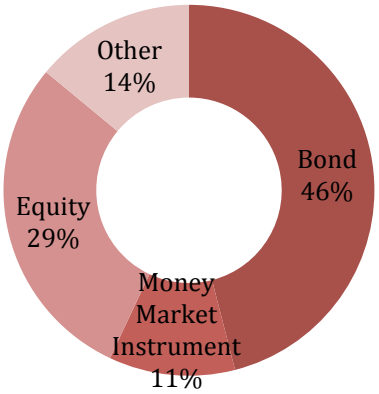
Source: EFAMA, 6th Annual review of the Asset Management in Europe.

Exhibit 1.3: Market Share in total AUM



Source: EFAMA, 6th Annual review of the Asset Management in Europe.

Exhibit 1.4: Asset Allocation in Total AUM (2011)



Source: EFAMA, 6th Annual review of the Asset Management in Europe.

1.3 Organization of Investment Companies

An investment company typically acts as a corporation, which has its major assets the portfolio of marketable securities referred to as a fund. Within the organizational structure, the investment company's board of directors hire a separate **investment management company** that handles the management of the portfolio of securities and other administrative duties. This legal description simplifies the typical disposition. The actual management normally begins with an investment advisory firm that starts an investment company and selects a board of directors for the fund. Afterwards, this board of directors hires the investment advisory firm as the fund's portfolio manager.

The duties and the compensation of the management company are detailed in the contract between the investment company (the portfolio of securities) and the investment management company. The major duties of the investment management company include investment research, asset allocation, management of the portfolio, as well as other administrative duties, such as issuing securities and handling redemptions and dividends. The management fee's scheme typically ranges from ¼ to ½ of 1%, with a sliding scale as the size of the fund increases. Management fees are stated as a percentage of the total value of the fund.

Management companies launch a numerous funds with different characteristics with the purpose to reach economies of scale. Indeed, the variety of funds allows the

management company to appeal to investors with different risk-return profiles. Moreover, it allows investors to switch among as economic or personal conditions change.

1.3.1 Valuing at NAV

The value of any given and separate account composed by investors' capital is calculated by totalling the market value of the securities held in the portfolio, after fees. When the securities are held jointly, the appropriate way to value client's investment is to multiply the number of shares in the fund owned by the **net asset value (NAV)** of the investment company, that is the per-share value of the entire security fund. We can calculate with the following equation:

$$\text{Fund NAV} = \frac{[(Total\ Market\ Value\ of\ Fund\ Portfolio) - (Fund\ Expenses)]}{Total\ Fund\ Shares\ Outstanding}$$

The concept of NAV for an investment company is analogous to the share price of a firm's common stock; indeed, like common stock, the NAV of the fund shares will increase as the value of the underlying assets (the fund security portfolio) increases.

1.3.2 Closed-End Versus Open-End Investment Companies

The main difference between open-end investment company (often referred to as **mutual fund**) and closed-end investment company (typically referred to as a **closed-end fund**) is the way in which each one operates *after* the initial public offering and how they handle shares sale and redemptions.

A **closed-end investment company** trades its stock in the regular secondary market, and the movements of the market supply and demand determine the price of its share. Hence, to buy or sell shares in a closed-end fund, investor must make transactions in the market where the shares are listed. No new investment capital is available for the investment company unless it makes another public sale of securities. In addition, no funds can be withdrawn from the market unless the investment company decides to repurchase its securities, but it is quite unusual. Investors who wish to convert their investment to cash can't turn them into the fund; they must find a buyer on the open market.

The closed-end investment company's NAV is computed throughout the day based on prevailing market prices for the portfolio of securities, however the *market price* of the shares is determined by trading on the exchange market. Investors pay or receive this

market price plus or minus a regular trading commission when they buy or sell shares of closed-end fund.

Mutual funds, or open-end investment companies, involve continuing sales and repurchase of shares after their initial public offerings. They are ready to sell supplementary shares of the fund at the NAV, with or without sales charge, or to redeem shares of the fund at the NAV, with or without redemption fees. One distinction of open-end funds is that some charge a sales fee for share sales. The offering price for share of a *load fund* equals the NAV of the share plus a sales charge, which can be as large as 7.0 to 8.0% of the NAV. Such funds generally charge no redemption fee, which means the shares can be redeemed at their NAV. These funds are typically quoted with an NAV price, that is the redemption (bid) price, and the offering (ask) price that equals the NAV divided by 1.0 minus the percentage load. On the other hand, **no-load funds** impose no initial sales charge, thus it sells shares at NAV. Some of these funds charge a small redemption fee about one-half of 1%.

1.3.3 Fund Management Fees

Investment companies charge annual **management fees** to reward professional managers of the fund. These fees are a percentage of the average net assets of the fund varying from about 0.25 to 1.00%. Most of these management fees are on sliding scales that decline with the size of the fund.

These management fees are a major factor driving the creation of new funds. More assets under management generate more fees, but the costs of management do not increase at the same rate as the managed assets because substantial economies of scale exist in managing financial assets.

1.3.4 Portfolio Objectives

There are four broad fund objective categories recognized worldwide: common stock funds, bond funds, hybrid funds, and money market funds.

Equity funds invest almost exclusively in common stocks. Within this category, however, we can find important differences; there are funds that focus on securities characteristics (e.g. Large- or Small-Cap Funds), geographic areas (e.g. Global Fund), specific industries (e.g. Chemical Fund), or collection of industries (e.g. Technology

Fund). In this context, an investor can choose a broad range of funds that matches his or her investment strategy and objective.

Conversely, *bond funds* concentrate on multiple types of bonds in order to produce high current income with minimal risk. Their investment policies differ from common stock funds. Some funds concentrate on Government bonds or high-grade corporate bonds, others hold a mixture of investment-grade bonds, and some concentrate on high-yield (junk) bonds.

In addition, there are funds composed blending several asset classes and which diversify outside a single market, these are the **balanced funds** which are composed by combining common stock with fixed-income securities, including corporate bonds, government bonds, convertible bonds, or preferred stock. The ratio of stocks to fixed-income securities will vary by fund, as stated in each fund's prospectus. **Flexible portfolio funds** seek high returns by investing in a mix of stocks, bonds, and money-market securities.

Money market funds, investment vehicles that try to provide current income, safety of principal, and liquidity by investing in diversified portfolios of short-term securities, such as Treasury bills, banker certificate of deposit, and commercial paper. They are typically no-load funds no penalty for early withdrawal and allow holders to write checks against their account.

1.4 Passive versus Active Management

The implementation of strategies into equity portfolio can be placed through either a passive or an active category. In order to better understand the categories of management we have to decompose the total actual return that the portfolio manager attempts to produce:

Total Actual Return = [Expected Return] + ["Alpha"]

= [Risk-free Rate + Risk Premium] + ["Alpha"]

Passive

Active

The main difference between passive and active management is that passive portfolio only managers to capture expected return consistent with the risk level of their

portfolios. On the other hand, active managers attempt to "beat the market" portfolios capable to produce returns that exceed risk-adjusted expect returns throughout capturing "alpha". Indeed, the *alpha* represents the amount of value that the active manager has added (if positive) or subtracted (if negative) to the investment process. It can be just defined as the difference between the actual and expected return of the portfolio.

Passive equity portfolio management holds stocks so that portfolio's returns will track those of a benchmark index over time. This approach to investing is generally referred to as *indexing*. Indexing is often thought to be a long-term buy-and-hold strategy, but occasionally is necessary to rebalance the portfolio as the composition of the underlying benchmark changes and cash distribution must be reinvested.

In contrast, in an *active equity portfolio management* the manager attempts to outperform an equity benchmark on a risk-adjusted basis. There are several strategies to add alpha, but we focus on two of these: *tactical adjustment* (e.g., equity style or sector timing) or *security selection* (i.e., stock picking).

When an investor decides to follow either an active or a passive strategy (or a combination of the two), he or she faces up to the trade-off between the low-cost but less-exciting alternative of indexing versus the potentially more lucrative alternative of active investing, which certainly will have higher trading costs and management fees. Historically, there is a great debate among this kind of trade-off. Sharpe (1991) argued the higher expenses will "always" make active management an inferior alternative. Samak, Sorensen and Miller (1998)[2] using pension fund performance data showed that the optimal allocation to indexing declines as managerial skill increases. Winkelmann, Jones, and Alford (2003)[3] supported this position by arguing that a disciplined approach to active management is likely to be the most effective method for investors. The debate is still open.

In this section, I will concentrate my analysis on the active management.

1.5 Methods of Index Portfolio Investing (Passive Management products)

There are at least two packaged ways to invest in passive investment portfolios: buying shares in an *index mutual fund* or buying shares in an *exchange-traded fund* (ETF).

[2] Vele Samak and Eric Sorensen. *Allocating Between Active and Passive Management*, Financial Analysts Journal (1998).
[3] Andrew Alford, Robert C Jones, and Kurt D Winkelmann. *A Spectrum Approach to Active Risk Budgeting*, The Journal of Portfolio Management (2003).

These tow packaged investment products are more convenient and less expensive for the small investor.

In an **Index fund**, or index mutual fund, the fund manager attempts to replicate exactly the composition of particular index, this means that the manager will buy exactly the securities comprising the index in their exact weights and then change the position anytime the composition of the index is changed.

Like any mutual fund, index funds have several advantages and disadvantages to assess before investing. The main advantage of index mutual fund is that they provide an inexpensive way for investors to purchase a diversified portfolio that accentuates the desired market or industry within the context of a traditional money management product. In contrast, the disadvantages are that it is not possible trading intraday, indeed the investors can only liquidate their positions at the end of the trading day; usually index fund cannot short sell, and may have unwanted tax repercussion if the fund has an unforeseen need to sell a portion of its holdings, thereby realising capital gains. An outstanding example of an index fund is Vanguard's 500 Index Fund (VFINX), which is designed to replicate the S&P 500 index.

Exchange-Traded Funds are a more recent development in the world of indexed investment products than index mutual funds. ETF is a portfolio of securities that is placed on deposit at financial institution or into unit trust, which then issues a single type of certificate representing the ownership of the underlying portfolio. These certificates are depository receipts giving investors a pro rata claim on the capital gains and cash flows of the securities that are held by the financial institution.

The main advantage of ETFs over the index mutual fund is that they act as a common stock, thus they can be bought and sold through an organized exchange or in OTC[4] (over-the-counter) market. Moreover for ETFs it is possible to make short sells. In terms of costs, the expense ratios for ETFs are lower than those of average mutual fund. Other important advantages include: smaller management fee, the ability for continuous trading, and the ability to point in time capital gain tax realizations. Conversely, the disadvantages include the brokerage commission and the inability to reinvest dividends except on a quarterly basis. Notable example of ETFs are (1) Standard & Poor's 500 Depository Receipts (SPDRs or "spider" as they are commonly called), which are based on a basket of all the securities held in that index; (2) iShares, which recreate indexed positions in several global developed and emerging equity market; (3) sector ETFs, which

[4] Over-the-counter (OTC) or off-exchange trading is done directly between two parties, without any supervision of an exchange.

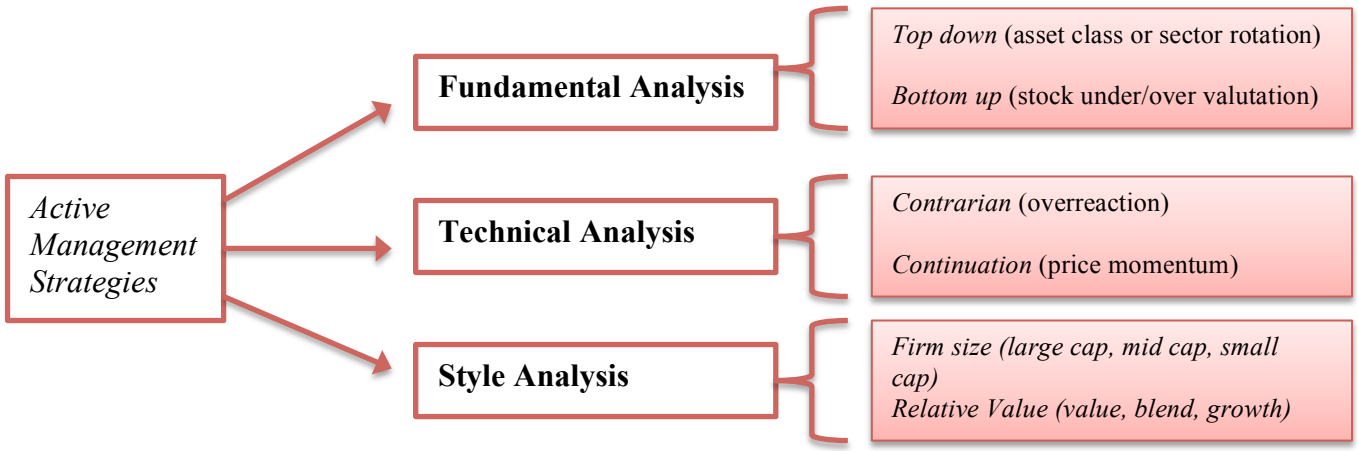
invest in basket of stocks from specific industry sectors (e.g. consumer services, technology, energy, utilities, industrial, financial services, and cyclical/transportation)[5].

1.6 A brief overview of Active Equity Portfolio Management strategies

As we have mentioned above, the main objective of an active equity portfolio management is to produce returns that exceed the return of a passive benchmark portfolio on a risk-adjusted basis and net of transaction costs. For example, if the sum of transaction costs and management fees reach 1.5% of the portfolio's assets, the manager managing active equity portfolio has to produce a return of 1.5% above the passive benchmark. This is a hard job to active managers.

However, the Exhibit 1.5 shows an overview of the principal strategies that can be implemented by an active equity manager when composing its portfolio.

Exhibit 1.5



1.6.1 Fundamental Strategies

The belief of the **fundamental analysis** is that, the intrinsic value of an aggregate stock market, individual securities, or various industries depends on underlying economic factors. For example, when evaluating an individual corporation's security, the analysis is conduct analysing the overall economic factors of that corporation, including financial statements, health, management and competitive advantages/disadvantages, earnings,

[5] Brown and Reilly (2009), *Analysis of Investments and Management of portfolios*, 9th Edition, p. 545.

growth expectations, market environment (competitors). In this context, an active equity management can start the analysis either through "top-down" or "bottom-up" approach.

The *top-down* investment process begins with the analysis of broad country and asset class allocations and progresses down through sector allocation decisions to the bottom level where individual securities are selected. Alternatively, a *bottom-up* process simply emphasizes the selection of securities without any initial market or sector analysis.

In the top-down approach we can distinguish two types of strategy, (1) **asset class rotation**, a strategy in which funds are shifted in and out of stock market depending on perception of how the market is valued compared to the various alternative asset classes, and (2) **sector rotation strategy**, where the active manager positions the portfolio in order to take advantage of the market's next move[6].

1.6.2 Technical Strategies

Briefly, **technical analysis** is a methodology for securities analysis and evaluation, forecasting the movements of prices through the study of past performance and market data in terms of price and volume. Technical analysts believe that stock price movements follow certain patterns, reflecting the predictable irrationality of investor behaviour[7].

A **contrarian investment strategy** is based on the belief that the best time to buy (sell) a stock is when the majority of other investors are most bearish (bullish) about it. In this approach there is the implicit belief that stock returns are *mean reverting*, indicating that, over time, stocks will be priced so as to produce returns consistent with their risk-adjusted expected returns, namely the mean.

Conversely, a **price momentum strategy** is based on the assumptions that the recent trends in past prices will continue. It's a strategy that focuses on the past trend of prices alone and make purchase and sale decision accordingly.

1.6.3 Style Analysis

There are many equity investment styles, including forming portfolios around stock characteristics such as market capitalization, leverage, industry sector, relative valuation, and growth potential. An important development in active management has been the

[6] Brown and Reilly (2009), *Analysis of Investments and Management of portfolios*, 9th Edition, p. 550.
[7] Pozen and Hamacher (2011), *The Fund Industry: How Your Money is Managed*.

creation of portfolios based on value- and growth-oriented investment style. The distinction between these two investment style approaches is given by the investor perceptions, focus, and its objectives.

Starting from the definition of the *Price-Earnings Ratio* –an equity valuation multiple that allow to analyse the market stock's valuation of a company and its share relative to the income that generating – which is calculated by:

$$\text{P/E Ratio} = \frac{Current\ Price\ per\ Share}{Earnings\ per\ Share}$$

A growth-oriented investor:

- Must focus on the denominator of the P/E ratio and its economic determinants (*EPS*);
- Look for companies that show large and rapid *EPS* growth in the future.

Conversely, a value-oriented investor:

- Must focus on the numerator of P/E ratio – the price component;
- Look for companies that show significant earnings growth in the future.

Research showed that a portfolio composed following the value approach tends to provide better returns, even though investors generally pay more attention to the growth approach. In 1993, Sharpe, Capual and Rowley[8] studied the long-term performance of value and growth portfolios in six countries: United States, Japan, United Kingdom, France, Switzerland, and Germany. Their studies showed that global value stocks outperformed global growth stocks by an average of 3.3% per year.

The aim of the style analysis is to endeavour explaining the variability in observed returns to a security portfolio in terms of the movements in the returns to a string of benchmark portfolios capturing the nature of a particular security characteristic. Indeed, style analysis determines the combination of long positions in a collection of passive indexes that best mimics the past performance of a security portfolio.

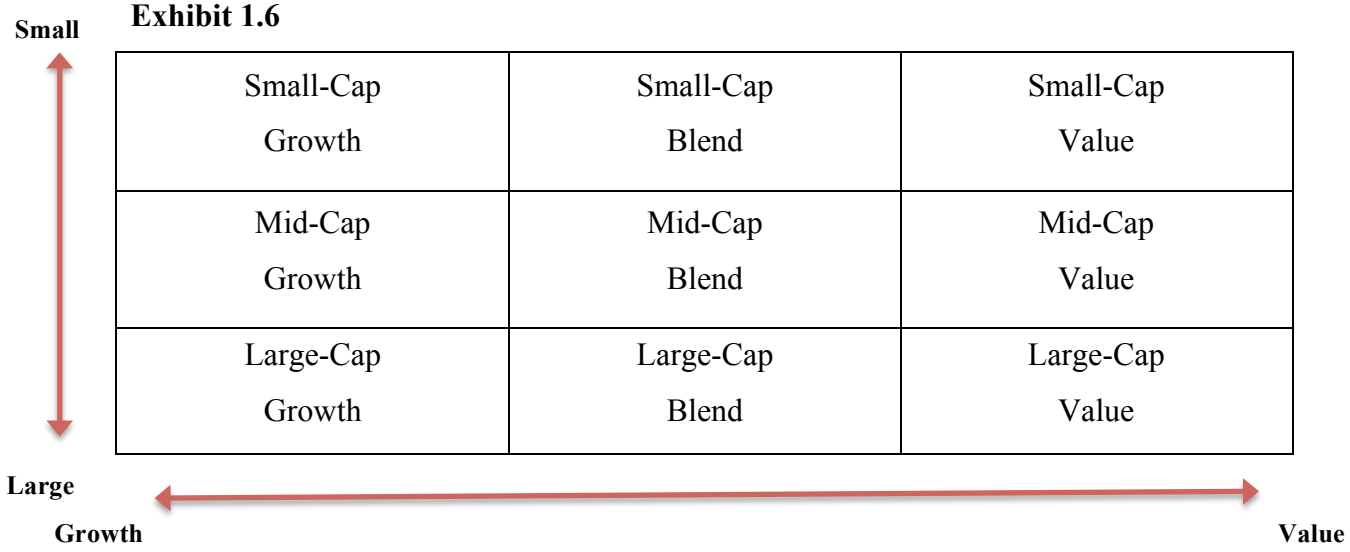
The process of return-based style analysis compares the past returns to a manager's portfolio with those to a series of indexes representing different investment styles to

[8] Sharpe, Capual, and Rowley (1993). *The Sharpe Ratio*, The Journal of Portfolio Management, p. 33.

determine the relationship between the fund and those specific styles. The more highly correlated a fund's returns are with a given style index, the greater the weighting that style is given in the statistical assessment. The goals of the analysis are to better understand the underlying influences responsible for the portfolio's performance and to classify manager's strategy when comparing with other managers.

Exhibit 1.6 provides an example of a simple **style grid**.

Exhibit 1.6



Small-Cap Growth	Small-Cap Blend	Small-Cap Value
Mid-Cap Growth	Mid-Cap Blend	Mid-Cap Value
Large-Cap Growth	Large-Cap Blend	Large-Cap Value

This simple grid is useful to classify a manager's performance along two dimensions: relative value (growth, blend, value) and firm size (small cap, mid cap, large cap) characteristics.

Style analysis relies on the *constrained least squares*[9] procedure, where the returns to the manager's portfolio as the dependent variable and the returns to the style index portfolios as the independent variables. Three constraints are employed:

1. No intercept term is specified;
2. The coefficients must sum to one;
3. All coefficients must be non-negative.

[9] Brown and Reilly (2009), *Analysis of Investments and Management of portfolios*, 9th Edition, p. 564.

Sharpe[10] (1992) developed the returns-based style analysis as a simple application of an asset class factor model[11]:

$$R_{pt} = [b_{p1}F_{1t} + b_{p2}F_{2t} + \ldots + b_{pn}F_{nt}] + e_{pt}$$

Where:

R_{pt} = the tth period return to the portfolio of Manager p

F_{jt} = the tth period return to the jth style factor

b_{pj} = the sensitivity of Portfolio p to style factor j

e_{pt} = the portion of the return variability in portfolio p not explained by variability in the set of factors

The coefficient of determination can be defined as:

$$R^2 = 1 - [\sigma^2 (e_p)/\sigma^2 (R_p]$$

Where R^2 can be interpreted as the percentage of manager-p's return variability due to the portfolio's style, with (1-R^2) due to his or her *selection* skills.

The benchmark portfolios selected as style analysis factors should be consistent with the manager's style.

1.7 Investing in Alternative Asset Classes

In the universe of the investment funds, we have mentioned several *commingled investment vehicles* – vehicles that allow investors to commingle their money to make joint investments - like mutual funds, equity funds, bond funds, money market funds, balanced funds, flexible portfolio funds, ETFs, and so on.

Beyond the three primary asset classes – stocks, bonds, and cash – many other types of investments can be used to diversify investment portfolios. We can simply define **alternative asset**, any non-traditional asset with potential economic value that not be found in a standard investment portfolio.

The term alternative asset is highly flexible. It may include a broad variety of investment opportunities, investing in specific physical assets, such as natural resources,

[10] W.F.Sharpe (1992), *Asset allocation: Management Style and performance measurement*, The Journal of Portfolio Management.

[11] It si an application of the Multifactor Models of risk and return, where the stochastic process generating asset returns can be expressed as a linear function of a set of k factors or indexes. In a multifactor model, the investor choose the exact number of risk factors.

real estate or commodities, or methods of investing, such as hedge funds or private equity. In some cases, even geographic regions, such as emerging global markets, are considered alternative assets. In this section, I will briefly develop the hedge funds investments.

Alternative asset investing can take place either through the creation of separate accounts for each investor or through the commingling of investor capital into a single pool of assets. This latter investing structure is the most used and it is usually formed as a **limited partnership** rather than as a mutual fund. In a limited partnership, one or more *general partners* are responsible for running the organization and assuming its legal obligations, while the remaining *limited partners* are only liable to extent of their investments. For example, in a hedge fund or private equity partnership, the general partner develops, implements, and maintains the investment portfolio around an initial strategy, while the limited partners (e.g., pension funds, high-net-worth individuals) provide the majority of the capital but have no direct involvement in the actual investment process.

The belief behind investing in alternative asset classes is that they are able to produce superior returns than traditional investment structure through adding *alpha*. This is also the main reason why the alternative assets market has a remarkable development.

1.7.1 Hedge Funds

One of the most important developments in the asset management industry over the past 20 years has been the emergence of a global market for hedge funds. However, it is not easy to set the boundaries in defining hedge funds. They are usually defined as loosely regulated investment vehicles, they are structured as limited partnership and their compensation schemes are mainly based on performance fees. Most notably, hedge fund investments are far less liquid than mutual fund (or even closed-end fund) shares; they differ one from another in significant ways:

- There are several limitations on when and how often investment capital can be contributed to ore removed from a partnership. The average hedge fund permits investors to enter or exit on certain dates of a year (monthly and quarterly respectively) compared to the daily ownership adjustment allowed by mutual funds.

- As I have mentioned above, hedge funds are *loosely regulated* investment vehicles. Generally, they are products less restricted in how and where they can make

investments, which is perhaps the main reason on why the investors believe that these vehicles can produce abnormally large returns.

- There are no limits in the implementation of the investment policies. Hedge funds allow manager to use financial leverage, short selling, and derivatives.

Hedge funds are "active products". Their results tend to reflect directly the capabilities of the managers (*pure skill asset class*). Investors in hedge funds believe that their managers can generate returns with positive *alpha*, or above-market returns, which reflects the value added by a hedge fund manager's skills. Furthermore, hedge funds are intended to provide *lower volatility* than mutual funds. The returns of hedge funds are structured to be relatively uncorrelated with the returns of traditional asset classes because their portfolios are composed in such a way they are affected by different market events than are the returns of stocks and bonds. In this contest, hedge funds have the potential to achieve great level of *diversification*, and thus lower risk, compared to other investment vehicles.

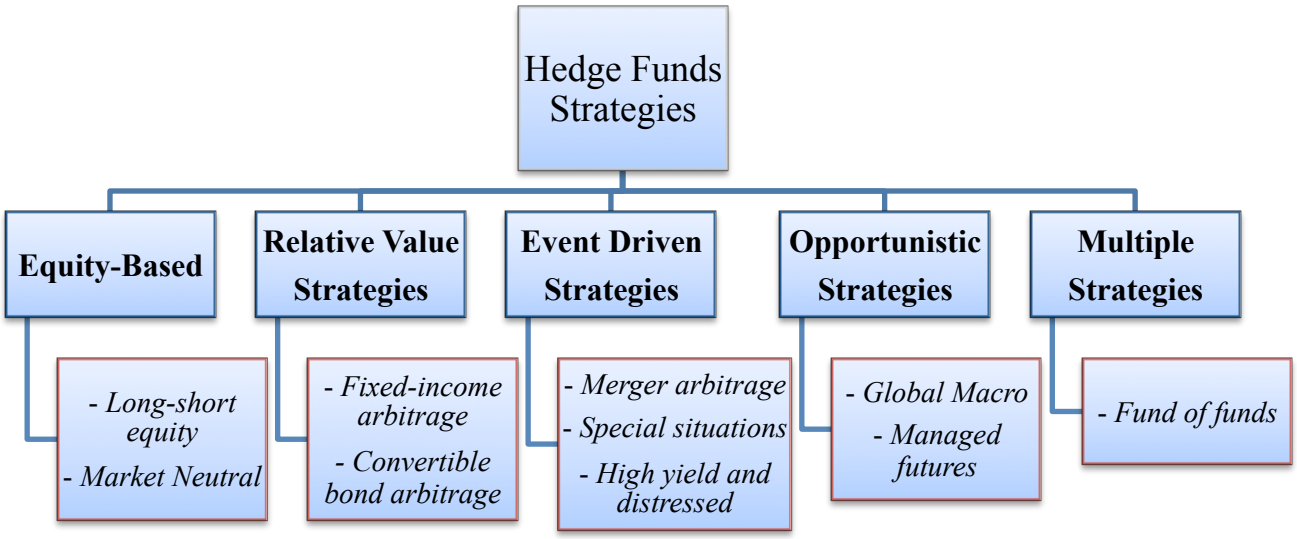
The compensation scheme for the hedge fund managers is composed of two components: a regular *management fee* (between 0 and 2% of AUM) and a *performance fee*, which normally amounts between 15 and 20% of the fund's profits beyond a minimum pre-specified rate of return (i.e., *hurdle rate*). In calculating this performance fee is usually used the *high-water mark* method, which ensure that the manager does not get paid large amounts for poor performance. So that, if a manager lost money over a period, he or she must get the fund above the high-water mark before receiving a performance bonus.

1.7.2 Hedge Fund Strategies

It is difficult to distinguish between different hedge fund strategies. With respect to the hedge fund designation, several investment strategies can be implemented with considerably diverse risk and expected return profiles. We can distinguish five types of hedge fund strategies:

1) Equity-Based Strategies.
2) Relative Value Strategies.
3) Event Driven Strategies.
4) Opportunistic Strategies.
5) Multiple Strategies.

Exhibit 1.7: Hedge Funds Strategies structure



1) Equity-Based Strategies:

- *Long-short Equity*: long position in undervalued stocks and short position n overvalued stocks. This strategy attempts to generate returns from misvalued stocks.
- *Market Neutral*: limiting the overall volatility exposure of the fund by taking offsetting risk positions on both sides of the market (long and short). It involves the use of derivatives.

2) Relative Value Strategies:

- *Fixed-income arbitrage*: returns are generated by taking advantage of bond pricing discrepancies caused by fluctuations in the fixed-income market. Leverage is usually employed to enhance returns.
- *Convertible bond arbitrage*: purchasing of a convertible bond and short selling of the underlying stock. Returns are generated from disparities between the price of convertible bond and the price of the underlying stock.

3) Event Driven Strategies:

- *Merger arbitrage*: returns are dependent upon the magnitude of the spread on merger transactions, which are directly related to the likelihood of the deal not being completed.
- *Special situations*: returns arise due to the results of significant events that occur during the normal life cycle of a company.
- *High yield and distressed*: this strategy takes advantage in distressed situation. When companies are distressed, their shares can be purchased at large discounts. Usually investing in *emerging market*.

4) Opportunistic Strategies:

- *Global Macro*: returns are generated from changes in global economies, usually after a government turmoil, which impact on interest rates, currency and stocks. Massive use of leverage and derivative products in order to take hedge exposures.
- *Managed Futures*: taking long and short positions in a broad range of futures contracts. Returns are generated exploiting prices disparities between the contracts. High degree of financial leverage adopted.

5) Multiple Strategies:

- *Fund of Funds*: formally this is not a separate strategy. It is an investment vehicle that acts like mutual funds or hedge funds but, rather than investing directly into stocks, bonds, and other products, they hold portfolios of investment funds.

  There are several advantages to invest in fund of funds. Investors can access to managers that might otherwise be unavailable to them, but the primary benefit of this method is to achieve a great and well-diversified portfolio's allocation compared to other investment vehicles. On the other hand, the principal disadvantage is that there is an extra layer of fees necessary to compensate the fund of funds manager (about 3% of the AUM).

  Funds of funds strategies rely on using different approaches, they can concentrate in a particular strategy and then diversify across various hedge fund managers – the *multi-manager approach* – or they can diversify across different strategies – this is the multiple *strategy approach*.

CHAPTER 2: THE MULTI-MANAGER APPROACH

2.1 Introduction to the multi-manager marketplace

The increasing demarcation among the distinct sets of core competencies and skills required for the manufacturing and distribution of fund management products and the growing trend towards open investment architecture has boost the growth of the multi-manager long only business.

Open architecture allows banks and intermediaries to distribute proprietary e non-proprietary investment products on a single platform that can accommodate multiple investment vehicles and account structures.

Institutional investors, dissatisfied with the returns they are getting from their traditional active equity and fixed-income managers, have been the primary drivers behind the launch of long-only strategies by fund of funds. "Long-only funds switch hedge fund managers from an absolute-return model to a relative-return model, and that is attractive" on a cash flow basis[12].

The term *multi-manager* is used to describe assets invested in long-only traditional investment (this excludes fund of hedge funds and funds of private equity funds) and held in one of two types of vehicles: manager-of-manager products or fund-of-funds.

Starting from the *fund-of-funds*, they are structured as collective investment schemes that in turn invest carefully in shares of other publicly traded mutual funds; we have to distinguish fund-of-funds that invest in proprietary sub-funds, which are classified as *fettered*, from those that invest in non-proprietary sub-funds, i.e. *unfettered*. Conversely, *manager-of-managers* are products managed by multiple underlying sub-advisors managing their portfolios as separate mandate. Within manager-of-managers products we classify, (1) those structured as collective investment schemes – these schemes has hand out mandates to their sub-advisors as separate accounts – under local regulations, which are *retail manager-of-managers*; (2) other manager-of-managers vehicles tailor-made for institutional investors, and therefore organized as *institutional manager-of-managers* products.

[12] Gideon Berger, is a Senior Managing Director and Head of Technology and Risk Management for the Hedge Fund Solutions group. He serves on the Investment Committees for Blackstone Alternative Asset Management, Blackstone Strategic Alliance and Blackstone Strategic Opportunities. Excerpt of the article *Funds-of-funds managers going long-only* by Christine Williamson (December 2013), www.pionline.com.

There are several key drivers that explain the shift of investors (especially institutional) from a single product to open architecture through the multi-manager approach:

- *Multi-manager products provide greater diversification and thus reduce risk*. The innovation of this kind of product can be measured in terms of diversification. Indeed, beyond the asset class diversification of a common mutual fund, multi-manager extends to diversifying style risk (including both growth- and value-oriented equity management within a core portfolio) and manager risk (hiring sub-advisors with similar styles with the assumption that some will compensate for the fact that at least one is likely to underperform).

- *Multi-manager products provide access to a broad selection of asset managers*. Multi-manager products let investors use specialist asset managers inaccessible to most mass-market clients.

- *Multi-manager products aid promote proprietary product*.

- *Multi-manager products fill gaps in company between expertise and knowledge.*

- *Multi-manager products can be highly profitable.*

- *Multi-manager is a consolidation tool to replace a portfolio of investments with managed solutions.*

- *Multi-manager products simplify the advisory and sales process minimising trading cost*.

- *Multi-manager products are often tax-efficient*. Especially in Europe, where managing a portfolios of funds within a fund of funds enjoys more tax relief than holding exposure to the same funds.

Investing in a multi-manager fund is an easy way to diversify investments over different asset managers, without wasting time in finding, choosing, and monitoring funds yourself.

Conversely, multi-manager products faces two main hurdles in its expansion, first there is *reluctant to cede responsibility*, especially in the institutional manager-of-managers products where the clients want to retain direct power to hire or fire certain

managers. Secondly, *pricing and performance issues*; nowadays, clients are more fee-conscious and therefore claim higher returns to the premium paid. Indeed, it is important to note that multi-managers funds are more expensive in fees than single manager funds as there are two tiers of fund managers to pay; those who select the funds and those who manage the selected funds. However, multi-manager is typically able to negotiate discounts through their ability to invest significant amount of money. The higher fees are the cost of having all the benefits of a multi-manager fund.

Prominent multi-manager providers are Frank Russell, AXA Multimanager, Aon, SEI, and Insight; on the other hand, global distributors include UBS, HSBC, CSFB, Citigroup and major insurance brands.

2.2 Multi-manager industry

In 2000, global stock markets were at their high point, and fund managers could move with total strategic exemption. At that time, multi-management was somewhat novelty; few expert practitioners employed it. In 2004, firms began to focus on their core competencies searching for managers with high competence and skills to gain success in manufacturing fund management products. In these years, financial services industry focused on new concepts: specialization and outsourcing. The move towards specialization (where the fund management of different segments of a portfolio is outsourced to different managers) has been the main driver of the multi-manager market.

During the five years ending in December 2004, multi-manager assets doubled from around US$ 500bn to US$ 1tn[13]. Multi-manager products expanded 30% during 2004 and accounted for 32% of new business in all mutual funds worldwide.

Exhibit 2.1 shows the increasing trend of global multi-manager asset since 2004 to 2008. As we can see, multi-manager assets fell by 30% in 2008 to total US$ 2.6 trillion compared to 2007, where multi-manager assets reach a peak of US$ 3.7 trillion. In addition, the Exhibit 2.2 provides the global multi-manager AUM from 2002 to 2007 with the distinction between manager-of-manager and fund-of-funds assets.

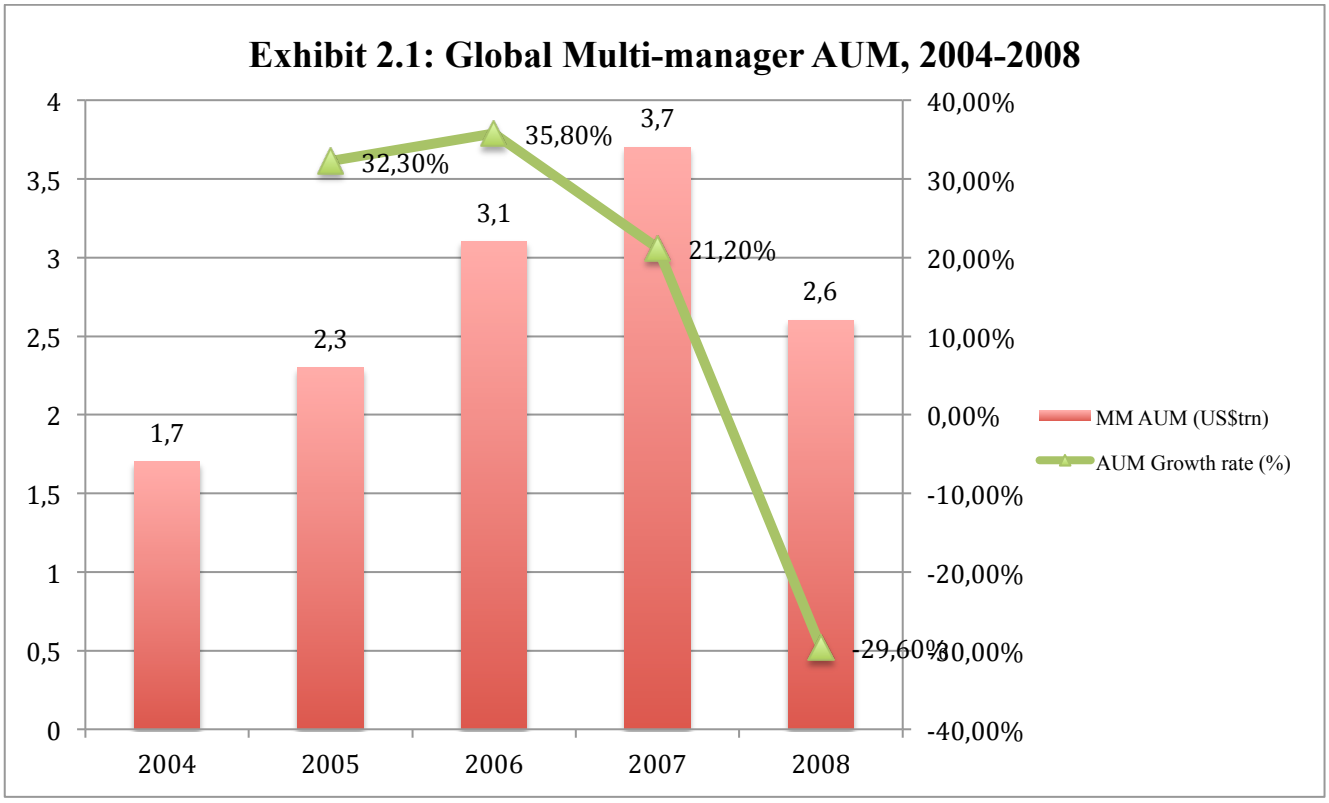
Nowadays, the largest multi-manager markets are United States (US$ 948,108) and Europe (US$ 340,776); whereas, the Asia multi-manager markets (US$ 118,119) is one of the fastest-growing product segments. Globally, the multi-manager approach is mostly

[13] Sohail Jaffer (2006), *Multi-Manager Funds. Long-only strategies for Managers and Investors*.

adopted in equity (49%), followed by mixed asset classes (19%), bonds (14%), and money market instruments (3%), as we can see in Exhibit 2.3.

According to the "Cerulli report"[14], the fastest and growing markets for multi-manager products are United States, United Kingdom, Japan, Australia, and Spain.

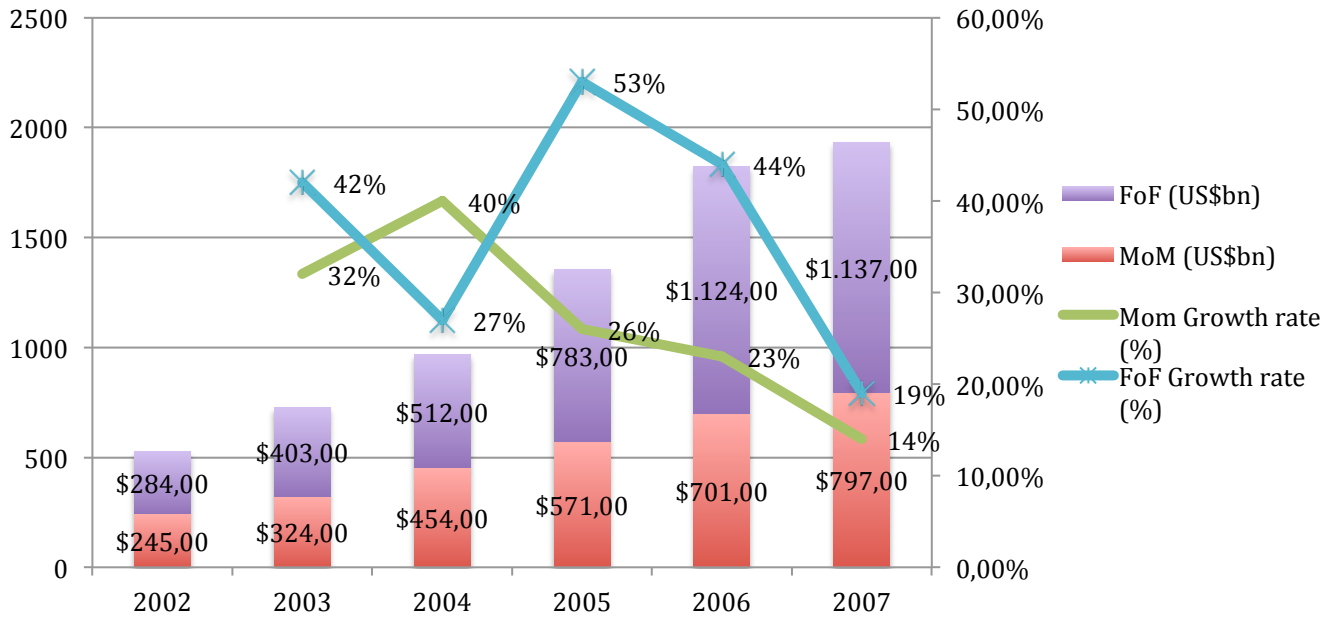
The multi-manager industry has played a pivotal role in the evolution of the investment industry as a whole. While its position is relatively small in the European market, the rise of multi-manager has been one of the major success stories of the last decade, with assets universally estimated to be a continuing area of growth. Market drivers are expected to continue in favour of multi-manager, with United States, Australia, and United Kingdom that will drive an important chunk of future growth.



Source: Cerulli Quantitative Update: Global Multimanager Products 2009

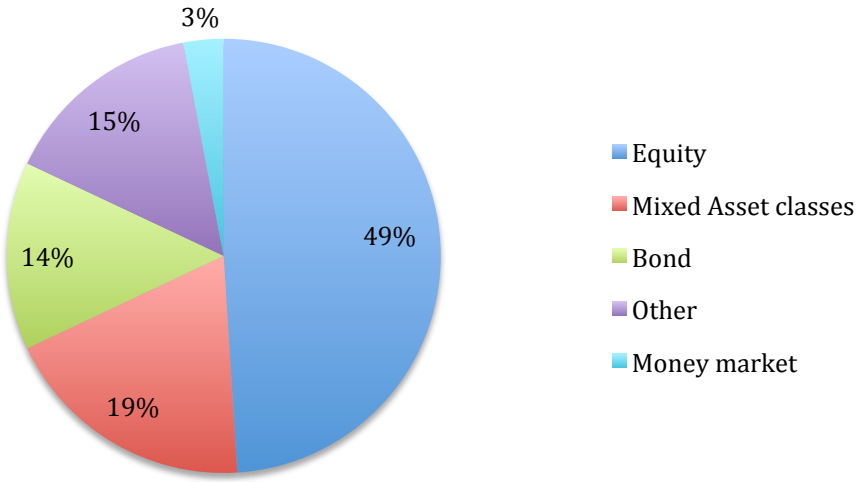
[14] Cerulli Reports are the most trusted source for comprehensive data and analysis of the global financial services industry.

Exhibit 2.2: Manager-of-managers and Fund-of-funds assets, 2002-2007



Source: Cerulli Quantitative Update: Global Multimanager Products 2008

Exhibit 2.3: Global breakdown by asset class, 2010



Source: Eurizon Capital SGR

2.3 UCITS

UCITS is the acronym for "Undertaking for Collective Investment in Transferable Securities", which, once authorized by one EU member state under the EU UCITS Directive, can be sold cross border within the EU under a harmonised regime so that no further authorization is required other than home member state authorization.

The UCITS directives have been one of the successful factors in the growth of multi-manager funds, especially for the overall Asset management in Europe. The major goal of these directives has been the removal of barriers to the cross-border marketing of units of collective investment schemes by allowing funds to invest in a wider range of financial instruments.

Under the directive UCITS III issued in 2001, it is possible to establish money market funds, derivatives funds, index tracking funds and funds of funds. Focusing primarily on the latter, a fund of funds can qualify for UCITS status if it complies with the following conditions:

- A fund of funds is authorized to invest up to 10% of its NAV in a single UCITS fund or equivalent, provided the equivalent structure is subject to risk diversification, leverage, and regulatory controls similar to that of a UCITS; Member States are authorized to increase this 10% limit to 20%.

- A UCITS may not acquire more than 25% of the units of any single UCITS fund.

- A fund of funds, structured as a UCITS, may not invest in an underlying fund if that underlying fund is allowed to invest more than 10% of its NAV in other funds of funds.

- Total investment in funds different than UCITS must not exceed 30% of the fund's NAV.

The most recent UCITS directive has been released in 2009 and is known as UCITS IV. The innovations introduced since the last directive are:

- Allows a UCITS certified in one country to hire a management company based in another EU country (*management company passport*).

- Enables UCITS funds based in different countries to merge.

- Simplifies host country notification procedures.

- Requires funds to supply investors with a *key information document* rather than a prospectus.

Briefly, UCITS system has been successful creating a common harmonised platform for cross-border sale in the Europe funds industry despite obstacles raised by some local regulators.

2.4 Underlying philosophy

Long-only manager of managers are not absolute return type vehicles. This approach compels them to be fully (abut 90%) invested and allow a limited use of hedging instruments – to achieve efficient portfolio and risk reduction through diversification. They are not allowed to "speculate" using derivatives. In this contest, we have to distinguish absolute return from the relative one. In short, *absolute return* is simply the return of whatever portfolio or asset over a certain period. On the other hand, *relative return* is given by the difference between the absolute return and the performance of the market represented by a benchmark or index. The notion of relative return is very important because allows to measure the performance of actively managed funds.

Behind the multi-manager approach there is a real philosophy on active management that it can be summarize in four points:

- Believe in active management means to believe in the ability of talented individuals to use skill and knowledge to add value over a benchmark or index.

- A belief that specialists will outperform generalists by finding and combining talented specialists into a portfolios combination.

- A belief that a better relationship can be achieved between risk and return by combining managers with different styles in any given asset.

- A belief that, within this approach, products should be monitored on an on-going basis making timely and efficient changes when there is a need to change.

The most important factor of this philosophy is that multi-manager approach emphasizes the importance of people as opposed to organizations. This approach conducts a dense approach to seek out specialists that could add value over an index. When uncorrelated specialists are combined together this delivers a compelling long-term investment vehicle.

2.5 Common features to good multi-managers structures

As we have mentioned above, the multi-manager products are divided in two big categories: fund-of-funds and manager-of-managers. In this part, we are going to highlight the common characteristic followed by a multi-manager structure.

- *Use of specialists*. Most multi-managers prefer specialist investment managers in managing their portfolios rather than generalists. This is the result of the underlying philosophy followed by this approach, the belief that specialists can outperform generalists.

- *Through manager research*. A broad global research capability is needed to ensure that good manager are not overlooked, after which considerable analysis should be undertaken to understand each manager's investment process.

- *Portfolio construction and continuous review*. In order to build up a successful multi-manager fund, clear process are required for:

    - ✓ Determining the manager structure.
    - ✓ Actively monitoring the structure.
    - ✓ Controlling risk.
    - ✓ Making quick decision to improve the process.

- *Innovation*. Managers must always look for opportunities to improve their investment process. Example of innovative ideas are:

    - **Equitizing cash**. The best managers have small, but consistent, cash holdings for liquidity and hedging purposes.

- **Transitions manager**. Multi-managers returns rely on the performance of the portfolio before, after and during a change in manager. The best multi-managers appoint a transition manager to buy and sell securities to turn the terminated manager's portfolio into the portfolio of the newly appointed manager[15].

- *Manager-of-managers fund versus fund-of-funds*. We discuss the main differences between these two products in terms of structure and organization in the following paragraphs; however, it is important to clarify that a fund-of-funds approach hires the pooled funds of preferred investment managers, while manager-of-managers fund hires investment managers and ask them to manage a new segregated account for them. By doing this, manager-of-managers can reduce costs by being able to negotiate better fees to pay the manager.

2.6 The role of multi-manager

The primary role of the multi-manager approach is to construct portfolios that meet client objectives by selecting from a broad range of investment options. Multi-manager funds draw on a specific set of skills that differentiate them from traditional fund management. The essential components in running a multi-manager approach are:

1. *Manager selection*. Multi-managers usually involve significant resources in identifying fund managers representing a range of asset classes. By doing this, multi-managers seek for managers that have information advantages rather than competitive advantages. Examples of information advantages are successful trading strategies and/or superior quantitative modelling capabilities. Giving these advantages, multi-.managers are able to combine strong investment and capital markets experience.

2. *Portfolio construction*. The aim of the portfolio construction is to capture market inefficiencies as they arise. Strategic and tactical asset allocation techniques are used to position portfolios in order to catch alpha.

[15] Sohail Jaffer (2006), *Multi-Manager Funds. Long-only strategies for Managers and Investors*, p. 40.

3. *Monitoring*. Continuously monitoring, rebalancing and reporting changes to the portfolio.

These three components allow investors to benefit from market inefficiencies. The high level of efficiency in most markets suggests that fund managers must possess an information advantage with respect to their peers. A clear benefit for investors lies in a multi-manager's ability to gauge fund managers' strengths and weaknesses, to make the best possible use of the investment intelligence available to them and assemble a portfolio in line with investment objectives that can consistently take advantage of market inefficiencies.

Historically, investors believe that markets are inefficient only at the individual stock level, and efficient at regional or asset class level. Focusing only in active allocating on a stock basis lead investors to neglect important profitable opportunities to manage risk or increase returns through tactical asset allocation (TAA). Investors' behaviours consistently cause asset classes (especially equity and bonds) to deviate from their fair value. Through TAA, successful multi-manager funds can systematically identify these inefficiencies and add value in their portfolios. In this contest, the great innovation of this approach is that multi-manager portfolio construction can add value not only through tactical asset allocation across markets and asset classes, but especially *within* the markets and asset classes.

2.7 Style buckets

The investment process can be grouped into one of the major style buckets: growth, aggressive growth, core, flexible, value, and GARP (growth at reasonable price). In addition, there are also other type of process including relative value, sector neutral, momentum, top-down, and quality.

The great advantage of the multi-manager fund is to combine uncorrelated specialists and investment styles to achieve a greater diversification. The most common combination used by multi-managers is balancing growth and value, combining an aggressive growth manager with a deep value manager. By doing this for example, the bad performance of the aggressive growth manager could be counterbalanced by the good performance of the deep value manager. In this way, multi-manager approach can neutralise the style risks. Being "style neutral" is another perceived benefit of the multi-manager approach over other investment vehicles.

Mercer Investment Consulting[16] describes the differing styles of value and growth:

"In a nutshell, value managers believe that stocks which are "cheap" will outperform over the long term. The "cheapness" of a stock can be based on its current price relative to one or more of a number of valuation measures such as historic or near term earnings, cash flow generations, or tangible asset valuations…"

"In general, growth managers believe that growth in earnings drives stock returns and that success requires the identification of stocks with an ability to deliver such growth over time."

Mercer concludes with a consideration on being style neutral:

"A style neutral approach to portfolio construction does not necessarily mean a reduction in the potential return. Rather, it means that the return is being sought from stock selection. All other being, this would lead to more reliable outcomes"[17].

In this contest, the question naturally arises: will multi-managers perform in all market conditions? Multi-manager funds should perform well over market cycles, both in bull or bear markets, and in periods of high volatility. However, there are very distinct market conditions in which multi-manager funds can be expected to underperform. The first is during narrow markets when indices are driven up by one or two sectors. Higher diversification could entail that the multi-manager is not concentrated in these sectors. The second condition is a low-quality rally. Nevertheless, these market scenario tend to be short-lived, this means that the markets will revert to normalised conditions over a long-time horizon. Therefore, multi-managers must have a long-term perspective in order to perform well in various market scenarios.

2.8 Impact of fees: the total expense ratio

In the multi-manager's universe, the impact of fess on the fund's performance is crucial for two main reasons. First, being an active product, active managers charge fees are higher than passive providers. Secondly, calculation of fees for multi-manager funds is inevitably more complicated than for single-manager funds.

The *Total Expense Ratio* (TER) is not only a method to calculate the overall fees for the management but it serves to gauge the total cash flows out of a multi-manager fund.

[16] Mercer Investment Consulting, is a leading global provider of objective investment advice and services.
[17] Garry Lette (2005), *Value, Growth or Style Neutral*, Mercer Investment Consulting.

The TER includes all annual operating expenses (including those for administration, custody, audit, and so on) plus the annual management fees. Exhibit 2.4 shows in detail the expenses included in the TER calculation. TER is expressed as a percentage of the related fund assets and it is usually calculated over a financial year.

Exhibit 2.4: Expenses included in TER calculation

1. Management and Performance fees.
2. Operating Expenses:
   - Custody and Trustee fees;
   - Audit fees;
   - Bank charges.
3. Value added taxes.
4. Liquidity costs.
5. Investment in other funds (upfront fees and exit fees).

Exhibit 2.5 shows an example of a simplified fund expense statement.

Exhibit 2.5: Fund expense statement

Fund expenses	**€**
Manager's fee	1,137,206
Registration fee	390,180
Trustee's fees	16,216
Custody fees	7,200
Audit fee	5,053
Tot Expenses	1,555,855

Source: *Multi-Manager Funds. Long-ongly Strategies for Managers and Investors*. Edited by S. Jaffer (2006)

From the data of Exhibit 2.5, the annual management fee is 1.5% and we can use the management fee charged (€1.137m) to calculate the fund's daily average net assets

over the year, which is €75.8m. Taking the total expense (€1.555m) as a proportion of the same average net assets (€75.8m), we can calculate the TER, which is 2.05%.

The TER is a fairer guide in gauging the impact of the annual management fees and expenses on fund performance. Moreover, is an important ratio for the investors because enable them to evaluate their portfolios by quantifying the costs incurred in the management of the fund in a single number so that the impact of these costs on returns is clearer.

New regulations from the European Commission (EC) for the simplified UCITS (collective funds that comply with European regulatory standards) prospectus now requires the disclosure of TER. TER have been implemented in the interest of investors, as these should assist investors and their advisors to better understand the disclosure.

2.8.1 Drag effect

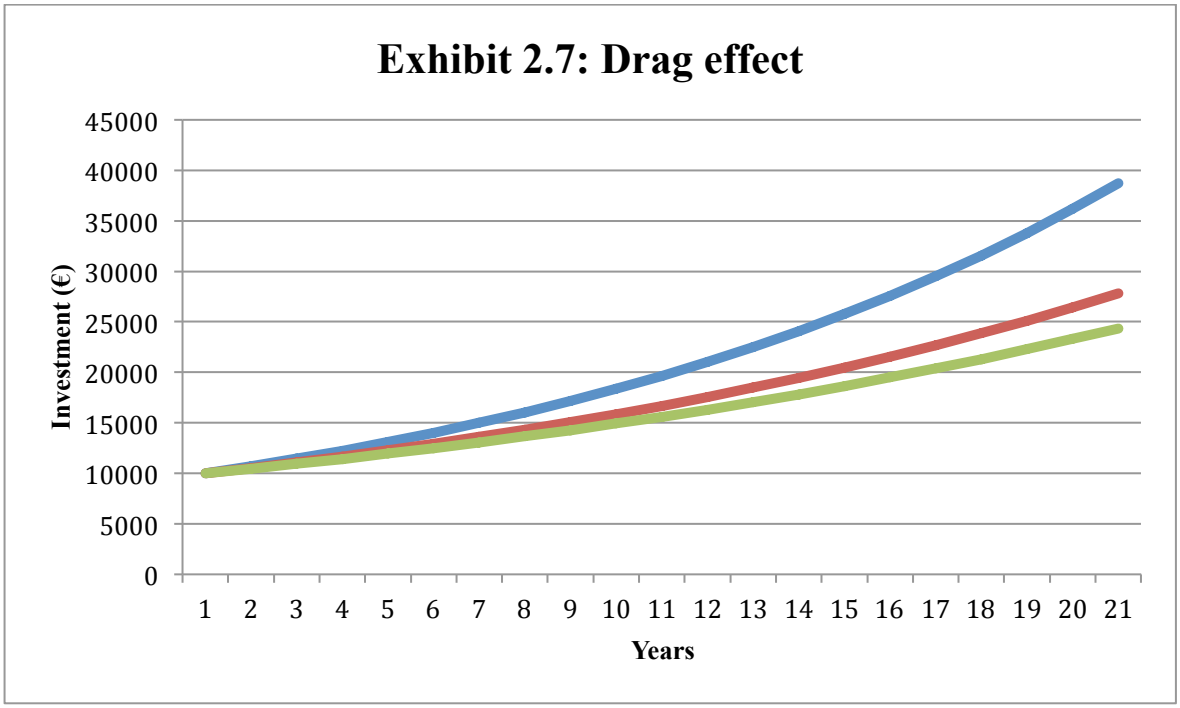
To better understand the drag effect of the annual fees is useful to implement a hypothetical scenario. Exhibit 2.6 shows the annual management fee and the TER for two funds.

Exhibit 2.5

	Management fee	**TER**
Fund A	1,50%	1,75%
Fund B	1,50%	2,45%

Performance figures are shown net of all fees and expenses borne by the fund. Thus, if Fund A and Fund B both produce performance of 7% over one year, an investor who invested in Fund A will return 5.25%, while that who invested in Fund B will return 4.55%.

The cumulative effect of the TER over time is shown in Exhibit 2.7.



Where the Blue Line represents return of 7% with no charges, the Red Line represents the return after 1.75% TER, and the Green Line represents the return after 2.45% TER.

The cumulative effect of the TER over 20-years time horizon can be conspicuous.

2.8.2 Synthetic TER

The European Commission has stated that a *synthetic TER* (or inclusive TER) should be calculated "when a UCITS invests at least 10% of its net asset value in other UCITS or in non-UCITS which publish a TER".

To better understand the calculation of the synthetic TER we may take into account the example of Ed Moisson, which is responsible for communications at Lipper Fitzrovia, a firm specialising in fee and expense research for collective funds. Exhibit 2.8 shows Moisson's analysis.

Exhibit 2.8: Synthetic TER calculation

Underlying Fund	TER (%)	Holding (%)
SGAM Fund - Equities US Relative Value	0.90	18.57
Artemis North American Growth Fund	1.91	9.93
Royal Bank of Canada Global Funds - Canadian	1.69	8.69
CF Lord Abbett - US Affiliated	0.96	16.33
Prudential North American Trust	1.51	16.33
Gartmore - Latin American Fund	1.24	5.09
LeggMason Global - Value	1.37	14.92
Investec Global Strategy - Global Energy	1.66	6.10
Net current assets	-	4.04
Weighted average TER for underlying funds	1.28	100.00
Top-level expenses (including rebates)	1.26	
Inclusive TER	**2.54**	

Source: Lipper Fitzrovia

Source: *Multi-Manager Funds. Long-ongly Strategies for Managers and Investors*. Edited by S. Jaffer (2006)

2.8.3 Different structures

The concept of TER is very important when managing *costs* in multi-manager funds. There are two main aspects to consider. First, there is the difference in the structures between manager-of-managers and fund-of-funds. Secondly, there is the difference between "fettered" funds and "unfettered" funds, namely funds that invest either internally or externally respectively.

Starting from the fund-of-funds, as I have mentioned before, these products are constructed investing in other collective funds, and therefore there is a second level of expenses that will affect the performance. The advantage of these products is that a fund-of-funds should be able to negotiate rebates on the annual management fees charged by the underlying funds. On the other hand, manager-of-managers does not invest directly into other funds but it outsources the management of a part of its assets to distinct fund

managers. By doing this, manager-of-managers can easily handle the fund's expenses because it is able to anticipate them.

The second difference is between funds investing only internally ("fettered") and funds investing externally ("unfettered"). The former have to take some steps in order to avoid the charging of full annual management fees at both levels, fund of funds (the top level) and on underlying funds. Indeed, the fund company will not charge a full retail rate at the top level because it is receiving management fee revenue from the underlying funds.

In contrast, a fund company that makes investments in funds of other companies will charge a full annual management fee at the top level and this can potentially affect the synthetic TER, and thus its performance.

2.9 Manager-of-managers funds versus Fund-of-funds: investment, management, and operational challenges

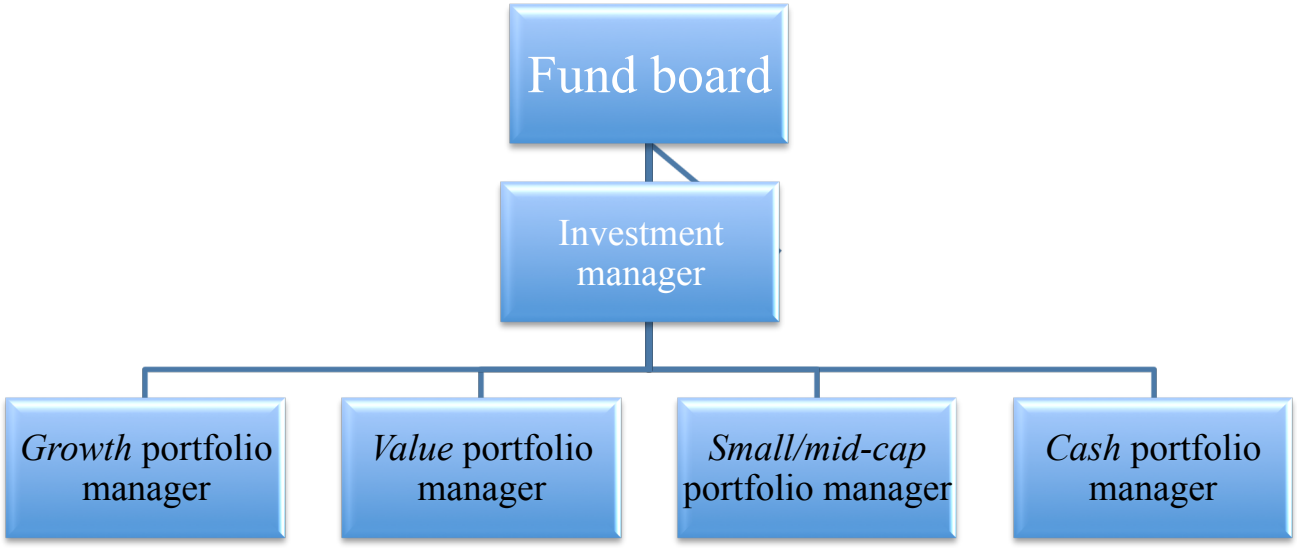
As I have already mentioned in the first part of the chapter, the multi-manager universe encompasses two distinct products: funds-of-funds and managers-of-managers. The two platforms differ significantly in their architecture; the first invests in funds, whereas the second invests in securities through the appointed managers. The aim of both products is basically the same trying to provide a diversified portfolio by combining managers with investment styles and objective investment characteristics in order to reduce the risk without scarifying returns. However, there are two different products and the differences between the two fund types can be summarized as follows.

- *Structure*. A fund-of-funds to achieve its investment objectives invests its assets in other funds, while a manager-of-managers fund directly selecting and engaging different portfolio managers that manage its assets in separate accounts. The manager of a multi-manager fund generally appoints an investment manager, which in turn picks a number of third-party portfolio managers (multiple managers structure) with discrete mandates in order to execute the actual investment of the fund's assets, individual benchmarks and fee arrangements. The main role of the investment manager is to select and

blend portfolio managers for the relevant mandate and to remove the portfolio managers when no longer accomplish the fund's investment objective.

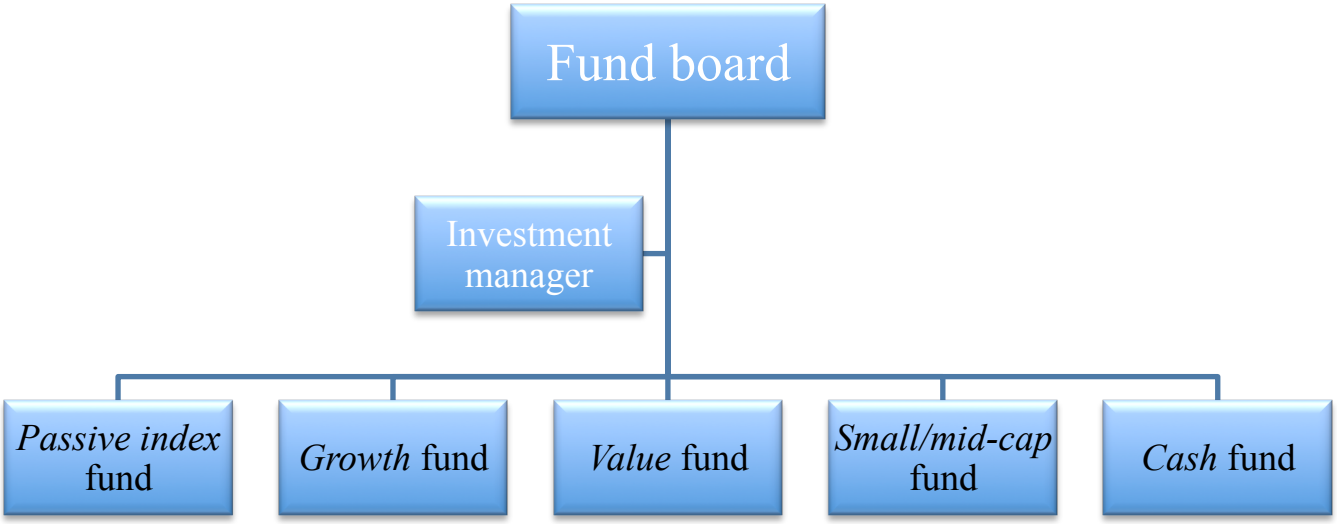
Exhibit 2.9 and 2.10 show a basic structure for manager of managers and fund of funds respectively.

Exhibit 2.9: Basic manager-of-managers structure



Source: *Multi-Manager Funds. Long-ongly Strategies for Managers and Investors*. Edited by S. Jaffer (2006)

Exhibit 2.10: Basic fund-of-funds structure



Source: *Multi-Manager Funds. Long-ongly Strategies for Managers and Investors*. Edited by S. Jaffer (2006)

- *Segregation*. A fund-of-funds will generally be just one of many investors in the underlying funds into which it invests, whereas a manager-of-managers fund assets remain within the same scheme being managed on a separate account basis.

- *Control*. A fund-of-funds controls its own allocations across different funds, where allocations requiring redemptions and new subscriptions, but it has no control over the objectives or styles of management. Conversely, manager-of-managers set the parameters of the discrete mandates for each portfolio manager to whom assets are allocated and has fully control over objectives and styles of management.

- *Regulations*. Manager-of-managers funds are generally not regulated as such (other than prospectus disclosure) but the fund itself has to comply with its own applicable investment restrictions tailored for its investment objective. Fund-of-funds is specifically regulated by reference to the types of underlying funds into which investment may be made (UCITS, non-UCITS) and have to comply with the maximum permitted exposures to anyone underlying fund.

- *Portfolio information*. A fund-of-funds periodically receives portfolio information from its underlying funds, whereas a manager-of-managers fund is able to receive portfolio information from its portfolio managers all the time, which enable to greater compliance monitoring.

- *Fees*. Fund-of-funds is subject to the aggregate fees of each of the underlying funds in which it invests but it may be able to negotiate rebates. A manager-of-managers can easily handle the fund's expenses because the fees in a multi-manager scheme are negotiated on a portfolio manager-by-portfolio manager basis.

- *Size*. Small portfolios can readily be managed on a fund-of-funds basis, while manager-of-managers require larger funds in terms of asset under management size.

The asset management industry now recognizes the role of "manufacturers" and of "asset gatherers", leading to an open architecture offering. Indeed, fund administration is closely related to custody: the fund administrator keeps the books and the custodian takes care of the assets. The following part highlights the difference about the custody dimension between managers-of-managers funds and fund-of-funds.

2.9.1 Custody dimension

Managers-of-managers

The generic custody service for managers of managers encompasses:

- *Cash transfers*. Accounts used to implement the asset allocation function; they are internal between the multi-manager accounts and the transfers are initiated by the net subscription and redemptions produced at each NAV frequency and by the portfolio rebalancing.

- *Connectivity*. Multi-manager funds have to implement a Systematic Transfer Plan (STP) for each sub-manager and the multi-manager.

- *Registration of securities*.

- *Reporting*. Segregation of access between the multi-manager (all portfolios), the sub-managers (their respective portfolios), and possibly the securities lending agent (securities portfolio).

- *Portfolio transition management*. The change of managers as well as the conversion of investment from one style to another induces costs. These costs are normally transaction costs like stamp duties and clearing fees. Portfolio transition management service coordinates the conversion of an existing portfolio into a new one without incurring in high and full transaction costs. Indeed, the portfolios are not liquidated but swapped with counterparties identified by the custodian.

Fund- of-funds

These funds do not dictate a standard level of custody service as the multi-manager. However, there are two levels of services:

1. Custody of the assets.
2. Trade execution on behalf of the fund/multi-manager.

Regarding the custody of the assets, the multi-manager depositary bank decides on the custody organization for funds of funds. There are three types of counterparties:

- The sub-fund administrator;
- The depositary bank of the sub-fund;
- The clearing house.

The depositary bank has to organize the opening of the accounts with those counterparties. The connectivity with the counterparties to achieve a seamless process is a crucial element. SWIFT (Society for Worldwide Interbank Financial Telecommunication) has designed message template for funds and permitted the asset managers, brokers and fund administrators to have a SWIFT address. A fund administrator, however, does not arrange for a SWIFT address if its transaction volume does not justify the corresponding costs. The e-banking facility developed by banks may be the preferable solution provided they have a template to accept fund messages.

The trade execution on behalf of the multi-manager is a specific service for funds of funds. It is a purely operational process with the filling of the subscription/redemption forms. The subscription/redemption orders are made under the name of the depositary bank. Both the depositary bank and the fund administrator may offer this service. The trade execution service provider takes responsibility for best execution, and therefore is required to know the investment terms: the sub-fund administrator that issues the shares units and the operational constraints (cut-off time, minimum amount, sales charge, qualification of investor, payment details, and payment date).

The clearing house solution

Regarding the *clearing house solution*, these such as Euroclear and Clearstream have developed a dedicated service offering to execute and safeguard the investments in funds. The process takes several steps as following:

1. The multi-manager sends the order by e-banking or SWIFT, which includes a fund message template with the names of both the depositary bank and the portfolio investing.

2. The clearing house receives the orders from the clients and sends a global order to the transfer agent of the sub-fund.

3. The transfer agent of the sub-fund sends a contract note indicating NAV price, amount and number of shares.

4. The clearing house confirms the acceptance of the order to the multi-manager and its depositary bank.

5. The multi-manager or the depositary bank sends the contract note to the fund administrator.

6. The depositary bank of the multi-manager instructs the payment from its clearing house account to the account of the sub-fund.

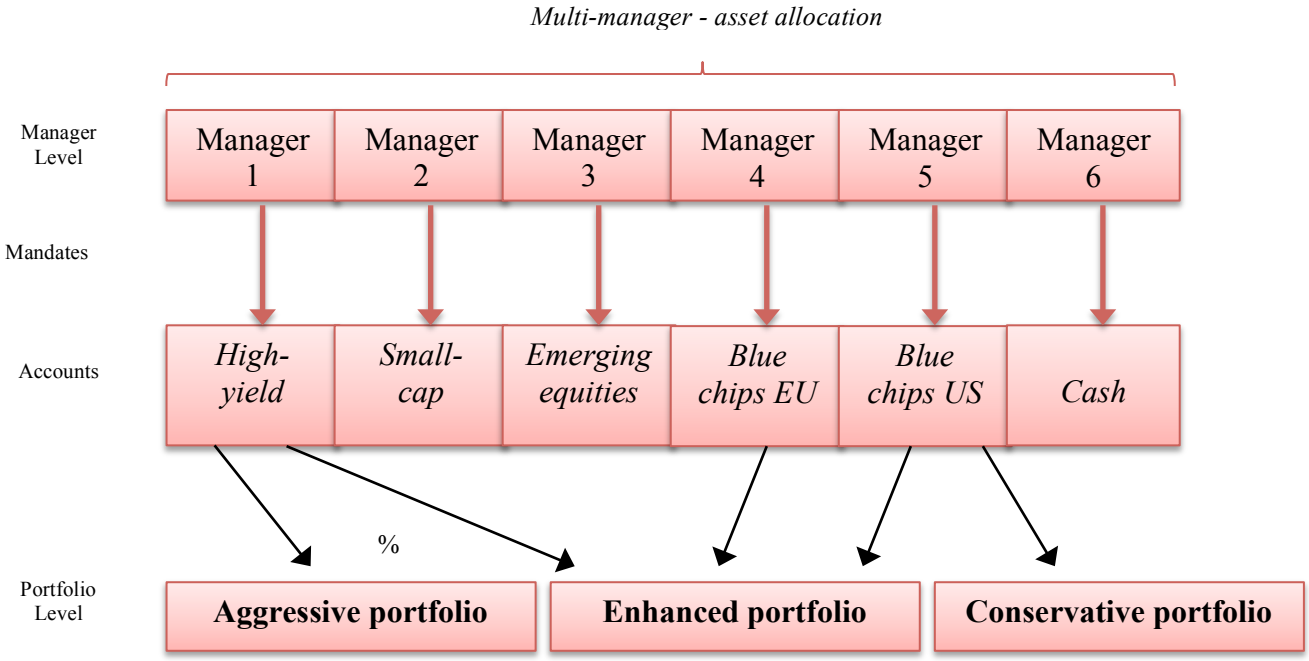
7. The transfer agent of the sub-fund has access to the clearing house database for managing its funds.

2.9.2 Fund administration dimension

Managers-of-managers

The optimal solution for managers of managers funds is the **pooling structure**. The pooling feature creates *virtual portfolios* that allow the manager to manage one pool of assets instead of multiple ones within the same legal structure in order to generate lower transaction costs. Exhibit 2.11 shows an example of pooling structure.

Exhibit 2.11: Pooling structure



The lines of stock and transactions at the pool level had to be allocated at the portfolio level, where each portfolio must have full control of its assets. The profit and loss accounts has to be worked from the pool to the portfolios and has to be monitored.

The pooling solution is generally used to portfolios reflecting risk appetite or tailored risk profile combined with a cheaper investment vehicle like an institutional fund.

Funds-of-funds

For funds of funds the process is similar to administering a fund of hedge funds, indeed affecting differently the fund administration value chain than in the case of a manager of managers. The fund dimension encompasses three main functions:

1. **Fund administrator database**. The process requires the access to dedicated data vendors such as Lipper and S&P Funds. These data also include the custodians of the sub-funds and the sub-funds' administrators.

2. **Portfolio**. The lines of stocks compared to a manager of managers are lower – 20 versus 400 lines of stock – making the fund of funds cheaper to administer.

3. **Rebates monitoring**. This function constitutes the control of the trailer fees generated by the sub-funds administrators. The rebates can be captured in two

main arrangements, the depositary bank negotiates the rebates with the sub-funds administers, or the multi-manager directly negotiates the rebates with the sub-funds administers.

Exhibit 2.12: Portfolio management factors of complexity

Criteria	Manager-of-managers	Fund-of-funds
Number of lines of stock	Four to five managers with each having 50 lines of stocks – 200 to 400 lines of stock	Up to 20 sub-funds not to dilute the performance – maximum 20 lines of stock
Portfolio turnover	Asset allocation and securities selection processes. The investment style of the investment managers dictates the number of transactions	Asset allocation process. Fewer transactions than in the case of a manager-of-managers
Custody	Traditional custody organization	Dedicated network of depositary banks and administrators of the sub-funds. Possible use of the clearing house solution
Trade execution	Not applicable – so far the practice is for the manager to execute its trades	The multi-manager may require trade execution from the depositary bank/fund administrator
Valuation of securities and instruments	The sub-managers and the multi-manager may use derivatives and invest in small-caps and emerging markets securities depending on investment style and risk management philosophy	Access to prices through dedicated fund databases or alternatively through the depositary bank and administrators of the sub-funds
Corporate actions	Tracking performed using different sources. Small-cap and emerging markets securities are more difficult to monitor	Limited number originated by an increasing number of but larger fund administrators
AUMs size	Possibly larger funds. Interest to have fixed charge of fees and expenses	Possibly smaller funds. Interest to have variable charge of fees and expenses

Pooling	Ideal functionality for the majority of cases, except when one investor	Not justified
Change of managers	May happen with operational implications and probably costs	Not applicable

2.10 Funds selection: implementing Quantitative and Qualitative analysis

The quantitative and qualitative analysis in multi-manager funds is the main phase leading to funds selection and portfolio construction. These two analyses are different, however they are used together because they are the principal driver in seeking and choosing funds.

Quantitative Analysis

Quantitative analysis is simply a financial analysis that investigates on behaviour by using mathematical and statistical modelling, measurement and research. This analysis plays a central role during the whole decision-making process in multi-manager funds.
As part of the selection process of third-party funds using quantitative techniques is mainly aimed to:

- Identify the funds of interest on which focusing the subsequent qualitative analysis (due diligence, meetings with managers, site visits, and so on)
- Highlight key features of the funds under analysis (exposure to specific risk factors, style analysis, and so on)

The starting point of the analysis is the availability of a large dataset, with returns time series of the funds on sufficiently long time horizons. The second step consists on the identification of asset classes (benchmark) to associate with the funds being analysed in order to obtain results that are sufficiently homogeneous and comparable. The data analysis and the construction of performance/risk benchmarks allow achieving a first screening and highlighting the funds on which focusing the next analysis. For each fund

performance and risk indicators are calculated on multiple time intervals in order to classify the funds on a specific ranking (performance, risk, and overall).

The quantitative analysis is used to filter amongst something like 50,000 funds globally available, to reduce the screening to more manageable number of funds (150-200), and to monitor that performance and volatility are in line with the expectations. In order to define the universe of funds and the right associated asset classes, the investment team regularly use multi-manager database, filtering products by asset class (equity, bond), country (Europe, Japan, US, and so on), and style (small-cap, value, growth and so on).

The goal of the analysis is to assess a fund in terms of performance, return and risk over a different time periods (1-, 3-, 5-years, and quarterly). In this contest, to achieve the goal of the quantitative analysis multi-manager using multi-approach combining several and distinct metrics shown in Exhibit 2.11.

Exhibit 2.11: relevant metrics in quantitative analysis

Performance	• Absolute and Relative Return • Sharpe Ratio • Information Ratio • Alpha
Risk	• Volatility (Standard Deviation) • Tracking Error Volatility • Beta
Style	• Correlation with markets • Style analysis

Regarding the style, there are a number of ways a multi-manager examines style quantitatively. The major technique is to analyse the historical returns and compare these with the style indices. For example, if the returns show a higher correlation with the value index than the growth index, this suggests a value approach. A more accurate technique is to take in consideration the holdings of the underlying portfolio and look at the fundamental factors versus the index. A weighted average computation of the portfolio's fundamental factors (P/E ratio, price/book, yields, beta, alpha, and etcetera) can then be compared with the index. For example, if a portfolio presents higher P/E ratio and simultaneously has lower yield, we can state that the portfolio has growth characteristics.

The holdings are analysed in a historical way in order to avoid style drift or a market-oriented approach. Furthermore, looking at quarterly data over the last 12-quarter end periods allows to understand how much the portfolio moves around the style spectrum.

Regarding the portfolio construction, the multi-manager has to be aware of style compatibility between the selected managers and of achieving an effective diversification.

Multi-manager approach tends to use *concentrated portfolios* – a range of 30 to 50 stocks, which then are combined with other concentrated portfolios in order to maintain an acceptable active risk.

After the stock picking provided by the specialists, a three-manager structure will be composed of about 100 stocks, providing the multi-manager fund with effective and specialist diversification.

Although quantitative analysis is a powerful tool for evaluating investments, it must be used together with qualitative analysis to deliver the optimal solution.

Qualitative Analysis

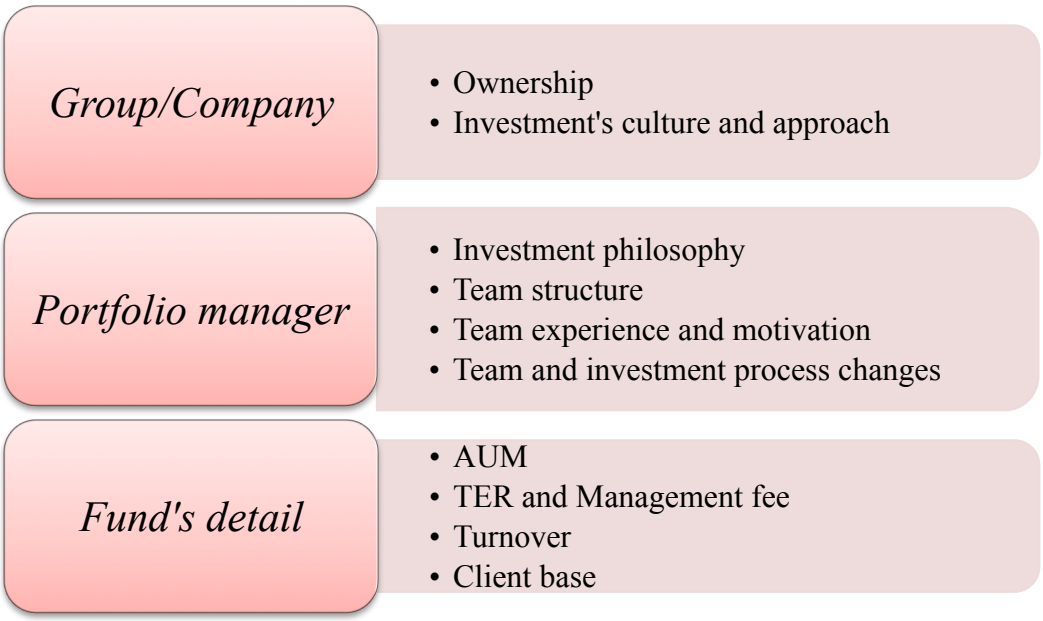
While most investors and analysts rely mostly on quantitative measure metrics, supplementing the analysis with qualitative analysis increases the insight into the company, or into the fund as in our case. Qualitative analysis is simply a securities analysis that employs subjective judgment based on non-quantifiable information.

The priority in selection is to be familiar and understand the main features of a fund in order to identify both its strengths and weaknesses.

- Understanding who are the people who generated the performances.
- Monitoring changes in the team and the organization structure.
- Evaluate stability of the feature of a fund over time.

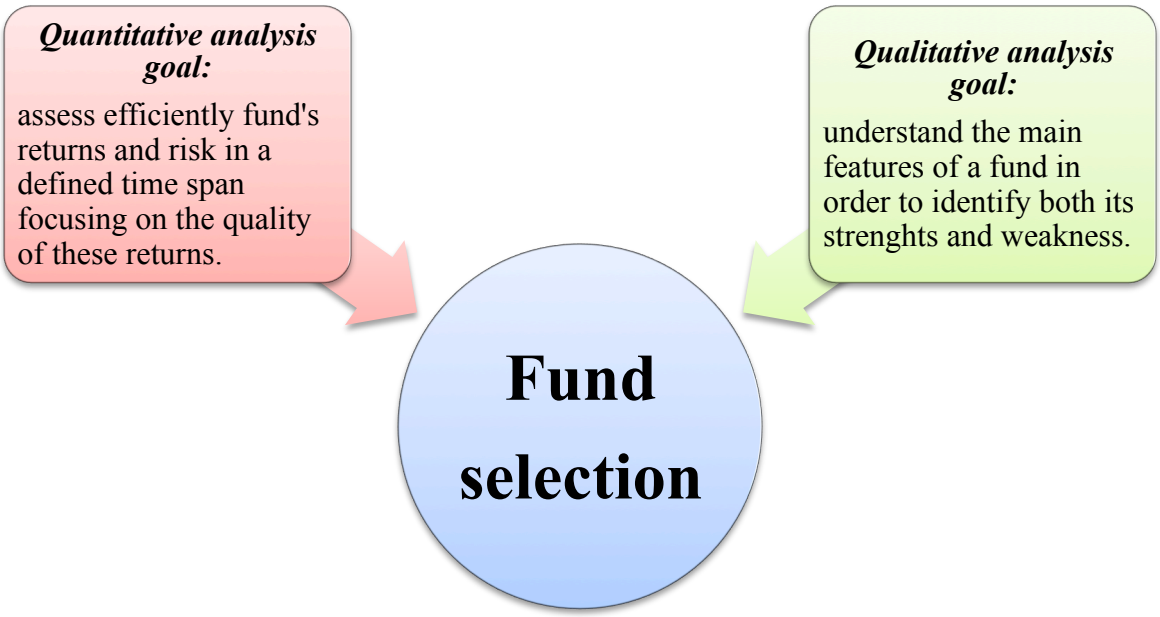
The fund selector can conduct about 300 visits at the portfolio managers' premises In order to carry out the analysis. Indeed, when appraising a fund management company organization, it is essential to meet people who have actually managed the money.

Exhibit 2.12: Drivers in qualitative analysis



The natural entry point for an analysis of a fund is a qualitative look at its people, process and philosophy. These elements comprise the backbone of all funds and are the source of their performance. The driver factors in the qualitative analysis shown in Exhibit 2.12 build a framework for a fund and are the first of a multi-step due diligence process, which will be analysed in detail in the following chapter.

Exhibit 2.13



As shown in Exhibit 2.13, the result of the two analyses, quantitative plus qualitative, leads to fund selection.
The key criteria in selecting the right fund can be summarized in these points.

- Comparing funds/managers performance over multiple periods (5-years, 3-years and even 1-year).

- Comparing the performances against the peer group and benchmark.

- Eliminating some of the noise from the data, use rolling measures to get a better perspective on the fund/manager's ability to provide consistent results in different market environments.

The fundamental part of the multi-manager process is the portfolio construction through the fund selection, which relies on the following objectives:

- Effectively diversify;
- Retain appropriate active risk;
- Monitor and rebalance to neutralize style risk;
- Continually ensure the best managers in managing the funds.

Once the funds are selected, they will then undergo constant monitoring in terms of risk data, correlation with the markets and style analysis. The managers monitor portfolio risk on a daily basis and verify the portfolios' coherence with the view expressed by the company's investment committee, which provide tactical asset allocation guidelines.

The most common mistake in the **portfolio construction** is the duplication of fund categories by holding funds with the same objectives, thus leading to an inefficient diversification. Diversification in multi-manager funds is the dispersion of the assets over diverse fund categories in order to realize specific low risk objective. There is no standardized formula or equation to determine the appropriate and optimal number of funds to construct a well-diversified portfolio. In the universe of the investment funds, there are different fund types that offer different return/risk objectives. These categories of funds can be depicted according to an escalating risk basis.

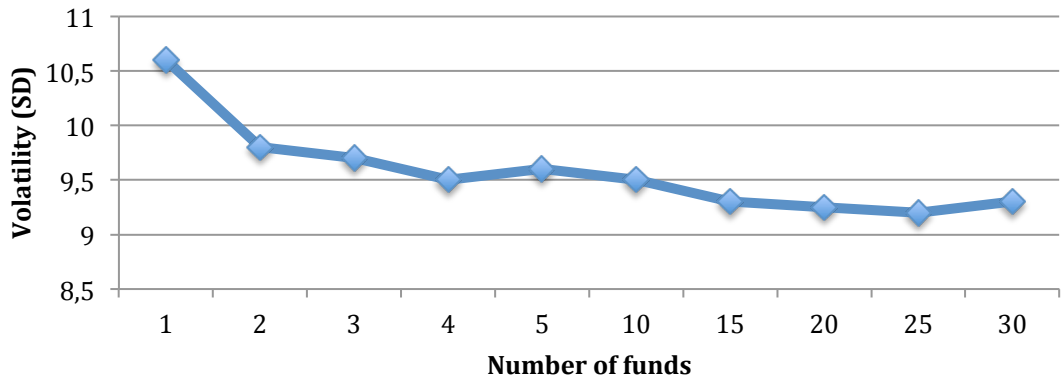
large value < large growth < mid value < mid growth < small value < small growth < sector < emerging markets

When adding a new fund, it is very important to focus on the correlation of this new fund respect to all the other funds already in the portfolio. Specifically, focus on the correlation of excess return - namely the difference between the fund performance and the respective benchmark - over an adequate period (3-years of monthly returns should be sufficient). For example, if two funds show high correlation among them, it is worth reconsidering its inclusion in the portfolio. This analysis is crucial because it is aimed to avoid market bias.

Taking in consideration the Morningstar study[18], shown in the Exhibit 2.14, which shows how it is possible to reduce risk by owning multiple funds, what we can conclude is that in choosing funds *quality* is more important than quantity. Indeed, Morningstar study that has chosen randomly equity funds, shows how the risk remains fairly constant up to 30 funds.

What is important is not the number of funds an investor owns, but how these funds are different among them in terms of investment strategy.

Exhibit 2.14: Reducing risk by ownign multiple funds



Source: Morningstar Investor

2.11 Multi-manager investing: one-way to beat an index

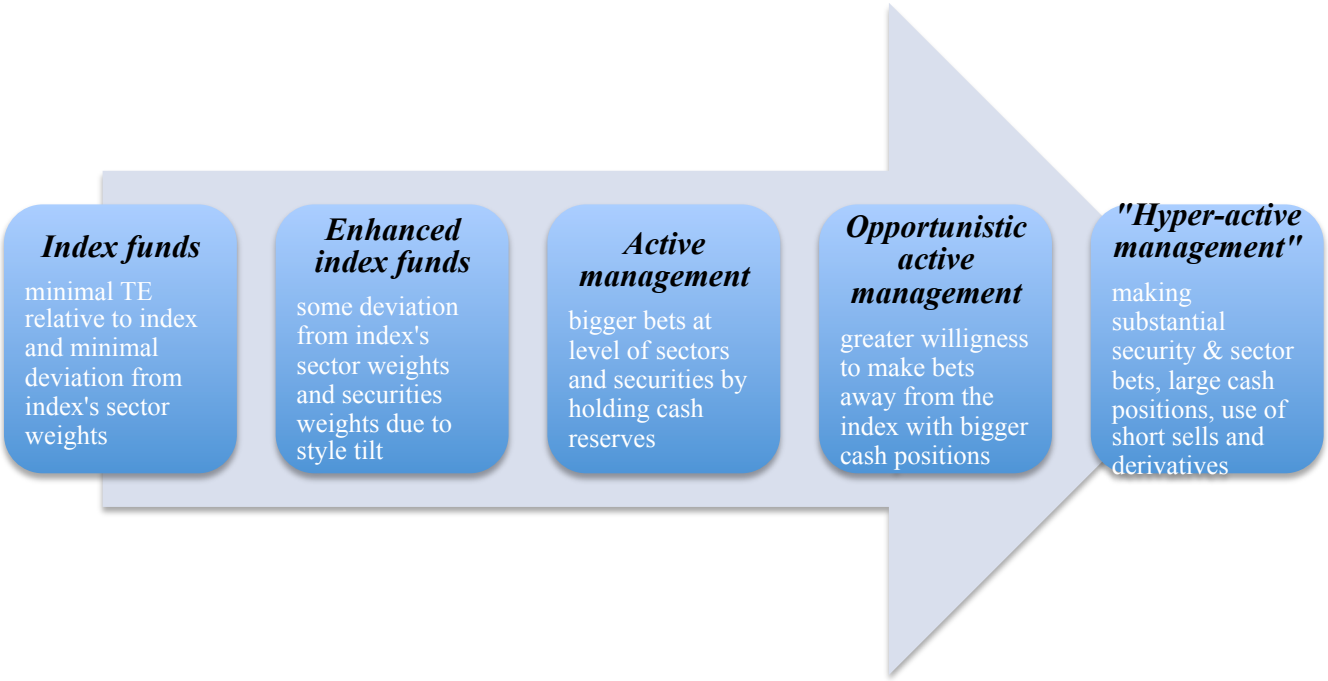
Multi-manager investing is a common practice among large institutional investors. As we have seen before, to pursue the investment objective in a multi-manager structure leads to have different exposure on multiple asset classes. In each asset class there are one

[18] Morningstar study in John C. Bogle, *Common Sense on Mutual Funds: New Imperatives for the Intelligent Investor*, (London: John Wiley & Sons, 2000).

or more managers, whom manage a portfolio against a benchmark specific to that asset class. In this contest, the key to success is to aggregate managers who are not benchmark-obsessed, those managers who provide low correlation with the governing benchmark, and therefore high tracking error. By blending such managers - individual managers who have relatively low correlation with each other and with the benchmark governing the aggregate portfolio - is possible to create a portfolio with acceptable levels of tracking error and furthermore avoiding the needs to place constraints on managers.

Looking at the spectrum of active management and moving from passive end to the active end of the spectrum, there is an increasing willingness to "make bets away from the index". The sequence is the following.

Exhibit 2.14: spectrum of active management



Multi-manager investing makes sense only when the underlying managers are willing to make bets away from the benchmark. These managers will display low correlation with the relevant index and higher tracking error. These types of managers are even called with the label *benchmark-unaware managers*.

Multi-manager investing is a species of active management at two different levels. The organization that is building the multi-manager portfolio is making active investment decisions in choosing managers and determining the allocations to those managers, and the

manager universe within which the decisions are being made is a universe of active managers. In this contest, the skilled active manager does not merely provide the passive value portfolio, but he/she will attempt to outperform the passive portfolio by using his/her individual talent. The objective of the active manager is to capture *alpha*, but alpha is elusive because it is the aspect of the investment process that cannot be captured by a mechanical system of rules.

The multi-manager is the most suitable approach when there is expectation of a premium from active management. There are four main strategies:

- *Core/satellite.* Hiring one core manager designed to generate modest incremental return with low TE, and then encircle the core manager with a team of satellite managers who are willing to make bets away from the benchmark.

- *Sector specialists*. Hiring a group of sector specialists where each manager attempts to add value through stock selection within its sector. For example, a EU equity portfolio may pool a technology specialist, a financial specialist, an industrial specialist, and so forth. The sector weights could be held close to those of the target benchmark, or could be allowed to deviate within predetermined ranges.

- *Style specialists*. This strategy is organized through a two-dimensional grid: large-, medium-, small-cap stocks versus growth, value and blended investment style. As in the sector specialists strategy, the weights of aggregate portfolio can be held close to those of the benchmark or can deviate within defined ranges.

- *Style specialists with sector bets*. The objective of this strategy is to hire style specialists who are willing to make large sector bets as a residual of their investment approach. A multi-manager portfolio could be constructed in which sector bets at the aggregate level could be held very close to those of the benchmark, but these bets must be monitored closely given both the state of the economy and of the market.

Multi-manager investing is a natural byproduct of the belief in active management.

CHAPTER 3: PERFORMANCE MEASUREMENT

3.1 Performance measurement and evaluation goals

As I have mentioned before, it is certain that past performance is no guarantee of future results, but in assessing the effectiveness of the investment managers performance, if carefully analyzed, it is one of the most powerful tools.

The ultimate goal of the performance measurement is to enable the decisions made. However, the performance analysis alone is not sufficient to make significant investment decisions. Performance analysis must be used along with other tools such as portfolio analysis, trading analysis and qualitative evaluation. The latter encompasses the evaluation of the organizational structure, the intellectual resources of the investment management, the decision-making process, and last but not least the ethical standards and principles of the organizational structure.

3.1.1 The decision tree

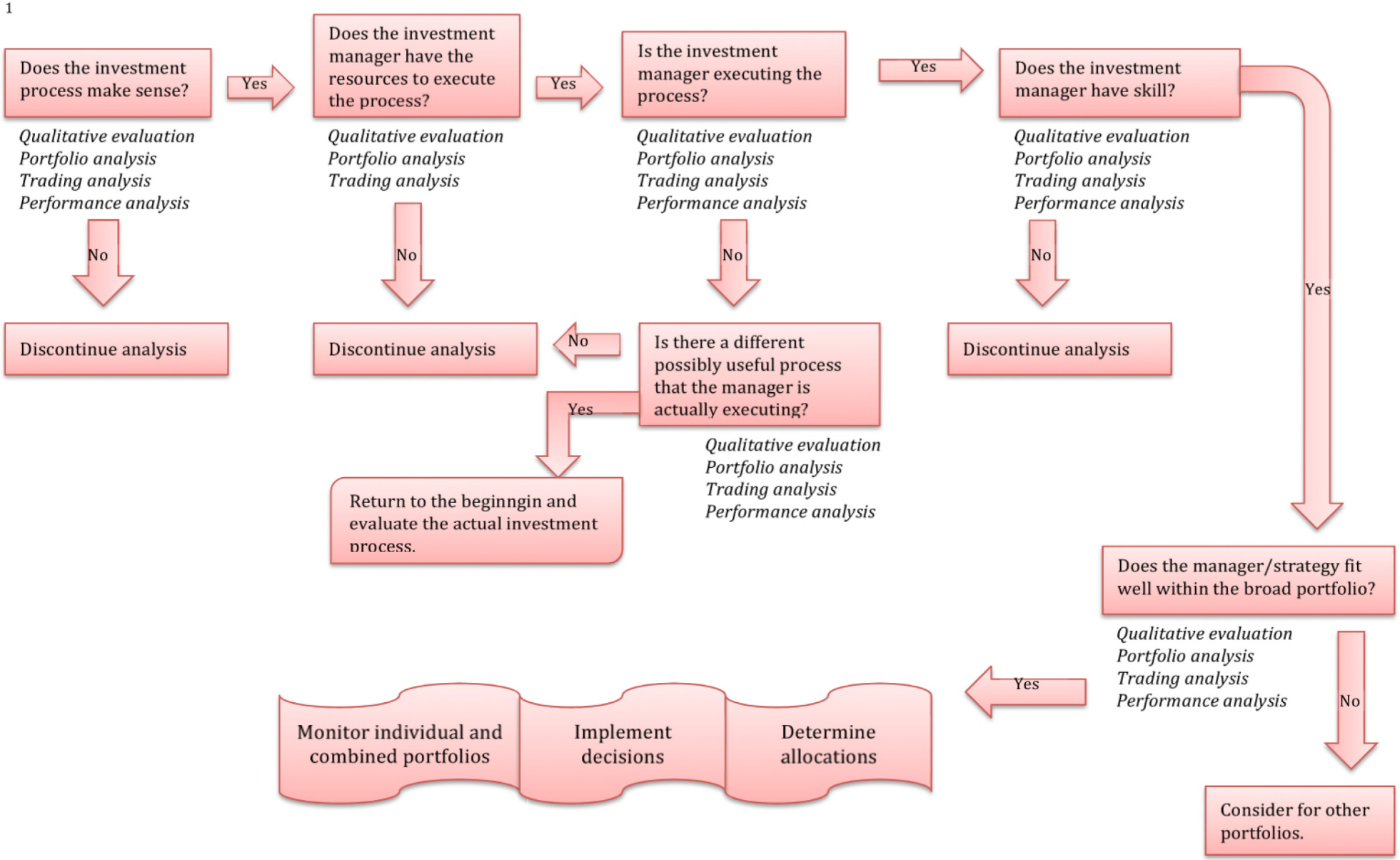
One of the most difficult challenges to overcome in the investment strategies and among investment managers is the presence of "noise" within investment results. This noise can be controlled through the *decision tree*, an approach that systematically analyzes the investment decisions made in order to identify and quantify the noise. This approach follows distinct steps. Each step is designed to answer specific and basic questions.

Starting the process evaluating the efficacy of the investment process and investment philosophy, the first step includes these types of questions:

- Does the philosophy add value over time?
- Has it been consistent, cyclical or random in its effectiveness?
- What types of environments has the philosophy worked in?
- What are the risks?
- How much efforts and skills are required to execute the process?

The next step is focused on evaluating how a manager has worked, if he or she has followed the investment philosophy and objective by comparing actual results to expectations derived from the initial work. Performance analysis alone will not fully answer this question, however it is an essential tool because it is able to raise warning flag or to support beliefs during the investment process. Exhibit 3.1 shows an example of a typical decision tree for investment manager selection process.

1



Source: Multi-Manager Funds. Long-ongly Strategies for Managers and Investors. S. Jaffer (2006)

Then, and only after determining that the philosophy and process have merit and that the manager is executing the process, one can extend the analysis to determine whether or not the manager is effectively executing the process.

3.1.2 The impact of fees on performance

Fees and expenses can blunt the potential value added by any investment manager. This is particularly true for multi-manager portfolios that can have layering of fees and can generate more expenses by the turnover of investment managers or in the case of re-balancing of portfolios.

Running the performance analysis it is useful to focus on the returns generated by managers gross of fees, because most managers publish their composite returns gross of fees. Moreover, beginning the analysis with gross returns, whatever fees and expense assumptions deemed appropriate can be added and managers compared accordingly.

Most of the times multi-manager portfolios are more expensive compared to a single-manager portfolios. However, if the multi-manager portfolio is well structured, the duplication (adviser plus sub-advisers) of fees can be avoided. This is particularly difficult in the case of fund-of-funds where each fund is run as a separate investment product and therefore must execute several activities, which involve additional layer of fees.

Expenses incurred by most single-manager portfolios are typically reproduced in their composite performance statistics.

When evaluating possible combinations within a multi-managed portfolio, considerations must be made as to what additional expenses will be incurred due to portfolio transitions caused by manager changes, or portfolio re-balancing. When modeling the performance of a multi-managed portfolio and designing re-balancing disciplines, it is imperative to apply assumptions about the cost of trading. However, in the case of evaluating past performance of a multi-managed portfolio it would only be necessary to adjust for expense assumptions if there is reason to believe that past performance is unrepresentative of future expenses.

3.1.3 Investment indexes as benchmarks

Investment indexes were originally designed to help investors better understand the performance of the markets. Nowadays, this original feature has remained, the investment community has used these indexes as benchmarks with which to compare investment manager performance. The theory is that a well-constructed index serves as a reasonable representation of the opportunity set available to investment managers. This combined with the Efficient Market Hypothesis[19] has led many to believe that broad capitalization-weighted or float-weighted indexes are efficient portfolios.

Benchmarks indexes are easy to use and thanks to the latest technology innovations, various instruments allow us to replicate the return of indexes. Indeed, many indexes are an investable alternative. In addition to using standard benchmarks, it is also possible to construct custom benchmarks based upon any manager's philosophy and process. Thus, they define the opportunity set of securities from which the manager is likely to choose.

The number of investment indexes currently available to investors has exploded due to technology developments. Standard & Poor's, for example, maintains more than 1,500 major investment indexes and over 100,000 sub-indexes; MSCI has designed approximately 2,500 indexes; and the Financial Times (FTSE) publishes more than 60,000 indexes. I have only mentioned the most important but the list goes on.

It is important to state that there is no theoretical basis to suggest that specialized indexes are efficient.

The difficult issue is to decide which are the appropriate indexes using to evaluate the performance of investment managers. This depends upon the aim of the performance analysis. Typically, several different indexes are used over the course of a manager evaluation. For example, a broad index that is representative of an entire asset class would be appropriate to test the efficacy of an investor's philosophy and process to compare actual results. A more specialized index that embodies some of the basic tenets of the philosophy would be useful to evaluate whether or not a manager is executing its philosophy and to further measure how effective the manager is within its philosophy. The most obvious is when the manager's goal is stated to outperform a particular benchmark.

[19] In finance, the efficient-market hypothesis (EMH) asserts that financial markets are "informationally efficient". In consequence of this, one cannot consistently achieve returns in excess of average market returns on a risk-adjusted basis, given the information available at the time the investment is made.

In order to evaluate how a manager fits with other portfolio managers in a multi-manager structure, it would be most appropriate to choose benchmark that best represents the overall objectives and risk parameters of the client. Thus, in the context of multi-manager, we can start evaluating the efficacy of individual managers using broad asset class indexes. Then, using more specialized indexes in order to evaluate the risks, actions and results of each manager. Finally, he or she would model combinations of these managers relative to each other and a client-appropriate benchmark. By doing this, multi-managers continue to monitor the investment managers using all three of these types of indexes.

For example, in the case of a global balanced portfolio two custom benchmarks are created. The first is a combination of the various primary benchmarks weighted by the target allocation for each manager within the portfolio. The performance of the portfolio relative to this benchmark measures how the managers in aggregate have performed relative to their benchmark. Then a second benchmark is created, which represents the long-term return and risk objectives for the portfolio as well as the broad opportunity set available. In this case, a benchmark is created consisting of 55% MSCI World Index and 45% Barclays Global Aggregate Index. The performance of the first benchmark relative to the second one measures the allocation decisions relative to the long-term strategic objective. Therefore, the goal for the portfolio is to outperform the first benchmark – specifically custom benchmark – and for the latter to outperform the second benchmark – extremely broad benchmark.

3.2 Results Analysis

As I have just mentioned in the previous chapter, the investment analysis and especially the funds selection requires the combination of many inputs and both qualitative and quantitative data. We refer to **results analysis** as a form of performance analysis that requires only the return streams of the investment or the managers in question, along with the benchmarks' return streams. Result analysis can be a robust and important tool when used in combination with other forms of analysis.

First of all, when running a result analysis, we must consider what time horizons and what frequency of returns to analyze. Starting from the definition of "long-term", some investors may define it as a "full market cycle", which is difficult to measure. The overall

opinion is that long-term is at least five years, but probably more like seven or ten years and longer.

The efficacy of investment strategies and the skill of investment managers should be assessed using time horizons equal to or close to the time horizons defined in the objectives expressed into the strategies themselves, and whenever possible, longer time horizons as well. Conversely, it is better focus on short-term to evaluate the skills and performance of a manager in a multi-managed portfolio. Indeed, during the selection and construction process, managers evaluate using short-term horizons and parameters similar to those that will be used in the monitoring process.

The goal of multi-managers portfolios is often to combine high-risk managers so that the riskiness of the overall portfolio is reduced. The risk that is to be diversified through the use of multi-managers may be referred to as *intelligence risk*. It can be simply defined as the risk that any managers fail to add value (underperforming the benchmark).

In terms of performance characteristics, the goal of a multi-managers portfolio might be quantified as producing excess returns over short or medium-term rolling time horizons while limiting risk. There is no one completely satisfying measure of risk based on quantitative measure, the main importance is certainly the *volatility* (the standard deviation of returns over short periods).

3.3 Performance characteristics

The aim in constructing portfolio following the multi-manager approach is to find managers who demonstrate ability to add value over time horizons consistent with their own philosophies. In this context, it is important to better understand what are the most important measures of performance.

Excess Return

The excess return can be simply defined as the investment return of a portfolio that exceed a benchmark or index with a similar level of risk. It is widely used as a measure of the value added by the portfolio or investment manager, or the manager's ability to "beat the market."

Alpha

Alpha is a measure of performance on a risk-adjusted basis. It takes the volatility of a fund and compares its risk-adjusted performance to a benchmark index. Another kind of definition: is the abnormal rate of return on a portfolio of securities in excess of what would be predicted by an equilibrium model like the Capital Asset Pricing Model (CAPM). Indeed, Michael Jensen in 1968 introduced the first measure for the evaluation of mutual fund managers. He demonstrated his theory starting from the CAPM providing the *Jensen's Alpha* – used to determine the abnormal return of a security or portfolio of securities over the theoretical expected return.

$$E(Ri) = RFR + \beta i[E(Rm) - RFR]$$

Where:

- *E(Ri)* = portfolio expected return.
- *RFR* = one-period risk-free rate.
- β_i = systematic risk for portfolio *i*.
- *E(Rm)* = the expected return on the market portfolio of risky assets.

In terms of realized returns, for different periods (i.e. yearly returns),

$$R_{it} - RFR_t = \alpha_i + \beta_i[R_{mt} - RFR] + U_{it}$$

Where:

- α_i = indicates where portfolio is superior or inferior in market timing and/or in stock selection;
- U_{it} = indicates a random error.

Giving an example, a positive alpha of 1.5% means that the fund has outperformed its relative benchmark by 1.5%. Correspondingly, a negative alpha of 1.5% indicates an underperformance of 1.5%. Obviously, a good manager is one who produces positive alpha.

The calculation of the alpha requires a regression analysis and introduces the concept of relative risk, even called *unsystematic* risk which is estimated by **beta**. Alpha and beta calculations through the regression analysis are only useful for predicting future

alpha and beta if the correlation (R^2) between the portfolio returns and benchmark returns is robust.

Treynor Ratio

Treynor in 1965 developed the first composite measure of portfolio performance by including a measure for risk-adjusted returns. Treynor postulated two main risk components:

1. Risk produced by general market fluctuations (**systematic risk**).
2. Risk resulting from *specific* fluctuations in portfolio securities (**unsystematic risk**).

Treynor was interested in a measure of performance that would apply to all investors, regardless their risk preferences. Treynor started from the Asset Pricing Theory and to identify the risk caused by market fluctuations, he introduced the *characteristic line* – which defines the relationship between the return for a portfolio over time and the return for the market portfolio. He observed that the characteristic line's slope (**beta**) measured the relative volatility of the portfolio's returns in relation to returns for the aggregate market (higher beta means greater return as well as the market risk).

In order to calculate the **Treynor Ratio**, we can look at the following formula:

$$T = \frac{\overline{Ri} - \overline{RFR}}{\beta i}$$

Where:

- The numerator is the risk premium (average portfolio return – average risk-free asset return).
- The denominator is a measure of risk (slope coefficient, beta, portfolio's relative volatility).
- The expression is the risk premium return per unit of risk.
- Risk averse investors prefer to maximize this value.
- This assumes a completely diversified portfolio leaving systematic risk as the relevant risk.

Sharpe Ratio

Sharpe in 1966 likewise conceived a composite measure to evaluate the adjusted-risk performance of mutual funds. The measure followed closely the CAPM, dealing specifically with the capital market line (CML).

The **Sharpe ratio** formula for a portfolio performance (*S*) is the following:

$$Si = \frac{(\overline{Ri} - \overline{RFR})}{\sigma i}$$

Where, in addition to earlier notation:

- σ_i = the standard deviation of the rate return for Portfolio *I* during the time period

The numerator is the portfolio's risk premium, which indicates the *risk premium per unit of total risk*.

This performance measure is similar to the Treynor ratio; the main difference between the two ratios is that the latter considers only the systematic risk captured by the beta, while the Sharpe ratio seeks to measure the *total risk* of the portfolio by using the standard deviation of returns. Moreover, Sharpe performance measure uses the CML to compare portfolios, whereas the Treynor examines portfolio performance in relation to security market line (SML).

A good way to evaluate a portfolio performance is to use both the methods because they allow us to better evaluate the diversification of the portfolio.

Information Ratio

Information ratio similarly measures the effectiveness of a manager's decisions relative to a benchmark. It is an indicator calculated as the ratio between the excess return of the portfolio relative to the benchmark and the *Tracking Error Volatility* (differential volatility of returns of the portfolio compared to a benchmark or an index). The calculation formula is the followed:

$$IR = \frac{Rp - Rb}{TEp,\, b}$$

Where:

R_p = is the annualized return of the portfolio.

R_b = is the annualized return of the relative benchmark.

$TE_{p,b}$ = tracking error volatility between the portfolio and relative benchmark.

The information ratio, thus, provides the amount of the excess return of the portfolio relative to the benchmark per unit of relative risk (represented by the tracking error) and allows evaluating the manager's ability to outperform the benchmark in relation to the risk assumed (represented by the deviation from the benchmark).

While a consistently high positive information ratio is deal, it is important to realize that one way to generate a high information ratio is to make very few, yet necessarily correct, bets versus the benchmark, thereby maintaining a very low tracking error. It is important to note that even if a portfolio that is significantly different from the benchmark, thus with a large tracking error, has the potential to add value, on the other hand it also creates greater risk of underperformance. The limitation of the tracking error may be an inherent part of a manager's investment process and philosophy, and/or it may be specified by the client's investment constraints. In the context of a multi-manager long-only portfolio, managers whose investment discipline is to significantly limit their tracking error are rarely a useful fit within the portfolio. This is because, without the ability to hedge the benchmark, tracking error is a poor estimate of the overall risk, and without the ability to lever the portfolio, the limitation of tracking error restricts the potential to add value.

However, the ability of the manager is how actively he or she manages the tracking error in order to avoid that very tracking error, which would become variable and unpredictable (within some reasonable range) over different rolling time periods.

Fundamental Law of Active Management (FLAM)

In Modern Portfolio Theory (MPT), the key to investment success is consistency forecasting (skill) applied repeatedly (breadth). The *breadth* of a strategy is the number of

independent investment forecasts that are made, while the *skill* measures the quality of those investment decisions.

Grinold and Kahn in 2000[20] have introduced the Fundamental Law of Active Management (FLAM). It has become an important framework to evaluate skills in active management. In their framework, the skill is measured by the *information coefficient* – the cross-sectional correlation coefficient between forecasts and future returns. Consistency is measured by the information ratio.

The FLAM connect breadth and skill to the information ratio through the following formula:

$$IR = IC \cdot \sqrt{N}$$

Where N represents the breadth, the number of independent forecasts (i.e. stocks).

The main assumptions to derive the formula are:

1. Information ratio can be achieved if the portfolio manager has an accurate measure of his skills and exploits information in an optimal way.
2. The portfolio manager uses only independent information.
3. The skill involved (information coefficient, IC) in forecasting each component is the same

Performance analysis is running in combination with risk analysis, which can provide important insights on the risk assumed in the stock selection as well as portfolio construction and allow satisfying the risk's profile of the clients.

Common risk measures can be summarized in the Exhibit 3.2.

[20] Grinold and Khan (2000). *Active Portfolio Management: A Quantitative Approach for Producing Superior Returns and Controlling Risk*. 2nd edition. Irwin Library of of investment & finance.

Exhibit 3.2: common risk measures

Standard Deviation (volatility)	Absolute risk $\sigma_{port} = \sqrt{\sum\sum wi \cdot wj \cdot \sigma i \cdot \sigma j \cdot \rho ij}$
Tracking Error Volatility	Relative risk - differential volatility of returns of the portfolio compared to a benchmark or an index
Value at Risk (VaR)	Maximum expected loss within a given holding period with a specified confidence level
Maximum drawdown	Maximum realized loss (decline) from the highest historical value of the fund
Beta	Systematic or market risk, undiversified. Systemic risk of an individual asset is derived from a regression model referred to the asset's characteristic line with the model portfolio: $(R_i - R_f) = \alpha_i + \beta_i (R_{mkt} - R_f) + \varepsilon$

3.4 Performance attribution

Performance attribution is a data intensive analysis and it is generally used with the purpose to describe the returns relative to a benchmark. One objective could be to separate returns generated by an investment manager and attribute the pieces to the various decisions made by the portfolio manager. Alternatively, performance attribution can separate the returns and attribute the pieces into various categories of risk the manager is taking.

This analysis requires full holdings data and fundamental, descriptive and performance data for individual securities. Moreover, if used appropriately, it is one of the most powerful tools to link quantitative data to qualitative views and notions. Indeed, if

used among the decision tree, the performance attribution helps to answer questions of whether or not an investment philosophy works and whether the manager is adding value.

The first step comprises the separation of the returns according to the investment process exploited by the investment manager. For example, in the case of equity attribution, which is appropriate in evaluating sector-based strategies, sector-neutral strategies, and top-down/bottom-up processes, the attribution is executed by economic sectors. Similarly, in the case of attribution relative to benchmark, this compares the portfolio's sector allocations over some time period with those of the benchmark. The analyst measures returns generated by each sector within the benchmark. The manager is deemed to have added value by overweighting sectors that performed well. Then, the analyst compares the average performance of each of the sectors of the portfolio to those of the benchmark.

In analysing sector rotation strategy, depending on the manager's specific strategy, stock selection might be expected to be either consistently near to zero, if manager was neutralising his individual holdings; random, if the manager makes active selection decisions which are ineffective; and positive, if the manager specifically attempts to add value through stock selection within sectors.

Performance attribution in designing and monitoring a multi-managed portfolio is run by using numerous slices including sectors, countries, price/cash flows (P/CF), price/book (P/BV), quintiles of P/E, earning growth rates, market capitalization and many other features. The result of performance attribution will be random over time because of the greater diversification in investment techniques implemented in a multi-managed portfolio. In the analysis, the various slices are considered risk factors, which appears to be a persistent source of value added or detracted, it leads to questioning of the structure of the portfolio or the fit of the managers.

Exhibit 3.3 provides an example of a two-factors (allocation and selection) attribution using sectors as the basis for separating the portfolio

Exhibit 3.3: Performance attribution - broad US equity portfolio versus benchmark index

	Broad US equity portfolio			Benchmark Index			Variation			Attribution analysis			
Economic sector	**Average weight**	**Total return**	**Contribution to return**	**Average weigth**	**Total return**	**Contribution to return**	**Average weigth**	**Total return**	**Contribution to return**	**Allocation effect**	**Selection effect**	**Interaction effect**	**Total effect**
Consumer discretionary	6.75	-4.48	-0.29	12.73	-1.50	-0.17	-5.99	-2.98	-0.12	0.34	-0.42	0.19	0.11
Consumer staples	2.96	9.39	0.26	8.41	3.24	0.28	-5.44	6.15	-0.01	0.05	0.53	-0.37	0.21
Energy	12.85	23.70	2.85	8.53	20.58	1.62	4.32	3.12	1.23	0.67	0.24	0.12	1.03
Financials	28.60	2.15	0.63	20.81	0.88	0.19	7.79	1.27	0.44	-0.24	0.28	0.09	0.13
Health care	17.11	11.82	2.02	13.50	2.33	0.32	3.61	9.49	1.71	-0.07	1.24	0.40	1.57
Industries	6.17	9.27	0.57	10.49	4.12	0.43	-4.31	5.14	0.14	-0.01	0.54	-0.22	0.31
Information technology	14.64	1.39	0.28	15.64	6.27	0.96	-1.01	-4.88	-0.68	0.02	-0.75	0.04	-0.70
Materials	3.85	37.32	1.22	3.20	3.27	0.10	0.65	34.05	1.12	0.00	0.94	0.14	1.09
Telecommunication service	3.39	0.31	0.00	2.97	0.36	0.01	0.43	-0.05	-0.01	-0.01	0.00	0.00	-0.01
Utilities	2.39	19.84	0.51	3.72	7.09	0.26	-1.33	12.74	0.24	-0.01	0.47	-0.13	0.32
(Cash)	1.25	0.87	0.01	-	-	-	1.25	0.87	0.01	-0.02	-	-	-0.02
(Unassigned)	0.03	4.62	0.02	0.00	8.33	0.00	0.03	-3.72	0.02	0.01	0.00	0.01	0.03
Total	100.00	8.09	8.09	100.00	4.01	4.01	-	4.09	4.09	0.72	3.09	0.27	4.09

Source: Multi-Manager Funds. Long-ongly Strategies for Managers and Investors. S. Jaffer (2006)

3.5 Peer group comparison

Peer groups analysis submits another method to evaluate the performance of a manager relative to the available opportunity set. An investment manager's peer group is a group of investment managers who focus on a comparable set of potential investment alternatives and have reasonably similar investment objectives in terms of returns, risk, and time horizons. Taking into account the returns of an appropriate peer group, over any time period, the dispersion of the returns across the peer group, from the 5^{th} percentile manager to the 95^{th} percentile manager, which means from the best-performing manager to the worst, outlines an advantageous picture of the risk of an asset class or investment strategy, and the opportunity to add value. However, this assumes a fair, accurate and reasonable representation of the managers comparable peers, a peer group well constructed. In the case of mutual fund peer groups there could be the problem of duplication of results due to the composition of the reference mutual fund. Clearly, many mutual funds have more than one asset class. If each class performs slightly differently due to differing fees and/or expense ratios, this can significantly skew the results.

For the purpose of evaluating a manager's performance, the peer group should be set to include all other managers who access the same sample of securities and have analogous investment objectives. In determining the peer group it is useful to implement the performance based style analysis in order to evaluate the asset types accessed by the list of potential peers.

Giving an example in the case of multi-manager funds, the peers for managers in a multi-manager large-cap fund would be based on their distinct styles – value, growth, blend, and core. In the case of multi-asset class portfolios, equity and debt instruments, the appropriate peer group will contain only portfolios with similar set of asset classes, and excludes single-asset portfolios. However, implementing a peer group analysis for multi-asset class it is a big challenge because of small differences in objectives, time horizon, or investment constraints which can lead to divergent and incomparable results.

A better way to evaluate a multi-managed or a multi-asset product is to focus on the specific objective and investment constraints of the product rather than relative to any group of peers.

CHAPTER 4: DUE DILIGENCE AND RISK CONTROL

4.1 Due Diligence

The first step in multi-managed products is to understand the investor's needs and objectives.

In order to run a global equity mandate, a good multi-manager portfolio should be able to:

- Deliver significant outperformance over the MSCI World Index through a diversified portfolio;
- Deliver outperformance in strong markets, and protect capital in declining markets;
- Providing investors a better risk-adjusted return versus:
    - Global equity fund-of-funds;
    - Global equity single-manager funds;
    - Passive global indexes

This simplifying example, gives us the idea of how could be long and extensive the due diligence and the monitoring process.

Superior multi-managers investing are those who access to the best investment managers. Thus, the identification of truly "active managers" in the universe of managers is the first step running the due diligence process. These managers often tend to exist in special boutiques or in high performance active manager firms. Managers with long track records in their strategy – managers with proven track record of delivering first quartile performance over one-, three-, and five-year period – seem to continue delivering good performance. These skilled managers are those who take large active risk positions and are focused mainly on absolute rate of returns.

Well constructed multi-managers funds should embed:

- A bottom-up process of manager selection, looking for managers that are uncorrelated with managers already in the fund.

- Identifying managers who have generated good returns in a range of market environments. Selecting managers who, for example, have the ability to protect the fund in declining market.
- Pointing to construct well-diversified portfolio of at least 15-20 managers who combine a broad range of skill, strategy, and exposure in order to reduce the portfolio's volatility and achieve greater risk-adjusted returns.

Briefly, it is important to search for managers who run each portfolio as if they were running their own portfolios.

4.2 Manager research and evaluation

Starting with a universe of best-performing managers relative to their respective benchmark, the best solution is to seek for managers whose alpha generation has been in excess of 4% per year over a market cycle. To find these managers, we have to run a due diligence process that consists of the following steps:

1. Manager sourcing.
2. Preliminary evaluation.
3. Detailed due diligence.

Manager sourcing

Managers can be sourced in a number of different ways, such as through an active screening process on a quarterly or monthly basis, or more directly through the asset management company's own network and on going review process.

Starting with a selected universe of 1,000 managers, this universe is then narrowed by the types of manager being sought in top performing active management types of firms.

Once the group of potential managers has been identified, it is useful to carry out peer group analysis to compare managers against other managers in terms of similar style and expertise. The analysis should confirm that the managers considered have constant top-quartile return/risk profiles against their relevant peer group and benchmark over a time horizon of one-, three-, five- and if possible 10-year periods.

The main criteria in this evaluation are:

- Ranking on level of outperformance;
- Risk/return scatter diagram;
- Quartile analysis of return and risk;
- Correlation to indexes and to other managers in the fund;
- Level of asset under management (AUM);
- Consistency of performance versus growth in AUM;
- Information ratio and Sharpe ratio;
- Performance in up months and in down months;
- Levels of alpha and beta in returns.

Preliminary evaluation

Once a prospective fund has been identified through this analysis, senior asset management company professionals would then meet with the manager to conduct detailed interview and preliminary evaluation. A multi-manager firm can interview up to 200 managers per year. The manager should be able to explain in the interview its beliefs about making good performance results in its chosen area of the market. Furthermore, it is important to have managers review of their current portfolio and ask how they came to their sector. It is desirable for managers to be able to articulate the style bias of their way of investing. These interviews should carry out a perspective on the sources of alpha generation, which need to be consistent with the manager's investment process and strategy.

The following step is to write a report about a preliminary evaluation of the manager, which also contains the investment process, performance attribution, and risk management disciplines derived from the interview process. This report also contains statistical analysis of returns, a style analysis, and a detailed performance history.

Finally, at this step of evaluation, several criteria can be applied to any manager selected in order to assure that the manager is of *institutional quality*. An institutional quality manager can be defined as a firm that shows the following characteristics:

1. *Pedigree of Principals*. The manager must have university qualifications and institutional training from a big financial institution.

2. *Independent Operations Team*. The presence of an independent operations team is fundamental in order to provide a strong check against potential fraud.

3. *Separate Trading Function*. In order to ensure the best practice in the investment process it is suitable to segregate the roles of the investment manager and the trader.

4. *High-quality Custodian and Administrator*. Two fundamental figures, the custodian is guarantor for the standard level of custody service, while the administrator provides independent pricing of the portfolio and issuance of the net asset value (NAV).

5. *High-quality Auditor*. A reputable firm has audited prior track record of the manager and the latter must conform to AIMR-compliant (Association for Investment Management and Research) or GIPS-based (Global Investment Performance Standards).

6. *Regulation of the Management Company*. The firm must be regulated by the Securities and Exchange Commission (SEC) or Financial Services Authority (FSA), or other relevant regulatory body.

An investment committee would then review the written manager evaluation in compliance against with institutional principles.

Detailed due diligence

At this stage of the due diligence every aspect of the fund's operations and structure are deeply examined. The detailed due diligence encompasses the analysis of the portfolio, the operational procedures, detailed legal compliance, organizational and financial standing of the firm, and a detailed evaluation of the fund's prospectus.

This process involves multiple one-site visits and external check, and it is completed by the validation of the following.

1. The investment team:

   - Experience.
   - Analyst support.

- Track record.
- Incentives.
- Investment approach.
- Risk management.

2. Organization:

- Structure.
- Product range.
- Asset split.
- Growth and profitability.
- Infrastructure.
- Compliance.

3. Product:

- Performance.
- Attribution.
- Style characteristics.
- Strategy characteristics.
- Liquidity.
- Fees and expenses.

Others types of documents typically requested are: sample client reports, sample risk and exposure reports, legal organizational chart, financial statements, administration, investment advisory and custody agreements, compliance manual, and list of client references.

The full due diligence file would then be reviewed by an investment committee as a prerequisite for approving the manager for investment.

Once the manager has been approved for the investment process, a risk monitor report would then be developed. This report outlines what the investment committee expects from the manager in terms of levels of performance, exposure, style, and volatility relative to the benchmark.

4.3 Portfolio construction disciplines

The portfolio construction is an important and fundamental step as the manager selection. At this point of the stage, the investment committee has to decide the manager's weights in the overall portfolio. The starting point in the portfolio construction is to clearly understand and meet the specific mandate requirements of an investor or product. Obviously, products that provide different risk and return objectives will have conspicuous differences in the portfolio allocations.

The portfolio optimization model is not needed in constructing multi-manager portfolios because of the length of the available data that is too short to apply to this model in a meaningful way.

As we have already mentioned, the portfolio construction process requires choosing a well-diversified portfolio of 15-20 managers. Managers may be more or less equally weighted in their allocations within the portfolio or could be smaller in the case that they are perceived as higher risk. For example, a global equity portfolio might have five managers investing in the United States, each with different style, but each with an equal share of the region's allocation. Within a region, like US, the number of managers varies in accordance with the size of the region relative to the benchmark. In addition to regional and global managers, may be used "out-of–benchmark" managers such as emerging markets, sector specialists, and commodity types of managers. These types of managers are introduced in the portfolio construction in order to achieve greater diversification and to avoid concentration exposures in the allocation. Moreover, style specific managers such as value versus growth and/or small-cap versus large-cap should be considered. Therefore, diversification in number and among region, style and type of skilled managers can all be used to reduce the overall portfolio risk. In conclusion, the tracking error volatility relative to the benchmark should be evaluated in order to ensure that the diversity has provided sufficient alpha after fees. For example, a target for a portfolio might be a value of the information ratio equals or greater than 50% and an absolute volatility less than the MSCI World Index.

4.4 Risk Monitoring

Due diligence process embraces even the risk monitoring task. Manager selected and considered for a portfolio must be evaluated from a risk perspective. Indeed, the risk

monitoring process is an important activity in every stage of the investment process. It comprises the main stages: manager evaluation, manager due diligence, portfolio construction, and manager monitoring.

There are three levels of risk monitoring in a multi-manager portfolio:

1. Product risk controls.
2. Manager level risk management tools.
3. Aggregating manager risk and factor exposures at the total portfolio level.

Product risk controls

There are four main strategies with the aim to improve risk-adjusted return.

1. **Broad diversification**. Multi-manager portfolio consists in a minimum of 15-20 managers in the portfolio, including a large range of investment strategies and talent, in order to achieve an optimal level of diversification.

2. **Emphasis on quantifying risks exposure**. The investment manager must build a robust set of risk management systems in order to quantify the overall risk exposure of the portfolio and style exposures for each manager. The good quality of multi-manager portfolios is the level of transparency at the overall portfolio level.

3. **Low correlations among sub-funds**. Correlation analysis is an important and crucial way to construct portfolios of managers who are quantitatively and qualitatively different.

4. **Market protection**. It can be useful to add managers that provide level of downside protection (captured by the semi-standard deviation) in order to protect a multi-manager portfolio. These managers are characterized by the aggressive use of cash in declining markets.

Manager level risk management tools

There are a number of ways to measure and monitor a range of risk factors at the manager level: manager level risk management tools over time. These types of measures allow key changes to be tracked at the manager level aiming to identify “style drift” of the managers included in the portfolio. The investment committee, each month, reviews the

risk exposures to ensure that the portfolio manager is implementing the investment strategy that is consistent with the expectations.
Manager level risk management tools include measuring factors such as:

- Number and size of positions.
- Tracking error volatility.
- Geographic exposure versus the benchmark.
- Sector exposure relative to the benchmark.
- Style characteristics such as:
    - Market capitalization bias (large, mid or small capitalization).
    - Value factors (book value to market value, ROE, ROIC).
    - Growth factors (earning yield, sales growth, dividend yield, cash flow yield, sales to price).
    - Momentum factors (short and long term, price momentum, earnings momentum).
- Portfolio liquidity.
- Days to liquidate the portfolio.
- Performance attribution.

Aggregating manager risk and factor exposures at the total portfolio level

Risk monitoring activity at the manager level is necessary in order to aggregate risk more effectively at the portfolio level. Aggregating position and exposure levels allow us to better evaluate the total risk of a portfolio, in terms of absolute and relative risk. Then, the portfolio is evaluated from an asset allocation, geographic, style, and sector-level perspective. This process allows the investment committee to rapidly react to high concentrations of types of risk or factor exposures by reducing allocations to a particular manager. The aggregation of the factor exposures serves for the "*stress testing*" of the portfolio, that is how the portfolio reacts in different market environments. In addition, risk report at the total portfolio level is useful to discover if any underlying funds have violated the risk limitations settled at the beginning part of the investment process.

4.5 Manager performance monitoring

The due diligence process must include an on going and systematic portfolio monitoring. Manager portfolio monitoring is useful to capture signals of concerns about a manager.

- *Monitoring underperformance*. When underperformance level is below a predetermined threshold, this has to be seen as a signal of review. It is normally considered as a benchmark deviation.

- *Cumulative underperformance*. This test has the aim to identify funds with chronic levels of minor underperformance.

- *Strategy relative performance*. Returns that deviate from what have been expected for a specific strategy during a given period in the market.

- *Qualitative factors*. This category includes a large variety of factors that could cause several concerns. For example, the evidence of possible style drift, significant changes in exposure levels, large changes in asset under management, and/or the departure of strategic personnel.

- *Market events*. Specific risks, which depend on the market conditions and events, need to be evaluated.

The triggering of these signals of concern should be reviewed by conducting the following three steps:

1. *Conference call or meeting*. Carrying out a conference call or a meeting with the portfolio manager, which needs to explain the factors responsible for recent underperformance.

2. *Investment committee consultation*. The investment committee then compare notes and exchange views regarding the manager in question from the information gathered in the conference call.

3. *Documentation*. Every notes and information gathered from the first two steps should be reported in a document report.

The ability to take rapid actions when an investment deviates from the expectations or underperforms the benchmark is a fundamental component of being an effective multi-manager portfolio investor.

4.6 Managing operational risks

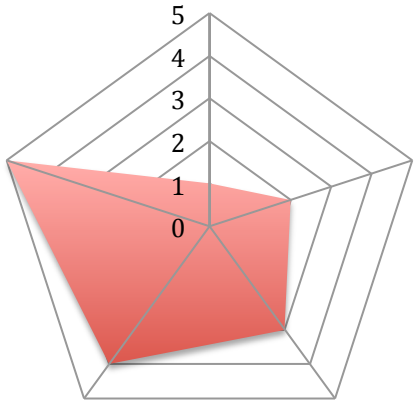
Operational risks in a manager-of-managers structure comprise factors that have impact on:

- Client.
- Business.
- Firm's regulatory profile.

Under each of these factors, the administrator should pinpoint all the possible events that might create a positive or negative effect and document the specific control activities that can be rapidly implemented.

One straightforward way to control and manage the high-level risks is to apportion a risk rating by assigning a factor of the probability of an event happening and the impact that this event would have.

Exhibit 4.1: Risk "heat map"



As we can see in the Exhibit 4.1, a function of risk rating is used, with a range from 1 to 5, where 1 is the lowest impact and 5 is the highest. For each risk it is given a rating of

probability factor from 1 to 5, which is then multiplied by the sum of the rating of the event affecting the client, the business or the regulatory profile.

Giving an example, the identified risk is the disruption to the business because of not having a clear business continuity plan, which will have a significant impact on all the three principal figures above mentioned. In this context, we might assign an impact factor of 3 to each, with a probability factor of 4. Now we can calculate the risk rating in the following way:

Risk rating = [3 (client impact) + 3 (business impact) + 3 (regulatory impact)] x Probability factor of 4 = 36

By doing this, we have calculated the risk rating *before* we take any actions in order to mitigate the risk impact. If, for example, we appoint a new risk management consultant, who is designed to rewrite the business continuity plan, we can re-evaluate the risk rating *after* the mitigation action has been implemented.

New Risk rating = [2 (client impact) + 2 (business impact) + 2 (regulatory impact)] x Probability factor of 3 = 12

Once the operational risk analysis has been completed, a clear internal report should be carried out.

4.7 Managing currency risk in multi-manager funds

Currency risks are important factors of concern for the asset management industry as a whole but especially for multi-manager products that could be multi-currency funds.

Managers in multi-managers funds can face two types of foreign-exchange risk:

1. They have to deal with investments denominated in foreign currencies, looking on the asset management side.

2. When they offer investors subclasses denominated in different currencies, they also have structural exposure.

Two basic hedging approaches can be applied to manage the foreign exchange (FX) risk, *passive hedging* and *active hedging*. Passive hedging strategies can be implemented

by using forward contracts[21]. All or part of the foreign exchange position is systematically covered by forward contracts. This strategy largely removes the currency risk but it is important to note that "perfect hedge" does not exist since the market value of the underlying assets is constantly changing. Therefore, the currency risk cannot be removed altogether.

The second method to manage foreign exchange risks is by implementing a *currency overlay* strategy, which consists of setting up an active hedging strategy to profit from currency movements. The objectives of a currency overlay strategy are:

- Engaging in positive movements in the investment currencies.
- Hedging against adverse movements in the investment currencies.
- Reducing the impact of investment currencies' volatility on a multi-manager fund.

Currency overlay strategy is a function of the benchmark fixed by the client. The benchmark is a ratio that ranges between 0% and 100% following the client's risk aversion and it represents the percentage of the foreign exchange exposure to be hedged. The manager's performance is measured against this reference index.
Exhibit 4.2 shows the implications of the different benchmarks.

Exhibit 4.2: Implications of the different benchmarks

Benchmark	Advantages
0% hedged benchmark	A benchmark set at 0% is an unhedged position. Thus, the client is willing to face the risks inherent in foreign exchange markets. In this context, the investor benefits naturally from favourable increasing movements in the investment currencies but is at the same time exposed to significant declines. Active overlay can provide some downside protection.

[21] In finance, a forward contract or simply a forward is a non-standardized contract between two parties to buy or to sell an asset at a specified future time at a price agreed upon today

50% hedged benchmark	This position enables investors to reduce the foreign exchange risk. A benchmark set at 50% benefits from market movements in either direction. Moreover, it provides greater stability in terms of added value from active overlay.
100% hedged benchmark	Typically set by investor who has greater aversion to foreign exchange risk. The risk is extremely limited and active overlay can add value when the investment currencies appreciate.

CONCLUSIONS

The dissertation proposed aims to provide an overview on the multi-manager approach in the whole context of the asset management industry. Starting with a global overview of the main products delivered by the asset management industry, we have pinpointed the advantages and the limits of single-managed products such as mutual funds, passing from passive to active management through the analysis of the hedge funds and the implications of the main strategies. Indeed by analysing the hedge funds and their branches of strategies that get to the point of the fund of funds, which instead of being a formally strategy, it is properly an investment vehicle that acts like an individual investment fund but with the main difference that rather than investing directly into stocks, bonds, and other instruments, it holds portfolios of investment funds.

The thesis of multi-managers approach is an extension of modern portfolio theory. The great innovation beyond these products is that there is a real philosophy on active management, where, believing in active management means to believe in the ability of talented individuals to use knowledge and skills to add value. The result is that the multi-manager approach emphasizes the importance of people as opposed to organizations. Multi-manager investing is a natural byproduct of the belief in active management.

By deep analysing the multi-manager, we have seen what are the key drivers that explain the shift of investors, above all institutional investors, from a single product to open architecture. The key factors of innovation and success can be measured in terms of diversification. Indeed, compared to the asset class diversification of a common mutual fund, multi-manager extends to diversifying style risk by including both growth- and value-oriented equity management within a core portfolio, and manager risk by hiring sub-advisors with similar styles beyond the assumption that some will compensate for the fact that at least one is likely to underperform. The great advantage of the multi-manager fund is to combine uncorrelated specialists and investment styles to achieve a greater diversification. Investing in a multi-manager fund is an easy way to diversify investments over different asset managers.

Conversely, it is important to note that multi-managers products are more expensive in fees than a single manager funds as there are two tiers of fund managers to pay, the cumulative effect of the annual fees can be conspicuous over-time triggering the drag effect. This is perhaps the principal disadvantage in investing through multi-manager, especially in an environment where the clients are more fees conscious and therefore claim

higher returns to the premium paid. However, looking at their structures, multi-manager is typically able to negotiate discounts by measuring the impact of fees through the analysis of the total expense ratio, and we can state that the higher fees are the cost of having all the benefits of a multi-manager fund.

Looking at the tactical asset allocation side, multi-manager approach can rapidly adjust the portfolio composition compared to a single mutual fund, in order to anticipate bull and bear trends of the market by combining managers within different geographic regions, asset classes, and style buckets as we have seen in the pooling structure of manager-of-managers funds. Through the tactical asset allocation, successful multi-managers funds can systematically identify market inefficiencies and anomalies, such as price momentum, earnings quality, and value versus growth stocks, which are perceived as opportunity factors and therefore try to add value in their portfolios. In this context, multi-manager portfolio construction can add value not only through tactical asset allocation across markets and asset classes, but especially within the markets and asset classes.

Making a comparison between the multi-manager approach and the hedge funds, we have seen how the former can provide a better understanding to investors of the trade-off between expected rate of returns and risk relative to the latter. Indeed, multi-manager universe offers investors products that best match their needs by first evaluating the client's risk and return profiles. Depending on the client's risk aversion, multi-manager approach tends to use concentrated portfolios that are combined with other concentrated portfolios in order to maintain an acceptable active risk. Differently from hedge funds, which are investment vehicles that offer large returns but at the same time involve great volatility exposure, multi-manager products offer portfolios with the capability to minimize the risk exposures by implementing "market neutral" or "style neutral" portfolios. That is another perceived benefit of the multi-manager over other investment vehicles.

In the early 2000s firms began to search for managers with high competence and skills to gain success in manufacturing fund management products. Indeed, in those years financial services industry focused on specialization and outsourcing, where the fund management of different segments of a portfolio is outsourced to different managers. The move towards specialization and outsourcing has been the main driver of the multi-manager market.

Nowadays, looking at the equity markets, globalization has strongly increased the correlation among equity markets. The result is that traditional risky assets are not able to produce big benefits of diversification. This combined with market demand and the search

of higher returns, have boosted the implementation and the use of the multi-manager approach.

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