CHAPTER 2

CONCEPTUAL FRAMEWORK

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2.1 Conceptual Framework

2.1.1 Fund Style

A Fund management style refers to the approach that investors, including professional fund managers, take in selecting individual investments and assembling portfolios as they seek to achieve their investment goals. (http://financial-dictionary.thefreedictionary.com/Investment+Style)

2.1.1.1 Style Box

As per Morningstar, the Style Box is a 3x3 grid in which the horizontal axis of the style box is divided into three investment style categories: value, blend (a value/growth mix) and growth. The vertical axis is divided into three company-size (based on market-capitalization) indicators: large, medium and small. For bonds and bond funds, the horizontal axis is divided into three maturity categories: short-term, intermediate-term, and long-term. The vertical axis is divided into three credit-quality categories: high, medium and low (BB-C) (http://economictimes.indiatimes.com/definition/style-box).
2.1.1.2 Style Investing: Style investing became increasingly popular in the 1980s and 1990s as a growing number of investment managers decided they could improve performance by rotating their portfolios among various investment segments. Rather than limiting their investments to only growth stock or only value stock, managers attempt to make gains by moving from one segment to another as conditions warranted. Style investing is based on the belief that certain identifiable equity segments do well over time but do not necessarily do well at the same time. For example, growth stock beats value stock during some periods, while value stock outperforms growth stock during other periods. Likewise, small-cap stock outperforms large-cap stock during certain market periods, with the converse also being true. A portfolio manager who practices style investing rotates from one equity segment to another depending on that manager's view of the market. For example, a manager may feel that a substantial decline in consumer confidence indicates a portfolio should be heavily weighted toward value stock. Successful style investing assumes the portfolio manager can accurately forecast which segments of the market will
produce superior returns. Critics argue that style investing increases transaction costs and relies on the faulty assumption that investment managers have predictive abilities, (Scott, 2003).

**Role of Style analysis in Asset Allocation:** Asset allocation is the strategy of dividing your investment portfolio across various asset classes like stocks, bonds and money market securities. Essentially, asset allocation is an organized and effective method of diversification. The options typically fall within three classes - stocks, bonds and cash. Within these three classes are subclasses (the variations within each category). Some subclasses and alternatives include:

- **Large-cap stock** - These are shares issued by large companies with a market capitalization generally greater than $10 billion.
- **Mid-cap stock** - These are issued by mid-sized companies with a market cap generally between $2 billion and $10 billion.
- **Small-cap stocks** - These represent smaller-sized companies with a market cap of less than $2 billion. These types of equities tend to have the highest risk due to lower liquidity.
- **International securities** - These types of assets are issued by foreign companies and listed on a foreign exchange. International securities allow an investor to diversify outside of his or her country, but they also have exposure to country risk - the risk that a country will not be able to honor its financial commitments.
- **Emerging markets** - This category represents securities from the financial markets of a developing country. Although investments in
emerging markets offer a higher potential return, there is also higher risk, often due to political instability, country risk and lower liquidity.

- **Fixed-income securities** - The fixed-income asset class comprises debt securities that pay the holder a set amount of interest, periodically or at maturity, as well as the return of principal when the security matures. These securities tend to have lower volatility than equities, and have lower risk because of the steady income they provide. Note that though payment of income is promised by the issuer, there is a risk of default. Fixed-income securities include corporate and government bonds.

- **Money market** - Money market securities are debt securities that are extremely liquid investments with maturities of less than one year. Treasury bills (T-bills) make up the majority of these types of securities.

- **Real-estate investment trusts (REITs)** - Real estate investment trusts (REITs) trade similarly to equities, except the underlying asset is a share of a pool of mortgages or properties, rather than ownership of a company.

The main goal of allocating one’s assets is to minimise risk given a certain expected level of return but for this the investor needs to know the risk-return characteristics of the various asset classes. To make the asset allocation process easier for clients, many investment companies create a series of model portfolios, each comprising different proportions of asset classes. These portfolios of different proportions satisfy a particular level of investor risk tolerance. In general, these model portfolios range from conservative to very aggressive:(http://www.investopedia.com/articles/pf/05/061505.asp).
Each of the individual investments within those classes invests investor’s money in different ways, performs differently in different economic climates, and carries a different level of investment risk. However, choosing the right mix of investments to produce the return the investors aspire and are willing to take-is usually harder than determining the allocation model to follow. There are thousands of options a fund manager can choose. That’s where style analysis comes in. Each individual investment within an asset class has a distinctive style, or pattern of behavior, which explains much of the return it produces. A mutual fund's style, for example, is determined primarily by its particular asset allocation, or the diversified portfolio of investments that make up the fund. Since no two funds own exactly the investments in exactly the same proportions, no two produce exactly the same return. For example, a stock mutual fund that describes itself as a growth fund doesn't necessarily produce the same return as other funds that call themselves growth funds. For similar reasons, a growth mutual fund may not produce the same return as a market index fund that tracks growth investments. One method professional portfolio managers use to gauge a fund's likely return is to analyze the fund's style based on its historical investment return (Morris, 2004).

**Importance of Fund Manager’s Style** - Most managers have an investment philosophy that leads to a process for building portfolios. That process causes the portfolio’s returns to behave in a certain way. This behavior is what we call style. A manager’s philosophy might be, for example, to look for stocks that have been beaten down by bad news or are currently selling below what might be deemed their intrinsic value. This philosophy leads to a process of buying stocks with low price to book ratios
and low price to earnings ratios. The return pattern (or price behavior) of such a portfolio is very different from that of a portfolio made up of stocks with high price to book ratios and high PE ratios. The behavior reflects the manager’s style, which in this case would be called “value”. Similarly some managers specialize in small company stocks while others focus on the stocks of large companies. There are two key reasons to identify a manager’s style. To determine whether a manager has skill, and is therefore worth paying an active management fee, we must find the proper benchmark for the manager. Manager style is also an important part of creating a diversified portfolio. If each of the managers beat their respective style benchmark then the total fund will beat the broader market benchmark. This is another reason that it’s important that managers’ styles are consistent and predictable (http://www.styleadvisor.com/resources/concepts/style_analysis.html).

2.1.2 Style Analysis

Style Analysis was introduced and developed by Nobel Laureate William F. Sharpe (1988, 1992) in his research titled “Asset allocation: management style and performance measurement” in order to determine the style of an investment product. It is a mathematical algorithm which selects a blend of indices that is most highly correlated with the total returns of the manager. Style Analysis can be defined as the measurement of an investment funds performance by means of a more recent return based approach. Sharpe (1992) introduced this analysis by developing an “Asset Class Factor Model” to distinguish the performance of different funds with respect to Style and Selection. In general, Style Analysis is a form of constrained regression that uses a weighted combination of market indexes to replicate,
as closely as possible, the historical return pattern of an investment portfolio. The resulting coefficients, called Sharpe Style weights, are used to form inferences about a portfolio’s behaviour and composition. The technique has been widely adopted in the investment industry (Lobosco and Dibartolomeo, 1997). Sharpe Style Analysis can reveal the investment philosophies of the investment funds or actively managed portfolios (Jackson and Staunton, 2001). The Style Analysis can be thought of as the process of forming a portfolio of market indexes that mimics, as closely as possible, the historical performance of a given portfolio (Lobosco and DiBartolomeo, 1997). The main goal of Style Analysis is to construct a benchmark portfolio, from a set of known indexes (for which returns are available), against which to compare with an investment fund's actively managed portfolio (Sharpe, 1992 and Jackson and Staunton, 2001). Sharpe Style Analysis has become a standard industry tool for inferring a fund's investment style. This method has proved as a valuable tool for investors, plan sponsor and consultants in estimating the fund exposures. Investors desire exactly to know the potential investment styles so they may create the most available asset mix that fits their needs. Besides, plan sponsors and consultants are interested in how well the portfolio managers meet the investment objectives.

There are two approaches to style analysis. The return based style analysis (RBSA) and portfolio or holdings based style analysis (PBSA or HBSA). RBSA regresses a manager’s returns against a family of style indexes to determine the combination of indexes that best tracks the manager’s performance. The interpretation of the “fit” is that the manager is employing this “effective” style mix because performance could be
approximately replicated with this passive blend. Returns-based Style Analysis was developed by Nobel Laureate William F. Sharpe in 1988 in order to determine the style of an investment product. It is a mathematical algorithm which selects a blend of indices that is most highly correlated with the total returns of the manager. It has many benefits. Apart from being widely used and accepted, it is inexpensive and easy to understand and interpret. It is based on market accepted Indices, and all the information it requires is readily available. However, this method also has some weaknesses. It is based on passive indices. The analysis has edges to the classifications, uses time series data and since the data used are historical returns, it is difficult to draw any conclusions about its future risk/return profile. There are many style changes which stay undetected and the method reports some style changes that may have never occurred. (http://www.imas.org.sg/uploads/media/2012/10/31/507_040924_Lipper_Luncheon_Talk_ppt.pdf).

Portfolio-based style analysis or holdings based style analysis examines the composition of the manager’s portfolio and compares the characteristics or attributes of the securities the manager has invested in with the characteristics of the securities that make up the performance benchmark. It examines the stocks actually held in the investment portfolio and maps these into styles at points in time. Once a sufficient history of these holdings-based snapshots is developed, an estimate of the manager’s average style profile can be developed and used as the custom benchmark. Some of the common characteristics that are often used in such comparisons include: market cap, book-to-market ratio, historic earnings growth rate, dividend yield and for fixed income securities
attributes such as duration, rating, etc. The attributes are averaged across securities and the returns associated with each attribute are determined. It has many benefits. Firstly it is accurate, transparent and flexible (can use own sector, industry, and characteristic categories). It has a proactive structure for review. However it suffers from weaknesses such as difficulty in obtaining data and limited coverage (http://www.imas.org.sg/uploads/media/2012/10/31/507_040924_Lipper_Luncheon_Talk_ppt.pdf).

Out of the two RBSA is more widely accepted and is more popular as portfolio-based style analysis however, it requires information on portfolio composition, which may be difficult to obtain. Further the classification of individual securities into slots based on characteristics can involve substantial amount of judgment. While it is possible to determine a fund’s investment style from a detailed analysis of the securities held by the fund, a simpler approach that uses only the realized fund-returns is possible. Return-based style analysis, requires only easily obtained information, while portfolio based style analysis requires knowledge of the actual composition of the portfolio.

**Asset Allocation and Portfolio Management Style:** As per Sharpe it is widely agreed that asset allocation accounts for a large part of the variability in the return on a typical investor’s portfolio. This is especially true if the overall portfolio is invested in multiple funds, each including a number of securities. It can not be carried out without defining the mentioned asset classes. After having the definition of asset classes, it has great importance to estimate the exposures for each component of an investors’ portfolio to movements in their returns. Then mentioned
information may be cumulated so as to determine the investors’ overall effective asset mix. The appropriate alterations can then be carried out until it is able to reach a desired asset mix. It is possible to estimate how effectively individual fund managers have performed their functions and the limit (if there any) to which value has been added to active portfolio management, if a procedure can be done for measuring exposure to variations in returns of main asset classes. Consequently, the effectiveness of the investors’ overall asset allocation may be estimated by comparison with that of one or more benchmark asset mixes. Within this framework, the asset allocation can be applied effectively by means of the asset class factor model given below (Sharpe, 1992).

### 2.1.3 Asset Class Factor Model

Factor models are common in investment analysis. The below asset class factor model which is used in estimating investment the style of the funds, has the similar specifications with multi-factor return estimation model. Equation (1) is a generic representation:

$$\tilde{R}_i = [b_{i1} \tilde{F}_1 + b_{i2} \tilde{F}_2 + \ldots + b_{in} \tilde{F}_n] + \tilde{e}_i$$

(1)

$R_i$ represents the return on asset $i$, $F_{i1}$ represents the value of factor 1, $F_{i2}$ the value of factor 2, $F_{in}$ the value of the n'th (last) factor and $e_i$ the "non-factor" component of the return on i. All these values are (potentially) unknown before-the-fact, as indicated by the tildes. The remaining values ($b_{i1}$ through $b_{in}$) represent the sensitivities of $R_i$ to factors $F_{i1}$ through $F_{in}$.
A key assumption makes a model of this sort more than simply an exercise in data description: The non-factor return for one asset \( (e_i) \) is assumed to be uncorrelated with that of every other (e.g. \( e_j \)). In effect, the factors are the only sources of correlation among returns.

An asset class factor model can be considered a special case of the generic type. In such a model each factor represents the return on an asset class and the sensitivities (\( b_{ij} \) values) are required to sum to 1 (100 percent). In effect, the return on an asset \( i \) is represented as the return on a portfolio (shown by the sum of the terms in the bracketed expression) invested in the \( n \) asset classes plus a residual component \( (e_i) \). For expository convenience, the sum of the terms in the brackets can be termed the return attributable to style and the residual component \( (e_i) \) the return due to selection. Indeed, a key contribution of this approach is the separation of return into these two main components.

While the appropriate measure of the efficacy of any specific implementation depends on the uses to which the model is to be put, factor models are typically evaluated on the basis of their ability to explain the returns of the assets in question (i.e. the \( R_i \)s). A useful metric is the proportion of variance "explained" by the selected asset classes. Using the traditional definition, for asset \( i \):

\[
R^2 = 1 - \frac{Var(e_i)}{Var(R_i)} \tag{2}
\]

The right-hand side of equation (2) equals 1 minus the proportion of variance "unexplained". The resulting R-squared value thus indicates the proportion of the variance of \( R_i \) "explained" by the \( n \) asset classes. The factors are normally defined as market indexes representing various asset classes or investment styles. These indexes are usually selected to cover
the range of investment choices available to the manager of the investment portfolio. Ideally, the indexes should reflect activity in different asset classes, they should be mutually exclusive and exhaustive, and their assets publicly quoted so that they can be tracked passively (Shape, 1992 and Lobosco, 1999). As an example, Sharpe (1992) used 12 indexes quoted in United States (US) Stock Exchanges, to cover the range of investment options available to US funds. The mentioned indexes were chosen to have as minimum overlapping as possible (Jackson & Staunton, 2001). As a quadratic optimization, Sharpe Style Analysis solves for the sensitivity of the portfolio returns to factor that minimizes the variance of the residual returns, subject to the constraints that the factor weights are non-negative and sum to “1” (Sharpe, 1992 and Lobosco, 1999 and Jackson and Staunton, 2001). The factor sensitivities are referred to as the Sharpe Style Weights. The index that results when these weights are applied to their respective indexes *(and summed)* is referred to as the Sharpe Style Index. Finally, Sharpe Style Index is typically used as the style benchmark for this portfolio, which can serve as the basis for further performance analysis. Since Style Analysis constraints (non-negative weights that sum to “1”) that the Style Index can be considered as an investable benchmark, which also makes it more important. This property has undoubtedly contributed to the wide spread acceptance of this technique (Lobosco, 1999).
2.2 Rationale of the Study

The Indian mutual funds industry has been currently growing at a healthy pace of 16.68 per cent for the past eight years and the trend is expected to move further as has been emphasized by the PWC report (2012). With the entrance of new fund houses and the introduction of new funds into the market, investors are now being presented with a broad array of mutual fund choices. The total asset under management of Mutual Fund industry rose from a mere 25 crores in 1965 to a whopping 8.26 lakh crores as on Jan 2013 as published by AMFI. The growing importance of Indian mutual funds is clearly visible in terms of the increased mobilization of funds and the increasing number of schemes and investors in the industry. To fulfill the expectations of millions of account holders, the mutual funds are required to function as successful institutional investors. Evaluating performance for mutual fund managers vis-à-vis such a goal, is important for both the investors as well as the portfolio managers. Fund managers in India, periodically publish various performance reports using standard measures, which may not actually reflect the true investment performance of the funds.

It is, generally, believed that professional fund managers have expertise in managing investments as they have access to information that is normally not available to common investors. In addition, they are supposed to possess superior analytical skills for making investment decisions. Thus, they are expected to provide a relatively higher rate of return on managed portfolios. However, higher returns per say may not indicate superior performance. The higher return may arise due to higher exposure to risk on investments, or may be attributed to luck or general market boom, rather than pure skill. This aspect is particularly worrying in case of India because
of the less mature capital market conditions, wild fluctuations of the equity market, and lesser awareness among common investors. So it is important to segregate the true competence of the fund managers from the overall performance. Therefore, a genuine effort is required which should highlight the efficiency and true competence of fund managers and augment the existing framework for identifying successful fund managers. It should benefit the investors, regulators, fund managers and other participants in the mutual fund industry in general (Deb, 2008)

Thus, it is imperative to perform a style analysis of a fund to know how much performance or return of the fund is attributed to the style adopted by the fund manager and how much is attributed to other factors like market conditions etc. Not much research has been done in the Indian context which considers the impact of management style on fund performance. The present study is an attempt to understand the impact of management style on fund performance in the Indian context

2.3 OBJECTIVES OF THE STUDY
1. To identify the style exhibited by a fund.
2. To identify that the style exhibited by the fund is identical to the one disclosed by Fund managers in prospectus
3. To calculate the total returns generated by a fund and find out how much of the returns are attributed to style and selection skills of a Fund manager.
4. To analyse the performance of balanced funds in India during 2008-2013 in purview of the results. (sub objective)