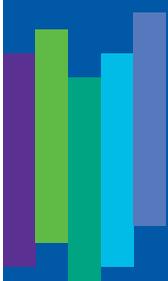


INVESTMENT PRINCIPLES

INFORMATION SHEET FOR CFA PROFESSIONALS

THE BENEFITS OF DIVERSIFICATION

DIFFERENT WAYS PORTFOLIOS CAN BE DIVERSIFIED



30

IMPORTANT NOTICE

The term "financial advisor" is used here in a general and generic way to refer to any duly authorized person who works in the field of financial services, including the following:

- Investment brokers
- Mutual fund brokers
- Scholarship plan dealers
- Exempt market dealers
- Portfolio managers
- Investment fund managers
- Life insurance agents
- Financial planners (F.Pl.)



Copyright © 2016 CFA Montreal. All rights reserved.
Reproduction in whole or in part without written permission of
CFA Society Montreal is prohibited.

DIFFERENT WAYS PORTFOLIOS CAN BE DIVERSIFIED

A portfolio can be diversified in terms of securities, sectors, styles, asset classes, geography, currencies, levels of economic development, and even risk types (risk factors). This document explains diversification across asset classes, styles, and regions. It introduces the concept of diversifying across risk factors and explains the implementation challenges of such an approach. It also illustrates the importance of building broadly diversified portfolios.

DIVERSIFYING ACROSS ASSET CLASSES, STYLES, AND GEOGRAPHY

An asset class is generally defined as a broad group of securities or assets that offer similar characteristics, behave similarly in the marketplace, and are subject to the same laws and regulations. A more pragmatic definition would be a broad group of securities or assets that provide similar exposure to risk premiums and/or unique diversification benefits. The basic asset classes are equities, bonds, and cash equivalents. Commodities and real estate are often characterized as asset classes. Hedge funds are built around investment strategies that exploit risk premiums and diversification benefits often found in primary asset classes. Thus, many do not consider hedge funds to be an asset class.

Investment style refers to the general portfolio characteristics that are favoured by the manager's investment philosophy. Apart from indexing (replicating standard capitalization weighted market indexes), the most well-known styles in equity investing are based on firm size (small, mid, and large-caps) and fundamental attributes (value, blend, growth, and momentum). Value managers invest in securities that appear attractively priced, whereas growth managers look for firms that are likely to expand quickly. The blend style is a mix of the two styles. Managers who favour momentum try to ride the wave of securities that have risen in price recently. The approaches each have their risks and potential rewards, and their expected excess performances against the market are imperfectly correlated. Some investment styles actually refer to an approach akin to investing according to risk factors. We will come back to this aspect at the end of the document.

Geography usually refers to countries but more often to regions, such as the Americas, Europe and the Middle East, Asia, the United States or international (non U.S.). Level of economic

THE BENEFITS OF DIVERSIFICATION

Different Ways Portfolios Can Be Diversified

3C

development may refer to developed, emerging, or frontier economies and markets. Diversification across geography and economic development seeks to benefit from the imperfect synchronization of economic growth, differences in valuation across financial markets, and exposure to different currencies, an aspect discussed specifically in document 3d.

An efficient diversification process should minimally incorporate diversification across asset classes and geography. How much should be allocated to different asset classes and how much geographic diversification is required are covered in document 5 and document 3d.

The following table shows why it is desirable to diversify across asset classes and regions. The table ranks five specific asset classes as well as a balanced portfolio according to their returns by two-year periods between January 1991 and December 2014. It also presents the average compounded return in U.S. dollars over the entire period. Each asset is colour-coded, which allows us to determine easily that no asset dominated each year.

The data for entire period show that riskier assets tend to be rewarded in the long run. But there were some unexpected results, even considering the full horizon. Among asset classes, emerging markets and U.S. equities dominated the performance but fixed income still outperformed international equities and commodities, which were dead last. The strong relative performance by fixed income can be explained by the deflationary environment of the past 15 years and the two equity market crises (2000-2001 and 2008). It is unlikely that fixed income can maintain this strong performance because low interest rates, as of 2016, make it mathematically impossible that the level of capital gains realized in the past can be sustained. Commodities did not do well but they should be considered a diversifier within a program that rebalances the asset allocation on a regular basis, because there is considerable uncertainty in terms of the level of risk premiums that commodities offer.¹ Finally, the balanced portfolio finished slightly below U.S. equities despite its much lower volatility. As we would expect, it never ranks at the top or at the bottom.

PERFORMANCE OF ASSET CLASSES IN DECLINING ORDER

| TWO YEARS ENDING | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------|-------|-------|--------|--------|--------|--------|
| Dec-92 | 33.5% | 20.4% | 12.9% | 12.2% | 2.9% | -9.3% |
| Dec-94 | 27.3% | 19.0% | 9.3% | 5.2% | 4.1% | -0.1% |
| Dec-96 | 29.9% | 14.5% | 14.3% | 12.0% | 9.1% | 0.3% |
| Dec-98 | 29.9% | 14.7% | 10.9% | 9.1% | -18.8% | -21.4% |
| Dec-00 | 36.2% | 9.6% | 7.5% | 7.2% | 5.9% | 5.6% |
| Dec-02 | 12.2% | -2.4% | -2.7% | -4.2% | -17.2% | -17.9% |
| Dec-04 | 40.3% | 30.1% | 20.3% | 17.4% | 14.9% | 4.4% |
| Dec-06 | 33.5% | 21.8% | 18.2% | 13.0% | 10.8% | 3.1% |
| Dec-08 | 15.5% | -4.3% | -10.3% | -18.8% | -18.9% | -19.1% |
| Dec-10 | 46.1% | 34.5% | 22.2% | 22.1% | 17.9% | 2.2% |
| Dec-12 | 8.7% | 8.1% | 5.9% | 1.9% | 1.2% | -1.5% |
| Dec-14 | 22.8% | 7.1% | 3.9% | 1.0% | -2.0% | -19.6% |
| Average | 9.9% | 8.6% | 8.3% | 7.5% | 7.0% | 4.6% |

Balanced portfolio consisting of 20% U.S. equities, 20% international equities, 10% emerging markets, 10% commodities, and 40% fixed income.

■ U.S. Equities ■ International Equities ■ Emerging Market Equities ■ Commodities ■ Fixed Income ■ Balanced

¹ Commodities are accessed by futures contracts, as opposed to the purchase of the commodities themselves. A basic characteristic of the futures market is that there is always an equal amount of futures contracts bought and sold. If a gold producer sells a contract on gold, there has to be a gold investor to buy the contract. Thus, it is a zero-sum market, which makes it difficult not only to assume that commodities necessarily pay a risk premium but also to determine whether the risk premium is paid to the buyer or to the seller of the contract at any specific time. This complicated matter is beyond the objectives of this document, however.

DIVERSIFYING ACROSS RISK FACTORS

Diversifying across asset classes is the most prevalent approach to portfolio construction. Even so, many academics and practitioners argue that diversification should be based on risk factors. Interest rate risk and equity market risk are among the best-known risk factors.

Risk premiums are compensation paid to investors who expose themselves to risk factors. More specifically, they are compensation received over time and on average for the losses investors will sustain in the bad times when investors are penalized for exposing themselves to some of these risk factors. For example, investors expose themselves to equity market risk because they expect to be rewarded over time, even though we all know that equity investors can sustain significant losses during challenging periods.

Many risk factors have been documented, such as Market, Value, Momentum, Size, and Betting against Beta.

- Market – Investing in equities instead of cash;
- Value – Investing in value firms at the expense of growth firms;
- Size – Investing in smaller firms at the expense of large ones;
- Momentum – Investing in firms with a greater price momentum at the expense of firms with a lesser price momentum;
- Betting against Beta – Investing in low-beta firms at the expense of high-beta firms.

Normally, a risk factor should have an economic rationale for its existence. For example, value firms (usually characterized by their lower price-to-book ratios) have, on average and over the long-term, provided higher returns than growth firms. The rational explanation is that the excess return of value firms is compensation for the added risk related to the more costly and less flexible infrastructure required by value firms – think of Exxon versus Alphabet (formerly known as Google). This

could also be the result of a behavioural bias; the possibility that over optimistic investors tend to bid the price of growth firms too high and consequently drive the price of value firms too low.

We will not argue the validity of the rational argument against that of the behavioural argument but simply accept the observation that the value premium has been significant and its existence well documented for a very long time. Furthermore, if we find that there is an economic rationale as well as a behavioural explanation for the existence of a factor, our confidence in its long-term profitability should be even stronger. Of course, there is no guarantee that the value premium will compensate investors in the short-term. For example, value firms performed poorly during the 1998-1999 and 2008-2009 periods, and we all know that Alphabet far outperformed Exxon.

Each security and asset class offer a different blend of exposure to risk factors. Andrew Ang of Columbia University believes that risk factors are to asset classes what nutrients are to different foods. A balanced diet seeks the appropriate mix of nutrients, and not all individuals need the same diet or will achieve their nutrient needs using the same mix of food. His argument is that investors should determine how much exposure their portfolio should have to specific risk factors and then establish the appropriate mix of assets that will deliver this exposure. This approach has the advantage of ensuring that the diversification of the investor's portfolio has all the desired risk-factor exposure. For example, many investors may not realize that some asset components (such as emerging market bonds) are very sensitive to equity market risk. They may have more exposure to some risk factors than they believe. Ideally, we should be able to measure the exposure of each portfolio component to risk factors, a requirement that significantly complicates the portfolio management process. Many institutions are moving in the direction of managing their exposure to risk factors but while the conceptual arguments are solid, this approach is not yet widely used to build individual or institutional portfolios. It is only a question of time and education, however.

THE BENEFITS OF DIVERSIFICATION

Different Ways Portfolios Can Be Diversified

3C

The following table shows the same information as the previous one but for five factors related to the U.S. equity market only. Obviously, the same type of analysis could be shown for many other asset classes and markets using their appropriate risk factors.

It is also important to understand that Size, Value, Momentum and Betting against Beta are risk premiums that can be captured beyond the Market risk premium. For example, having some exposure to the Momentum factor will, over the long run, add performance over and above that of exposure to the

Market factor only. Furthermore, many so-called uncorrelated strategies offered by hedge funds are often simply portfolios that are designed to load on many risk factors but not on the Market risk factor itself. It is also interesting to see that some risk premiums (Betting against Beta and Momentum) appear to have been historically almost as large as the Market risk premium or even larger. The table also shows that low-beta stocks did in fact outperform high-beta stocks over the entire period, which explains the proliferation of low-risk volatility/low-risk products in the industry.

PERFORMANCE OF RISK FACTORS IN DECLINING ORDER

| TWO YEARS ENDING | RANK | | | | |
|------------------|-------|-------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | 5 |
| Dec-92 | 16.4% | 15.0% | 9.3% | 9.2% | 3.5% |
| Dec-94 | 19.4% | 13.8% | 9.8% | 2.5% | 1.8% |
| Dec-96 | 27.5% | 21.6% | 9.6% | -0.1% | -2.7% |
| Dec-98 | 21.0% | 16.9% | 13.0% | -5.9% | -12.9% |
| Dec-00 | 19.9% | 0.7% | 0.4% | -11.4% | -14.0% |
| Dec-02 | 23.3% | 17.9% | 17.6% | 9.5% | -18.5% |
| Dec-04 | 21.3% | 19.9% | 14.9% | 14.2% | -7.6% |
| Dec-06 | 12.0% | 7.5% | 6.0% | 5.3% | -0.7% |
| Dec-08 | 16.7% | -6.4% | -15.5% | -21.0% | -22.2% |
| Dec-10 | 24.5% | 20.7% | 14.5% | 8.1% | -29.4% |
| Dec-12 | 9.9% | 7.1% | 5.6% | -1.1% | -1.7% |
| Dec-14 | 20.9% | 18.1% | 6.5% | -1.6% | -2.6% |
| Average | 8.4% | 5.6% | 4.9% | 2.6% | 2.5% |

■ Market
 ■ Size
 ■ Value
 ■ Momentum
 ■ Betting against Beta

THE BENEFITS OF DIVERSIFICATION

Different Ways Portfolios Can Be Diversified

3C

Diversification across risk factors offers tremendous possibilities, especially if it involves a large number of factors and asset classes. That said, even though there are many products that make use of risk factors (value, small-cap, momentum, and low-beta funds and ETFs), it is almost impossible for individual investors to reap these benefits fully. The factor returns, other than Market, provided above are the result of creating long-short portfolios and using leverage.² Most investors, even some institutional investors, do not have the ability and/or the willingness to accept these

requirements. Thus, investment products that seek these risk premiums tend to simply tilt their allocation toward specific stocks that offer the desired characteristics but without the use of short positions or leverage. Doing so allows them to capture some of the benefits associated with risk factor exposures. So-called smart-beta products do this in a systematic way.

Diversification is essential, but doing it well and appropriately to meet the needs of investors is a challenge. That is why most investors require the support of a knowledgeable advisor. A wisely diversified portfolio should have exposure to different asset classes and different geographic regions. Finally, although diversification across risk factors is a rational and effective approach, it presents more implementation challenges. Smart-beta products are a step in this direction. Thus, we should no longer use the term "smart beta"; it should be replaced by "factor investing" or "factor products."

² Factor returns are usually calculated by combining a long portfolio having the desired characteristics (such as value firms) and a short portfolio having contrarian characteristics (such as growth firms).