

Strategic allocation to premiums in the equity market

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INTRODUCTION

Investors tend to focus on harvesting the risk premiums offered by traditional asset classes when making their strategic investment decisions. Some papers, however, argue that investors should also consider various other premiums that are known to exist in financial markets, for possible inclusion in the strategic asset allocation. Examples of such premiums that have been documented for the equity market are the size, value, momentum and low-volatility effects. This note shows that the theoretically optimal strategic allocation to such premiums is sizable, even when using highly conservative assumptions regarding their future expected magnitude. It also discusses the pros and cons of two ways of obtaining exposure to these premiums in practice, specifically passively managed smart beta funds versus actively managed quant funds.

LITERATURE REVIEW

The literature shows that although the average actively managed fund underperforms the capitalisation-weighted market index, it is possible to identify a certain group of active funds which does outperform systematically (Carhart, 1997). The caveat, however, is that most of this outperformance can be attributed to exposures to the size, value and momentum effects – that is, simple rules-based strategies that are well known in the literature for carrying a return premium. Researchers from MSCI Barra discuss the role of such premiums in the strategic asset allocation, arguing that they should be explicitly considered next to traditional asset classes, such as equities and bonds (Bender, Briand, Nielsen and Stefek, 2010). In the same spirit, a key recommendation of finance professors, asked by Norway's Government Pension Fund to evaluate its investment performance, is that the fund should seek explicit exposure to various premiums that are known to be present in financial markets (Ang, Goetzmann and Schaefer, 2009). Inspired by these studies, this paper examines whether it indeed makes sense for investors to include such premiums in the strategic asset mix. The analysis focuses on the strategic allocation to premiums related to the equity market.

PREMIUMS IN THE EQUITY MARKET

Investors typically include equities in their strategic asset allocation in order to earn the expected equity premium. Empirical research supports the existence of such a premium by

showing that, historically, equities have offered a higher average return than a risk-free investment in Treasury bills or Treasury bonds. However, empirical research has also shown that more return premiums may be harvested from the equity market. Examples include the size premium (Banz, 1981), the value premium (Fama and French, 1992), the momentum premium (Jegadeesh and Titman, 1993) and the low-volatility (or low-beta) premium (Black, Jensen and Scholes, 1972; Blitz and van Vliet, 2007). In the academic literature, the existence of these premiums is widely acknowledged, and the debate has moved from whether these premiums exist, to why they exist. One stream of literature argues that a systematic return premium should reflect a compensation for bearing a certain risk, while another stream of literature argues that premiums are the result of systematic mispricing – for example, arising from systematic behavioral biases of investors. It is the author's view that the empirical evidence supports the latter explanation, although for the purposes of this note, it actually does not really matter whether one agrees with that view or not. As long as an investor acknowledges that, for whatever reasons, certain premiums have been and will continue to be present in the equity market, it makes sense to study the strategic investment implications.

EMPIRICAL ANALYSIS

Figure 1 quantifies the historical equity, size, value, momentum and low-volatility premiums for the US market, using data going back to the early 1960s. This should not be interpreted as an exhaustive list of premiums documented for the equity market, but simply focuses on premiums that are widely known and for which data are readily available. By identifying additional premiums, investors may expand their opportunity set and unlock additional performance potential.

Figure 1 shows that the historical equity premium – that is, the return of the capitalisation-weighted index in excess of Treasury bills – amounts to 3.9% per annum. However, it also provides clear evidence of the existence of value, momentum and low-volatility premiums. The CAPM alpha figures are particularly relevant in this regard, as these show the added value vis-à-vis the capitalisation-weighted index, after adjusting for differences in market risk. The evidence for a size premium is relatively weak.

Figure 1: Historical premiums

Portfolio	Excess return	Volatility	Sharpe ratio	CAPM beta	CAPM alpha
Cap-weighted index	3.9%	15.6%	0.25	1.00	0.0%
Small stocks	5.7%	20.0%	0.29	1.19	1.1%
Value stocks	8.3%	17.4%	0.48	0.97	4.6%
Momentum stocks	8.8%	18.5%	0.48	1.09	4.6%
Low-volatility stocks	5.9%	13.3%	0.44	0.76	3.0%

Kenneth French webpage¹ and Robeco calculations. The table shows geometric average annual returns in excess of the risk-free return for the US equity market over the sample period 1963/07 until 2009/12. The cap-weighted index is the Market-Rf factor of Kenneth French, which represents the value-weighted return of the entire CRSP universe at each point in time. It is also used to calculate CAPM betas. The small stock portfolio is the equally-weighted 'med 40' size portfolio of Kenneth French, which consists of all stocks in the CRSP universe at each point in time excluding the 30% largest and 30% smallest (micro-cap) stocks. The value stock portfolio is the equally-weighted 'big-value' portfolio of Kenneth French, which consists of the 30% highest book-to-market stocks among the 50% largest stocks in the CRSP universe at each point in time. The momentum stock portfolio is the equally-weighted 'big-momentum' portfolio of Kenneth French, which consists of the 30% highest past 12-1 month return stocks among the 50% largest stocks in the CRSP universe at each point in time. The lowvolatility stock portfolio is an equally-weighted 'big-low-volatility' portfolio constructed in the same spirit as the 'big-value' and 'big-momentum' portfolios of Kenneth French, consisting of the 30% lowest past 36 month total volatility stocks among the 50% largest stocks in the CRSP universe at each point in time.

Figure 2 shows that the cross-correlations between the alphas of the various premiums tend to be low.² This indicates that the different premiums reflect distinct effects and that significant diversification benefits may be obtained by combining them into one portfolio.

Figure 2: Correlation between CAPM alphas

	Small stocks	Value stocks	Momentum stocks	Low-volatility stocks
Small stocks	1			
Value stocks	0.44	1		
Momentum stocks	0.23	-0.05	1	
Low-volatility stocks	0.08	0.64	-0.13	1

Source: Robeco

Before examining the desired strategic exposure to the various premiums, two important issues are addressed.

First, the effect of transaction costs. Because the capitalisation-weighted index is essentially a buy-and-hold portfolio, the impact of transaction costs on the equity premium is close to negligible. The size, low-volatility and value premiums are associated with modest amounts of turnover, implying a limited impact of transaction costs. Most turnover is associated with the momentum premium, because it dynamically selects stocks based on their past twelve month return. So, although momentum may appear to offer the largest premium at first glance, it is also the effect which will be eroded most by transaction costs in practical applications.

A second issue that needs to be addressed is whether the magnitude of premiums in the past is representative for the future. There is no consensus on the future expected equity premium, let alone on the expectations for the other premiums in the equity market. An understanding of the driving force behind the premiums may be relevant for determining a view on this. If an investor believes that the premiums reflect a compensation for some sort of risk, the question is whether this risk will continue to be present and rewarded going forward. Alternatively, if an investor believes that the premiums are caused by mispricing, the question is whether such mispricing is likely to persist going forward.

It is possible to address these concerns using conservative return assumptions for strategic asset allocation purposes. As an example, the analysis here uses the following assumptions:

- assumed equity premium: 3% per annum;

- assumed alpha premium for value, momentum and low-volatility effects: 1% per annum;
- assumed alpha premium for size: 0% per annum, therefore do not consider for inclusion;
- volatilities, correlations and betas as implied by the historical data discussed above;
- total volatility risk budget: same as for a 100% investment in the capitalisation-weighted market portfolio (benchmark); and,
- weight restrictions: short-selling is not allowed and weights should sum to 100%.

Based on these assumptions a simple portfolio optimisation was conducted, aimed at maximising the Sharpe ratio. In addition, a simple but arguably more robust 1/N portfolio is considered, which invests 25% each in the capitalisation-weighted market, value, momentum and low-volatility portfolios.

Figure 3: Mean/variance optimisation

	Benchmark weight	Simple 1/N weight	Optimised weight
Cap-weighted index	100%	25%	-
Value stocks	-	25%	31.3%
Momentum stocks	-	25%	39.0%
Low-volatility stocks	-	25%	29.7%
Volatility (annualised)	15.6%	15.3%	15.6%
Expected excess return	3.0%	3.6%	3.9%
Expected Sharpe ratio	0.19	0.24	0.25
Historical excess return	3.9%	6.9%	8.0%
Historical Sharpe ratio	0.25	0.45	0.51

Source: Robeco.

Figure 3 shows that the optimal allocation to the value, momentum and low-volatility portfolios is large, even though highly conservative assumptions were used regarding the magnitude of the expected return premiums on these portfolios. In fact, the mean/variance optimised portfolio is invested entirely in a combination of these premiums, and not at all in the capitalisation-weighted index. The result is a 28% improvement of the expected Sharpe

ratio. Interestingly, the simple 1/N portfolio is able to capture most of this improvement, with somewhat more emphasis on risk reduction than on return enhancement.

The historical performance of these portfolios is even more spectacular, with an approximate doubling of the Sharpe ratio compared with the capitalisation-weighted index. This can be explained by the fact that the raw historical premiums have been much larger than the conservative figures we assume.

The conclusion is that investors can substantially improve the risk/return characteristics of their strategic asset allocation by considering not only the classic equity premium, but also other premiums present in the equity market.

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