

## GLOBAL PORTFOLIOS WITH MARKET, SIZE AND VALUE CONSIDERATIONS

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### Abstract

*Low or moderate cross correlations of dollar returns between the major domestic, regional and international indexes signal some degrees of segmentation in the global financial markets. Risk/return characteristics of global asset classes and portfolios as well as market, size and value premiums are time variant. Although the differences in the market, value and size premiums across the markets mostly are not significant, they do contribute to the diversification benefits of the global portfolios. The benefits of global diversification still continue. (JEL F21, F31)*

### 1. Introduction

It is well known that the higher the degree of segmentation in the markets, the greater will be the global diversification benefits. Siquefield (1996) claims that mixing U.S. domestic portfolios with the MSCI EAFE Index does not create any favorable diversification effects, since the markets are integrated today. Other studies contradict his findings and indicate (mildly) segmented financial markets (e.g. Erb, Harvey and Viskanta (1996); Akdogan (1996) and (1997), Chan, Benton and Pan (1997)).

Conversely, Siquefield verifies global diversification benefits of international value and small stocks, which is confirmed by others (e.g. Capaul, Rowley and Sharpe (1993) and Bauman, Conover and Miller (1998)). On the other hand, Berk (1997) and Jensen, Johnson and Mercer (1998) show that the significance of the domestic size and value effects is time variant. This paper provides further empirical evidence for the financial market segmentation and for the benefits of global asset allocation, considering market, value and size premiums. We extend the work of Siquefield (1996), by including EMS, regional indexes and mid-cap stocks in global portfolios, and by using optimal portfolio weights.

### 2. Global Three-Factor Asset Pricing Model

The global model is basically the three factor asset pricing structure that was proposed by Merton (1973). The three factors are a market factor, a size factor and a value factor. Fama and French (February 1993; September 1993) and Capaul, Rowley and Sharpe (1993) show that all developed countries (DCS), U.S. or non-U.S., are well described by Merton's model.

The expected return of a global portfolio ( $E r_p$ ) is

$$(1) E r_p = r_f + b [ E (r_m - r_f) ] + v [ E r_v ] + s [ E r_s ]$$

where  $m$ ,  $v$  and  $s$  refer to the returns on market, value and size factors. The  $b$ ,  $v$  and  $s$  indicate the portfolio's sensitivity to the relevant factor,  $r_f$  is the risk free return.

Within this framework, we test the global financial market segmentation as well as the significance of global market, value and size premiums.

$$(2) E (r_m - r_{f,US}) \neq E (r_m - r_{f,DCS}) \neq E (r_m - r_{f,EMS})$$

### 3. Data and Estimation Procedures

The study is implemented for three periods (1993-97; 1988-97 and 1975-97), including twenty three major global asset classes. Domestic equities include the S&P 500, the S&P Mid\_CAP 400 and U.S Small Cap. International equities cover the MSCI EAFE composite for the developed countries (DCS), the IFCG composite for the emerging markets (EMS) and their regional indexes. Fixed income securities contain U.S.(30 day) T. Bills, U.S. Intermediate and Long Term Government Bonds and SB Brothers World Government Bonds.

Monthly total returns are obtained in dollar terms. Cross correlations, arithmetic means, standard deviations, Sharpe ratios (SR) as well as optimal portfolio weights and statistics are calculated by using the Ibbotson Associates' Optimizer. The SPSS is used in the calculation of the t statistics, to test the statistical significance of differences between the risk premiums.

#### **4. Empirical Findings**

##### *A. Cross Correlations of Dollar Returns*

The S&P 500 has large positive correlations with the MSCI World (70 to 80 percent) and the S&P Mid Cap (83 to 88 percent). Correlations with the U.S. Small Stock (54 to 76 percent) , the MSCI Europe (57 to 61 percent), the MSCI EAFE (46 to 48 percent) and the U.S. Intermediate (31 to 54 percent) and Long Term Government Bonds (38 to 51 percent) are moderate. Correlations with the MSCI EAFE Small Cap (23 percent), the MSCI Pacific, IFCG Latin America and Asia (21 to 37 percent) are low. The lowest cross correlations are for the U.K. FT 100 and the Japan Nikkei (4 to 22 percent), the U.S. T. Bill (minus 6 to 25 percent) and the SB World Government Bonds (12 to 17 percent).

SP/Barra Value Stocks have relatively high cross correlations with other value and growth stocks (54 to 74 percent).<sup>1</sup> SP/Barra Growth Stocks have lower correlations with MSCI EAFE Value and Growth Stocks (31 to 38 percent). MSCI EAFE Value and Growth Stocks have the highest cross correlations (94 to 96 percent). Finally, Mid Cap Value and Growth Stocks have moderate cross correlations with MSCI EAFE Value and Growth Stocks (36 to 46 percent).

##### *B. Risk/Return Tradeoff*

If Sharpe ratio is taken as the criterion, the U.S. T. Bill (2.4 to 4.1) looks very attractive for all periods. Among the domestic stocks, the S&P 500 (.32 to .52) and the Mid Cap (.39 to .43) as well as their value and growth sub-divisions plus the U.S. Intermediate Term Bond (.42) have the best Sharpe ratios.<sup>2</sup> The U.S. Small Cap (.31 to .43) follows them.

In the case of international indexes, the MSCI Europe (.29 to .48) and the MSCI World (.25 to .41) rank below the S&P 500, but they dominate others. Majority of the regional indexes show unstable trends. The IFCG Latin America (.77 to 1.06) has the best performance among others.

##### *C. Market, Value, Growth and Size Premiums*

The market premium is the largest for the U.S. Small Stock (1.19 percent) for Period 3. However, it is interesting to observe that the market premium for the S&P 500 (1.22 percent) is recently larger than the market premium for the Small Cap (1.19 percent)(for Period 1). Similar to the case of Sharpe ratios, the market premiums for the MSCI EAFE and the IFCG Composite are much lower than the domestic market premiums. The former (.68 percent) is better for Period 1, the latter (.55 percent) is better for Period 2. The market premiums for the IFCG Latin America (1.15-2.14 percent) and the MSCI Europe (.78 to 1.19 percent) are the best among the others. On the other hand, U.K., Japan, Pacific and partly Asia have negative market premiums.

As for the value premiums, the MSCI EAFE Value Index (.12 to .14 percent) yields positive value premiums over three periods, whereas the SP/Barra Value Index (.04 percent) has only one for Period 1. Conversely, domestic or international, all growth premiums are negative.

Another noteworthy finding is that the size premiums are positive in general. In the meantime, the MSCI EAFE small size premium (.80 percent) is quite large. This verifies the findings of Sinquefeld. For all periods, there are no significant differences between the market risk premiums of the domestic and international markets. However, only four regional indexes (U.K. FT 100, Japan Nikkei, Pacific and Asia) have significantly different market premiums from the domestic market premium. More important, the difference tests for value, growth and size factors in domestic and international markets are not significant either. In this regard, our findings are different from the conclusions of Sinquefeld, but consistent with the results of Berk (1997) as well as Jensen, Johnson and Mercer (1998).

#### D. Comparative Performance of the Global Portfolios

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**COMPARATIVE PERFORMANCE OF THE PORTFOLIO**

	Average Return(%)			Standard Deviation(%)			Sharpe Ratio(%)		
	Period1	Period2	Period3	Period1	Period2	Period3	Period1	Period2	Period3
1. Domestic Portfolio*	1.02	0.98	1.24	1.59	1.81	3.00	0.64	0.54	0.41
2. Global Portfolio 1	1.05	1.08	1.26	1.58	2.04	3.00	0.66	0.53	0.42
3. Global Portfolio 2	1.05	1.87	1.10	1.58	4.28	2.53	0.66	0.44	0.44
4. Global Portfolio 3	1.07	1.88	1.30	1.58	4.28	3.00	0.67	0.44	0.43
5. Global Portfolio 4	1.05	0.99	1.35	1.59	1.81	3.00	0.66	0.55	0.45

\* 1. Diversified by the domestic major asset classes. 2. Diversified by the market and size factors  
3. Diversified by the regional indexes. 4. Diversified by the market, size and value factors. 5. Diversified by the global major asset classes.

It is very interesting to observe that, for Period 1 which is the most recent period, almost all portfolios have the same Sharpe ratio (.66). There has been no difference in the performance of the portfolios whether they were domestic or global, and considering market, size and value premiums. Maybe, with a very slight difference, the global portfolio diversified by the market, size and value factors (.67) has been the best and the domestic portfolio diversified by the major asset classes (.64) has been the worst. Also, in this period, the performances of all portfolios have been the best, compared to the other periods. For Periods 2 and 3, the global portfolio diversified by the major global asset classes has been the best. The low and moderate cross correlations among them contribute to the risk reduction benefits of the international diversification.

#### 5. Summary and Conclusions

This paper examines global portfolio performance considering market, size and value effects. Low and moderate correlations among the major domestic and international asset classes which are diversified by market, size and value factors confirm the previous findings that global financial markets are still segmented. Our findings do not imply serious correlation risk or complete integration of financial markets. Lower cross correlations between the DCS and the EMS indicate a lower degree of segmentation between the two. Although the international asset classes have the poorest Sharpe ratios, because of their diversification effects, the inclusion of DCS or EMS in the global portfolios still expands the return enhancement and risk reduction benefits of global investing. Addition of regional indexes such as Europe/Middle East/Africa, Latin America and Asia may create further global diversification effects.

The Sharpe ratios emphasize the importance of the three factorial diversification. However, the relevance of the market, size and value premiums is time variant.

We do not observe any statistically significant differences between the market, size and value premiums of the domestic and international markets, with the exception of four regional indexes. Nonetheless, majority of the market premiums are significant and contribute to the global diversification. The size premiums are greater than the value premiums, whereas the growth premiums are all negative.

## Endnotes

<sup>1</sup>The SP/Barra Growth and Value Index are constructed in regard to a single attribute: book-to-price ratio. See new.asp.

<sup>2</sup>Sharpe ratios are obtained simply by dividing the return in to the standard deviation as an indication of the reward / risk ratio.

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