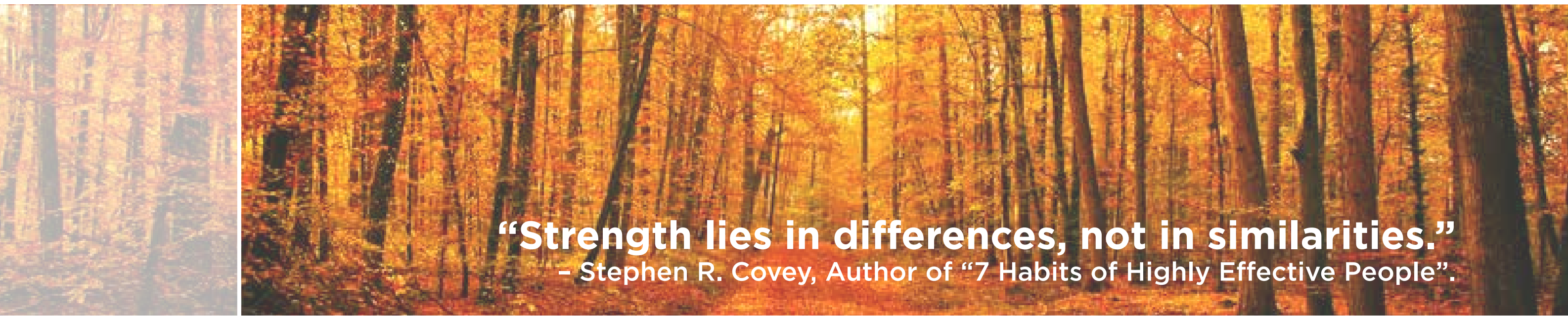
Around the World in Four Factors



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Factor investing is often referred to under broad, blanket terms like 'value investing' or 'investing in a value or a low-volatility fund'. There are many details behind these terms, such as the geographical choice for creating factor portfolios. In this piece we investigate how factors behave in different regions globally. We want to understand if investing in concepts like 'value', 'quality', 'low volatility' and 'sentiment' are comparable in different regions in terms of expected returns, and in terms of correlations with one another.

We find that different geographies of the same factor are broadly aligned with one another, but there are some differences that warrant attention. We use these differences to highlight nuances in factor investing that necessitate an active management mind-set when considering a factor strategy.

Methodology and setup

We want to test the returns to a simple (naïve) formulation of a factor return for a multitude of geographic regions. There are many ways to formulate factor returns, and we want to choose the simplest possible method to allow us to focus on geographic differences only[1] . We therefore define factor returns as: the weighted average of the top tercile (33%) of stocks in a given factor, minus the returns to that domestic market, calculated monthly[2]. For example, for an index like the Russell 1000 this would be the weighted average of the 'cheapest' 333 stocks as measured by a value factor, minus the Russell 1000's returns. This is a very simple measure of factor returns, and provides a benchmark from which we can explore geographic differences among (i) US, (ii) Europe, (iii) Japan and (iv) Asia ex Japan markets.[3]

The value factor around the world

Value factors are perhaps the most grounded in economic intuition, and suggest that buying 'cheap' stocks should generate excess returns above a benchmark consistently, irrespective of geography.

We start our travels by looking at the returns to the two common but different value factors of earnings yield and book yield[4]. Tables 1 and 2 overpage show the returns of these two, as well as information on risk (maximum drawdown) and correlation with a 'global' factor of the same kind.

[1] Practitioners and discerning readers will note that we rely on the assumption that our chosen definitions of factors and portfolio construction are not interacting with our geography experiment. [2] We use monthly data from 1989 to 2017, defining each region by the country of listing for securities. We use market capitalisations of stocks to generate the weighted portfolios and look forward for a single month. The active returns are compounded differences between the factor portfolio and the benchmark. [3] Each zone is defined by its MSCI equivalent: MSCI Europe, MSCI Japan, MSCI USA and MSCI Asia x Japan. [4] Earnings Yield is defined as the historic earnings divided by price per share. Book yield is similarly defined as the book value per share divided by the price per share. Higher values for both of these variables indicate 'cheaper' stocks.

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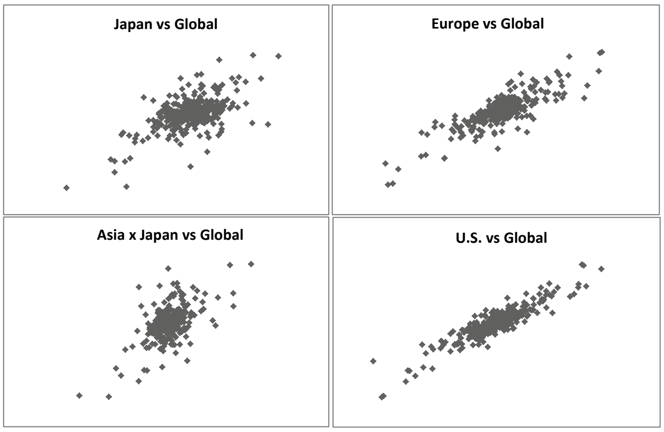
So, for example, the correlation between the historical returns to value for US firms is fairly strongly related to the historical returns to value globally[5], however, this relationship is less clear for other regions.

Table 1 The value (earnings - yield) factor returns within regions

	U.S.	Europe	Japan	Asia Ex Japan	Global
Average Returns (p.a.)	0.5%	2.1%	3.7%	2.0%	1.7%
Maximum drawdown (p.a.)	-24%	-16%	-20%	-26%	-21%

Annual returns of the regional versus global factor



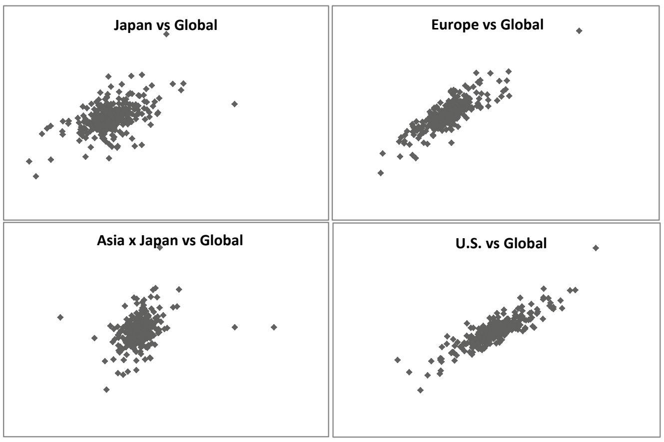
Source: Rosenberg Equities, June 2017

Not only are the correlations variable, but the level of returns also varies by region. Japan is the one market with consistently strong historical returns to both value measures, but the historical returns vary significantly across the other regions, though are still positive on average.

Table 2 The value (book - yield) factor returns within regions

	U.S.	Europe	Japan	Asia Ex Japan	Global
Average Returns (p.a.)	0.1%	0.6%	4.7%	0.7%	1.1%
Maximum drawdown (p.a.)	-20%	-23%	-19%	-34%	-14%

Annual returns of the regional versus global factor



Source: Rosenberg Equities, June 2017

It therefore really matters to investors where they invest in value opportunities, not only in terms of expected returns, but also in risk and correlations.

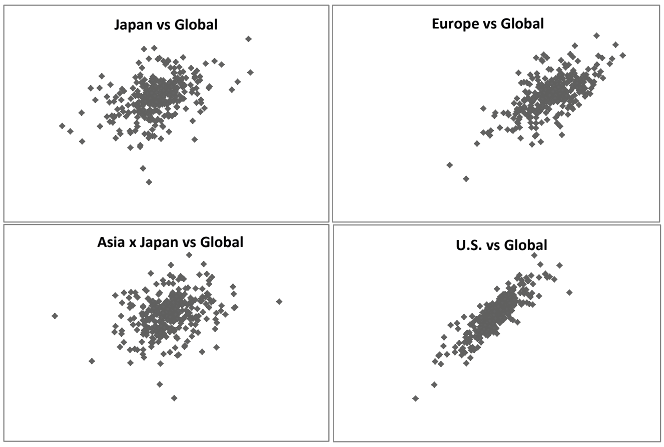
The quality factor around the world

Quality as a notion is perhaps the most ambiguous as it relates directly to what local investors would regard as 'safe' when it comes to company fundamentals. This leads to a large number of potential candidates for the empirical factors to represent a stable, profitable and quality business. For this paper, we will use a very simple measure of fundamental returns to equity holdings using ROE (return-on-equity) to define a quality factor. Table 3 shows the characteristics of the quality factor globally, and like value, while overall positive, the returns are much stronger in the US and Europe but are barely correlated with one another globally.

Table 3 The quality (ROE) factor returns within regions

	U.S.	Europe	Japan	Asia Ex Japan	Global
Average Returns (p.a.)	1.5%	1.7%	0.2%	1.0%	1.4%
Maximum drawdown (p.a.)	-12%	-9%	-18%	-15%	-11%

Annual returns of the regional versus global factor



Source: Rosenberg Equities, June 2017

The low-volatility factor around the world

The low-volatility factor is perhaps the easiest to define in a naïve way simply by taking the historic volatility of prices for stocks[6], and creating factor rankings. While the returns to low volatility are positive, the effect is almost three times the size in Asia, and is barely noticeable in the U.S.

Perhaps, as seen in Table 4, most surprising are the low correlations between the historical returns to volatility globally. Global risk-aversion and its impact on global stock markets should bring the returns to factors like

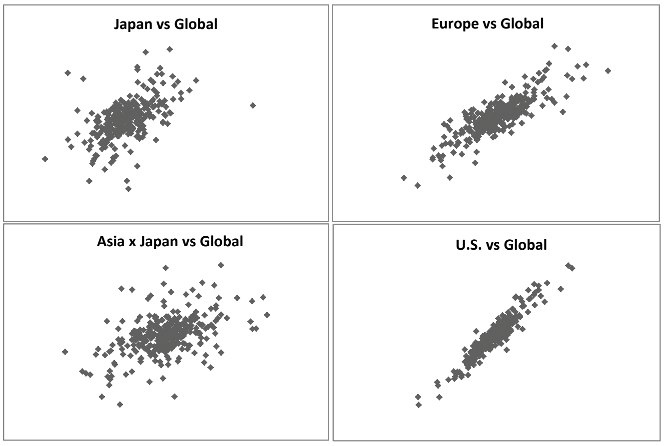
[5] This is primarily an artefact of construction, whereby the global market is around 50% US companies. It is therefore not surprising that any global factor will have a strong relationship to a US based equivalent. [6] We use five year monthly data to calculate rolling measures of volatility. Table IV shows the inverse of the returns to high volatility stocks. This is because the low-volatility effect is invested by shorting/under-owning high volatility stocks.

volatility closer in-line, however, we don't see consistent evidence for this in our analysis. The returns to low-volatility are still very dispersed globally, and vary significantly in magnitude and risk.

Table 4 The low volatility factor returns within regions

	U.S.	Europe	Japan	Asia Ex Japan	Global
Average Returns (p.a.)	0.3%	1.3%	0.7%	3.0%	1.0%
Maximum drawdown (p.a.)	-21%	-13%	-21%	-17%	-17%

Annual returns of the regional versus global factor



Source: Rosenberg Equities, June 2017

The sentiment factor around the world

Finally, as seen in Table 5, the most persistent, but least understood, factor is one based around market sentiment. We use price momentum[7] to define market sentiment and expectations. We find that the sentiment factor is strong across the board, except in Japan, where its performance is essentially zero. Similarly to our previous findings, Asia has little relationship to the rest of the world, while Europe and US are fairly consistent with global factor returns.

Local factors and global active management

We have shown that naïve factors vary in behaviour across different regions of the world. Not only do they display different returns, but they also carry different risks, and sometimes exhibit little correlation within the same factor family across different regions.

Our work can be interpreted in two different ways. First, that factor returns are inherently noisy, and therefore any different sampling (for example by geography) should give rise to differences, which can be diversified in a global portfolio. Alternately, our view is that this highlights the merits of active management in factor investing; accounting for geographies, like for example Japan, may enable investors to realise superior factor returns through a more dynamic exposure to different markets.

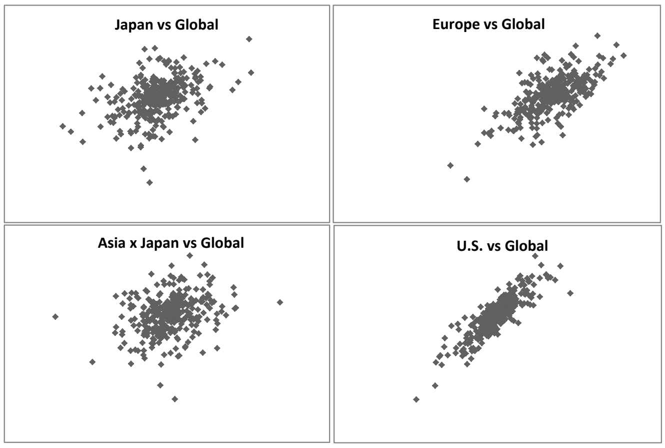
In exposing regional differences, the very term 'investing in value', for example, takes on different meaning based on the geographic context of the investor. If buying momentum in Japan has so little (or no) returns associated with it, why should a global sentiment factor have any Japanese stocks in it?

While we have focused on geography, this analysis can also raise further questions: How are factor returns related to local macroeconomic cycles? How does local versus global risk-aversion impact factor performance? We address these and more in our advanced factor series.

Table 5 The sentiment factor (momentum) returns within regions

	U.S.	Europe	Japan	Asia Ex Japan	Global
Average Returns (p.a.)	1.5%	2.3%	-0.3%	1.6%	1.6%
Maximum drawdown (p.a.)	-26%	-28%	-28%	-23%	-24%

Annual returns of the regional versus global factor



Source: Rosenberg Equities, June 2017

[7] We use the more traditional 12-month momentum score for sentiment, leaving out the previous month of returns. This measures recent price performance as the factor exposure.

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