

Axioma Insight

Quarterly Risk Review

Asia Pacific ex-Japan Edition

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Quarter-end predicted risk for many benchmarks around the world was higher, in most cases substantially higher, than it was at the end of the prior quarter (Table 1). The one exception was Japan, which was likely still suffering the effects of the earthquake and tsunami at the end of July. Japan has now moved from above-average risk relative to other major markets last quarter to below-average risk. Not surprisingly the Euro block forecast risk is currently the highest of the major markets.

Highlights from this quarter:

- Due to the common themes driving risk in the current environment, the “market factor” has captured a large proportion of the volatility increase (see Figure 3, page 7).
- Predicted risk from the short horizon statistical model has risen substantially relative to the medium horizon statistical model, suggesting that there is a recent factor driving risk increases not identified by the fundamental model (Figure 5, page 9).
- Style factor returns had a wild three months, bouncing from unusually high returns to unusually low returns (or vice versa) from month to month (Table 2, page 10).
- Active risk of a 50-stock portfolio tracking the FTSE-Asia-ex-Japan benchmark has increased by about 40 basis points over the last three months (Figure 8, page 13).
- Stock-stock correlations remain near their 12-year peak (Figure 9, page 15).
- Similarly, cross-sectional predicted volatility, whether looking at stocks, industries, countries, currencies, or style factors remains low, suggesting it continues to be very difficult to add value through stock picking (Figure 11, page 16).

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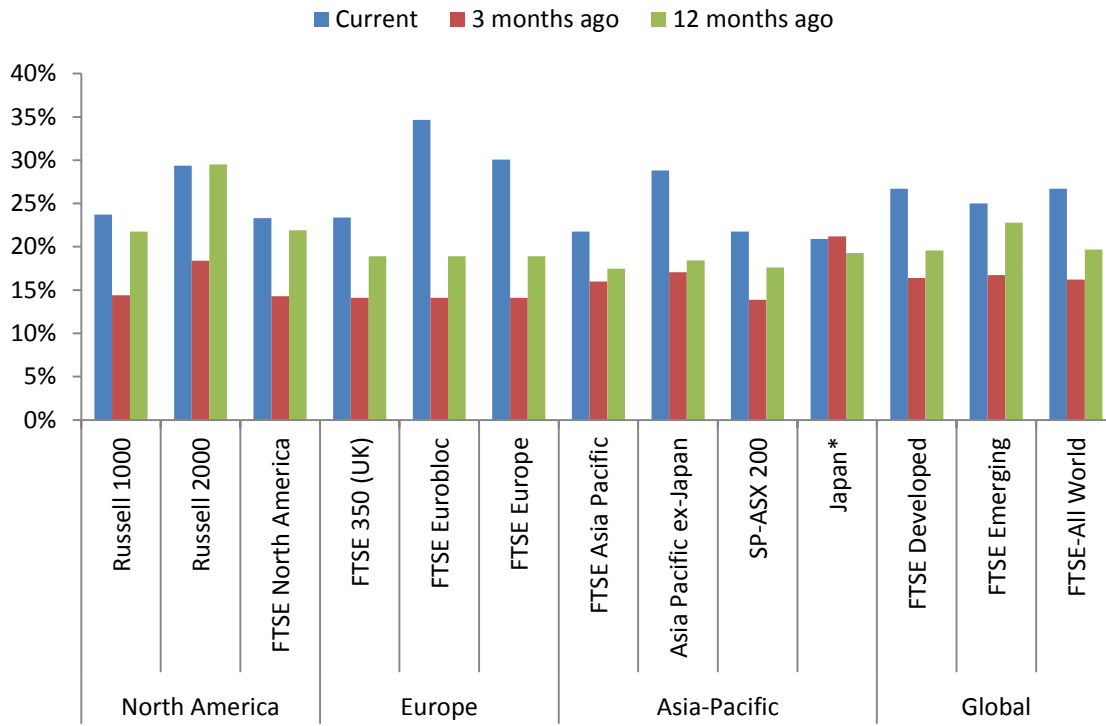
Table 1. Comparison of Benchmark Predicted Volatilities

| | Benchmark Predicted Volatility | | | Change Vs. | |
|-----------------------|--------------------------------|------------------------------------|--------------------------------|------------------|-------------|
| | Most Recent (31 Oct 2011) | 1 Quarter Ago (29 July 2011) | 1 Year Ago (29 Oct 2010) | 1 Quarter Ago | 1 Year Ago |
| North America | | | | | |
| Russell 1000 | 23.7% | 14.4% | 21.7% | 9.3% | 2.0% |
| Russell 2000 | 29.4% | 18.4% | 29.5% | 11.0% | -0.2% |
| FTSE North America | 23.3% | 14.3% | 21.9% | 9.0% | 1.4% |
| Europe | | | | | |
| FTSE 350 (UK) | 23.4% | 14.4% | 20.8% | 9.0% | 2.6% |
| FTSE Eurobloc | 34.6% | 22.6% | 29.9% | 12.1% | 4.7% |
| FTSE Europe | 30.1% | 20.6% | 28.1% | 9.5% | 2.0% |
| Asia-Pacific | | | | | |
| FTSE Asia Pacific | 21.7% | 16.0% | 17.5% | 5.8% | 4.3% |
| Asia Pacific ex-Japan | 28.8% | 17.0% | 18.4% | 11.8% | 10.4% |
| SP-ASX 200 | 21.8% | 13.9% | 17.6% | 7.9% | 4.1% |
| Japan* | 20.9% | 21.2% | 19.3% | -0.3% | 1.6% |
| FTSE Developed | 26.7% | 16.4% | 19.6% | 10.3% | 7.1% |
| FTSE Emerging | 25.0% | 16.7% | 22.8% | 8.3% | 2.2% |
| FTSE-All World | 25.0% | 15.8% | 22.8% | 9.2% | 2.3% |
| Average | 25.7% | 17.1% | 22.3% | 8.7% | 3.4% |

* Russell Developed minus Russell Developed ex-Japan.

Based on medium-horizon fundamental model for each region.
Source: Axioma, Inc. FTSE, Frank Russell, Standard and Poor's.

Figure 1. Risk Has Increased Across the Board; Japan is the Lone Exception



* Russell Developed minus Russell Developed ex-Japan.
 Based on medium-horizon fundamental model for each region.
 Source: Axioma, Inc. FTSE, Frank Russell, Standard and Poor's.

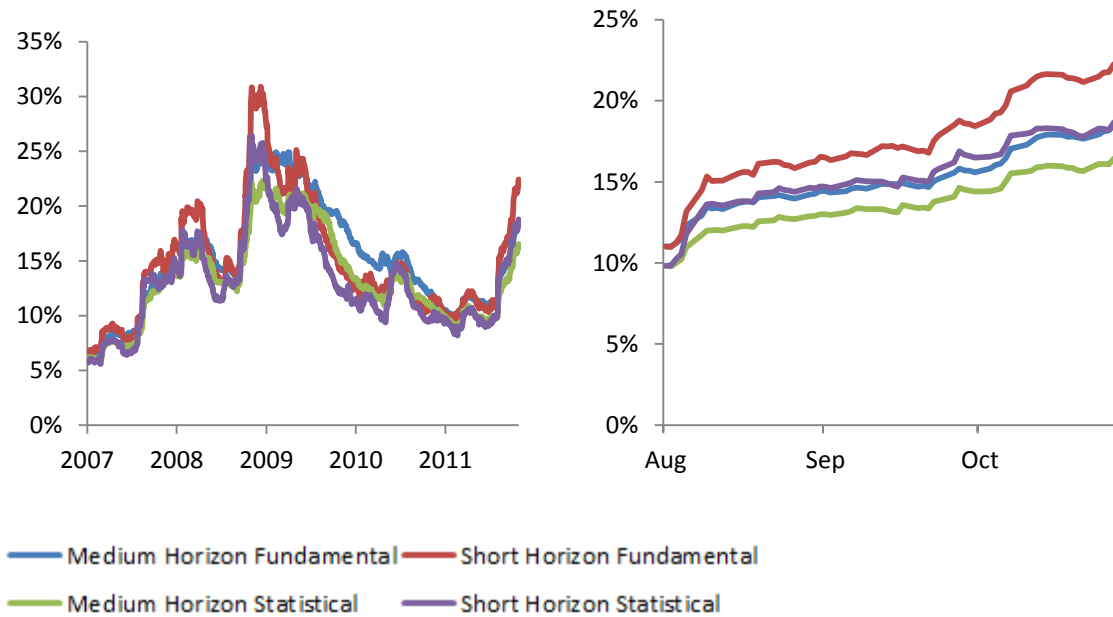
Focus on Asia-Pacific ex-Japan

Risk rose substantially in the Asia Pacific region over the past three months, as it had for most regions globally. In addition, Asia ex-Japan saw the largest increase in risk of all of our sample benchmarks over the past year.

Risk in Asia ex-Japan has been steadily rising since May 2011, although predicted risk remains well below its recent high at the end of 2008 (Figure 2). This increase in risk is evident in all four models, although the short-horizon fundamental model shows the largest gain.

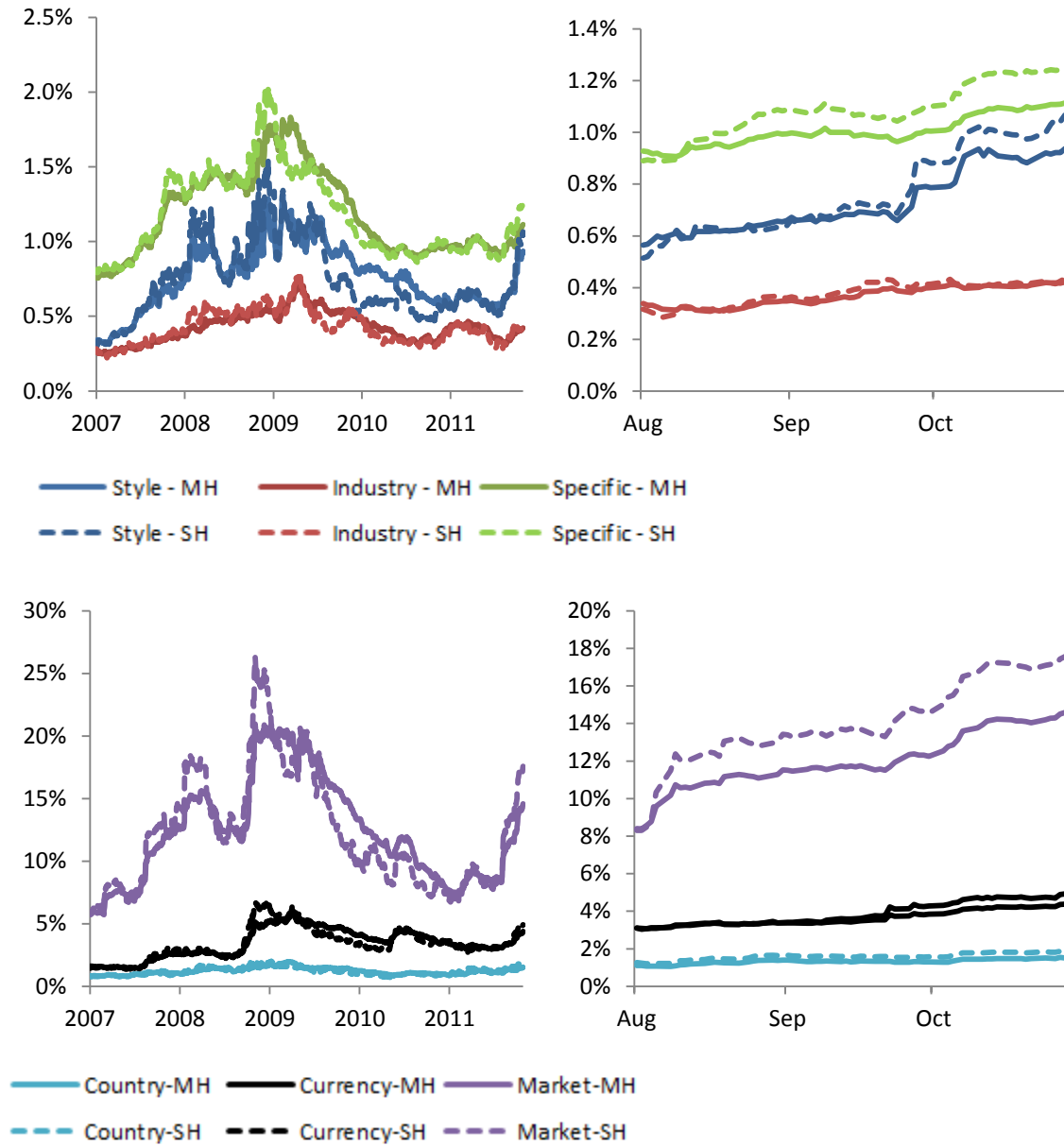
As Figure 3 shows, most of the increase can be attributed to rising market risk, especially from the short horizon model. Style risk also showed an abrupt gain, albeit from a very low level. In addition, currency risk is up over the prior quarter's level.

Figure 2. Asia Pacific Ex-Japan, Risk Characteristics, Last 5 Years and Most Recent Three Months



Source: FTSE, Axioma, Inc.

Figure 3. Asia Pacific Ex-Japan Components of Risk

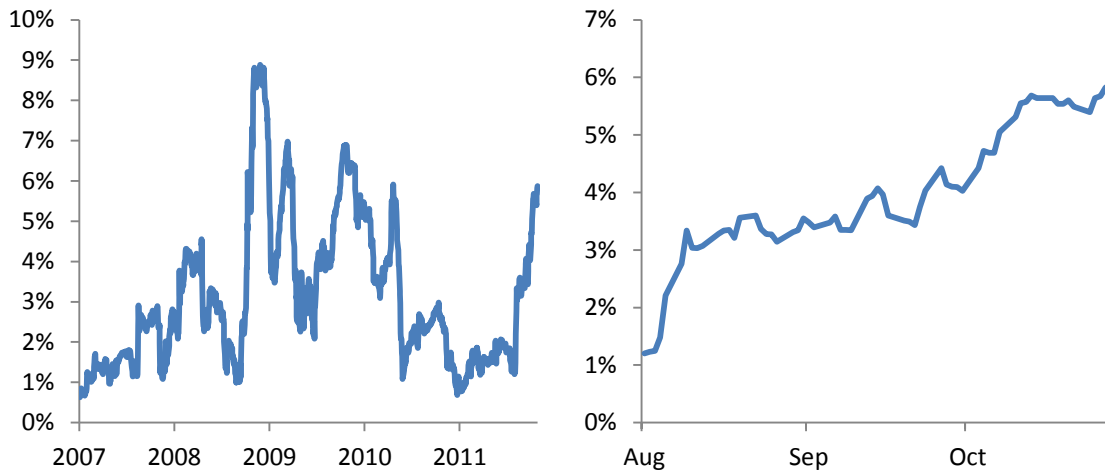


Source: FTSE, Axioma, Inc.

Differences in risk estimates are described further by risk *spreads*. The predicted risk spread measures the difference in the largest risk estimate from the four risk models (medium-term fundamental, medium-term statistical, short-term fundamental and short-term statistical) from the smallest (Figure 4). The higher the number, the larger the disagreement among models. The five-year peak came in early November 2008, when the short-term fundamental model’s forecast exceeded that of the medium-term statistical model by almost 9 percentage points. Over the last quarter, the spread climbed substantially and steadily, although it remains well below the 5-year high. The spread is also well below that of other markets such as the US.

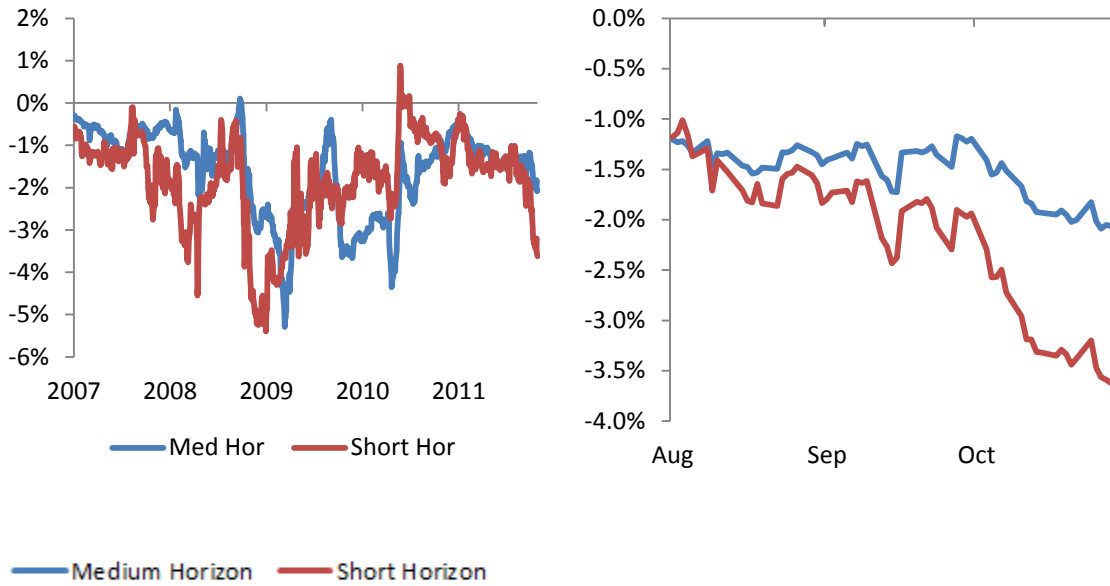
Over the past five years, the statistical model has almost always predicted lower risk than the fundamental model, at both horizons (Figure 5). During the last quarter, the spread has widened much more at the short horizon. The spread between the short horizon and medium horizons has bounced around from being quite positive to very negative; this is true for both the statistical and fundamental variants. Recently the spread for the statistical model has widened much more than that of the fundamental model, suggesting that something not included in the fundamental model may be seen by the statistical model. The magnitude of these spreads is similar to what we observed in late 2008 – although not quite as high.

Figure 4. Predicted Risk Spread: The Difference Between the Highest and Lowest Risk Estimates Based on the Four Model Variants



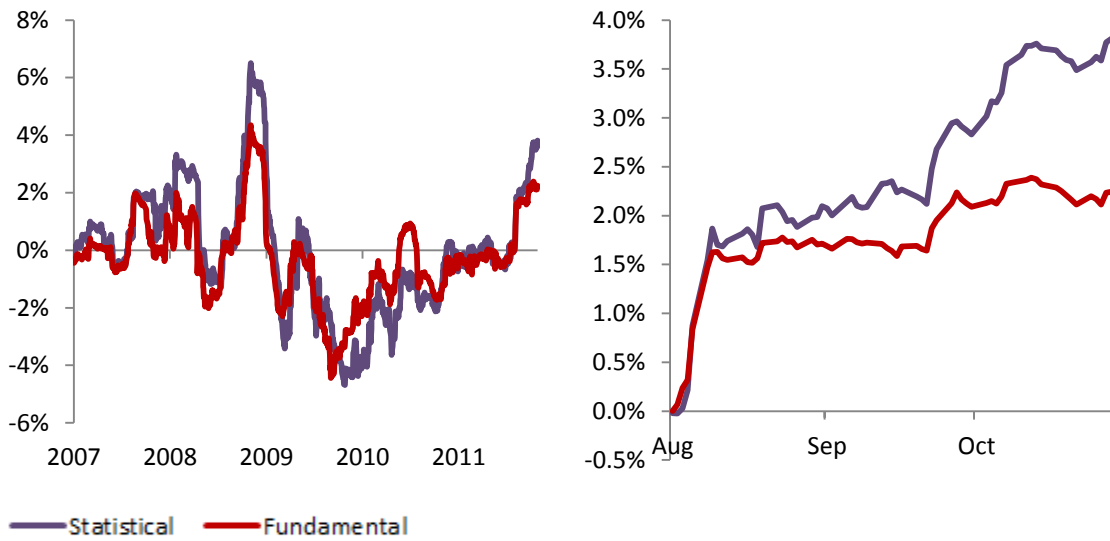
Source: FTSE, Axioma, Inc.

Figure 5. Statistical – Fundamental Spread



Source: FTSE, Axioma, Inc.

Figure 6. Short – Medium Spread



Source: FTSE, Axioma, Inc.

Volatilities and Returns

The increased volatility is reflected in the magnitude of factor returns. In October six of the 9 style components of the medium horizon fundamental model were at least one standard deviation above or below the long term average (Table 2.) Many factors saw a sharp reversal of fortune in October as compared with September. For example, short-term momentum had a return in the 95th percentile relative to its history in September, and then had its worst month since 1999 in October. Volatility, which has produced highly negative returns for much of the last year, continued its downward path during the first two months of this quarterly period, and then had a strongly positive return in October. Over the past year, several factors have seen very volatile returns (Figure 7).

Predicted volatility has also bounced around quite a bit for many of the style factors, with most seeing higher forecasts currently versus one quarter and one year ago (Table 3). Note that we show volatility forecasts for countries, currencies and industries in the appendices.

Table 2. Asia Pacific ex-Japan Realized Factor Returns

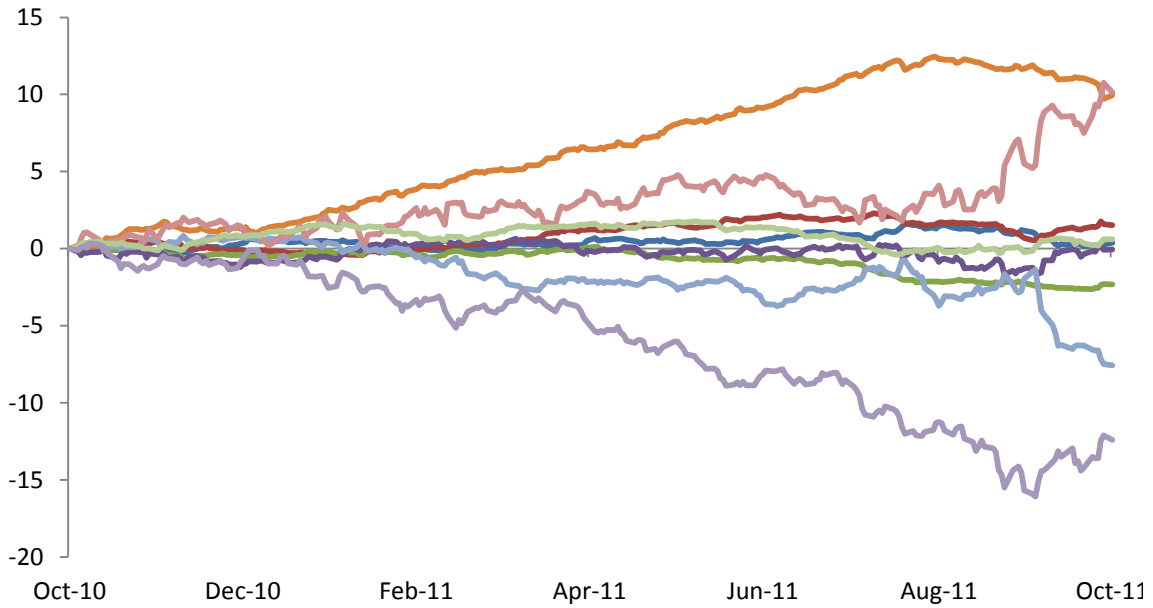
| Medium Horizon Fundamental Model Risk Factor | 2011 Returns | | | Average Monthly Return | | | | |
|--|--------------|-------|-------|------------------------|------------|------------|------------|---------------|
| | Oct | Sep | Aug | 3Q 2011 | 2Q 2011 | 1Q 2011 | 4Q 2010 | Long Term* |
| Exchange Rate Sensitivity | -0.77 | -0.30 | 0.57 | 0.20 | 0.12 | -0.16 | 0.09 | 0.01 |
| Growth | 0.83 | -0.97 | -0.20 | -0.44 | 0.55 | 0.21 | 0.07 | 0.22 |
| Leverage | -0.07 | -0.11 | -1.21 | -0.51 | -0.18 | 0.12 | -0.09 | -0.14 |
| Liquidity | 1.22 | -0.42 | -0.99 | -0.37 | -0.17 | 0.39 | -0.29 | -0.27 |
| Medium-Term Momentum | -1.55 | -0.56 | 1.03 | 0.77 | 1.26 | 1.29 | 0.90 | 0.45 |
| Short-Term Momentum | -5.73 | 1.83 | -1.32 | 0.52 | -0.51 | -0.89 | 0.22 | -0.71 |
| Size | 4.39 | 1.37 | 1.34 | 0.31 | 0.53 | 0.66 | 0.25 | 0.26 |
| Value | 0.87 | -0.29 | -0.61 | -0.53 | 0.09 | 0.08 | 0.58 | 0.57 |
| Volatility | 3.89 | -5.00 | -2.98 | -2.80 | -1.54 | -1.22 | -0.14 | -0.63 |

* January 1999 - present

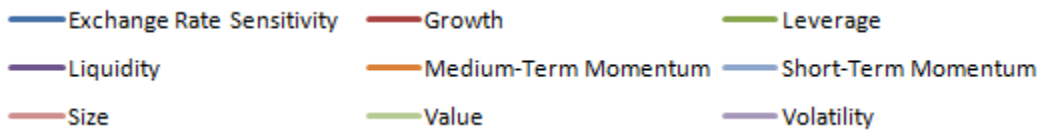
Highlighted cells are 1 standard deviation above or below average

Source: Axioma, Inc.

Figure 7. APxJP Medium-Horizon Model Cumulative Style Factor Returns, 12 Months Ended October 2011 (%)





































































Source: Axioma, Inc.



Source: Axioma, Inc.

Table 3. APxJP Style Factor Predicted Volatility

| | Month End | | | Change from | | Trends | | |
|---------------------------|--------------------------|------------------------------|---------------------------|-------------|----------|---|---|---|
| | Current (31 Oct 2011) | Quarter Ago (29 Jul 2011) | Year Ago (29 Oct 2010) | Quarter Ago | Year Ago | 5 year | 1 Year | 3 Month |
| Asian Market | | | | | | | | |
| Medium Horizon | 22.6% | 13.8% | 13.5% | 8.8% | 9.2% |  |  |  |
| Short Horizon | 27.1% | 13.5% | 10.8% | 13.7% | 16.3% |  |  |  |
| Domestic China | | | | | | | | |
| Medium Horizon | 23.4% | 15.9% | 20.3% | 7.6% | 3.2% |  |  |  |
| Short Horizon | 26.2% | 16.2% | 17.2% | 10.1% | 9.0% |  |  |  |
| Exchange Rate Sensitivity | | | | | | | | |
| Medium Horizon | 1.5% | 1.0% | 0.9% | 0.5% | 0.6% |  |  |  |
| Short Horizon | 1.7% | 0.9% | 0.9% | 0.8% | 0.9% |  |  |  |
| Growth | | | | | | | | |
| Medium Horizon | 1.5% | 1.0% | 1.0% | 0.4% | 0.4% |  |  |  |
| Short Horizon | 1.7% | 0.9% | 1.0% | 0.8% | 0.7% |  |  |  |
| Leverage | | | | | | | | |
| Medium Horizon | 3.1% | 1.0% | 0.8% | 2.2% | 2.3% |  |  |  |
| Short Horizon | 1.3% | 0.8% | 0.7% | 0.4% | 0.5% |  |  |  |
| Liquidity | | | | | | | | |
| Medium Horizon | 1.2% | 1.7% | 2.1% | -0.6% | -0.9% |  |  |  |
| Short Horizon | 3.6% | 1.7% | 1.9% | 1.9% | 1.7% |  |  |  |
| Medium-Term Momentum | | | | | | | | |
| Medium Horizon | 2.6% | 2.2% | 2.5% | 0.4% | 0.1% |  |  |  |
| Short Horizon | 2.7% | 2.1% | 2.2% | 0.6% | 0.6% |  |  |  |
| Short-Term Momentum | | | | | | | | |
| Medium Horizon | 5.6% | 3.3% | 3.3% | 2.3% | 2.4% |  |  |  |
| Short Horizon | 7.1% | 3.3% | 2.4% | 3.8% | 4.6% |  |  |  |
| Size | | | | | | | | |
| Medium Horizon | 7.6% | 4.6% | 4.2% | 3.0% | 3.4% |  |  |  |
| Short Horizon | 9.1% | 4.0% | 3.6% | 5.2% | 5.5% |  |  |  |
| Value | | | | | | | | |
| Medium Horizon | 1.9% | 1.3% | 1.3% | 0.6% | 0.6% |  |  |  |
| Short Horizon | 2.1% | 1.2% | 1.2% | 0.9% | 0.9% |  |  |  |
| Volatility | | | | | | | | |
| Medium Horizon | 7.5% | 4.9% | 4.8% | 2.6% | 2.6% |  |  |  |
| Short Horizon | 8.8% | 4.6% | 3.8% | 4.1% | 5.0% |  |  |  |

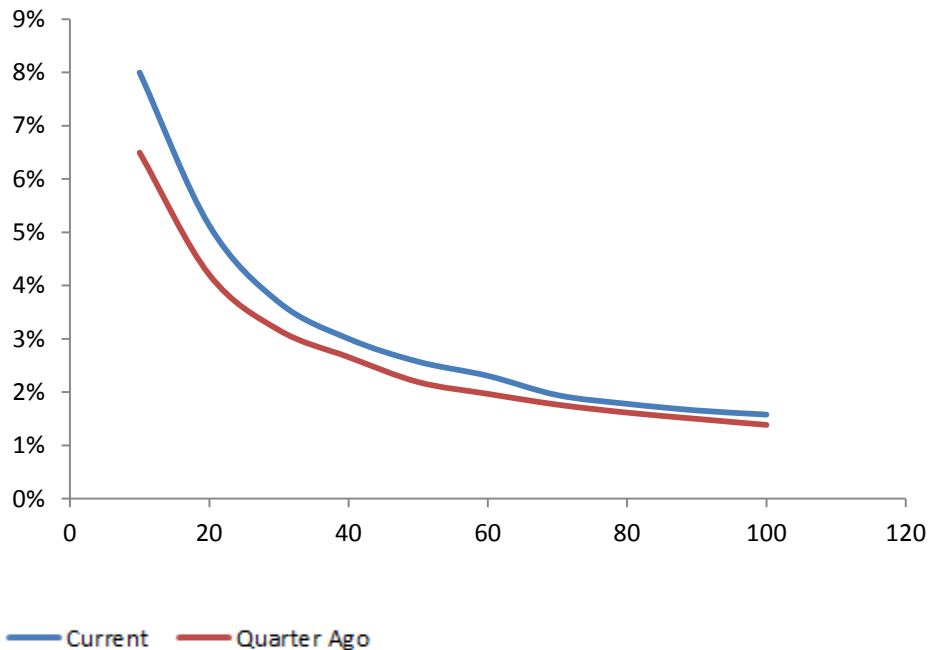
Source: Axioma, Inc.

Implications for Tracking Error

Another sign of increased market risk is illustrated in Figure 8, which highlights the tracking error to the FTSE Asia ex-Japan benchmark versus the number of stocks.

Changes in market level risk almost inevitably imply changes in active risk for managers who are tracking a benchmark. In the following chart we show the minimum active risk for index tracking portfolios of varying number of stocks. The recent increase in market risk has led to a fairly large corresponding increase in tracking error for portfolios with a small number of stocks, but even a portfolio with 100 stocks would have higher tracking error now relative to last quarter.

Figure 8. Tracking Error as Number of Stocks Increases, APxJP



As of 31 Oct 2011
 Source: FTSE, Axioma Inc.

Correlations and Cross-Sectional Dispersion

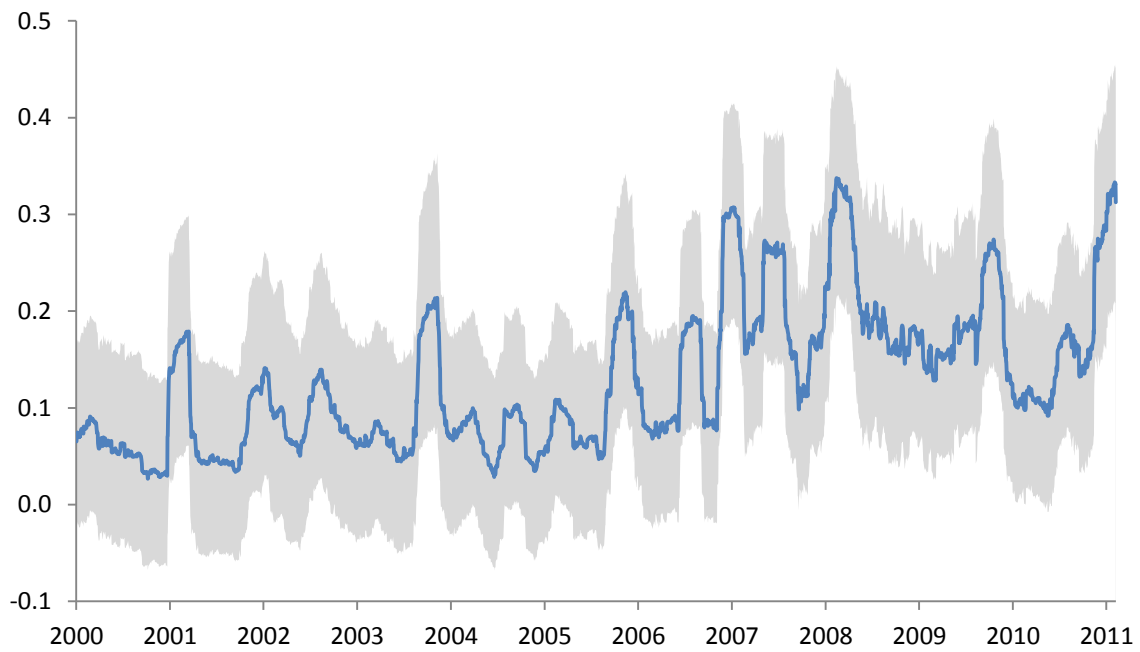
2011 has witnessed a large increase in correlations, especially between stocks. Currently, the median correlation is just slightly below its prior peak (reached in late 2008 - Figure 9). Similarly, at around 4%, the proportion of stock pairs that actually have a negative correlation is just above its low since 1999.

Cross-sectional dispersion (also called cross-sectional volatility) of monthly returns had fallen dramatically in early 2011, although it has ticked up substantially since May. So for much of this year, even on a monthly basis, one stock's return was not very different from another's. This did change a bit in September and October, although even the levels in those months are well below the peak in May 2009.

Country, currency, industry and style dispersion (based on predicted volatility) have all dropped since the beginning of 2011, with currency factors having the steepest decline. So, as stocks seem to be moving in lock-step with each other, so do other risk factors (Figure 12). The implication is that no matter which levers a manager pushes, it has been increasingly difficult to create a well-diversified portfolio. In addition, most correlations over the last quarter have not changed substantially (Table 4), although there are some notable exceptions, particularly Exchange Rate Sensitivity.

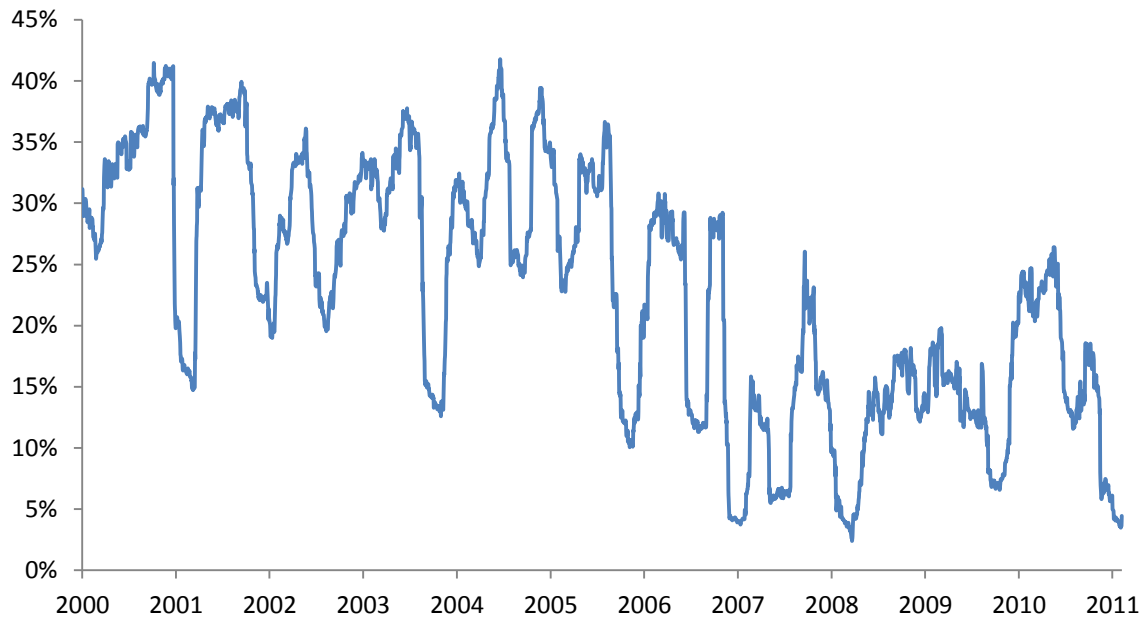
Overall, although October saw a recovery in market returns, it did not see much improvement in the correlation/dispersion environment, and distinguishing the thorns from the roses remained extremely difficult, whether an investor was trying to choose among stocks, industries, countries, currencies or risk factors.

Figure 9. APxJP Median Realized 60-day Pairwise Asset Correlation and Interquartile Range



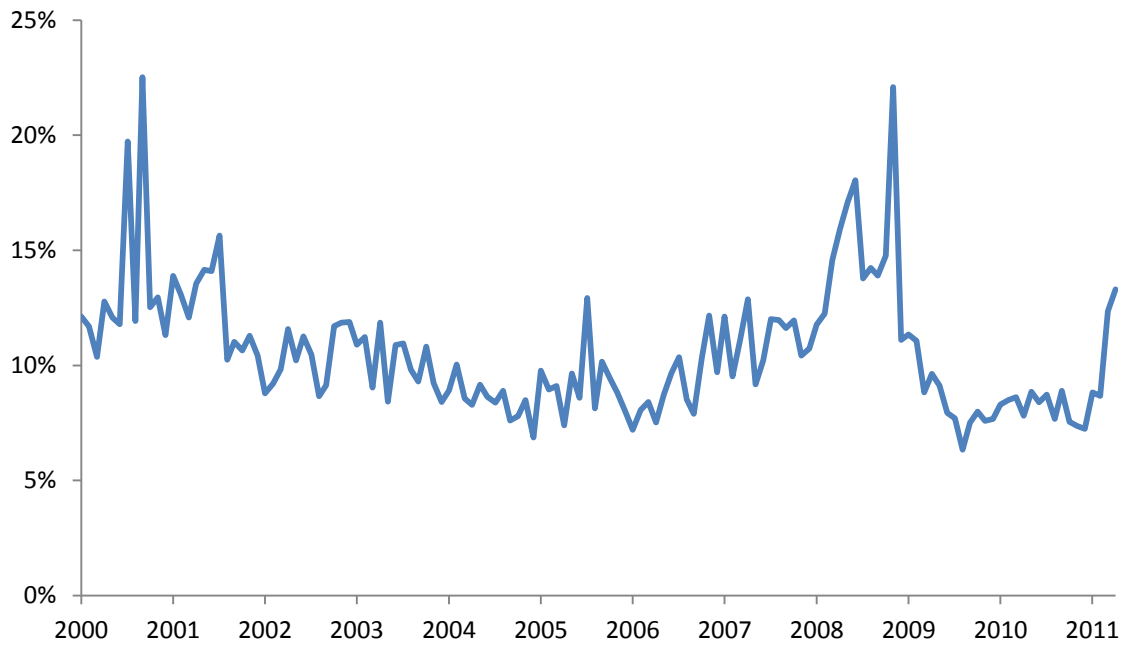
Source: FTSE, Axioma, Inc.

Figure 10. Percent of APxJP Stock-Stock Correlations That Are Negative



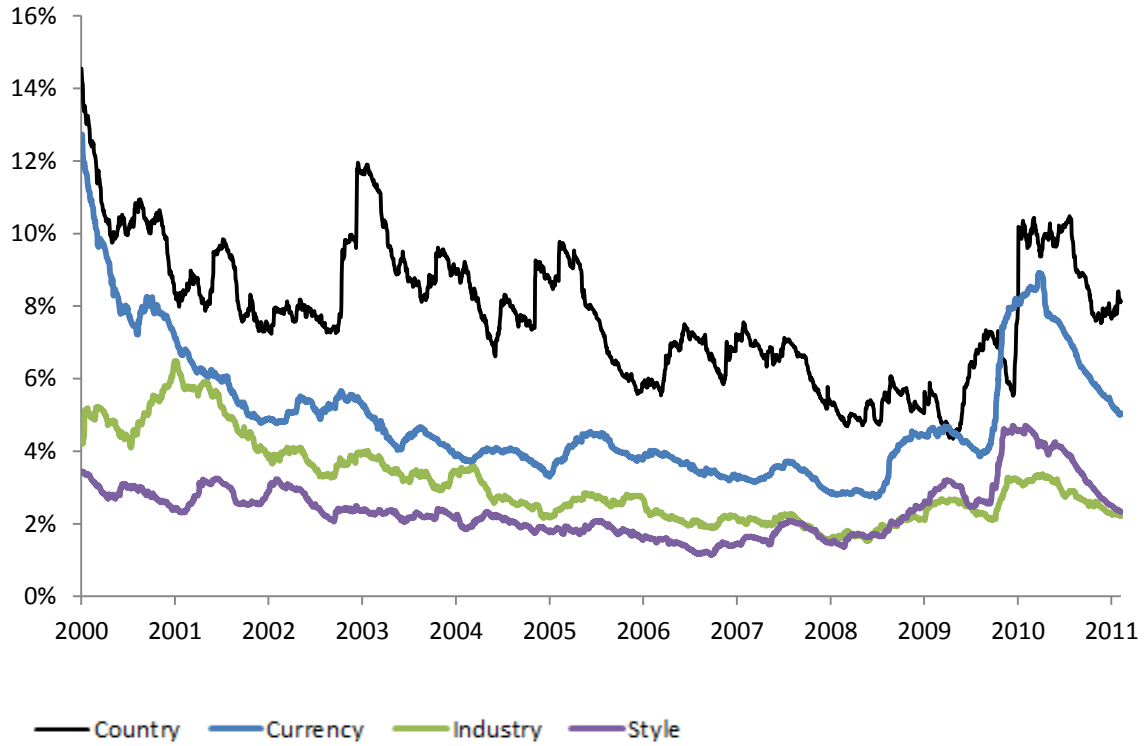
Source: FTSE, Axioma, Inc.

Figure 11. APxJP Cross-Sectional Dispersion of Monthly Returns



Source: FTSE, Axioma, Inc.

Figure 12. APxJP Medium Horizon Fundamental Model, Cross-Sectional Dispersion, Common Factors



Source: Axioma, Inc.

Table 4.Style, Currency and Country Correlations

| As of 10/31/2011 | Asian | | | | | Short- | Medium- | Exchange | | | | Domestic |
|--------------------|--------|-------|----------|--------|-------|----------|----------|------------|-----------|-----------|-------|----------|
| | Market | Value | Leverage | Growth | Size | Term Mom | Term Mom | Volatility | Liquidity | Rate Sens | China | |
| Asian Market | 1 | 0.36 | 0.19 | 0.29 | 0.41 | -0.61 | -0.22 | 0.89 | 0.28 | -0.03 | -0.55 | |
| Value | 0.36 | 1 | 0.30 | -0.03 | 0.30 | -0.29 | -0.24 | 0.30 | -0.08 | -0.07 | -0.17 | |
| Leverage | 0.19 | 0.30 | 1 | 0.11 | -0.01 | -0.03 | -0.04 | 0.16 | -0.03 | -0.01 | -0.09 | |
| Growth | 0.29 | -0.03 | 0.11 | 1 | 0.09 | -0.24 | -0.01 | 0.25 | 0.08 | -0.13 | -0.25 | |
| Size | 0.41 | 0.30 | -0.01 | 0.09 | 1 | -0.29 | -0.06 | 0.33 | -0.05 | -0.14 | -0.23 | |
| Short-Term Mom | -0.61 | -0.29 | -0.03 | -0.24 | -0.29 | 1 | 0.21 | -0.56 | -0.25 | 0.14 | 0.38 | |
| Medium-Term Mom | -0.22 | -0.24 | -0.04 | -0.01 | -0.06 | 0.21 | 1 | -0.27 | -0.08 | -0.08 | 0.09 | |
| Volatility | 0.89 | 0.30 | 0.16 | 0.25 | 0.33 | -0.56 | -0.27 | 1 | 0.27 | -0.03 | -0.53 | |
| Liquidity | 0.28 | -0.08 | -0.03 | 0.08 | -0.05 | -0.25 | -0.08 | 0.27 | 1 | 0.05 | -0.05 | |
| Exchange Rate Sens | -0.03 | -0.07 | -0.01 | -0.13 | -0.14 | 0.14 | -0.08 | -0.03 | 0.05 | 1 | 0.08 | |
| Domestic China | -0.55 | -0.17 | -0.09 | -0.25 | -0.23 | 0.38 | 0.09 | -0.53 | -0.05 | 0.08 | 1 | |

| As of 7/29/2011 | Asian | | | | | Short- | Medium- | Exchange | | | | Domestic |
|--------------------|--------|-------|----------|--------|-------|----------|----------|------------|-----------|-----------|-------|----------|
| | Market | Value | Leverage | Growth | Size | Term Mom | Term Mom | Volatility | Liquidity | Rate Sens | China | |
| Asian Market | 1 | 0.33 | 0.10 | 0.21 | 0.42 | -0.47 | -0.19 | 0.85 | 0.18 | 0.08 | -0.47 | |
| Value | 0.33 | 1 | 0.27 | -0.03 | 0.22 | -0.19 | -0.20 | 0.24 | -0.05 | 0.06 | -0.10 | |
| Leverage | 0.10 | 0.27 | 1 | 0.11 | -0.06 | 0.01 | 0.02 | 0.04 | -0.01 | 0.06 | 0.02 | |
| Growth | 0.21 | -0.03 | 0.11 | 1 | 0.10 | -0.11 | 0.06 | 0.08 | -0.08 | -0.06 | -0.20 | |
| Size | 0.42 | 0.22 | -0.06 | 0.10 | 1 | -0.13 | 0.00 | 0.27 | -0.10 | 0.05 | -0.23 | |
| Short-Term Mom | -0.47 | -0.19 | 0.01 | -0.11 | -0.13 | 1 | 0.17 | -0.43 | -0.20 | 0.00 | 0.27 | |
| Medium-Term Mom | -0.19 | -0.20 | 0.02 | 0.06 | 0.00 | 0.17 | 1 | -0.27 | -0.07 | -0.09 | 0.07 | |
| Volatility | 0.85 | 0.24 | 0.04 | 0.08 | 0.27 | -0.43 | -0.27 | 1 | 0.20 | 0.06 | -0.44 | |
| Liquidity | 0.18 | -0.05 | -0.01 | -0.08 | -0.10 | -0.20 | -0.07 | 0.20 | 1 | 0.03 | 0.01 | |
| Exchange Rate Sens | 0.08 | 0.06 | 0.06 | -0.06 | 0.05 | 0.00 | -0.09 | 0.06 | 0.03 | 1 | 0.01 | |
| Domestic China | -0.47 | -0.10 | 0.02 | -0.20 | -0.23 | 0.27 | 0.07 | -0.44 | 0.01 | 0.01 | 1 | |

| Change | Asian | | | | | Short- | Medium- | Exchange | | | | Domestic |
|--------------------|--------|-------|----------|--------|-------|----------|----------|------------|-----------|-----------|-------|----------|
| | Market | Value | Leverage | Growth | Size | Term Mom | Term Mom | Volatility | Liquidity | Rate Sens | China | |
| Asian Market | 0 | 0.04 | 0.09 | 0.09 | -0.01 | -0.14 | -0.04 | 0.04 | 0.09 | -0.11 | -0.08 | |
| Value | 0.04 | 0 | 0.02 | 0.00 | 0.08 | -0.10 | -0.04 | 0.06 | -0.03 | -0.13 | -0.07 | |
| Leverage | 0.09 | 0.02 | 0 | 0.00 | 0.05 | -0.04 | -0.06 | 0.12 | -0.02 | -0.06 | -0.11 | |
| Growth | 0.09 | 0.00 | 0.00 | 0 | -0.01 | -0.13 | -0.07 | 0.17 | 0.15 | -0.07 | -0.05 | |
| Size | -0.01 | 0.08 | 0.05 | -0.01 | 0 | -0.16 | -0.05 | 0.06 | 0.04 | -0.19 | 0.00 | |
| Short-Term Mom | -0.14 | -0.10 | -0.04 | -0.13 | -0.16 | 0 | 0.03 | -0.12 | -0.05 | 0.14 | 0.11 | |
| Medium-Term Mom | -0.04 | -0.04 | -0.06 | -0.07 | -0.05 | 0.03 | 0 | 0.00 | -0.02 | 0.01 | 0.01 | |
| Volatility | 0.04 | 0.06 | 0.12 | 0.17 | 0.06 | -0.12 | 0.00 | 0 | 0.07 | -0.09 | -0.09 | |
| Liquidity | 0.09 | -0.03 | -0.02 | 0.15 | 0.04 | -0.05 | -0.02 | 0.07 | 0 | 0.02 | -0.06 | |
| Exchange Rate Sens | -0.11 | -0.13 | -0.06 | -0.07 | -0.19 | 0.14 | 0.01 | -0.09 | 0.02 | 0 | 0.06 | |
| Domestic China | -0.08 | -0.07 | -0.11 | -0.05 | 0.00 | 0.11 | 0.01 | -0.09 | -0.06 | 0.06 | 0 | |














































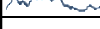











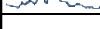





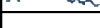











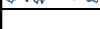





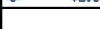





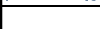






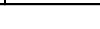

Source: Axioma, Inc.

Conclusion

The last three months have been characterized by increasing volatility, high correlations and low dispersion among stocks, volatile factor returns, little risk distinction between industries, countries, currencies or styles – overall, a difficult environment for investors to produce high active returns (not that it is ever very easy!)

















































We hope you, our readers, find this information helpful in your investment process. We will continue to refine and enhance this publication, and we look forward to suggestions about how we can improve this report to ensure it is a useful tool for managing portfolio risk.





























































Appendix 1. Predicted Country Volatility

| As of 10/31/2011 | Month End | | | Change from | | Trends | | |
|--------------------|-----------|-------------|----------|-------------|----------|---|---|---|
| | Current | Quarter Ago | Year Ago | Quarter Ago | Year Ago | 5 year | 1 Year | 3 Month |
| Australia | | | | | | | | |
| Medium Horizon | 12.0 | 9.6 | 9.3 | 2.4 | 2.7 |  |  |  |
| Short Horizon | 13.5 | 10.6 | 7.7 | 2.9 | 5.8 |  |  |  |
| Bangladesh | | | | | | | | |
| Medium Horizon | 36.2 | 35.2 | 18.1 | 1.1 | 18.2 |  |  |  |
| Short Horizon | 40.7 | 32.3 | 14.1 | 8.4 | 26.6 |  |  |  |
| China | | | | | | | | |
| Medium Horizon | 13.1 | 8.6 | 8.4 | 4.5 | 4.7 |  |  |  |
| Short Horizon | 15.5 | 9.3 | 7.0 | 6.2 | 8.6 |  |  |  |
| Hong Kong | | | | | | | | |
| Medium Horizon | 8.8 | 6.2 | 6.7 | 2.6 | 2.2 |  |  |  |
| Short Horizon | 10.1 | 5.8 | 6.4 | 4.3 | 3.7 |  |  |  |
| India | | | | | | | | |
| Medium Horizon | 15.7 | 11.9 | 9.4 | 3.8 | 6.3 |  |  |  |
| Short Horizon | 16.5 | 12.1 | 8.0 | 4.4 | 8.5 |  |  |  |
| Indonesia | | | | | | | | |
| Medium Horizon | 15.4 | 11.9 | 15.1 | 3.5 | 0.3 |  |  |  |
| Short Horizon | 16.2 | 10.3 | 13.4 | 5.8 | 2.8 |  |  |  |
| Korea, Republic of | | | | | | | | |
| Medium Horizon | 14.2 | 8.7 | 9.2 | 5.4 | 5.0 |  |  |  |
| Short Horizon | 16.7 | 8.6 | 8.3 | 8.1 | 8.4 |  |  |  |
| Malaysia | | | | | | | | |
| Medium Horizon | 9.6 | 7.3 | 6.9 | 2.3 | 2.7 |  |  |  |
| Short Horizon | 10.3 | 7.5 | 6.2 | 2.7 | 4.0 |  |  |  |
| New Zealand | | | | | | | | |
| Medium Horizon | 10.1 | 7.9 | 9.1 | 2.2 | 0.9 |  |  |  |
| Short Horizon | 11.2 | 8.2 | 8.7 | 3.0 | 2.5 |  |  |  |
| Pakistan | | | | | | | | |
| Medium Horizon | 19.1 | 13.5 | 22.4 | 5.7 | -3.2 |  |  |  |
| Short Horizon | 21.2 | 12.8 | 16.4 | 8.4 | 4.9 |  |  |  |
| Philippines | | | | | | | | |
| Medium Horizon | 15.2 | 11.8 | 13.6 | 3.4 | 1.7 |  |  |  |
| Short Horizon | 16.1 | 10.0 | 11.9 | 6.1 | 4.2 |  |  |  |
| Singapore | | | | | | | | |
| Medium Horizon | 10.8 | 8.3 | 7.9 | 2.5 | 2.9 |  |  |  |
| Short Horizon | 12.1 | 8.3 | 7.0 | 3.8 | 5.1 |  |  |  |
| Sri Lanka | | | | | | | | |
| Medium Horizon | 21.6 | 20.0 | 25.2 | 1.6 | -3.7 |  |  |  |
| Short Horizon | 22.4 | 21.1 | 26.8 | 1.4 | -4.3 |  |  |  |
| Taiwan | | | | | | | | |
| Medium Horizon | 11.4 | 8.9 | 10.5 | 2.4 | 0.9 |  |  |  |
| Short Horizon | 12.2 | 8.5 | 8.7 | 3.7 | 3.6 |  |  |  |
| Thailand | | | | | | | | |
| Medium Horizon | 15.8 | 13.1 | 14.7 | 2.8 | 1.2 |  |  |  |
| Short Horizon | 16.9 | 12.9 | 14.7 | 4.1 | 2.2 |  |  |  |
| Vietnam | | | | | | | | |
| Medium Horizon | 31.4 | 28.2 | 26.7 | 3.2 | 4.7 |  |  |  |
| Short Horizon | 32.3 | 28.0 | 24.8 | 4.3 | 7.5 |  |  |  |

Source: Axioma, Inc.









































































Appendix 2. Predicted Currency Volatility























































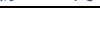

















| As of 10/31/2011 | Month End | | | Change from | | Trends | | |
|------------------|-----------|-------------|----------|-------------|----------|---|---|---|
| | Current | Quarter Ago | Year Ago | Quarter Ago | Year Ago | 5 year | 1 Year | 3 Month |
| AUD | | | | | | | | |
| Medium Horizon | 15.9 | 11.4 | 13.6 | 4.5 | 2.2 |  |  |  |
| Short Horizon | 17.9 | 11.6 | 12.8 | 6.3 | 5.1 |  |  |  |
| BDT | | | | | | | | |
| Medium Horizon | 2.5 | 1.9 | 1.8 | 0.6 | 0.7 |  |  |  |
| Short Horizon | 2.8 | 1.7 | 2.2 | 1.1 | 0.6 |  |  |  |
| CNY | | | | | | | | |
| Medium Horizon | 2.0 | 1.8 | 1.5 | 0.1 | 0.5 |  |  |  |
| Short Horizon | 2.1 | 1.6 | 1.9 | 0.5 | 0.2 |  |  |  |
| EUR | | | | | | | | |
| Medium Horizon | 12.9 | 10.8 | 10.7 | 2.2 | 2.2 |  |  |  |
| Short Horizon | 14.5 | 11.4 | 10.1 | 3.1 | 4.4 |  |  |  |
| HKD | | | | | | | | |
| Medium Horizon | 0.7 | 0.7 | 0.7 | 0.1 | 0.1 |  |  |  |
| Short Horizon | 0.7 | 0.7 | 0.7 | 0.1 | 0.0 |  |  |  |
| IDR | | | | | | | | |
| Medium Horizon | 4.7 | 3.1 | 4.7 | 1.6 | 0.1 |  |  |  |
| Short Horizon | 5.4 | 3.2 | 4.1 | 2.1 | 1.2 |  |  |  |
| INR | | | | | | | | |
| Medium Horizon | 7.0 | 5.2 | 6.8 | 1.8 | 0.2 |  |  |  |
| Short Horizon | 7.9 | 4.8 | 6.9 | 3.1 | 1.0 |  |  |  |
| JPY | | | | | | | | |
| Medium Horizon | 10.2 | 8.8 | 10.9 | 1.4 | -0.7 |  |  |  |
| Short Horizon | 10.7 | 8.2 | 9.4 | 2.5 | 1.3 |  |  |  |

| As of 10/31/2011 | Month End | | | Change from | | Trends | | |
|------------------|-----------|-------------|----------|-------------|----------|---|---|---|
| | Current | Quarter Ago | Year Ago | Quarter Ago | Year Ago | 5 year | 1 Year | 3 Month |
| KRW | | | | | | | | |
| Medium Horizon | 11.4 | 8.1 | 12.2 | 3.3 | -0.9 |  |  |  |
| Short Horizon | 12.3 | 7.7 | 11.1 | 4.6 | 1.2 |  |  |  |
| LKR | | | | | | | | |
| Medium Horizon | 1.1 | 1.2 | 1.3 | -0.1 | -0.2 |  |  |  |
| Short Horizon | 0.9 | 1.1 | 1.3 | -0.2 | -0.4 |  |  |  |
| MYR | | | | | | | | |
| Medium Horizon | 6.8 | 5.3 | 7.2 | 1.5 | -0.4 |  |  |  |
| Short Horizon | 7.6 | 5.6 | 6.8 | 2.0 | 0.8 |  |  |  |
| NZD | | | | | | | | |
| Medium Horizon | 15.9 | 12.6 | 13.9 | 3.3 | 2.0 |  |  |  |
| Short Horizon | 17.4 | 12.9 | 13.1 | 4.5 | 4.3 |  |  |  |
| PHP | | | | | | | | |
| Medium Horizon | 5.3 | 5.2 | 6.4 | 0.1 | -1.2 |  |  |  |
| Short Horizon | 5.5 | 4.5 | 6.2 | 1.0 | -0.8 |  |  |  |
| PKR | | | | | | | | |
| Medium Horizon | 2.7 | 2.6 | 2.5 | 0.1 | 0.2 |  |  |  |
| Short Horizon | 2.7 | 2.7 | 2.1 | 0.0 | 0.7 |  |  |  |
| SGD | | | | | | | | |
| Medium Horizon | 7.8 | 5.1 | 5.1 | 2.7 | 2.6 |  |  |  |
| Short Horizon | 9.0 | 5.3 | 4.9 | 3.8 | 4.1 |  |  |  |
| THB | | | | | | | | |
| Medium Horizon | 4.7 | 4.4 | 3.5 | 0.4 | 1.2 |  |  |  |
| Short Horizon | 5.1 | 4.2 | 3.8 | 0.9 | 1.3 |  |  |  |
| TWD | | | | | | | | |
| Medium Horizon | 5.0 | 4.4 | 4.0 | 0.6 | 1.0 |  |  |  |
| Short Horizon | 4.9 | 4.0 | 4.0 | 0.9 | 0.9 |  |  |  |
| VND | | | | | | | | |
| Medium Horizon | 2.3 | 2.3 | 1.8 | 0.0 | 0.5 |  |  |  |
| Short Horizon | 2.2 | 2.7 | 1.4 | -0.5 | 0.8 |  |  |  |

Source: Axioma, Inc.

Appendix 3. Predicted Industry Volatility

| | Month End | | | Change from | | Trends | | |
|------------------------------------|-----------|-------------|----------|-------------|----------|---|---|---|
| | Current | Quarter Ago | Year Ago | Quarter Ago | Year Ago | 5 year | 1 Year | 3 Month |
| As of 10/31/2011 | | | | | | | | |
| Automobiles & Components | | | | | | | | |
| Medium Horizon | 9.5 | 8.4 | 8.9 | 1.2 | 0.7 |  |  |  |
| Short Horizon | 9.7 | 7.7 | 8.7 | 2.0 | 1.0 |  |  |  |
| Banks | | | | | | | | |
| Medium Horizon | 5.1 | 3.6 | 4.0 | 1.5 | 1.1 |  |  |  |
| Short Horizon | 5.5 | 3.0 | 3.2 | 2.6 | 2.3 |  |  |  |
| Capital Goods | | | | | | | | |
| Medium Horizon | 3.6 | 2.9 | 3.2 | 0.8 | 0.5 |  |  |  |
| Short Horizon | 3.6 | 2.6 | 3.1 | 1.0 | 0.4 |  |  |  |
| Commercial & Professional Services | | | | | | | | |
| Medium Horizon | 5.6 | 5.3 | 5.9 | 0.4 | -0.3 |  |  |  |
| Short Horizon | 5.5 | 4.9 | 5.6 | 0.6 | -0.1 |  |  |  |
| Consumer Durables & Apparel | | | | | | | | |
| Medium Horizon | 4.1 | 4.7 | 4.4 | -0.6 | -0.2 |  |  |  |
| Short Horizon | 3.8 | 4.5 | 4.1 | -0.7 | -0.3 |  |  |  |
| Consumer Services | | | | | | | | |
| Medium Horizon | 7.1 | 5.9 | 5.7 | 1.3 | 1.5 |  |  |  |
| Short Horizon | 7.8 | 5.4 | 6.1 | 2.5 | 1.8 |  |  |  |
| Diversified Financials | | | | | | | | |
| Medium Horizon | 4.1 | 3.3 | 3.8 | 0.8 | 0.2 |  |  |  |
| Short Horizon | 4.6 | 3.1 | 3.8 | 1.4 | 0.8 |  |  |  |
| Energy | | | | | | | | |
| Medium Horizon | 6.4 | 5.3 | 4.9 | 1.2 | 1.5 |  |  |  |
| Short Horizon | 6.7 | 4.8 | 4.7 | 1.9 | 2.1 |  |  |  |
| Food & Staples Retailing | | | | | | | | |
| Medium Horizon | 8.8 | 7.4 | 8.0 | 1.4 | 0.9 |  |  |  |
| Short Horizon | 9.5 | 7.7 | 8.0 | 1.8 | 1.5 |  |  |  |
| Food, Beverage & Tobacco | | | | | | | | |
| Medium Horizon | 4.7 | 4.0 | 4.2 | 0.7 | 0.5 |  |  |  |
| Short Horizon | 5.0 | 4.1 | 4.1 | 0.9 | 0.9 |  |  |  |
| Health Care Equip & Services | | | | | | | | |
| Medium Horizon | 6.7 | 5.5 | 6.4 | 1.2 | 0.3 |  |  |  |
| Short Horizon | 7.5 | 5.8 | 6.5 | 1.6 | 1.0 |  |  |  |
| Household & Personal Prods | | | | | | | | |
| Medium Horizon | 10.5 | 8.2 | 10.3 | 2.3 | 0.2 |  |  |  |
| Short Horizon | 11.9 | 7.9 | 9.4 | 4.0 | 2.5 |  |  |  |

| As of 10/31/2011 | Month End | | | Change from | | Trends | | |
|--|-----------|-------------|----------|-------------|----------|---|---|---|
| | Current | Quarter Ago | Year Ago | Quarter Ago | Year Ago | 5 year | 1 Year | 3 Month |
| Insurance | | | | | | | | |
| Medium Horizon | 7.1 | 5.8 | 6.8 | 1.2 | 0.3 |  |  |  |
| Short Horizon | 7.6 | 5.3 | 6.7 | 2.3 | 1.0 |  |  |  |
| Materials | | | | | | | | |
| Medium Horizon | 5.3 | 4.1 | 4.7 | 1.2 | 0.6 |  |  |  |
| Short Horizon | 6.1 | 3.6 | 4.6 | 2.5 | 1.6 |  |  |  |
| Media | | | | | | | | |
| Medium Horizon | 6.5 | 5.3 | 5.2 | 1.2 | 1.3 |  |  |  |
| Short Horizon | 7.1 | 5.1 | 5.0 | 1.9 | 2.1 |  |  |  |
| Pharmas, Biotech & Life Sci | | | | | | | | |
| Medium Horizon | 6.3 | 5.6 | 6.9 | 0.7 | -0.6 |  |  |  |
| Short Horizon | 6.5 | 5.7 | 6.6 | 0.8 | -0.2 |  |  |  |
| Real Estate | | | | | | | | |
| Medium Horizon | 4.8 | 4.1 | 5.1 | 0.7 | -0.3 |  |  |  |
| Short Horizon | 4.9 | 4.0 | 4.5 | 0.9 | 0.4 |  |  |  |
| Retailing | | | | | | | | |
| Medium Horizon | 8.4 | 6.6 | 5.5 | 1.8 | 2.9 |  |  |  |
| Short Horizon | 9.7 | 6.3 | 5.7 | 3.4 | 4.0 |  |  |  |
| Semicond & Semi Equip | | | | | | | | |
| Medium Horizon | 12.8 | 11.2 | 11.6 | 1.5 | 1.1 |  |  |  |
| Short Horizon | 13.2 | 11.9 | 11.8 | 1.3 | 1.4 |  |  |  |
| Software & Services | | | | | | | | |
| Medium Horizon | 8.0 | 5.0 | 6.5 | 3.0 | 1.6 |  |  |  |
| Short Horizon | 9.2 | 4.3 | 5.7 | 4.9 | 3.5 |  |  |  |
| Tech Hardware & Equip | | | | | | | | |
| Medium Horizon | 8.2 | 7.3 | 7.6 | 0.8 | 0.5 |  |  |  |
| Short Horizon | 8.6 | 7.6 | 8.0 | 1.0 | 0.7 |  |  |  |
| Telecommunication Services | | | | | | | | |
| Medium Horizon | 9.4 | 5.5 | 6.3 | 3.9 | 3.1 |  |  |  |
| Short Horizon | 10.9 | 5.2 | 6.0 | 5.8 | 5.0 |  |  |  |
| Transportation | | | | | | | | |
| Medium Horizon | 4.3 | 4.3 | 4.8 | 0.1 | -0.4 |  |  |  |
| Short Horizon | 4.4 | 4.0 | 4.3 | 0.4 | 0.1 |  |  |  |
| Utilities | | | | | | | | |
| Medium Horizon | 6.1 | 4.0 | 4.7 | 2.1 | 1.5 |  |  |  |
| Short Horizon | 7.1 | 4.0 | 4.6 | 3.1 | 2.5 |  |  |  |

Source: Axioma, Inc.

Appendix 4. Asia ex-Japan Country Correlations

The Axioma country factors look at returns in-excess of the market factor, so correlations in the following tables are all relative to the Asia Pac x Japan market.

| As of 10/31/11 | Taiwan | Vietnam | Australia | China | Hong Kong | India | Indonesia | Rep of Korea | Malaysia | Zealand | Pakistan | Philippines | Singapore | Thailand | Sri Lanka | Bangladesh |
|----------------|--------|---------|-----------|-------|-----------|-------|-----------|--------------|----------|---------|----------|-------------|-----------|----------|-----------|------------|
| Taiwan | 1 | -0.10 | 0.10 | -0.28 | -0.21 | -0.22 | -0.16 | 0.07 | -0.06 | 0.04 | 0.06 | 0.04 | -0.16 | -0.13 | -0.04 | 0.01 |
| Vietnam | -0.10 | 1 | 0.16 | -0.18 | -0.15 | 0.10 | -0.09 | 0.03 | 0.06 | 0.28 | 0.15 | 0.03 | -0.05 | 0.03 | 0.24 | 0.20 |
| Australia | 0.10 | 0.16 | 1 | -0.32 | -0.24 | -0.23 | -0.14 | -0.04 | 0.00 | 0.46 | 0.16 | 0.03 | -0.05 | -0.15 | 0.12 | 0.03 |
| China | -0.28 | -0.18 | -0.32 | 1 | 0.63 | -0.31 | -0.03 | -0.28 | -0.02 | -0.23 | -0.28 | -0.14 | 0.07 | -0.08 | -0.18 | -0.20 |
| Hong Kong | -0.21 | -0.15 | -0.24 | 0.63 | 1 | -0.41 | -0.02 | -0.17 | -0.01 | -0.16 | -0.21 | -0.13 | 0.20 | 0.02 | -0.08 | -0.17 |
| India | -0.22 | 0.10 | -0.23 | -0.31 | -0.41 | 1 | -0.13 | -0.40 | -0.17 | -0.01 | 0.09 | -0.12 | -0.17 | -0.06 | 0.13 | 0.07 |
| Indonesia | -0.16 | -0.09 | -0.14 | -0.03 | -0.02 | -0.13 | 1 | -0.07 | 0.15 | -0.16 | -0.08 | 0.19 | 0.08 | 0.15 | -0.05 | 0.17 |
| Rep of Korea | 0.07 | 0.03 | -0.04 | -0.28 | -0.17 | -0.40 | -0.07 | 1 | -0.04 | -0.08 | 0.04 | 0.05 | -0.09 | 0.02 | -0.03 | 0.05 |
| Malaysia | -0.06 | 0.06 | 0.00 | -0.02 | -0.01 | -0.17 | 0.15 | -0.04 | 1 | 0.14 | 0.13 | 0.22 | 0.10 | 0.11 | 0.02 | -0.02 |
| New Zealand | 0.04 | 0.28 | 0.46 | -0.23 | -0.16 | -0.01 | -0.16 | -0.08 | 0.14 | 1 | 0.33 | 0.12 | -0.01 | -0.04 | 0.31 | 0.08 |
| Pakistan | 0.06 | 0.15 | 0.16 | -0.28 | -0.21 | 0.09 | -0.08 | 0.04 | 0.13 | 0.33 | 1 | 0.11 | -0.06 | 0.04 | 0.19 | 0.11 |
| Philippines | 0.04 | 0.03 | 0.03 | -0.14 | -0.13 | -0.12 | 0.19 | 0.05 | 0.22 | 0.12 | 0.11 | 1 | -0.20 | 0.09 | 0.04 | 0.06 |
| Singapore | -0.16 | -0.05 | -0.05 | 0.07 | 0.20 | -0.17 | 0.08 | -0.09 | 0.10 | -0.01 | -0.06 | -0.20 | 1 | 0.00 | -0.03 | -0.05 |
| Thailand | -0.13 | 0.03 | -0.15 | -0.08 | 0.02 | -0.06 | 0.15 | 0.02 | 0.11 | -0.04 | 0.04 | 0.09 | 0.00 | 1 | 0.05 | -0.03 |
| Sri Lanka | -0.04 | 0.24 | 0.12 | -0.18 | -0.08 | 0.13 | -0.05 | -0.03 | 0.02 | 0.31 | 0.19 | 0.04 | -0.03 | 0.05 | 1 | 0.11 |
| Bangladesh | 0.01 | 0.20 | 0.03 | -0.20 | -0.17 | 0.07 | 0.17 | 0.05 | -0.02 | 0.08 | 0.11 | 0.06 | -0.05 | -0.03 | 0.11 | 1 |

| As of 7/29/11 | Taiwan | Vietnam | Australia | China | Hong Kong | India | Indonesia | Rep of Korea | Malaysia | Zealand | Pakistan | Philippines | Singapore | Thailand | Sri Lanka | Bangladesh |
|---------------|--------|---------|-----------|-------|-----------|-------|-----------|--------------|----------|---------|----------|-------------|-----------|----------|-----------|------------|
| Taiwan | 1 | -0.05 | 0.05 | -0.25 | -0.12 | -0.29 | -0.09 | 0.06 | -0.09 | -0.01 | 0.00 | -0.03 | -0.07 | -0.11 | -0.07 | 0.02 |
| Vietnam | -0.05 | 1 | 0.14 | -0.12 | -0.08 | -0.02 | -0.09 | 0.09 | 0.11 | 0.20 | 0.11 | 0.03 | -0.08 | -0.02 | 0.11 | 0.11 |
| Australia | 0.05 | 0.14 | 1 | -0.32 | -0.21 | -0.32 | -0.12 | 0.01 | 0.09 | 0.42 | 0.12 | -0.01 | 0.06 | -0.10 | 0.06 | -0.07 |
| China | -0.25 | -0.12 | -0.32 | 1 | 0.58 | -0.24 | -0.12 | -0.29 | -0.03 | -0.11 | -0.16 | -0.07 | 0.02 | -0.10 | -0.09 | -0.18 |
| Hong Kong | -0.12 | -0.08 | -0.21 | 0.58 | 1 | -0.35 | -0.08 | -0.24 | 0.05 | -0.08 | -0.08 | -0.05 | 0.23 | -0.05 | 0.03 | -0.13 |
| India | -0.29 | -0.02 | -0.32 | -0.24 | -0.35 | 1 | -0.15 | -0.35 | -0.31 | -0.21 | -0.10 | -0.16 | -0.29 | -0.13 | 0.02 | 0.00 |
| Indonesia | -0.09 | -0.09 | -0.12 | -0.12 | -0.08 | -0.15 | 1 | -0.01 | 0.10 | -0.12 | -0.05 | 0.24 | 0.17 | 0.18 | -0.02 | 0.27 |
| Rep of Korea | 0.06 | 0.09 | 0.01 | -0.29 | -0.24 | -0.35 | -0.01 | 1 | 0.07 | 0.01 | 0.14 | 0.07 | -0.15 | 0.11 | 0.03 | 0.11 |
| Malaysia | -0.09 | 0.11 | 0.09 | -0.03 | 0.05 | -0.31 | 0.10 | 0.07 | 1 | 0.20 | 0.14 | 0.11 | 0.25 | 0.10 | 0.05 | 0.05 |
| New Zealand | -0.01 | 0.20 | 0.42 | -0.11 | -0.02 | -0.21 | -0.12 | 0.01 | 0.20 | 1 | 0.24 | 0.08 | 0.03 | -0.03 | 0.24 | 0.00 |
| Pakistan | 0.00 | 0.11 | 0.12 | -0.16 | -0.08 | -0.10 | -0.05 | 0.14 | 0.14 | 0.24 | 1 | 0.10 | -0.04 | 0.04 | 0.09 | 0.09 |
| Philippines | -0.03 | 0.03 | -0.01 | -0.07 | -0.05 | -0.16 | 0.24 | 0.07 | 0.11 | 0.08 | 0.10 | 1 | -0.07 | 0.14 | 0.03 | 0.15 |
| Singapore | -0.07 | -0.08 | 0.06 | 0.02 | 0.23 | -0.29 | 0.17 | -0.15 | 0.25 | 0.03 | -0.04 | -0.07 | 1 | 0.10 | 0.03 | -0.11 |
| Thailand | -0.11 | -0.02 | -0.10 | -0.10 | -0.05 | -0.13 | 0.18 | 0.11 | 0.10 | -0.03 | 0.04 | 0.14 | 0.00 | 1 | 0.04 | 0.06 |
| Sri Lanka | -0.07 | 0.11 | 0.06 | -0.09 | 0.03 | 0.02 | -0.02 | 0.03 | 0.05 | 0.24 | 0.09 | 0.03 | 0.03 | 0.04 | 1 | -0.02 |
| Bangladesh | 0.02 | 0.11 | -0.07 | -0.18 | -0.13 | 0.00 | 0.27 | 0.11 | 0.05 | 0.00 | 0.09 | 0.15 | -0.11 | 0.06 | -0.02 | 1 |

| Change | Taiwan | Vietnam | Australia | China | Hong Kong | India | Indonesia | Rep of Korea | Malaysia | Zealand | Pakistan | Philippines | Singapore | Thailand | Sri Lanka | Bangladesh |
|--------------|--------|---------|-----------|-------|-----------|-------|-----------|--------------|----------|---------|----------|-------------|-----------|----------|-----------|------------|
| Taiwan | 0 | -0.05 | 0.06 | -0.03 | -0.09 | 0.07 | -0.07 | 0.02 | 0.04 | 0.05 | 0.05 | 0.07 | -0.09 | -0.03 | 0.03 | 0.00 |
| Vietnam | -0.05 | 0 | 0.03 | -0.06 | -0.07 | 0.13 | 0.00 | -0.07 | -0.05 | 0.08 | 0.04 | -0.01 | 0.03 | 0.04 | 0.13 | 0.09 |
| Australia | 0.06 | 0.03 | 0 | -0.01 | -0.03 | 0.09 | -0.02 | -0.05 | -0.09 | 0.04 | 0.04 | 0.04 | -0.11 | -0.05 | 0.05 | 0.10 |
| China | -0.03 | -0.06 | -0.01 | 0 | 0.05 | -0.08 | 0.09 | 0.01 | 0.01 | -0.12 | -0.12 | -0.07 | 0.04 | 0.03 | -0.08 | -0.02 |
| Hong Kong | -0.09 | -0.07 | -0.03 | 0.05 | 0 | -0.06 | 0.06 | 0.07 | -0.07 | -0.14 | -0.14 | -0.08 | -0.03 | 0.07 | -0.12 | -0.04 |
| India | 0.07 | 0.13 | 0.09 | -0.08 | -0.06 | 0 | 0.03 | -0.05 | 0.14 | 0.20 | 0.19 | 0.04 | 0.12 | 0.07 | 0.11 | 0.08 |
| Indonesia | -0.07 | 0.00 | -0.02 | 0.09 | 0.06 | 0.03 | 0 | -0.05 | 0.05 | -0.04 | -0.03 | -0.05 | -0.09 | -0.03 | -0.02 | -0.10 |
| Rep of Korea | 0.02 | -0.07 | -0.05 | 0.01 | 0.07 | -0.05 | -0.05 | 0 | -0.11 | -0.09 | -0.10 | -0.02 | 0.06 | -0.09 | -0.06 | -0.06 |
| Malaysia | 0.04 | -0.05 | -0.09 | 0.01 | -0.07 | 0.14 | 0.05 | -0.11 | 0 | -0.06 | -0.01 | 0.11 | -0.15 | 0.01 | -0.03 | -0.07 |
| New Zealand | 0.05 | 0.08 | 0.04 | -0.12 | -0.14 | 0.20 | -0.04 | -0.09 | -0.06 | 0 | 0.09 | 0.04 | -0.04 | -0.01 | 0.06 | 0.08 |
| Pakistan | 0.05 | 0.04 | 0.04 | -0.12 | -0.14 | 0.19 | -0.03 | -0.10 | -0.01 | 0.09 | 0 | 0.01 | -0.02 | 0.00 | 0.10 | 0.02 |
| Philippines | 0.07 | -0.01 | 0.04 | -0.07 | -0.08 | 0.04 | -0.05 | -0.02 | 0.11 | 0.04 | 0.01 | 0 | -0.13 | -0.05 | 0.01 | -0.09 |
| Singapore | -0.09 | 0.03 | -0.11 | 0.04 | -0.03 | 0.12 | -0.09 | 0.06 | -0.15 | -0.04 | -0.02 | -0.13 | 0 | -0.01 | -0.06 | 0.05 |
| Thailand | -0.03 | 0.04 | -0.05 | 0.03 | 0.07 | 0.07 | -0.03 | -0.09 | 0.01 | -0.01 | 0.00 | -0.05 | -0.01 | 0 | 0.01 | -0.09 |
| Sri Lanka | 0.03 | 0.13 | 0.05 | -0.08 | -0.12 | 0.11 | -0.02 | -0.06 | -0.03 | 0.06 | 0.10 | 0.01 | -0.06 | 0.01 | 0 | 0.13 |
| Bangladesh | 0.00 | 0.09 | 0.10 | -0.02 | -0.04 | 0.08 | -0.10 | -0.06 | -0.07 | 0.08 | 0.02 | -0.09 | 0.05 | -0.09 | 0.13 | 0 |

Appendix 5. Asia Ex-Japan Currency Correlations

| 31 Oct 2011 | PKR | VND | AUD | TWD | THB | MYR | IDR | KRW | INR | CNY | BDT | NZD | PHP | LKR | SGD | HKD | EUR | JPY |
|-------------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|
| PKR | 1 | 0.00 | 0.04 | 0.03 | -0.02 | 0.01 | 0.03 | 0.04 | 0.00 | 0.01 | 0.00 | 0.02 | 0.02 | -0.02 | -0.03 | 0.00 | -0.01 | -0.06 |
| VND | 0.00 | 1 | 0.07 | 0.04 | 0.03 | 0.05 | 0.01 | 0.06 | 0.06 | -0.01 | -0.03 | 0.04 | 0.04 | 0.04 | 0.02 | 0.00 | 0.02 | -0.02 |
| AUD | 0.04 | 0.07 | 1 | 0.50 | 0.41 | 0.58 | 0.36 | 0.66 | 0.59 | 0.33 | 0.10 | 0.87 | 0.53 | 0.19 | 0.84 | 0.00 | 0.63 | 0.03 |
| TWD | 0.03 | 0.04 | 0.50 | 1 | 0.41 | 0.54 | 0.42 | 0.74 | 0.47 | 0.27 | 0.05 | 0.48 | 0.52 | 0.19 | 0.54 | 0.00 | 0.41 | -0.06 |
| THB | -0.02 | 0.03 | 0.41 | 0.41 | 1 | 0.44 | 0.31 | 0.51 | 0.40 | 0.22 | 0.04 | 0.40 | 0.38 | 0.16 | 0.53 | 0.00 | 0.34 | 0.06 |
| MYR | 0.01 | 0.05 | 0.58 | 0.54 | 0.44 | 1 | 0.42 | 0.69 | 0.53 | 0.28 | 0.06 | 0.54 | 0.52 | 0.20 | 0.66 | 0.00 | 0.36 | -0.07 |
| IDR | 0.03 | 0.01 | 0.36 | 0.42 | 0.31 | 0.42 | 1 | 0.55 | 0.35 | 0.22 | 0.04 | 0.34 | 0.39 | 0.14 | 0.42 | 0.00 | 0.24 | 0.00 |
| KRW | 0.04 | 0.06 | 0.66 | 0.74 | 0.51 | 0.69 | 0.55 | 1 | 0.61 | 0.35 | 0.05 | 0.62 | 0.69 | 0.27 | 0.65 | 0.00 | 0.41 | -0.07 |
| INR | 0.00 | 0.06 | 0.59 | 0.47 | 0.40 | 0.53 | 0.35 | 0.61 | 1 | 0.24 | 0.05 | 0.54 | 0.46 | 0.17 | 0.64 | 0.00 | 0.38 | -0.09 |
| CNY | 0.01 | -0.01 | 0.33 | 0.27 | 0.22 | 0.28 | 0.22 | 0.35 | 0.24 | 1 | 0.04 | 0.31 | 0.26 | 0.09 | 0.35 | 0.00 | 0.28 | 0.03 |
| BDT | 0.00 | -0.03 | 0.10 | 0.05 | 0.04 | 0.06 | 0.04 | 0.05 | 0.05 | 0.04 | 1 | 0.09 | 0.05 | 0.01 | 0.11 | 0.00 | 0.07 | 0.01 |
| NZD | 0.02 | 0.04 | 0.87 | 0.48 | 0.40 | 0.54 | 0.34 | 0.62 | 0.54 | 0.31 | 0.09 | 1 | 0.48 | 0.18 | 0.77 | 0.00 | 0.60 | 0.04 |
| PHP | 0.02 | 0.04 | 0.53 | 0.52 | 0.38 | 0.52 | 0.39 | 0.69 | 0.46 | 0.26 | 0.05 | 0.48 | 1 | 0.18 | 0.54 | 0.00 | 0.35 | -0.05 |
| LKR | -0.02 | 0.04 | 0.19 | 0.19 | 0.16 | 0.20 | 0.14 | 0.27 | 0.17 | 0.09 | 0.01 | 0.18 | 0.18 | 1 | 0.18 | 0.00 | 0.05 | 0.05 |
| SGD | -0.03 | 0.02 | 0.84 | 0.54 | 0.53 | 0.66 | 0.42 | 0.65 | 0.64 | 0.35 | 0.11 | 0.77 | 0.54 | 0.18 | 1 | 0.00 | 0.70 | 0.12 |
| HKD | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 | 0.00 |
| EUR | -0.01 | 0.02 | 0.63 | 0.41 | 0.34 | 0.36 | 0.24 | 0.41 | 0.38 | 0.28 | 0.07 | 0.60 | 0.35 | 0.05 | 0.70 | 0.00 | 1 | 0.22 |
| JPY | -0.06 | -0.02 | 0.03 | -0.06 | 0.06 | -0.07 | 0.00 | -0.07 | -0.09 | 0.03 | 0.01 | 0.04 | -0.05 | 0.05 | 0.12 | 0.00 | 0.22 | 1 |

| 29 Jul 2011 | PKR | VND | AUD | TWD | THB | MYR | IDR | KRW | INR | CNY | BDT | NZD | PHP | LKR | SGD | HKD | EUR | JPY |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|
| PKR | 1 | 0.00 | 0.08 | 0.05 | 0.02 | 0.03 | 0.03 | 0.08 | 0.03 | 0.02 | -0.02 | 0.05 | 0.05 | 0.01 | 0.02 | 0.00 | 0.01 | -0.01 |
| VND | 0.00 | 1 | 0.04 | 0.02 | 0.00 | 0.01 | 0.02 | 0.03 | 0.01 | 0.00 | -0.01 | 0.01 | 0.01 | 0.02 | 0.00 | 0.00 | 0.02 | 0.01 |
| AUD | 0.08 | 0.04 | 1 | 0.42 | 0.37 | 0.48 | 0.41 | 0.62 | 0.55 | 0.40 | -0.01 | 0.77 | 0.50 | 0.17 | 0.85 | 0.00 | 0.64 | 0.07 |
| TWD | 0.05 | 0.02 | 0.42 | 1 | 0.33 | 0.43 | 0.37 | 0.63 | 0.41 | 0.31 | -0.06 | 0.36 | 0.41 | 0.17 | 0.46 | 0.00 | 0.39 | -0.05 |
| THB | 0.02 | 0.00 | 0.37 | 0.33 | 1 | 0.38 | 0.31 | 0.50 | 0.37 | 0.27 | -0.04 | 0.32 | 0.34 | 0.14 | 0.47 | 0.00 | 0.31 | -0.03 |
| MYR | 0.03 | 0.01 | 0.48 | 0.43 | 0.38 | 1 | 0.42 | 0.65 | 0.47 | 0.35 | -0.04 | 0.39 | 0.44 | 0.19 | 0.56 | 0.00 | 0.34 | -0.09 |
| IDR | 0.03 | 0.02 | 0.41 | 0.37 | 0.31 | 0.42 | 1 | 0.56 | 0.40 | 0.30 | -0.03 | 0.33 | 0.38 | 0.17 | 0.46 | 0.00 | 0.32 | -0.06 |
| KRW | 0.08 | 0.03 | 0.62 | 0.63 | 0.50 | 0.65 | 0.56 | 1 | 0.61 | 0.46 | -0.11 | 0.53 | 0.62 | 0.28 | 0.64 | 0.00 | 0.45 | -0.09 |
| INR | 0.03 | 0.01 | 0.55 | 0.41 | 0.37 | 0.47 | 0.40 | 0.61 | 1 | 0.35 | -0.04 | 0.45 | 0.44 | 0.17 | 0.62 | 0.00 | 0.44 | -0.05 |
| CNY | 0.02 | 0.00 | 0.40 | 0.31 | 0.27 | 0.35 | 0.30 | 0.46 | 0.35 | 1 | -0.01 | 0.34 | 0.33 | 0.12 | 0.45 | 0.00 | 0.31 | -0.03 |
| BDT | -0.02 | -0.01 | -0.01 | -0.06 | -0.04 | -0.04 | -0.03 | -0.11 | -0.04 | -0.01 | 1 | -0.02 | -0.04 | -0.04 | 0.00 | 0.00 | -0.02 | -0.08 |
| NZD | 0.05 | 0.01 | 0.77 | 0.36 | 0.32 | 0.39 | 0.33 | 0.53 | 0.45 | 0.34 | -0.02 | 1 | 0.41 | 0.14 | 0.70 | 0.00 | 0.56 | 0.08 |
| PHP | 0.05 | 0.01 | 0.50 | 0.41 | 0.34 | 0.44 | 0.38 | 0.62 | 0.44 | 0.33 | -0.04 | 0.41 | 1 | 0.16 | 0.49 | 0.00 | 0.35 | -0.15 |
| LKR | 0.01 | 0.02 | 0.17 | 0.17 | 0.14 | 0.19 | 0.17 | 0.28 | 0.17 | 0.12 | -0.04 | 0.14 | 0.16 | 1 | 0.18 | 0.00 | 0.10 | 0.03 |
| SGD | 0.02 | 0.00 | 0.85 | 0.46 | 0.47 | 0.56 | 0.46 | 0.64 | 0.62 | 0.45 | 0.00 | 0.70 | 0.49 | 0.18 | 1 | 0.00 | 0.72 | 0.19 |
| HKD | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1 | 0.00 | 0.00 |
| EUR | 0.01 | 0.02 | 0.64 | 0.39 | 0.31 | 0.34 | 0.32 | 0.45 | 0.44 | 0.31 | -0.02 | 0.56 | 0.35 | 0.10 | 0.72 | 0.00 | 1 | 0.27 |
| JPY | -0.01 | 0.01 | 0.07 | -0.05 | -0.03 | -0.09 | -0.06 | -0.09 | -0.05 | -0.03 | -0.08 | 0.08 | -0.15 | 0.03 | 0.19 | 0.00 | 0.27 | 1 |

| Change | PKR | VND | AUD | TWD | THB | MYR | IDR | KRW | INR | CNY | BDT | NZD | PHP | LKR | SGD | HKD | EUR | JPY |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| PKR | 0 | 0.00 | -0.04 | -0.02 | -0.04 | -0.02 | 0.00 | -0.05 | -0.03 | -0.02 | 0.01 | -0.03 | -0.03 | -0.03 | -0.05 | 0.00 | -0.02 | -0.05 |
| VND | 0.00 | 0 | 0.03 | 0.02 | 0.03 | 0.04 | -0.01 | 0.03 | 0.05 | -0.01 | -0.02 | 0.03 | 0.03 | 0.01 | 0.02 | 0.00 | 0.00 | -0.03 |
| AUD | -0.04 | 0.03 | 0 | 0.09 | 0.04 | 0.10 | -0.05 | 0.04 | 0.05 | -0.06 | 0.11 | 0.10 | 0.02 | 0.02 | -0.01 | 0.00 | -0.01 | -0.04 |
| TWD | -0.02 | 0.02 | 0.09 | 0 | 0.08 | 0.11 | 0.04 | 0.11 | 0.06 | -0.04 | 0.10 | 0.13 | 0.11 | 0.02 | 0.08 | 0.00 | 0.02 | -0.01 |
| THB | -0.04 | 0.03 | 0.04 | 0.08 | 0 | 0.07 | 0.00 | 0.02 | 0.02 | -0.06 | 0.08 | 0.07 | 0.04 | 0.02 | 0.06 | 0.00 | 0.03 | 0.09 |
| MYR | -0.02 | 0.04 | 0.10 | 0.11 | 0.07 | 0 | 0.00 | 0.04 | 0.06 | -0.07 | 0.10 | 0.15 | 0.08 | 0.00 | 0.09 | 0.00 | 0.03 | 0.03 |
| IDR | 0.00 | -0.01 | -0.05 | 0.04 | 0.00 | 0.00 | 0 | -0.01 | -0.05 | -0.08 | 0.08 | 0.01 | 0.00 | -0.03 | -0.05 | 0.00 | -0.08 | 0.06 |
| KRW | -0.05 | 0.03 | 0.04 | 0.11 | 0.02 | 0.04 | -0.01 | 0 | 0.00 | -0.11 | 0.17 | 0.09 | 0.06 | -0.01 | 0.01 | 0.00 | -0.04 | 0.02 |
| INR | -0.03 | 0.05 | 0.05 | 0.06 | 0.02 | 0.06 | -0.05 | 0.00 | 0 | -0.11 | 0.09 | 0.09 | 0.02 | 0.00 | 0.02 | 0.00 | -0.05 | -0.05 |
| CNY | -0.02 | -0.01 | -0.06 | -0.04 | -0.06 | -0.07 | -0.08 | -0.11 | -0.11 | 0 | 0.06 | -0.02 | -0.07 | -0.03 | -0.10 | 0.00 | -0.03 | 0.06 |
| BDT | 0.01 | -0.02 | 0.11 | 0.10 | 0.08 | 0.10 | 0.08 | 0.17 | 0.09 | 0.06 | 0 | 0.11 | 0.09 | 0.05 | 0.12 | 0.00 | 0.09 | 0.09 |
| NZD | -0.03 | 0.03 | 0.10 | 0.13 | 0.07 | 0.15 | 0.01 | 0.09 | 0.09 | -0.02 | 0.11 | 0 | 0.07 | 0.04 | 0.07 | 0.00 | 0.04 | -0.04 |
| PHP | -0.03 | 0.03 | 0.02 | 0.11 | 0.04 | 0.08 | 0.00 | 0.06 | 0.02 | -0.07 | 0.09 | 0.07 | 0 | 0.02 | 0.05 | 0.00 | 0.00 | 0.11 |
| LKR | -0.03 | 0.01 | 0.02 | 0.02 | 0.02 | 0.00 | -0.03 | -0.01 | 0.00 | -0.03 | 0.05 | 0.04 | 0.02 | 0 | 0.00 | 0.00 | -0.05 | 0.03 |
| SGD | -0.05 | 0.02 | -0.01 | 0.08 | 0.06 | 0.09 | -0.05 | 0.01 | 0.02 | -0.10 | 0.12 | 0.07 | 0.05 | 0.00 | 0 | 0.00 | -0.02 | -0.07 |
| HKD | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 | 0.00 | 0.00 |
| EUR | -0.02 | 0.00 | -0.01 | 0.02 | 0.03 | 0.03 | -0.08 | -0.04 | -0.05 | -0.03 | 0.09 | 0.04 | 0.00 | -0.05 | -0.02 | 0.00 | 0 | -0.05 |
| JPY | -0.05 | -0.03 | -0.04 | -0.01 | 0.09 | 0.03 | 0.06 | 0.02 | -0.05 | 0.06 | 0.09 | -0.04 | 0.11 | 0.03 | -0.07 | 0.00 | -0.05 | 0 |



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