

Axioma Insight

Quarterly Risk Review

Global Developed Markets 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 the current report:

- Correlations across stocks remained extremely high over the past three months, although they were lower globally than in individual regions (Figure 10, page 15). In addition, we have observed that shorter-horizon correlations seem to be declining.
- Predicted volatilities for countries, currencies, industries and styles globally are much more similar now than they were a year ago (Figure 12, page 16). This is true not only based on our Worldwide model, but also separately in the US, Europe and Asia ex-Japan (see the regional issues of Axioma Insights for more detail).
- Fundamental models currently forecast higher risk for the global developed market than statistical, and forecasts from our short-horizon models are higher than those from the medium-term models (Figure 5 and Figure 6, page 9).
- Late in October several risk factors experienced a sharp reversal in returns (Figure 7, page 11).
- Active risk of a 50-stock portfolio tracking the FTSE-Developed benchmark has increased by 85 basis points over the last three months (Figure 9, page 13).
- Some style factor correlations are quite negative, suggesting it may be a slightly better diversification environment for investors using risk models to help them construct portfolios (Figure 13, page 17).

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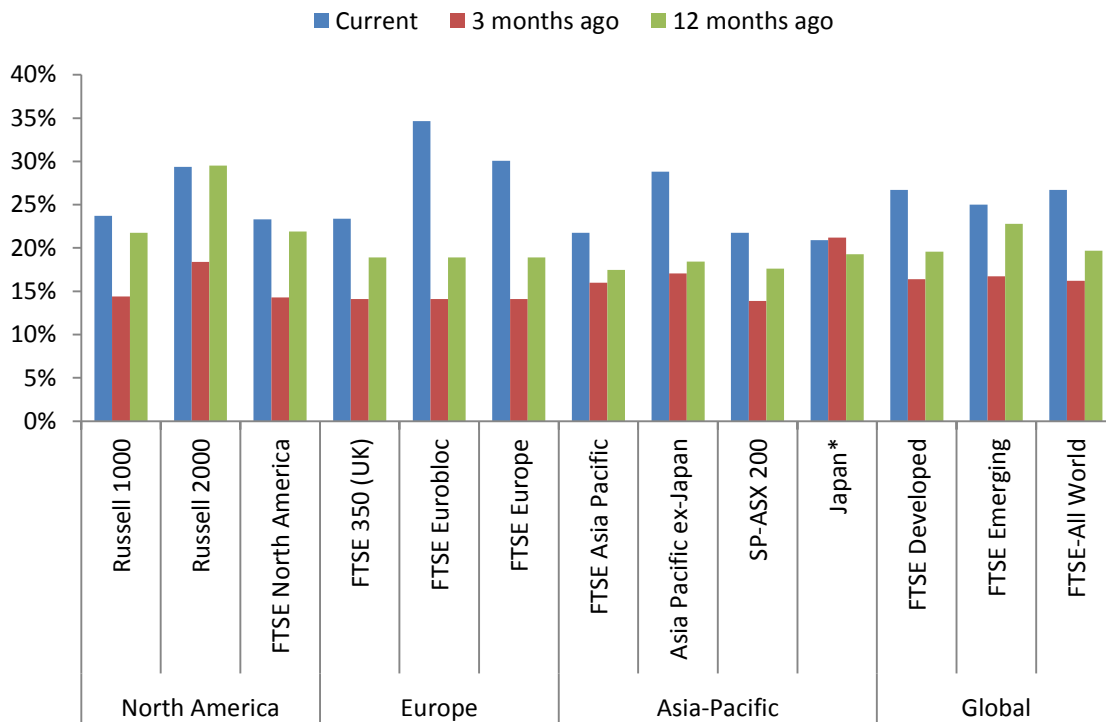
Table 1. Comparison of Selected Benchmark Predicted Volatilities

	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. Data as of 31 October 2011.

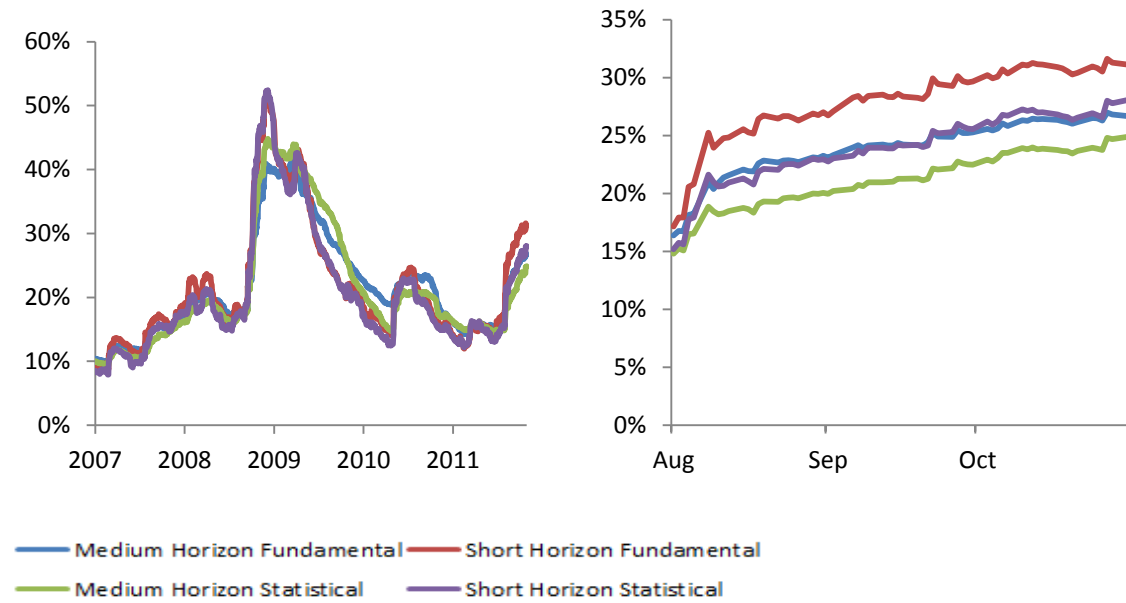
Source: Axioma, Inc. FTSE, Frank Russell, Standard and Poor's.

Focus on Global Developed Markets

Over the past several months, one could not pick up a newspaper or magazine without seeing a discussion of what was happening in Europe's markets. Correspondingly, predicted risk rose substantially around the globe.

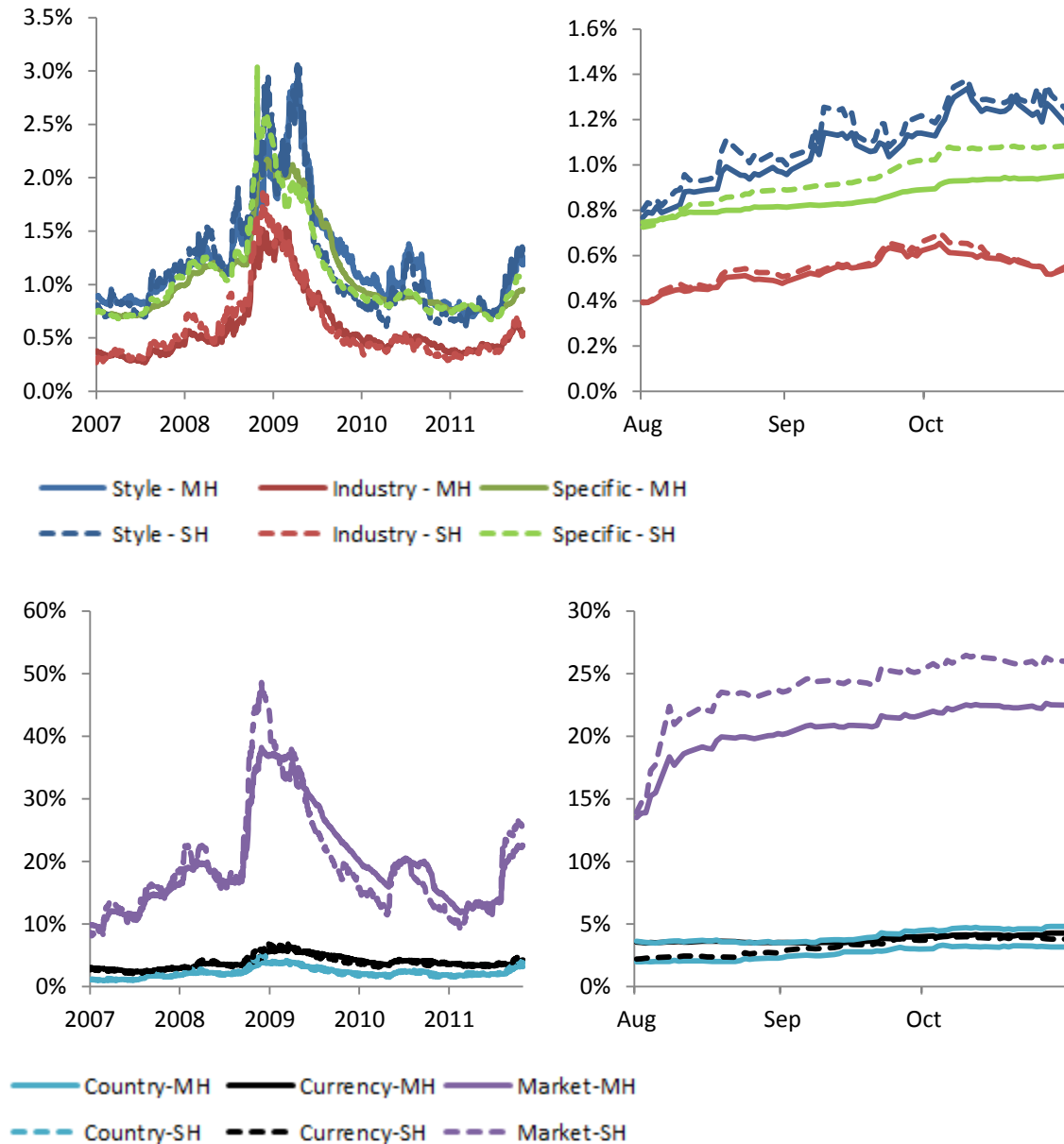
From the fundamental model perspective, the biggest increase, and largest component of risk is from the market, especially as predicted by the short horizon model. Currency and country risk stayed relatively flat (Figure 3). Style risk has also gone up, but from a very low base. Risk remains well below its peak during the financial crisis, however, and while risk continued to rise throughout the last three months, the rate of increase has flattened out.

Figure 2. FTSE-Developed Index Predicted Risk Characteristics, Last 5 Years and Most Recent Three Months



Source: FTSE, Axioma, Inc.

Figure 3. FTSE-Developed Index Components of Risk



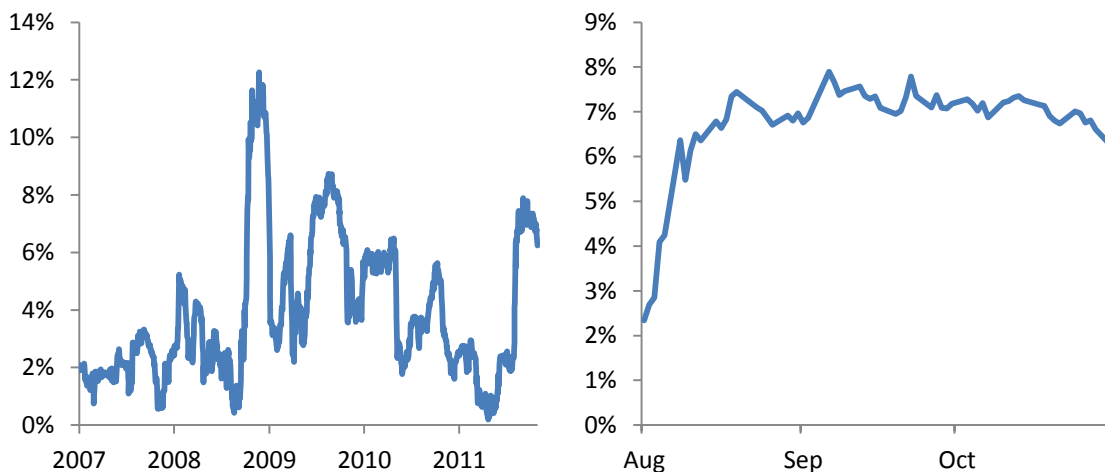
Source: FTSE, Axioma, Inc.

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. The higher the number, the larger the disagreement among models. The five-year peak came in October 2008, when the short-term statistical model’s forecast exceeded that of the medium-term fundamental model by 12 percentage points (Figure 4). The spread climbed substantially from the beginning of June to mid- August 2011, but has meandered downward since then. When we see the spread widen, it may be because something is being picked up in one or two model variants that is not captured in others.

There has not been a consistent disagreement between the statistical and fundamental models over the past five years. Sometimes the statistical model may “see” risk that isn’t captured in the fundamental variants, as it did in 2008-2009 (Figure 5), especially at the medium horizon. That has not been the case more recently, however, as risk has been more evident in the fundamental factors of our models. In fact, risk from the statistical models has been below that of the fundamental models since early 2011, although the spread has been narrowing slightly more recently.

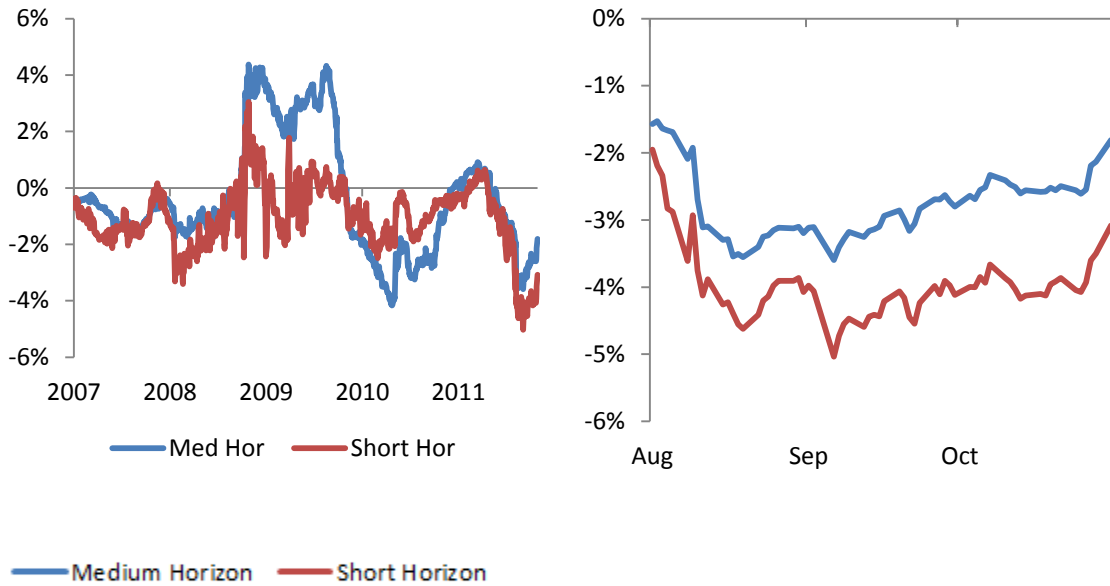
In addition, when risk changes rapidly, our short-term models may reflect these changes sooner than the medium-horizon variants. We observed the short term model risk forecasts climb rapidly at the beginning of August (relative to the medium term forecasts) for both the statistical and fundamental models, although more recently the spread has begun to level off (Figure 6).

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



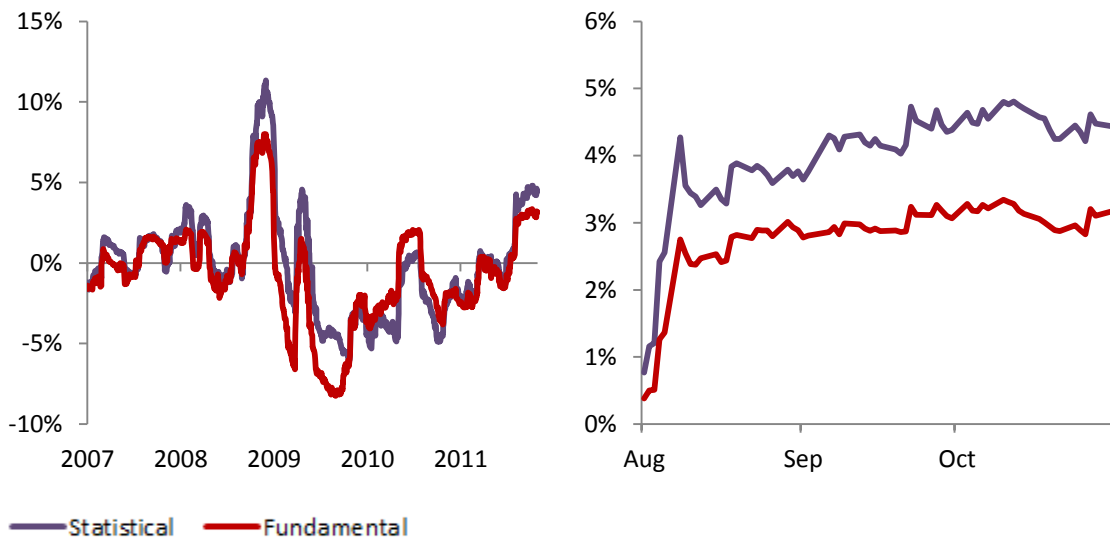
Source: FTSE, Axioma, Inc.

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 return over the past few months. In August and October four of the 9 style components of the medium horizon fundamental model had returns at least one standard deviation above or below the long term average (Table 2). Several factors saw a sharp reversal of fortune in October. For example, Volatility had returns in the bottom decile in September, but reversed to the 98th percentile in October.

In the last few days of October several factors staged a sharp return reversal (Figure 7). But the turnaround in returns pales compared with the sharp drop in medium-term momentum in early 2009 (Figure 8).

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

Table 2. Worldwide Medium Horizon Fundamental Model Realized Factor Returns

Axioma Medium Horizon Model Risk Factor	2011 Returns			Average Monthly Return				
	Oct	Sep	Aug	3Q 2011	2Q 2011	1Q 2011	4Q 2010	Long Term*
Exchange Rate Sensitivity	-0.30	0.22	-0.18	-0.04	0.09	0.06	0.03	0.00
Growth	0.02	-0.31	1.21	0.45	0.35	0.02	-0.06	0.18
Leverage	-0.32	-0.09	-1.25	-0.55	-0.15	0.01	-0.14	-0.13
Liquidity	0.75	-1.36	-0.36	-0.52	-0.25	0.21	-0.08	0.22
Medium-Term Momentum	-1.49	-0.15	0.34	0.47	0.90	0.57	0.47	0.34
Short-Term Momentum	-4.29	0.10	-1.43	-0.48	-0.56	-1.01	-0.20	-1.47
Size	2.54	1.42	-0.69	-0.08	0.08	-0.18	-0.34	-0.07
Value	-0.25	-0.22	-1.10	-0.60	-0.14	0.26	0.12	0.32
Volatility	4.52	-4.48	-3.29	-2.95	-1.50	-0.79	0.41	-0.71

* January 1999 - present

Highlighted cells are 1 standard deviation above or below average

Figure 7. Worldwide Medium-Horizon Model Cumulative Style Factor Returns, Last 12 Months (%)

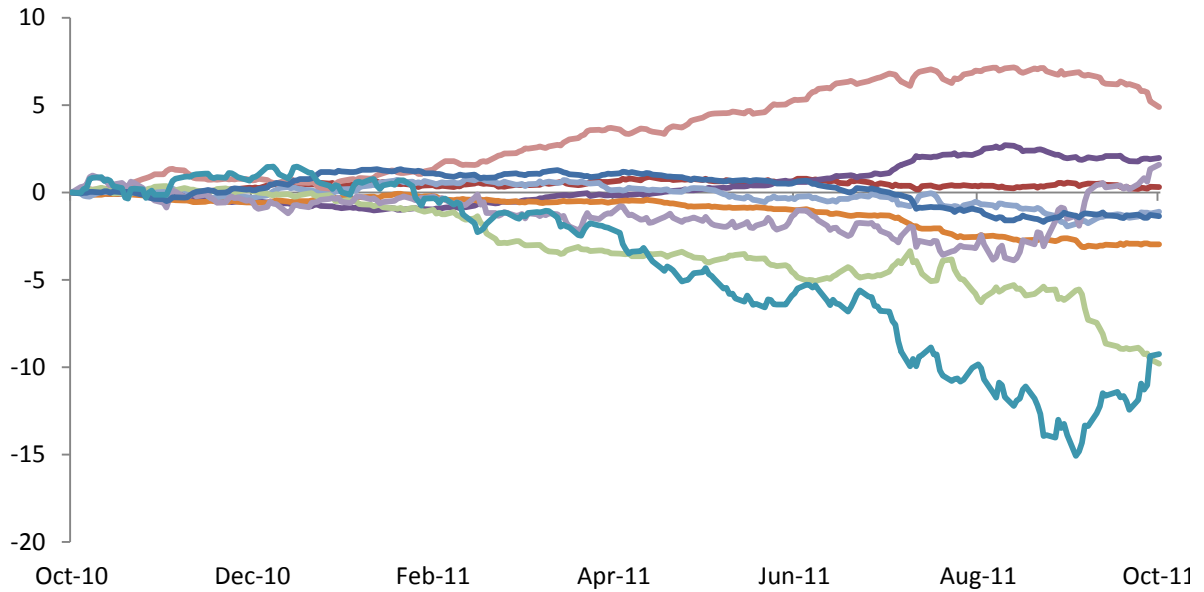
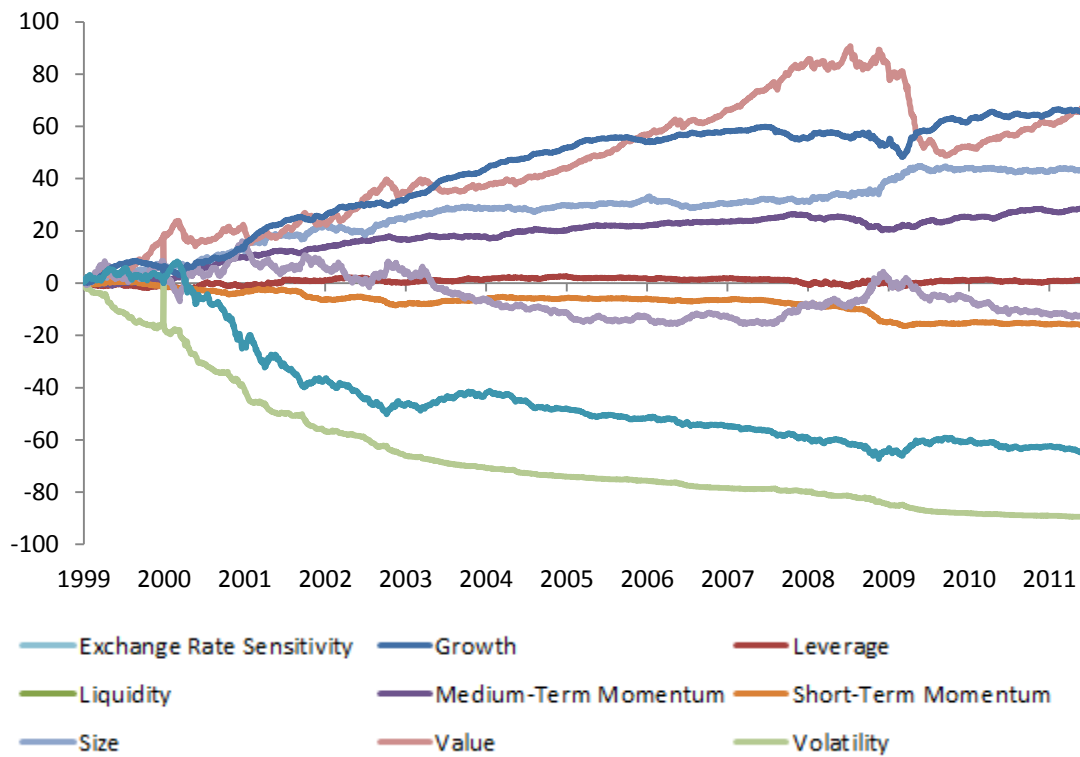
























































Figure 8. Worldwide Medium-Horizon Model Cumulative Style Factor Realized Returns Since 1999 (%)



Source: Axioma, Inc.

Table 3. Worldwide Fundamental Models, Style Factor Predicted Volatility (%)

	Month End Value (%)			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
Exchange Rate Sensitivity								
Medium Horizon	0.9	0.9	0.8	0.0	0.1			
Short Horizon	0.9	0.9	0.7	0.0	0.2			
Growth								
Medium Horizon	1.2	0.8	1.1	0.4	0.2			
Short Horizon	1.4	0.8	0.9	0.6	0.5			
Leverage								
Medium Horizon	1.1	0.6	0.7	0.4	0.4			
Short Horizon	1.3	0.6	0.6	0.6	0.7			
Liquidity								
Medium Horizon	1.8	1.3	1.5	0.5	0.3			
Short Horizon	2.1	1.3	1.3	0.8	0.8			
Medium-Term Momentum								
Medium Horizon	2.3	2.0	2.3	0.4	0.1			
Short Horizon	2.6	2.1	1.7	0.5	0.9			
Short-Term Momentum								
Medium Horizon	4.4	2.2	2.9	2.2	1.5			
Short Horizon	5.4	2.5	1.9	3.0	3.5			
Size								
Medium Horizon	5.1	3.3	3.6	1.7	1.4			
Short Horizon	5.9	3.5	3.0	2.3	2.8			
Value								
Medium Horizon	1.5	1.0	1.1	0.5	0.4			
Short Horizon	1.7	1.1	0.8	0.6	0.9			
Volatility								
Medium Horizon	8.2	5.0	6.3	3.1	1.9			
Short Horizon	9.6	5.3	4.8	4.4	4.8			

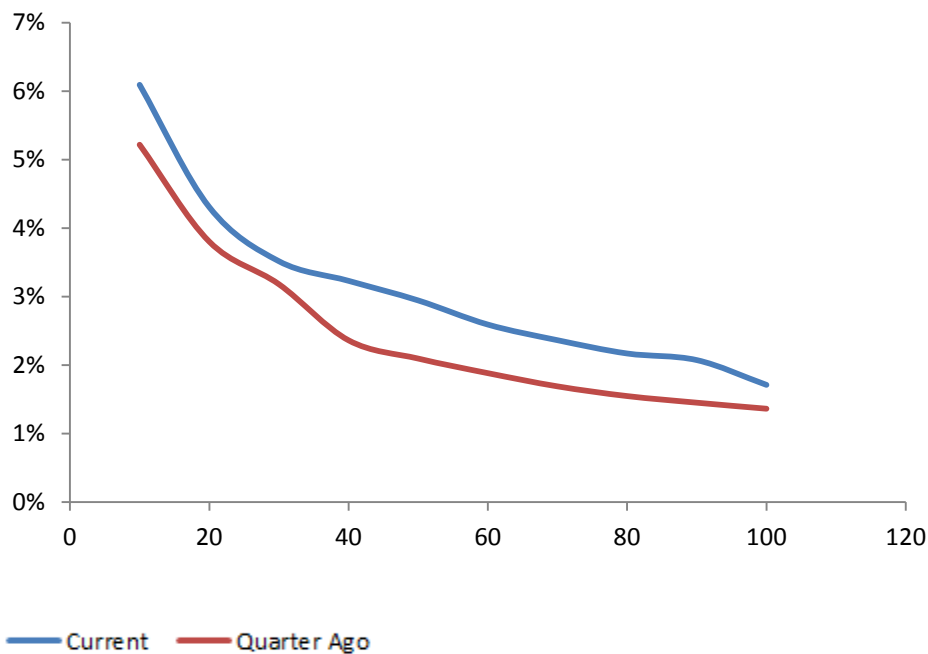
Source: Axioma, Inc.

Implications for Tracking Error

Another sign of increased market risk is illustrated in Figure 9, which highlights the tracking error to the FTSE Developed 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 the end of July. A portfolio comprising 50 stocks would have tracking error 85 basis points higher in October as compared with the end of July, a substantial increase that warrants a portfolio manager’s attention.

Figure 9. Tracking Error as Number of Stocks Increases, FTSE Developed



As of 31 Oct 2011

Source: FTSE, Axioma Inc.

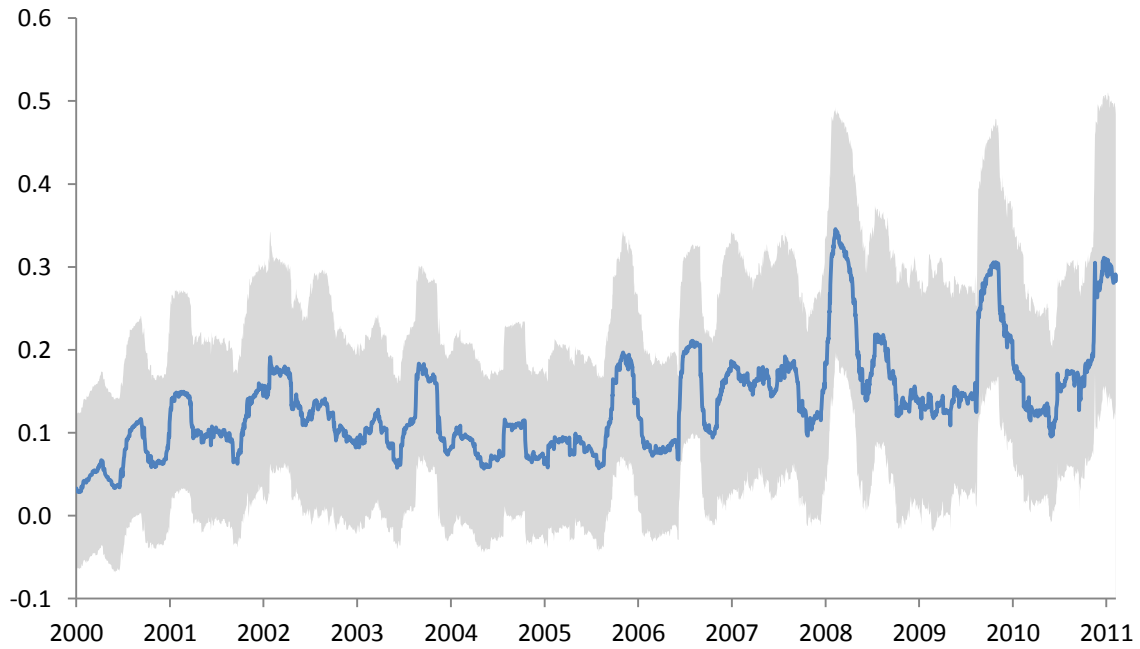
Correlations and Cross-Sectional Dispersion

Along with daily discussions of what is happening in Europe, high stock correlations have figured prominently in financial discussions recently. 2011 has witnessed a large increase in correlations, especially between stocks. 60-day correlations within specific regions have been extremely high: roughly 0.70 for the US market, about 0.55 for Europe, and a more-modest 0.30 for Asia ex-Japan. Correlations in all regions are at or near their 10-year peaks. When we look across the globe, the 0.30 correlation is also just about equal to its prior peak (Figure 10). Although we do not show it in this report, other work we have done suggests that shorter-horizon correlations have declined. The proportion of stock pairs that actually have a negative correlation is eye-opening: Less than 1% of the stocks in the US and Europe have negative correlations. That proportion increases to about 4% in Asia. Thus, proper diversification has become increasingly difficult within any given region. The percent of stocks with a negative correlation increases to 9% when calculated across the globe, still extremely low relative to history (Figure 11).

When we expand the comparison period from daily returns to monthly, we see a slightly better diversification story. Cross-sectional dispersion (also called cross-sectional volatility) of *monthly* returns has shown a dramatic uptick since May (Figure 12). Thus, on a monthly basis we are seeing a little more differentiation in global stock returns than when we look daily, suggesting that stock pickers have a better chance of differentiating themselves when they have a longer measurement period.

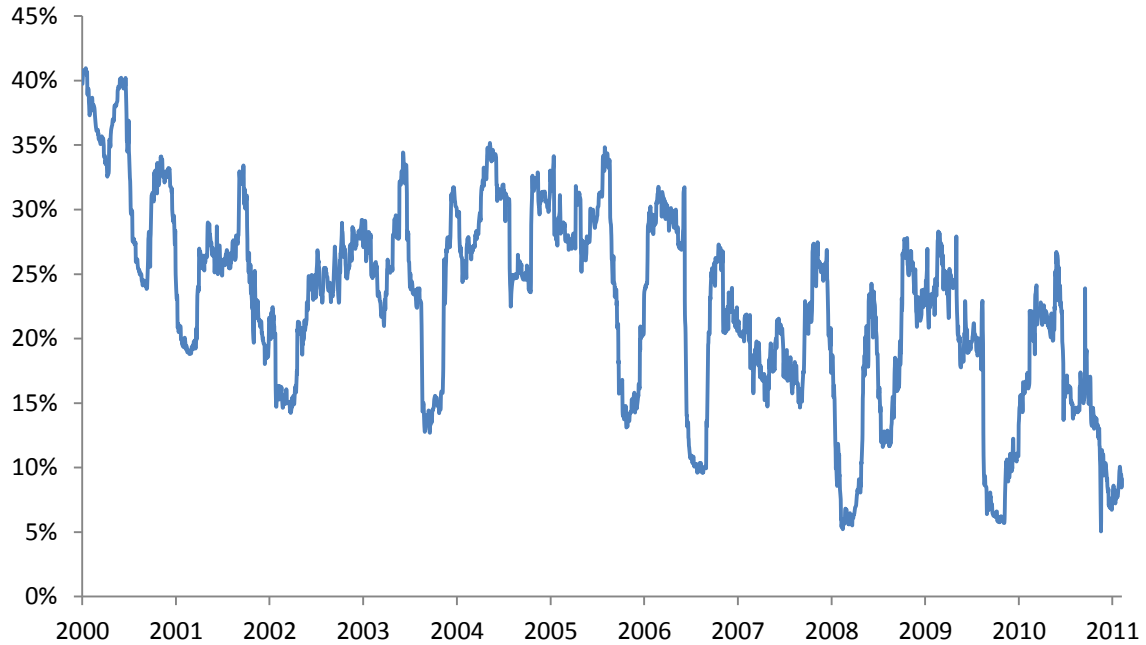
Predicted volatilities for countries, currencies, industries and styles globally are much more similar now than they were a year ago (Figure 13). This is true not only based on our Worldwide model, but also separately in the US (just styles and industries are measured here, of course), Europe and Asia ex-Japan. In other words, our medium-horizon model expects country returns to be more similar to each other, as well as currency, industry and style factor returns.

Figure 10. FTSE-Developed Median Realized 60-day Pairwise Asset Correlation and Interquartile Range



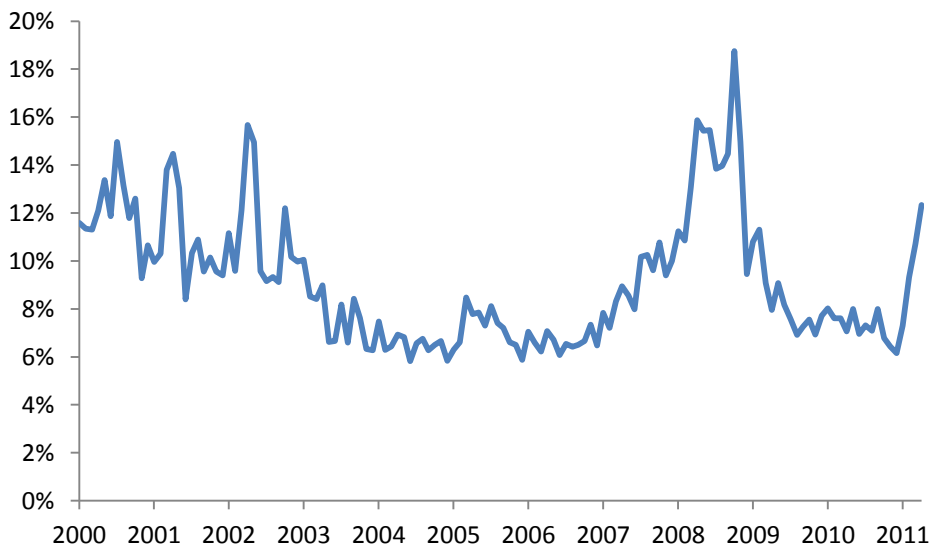
Source: FTSE, Axioma, Inc.

Figure 11. Percent of FTSE-Developed Stock-Stock Realized 60-Day Correlations That Are Negative



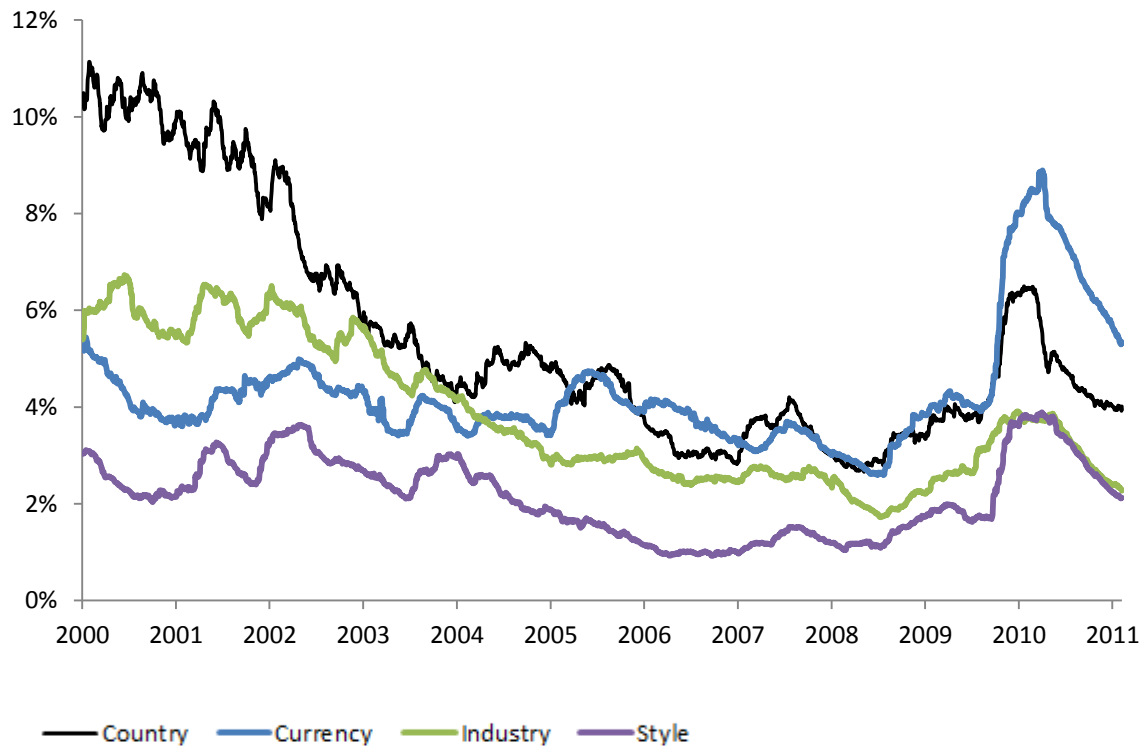
Source: FTSE, Axioma, Inc.

Figure 12. FTSE-Developed Cross-Sectional Dispersion of Monthly Returns



Source: FTSE, Axioma, Inc.

Figure 13. Worldwide Medium Horizon Fundamental Model, Cross-Sectional Standard Deviation, Common Factor Predicted Volatility



Source: Axioma, Inc.

Note: Country and currency correlations include only developed markets.

Style factor correlations have not changed very much over the last three months (Table 4). Some correlations continue to be quite negative, especially those between Growth and several of the other style factors; in this environment, a manager should be able to find offsetting style bets, even if offsetting stock bets are difficult to find.

Not surprising, European countries tend to be highly correlated with other European countries (Table 5). More interestingly, the United States and some European countries have strong negative correlations with many Asian countries, once again suggesting that diversification may be easier to achieve in a global portfolio than in a regional one.

Also important to note is that some correlations between risk factors have changed substantially over the last 3 months, changes a manager trying to balance risks may want to take note of (Table 7).

Table 4.Style, Currency and Country Correlations

31-Oct-11	Global Market	Value	Leverage	Growth	Size	Short-Term Mom	Med-Term Mom	Volatility	Liquidity	Exch Rate Sens	Average		
											Country	Currency	Industry
Global Market	1	0.35	0.21	-0.30	0.52	-0.54	-0.10	0.91	0.37	0.21	-0.18	0.33	-0.07
Value	0.35	1	0.43	-0.48	0.34	-0.24	-0.46	0.38	-0.06	0.37	0.00	0.13	0.00
Leverage	0.21	0.43	1	-0.21	0.05	-0.10	-0.16	0.23	0.02	0.14	0.06	0.08	-0.01
Growth	-0.30	-0.48	-0.21	1	-0.24	0.00	0.15	-0.31	0.02	-0.30	0.10	-0.05	-0.01
Size	0.52	0.34	0.05	-0.24	1	-0.29	-0.15	0.50	0.11	0.30	-0.06	0.22	-0.01
Short-Term Mom	-0.54	-0.24	-0.10	0.00	-0.29	1	0.21	-0.50	-0.27	-0.09	0.06	-0.20	0.03
Medium-Term Mom	-0.10	-0.46	-0.16	0.15	-0.15	0.21	1	-0.22	-0.02	-0.18	-0.04	-0.04	-0.02
Volatility	0.91	0.38	0.23	-0.31	0.50	-0.50	-0.22	1	0.38	0.19	-0.15	0.33	-0.07
Liquidity	0.37	-0.06	0.02	0.02	0.11	-0.27	-0.02	0.38	1	-0.08	-0.04	0.07	-0.05
Exchange Rate Sens	0.21	0.37	0.14	-0.30	0.30	-0.09	-0.18	0.19	-0.08	1	-0.01	0.10	0.03

29-Jul-11	Global Market	Value	Leverage	Growth	Size	Short-Term Mom	Med-Term Mom	Volatility	Liquidity	Exch Rate Sens	Average		
											Country	Currency	Industry
Global Market	1	0.34	0.18	-0.30	0.54	-0.43	-0.06	0.91	0.22	0.22	-0.18	0.30	-0.06
Value	0.34	1	0.45	-0.40	0.35	-0.29	-0.49	0.36	-0.02	0.35	0.02	0.12	0.00
Leverage	0.18	0.45	1	-0.18	0.09	-0.12	-0.28	0.21	0.04	0.16	0.03	0.05	0.01
Growth	-0.30	-0.40	-0.18	1	-0.23	-0.03	0.22	-0.37	-0.04	-0.32	0.08	-0.05	-0.01
Size	0.54	0.35	0.09	-0.23	1	-0.18	-0.09	0.49	0.14	0.29	-0.05	0.21	-0.03
Short-Term Mom	-0.43	-0.29	-0.12	-0.03	-0.18	1	0.19	-0.39	-0.18	-0.07	0.03	-0.15	0.03
Medium-Term Mom	-0.06	-0.49	-0.28	0.22	-0.09	0.19	1	-0.17	-0.11	-0.20	-0.05	-0.01	-0.01
Volatility	0.91	0.36	0.21	-0.37	0.49	-0.39	-0.17	1	0.26	0.19	-0.15	0.28	-0.06
Liquidity	0.22	-0.02	0.04	-0.04	0.14	-0.18	-0.11	0.26	1	-0.04	0.00	0.01	-0.02
Exchange Rate Sens	0.22	0.35	0.16	-0.32	0.29	-0.07	-0.20	0.19	-0.04	1	-0.02	0.09	0.02

Change	Global Market	Value	Leverage	Growth	Size	Short-Term Mom	Med-Term Mom	Volatility	Liquidity	Exch Rate Sens	Average		
											Country	Currency	Industry
Global Market	0	0.02	0.03	0.00	-0.02	-0.11	-0.04	0.01	0.15	0.00	-0.01	0.02	-0.01
Value	0.02	0	-0.02	-0.08	0.00	0.05	0.03	0.02	-0.04	0.02	-0.02	0.02	0.00
Leverage	0.03	-0.02	0	-0.02	-0.05	0.02	0.12	0.02	-0.02	-0.02	0.03	0.03	-0.02
Growth	0.00	-0.08	-0.02	0	0.00	0.04	-0.07	0.05	0.06	0.02	0.02	0.00	0.00
Size	-0.02	0.00	-0.05	0.00	0	-0.11	-0.05	0.01	-0.03	0.01	-0.01	0.01	0.02
Short-Term Mom	-0.11	0.05	0.02	0.04	-0.11	0	0.01	-0.11	-0.09	-0.02	0.03	-0.04	0.00
Medium-Term Mom	-0.04	0.03	0.12	-0.07	-0.05	0.01	0	-0.05	0.09	0.02	0.01	-0.04	0.00
Volatility	0.01	0.02	0.02	0.05	0.01	-0.11	-0.05	0	0.12	0.00	0.00	0.05	-0.01
Liquidity	0.15	-0.04	-0.02	0.06	-0.03	-0.09	0.09	0.12	0	-0.04	-0.04	0.06	-0.02
Exchange Rate Sens	0.00	0.02	-0.02	0.02	0.01	-0.02	0.02	0.00	-0.04	0	0.00	0.01	0.01

Source: Axioma, Inc.

Table 5. Country-Country Correlations, 31 Oct 2011

Top 20			Bottom 20		
China	Hong Kong	0.78	United States	Korea, Rep of	-0.50
Italy	Spain	0.76	United States	Singapore	-0.42
France	Netherlands	0.74	United States	Denmark	-0.38
France	Germany	0.71	United States	Hong Kong	-0.37
Belgium	France	0.70	United States	Japan	-0.37
France	Italy	0.69	United States	China	-0.35
Germany	Netherlands	0.69	United States	Norway	-0.29
Belgium	Netherlands	0.67	France	Korea, Rep of	-0.28
Finland	Sweden	0.66	United Kingdom	Japan	-0.28
Portugal	Spain	0.64	United States	Portugal	-0.28
Italy	Netherlands	0.63	United States	Israel	-0.27
France	Spain	0.61	United States	United Kingdom	-0.27
Belgium	Italy	0.61	United States	Netherlands	-0.26
Finland	France	0.61	Hong Kong	Italy	-0.25
Finland	Netherlands	0.59	United States	Sweden	-0.25
United Kingdom	France	0.59	Germany	Hong Kong	-0.25
Belgium	Finland	0.58	China	Italy	-0.24
Italy	Portugal	0.57	Hong Kong	Switzerland	-0.24
Belgium	Germany	0.57	United States	Greece	-0.24
Austria	France	0.56	China	Germany	-0.23

Source: Axioma, Inc.

Table 6. Currency-Currency Correlations, 31 Oct 2011

Top 20			Bottom 20		
DKK	EUR	1.00	JPY	CAD	-0.13
SEK	EUR	0.87	JPY	KRW	-0.07
DKK	SEK	0.87	JPY	ILS	0.03
AUD	NZD	0.87	JPY	CNY	0.03
EUR	NOK	0.86	JPY	AUD	0.03
DKK	NOK	0.86	JPY	NZD	0.04
SGD	AUD	0.84	JPY	GBP	0.06
SEK	NOK	0.83	JPY	SEK	0.08
CAD	AUD	0.83	JPY	NOK	0.12
SGD	NZD	0.77	JPY	SGD	0.12
SGD	NOK	0.77	CHF	CNY	0.12
AUD	NOK	0.76	CHF	KRW	0.18
CAD	NZD	0.76	JPY	EUR	0.22
SEK	SGD	0.76	JPY	DKK	0.22
CAD	SGD	0.75	CAD	CHF	0.22
GBP	DKK	0.74	ILS	CNY	0.23
GBP	EUR	0.74	ILS	CHF	0.25
SEK	AUD	0.72	GBP	CNY	0.26
GBP	SEK	0.72	CAD	CNY	0.27
GBP	NOK	0.72	SEK	CNY	0.27

Source: Axioma, Inc.

Table 7. Biggest Changes in Factor Correlations Over Last 3 Months

Biggest Upward Change		31-Oct-11	29-Jul-11	Biggest Downward Change		31-Oct-11	29-Jul-11
Liquidity	Chemicals	0.28	0.11	Road & Rail	Korea, Republic of	-0.31	-0.09
Household Products	Italy	0.08	-0.09	Transportation Infra	Hong Kong	-0.17	0.03
Building Products	Germany	0.13	-0.04	Water Utilities	Energy Equip & Svc	-0.29	-0.10
Hong Kong	SGD	0.15	-0.01	Leverage	Consumer Finance	-0.18	0.01
Global Market	Energy Equip & Svc	0.39	0.23	Wireless Telecomm	Germany	-0.18	-0.01
Auto Components	Netherlands	0.12	-0.04	Textiles, App & Lux Goods	Korea, Republic of	-0.17	0.00
Volatility	Chemicals	0.38	0.22	Size	Greece	0.01	0.18
Metals & Mining	Hong Kong	0.28	0.11	Household Products	Hong Kong	-0.04	0.13
Water Utilities	New Zealand	0.06	-0.10	Gas Utilities	Singapore	-0.28	-0.11
Professional Services	Israel	0.24	0.07	Transportation Infra	China	-0.17	-0.01
Size	Germany	0.32	0.15	Diversified Telecomm	Germany	-0.22	-0.06
Health Care Eq& Sup	Austria	0.04	-0.14	Textiles, App & Lux Goods	Tobacco	-0.12	0.04
Size	IT Services	0.10	-0.08	Textiles, App & Lux Goods	Household Products	-0.05	0.11
Korea, Republic of	Norway	0.04	-0.14	Beverages	Chemicals	-0.30	-0.14
Italy	Israel	0.17	-0.01	Household Products	China	-0.09	0.06
Leverage	Energy Equip & Svc	0.04	-0.14	Growth	Germany	-0.20	-0.05
Korea, Republic of	Switzerland	-0.11	-0.29	Beverages	Machinery	-0.38	-0.23
Leverage	Singapore	0.26	0.06	Switzerland	CHF	-0.41	-0.25
Biotechnology	Switzerland	0.08	-0.13	Water Utilities	AUD	-0.37	-0.22
Leverage	Korea, Republic of	0.15	-0.11	Biotechnology	CHF	-0.23	-0.08







































































































Source: Axioma, Inc.

Conclusion

The last three months have been characterized by increasing volatility, high stock-stock correlations and low dispersion among stocks, although these as bigger issues for managers concentrating on a single region than for global managers. Factor returns have been volatile, while dispersion across countries, currencies and styles has decreased. It remains an difficult environment for investors to produce high active returns (not that it is ever very easy!) Index volatility is higher in Europe than in other regions, but predicted volatility has increased almost across the board, making the investment landscape even more uncertain.





























































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 Volatility, Developed Market Countries

	Month End Value (%)			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
Australia								
Medium Horizon	10.3	8.1	8.6	2.3	1.8			
Short Horizon	11.7	9.1	7.3	2.6	4.4			
Canada								
Medium Horizon	8.7	6.7	8.0	2.0	0.7			
Short Horizon	9.4	6.6	6.4	2.8	3.0			
China								
Medium Horizon	18.0	12.5	12.0	5.5	5.9			
Short Horizon	21.2	13.4	9.2	7.8	12.0			
France								
Medium Horizon	9.7	6.4	6.9	3.3	2.8			
Short Horizon	11.2	7.0	5.4	4.2	5.8			
Germany								
Medium Horizon	9.4	5.3	6.1	4.1	3.3			
Short Horizon	11.0	5.2	5.2	5.8	5.8			
Greece								
Medium Horizon	32.7	27.0	23.7	5.7	9.0			
Short Horizon	35.6	23.4	21.6	12.2	14.0			
Hong Kong								
Medium Horizon	15.0	9.7	9.5	5.3	5.5			
Short Horizon	17.6	10.8	7.9	6.8	9.6			
Italy								
Medium Horizon	14.2	10.9	8.8	3.3	5.3			
Short Horizon	16.4	12.8	7.0	3.7	9.4			
Japan								
Medium Horizon	14.3	15.7	11.9	-1.5	2.4			
Short Horizon	15.6	13.6	10.5	2.0	5.1			
Korea, Republic of								
Medium Horizon	19.3	12.0	11.2	7.4	8.2			
Short Horizon	23.3	12.5	9.4	10.8	13.9			
Netherlands								
Medium Horizon	9.4	6.3	7.1	3.1	2.3			
Short Horizon	11.0	7.0	5.8	4.0	5.2			
Singapore								
Medium Horizon	12.9	9.2	9.7	3.7	3.2			
Short Horizon	14.6	9.2	8.0	5.3	6.6			
Spain								
Medium Horizon	13.5	11.3	10.6	2.2	2.9			
Short Horizon	13.4	11.7	8.8	1.7	4.6			
Sweden								
Medium Horizon	12.0	9.5	9.2	2.5	2.8			
Short Horizon	13.4	9.9	7.0	3.5	6.5			
Switzerland								
Medium Horizon	9.5	6.3	5.1	3.1	4.3			
Short Horizon	11.2	7.3	4.3	3.9	6.9			
United Kingdom								
Medium Horizon	7.8	4.8	5.8	3.0	2.0			
Short Horizon	8.9	4.5	4.6	4.4	4.3			
United States								
Medium Horizon	9.0	5.9	6.7	3.1	2.3			
Short Horizon	10.6	6.1	5.2	4.5	5.4			

Source: Axioma, Inc.

Appendix 2. Predicted Volatility, Developed Market Currencies

	Month End Value (%)			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
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			
CAD								
Medium Horizon	11.1	8.7	11.1	2.4	0.0			
Short Horizon	12.2	8.7	10.4	3.5	1.8			
CHF								
Medium Horizon	14.5	10.0	10.4	4.5	4.1			
Short Horizon	16.0	10.3	9.5	5.8	6.5			
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			
GBP								
Medium Horizon	9.6	8.3	10.4	1.3	-0.8			
Short Horizon	10.4	8.2	9.2	2.2	1.2			
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			
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			
NOK								
Medium Horizon	15.2	12.9	13.5	2.3	1.7			
Short Horizon	17.1	13.5	13.1	3.7	4.0			
SEK								
Medium Horizon	15.8	13.1	13.7	2.7	2.1			
Short Horizon	17.6	13.6	13.0	4.1	4.6			
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			

Source: Axioma, Inc.



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