

Research

7 June 2012 | 56 pages

Quantitative Market Profile - GEM

May: Quality and Momentum Rewarded

- **Style Performance** — Value continued to do well in GEM, along with Quality (probably as a result of the underlying nervousness in the market). Momentum has recovered in the past couple of months after being significantly negative during the few months towards the end of last year. Contrary to popular belief, Growth continues to disappoint (both in the long and short term), as did Risk over the past few months.
- **Factor Performance** — Profitability based factors dominated over the last two months followed by longer term momentum based strategies. Though dividend yield was the best performing factor last month, return on equity (ROE) and net margin based factors have also done well, likely due to the outperformance of companies in reporting season.
- **Market Environment** — Both Index and Stock Volatility rose but still nowhere close to historical highs. In general, Index Volatility rose more than stock volatility in every market indicating a larger proportion of activity being concentrated in the large cap space. While cross correlations continued to trend upwards, excess correlations on the other hand fell or stayed flat for most markets.
- **Risk Environment** — Principal and macro risk have gone up in all styles except for Quality, indicating the uncertain and volatile market behavior. Credit worries still continue to haunt the market with the CDS spread continuing to be the dominant risk factor followed by Commodity and Oil in our AP-RAM model.
- **RAM Monitors** — The implicit pricing in higher CDS spreads for the last three months rose higher - indicating credit worries still exist, possibly with Europe not being able to find the right balance between growth and inflation. Market has started pricing against global yield and oil but there is no clear trend in Commodities.
- **Analyst Bias** — Analysts prefer stocks positively exposed to CDS, where as they are negatively exposed to oil and global yield. In terms of styles, they are negatively biased to Size and Quality. Increasing exposure to Growth and relatively neutral Momentum bias indicates analysts' expectation of a slow global economic recovery.

- Equities
- Global Emerging Markets
- Monthly

Paul R Chanin

+65-6657-1153

paul.chanin@citi.com

Head, Pan Asia Quantitative Research
Puneet Singh

+65-6657-1172

puneet.singh@citi.com

Tushar Subhra Mandal

+65-6657-1154

tushar.mandal@citi.com

Anmol Sethy

+65-6657-1175

anmol.sethy@citi.com

Nachiket R Garde, CFA

Masayoshi Yoshihara

Nick Morton

Si An Tan

Zee Yusuf

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Citi Investment Research & Analysis is a division of Citigroup Global Markets Inc. (the "Firm"), which does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Contents

What's working in the markets?	3
Performance of QuantIFI Styles	4
Factor Performance (Unrestricted)	6
Factor Performance (Country Sector Neutral)	7
Payoff to Country and Sector Selection	8
Market Environment – Volatility, Correlation and Dispersion	9
Volatility Measures	10
Risk Environment	13
Risk Decomposition of various Investing Styles	14
GRAM Factor Significance	16
RAM Monitors	17
Analyst Biases	21
Analyst Macro Biases	22
Analyst Style Biases	24
QuantIFI Loadings	25
QuantIFI Loadings	26
Significant RAM Betas	33
RAM Betas	34
Figure Descriptions	41
Figures Description	42
Methodology	43
Volatility Monitor Methodology	44
QuantIFI Methodology	45
GRAM Factors	47
Appendix A-1	51

What's working in the markets?

Performance of QuantIFI Styles

Value continued to perform well while growth disappointed

Figure 1. Size over last one year

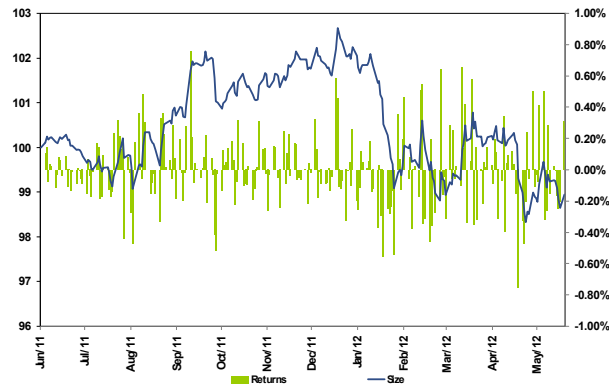


Figure 2. Value over last one year

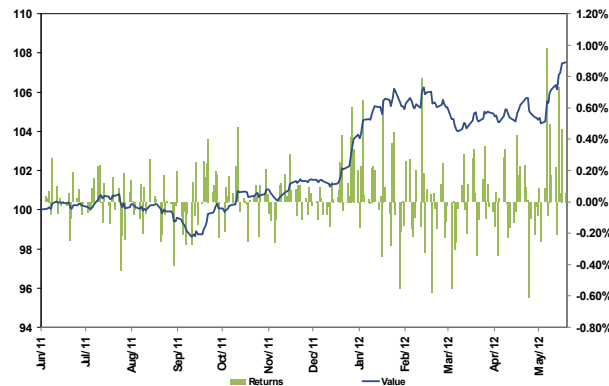


Figure 3. Growth over last one year

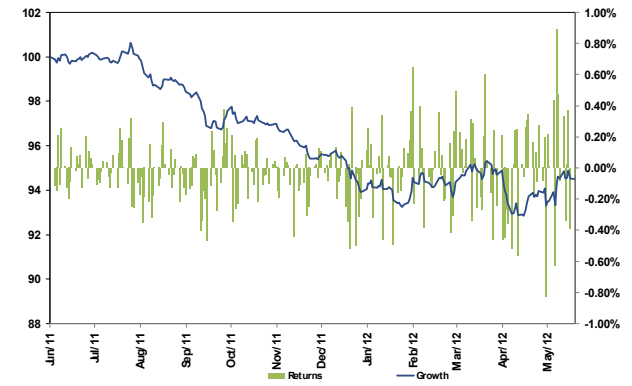


Figure 4. Size over ten years

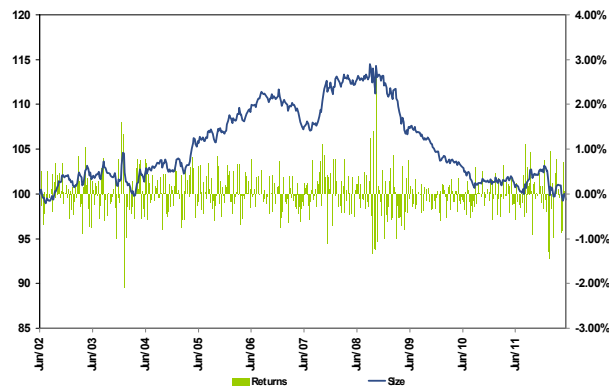


Figure 5. Value over ten years

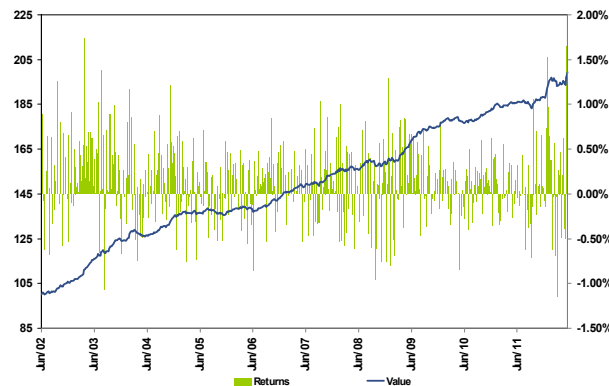
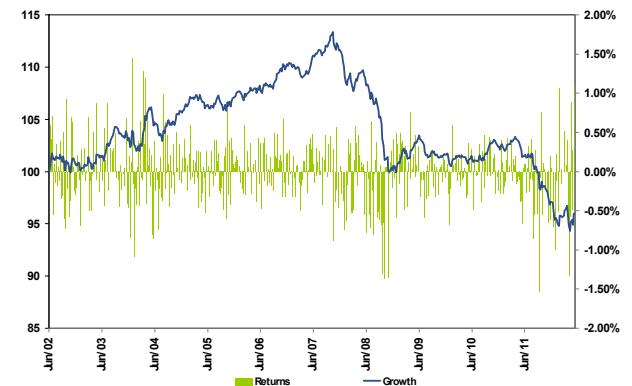


Figure 6. Growth over ten years



Source for all charts: Citi Investment Research and Analysis

Performance of QuantIFI Styles (cont'd.)

Quality performed consistently over the last year but Risk had a negative payoff

Figure 7. Risk over last one year

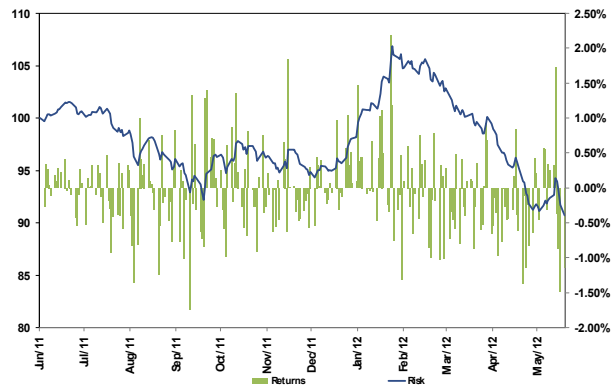


Figure 8. Momentum over last one year

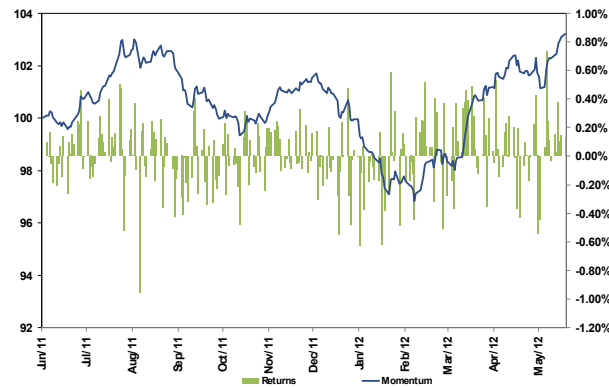


Figure 9. Quality over last one year

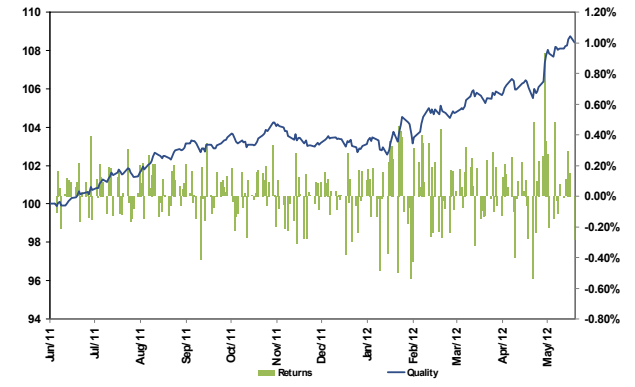


Figure 10. Risk over ten years

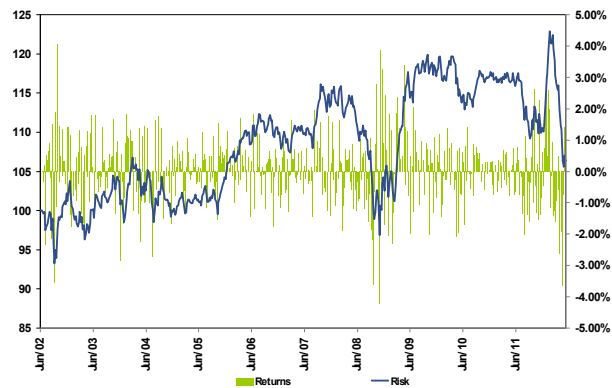


Figure 11. Momentum over ten years

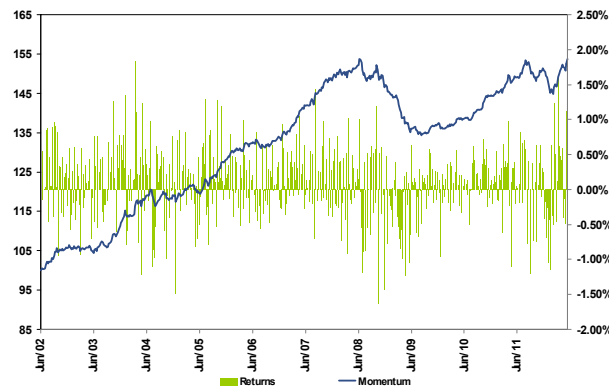
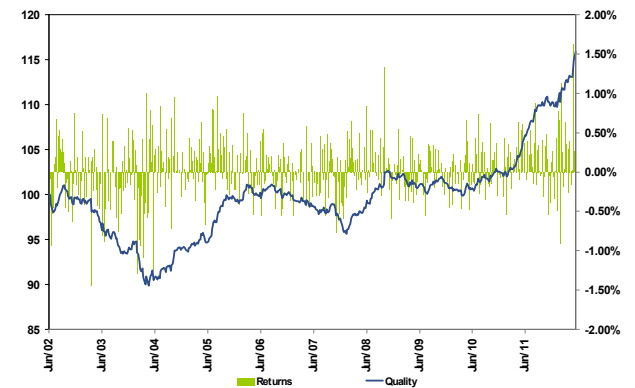


Figure 12. Quality over ten years



Source for all charts: Citi Investment Research and Analysis



Factor Performance (Unrestricted)

Profitability based strategies dominated over the last month

Figure 13. Factor Performance – GEM (Unrestricted)

	Returns							IR's			
	1m	3m	6m	1y	2y	5y	10y	1y	2y	5y	10y
Valuations											
Dividend Yield	4.2 (1)	7.4 (9)	15.1 (1)	21.0 (1)	12.9 (5)	14.5 (2)	11.2 (3)	2.6 (1)	1.8 (3)	1.7 (2)	1.2 (3)
Price/Cash Flow	-1.8 (20)	-4.8 (19)	4.5 (5)	1.9 (15)	5.2 (12)	9.6 (4)	9.7 (4)	0.2 (15)	0.7 (12)	0.9 (4)	1.0 (4)
Trailing PE	-0.5 (18)	2.7 (13)	8.3 (3)	14.9 (5)	15.4 (3)	15.1 (1)	17.2 (2)	1.8 (5)	2.5 (2)	1.8 (1)	1.8 (2)
F'Cast PE (12m F'wd)	-1.2 (19)	-6.2 (21)	3.9 (9)	5.7 (12)	9.5 (8)	7.5 (5)	8.2 (5)	0.3 (13)	0.7 (11)	0.5 (8)	0.6 (6)
Price/Sales	-2.5 (22)	-8.7 (23)	-0.1 (16)	-7.2 (21)	0.2 (18)	6.1 (7)	4.7 (9)	-0.7 (23)	0.0 (18)	0.5 (7)	0.4 (9)
Price/Book	-2.7 (23)	-10.1 (24)	4.0 (8)	-6.2 (20)	-3.4 (22)	4.5 (8)	4.2 (11)	-0.4 (19)	-0.3 (22)	0.3 (11)	0.3 (13)
Profitability											
Reported ROE	1.3 (9)	8.1 (7)	5.7 (4)	13.5 (7)	8.9 (9)	6.2 (6)	6.6 (7)	2.3 (3)	1.2 (7)	0.8 (5)	0.7 (5)
Forecast ROE	3.3 (2)	10.0 (3)	3.6 (10)	17.9 (2)	11.7 (6)	2.6 (11)	3.1 (16)	1.9 (4)	1.6 (5)	0.3 (12)	0.4 (10)
Net Margin (Trailing)	1.9 (7)	9.2 (4)	9.3 (2)	14.6 (6)	5.4 (11)	2.6 (13)	1.9 (18)	2.5 (2)	0.8 (10)	0.3 (10)	0.2 (18)
Net Margin (F'Cast)	2.7 (3)	8.6 (6)	4.1 (7)	10.8 (9)	3.7 (13)	-4.0 (19)	-2.8 (23)	1.6 (8)	0.6 (13)	-0.5 (24)	-0.4 (23)
Earnings Certainty & Quality											
Cashflow to Earnings	1.8 (8)	1.5 (15)	-0.9 (17)	-1.2 (16)	0.3 (17)	0.6 (15)	0.2 (20)	-0.3 (18)	0.1 (17)	0.1 (15)	0.0 (20)
Earnings Est. Variability (Hist)	1.2 (11)	3.1 (12)	2.0 (13)	10.0 (10)	2.9 (15)	0.9 (14)	-2.7 (22)	1.5 (9)	0.5 (14)	0.1 (14)	-0.3 (22)
Earnings Est. Dispersion FY1	1.9 (6)	4.8 (10)	3.4 (11)	15.5 (4)	9.8 (7)	3.1 (10)	2.3 (17)	1.7 (7)	1.4 (6)	0.4 (9)	0.3 (14)
Earnings Growth											
Historical EPS Growth	0.2 (16)	2.2 (14)	0.0 (15)	5.6 (13)	2.6 (16)	0.0 (16)	1.7 (19)	1.0 (11)	0.5 (15)	0.0 (16)	0.3 (15)
1Y EPS Growth	-0.2 (17)	3.1 (11)	3.2 (12)	5.1 (14)	7.0 (10)	4.4 (9)	3.7 (13)	1.3 (10)	1.6 (4)	0.7 (6)	0.5 (7)
Earnings Revisions Ratio	0.9 (14)	8.7 (5)	4.2 (6)	15.6 (3)	18.2 (1)	9.9 (3)	17.6 (1)	1.7 (6)	2.6 (1)	1.2 (3)	2.1 (1)
PEG Ratio	-2.8 (24)	-7.6 (22)	-1.5 (18)	-9.2 (22)	-2.5 (21)	-0.4 (18)	-0.3 (21)	-0.7 (24)	-0.3 (21)	-0.1 (18)	0.0 (21)
Long Term PEG Ratio	-2.3 (21)	-5.5 (20)	0.6 (14)	-5.5 (19)	-2.0 (20)	-0.3 (17)	4.0 (12)	-0.4 (20)	-0.2 (20)	0.0 (17)	0.5 (8)
Price Momentum											
% Price Change (1M)	1.0 (13)	0.3 (16)	-8.2 (22)	-10.5 (23)	-4.7 (23)	2.6 (12)	3.6 (14)	-0.5 (21)	-0.3 (24)	0.1 (13)	0.2 (17)
% Price Change (3M)	1.2 (10)	-0.8 (17)	-19.0 (24)	-13.4 (24)	-4.8 (24)	-4.2 (20)	3.3 (15)	-0.6 (22)	-0.3 (23)	-0.2 (19)	0.2 (19)
% Price Change (6M)	1.0 (12)	7.5 (8)	-15.0 (23)	-4.7 (18)	3.4 (14)	-7.7 (22)	4.3 (10)	-0.2 (16)	0.2 (16)	-0.4 (20)	0.3 (16)
% Price Change (12M)	2.4 (5)	14.1 (2)	-7.9 (21)	6.4 (11)	13.0 (4)	-10.3 (24)	6.4 (8)	0.3 (14)	0.8 (9)	-0.5 (22)	0.3 (12)
First 11 of Last 12M	2.4 (4)	14.9 (1)	-5.5 (20)	11.6 (8)	16.0 (2)	-9.8 (23)	6.7 (6)	0.6 (12)	1.0 (8)	-0.5 (21)	0.4 (11)
260D Trading Value	0.6 (15)	-2.2 (18)	-5.1 (19)	-2.2 (17)	-0.1 (19)	-6.7 (21)	-7.7 (24)	-0.2 (17)	0.0 (19)	-0.5 (23)	-0.6 (24)

Source: Factset, I/B/E/S, WorldScope, CIRA

Factor Performance (Country Sector Neutral)

Figure 14. Factor Performance – GEM (Country Sector Neutral)

	Returns							IR's						
	1m	3m	6m	1y	2y	5y	10y	1y	2y	5y	10y			
Valuations														
Dividend Yield	1.2 (10)	2.4 (12)	6.0 (3)	16.4 (1)	9.5 (6)	10.4 (2)	9.9 (4)	5.6 (1)	2.6 (2)	2.3 (1)	1.7 (3)			
Price/Cash Flow	-1.3 (19)	-2.6 (18)	5.8 (4)	2.6 (15)	4.5 (13)	9.0 (4)	8.9 (5)	0.3 (15)	0.8 (14)	1.3 (4)	1.5 (4)			
Trailing PE	-0.2 (18)	1.3 (14)	7.1 (1)	11.1 (4)	9.6 (5)	10.5 (1)	12.4 (2)	1.6 (7)	1.8 (5)	1.8 (2)	2.0 (2)			
F'Cast PE (12m F'rdw)	-1.3 (20)	-3.0 (21)	6.8 (2)	2.7 (14)	5.3 (10)	7.9 (6)	11.2 (3)	0.2 (16)	0.6 (15)	0.8 (8)	1.4 (5)			
Price/Sales	-2.1 (23)	-4.8 (23)	2.3 (12)	-3.3 (19)	0.0 (19)	8.9 (5)	6.9 (8)	-0.4 (20)	0.0 (19)	1.1 (5)	1.0 (8)			
Price/Book	-3.1 (24)	-8.4 (24)	2.6 (10)	-7.2 (22)	-5.2 (24)	4.1 (8)	5.5 (10)	-0.6 (22)	-0.6 (23)	0.4 (12)	0.6 (13)			
Profitability														
Reported ROE	2.2 (4)	5.3 (5)	3.9 (7)	12.2 (2)	9.2 (7)	4.3 (7)	3.4 (13)	2.9 (2)	1.9 (4)	0.9 (7)	0.6 (12)			
Forecast ROE	2.4 (3)	7.0 (3)	2.6 (11)	11.9 (3)	10.8 (4)	3.6 (11)	4.2 (12)	1.8 (6)	2.1 (3)	0.5 (11)	0.7 (9)			
Net Margin (Trailing)	1.1 (11)	3.9 (8)	3.5 (9)	7.6 (8)	4.3 (14)	0.8 (16)	1.7 (18)	2.6 (3)	1.2 (10)	0.2 (16)	0.3 (17)			
Net Margin (F'Cast)	1.4 (8)	4.5 (6)	0.8 (14)	5.6 (12)	3.8 (16)	-3.4 (20)	-1.1 (22)	1.2 (11)	1.0 (13)	-0.7 (24)	-0.2 (22)			
Earnings Certainty & Quality														
Cashflow to Earnings	0.8 (14)	1.2 (16)	0.6 (16)	0.8 (17)	-0.1 (20)	1.2 (15)	1.8 (17)	0.4 (14)	-0.1 (20)	0.4 (13)	0.5 (14)			
Earnings Est. Variability (Hist)	0.4 (16)	2.5 (11)	0.2 (18)	7.2 (9)	4.3 (15)	1.3 (14)	-0.6 (21)	1.6 (8)	1.1 (11)	0.3 (15)	-0.1 (21)			
Earnings Est. Dispersion FY1	0.9 (12)	3.6 (10)	0.3 (17)	8.4 (7)	7.7 (8)	3.6 (12)	3.2 (14)	1.3 (10)	1.6 (7)	0.6 (9)	0.6 (11)			
Earnings Growth														
Historical EPS Growth	0.5 (15)	1.2 (15)	0.7 (15)	4.6 (13)	5.8 (9)	1.4 (13)	-0.3 (20)	1.5 (9)	1.8 (6)	0.4 (14)	-0.1 (20)			
1Y EPS Growth	0.9 (13)	3.8 (9)	4.7 (5)	6.9 (10)	5.0 (11)	4.1 (10)	5.8 (9)	2.1 (4)	1.5 (9)	1.0 (6)	1.4 (6)			
Earnings Revisions Ratio	1.9 (6)	6.3 (4)	4.7 (6)	10.5 (5)	12.5 (3)	9.1 (3)	13.9 (1)	2.0 (5)	2.9 (1)	1.6 (3)	2.6 (1)			
PEG Ratio	-1.6 (21)	-4.1 (22)	0.8 (13)	-7.7 (23)	-3.0 (21)	0.1 (17)	2.4 (16)	-0.8 (24)	-0.4 (21)	0.0 (17)	0.4 (15)			
Long Term PEG Ratio	-2.0 (22)	-2.8 (20)	3.5 (8)	0.9 (16)	2.7 (17)	4.1 (9)	7.3 (6)	0.1 (17)	0.4 (16)	0.6 (10)	1.2 (7)			
Price Momentum														
% Price Change (1M)	1.9 (5)	1.5 (13)	-5.8 (22)	-7.9 (24)	-4.5 (23)	-4.3 (23)	-3.2 (24)	-0.5 (21)	-0.4 (22)	-0.3 (22)	-0.3 (23)			
% Price Change (3M)	1.4 (9)	0.4 (17)	-10.4 (23)	-3.6 (20)	0.4 (18)	-3.6 (21)	0.0 (19)	-0.2 (19)	0.0 (18)	-0.3 (21)	0.0 (19)			
% Price Change (6M)	1.4 (7)	4.0 (7)	-13.2 (24)	-3.2 (18)	4.7 (12)	-2.6 (19)	2.5 (15)	-0.2 (18)	0.4 (17)	-0.2 (19)	0.2 (18)			
% Price Change (12M)	3.4 (1)	12.0 (1)	-4.1 (21)	6.4 (11)	13.0 (2)	-3.9 (22)	4.4 (11)	0.4 (13)	1.1 (12)	-0.3 (20)	0.4 (16)			
First 11 of Last 12M	3.3 (2)	11.1 (2)	-2.8 (19)	9.6 (6)	15.5 (1)	-0.6 (18)	7.2 (7)	0.7 (12)	1.5 (8)	0.0 (18)	0.6 (10)			
260D Trading Value	0.1 (17)	-2.8 (19)	-3.4 (20)	-5.6 (21)	-3.5 (22)	-4.3 (24)	-2.8 (23)	-0.8 (23)	-0.6 (24)	-0.6 (23)	-0.4 (24)			

Source: Factset, I/B/E/S, WorldScope, CIRA

Source: Citi Investment Research and Analysis

Payoff to Country and Sector Selection

Figure 15. Payoff to Country Sector selection-GEM

	Returns							IR's				
	1m	3m	6m	1y	2y	5y	10y	1y	2y	5y	10y	
Valuations												
Dividend Yield	3.0 (1)	5.0 (2)	8.7 (1)	4.0 (6)	3.1 (5)	3.7 (3)	1.2 (9)	0.5 (7)	0.5 (8)	0.5 (3)	0.2 (9)	
Price/Cash Flow	-0.6 (17)	-2.2 (20)	-1.2 (12)	-0.7 (17)	0.7 (12)	0.7 (7)	0.7 (10)	-0.3 (19)	0.2 (11)	0.1 (7)	0.1 (10)	
Trailing PE	-0.3 (12)	1.4 (10)	1.1 (8)	3.5 (8)	5.4 (1)	4.2 (2)	4.4 (2)	1.2 (5)	1.8 (1)	0.9 (1)	0.8 (2)	
F'Cast PE (12m F'rd)	0.1 (10)	-3.3 (22)	-2.6 (21)	3.4 (9)	4.3 (3)	-0.2 (10)	-2.7 (22)	0.4 (9)	0.6 (4)	0.0 (10)	-0.3 (18)	
Price/Sales	-0.4 (15)	-4.1 (24)	-2.2 (18)	-3.9 (22)	0.4 (16)	-2.6 (20)	-2.0 (19)	-1.1 (23)	0.1 (15)	-0.3 (20)	-0.2 (16)	
Price/Book	0.4 (9)	-1.8 (19)	1.5 (7)	1.4 (12)	2.1 (6)	0.5 (8)	-1.2 (15)	0.3 (14)	0.5 (6)	0.1 (8)	-0.1 (14)	
Profitability												
Reported ROE	-0.9 (19)	2.6 (7)	1.8 (6)	1.2 (13)	-0.3 (19)	1.8 (5)	3.2 (5)	0.3 (11)	-0.1 (19)	0.3 (5)	0.5 (4)	
Forecast ROE	0.9 (5)	2.8 (6)	1.1 (9)	5.6 (3)	0.9 (11)	-0.9 (17)	-1.0 (14)	1.4 (4)	0.2 (9)	-0.2 (17)	-0.2 (15)	
Net Margin (Trailing)	0.7 (7)	5.2 (1)	5.7 (2)	6.6 (2)	1.1 (9)	1.8 (4)	0.3 (11)	1.8 (2)	0.2 (10)	0.3 (4)	0.0 (11)	
Net Margin (F'Cast)	1.4 (2)	4.0 (3)	3.4 (3)	5.1 (4)	0.0 (18)	-0.6 (15)	-1.7 (17)	1.8 (3)	0.0 (18)	-0.1 (15)	-0.3 (20)	
Earnings Certainty & Quality												
Cashflow to Earnings	1.0 (4)	0.3 (15)	-1.5 (15)	-2.1 (20)	0.4 (15)	-0.5 (14)	-1.5 (16)	-0.7 (20)	0.1 (12)	-0.1 (14)	-0.2 (17)	
Earnings Est. Variability (Hist)	0.8 (6)	0.6 (14)	1.8 (5)	2.7 (11)	-1.4 (21)	-0.4 (13)	-2.2 (20)	0.4 (8)	-0.3 (21)	-0.1 (12)	-0.3 (19)	
Earnings Est. Dispersion FY1	1.0 (3)	1.2 (11)	3.2 (4)	6.8 (1)	2.0 (7)	-0.4 (12)	-0.8 (13)	1.8 (1)	0.6 (5)	-0.1 (13)	-0.1 (13)	
Earnings Growth												
Historical EPS Growth	-0.3 (14)	1.0 (12)	-0.7 (11)	1.0 (14)	-3.0 (22)	-1.3 (18)	1.9 (8)	0.3 (13)	-0.8 (23)	-0.2 (19)	0.3 (6)	
1Y EPS Growth	-1.1 (23)	-0.7 (16)	-1.4 (13)	-1.7 (19)	1.9 (8)	0.3 (9)	-2.0 (18)	-0.7 (21)	0.8 (3)	0.1 (9)	-0.3 (21)	
Earnings Revisions Ratio	-1.0 (20)	2.3 (8)	-0.4 (10)	4.8 (5)	5.2 (2)	0.8 (6)	3.3 (4)	0.9 (6)	1.3 (2)	0.1 (6)	0.5 (3)	
PEG Ratio	-1.2 (24)	-3.6 (23)	-2.2 (19)	-1.4 (18)	0.6 (13)	-0.7 (16)	-2.7 (21)	-0.2 (17)	0.1 (14)	-0.1 (16)	-0.4 (22)	
Long Term PEG Ratio	-0.3 (13)	-2.8 (21)	-2.8 (22)	-6.1 (23)	-4.4 (23)	-4.2 (21)	-3.0 (23)	-1.0 (22)	-0.9 (24)	-0.8 (23)	-0.5 (23)	
Price Momentum												
% Price Change (1M)	-1.0 (21)	-1.1 (17)	-2.3 (20)	-2.1 (21)	0.2 (17)	7.7 (1)	7.3 (1)	-0.2 (18)	0.0 (17)	0.8 (2)	0.8 (1)	
% Price Change (3M)	-0.1 (11)	-1.2 (18)	-9.1 (24)	-9.4 (24)	-4.8 (24)	-0.2 (11)	3.5 (3)	-1.3 (24)	-0.8 (22)	0.0 (11)	0.4 (5)	
% Price Change (6M)	-0.4 (16)	3.4 (5)	-1.5 (14)	-0.5 (16)	-0.6 (20)	-4.6 (22)	2.2 (7)	-0.1 (16)	-0.1 (20)	-0.5 (21)	0.2 (8)	
% Price Change (12M)	-1.1 (22)	2.0 (9)	-3.4 (23)	0.9 (15)	0.5 (14)	-5.8 (23)	2.5 (6)	0.1 (15)	0.1 (16)	-0.6 (22)	0.3 (7)	
First 11 of Last 12M	-0.8 (18)	3.5 (4)	-2.1 (17)	2.7 (10)	0.9 (10)	-8.4 (24)	0.2 (12)	0.3 (12)	0.1 (13)	-0.8 (24)	0.0 (12)	
260D Trading Value	0.4 (8)	0.7 (13)	-1.9 (16)	3.5 (7)	3.5 (4)	-2.2 (19)	-4.8 (24)	0.4 (10)	0.5 (7)	-0.2 (18)	-0.5 (24)	

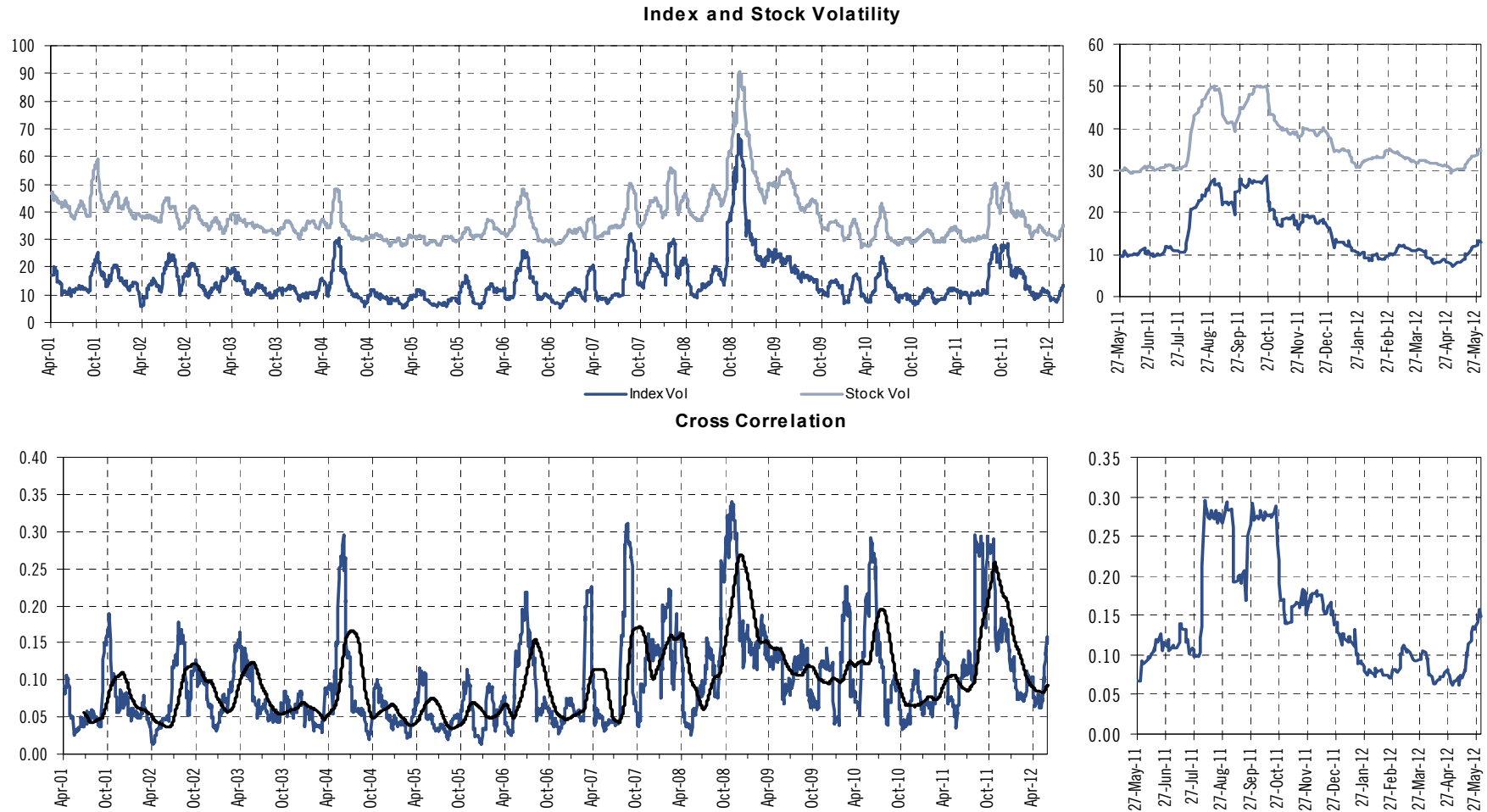
Source: Factset, I/B/E/S, WorldScope, CIRA

Market Environment – Volatility, Correlation and Dispersion

Volatility Measures

Volatility indicators started rising over the last couple of months

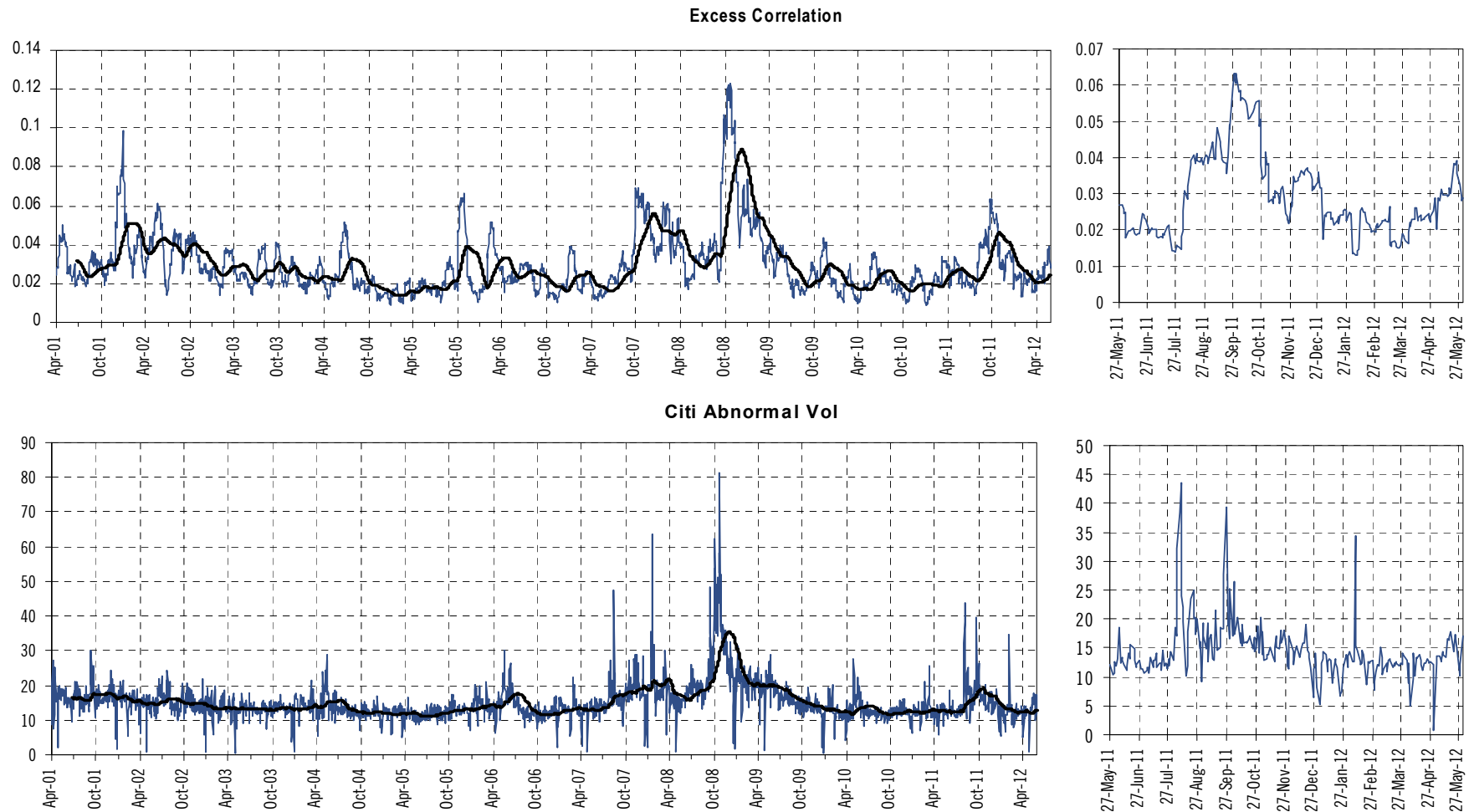
Figure 16. Volatility and Pair-wise Stock Correlations



Source: Citi Investment Research and Analysis

Volatility Measures (cont'd.)

Figure 17. Cross-sectional Deviation of Returns and Abnormal Volatility



Source: Citi Investment Research and Analysis





Risk Environment

Risk Decomposition of various Investing Styles

Principal risk and macro risk have gone up for all the styles except Quality

Figure 18. Principal risk in Value

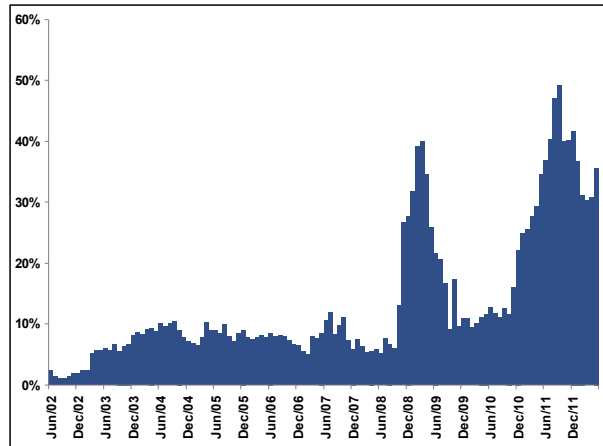


Figure 19. Value macro risk decomposition

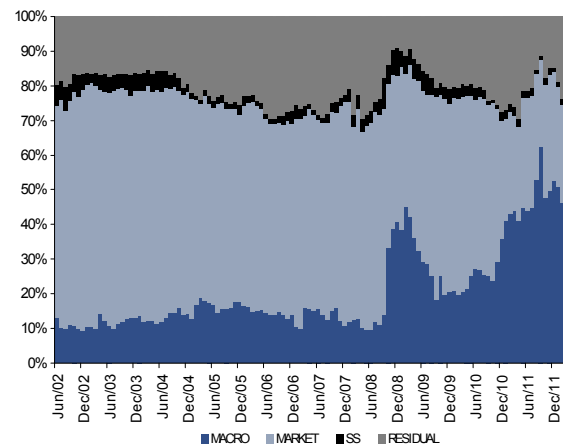


Figure 20. Macro exposures of Value

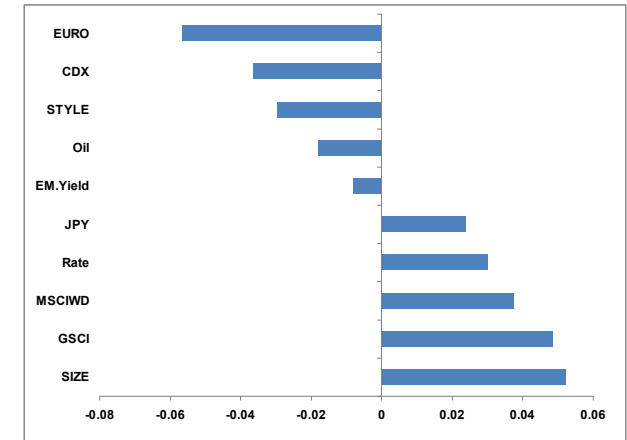


Figure 21. Principal risk in Momentum

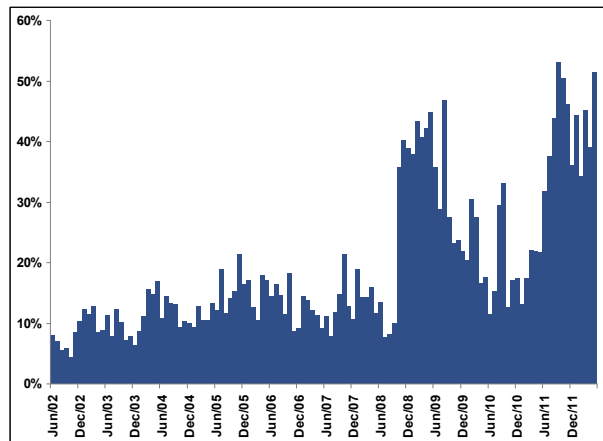


Figure 22. Momentum macro risk decomposition

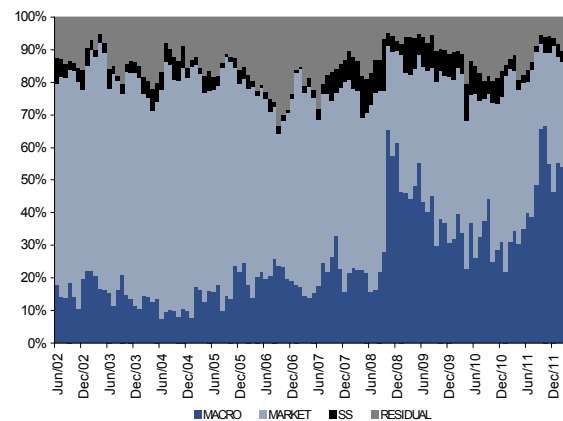
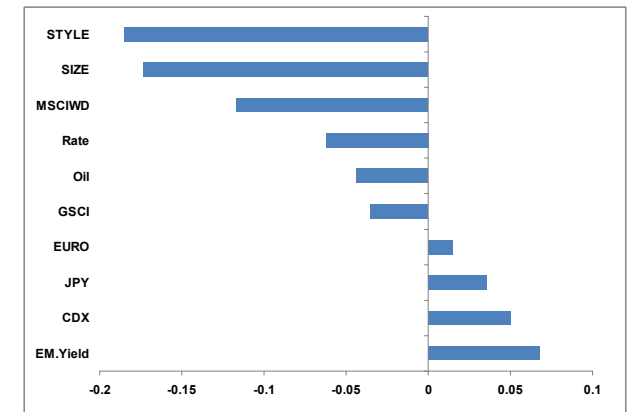


Figure 23. Macro exposures of Momentum



Source for all charts: Citi Investment Research and Analysis

Risk Decomposition of various Investing Styles (Cont'd.)

Figure 24. Principal risk in Growth

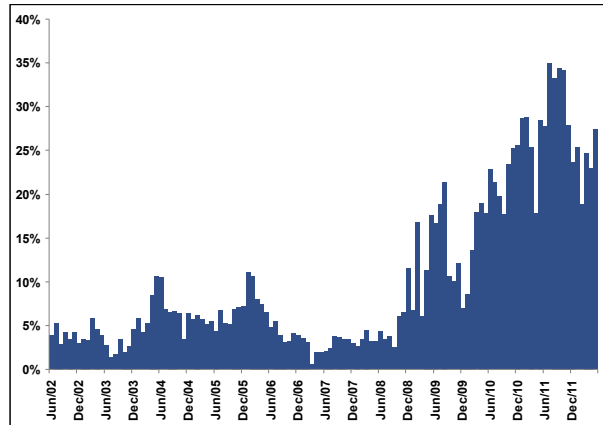


Figure 25. Growth macro risk decomposition

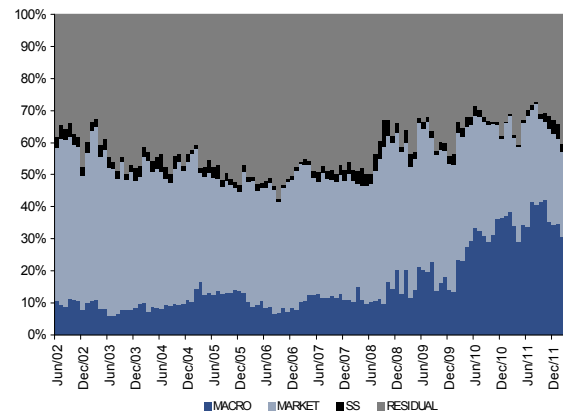


Figure 26. Macro exposures of Growth

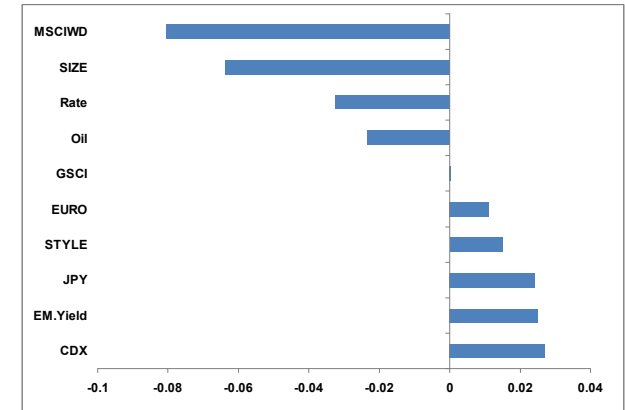


Figure 27. Principal risk in Quality

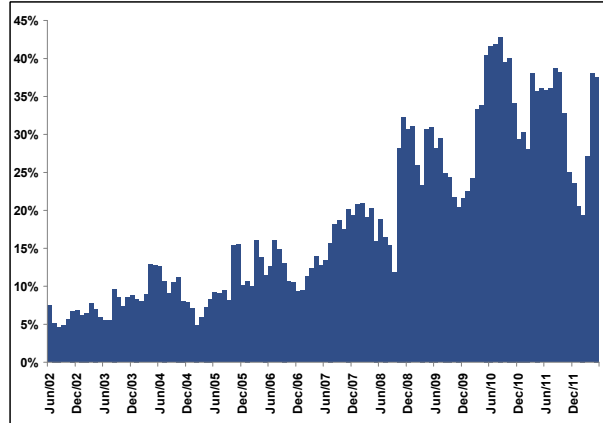


Figure 28. Quality macro risk decomposition

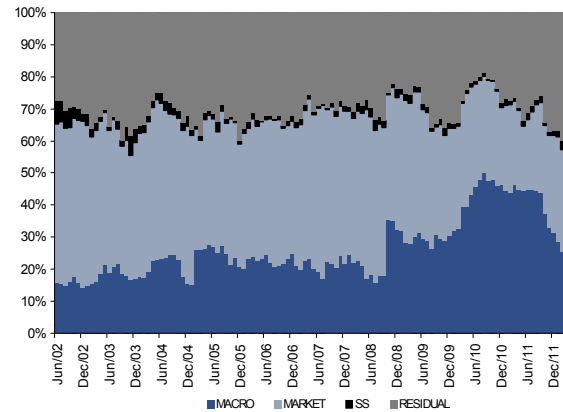
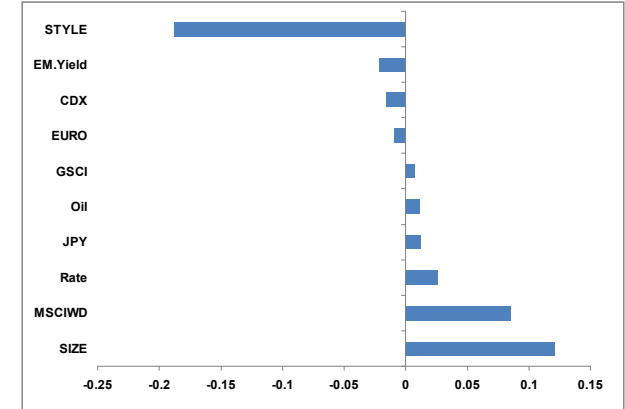


Figure 29. Macro exposures of Quality

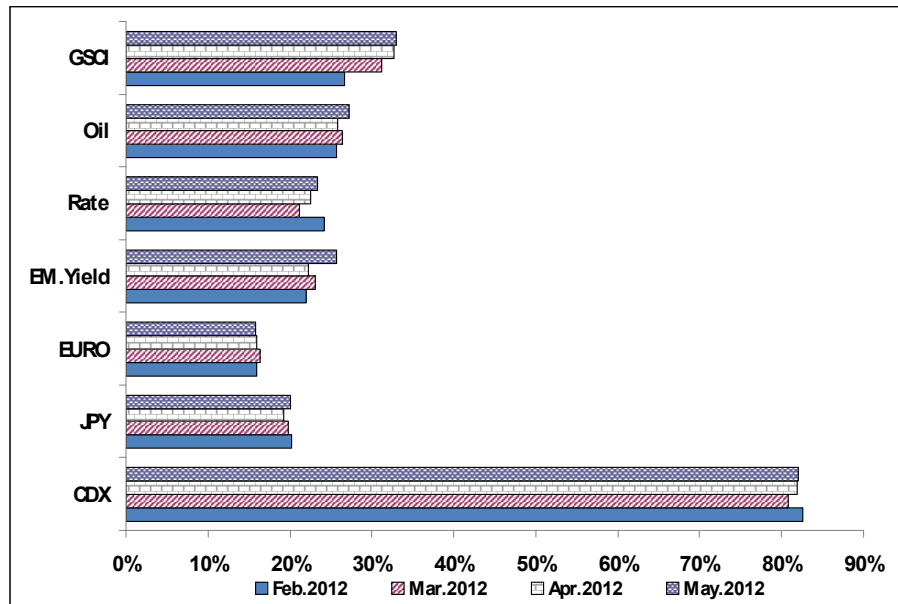


Source for all charts: Citi Investment Research and Analysis

GRAM Factor Significance

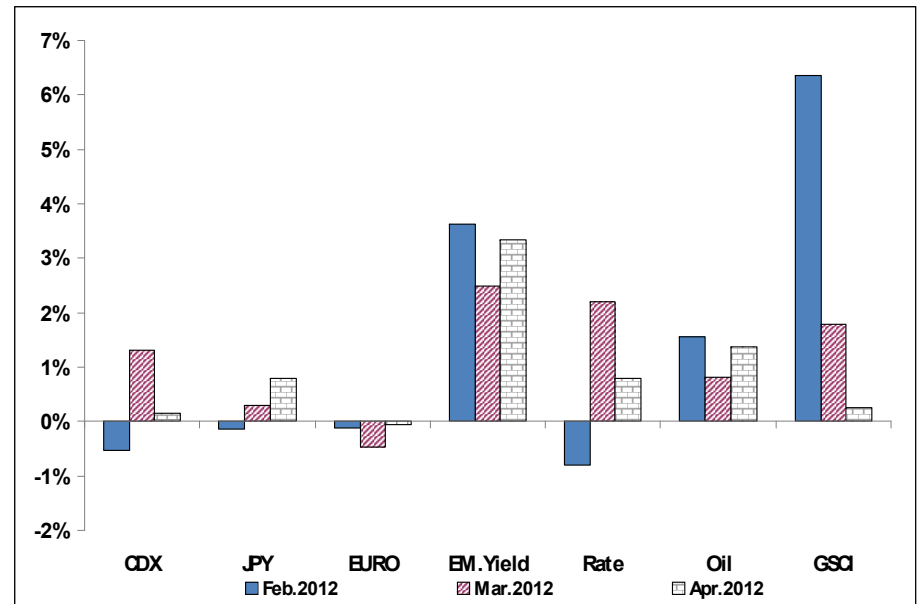
Sensitivity to CDS is the most significant factor followed by GSCI and Oil

Figure 30. Macro factor significance in GEM Universe



Source: Citi Investment Research and Analysis

Figure 31. Changes in Factor sensitivity in GEM Universe

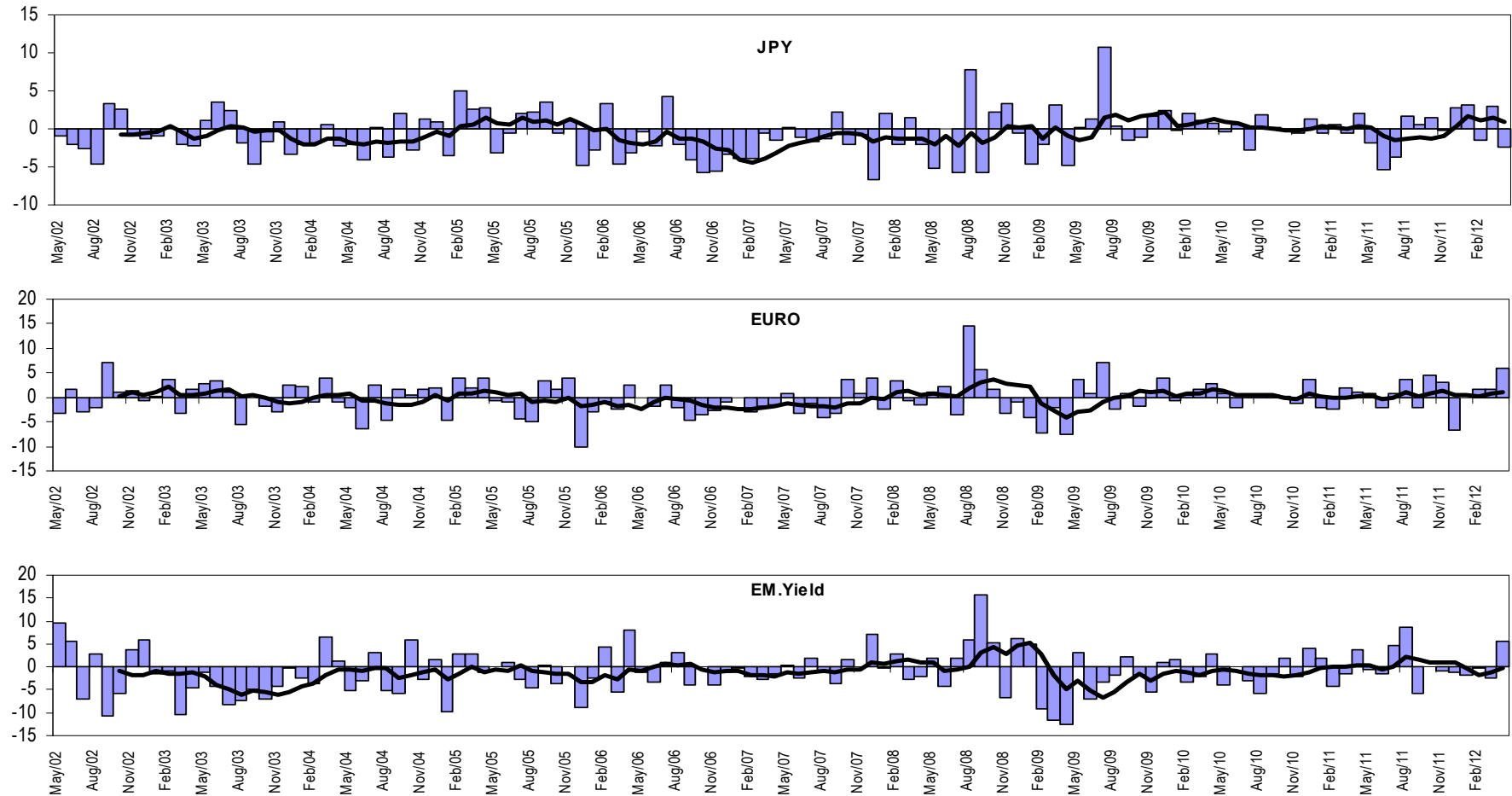


Source: Citi Investment Research and Analysis

RAM Monitors

There is no clear trend in emerging market bond yields and JPY

Figure 32. RAM Monitor for Macroeconomic Factors

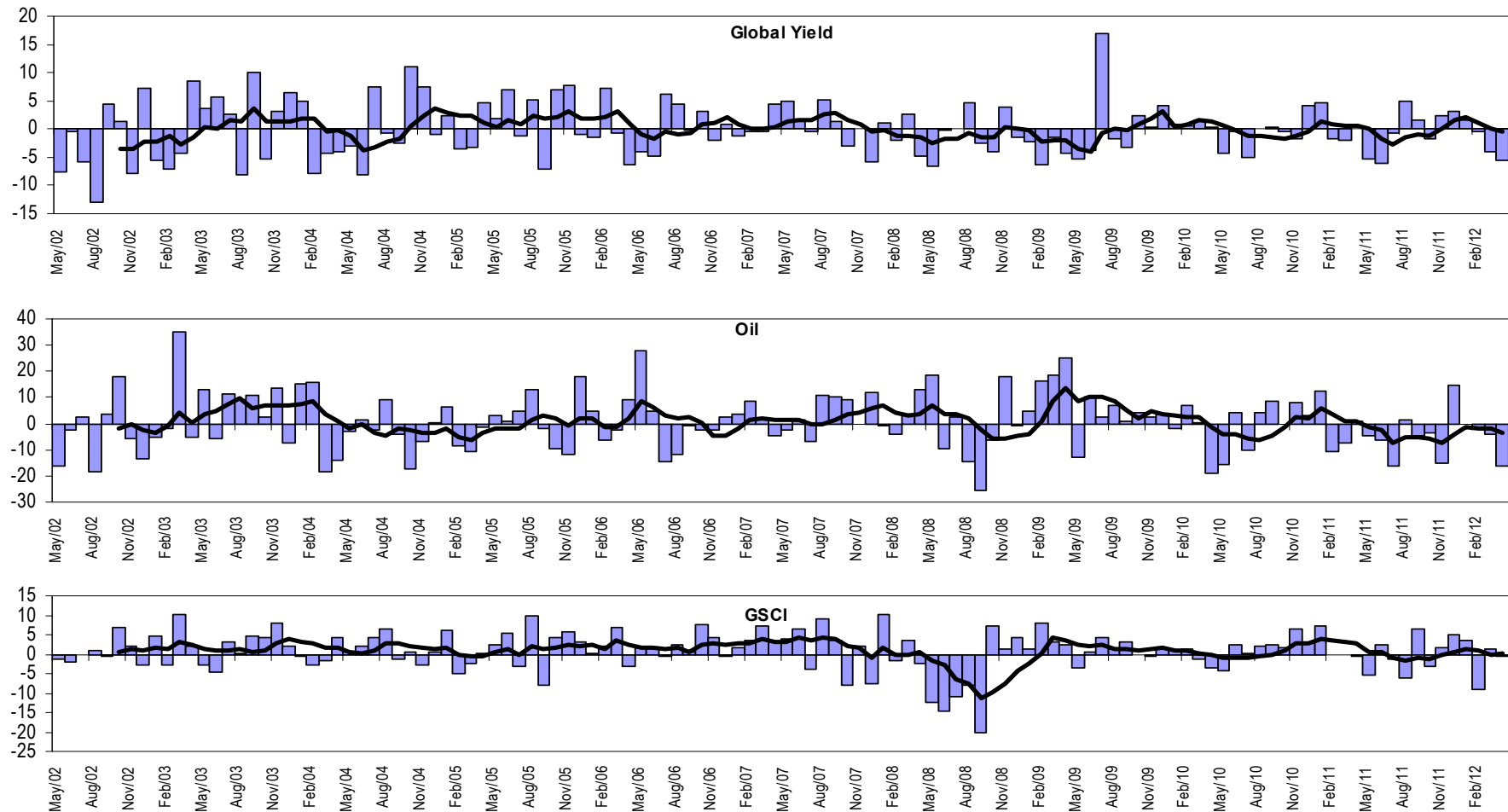


Source: Citi Investment Research and Analysis

RAM Monitors (cont'd.)

Market has started pricing against global yield and oil but there is no clear trend in Commodities

Figure 33. RAM Monitor for Macroeconomic Factors

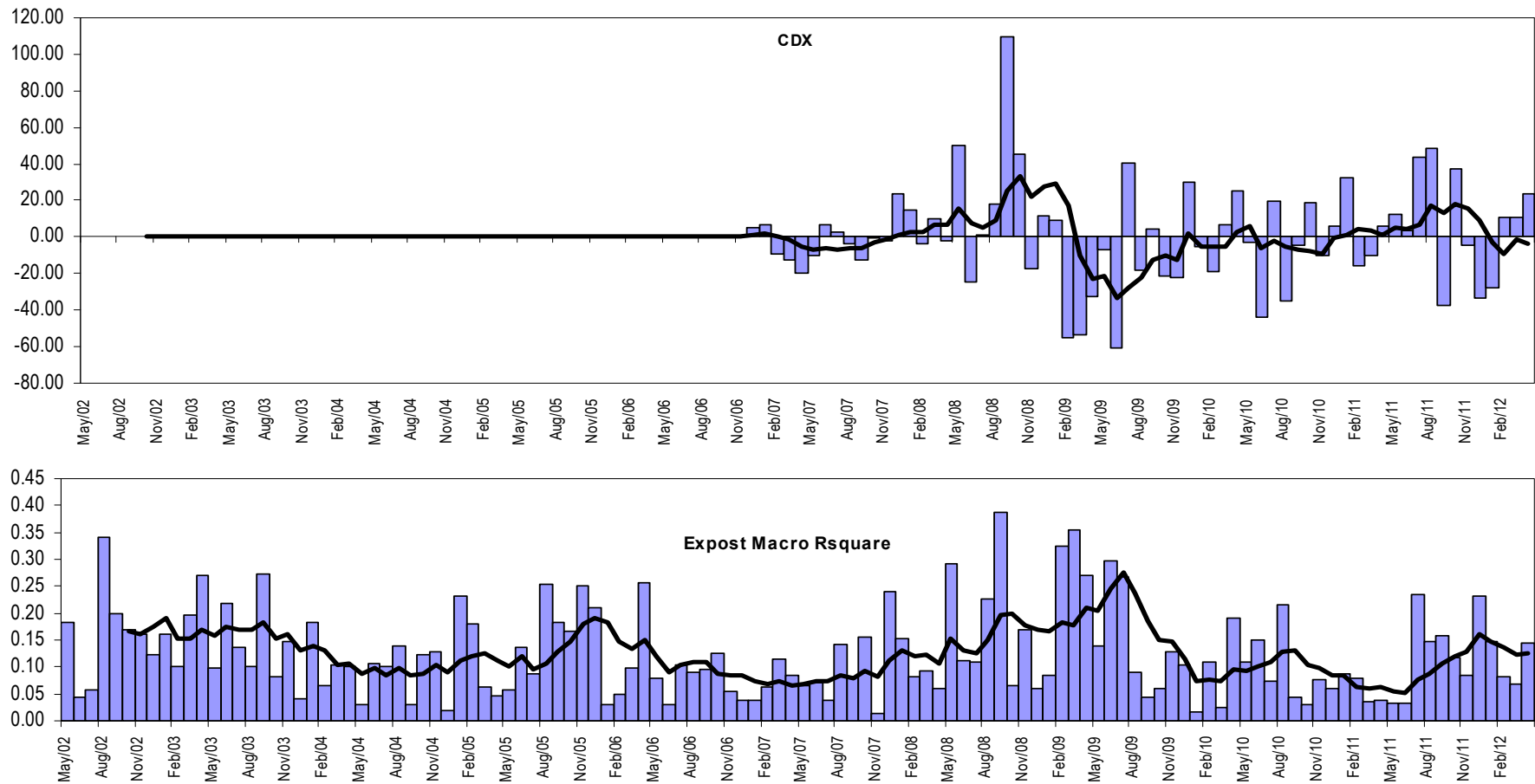


Source: Citi Investment Research and Analysis

RAM Monitors (cont'd.)

Ex-post macro R square has increased in the last month

Figure 34. RAM Monitor for Macroeconomic Factors



Source: Citi Investment Research and Analysis



Analyst Biases

Analyst Macro Biases

Analysts are biased towards stocks positively exposed to a strengthening US Dollar (versus the Yen) and CDS but biased against global yield

Figure 35. Drift/Sentiment

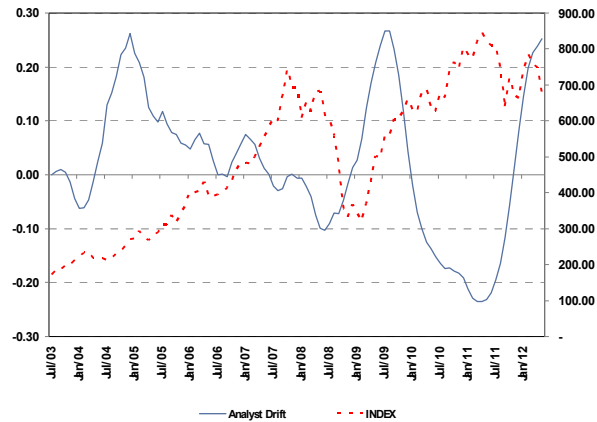


Figure 36. CDX

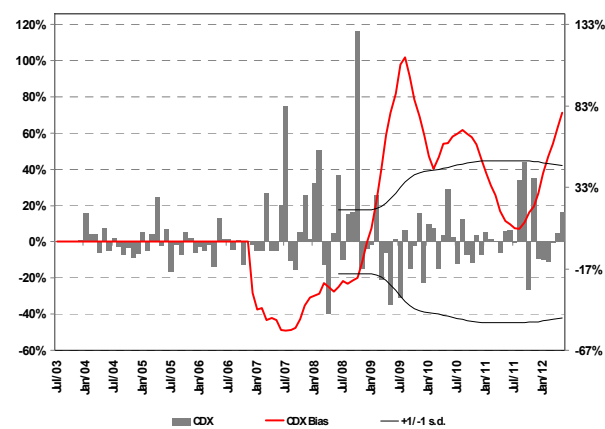


Figure 37. JPY

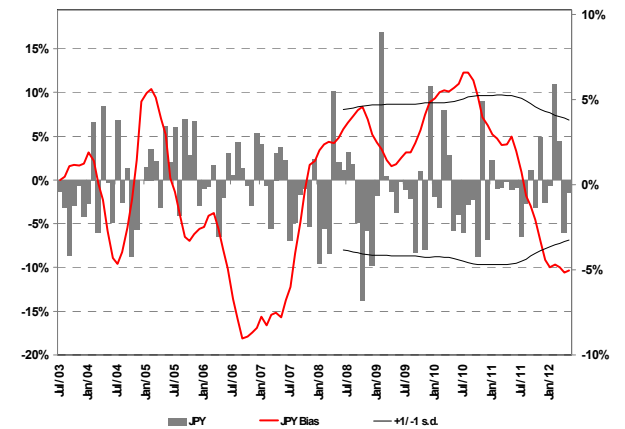


Figure 38. EURO

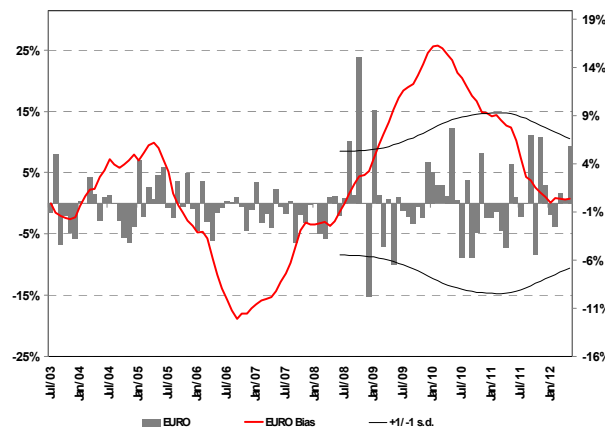


Figure 39. EM Yield

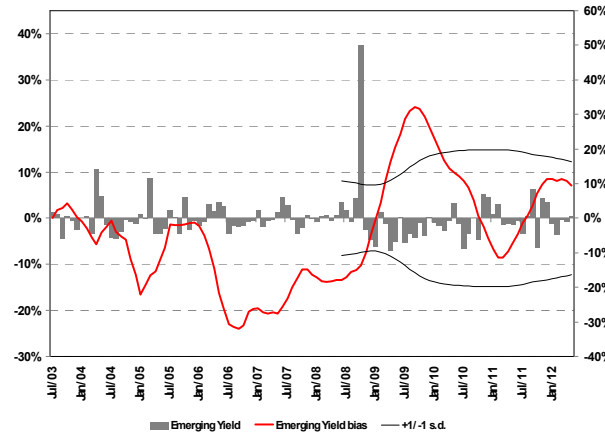
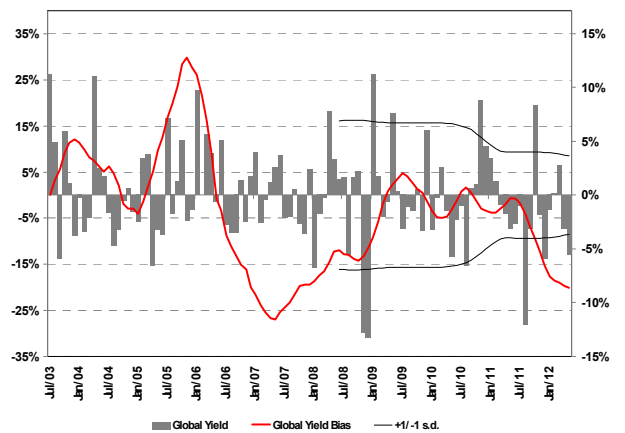


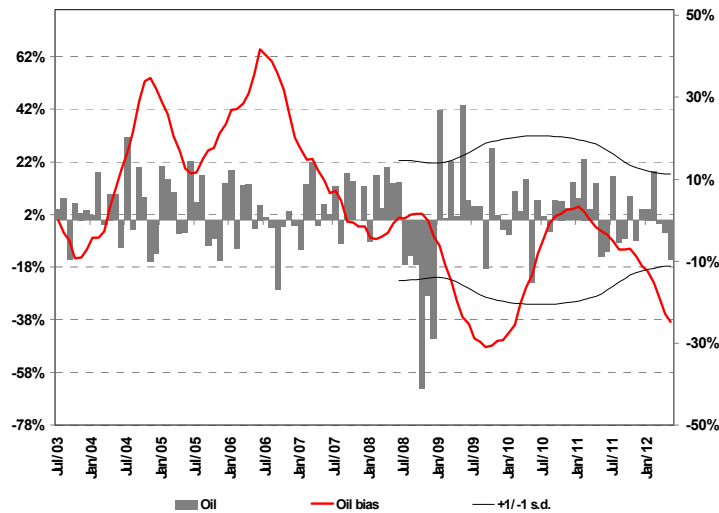
Figure 40. Global Yield



Source for all charts: Citi Investment Research and Analysis

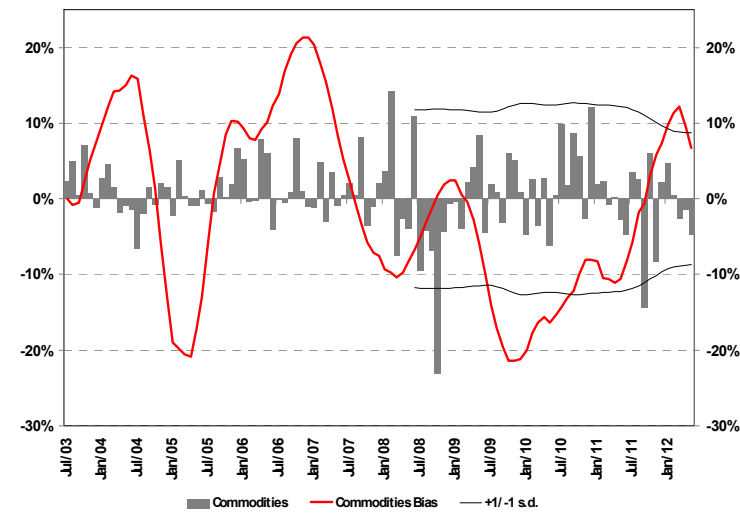
Analyst Macro Biases (cont'd.)

Figure 41. Oil



Source: Citi Investment Research and Analysis

Figure 42. Commodities



Source: Citi Investment Research and Analysis

Analyst Style Biases

Analysts are biased towards Growth while remaining wary of Quality and neutral on Momentum

Figure 43. Drift/Sentiment

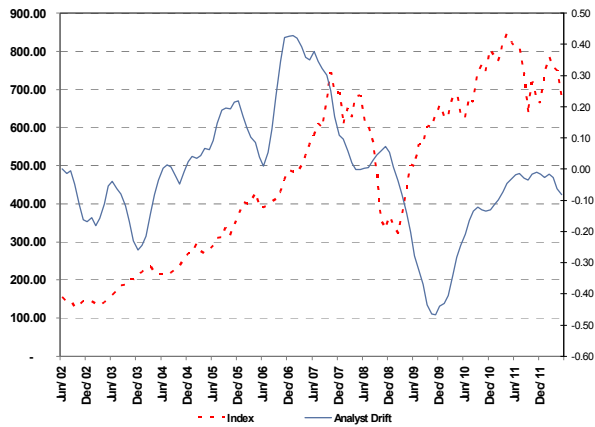


Figure 44. Size

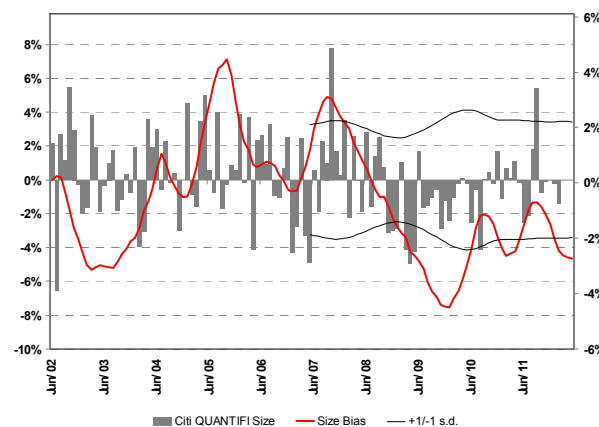


Figure 45. Value

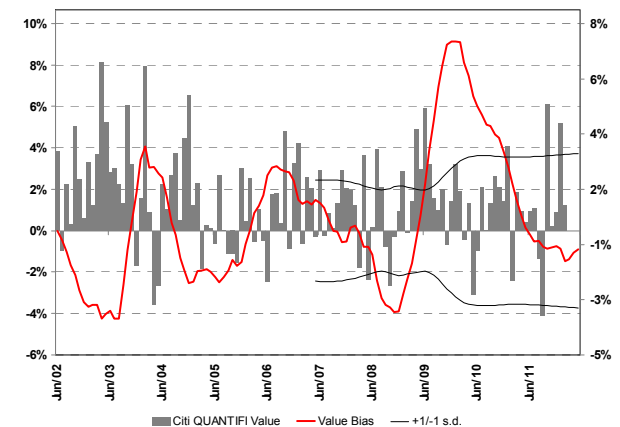


Figure 46. Growth

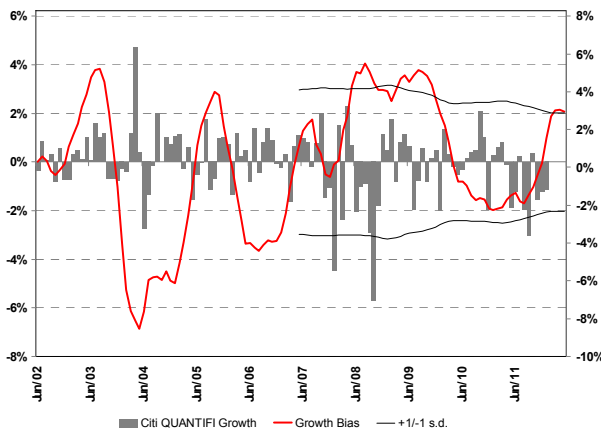


Figure 47. Momentum

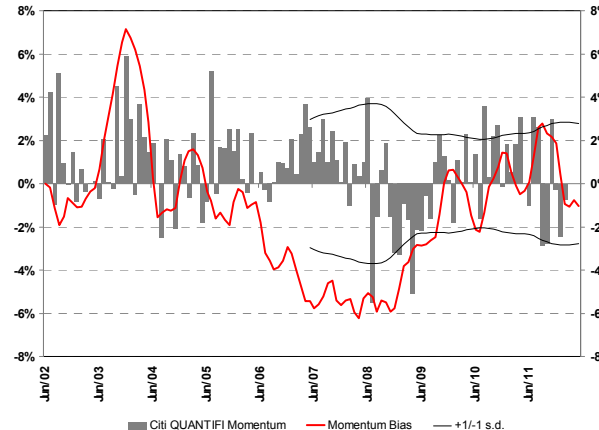
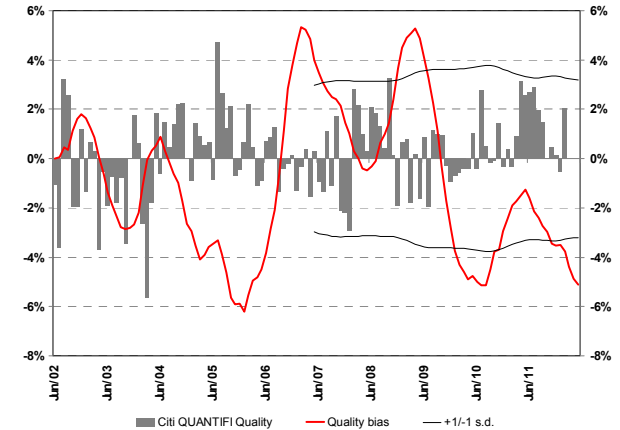


Figure 48. Quality



Source for all charts: Citi Investment Research and Analysis

QuantIFI Loadings

QuantIFI Loadings

Figure 49. Stocks with highest loadings to Size

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
601398 CH	B1G2JY	Ind & Comm Bk Of China - A	CHINA	FINANCIALS	0	27.41	4.22	1.514
601988 CH	B180B4	Bank Of China-A	CHINA	FINANCIALS	0	10.61	3.03	1.514
939 HK	B0LMTQ	China Construction Bank-H	CHINA	FINANCIALS	49982	253.09	5.38	1.514
601288 CH	B620Y4	AGRI BANK OF CHINA A	CHINA	FINANCIALS	0	36.41	2.64	1.514
GAZP RM	B59L4L	Gazprom Oao	RUSSIA	ENERGY	51987	355.06	147.03	1.473
601857 CH	B28SLD	Petrochina Co-A	CHINA	ENERGY	0	24.48	9.45	1.462
PETR3 BS	268236	Petrobras - Petroleo Bras	BRAZIL	ENERGY	31625	74.29	19.8	1.447
600028 CH	637372	China Petroleum & Chemical-A	CHINA	ENERGY	0	32.66	6.68	1.383
941 HK	607355	China Mobile	CHINA	TELECOM	52383	189.16	78.5	1.365
005930 KS	677172	Samsung Electronics Co	SOUTH KOREA	IT	151137	295.54	1211000	1.346
1398 HK	B1G1QD	Ind & Comm Bk Of China - H	CHINA	FINANCIALS	37030	207.5	4.72	1.257
AMXL MM	266747	America Movil Sab De C-Ser L	MEXICO	TELECOM	61380	104.44	16.82	1.246
883 HK	B00G0S	Cnooc	CHINA	ENERGY	28746	130.78	14.04	1.24
601628 CH	B1LBS8	China Life Insurance Co- A	CHINA	FINANCIALS	0	33	17.41	1.236

Source: Citi Investment Research and Analysis

Figure 50. Stocks with lowest loadings to Size

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
EGCH EY	630703	Egyptian Chemical Industries	EGYPT	MATERIALS	88	0.34	8.71	-3.563
3504 TT	B0R0P0	Young Optics Inc	TAIWAN	CONS.DIS.	244	5.48	108	-3.484
1033 HK	698466	Sinopec Yizheng Chemical-H	CHINA	MATERIALS	292	2.52	1.62	-3.327
200596 CH	602669	ANHUI GUJING DISTL 'B'CNY1	CHINA	CONS. STAP.	446	1.26	28.83	-3.326
2374 TT	600518	Ability Enterprise Co	TAIWAN	IT	360	1.49	28.25	-3.325
3443 TT	B05638	Global Unichip Corp	TAIWAN	IT	309	9.01	114	-3.322
2349 TT	674075	Ritek Corporation	TAIWAN	IT	377	2.59	4.25	-3.298
3691 TT	B5BTL3	GIGASOLAR MATERIAL TWD10	TAIWAN	IT	192	7.41	359	-3.292
3514 TT	B28TNP	Gintech Energy Corp	TAIWAN	IT	428	7.5	37.7	-3.291
2014 TT	698760	Chung Hung Steel Corp	TAIWAN	MATERIALS	239	0.98	8.37	-3.286
2332 TT	625487	D-Link Corp	TAIWAN	IT	434	1.7	20	-3.278
AUTO EY	B1Y9TD	Gb Auto	EGYPT	CONS.DIS.	101	0.12	20.49	-3.267
1785 TT	B00LY3	Solar Applied Materials Tech	TAIWAN	MATERIALS	420	3.26	38	-3.246
5346 TT	610899	Powerchip Semiconductor Corp	TAIWAN	IT	117	0.87	0.63	-3.244

Source: Citi Investment Research and Analysis



QuantIFI Loadings (cont'd)

Figure 51. Stocks with highest loadings to Value

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
BBAS3 BS	232859	Banco Do Brasil Sa	BRAZIL	FINANCIALS	8691	87.75	20	2.998
ELET3 BS	231112	Centrais Eletricas Brasilier	BRAZIL	UTILITIES	1944	9.79	13.27	2.998
003600 KS	698837	SK Holdings	SOUTH KOREA	INDUSTRIALS	3323	37.85	122500	2.998
1378 HK	B44ZV9	China Hongqiao Group Ltd	CHINA	MATERIALS	419	0.72	3.67	2.998
GAZP RM	B59L4L	Gazprom Oao	RUSSIA	ENERGY	51987	355.06	147.03	2.998
LKOH RM	B59SNS	Lukoil OAO-Clis	RUSSIA	ENERGY	30656	114.86	1720	2.998
OBC IN	612150	Oriental Bank Of Commerce	INDIA	FINANCIALS	238	0.26	229.4	2.961
148 HK	649131	Kingboard Chemicals Hlds	CHINA	IT	1269	4.99	16.76	2.941
INBK IN	B1SFSX	Indian Bank	INDIA	FINANCIALS	259	0.18	169.15	2.888
LTS PW	B0B8Z4	Grupa Lotos Sa	POLAND	ENERGY	398	3.33	23.3	2.867
053000 KS	653426	Woori Finance Hlds Co	SOUTH KOREA	FINANCIALS	3232	28.15	11000	2.855
PDGR3 BS	B1N9YL	Pdg Realty Sa	BRAZIL	CONS.DIS.	1866	69.17	3.36	2.65
030200 KS	650531	Kt Corp	SOUTH KOREA	TELECOM	3030	30.04	27950	2.637
024110 KS	646297	Industrial Bank Of Korea	SOUTH KOREA	FINANCIALS	1743	19.27	12000	2.549

Source: Citi Investment Research and Analysis

Figure 52. Stocks with lowest loadings to Value

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
MAS MK	655668	Malaysian Airline System Bhd	MALAYSIA	INDUSTRIALS	157	1.89	1.13	-3.132
2408 TT	628360	Nanya Technology Corp	TAIWAN	IT	131	0.57	2.48	-3.081
011200 KS	640586	Hyundai Merchant Marine	SOUTH KOREA	INDUSTRIALS	1345	4.38	25050	-2.635
1919 HK	B0B8Z1	China Cosco Hlds-H	CHINA	INDUSTRIALS	1237	12.7	3.72	-2.633
601919 CH	B1YQ5Q	China Cosco Hlds-A	CHINA	INDUSTRIALS	0	14.43	5.07	-2.602
3474 TT	B071G3	Inotera Memories Inc	TAIWAN	IT	474	4.15	7.68	-2.556
3514 TT	B28TNP	Gintech Energy Corp	TAIWAN	IT	428	7.5	37.7	-2.552
SINA UQ	257923	Sina Corp.	CHINA	IT	3511	482.8	53.27	-2.25
2409 TT	628819	Au Optronics Corp	TAIWAN	IT	3155	28.22	12.2	-2.158
TRUE TB	687593	True Corp Pcl	THAILAND	TELECOM	826	12.95	3.7	-2.137
OGXP3 BS	B19RPM	Ogx Petroleo E Gas Participa	BRAZIL	ENERGY	6936	143.97	10.3	-2.084
5483 TT	633527	Sino-American Silicon Produc	TAIWAN	IT	707	14.66	53.6	-2.048
6116 TT	638182	Hannstar Display Corp	TAIWAN	IT	501	2.4	2.55	-1.978
2609 TT	698758	Yang Ming Marine Transport	TAIWAN	INDUSTRIALS	583	7.6	12.35	-1.915

Source: Citi Investment Research and Analysis

QuantIFI Loadings (cont'd)

Figure 53. Stocks with highest loadings to Growth

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
QUINENC CC	271286	Quinenco S.A.	CHILE	INDUSTRIALS	335	0.99	1375	2.739
119 HK	622098	Poly Hong Kong Inv	CHINA	FINANCIALS	938	10.21	3.77	2.739
135 HK	634007	Kunlun Energy Co. Ltd.	CHINA	ENERGY	5341	27.29	13.26	2.739
2384 TT	613960	Wintek Corp	TAIWAN	IT	873	36.17	17.85	2.739
BIDU UQ	05675210	Baidu.Com	CHINA	IT	32483	945.57	117.77	2.739
700 HK	B01CT3	Tencent Hlds	CHINA	IT	28024	110.76	213.4	2.739
3406 TT	B059SR	Genius Electronic Optical Co	TAIWAN	CONS.DISC.	501	40.59	235.5	2.739
3673 TT	B5T7VM	TPK Holding Co Ltd	TAIWAN	IT	1964	62.38	445	2.739
MFRISCOA MM	B3QHKH	MINERA FRISCO	MEXICO	MATERIALS	2040	2.44	55.96	2.739
BORN IJ	B3LBTT	BORNEO LUMBUNG ENE IDR100	INDONESIA	MATERIALS	306	4.84	650	2.739
2723 TT	B5MY7H	Gourmet Master Co Ltd	TAIWAN	CONS.DISC.	383	0.83	210	2.739
3360 HK	B63DLB	Far East Horizon Ltd	CHINA	FINANCIALS	1045	3.5	5.24	2.739
1293 HK	B5VKM8	Baoxin Auto Group Ltd	CHINA	CONS.DISC.	404	3.44	5.9	2.739
5871 TT	B58J1S	Chailease Holding Co Ltd	TAIWAN	FINANCIALS	1210	4.39	46	2.739

Source: Citi Investment Research and Analysis

Figure 54. Stocks with lowest loadings to Growth

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
OIBR4 BS	B7XL5Q	Oi S.A. Prf	BRAZIL	TELECOM	3270	10.7	8	-2.685
2328 TT	666996	Pan-International Ind	TAIWAN	IT	398	3.31	29.45	-2.469
2377 TT	613345	Micro-Star International Co	TAIWAN	IT	361	1.37	14.25	-2.461
TRUE TB	687593	True Corp Pcl	THAILAND	TELECOM	826	12.95	3.7	-2.433
2606 TT	691137	U-Ming Marine Transport Corp	TAIWAN	INDUSTRIALS	660	2.57	45.9	-2.428
3514 TT	B28TNP	Gintech Energy Corp	TAIWAN	IT	428	7.5	37.7	-2.418
2323 TT	623848	Cmc Magnetics Corp	TAIWAN	IT	457	2.92	4.8	-2.415
TKG SJ	658857	Telkom Sa	SOUTH AFRICA	TELECOM	839	5.25	22.91	-2.359
004170 KS	680504	Shinsegae Co	SOUTH KOREA	CONS.DISC.	1446	10.31	230000	-2.355
SPTT CP	527256	Telefonica O2 Czech Republic	CZECH REPUBLIC	TELECOM	1793	6.71	380	-2.337
2371 TT	687567	Tatung Co	TAIWAN	CONS.DISC.	513	4.58	6.55	-2.267
028670 KS	B24FX4	Stx Pan Ocean Co	SOUTH KOREA	INDUSTRIALS	400	9.41	4365	-2.152
USIM5 BS	238600	Usinas Sider Minas Ger-Pf A	BRAZIL	MATERIALS	1706	38.87	8.5	-2.115
RCOM IN	B0WNLY	Reliance Communications	INDIA	TELECOM	674	4.15	64.55	-2.073

Source: Citi Investment Research and Analysis

QuantIFI Loadings (cont'd)

Figure 55. Stocks with highest loadings to Risk

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
3333 HK	B2Q8YL	EVERGRANDE REAL ES USD0.01	CHINA	FINANCIALS	2646	44.52	4.26	3.46
119 HK	622098	Poly Hong Kong Inv	CHINA	FINANCIALS	938	10.21	3.77	3.205
2866 HK	B018L7	China Shipping Container-H	CHINA	INDUSTRIALS	942	11.35	1.95	3.202
2009 HK	B3NFC5	Bbmng Corporation - H	CHINA	MATERIALS	930	13.24	6.17	3.083
AQP LN	084558	Aquarius Platinum (Bermuda)	SOUTH AFRICA	MATERIALS	458	4.15	0.73	3.055
3323 HK	B0Y91C	China National Building Ma-H	CHINA	MATERIALS	3495	78.1	9.42	2.913
347 HK	601564	Angang Steel Co-H	CHINA	MATERIALS	623	8.99	4.45	2.894
012630 KS	640242	Hyundai Development Company	SOUTH KOREA	INDUSTRIALS	1041	10.49	23550	2.771
1157 HK	B544N7	Zoomlion Heavy Ind Sci H	CHINA	INDUSTRIALS	2097	33	11.38	2.766
028670 KS	B24FX4	Stx Pan Ocean Co	SOUTH KOREA	INDUSTRIALS	400	9.41	4365	2.729
2007 HK	B1VKYN	Country Garden Hlds Co	CHINA	FINANCIALS	2151	10.08	2.91	2.697
PDGR3 BS	B1N9YL	Pdg Realty Sa	BRAZIL	CONS.DISC.	1866	69.17	3.36	2.69
SINA UQ	257923	Sina Corp.	CHINA	IT	3511	482.8	53.27	2.68
1387 HK	B3DDY1	Renhe Commercial Hlds	CHINA	FINANCIALS	418	8.75	0.39	2.675

Source: Citi Investment Research and Analysis

Figure 56. Stocks with lowest loadings to Risk

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
2412 TT	628784	Chunghwa Telecom Co	TAIWAN	TELECOM	11487	51.49	90.2	-1.762
NESZ MK	662933	Nestle (Malaysia) Berhad	MALAYSIA	CONS. STAP.	1078	0.35	53.22	-1.762
MAXIS MK	B5387L	Maxis Bhd	MALAYSIA	TELECOM	4391	5.9	6.19	-1.757
9917 TT	687781	Taiwan Secom	TAIWAN	INDUSTRIALS	591	0.77	63.8	-1.746
601988 CH	B180B4	Bank Of China-A	CHINA	FINANCIALS	0	10.61	3.03	-1.744
FNH MK	655594	Fraser & Neave Hlds Bhd	MALAYSIA	CONS. STAP.	318	0.48	17.82	-1.742
601398 CH	B1G2JY	Ind & Comm Bk Of China - A	CHINA	FINANCIALS	0	27.41	4.22	-1.734
601288 CH	B620Y4	AGRI BANK OF CHINA A	CHINA	FINANCIALS	0	36.41	2.64	-1.727
601939 CH	B24G12	China Construction Bank -A	CHINA	FINANCIALS	0	21.38	4.49	-1.717
BCP MC	B01J1K	Banque Centrale Populaire	MOROCCO	FINANCIALS	706	0.99	195	-1.714
SMC PM	B56DTZ	San Miguel Corp	PHILIPPINES	CONS. STAP.	1769	3.54	117	-1.689
601857 CH	B28SLD	Petrochina Co-A	CHINA	ENERGY	0	24.48	9.45	-1.686
01002T TT	B0LCGD	Cathay No 1 Reit	TAIWAN	FINANCIALS	671	0.49	17.95	-1.67
PBK MK	B012W4	Public Bank Berhad	MALAYSIA	FINANCIALS	4597	9.97	13.76	-1.649

Source: Citi Investment Research and Analysis

QuantIFI Loadings (cont'd)

Figure 57. Stocks with highest loadings to Momentum

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
LHC SJ	B4K90R	Life Healthcare Group Holdings Ltd.	SOUTH AFRICA	HEALTH CARE	2398	10.87	29.2	3.047
4904 TT	642185	Far Eastone Telecomm Co	TAIWAN	TELECOM	3552	12.97	66.4	2.848
FEMSAUBD MM	224205	Fomento Economico Mexica-Ubd	MEXICO	CONS. STAP.	15063	17.87	112.81	2.695
KOFL MM	214189	Coca-cola Femsa S. Ser'l'npv New	MEXICO	CONS. STAP.	3377	3.09	166.08	2.545
MPC SJ	682036	Mr Price Gp	SOUTH AFRICA	CONS.DISC.	2541	13.57	104.2	2.526
APN SJ	B09C0Z	Aspen Pharmacare Hlds Lt	SOUTH AFRICA	HEALTH CARE	4862	12.6	117.57	2.508
ADVANC TB	641256	Advanced Info Service Pcl	THAILAND	TELECOM	6409	25.07	179	2.486
001800 KS	689684	Orion Corp	SOUTH KOREA	CONS. STAP.	3448	10.58	962000	2.393
BGH TB	B013SS	Bangkok Dusit Med Service	THAILAND	HEALTH CARE	869	4.84	89.5	2.383
CIEL3 BS	B614LY	Cielo Sa	BRAZIL	IT	7533	44.35	54.5	2.357
HUVR IN	626167	Hindustan Unilever	INDIA	CONS. STAP.	8148	1.81	428	2.311
T MK	686839	Telekom Malaysia Bhd	MALAYSIA	TELECOM	2274	10.59	5.39	2.239
WHL SJ	B06KZ9	Woolworths Hlds	SOUTH AFRICA	CONS.DISC.	4757	17.08	48.75	2.196
BOS IN	B01NFV	Bosch	INDIA	CONS.DISC.	1165	0.19	8681.95	2.136

Source: Citi Investment Research and Analysis

Figure 58. Stocks with lowest loadings to Momentum

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
8046 TT	B11875	Nan Ya Printed Circuit Board	TAIWAN	IT	339	4.8	48.75	-2.895
2903 TT	633137	Far Eastern Department Store	TAIWAN	CONS.DISC.	943	13.47	27.8	-2.572
CTRP UQ	22943F10	Ctrip.Com International.	CHINA	CONS.DISC.	2642	76.8	18.4	-2.398
2388 TT	614682	Via Technologies Inc	TAIWAN	IT	449	3.62	15.55	-2.244
029780 KS	B1WQQ4	Samsung Card Co	SOUTH KOREA	FINANCIALS	1325	7.81	33200	-2.24
2498 TT	651053	Htc Corp	TAIWAN	IT	12275	185.47	430	-2.169
1818 HK	B1H508	Zhaojin Mining Industry - H	CHINA	MATERIALS	1030	7.69	9.14	-2.144
8069 TT	674428	E Ink Holdings Inc	TAIWAN	IT	967	28.21	31.7	-2.141
1802 TT	687086	Taiwan Glass Ind Corp	TAIWAN	INDUSTRIALS	1184	5.51	27.95	-2.129
SINA UQ	257923	Sina Corp.	CHINA	IT	3511	482.8	53.27	-2.101
BHEL IN	B6SNRV	Bharat Heavy Electricals	INDIA	INDUSTRIALS	2219	3.52	212.1	-2.088
009830 KS	640776	Hanwha Chemical Corp	SOUTH KOREA	MATERIALS	1525	70.78	20650	-2.079
2371 TT	687567	Tatung Co	TAIWAN	CONS.DISC.	513	4.58	6.55	-2.074
297 HK	B0CJMD	Sinofert Hlds	CHINA	MATERIALS	307	3.27	1.34	-2.066

Source: Citi Investment Research and Analysis

QuantIFI Loadings (cont'd)

Figure 59. Stocks with highest loadings to Quality

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
NESZ MK	662933	Nestle (Malaysia) Berhad	MALAYSIA	CONS. STAP.	1078	0.35	53.22	2.484
ROTH MK	675234	British American Tobacco Bhd	MALAYSIA	CONS. STAP.	2450	1.79	54.44	2.484
BST MK	633156	Berjaya Sports Toto Bhd	MALAYSIA	CONS.DISC.	960	1.5	4.17	2.484
CRUZ3 BS	283214	Souza Cruz Sa	BRAZIL	CONS. STAP.	5045	14.64	27	2.484
CSTR IN	611471	Castrol India	INDIA	MATERIALS	517	0.24	489.45	2.484
CLGT IN	613969	Colgate Palmolive (India)	INDIA	CONS. STAP.	700	0.35	1204.1	2.484
HUVR IN	626167	Hindustan Unilever	INDIA	CONS. STAP.	8148	1.81	428	2.484
NEST IN	612860	Nestle India	INDIA	CONS. STAP.	1856	0.51	4505.2	2.484
UNVR IJ	668718	Unilever Indonesia Tbk Pt	INDONESIA	CONS. STAP.	2502	3.28	20550	2.484
SHP SJ	680157	Shoprite Hlds	SOUTH AFRICA	CONS. STAP.	5472	28.86	137.82	2.484
WHL SJ	B06KZ9	Woolworths Hlds	SOUTH AFRICA	CONS.DISC.	4757	17.08	48.75	2.484
HMCL IN	632732	Hero Motocorp Ltd	INDIA	CONS.DISC.	2603	2.07	1830.1	2.484
MPC SJ	682036	Mr Price Gp	SOUTH AFRICA	CONS.DISC.	2541	13.57	104.2	2.484
CPALL TB	B08YDG	Cp All Pcl	THAILAND	CONS. STAP.	4040	15.86	34.25	2.484

Source: Citi Investment Research and Analysis

Figure 60. Stocks with lowest loadings to Quality

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Loading
600808 CH	655093	Maanshan Iron & Steel-A	CHINA	MATERIALS	0	5.29	2.45	-2.949
TRUE TB	687593	True Corp Pcl	THAILAND	TELECOM	826	12.95	3.7	-2.949
323 HK	660087	Maanshan Iron & Steel-H	CHINA	MATERIALS	420	6.1	1.88	-2.949
2609 TT	698758	Yang Ming Marine Transport	TAIWAN	INDUSTRIALS	583	7.6	12.35	-2.949
015760 KS	649573	Korea Electric Power Corp	SOUTH KOREA	UTILITIES	4895	28.05	22500	-2.949
003490 KS	649676	Korean Air Lines Co	SOUTH KOREA	INDUSTRIALS	1378	28.14	45200	-2.949
2610 TT	618965	China Airlines	TAIWAN	INDUSTRIALS	1039	8.32	12	-2.949
FIBR3 BS	B04M7D	Fibria Celulose Sa	BRAZIL	MATERIALS	1456	15.3	13.22	-2.949
000898 CH	608733	Angang Steel Co - A	CHINA	MATERIALS	0	8.82	4.22	-2.949
DOHOL TI	B03MRG	Dogan Sirketler Grubu Hldgs	TURKEY	INDUSTRIALS	354	9.78	0.71	-2.949
ORTE EY	B1VZ1Q	Orascom Telecom Hld	EGYPT	TELECOM	1302	2.73	3.13	-2.949
2344 TT	696651	Winbond Electronics Corp	TAIWAN	IT	433	2.94	4.77	-2.949
347 HK	601564	Angang Steel Co-H	CHINA	MATERIALS	623	8.99	4.45	-2.949
1919 HK	B0B8Z1	China Cosco Hlds-H	CHINA	INDUSTRIALS	1237	12.7	3.72	-2.949

Source: Citi Investment Research and Analysis



Significant RAM Betas

RAM Betas

Figure 61. Stocks with highest beta to CDX

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	CDX
EAST EY	629817	Eastern Tobacco	EGYPT	CONS. STAP.	305	0.21	82	0.07
ATW MC	608833	Attijariwafa Bank	MOROCCO	FINANCIALS	2915	1.83	365	0.05
2412 TT	628784	Chunghwa Telecom Co	TAIWAN	TELECOM	11487	51.49	90.2	-0.03
SHELL MK	680350	Shell Refining Co (F.O.M.)	MALAYSIA	ENERGY	170	0.08	9.9	-0.03
PBK MK	B012W4	Public Bank Berhad	MALAYSIA	FINANCIALS	4597	9.97	13.76	-0.03
NESZ MK	662933	Nestle (Malaysia) Berhad	MALAYSIA	CONS. STAP.	1078	0.35	53.22	-0.03
4904 TT	642185	Far Eastone Telecomm Co	TAIWAN	TELECOM	3552	12.97	66.4	-0.04
SIME MK	B29TTR	Sime Darby Berhad	MALAYSIA	INDUSTRIALS	6434	22.81	9.68	-0.04
MAXIS MK	B5387L	Maxis Bhd	MALAYSIA	TELECOM	4391	5.9	6.19	-0.04
PETD MK	669593	Petronas Dagangan Bhd	MALAYSIA	ENERGY	1539	3.06	20.7	-0.04
T MK	686839	Telekom Malaysia Bhd	MALAYSIA	TELECOM	2274	10.59	5.39	-0.04
BOGOTA CB	207503	Banco De Bogota	COLOMBIA	FINANCIALS	2766	0.39	50340	-0.04
MAHB MK	618819	Malaysia Airports Hldgs Bhd	MALAYSIA	INDUSTRIALS	526	1.29	5.8	-0.05
YTLP MK	B01GQS	Ytl Power International Bhd	MALAYSIA	UTILITIES	1669	2.44	1.66	-0.05

Source: Citi Investment Research and Analysis

Figure 62. Stocks with lowest beta to CDX

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	CDX
1138 HK	678204	China Shipping Development-H	CHINA	INDUSTRIALS	701	7.33	4.2	-0.38
2883 HK	656099	China Oilfield Services-H	CHINA	ENERGY	2132	12.44	10.78	-0.39
358 HK	600030	Jiangxi Copper Co-H	CHINA	MATERIALS	2918	40.48	16.32	-0.39
2689 HK	B0WC2B	Nine Dragons Paper Hlds	CHINA	MATERIALS	1048	9.37	4.87	-0.4
2866 HK	B018L7	China Shipping Container-H	CHINA	INDUSTRIALS	942	11.35	1.95	-0.4
1072 HK	627856	Dongfang Electric Corp-H	CHINA	INDUSTRIALS	794	7.96	18.12	-0.4
NLMK LI	B0RTNX	Novolipetsk Steel (GDR)	RUSSIA	MATERIALS	1368	17.76	15.78	-0.4
323 HK	660087	Maanshan Iron & Steel-H	CHINA	MATERIALS	420	6.1	1.88	-0.41
1101 HK	B5NSWF	CHINA RONGSHENG HEAVY IN	CHINA	INDUSTRIALS	889	10.35	2.13	-0.44
3333 HK	B2Q8YL	EVERGRANDE REAL ES USD0.01	CHINA	FINANCIALS	2646	44.52	4.26	-0.44
2208 HK	B59GZJ	XINJIANG GOLDWIND 'H' CNY1	CHINA	INDUSTRIALS	216	2.4	3.36	-0.46
3618 HK	B4Q1Y5	CHONGQING RURAL CO CNY1 H SHARE	CHINA	FINANCIALS	1072	9.23	3.31	-0.54
1157 HK	B544N7	Zoomlion Heavy Ind Sci H	CHINA	INDUSTRIALS	2097	33	11.38	-0.64
1378 HK	B44ZV9	China Hongqiao Group Ltd	CHINA	MATERIALS	419	0.72	3.67	-0.71

Source: Citi Investment Research and Analysis

RAM Betas (Cont'd)

Figure 63. Stocks with highest beta to JPY

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	JPY
ESRS EY	616261	Al Ezz Steel Rebars Sae	EGYPT	MATERIALS	209	1.62	6.65	1.53
1211 HK	653665	Byd Co-H	CHINA	CONS.DISC.	1613	13.28	15.78	1.47
ORTE EY	B1VZ1Q	Orascom Telecom Hld	EGYPT	TELECOM	1302	2.73	3.13	1.45
3504 TT	B0R0P0	Young Optics Inc	TAIWAN	CONS.DISC.	244	5.48	108	1.18
813 HK	B16YNS	Shimao Property Hlds	CHINA	FINANCIALS	1832	15.22	10.4	1.17
TMGH EY	B2989Q	T M G Hld	EGYPT	FINANCIALS	689	2.33	4.06	1.1
OCIC EY	B03BN8	Orascom Construction Inds	EGYPT	INDUSTRIALS	4014	3.44	257.85	1.09
AUTO EY	B1Y9TD	Gb Auto	EGYPT	CONS.DISC.	101	0.12	20.49	1.07
2333 HK	671825	Great Wall Motor Company-H	CHINA	CONS.DISC.	801	12.58	15.94	0.98
8069 TT	674428	E Ink Holdings Inc	TAIWAN	IT	967	28.21	31.7	0.97
000024 CH	620587	China Merchants Property -A	CHINA	FINANCIALS	0	23.01	25.2	0.95
COMI EY	624389	Commercial International Ban	EGYPT	FINANCIALS	2410	3.58	24.53	0.94
SKPC EY	B1R9JX	Sidi Kerir Petrochemicals Co	EGYPT	MATERIALS	365	0.49	11.99	0.94
200012 CH	619617	Csg Hld Co - B	CHINA	MATERIALS	550	2.28	5.6	0.92

Source: Citi Investment Research and Analysis

Figure 64. Stocks with lowest beta to JPY

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	JPY
BUENAVC1 PE	289498	Cia De Minas Buenaventur-Com	PERU	MATERIALS	8516	0.39	107.3	-0.62
ADH MC	B18R0L	Douja Prom Addoha	MOROCCO	FINANCIALS	1072	1.43	68.98	-0.62
3231 TT	667248	Wistron Corp	TAIWAN	IT	2647	20.18	37.9	-0.63
URC PM	691951	Universal Robina Corp	PHILIPPINES	CONS. STAP.	1112	3.19	65	-0.64
1440 TT	687182	Tainan Spinning	TAIWAN	CONS.DISC.	457	1.81	12.7	-0.65
009830 KS	640776	Hanwha Chemical Corp	SOUTH KOREA	MATERIALS	1525	70.78	20650	-0.71
1802 TT	687086	Taiwan Glass Ind Corp	TAIWAN	INDUSTRIALS	1184	5.51	27.95	-0.76
1068 HK	B0D01C	China Yurun Food Gp	CHINA	CONS. STAP.	1392	32.59	7.94	-0.79
2324 TT	622574	Compal Electronics	TAIWAN	IT	4535	10.61	30.8	-0.8
8078 TT	671286	Compal Communications Inc	TAIWAN	IT	369	23.98	36.4	-0.81
AQP LN	084558	Aquarius Platinum (Bermuda)	SOUTH AFRICA	MATERIALS	458	4.15	0.73	-0.83
078930 KS	B01RJV	Gs Hlds	SOUTH KOREA	ENERGY	2386	41.7	55400	-0.9
010950 KS	640605	S-Oil Corporation	SOUTH KOREA	ENERGY	3235	67.5	92700	-1.01
096770 KS	B232R0	Sk Energy Co	SOUTH KOREA	ENERGY	7305	94.21	140000	-1.07

Source: Citi Investment Research and Analysis

RAM Betas (Cont'd)

Figure 65. Stocks with highest beta to EURO

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	EURO
3673 TT	B5T7VM	TPK Holding Co Ltd	TAIWAN	IT	1964	62.38	445	1.32
011210 KS	B3LF56	Hyundai Wia Corp	SOUTH KOREA	CONS.DISC.	1864	31.44	174500	1.1
3691 TT	B5BTL3	GIGASOLAR MATERIAL TWD10	TAIWAN	IT	192	7.41	359	1.07
004020 KS	646185	Hyundai Steel Co	SOUTH KOREA	MATERIALS	4052	50.19	84700	0.73
4938 TT	B4PLX1	PEGATRON	TAIWAN	IT	2368	9.81	41.45	0.73
2388 TT	614682	Via Technologies Inc	TAIWAN	IT	449	3.62	15.55	0.69
000270 KS	649092	Kia Motors Corporation	SOUTH KOREA	CONS.DISC.	18262	146.64	80200	0.68
UNVR IJ	668718	Unilever Indonesia Tbk Pt	INDONESIA	CONS. STAP.	2502	3.28	20550	0.61
MBT PM	651444	Metropolitan Bank & Trust	PHILIPPINES	FINANCIALS	1745	5.81	89.9	0.6
PNBN IJ	654524	Bank Pan Indonesia Tbk Pt	INDONESIA	FINANCIALS	371	0.36	880	0.58
JSW IN	B4X3ST	JSW Energy Ltd	INDIA	UTILITIES	315	0.58	45	0.58
PCOR PM	668413	Petron Corp	PHILIPPINES	ENERGY	163	1.11	10.16	0.57
KLBF IJ	672810	Kalbe Farma Pt	INDONESIA	HEALTH CARE	2332	4.03	3875	0.56
2353 TT	600585	Acer Inc	TAIWAN	IT	2767	26.15	30.55	0.56

Source: Citi Investment Research and Analysis

Figure 66. Stocks with lowest beta to EURO

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	EURO
BPCL IN	609972	Bharat Petroleum Corp	INDIA	ENERGY	1078	0.69	697.65	-0.68
EKGYO TI	B58656	Emlak Konut Gayrimenkul Yatirim Ortakligi AS	TURKEY	FINANCIALS	688	40.63	2.05	-0.69
BBAS3 BS	232859	Banco Do Brasil Sa	BRAZIL	FINANCIALS	8691	87.75	20	-0.69
TUPRS TI	B03MYT	Tupras-Turkiye Petrol Rafine	TURKEY	ENERGY	2285	22.03	34.7	-0.7
2890 TT	652587	Sinopac Financial Hlds	TAIWAN	FINANCIALS	2719	4.65	11.1	-0.71
THYAO TI	B03MYK	Turk Hava Yollari Ao	TURKEY	INDUSTRIALS	826	27.26	2.52	-0.72
UT IN	B17MRV	Unitech	INDIA	FINANCIALS	486	1.72	21.35	-0.72
ENKAI TI	B03MS6	Enka Insaat Ve Sanayi As	TURKEY	INDUSTRIALS	1864	4.28	4.02	-0.73
AYGAZ TI	B03MPL	Aygaz As	TURKEY	UTILITIES	333	1.57	7	-0.74
2238 HK	B43399	GUANGZHOU AUTO GROUP H	CHINA	CONS.DISC.	1877	7.54	6.58	-0.79
1378 HK	B44ZV9	China Hongqiao Group Ltd	CHINA	MATERIALS	419	0.72	3.67	-0.83
LICHF IN	610102	LIC Housing Finance	INDIA	FINANCIALS	982	2.68	237.05	-0.84
BPH PW	728887	Bank Bph	POLAND	FINANCIALS	94	0.23	40.1	-0.98
OTP HB	732015	Otp Bank	HUNGARY	FINANCIALS	3821	39.71	3338	-1.05

Source: Citi Investment Research and Analysis

RAM Betas (Cont'd)

Figure 67. Stocks with highest beta to Emerging market bond yield

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	EM.Yield
3037 TT	613772	Unimicron Technology Corp	TAIWAN	IT	1417	12.4	32.25	0.78
2238 HK	B43399	GUANGZHOU AUTO GROUP H	CHINA	CONS.DISC.	1877	7.54	6.58	0.7
COAL IN	B4Z9XF	COAL INDIA	INDIA	ENERGY	3617	4.17	321.6	0.7
1378 HK	B44ZV9	China Hongqiao Group Ltd	CHINA	MATERIALS	419	0.72	3.67	0.65
SBIN IN	610079	State Bank Of India	INDIA	FINANCIALS	4649	25.46	2056.05	0.61
6147 TT	643280	Chipbond Technology Corp	TAIWAN	IT	783	10.69	39.3	0.51
066570 KS	652073	Lg Electronics Inc	SOUTH KOREA	CONS.DISC.	5976	93.94	66100	0.49
2311 TT	605607	Advanced Semiconductor Engr	TAIWAN	IT	4967	26.12	28.25	0.47
2303 TT	691662	United Microelectronics Corp	TAIWAN	IT	5742	15.88	13.1	0.45
034220 KS	B01VZN	Lg Display Co	SOUTH KOREA	IT	3935	64.57	20900	0.44
AQP LN	084558	Aquarius Platinum (Bermuda)	SOUTH AFRICA	MATERIALS	458	4.15	0.73	0.44
2392 TT	617566	Cheng Uei Precision Industry	TAIWAN	IT	769	16.47	62.6	0.43
068270 KS	B0C5YV	Celltrion Inc	SOUTH KOREA	HEALTH CARE	3560	48.04	33550	0.43
EEB CB	B3V65K	Empresa de Energia de Bogota S.A. E.S.P.	COLOMBIA	UTILITIES	843	0.9	1000	0.42

Source: Citi Investment Research and Analysis

Figure 68. Stocks with lowest beta to Emerging market bond yield

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	EM.Yield
002202 CH	B29VXG	Xinjiang Goldwind Sci&Tech-A	CHINA	INDUSTRIALS	0	24.37	7.36	-0.67
1033 HK	698466	Sinopec Yizheng Chemical-H	CHINA	MATERIALS	292	2.52	1.62	-0.67
670 HK	617137	China Eastern Airlines - H	CHINA	INDUSTRIALS	442	4.83	2.19	-0.68
ESRS EY	616261	Al Ezz Steel Rebars Sae	EGYPT	MATERIALS	209	1.62	6.65	-0.68
1171 HK	610989	Yanzhou Coal Mining Co-H	CHINA	ENERGY	3296	46.44	13.06	-0.7
DRB MK	626981	Drb-Hicom Bhd	MALAYSIA	CONS.DISC.	377	4.29	2.45	-0.7
PDGR3 BS	B1N9YL	Pdg Realty Sa	BRAZIL	CONS.DISC.	1866	69.17	3.36	-0.72
011210 KS	B3LF56	Hyundai Wia Corp	SOUTH KOREA	CONS.DISC.	1864	31.44	174500	-0.72
IVL TB	B5VSK2	INDORAMA VENTURES	THAILAND	MATERIALS	1538	28.77	28	-0.75
1068 HK	B0D01C	China Yurun Food Gp	CHINA	CONS. STAP.	1392	32.59	7.94	-0.78
3360 HK	B63DLB	Far East Horizon Ltd	CHINA	FINANCIALS	1045	3.5	5.24	-0.82
606 HK	B1TLR6	China Agri-Industries Hldgs	CHINA	CONS. STAP.	1226	5.5	5.59	-0.83
USIM3 BS	219369	Usinas Siderurgicas De Minas	BRAZIL	MATERIALS	484	5.56	9.17	-0.83
MFRISCOA MM	B3QHKH	MINERA FRISCO	MEXICO	MATERIALS	2040	2.44	55.96	-0.89

Source: Citi Investment Research and Analysis

RAM Betas (Cont'd)

Figure 69. Stocks with highest beta to Rate

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Rate
5346 TT	610899	Powerchip Semiconductor Corp	TAIWAN	IT	117	0.87	0.63	0.88
2408 TT	628360	Nanya Technology Corp	TAIWAN	IT	131	0.57	2.48	0.78
1068 HK	B0D01C	China Yurun Food Gp	CHINA	CONS. STAP.	1392	32.59	7.94	0.71
042660 KS	621173	Daewoo Shipbuilding & Marine	SOUTH KOREA	INDUSTRIALS	2196	50.6	27300	0.66
BIDU UQ	05675210	Baidu.Com	CHINA	IT	32483	945.57	117.77	0.65
AQP LN	084558	Aquarius Platinum (Bermuda)	SOUTH AFRICA	MATERIALS	458	4.15	0.73	0.64
JBSS3 BS	B1V74X	Jbs Sa	BRAZIL	CONS. STAP.	1905	13.26	5.45	0.63
MFRISCOA MM	B3QHKH	MINERA FRISCO	MEXICO	MATERIALS	2040	2.44	55.96	0.62
PGE PW	B544PW	Polska Grupa Energetyczna Sa	POLAND	UTILITIES	2982	14.28	18.5	0.61
KGH PW	526325	Kghm Polska Miedz Sa	POLAND	MATERIALS	4902	48.85	128	0.6
009830 KS	640776	Hanwha Chemical Corp	SOUTH KOREA	MATERIALS	1525	70.78	20650	0.59
FIBR3 BS	B04M7D	Fibria Celulose Sa	BRAZIL	MATERIALS	1456	15.3	13.22	0.59
601808 CH	B24G11	China Oilfield Services-A	CHINA	ENERGY	0	25.17	17.85	0.59
SINA UQ	257923	Sina Corp.	CHINA	IT	3511	482.8	53.27	0.59

Source: Citi Investment Research and Analysis

Figure 70. Stocks with lowest beta to Rate

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Rate
ADSEZ IN	B28XXH	Mundra Port And Sez	INDIA	INDUSTRIALS	708	0.62	123.45	-0.46
COMI EY	624389	Commercial International Ban	EGYPT	FINANCIALS	2410	3.58	24.53	-0.48
COAL IN	B4Z9XF	COAL INDIA	INDIA	ENERGY	3617	4.17	321.6	-0.48
BSDE IJ	B2RJPM	PT BUMI SERPONG DA IDR100	INDONESIA	FINANCIALS	893	2.64	1200	-0.5
ORTE EY	B1VZ1Q	Orascom Telecom Hld	EGYPT	TELECOM	1302	2.73	3.13	-0.5
2511 TT	670316	Prince Housing & Development	TAIWAN	FINANCIALS	532	4.68	20.5	-0.51
3697 TT	B4N97J	MSTAR SEMICONDUCTOR	TAIWAN	IT	3247	29.58	181	-0.52
AUTO EY	B1Y9TD	Gb Auto	EGYPT	CONS.DISC.	101	0.12	20.49	-0.53
JPA IN	B01GVY	Jaiprakash Associates	INDIA	INDUSTRIALS	1058	3.05	62.15	-0.55
HRHO EY	613947	Efg-Hermes Hld Sae	EGYPT	FINANCIALS	648	2.17	10.97	-0.57
Z IN	618853	Zee Entertainment Enterprise	INDIA	CONS.DISC.	1128	0.38	132.15	-0.58
EGCH EY	630703	Egyptian Chemical Industries	EGYPT	MATERIALS	88	0.34	8.71	-0.62
3618 HK	B4Q1Y5	CHONGQING RURAL CO CNY1 H SHARE	CHINA	FINANCIALS	1072	9.23	3.31	-0.67
1590 TT	B52J81	Airtac International Group	TAIWAN	INDUSTRIALS	525	3.74	166	-0.79

Source: Citi Investment Research and Analysis

RAM Betas (Cont'd)

Figure 71. Stocks with highest beta to Oil

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Oil
011210 KS	B3LF56	Hyundai Wia Corp	SOUTH KOREA	CONS.DISC.	1864	31.44	174500	0.78
GAZ LI	B11XHC	Gazprom Neft OJSC ADR	RUSSIA	ENERGY	818	4.64	19.96	0.72
SGGD LI	B01WHG	Surgutneftegas OJSC ADR	RUSSIA	ENERGY	7356	25.06	7.51	0.63
SVST LI	B1G4YH	Severstal OJSC GDR	RUSSIA	MATERIALS	1628	27.02	10.93	0.62
5346 TT	610899	Powerchip Semiconductor Corp	TAIWAN	IT	117	0.87	0.63	0.59
GAZP RM	B59L4L	Gazprom Oao	RUSSIA	ENERGY	51987	355.06	147.03	0.53
NLMK LI	B0RTNX	Novolipetsk Steel (GDR)	RUSSIA	MATERIALS	1368	17.76	15.78	0.53
EGCH EY	630703	Egyptian Chemical Industries	EGYPT	MATERIALS	88	0.34	8.71	0.47
BRMS IJ	B3R589	BUMI RESOURCES MIN IDR625	INDONESIA	MATERIALS	591	0.89	520	0.47
052690 KS	B4LW1M	KEPCO Engineering & Construction Co Inc	SOUTH KOREA	INDUSTRIALS	521	11.96	72900	0.47
ROSN LI	B17FSC	Rosneft OJSC GDR	RUSSIA	ENERGY	9979	135.07	6.15	0.46
LKOH RM	B59SNS	Lukoil OAO-Clis	RUSSIA	ENERGY	30656	114.86	1720	0.45
AQP LN	084558	Aquarius Platinum (Bermuda)	SOUTH AFRICA	MATERIALS	458	4.15	0.73	0.44
VIP UN	B62HR7	VimpelCom ADR	RUSSIA	TELECOM	2147	28.94	7.37	0.44

Source: Citi Investment Research and Analysis

Figure 72. Stocks with lowest beta to Oil

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	Oil
600875 CH	627857	Dongfang Electric Corp-A	CHINA	INDUSTRIALS	0	28.45	22.24	-0.24
2354 TT	680177	Foxconn Technology Co	TAIWAN	IT	3288	41.23	107.5	-0.25
BIMAS TI	B0D000	Bim Birlesik Magazalar As	TURKEY	CONS. STAP.	4090	7.14	75.5	-0.27
2618 TT	618602	Eva Airways Corp	TAIWAN	INDUSTRIALS	972	11.88	17.8	-0.28
PX PM	B1FHVH	Philex Mining Corp	PHILIPPINES	MATERIALS	1084	2.64	24	-0.29
1387 HK	B3DDY1	Renhe Commercial Hlds	CHINA	FINANCIALS	418	8.75	0.39	-0.3
120110 KS	B5TVWD	Kolon Industries Inc	SOUTH KOREA	MATERIALS	939	19.22	65000	-0.31
3383 HK	B0PR2F	Agile Property Hlds	CHINA	FINANCIALS	1490	16.97	9.01	-0.32
960 HK	B56KLY	LONGFOR PROPERTIES HKD0.10'REGS'	CHINA	FINANCIALS	1937	9.11	12.04	-0.34
8299 TT	672846	Phison Electronics Corp	TAIWAN	IT	1027	17.14	220	-0.37
CEB PM	B2NRDY	Cebu Air Inc	PHILIPPINES	INDUSTRIALS	336	1.05	68.9	-0.39
BPCL IN	609972	Bharat Petroleum Corp	INDIA	ENERGY	1078	0.69	697.65	-0.4
IOCL IN	625376	Indian Oil Corporation	INDIA	ENERGY	2330	0.44	255.6	-0.49
HPCL IN	610047	Hindustan Petroleum Corp	INDIA	ENERGY	420	0.74	290.45	-0.53

Source: Citi Investment Research and Analysis

RAM Betas (Cont'd)

Figure 73. Stocks with highest beta to GSCI

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	GSCI
3383 HK	B0PR2F	Agile Property Hlds	CHINA	FINANCIALS	1490	16.97	9.01	1.2
3333 HK	B2Q8YL	EVERGRANDE REAL ES USD0.01	CHINA	FINANCIALS	2646	44.52	4.26	0.99
3406 TT	B059SR	Genius Electronic Optical Co	TAIWAN	CONS.DISC.	501	40.59	235.5	0.95
358 HK	600030	Jiangxi Copper Co-H	CHINA	MATERIALS	2918	40.48	16.32	0.92
SINA UQ	257923	Sina Corp.	CHINA	IT	3511	482.8	53.27	0.89
3673 TT	B5T7VM	TPK Holding Co Ltd	TAIWAN	IT	1964	62.38	445	0.87
AQP LN	084558	Aquarius Platinum (Bermuda)	SOUTH AFRICA	MATERIALS	458	4.15	0.73	0.87
1157 HK	B544N7	Zoomlion Heavy Ind Sci H	CHINA	INDUSTRIALS	2097	33	11.38	0.86
SCCO PE	282091	Southern Copper Corp	PERU	MATERIALS	4897	0.29	28.5	0.84
3691 TT	B5BTL3	GIGASOLAR MATERIAL TWD10	TAIWAN	IT	192	7.41	359	0.82
PX PM	B1FHVG	Philex Mining Corp	PHILIPPINES	MATERIALS	1084	2.64	24	0.78
1101 HK	B5NSWF	CHINA RONGSHENG HEAVY IN	CHINA	INDUSTRIALS	889	10.35	2.13	0.78
2899 HK	672529	Zijin Mining Gp Co-H	CHINA	MATERIALS	1904	18.38	2.46	0.76
PE&OLES* MM	244820	Industrias Penoles Sab De Cv	MEXICO	MATERIALS	4746	9.62	548.23	0.72

Source: Citi Investment Research and Analysis

Figure 74. Stocks with lowest beta to GSCI

BB Ticker	Sedol	Name	Country	Sector	MCap(US\$ Mn)	260D ATV	Price (LCY)	GSCI
IAM MC	B04SJM	Maroc Telecom	MOROCCO	TELECOM	1893	1.71	113	-0.12
TSH SJ	B61R1Q	Tsogo Sun Holdings Ltd	SOUTH AFRICA	CONS.DISC.	1984	0.65	18.85	-0.18
017670 KS	622487	Sk Telecom	SOUTH KOREA	TELECOM	4040	29.7	120500	-0.2
TPS PW	555255	Telekomunikacja Polska Sa	POLAND	TELECOM	3022	14.89	16.05	-0.25
ACP PW	597895	Asseco Poland Sa	POLAND	IT	954	2.04	48.9	-0.25
BCE MC	607862	Banque Marocaine Du Commerce	MOROCCO	FINANCIALS	1614	0.75	201	-0.25
032640 KS	629090	Lg Telecom	SOUTH KOREA	TELECOM	1089	14.2	5430	-0.26
291 HK	697245	China Resources Enterprise	CHINA	CONS. STAP.	3690	15.01	24.55	-0.29
009150 KS	677168	Samsung Electro-Mechanics Co	SOUTH KOREA	IT	4926	57.1	102000	-0.33
053000 KS	653426	Woori Finance Hlds Co	SOUTH KOREA	FINANCIALS	3232	28.15	11000	-0.37
BSDE IJ	B2RJPM	PT BUMI SERPONG DA IDR100	INDONESIA	FINANCIALS	893	2.64	1200	-0.4
BRAU IJ	B51F5K	BERAU COAL ENERGY INR100	INDONESIA	ENERGY	108	1.1	350	-0.41
BRMS IJ	B3R589	BUMI RESOURCES MIN IDR625	INDONESIA	MATERIALS	591	0.89	520	-0.56
011210 KS	B3LF56	Hyundai Wia Corp	SOUTH KOREA	CONS.DISC.	1864	31.44	174500	-0.94

Source: Citi Investment Research and Analysis

Figure Descriptions



Figures Description

Fig 1 to 12: These figures have performance of various investing styles as defined in our QuantIFI indices over last one and ten years. For more details refer to: [GEM Equity Style Investing with Citi QuantIFI](#)

Fig 13 to 15: Performance of various style portfolios (defined as the long-short between the top and bottom quintile on each style, rebalanced every month). There are three tables: Unrestricted, Country-Sector neutral and the difference between the two.

Figure 16 to 17: These figures have various volatility indicators in Global Emerging Market. For more details refer to: [GEM Volatility Outlook and Review](#)

Figure 18 to 29: These figures have PCA risk contribution, risk contribution of macro, market and styles to various investing styles. Investing styles are average of sub styles as mentioned in Figure 13 to 15. **Also macro betas of these investing styles are presented.** For more details please refer to [Global Risk Attribute Model \(GRAM\) Version 2.0](#).

Figure 30 to 31: These figures have number of stocks as percentage of total breadth of universe sensitive to GRAM macro factors at 90% significance level in GEM and the change in factor sensitivities over last one, two and three months. .

Figure 32 to 34: In this section, we present the RAM Monitors or implied factor returns for GRAM in Global Emerging market universe. The observed total returns of stocks in a month are regressed cross sectionally on the estimated factor sensitivities of the same month. The resulting regression coefficients are called implied factor returns, or RAM Monitors. They are the model's estimates of the factor values given the observed stock price behavior and the estimated betas. That is, within the framework of the model, the market is behaving as if the factors had the values implied by the cross-sectional regressions. If an implied factor is large and statistically significant, then the model suggests that the market is pricing that factor, and stocks with large positive sensitivities to that factor are outperforming stocks with small or negative sensitivities. Furthermore, if we believe that a large implied factor value will persist, we can then capture excess returns by overweighting our portfolio with stocks that have high sensitivities to that factor.

Figures 35 to 48: These figures show the macro and style tilts present in current analyst biases. For more details refer to: [Neutralizing Forecast Bias](#)

Figure 49 to 60: These tables show few of the highest and lowest normalized scores or loadings of stocks in the GEM universe for each of the QuantIFI styles. For more details refer to: [GEM Equity Style Investing with Citi QuantIFI](#)

Figure 61 to 74: These tables show few stocks in the GEM universe with highest and lowest significant betas to each factor in GRAM.

Methodology



Volatility Monitor Methodology

The report uses global emerging market universe for calculating various volatility measures:

1. Index Volatility

Index Volatility is historical one month rolling annualized volatility of various regional, country and sector level indices.

2. Stock Volatility

Stock Volatility is computed as the mean one month rolling annualized volatility of the index constituents.

3. Cross Correlation

Cross correlation is the mean pairwise correlation between rolling one month returns of all the possible pairs of index constituents

4. Cross Sectional Deviation

Cross Sectional Deviation is the annualized standard deviation of the daily returns of the constituent stocks in an index.

5. Citi Abnormal Vol

Citi Abnormal Vol is Citi's proprietary volatility indicator which whose daily reading is defined as

$$V_x = H/L - \max(O, C) / \min(O, C)$$

Where:

O: Open price on the given day

C: Closing price

H: High price

L: Low price

(For more details refer to our August 2010 report on [Citi Abnormal Vol](#))



QuantIFI Methodology

We can express cross sectional stock returns over any period using the following equation

$$Y_{Nx1} = X_{Mkt,NxC} R_{Mkt,Cx1} + X_{Sector,NxS} R_{Sector,Sx1} + X_{Style,NxM} R_{Style,Mx1} + \delta$$

where Y – Stock returns in local currency in excess of short term interest rates for each country

$N \in$ S&P Emerging + South Korea Large-MidCap Index

X_{Mkt} – Matrix of the loadings indicating a stocks country membership; and $C=12$

X_{Sector} – Matrix of dummy loadings indicating a stocks sector membership; and $S=12$

X_{Style} – Matrix of betas of the stocks to the 6 Style factors

R – Returns of the pure Style factors, Market & Sector

δ – Stock specific returns

A stocks beta to a style is computed by first winsorizing and then normalizing the underlying descriptor chosen for each style

$$x_{ij} = \sum_{k \in j} w_k \left(\frac{d_{ik} - \bar{d}_k}{\sigma_{d_k}} \right)$$

where w_k is the weight of the descriptor in the style

A weighted least squares solution to the above regression equation can be expressed as

$$R_{(C+S+M) \times 1} = \hat{p}_{M \times N} \cdot Y_{N \times 1}$$

Where Y may be of monthly or daily or any other periodically



The factor portfolios (fp) are then computed with a constrain on the sector weights¹ as

$$fp = (X^T W X)^{-1} \cdot (X^T W)$$

where W is a matrix of regression weights computed as a function of each stock's recent liquidity

Figure 75. Citigroup QuantIFI indices on Bloomberg

Style\Region	ASIA PACIFIC x JAPAN	AUSTRALIA	JAPAN	Global Emerging Markets	Emerging Asia	Latin America	CEEMEA
Size	CITQASSZ	CITQAUSZ	CITQJPSZ	CITQGESZ	CITQEASZ	CITQLASZ	CITQEESZ
Value	CITQASVA	CITQAUVA	CITQJPVA	CITQGEVA	CITQEAVA	CITQLAVA	CITQEEVA
Growth	CITQASGR	CITQAUGR	CITQJPGR	CITQGEGR	CITQEAGR	CITQLAGR	CITQEEGR
Risk	CITQASRI	CITQAURI	CITQJPRI	CITQGERI	CITQEARI	CITQLARI	CITQEERI
Momentum	CITQASMO	CITQAUMO	CITQJPMO	CITQGEMO	CITQEAMO	CITQLAMO	CITQEEMO
Quality	CITQASQU	CITQAUQU	CITQJPQU	CITQGEQU	CITQEQU	CITQLAQU	CITQEEQU

Source: Citi Investment Research and Analysis

¹ As the equation is over described, we constrain the weighted sum of the sectors to be 0 giving precedence to the country factors.



GRAM Factors

Below, we provide definitions of the seven macroeconomic risk factors and five equity market risk factors used in the GRAM model.

Macroeconomic Factors

1. **Global Yield:** The global yield factor is the weekly percentage change of GDP-weighted 10-year benchmark government bond yields from the top 9 countries by GDP.
2. **Emerging Markets Bond Yield:** The emerging market bond yield factor is the weekly percentage change of the yield of the CITI Emerging Market Sovereign-Capped Bond Index (ESBI-C).
3. **Credit:** The credit factor is the weighted composite of weekly percentage changes of four regional Credit Default Swap (CDS) indices. The indices are as follows: Markit Credit Indices for North America (CDX, 5-year Investment Grade), Europe (iTraxx, 5-year Investment Grade), Japan (iTraxx, 5-year Investment Grade) and Emerging Markets (CDX Diversified, 5-year Investment Grade). Each regional CDS index is equally-weighted. In forming the composite, we weight each regional index by the number of issues in each respective index.
4. **Oil Price:** The oil price factor is the percentage change of the spot price (in US dollars) of the West Texas Intermediate (WTI) crude oil. Other than the direct impact of oil prices on energy costs, changes in oil prices also serve as an important proxy for global inflation and growth expectations.
5. **Commodities Price:** The commodity price factor is the weekly percentage change of the S&P GSCI All Commodities Ex-Energy Index. We have observed decoupling of Energy and other commodities prices which warrants the inclusion of a separate commodities price risk factor in addition to the oil price factor.
6. **Currency - Euro/US\$ and JPY/US\$ Exchange Rates:** We have included the two most important global exchange rates in the risk model – the Euro/US\$ and the JPY/US\$, measured as the weekly percentage changes of the exchange rates.

Equity Market Factors

Equity market performance is impacted by macroeconomic factors and the correlations between different segments of the market. Therefore we measure the global market, small-cap premium, growth/value style premium, sector, and country factors after adjusting for the correlations with other factors. We refer to these adjusted factors as residualized factors.

1. **Global Market (residual):** The market factor is based on the weekly total returns of the MSCI ACWI Index in US dollars. We perform an OLS regression of this variable on the above seven macroeconomic variables. We then use the residuals of this regression as the final global market factor.
2. **Global Small-Cap Premium (residual):** The small-cap premium factor is based on the weekly total return spread in US dollar between the S&P BMI World Small Cap Index and the S&P BMI World Large Cap Index. We then perform an OLS regression of this variable on the seven macroeconomic factors and the residual global market factor. The final residual small cap factor uses the residuals of this regression.



3. **Global Growth/Value Style Premium (residual):** The style premium factor is based on the weekly total return spread in US dollar between the S&P BMI World Large-Cap Growth and Value Indices. We then perform an OLS regression of this variable on the seven macroeconomic factors and the two residualized equity market factors described above. We use the residuals of this regression as the final residual style factor.
4. **Global Sector Factors (residual):** The sector factor for a given individual stock is based on the weekly total return in US dollars of the MSCI ACWI GICS sector index to which that stock belongs. We then perform an OLS regression of this variable on the seven macroeconomic factors and the three residualized equity market factors listed above. The residuals of this regression are the final sector factor. There are ten GICS sectors.
5. **Local Market/Country Factors (residual):** The local market/country factor for a given individual stock is based on the weekly total return in local currency of the MSCI country index to which that stock belongs, except for stocks from the frontier markets. For stocks in the frontier markets, the local market factor is the weekly total return in local currencies of the MSCI Frontier Markets Index. We then perform an OLS regression of this variable on the seven macroeconomic factors, the first three residualized equity market factors and all ten residualized sector factors. The residuals from this regression are the local market factor.

For more details please refer to [Global Risk Attribute Model \(GRAM\) Version 2.0](#).







Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Investment Research & Analysis product ("the Product"), please contact Citi Investment Research & Analysis, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

Citi Investment Research & Analysis Ratings Distribution

	12 Month Rating			Relative Rating		
	Buy	Hold	Sell	Buy	Hold	Sell
Data current as of 31 Mar 2012						
Citi Investment Research & Analysis Global Fundamental Coverage	52%	37%	11%	10%	79%	10%
<i>% of companies in each rating category that are investment banking clients</i>	44%	42%	40%	47%	42%	43%
Citi Investment Research & Analysis Quantitative World Radar Screen Model Coverage	30%	40%	30%			
<i>% of companies in each rating category that are investment banking clients</i>	23%	23%	19%			
Citi Investment Research & Analysis Quantitative Decision Tree Model Coverage	47%	0%	53%			
<i>% of companies in each rating category that are investment banking clients</i>	48%	0%	47%			
Citi Investment Research & Analysis Asia Quantitative Radar Screen Model Coverage	20%	60%	20%			
<i>% of companies in each rating category that are investment banking clients</i>	24%	22%	21%			
Citi Investment Research & Analysis Australia Radar Model Coverage	51%	0%	49%			
<i>% of companies in each rating category that are investment banking clients</i>	37%	0%	13%			

Guide to Citi Investment Research & Analysis (CIRA) Fundamental Research Investment Ratings:

CIRA's stock recommendations include an investment rating and an optional risk rating to highlight high risk stocks.

Risk rating takes into account both price volatility and fundamental criteria. Stocks will either have no risk rating or a High risk rating assigned.

Investment Ratings: CIRA's investment ratings are Buy, Neutral and Sell. Our ratings are a function of analyst expectations of expected total return ("ETR") and risk. ETR is the sum of the forecast price appreciation (or depreciation) plus the dividend yield for a stock within the next 12 months. The Investment rating definitions are: Buy (1) ETR of 15% or more or 25% or more for High risk stocks; and Sell (3) for negative ETR. Any covered stock not assigned a Buy or a Sell is a Neutral (2). For stocks rated Neutral (2), if an analyst believes that there are insufficient valuation drivers and/or investment catalysts to derive a positive or negative investment view, they may elect with the approval of CIRA management not to assign a target price and, thus, not derive an ETR. Analysts may place covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and / or trading in the company's securities (e.g. trading suspension). As soon as practically possible, the analyst will publish a note re-establishing a rating and investment thesis. To satisfy regulatory requirements, we correspond Under Review and Neutral to Hold in our ratings distribution table for our 12-month fundamental rating system. However, we reiterate that we do not consider Under Review to be a recommendation.

Relative three-month ratings: CIRA may also assign a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the geographic and industry sector over a 3 month period. The relative call may highlight a specific near-term catalyst or event impacting the company or the market that is anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) will indicate the most and least preferred stocks in the universe of stocks under consideration, explaining the basis for this



short-term view. This three-month view may be different from and does not affect a stock's fundamental equity rating, which reflects a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls correspond to a buy recommendation and least preferred calls correspond to a sell recommendation. Any stock not assigned to a most preferred or least preferred call is considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we correspond NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we do not consider NRR to be a recommendation.

Prior to October 8, 2011, the firm's stock recommendation system included a risk rating and an investment rating. **Risk ratings**, which took into account both price volatility and fundamental criteria, were: Low (L), Medium (M), High (H), and Speculative (S). **Investment Ratings** of Buy, Hold and Sell were a function of CIRA's expectation of total return (forecast price appreciation and dividend yield within the next 12 months) and risk rating. Additionally, analysts could have placed covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and/or trading in the company's securities (e.g. trading suspension). Stocks placed "Under Review" were monitored daily by management and as practically possible, the analyst published a note re-establishing a rating and investment thesis. For securities in developed markets (US, UK, Europe, Japan, and Australia/New Zealand), investment ratings were: Buy (1) (expected total return of 10% or more for Low-Risk stocks, 15% or more for Medium-Risk stocks, 20% or more for High-Risk stocks, and 35% or more for Speculative stocks); Hold (2) (0%-10% for Low-Risk stocks, 0%-15% for Medium-Risk stocks, 0%-20% for High-Risk stocks, and 0%-35% for Speculative stocks); and Sell (3) (negative total return). For securities in emerging markets (Asia Pacific, Emerging Europe/Middle East/Africa, and Latin America), investment ratings were: Buy (1) (expected total return of 15% or more for Low-Risk stocks, 20% or more for Medium-Risk stocks, 30% or more for High-Risk stocks, and 40% or more for Speculative stocks); Hold (2) (5%-15% for Low-Risk stocks, 10%-20% for Medium-Risk stocks, 15%-30% for High-Risk stocks, and 20%-40% for Speculative stocks); and Sell (3) (5% or less for Low-Risk stocks, 10% or less for Medium-Risk stocks, 15% or less for High-Risk stocks, and 20% or less for Speculative stocks).

Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. Your decision to buy or sell a security should be based upon your personal investment objectives and should be made only after evaluating the stock's expected performance and risk.

Guide to Citi Investment Research & Analysis (CIRA) Quantitative Research Investment Ratings:

CIRA Quantitative Research World Radar Screen recommendations are based on a globally consistent framework to measure relative value and momentum for a large number of stocks across global developed and emerging markets. Relative value and momentum rankings are equally weighted to produce a global attractiveness score for each stock. The scores are then ranked and put into deciles. A stock with a decile rating of 1 denotes an attractiveness score in the top 10% of the universe (most attractive). A stock with a decile rating of 10 denotes an attractiveness score in the bottom 10% of the universe (least attractive). CIRA Asia Quantitative Radar Screen model recommendations are based on a regionally consistent framework to measure relative value and momentum for a large number of stocks across regional developed and emerging markets. Relative value and momentum rankings are equally weighted to produce a global attractiveness score for each stock. The scores are then ranked and put into quintiles. A stock with a quintile rating of 1 denotes an attractiveness score in the top 20% of the universe (most attractive). A stock with a quintile rating of 5 denotes an attractiveness score in the bottom 20% of the universe (least attractive).

CIRA Australia Quantitative Radar Screen model recommendations are based on a robust framework to measure relative value and momentum for a large number of stocks across the Australian market. Stocks with a ranking of 1 denotes a stock that is above average in terms of both value and momentum relative to the stocks in the Australian market. A ranking of 10 denotes a stock that is below average in terms of both value and momentum relative to the stocks in the Australian market.

CIRA Quantitative Decision Tree model recommendations are based on a predetermined set of factors to rate the relative attractiveness of stocks. These factors are detailed in the text of the report. The Decision Tree model forecasts whether stocks are attractive or unattractive relative to other stocks in the same sector (based on the Russell 1000 sector classifications).

For purposes of NASD/NYSE ratings-distribution-disclosure rules, a Citi Investment Research & Analysis (CIRA) Quantitative World Radar Screen recommendation of (1), (2) or (3) most closely corresponds to a buy recommendation; a recommendation from this product group of (4), (5), (6) or (7) most closely corresponds to a hold recommendation; and a recommendation of (8), (9) or (10) most closely corresponds to a sell recommendation. An (NR) recommendation indicates that the stock is no longer in the screen.

For purposes of NASD/NYSE ratings distribution disclosure rules, a CIRA Asia Quantitative Radar Screen recommendation of (1) most closely corresponds to a buy recommendation; a CIRA Asia Quantitative Radar Screen recommendation of (2), (3), (4) most closely corresponds to a hold recommendation; and a recommendation of (5) most closely corresponds to a sell recommendation. An (NR) recommendation indicates that the stock is no longer in the screen.

For purposes of NASD/NYSE ratings-distribution-disclosure rules, a CIRA Quantitative Research Decision Tree model or Quantitative Research Australia Radar Screen recommendation of "attractive" (1) most closely corresponds to a buy recommendation. All other stocks in the sector are considered to be "unattractive" (10) which most closely corresponds to a sell recommendation. An (NR)/(0) recommendation indicates that the stock is no longer in the screen.

Recommendations are based on the relative attractiveness of a stock, thus can not be directly equated to buy, hold and sell categories. Accordingly, your decision to buy or sell a security should be based on your personal investment objectives and only after evaluating the stock's expected relative performance.

NON-US RESEARCH ANALYST DISCLOSURES

Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research



analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Singapore PTE LIMITED	Paul R Chanin; Puneet Singh; Tushar Subhra Mandal; Anmol Sethy; Si An Tan
Citigroup Global Markets Japan Inc.	Nachiket R Garde, CFA; Masayoshi Yoshihara
Citicorp Pty Ltd	Nick Morton; Zee Yusuf

OTHER DISCLOSURES

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Investment Research & Analysis (CIRA) does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of CIRA to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

Important Disclosures for Morgan Stanley Smith Barney LLC Customers: Morgan Stanley & Co. LLC (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Investment Research & Analysis (CIRA) research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to CIRA research reports. Important disclosure regarding the relationship between the companies that are the subject of this CIRA research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.

For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. This CIRA research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of CIRA. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in **Australia** through Citigroup Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100,



Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A., Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 110-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. <http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02>. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) ("CGMM") to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to 'wholesale clients' only as defined by s5C(1) of the Financial Advisers Act 2008 ('FAA') through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul. Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. ("CGMSPL"), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold/Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gasset, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup



Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different CIRA ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority. Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company. Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to CIRA's Products can be found at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations. The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted. Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product. With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs), CIRA concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual CIRA analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. CIRA simultaneously distributes product that is limited to QIBs only through email distribution. The level and types of services provided by CIRA analysts to clients may vary depending on various factors such as the client's individual preferences as to the frequency and manner of receiving communications from analysts, the client's risk profile and investment focus and perspective (e.g. market-wide, sector specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints. CIRA product may source data from dataCentral. dataCentral is a CIRA proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.

© 2012 Citigroup Global Markets Inc. Citi Investment Research & Analysis is a division of Citigroup Global Markets Inc. Citi and Citi with Arc Design are trademarks and service marks of Citigroup Inc. and its affiliates and are used and registered throughout the world. All rights reserved. Any unauthorized use, duplication, redistribution or disclosure of this report (the "Product"), including, but not limited to, redistribution of the Product by electronic mail, posting of the Product on a website or page, and/or providing to a third party a link to the Product, is prohibited by law and will result in prosecution. The information contained in the Product is intended solely for the recipient and may not be further distributed by the recipient to any third party. Where included in this report, MSCI sourced information is the exclusive property of Morgan Stanley Capital International Inc. (MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, disseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI, Morgan Stanley Capital International and the MSCI indexes are services marks of MSCI and its affiliates. The Firm accepts no liability whatsoever for the actions of third parties. The Product may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the Product refers to website material of the Firm, the Firm has not reviewed the linked site. Equally, except to the extent to which



the Product refers to website material of the Firm, the Firm takes no responsibility for, and makes no representations or warranties whatsoever as to, the data and information contained therein. Such address or hyperlink (including addresses or hyperlinks to website material of the Firm) is provided solely for your convenience and information and the content of the linked site does not in anyway form part of this document. Accessing such website or following such link through the Product or the website of the Firm shall be at your own risk and the Firm shall have no liability arising out of, or in connection with, any such referenced website.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST
