

Equities

6 February 2012 | 24 pages

What Works in Equity Markets

Risk On (At the Moment)

■ Quantitative Analysis
■ Monthly

- **Style Rotation Déjà Vu** — Contrary to January 2011, we see the style rotation as more than just short-term portfolio repositioning. Equity valuations are attractive and, considering recent improvements to the macro backdrop, we are more confident the current rally can be sustained.
- **Market Review** — The strongest January for equities in over 10 years, with the MSCI Europe index up nearly 4% in EUR terms.
- **Style Review** — All change from a style perspective as last year's losers outperformed. With increased risk appetite, Value and GARP were the main beneficiaries at the expense of Low Risk, Momentum and Quality.
- **A Discriminative Approach to Value** — With the macro uncertainties on the horizon, we recommend adding selective Value exposure whilst maintaining a Quality tilt and present our Dividend Growth at a Reasonable Price (DGARP) income strategy.
- **Latest DGARP Opportunities** — Long opportunities with risk-adjusted forward Dividend Yield > 3.5%: France Telecom, KPN, Vivendi, Santander, GDF Suez, Veolia, RWE, Telecom Italia, Lagardere, Klepierre.

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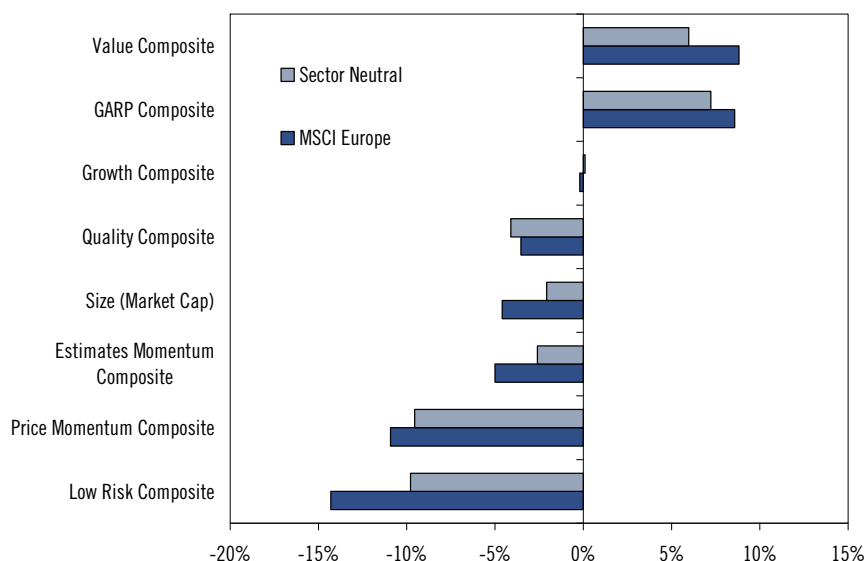
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Figure 1. Style Performance for Stocks in MSCI Europe – January 2012



Source: Citi Investment Research and Analysis

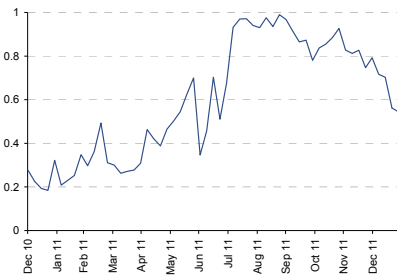
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Style Rotation Déjà vu

Increased risk appetite brings a strong start to the year for equities...

Figure 2. Citi Macro Risk Index



Source: Citi Investment Research and Analysis

From an equity market's perspective, 2012 has certainly started on a more positive note. For January the market was up nearly 4%, compared to 2011 which was down 7.5%. In fact January 2012 was the strongest start to the year in over 10 years and indeed since the inception of the Euro. So what has changed?

At face value it's clear that the market's risk aversion has decreased. While market direction has seemingly indicated this change in risk aversion, there are a number of different indicators that support this. One such indicator is the Citi Macro Risk Index¹ (MRI) which is a measure of the level of risk aversion in financial markets. For most of 2011 this index rose dramatically but in the fourth quarter it has been falling and more so over the last four weeks. Other indicators that suggest falling risk aversion could be the fall in stock return correlation² or general volatility itself.

Additional evidence of falling risk aversion can be seen in the style performance for January and the clear style rotation away from Low Risk and into Value and, as a result, the failure of Price Momentum. So again, what has changed? To answer this question we have considered three aspects that could contribute to the change in market sentiment. Each is related but depending on which one explains the change can indicate how markets will look going forward into the short to medium term.

The three aspects that we consider are:

1. **Seasonality Effect:** Is it common to see style rotation, vis-à-vis portfolio repositioning, at the start of the year?
2. **Macro Environment:** Has the Global and/or European macro-environment changed substantially to justify a change in risk aversion?
3. **Equity Valuations:** Given the macro environment and any change that has occurred over past couple of months, are valuations compelling enough for investors to shift from worrying about down-side risk to up-side risk?

...but is the rally sustainable?

Through our discussion and analysis on the three aspects in the following sections, we aim to shed some light as to what has really been going on in the market and whether or not this rally is sustainable. With liquidity in abundance, is this a repeat of March 2009 all over again? If not, how should investors position themselves to harvest style alphas on the table whilst seeking protection on the downside?

¹ For more information, please contact [Kristjan Kasikov](#) from CitiFX Quantitative Investor Solutions. This index can be found in Bloomberg: Citi Macro Risk Index - MRI <GO>.

² See Dispersion, Correlation & Diversification, Citi Investment Research & Analysis, January 2012

Seasonality Effect – Portfolio Repositioning?

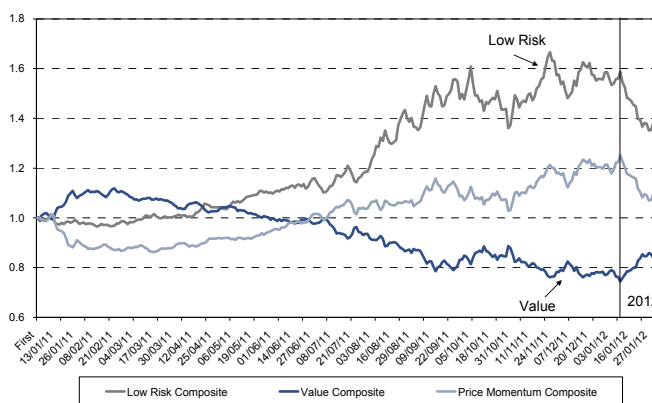
Repositioning in January is not uncommon...

Common perception would lead one to believe that January market returns are strongly influenced by end/start of year portfolio repositioning. One could, perhaps controversially, assume that at the start of the year, investors are more prone to take on risk or a contrarian view given they potentially have another 11 months to compensate for potential losses.

...and is often played out at the style level.

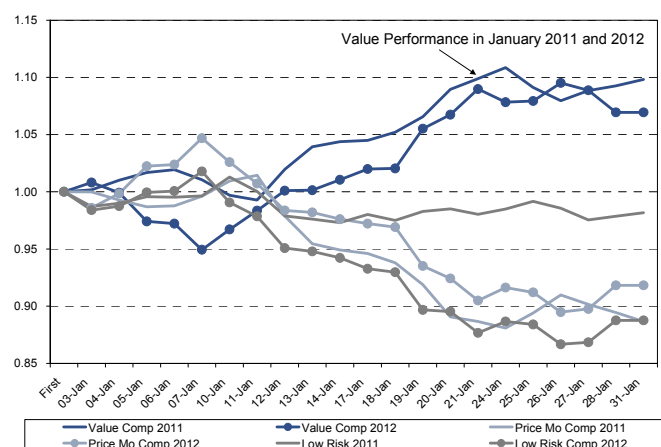
This repositioning is not uncommon and often has clearly played out at the style level with last year's outperforming styles becoming January's laggards – and vice versa.

Figure 3. Value, Low Risk and Price Momentum Performance in 2011



Source: Citi Investment Research and Analysis

Figure 4. Value Rotation in 2011 and 2012



Source: Citi Investment Research and Analysis

Strong style rotation in January 2012 with Value outperforming at the expense of momentum...

January 2011 witnessed strong style reversion with Value leading the way at the expense of Price Momentum. At the time³ we argued that this was more than just style rotation and not a pure risk rally. Value outperformance was not the *cause* but a direct *consequence* of a tactical repositioning in the market rather than a structural shift. The rotation indeed appeared to be a bi-product of fund flow out of EM and into DM.

...contrary to 2011, Risk is the driving factor...

With regard to Value and Momentum, January 2012 was a near mirror image of January 2011 as investors favoured the previous year's losers at the expense of the outperformers. The main difference appears to emerge from the performance of the Low Risk factor and the motivation for investing.

Low Risk returns were flat in 2010 and, consequently, Low Risk was relatively unaffected by the tactical repositioning witnessed in January 2011. Investors were not taking on risk but were repatriating risk from Emerging to Developed markets and the reversion, on the whole, "by-passed" beta and risk.

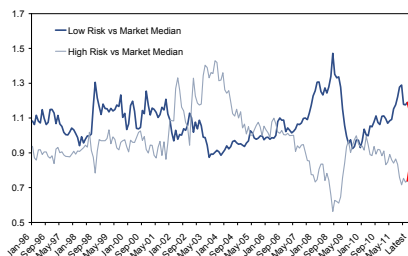
...as the Low Risk trade continued to unwind

In contrast, January 2012 has witnessed a strong unwinding of the Low Risk trade. Having returned in excess of 55% in 2011, Low Risk shed upwards of 11% and was the clear loser of portfolio repositioning over the past month.

³ What Works in Equity Markets: Structural Repositioning or Tactical Repositioning, Citi Investment Research & Analysis, February 2011

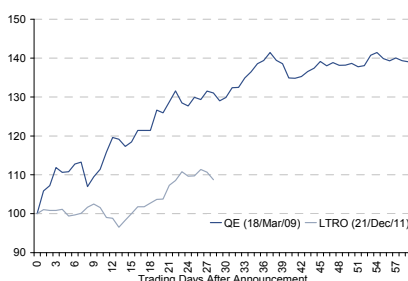
What has changed this time around?

Figure 5. Relative Valuation of High/Low Risk Portfolios



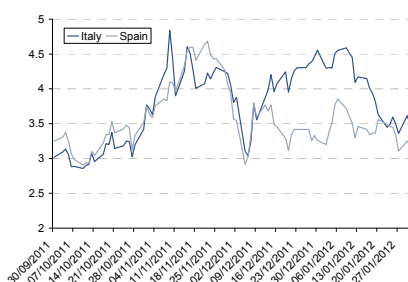
Source: Citi Investment Research and Analysis

Figure 6. L/S Value Performance Following QE and LTRO



Source: Citi Investment Research and Analysis

Figure 7. 10yr Bond Spread, Italy & Spain vs. Bunds



Source: Citi Investment Research and Analysis

We are left posing the questions: what is different this time around and is this risk rally the cause of a structural shift or is it a consequence of another repositioning playing out?

Having seen minimal risk added outside of relative bets in defensive sectors in 2011, January saw an about turn with risk being added intra sector across cyclicals and with defensives offering poor returns from a high/low risk perspective.

At this juncture, and with our strategists forecasting ~10% equity market returns despite a 15% fall in earnings⁴, we think this reversion is more likely the start of a structural shift than a seasonal repositioning as investors become increasingly confident that macro issues are either priced in or can be resolved.

Whilst we don't see this as a repeat of March 09, we do see it as more than short term tactical repositioning. Considering recent improving sentiment, we are more confident that the current rally in equity markets can be sustained but are still cognizant of headwinds that may emerge in the medium term.

Macro Environment – Has it Changed?

Having peaked in September, the Citi MRI steadily fell over Q4. From a style perspective, Q4 2011 had potentially already seen the seeds being sown with Quality and Momentum offering superior returns to Low Risk as the relative price of Risk portfolios became stretched – something we have been monitoring for some time. (See Figure 5).

The macro environment remains a challenge but direct intervention from policymakers, positive economic data and a changing perception of the associated risks have contributed to the increase in risk appetite.

Liquidity has been injected into the banking system. In December the ECB lent nearly EUR500 billion via their Long Term Refinancing Operation (LTRO) and a possible further EUR1 trillion is not unexpected in February. The logic here is simple: the ECB hope banks will use the cheap debt to buy high yielding government bonds, thus relieving stress on the yields. This can then be used as collateral for banks to return to the ECB for additional cheap funding via LTRO.

Is this Quantitative Easing (QE) in disguise? If banks that participated in LTRO have indeed used the funds to buy government debt then yes, this could be viewed as an indirect QE. If not, and banks are simply hoarding the proceeds, then the desired effect will not be as strong.

From a quantitative perspective, if LTRO turns out to be a “backdoor” QE for Europe one can expect a continuation of Value outperformance. In the 3 months following QE, Value returned 40% (long/short). In the 6 weeks since LTRO⁵ Value has returned 9% (see Figure 6). February 29th, the second round of LTRO, will clearly be a key catalyst in determining how the factor landscape plays out in 2012.

Following LTRO, auctions for peripheral European government bonds went better than expected in January. Yields have fallen from in excess of 6.5% to around the 5% level for both Italian and Spanish bonds (10yr) and spreads versus German Bunds have contracted. (See Figure 7).

⁴ Pan-Europe Road Ahead: Backing The Barbell – Citi Investment Research & Analysis, December 2012. at the time of publication, 15-20% upside was forecast for equities leaving ~10% from where we currently stand.

⁵ We use the date of the announcement of the second round of LTRO (21st December 2011) as size is expected to be more significant.

Data on key economies has been favourable with stronger than expected data emerging from the US, China and Germany giving increasingly positive signals.

Rates also remain low and, with the Fed announcing rates being kept low until late 2014, one can expect them to remain at these historically low levels for the immediate future. A similar picture is expected in Europe.

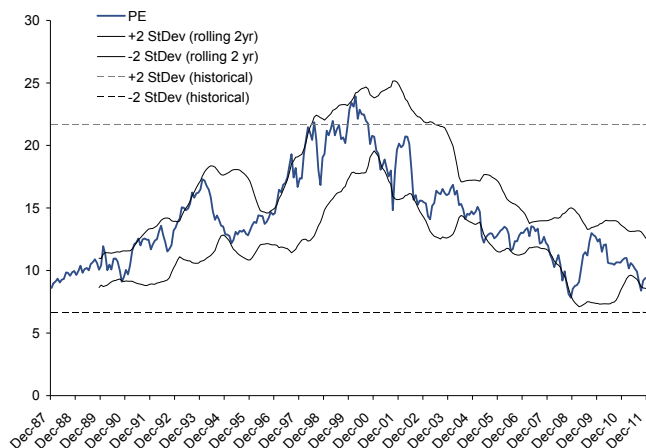
Headwinds remain but current backdrop is supportive for equities

In short, despite some headwinds clearly remaining, the current macroeconomic backdrop would also appear to be supportive to further equity market gains. Whilst there are still clouds on the mid/long term horizon, over the short term there would certainly appear to be upside for Value factors and for selectively adding risk in our view.

Equity Valuations – Compelling Enough to Add Risk?

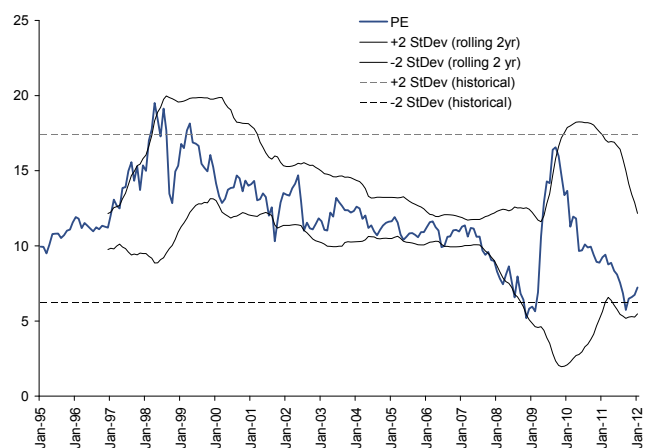
European equities appear cheap and, despite recent expansion both throughout Q4 2011 and year-to-date, are still near both long and short term troughs. The risk/reward profile for taking a valuation bias at this juncture is becoming more compelling and one can conclude that valuations are becoming attractive. This is perhaps even more compelling when we focus on European Banks.

Figure 8. MSCI Europe, 12mth fwd P/E



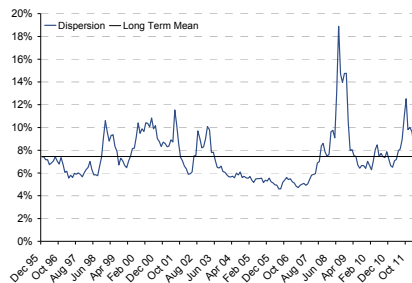
Source: Citi Investment Research and Analysis

Figure 9. MSCI Europe Banks, 12mth fwd P/E



Source: Citi Investment Research and Analysis

Figure 10. MSCI Europe, 12mth fwd P/E Valuation Dispersion⁶



Source: Citi Investment Research and Analysis

There has also been a contemporaneous contraction in the dispersion of valuations, with the spread now approaching the long term equilibrium.

To put this into some context, the market P/E troughed in October / November 2008 accompanied with a spike in the dispersion of valuations – 4 months ahead of QE and the March 2009 Value rally. As we currently stand, the market P/E troughed in September / October 2011 and was again accompanied by a spike in valuation dispersion. (See Figure 10).

This would imply that the market was pricing in a worst case scenario ahead of policymaker intervention and that any intervention or improvement to the underlying macroeconomic environment would therefore bring with it a sharp reversal to risk aversion and style returns.

The fiscal stimulus provided by QE in 2009 essentially set a floor to valuations and investors were offered the opportunity to buy distressed assets with limited downside due to the significant funding help already in the pipeline. That whether the same story will play out with LTRO remains to be seen.

That said, investors should also bear in mind potential risk on the downside in the scenarios such as failing Greek debt talk, further deterioration in Portugal or the next tranche of LTRO falling short of expectations – all these can change investors' attitude towards risk quickly. LTRO solves the short-term funding issues for banks and along with it, potentially the stress on the government bond yields. However, it does not cure the cause of Eurozone crisis where debt-laden countries simply have spent beyond their means. We would thus caution investors that whilst LTRO brings in short-term relief, in the medium term the core of the problem remains unless these countries can instill strong fiscal disciplines in their spending or persuade markets that they are unequivocally on the growth path.

Summary

Increased risk appetite...

Whilst there has undoubtedly been an increase in risk appetite in the market over the past month, we still remain cautious over taking excessive Value and Risk tilts, given the possible event risk on the horizon. We do however realize that, given the potential upside to equities, Value exposure is currently almost a pre-requisite.

...but remain cautious on excessive value and risk exposure

Having last month posed the question 'is Low Risk becoming a high risk strategy?⁷', we continue to be of the opinion that the pure low risk trade may have run its course and that going forward investors will seek to selectively add risk.

DGARP – a discriminative approach to Value is required

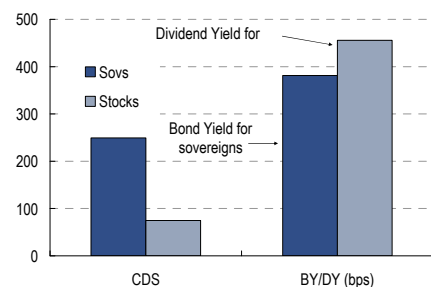
At this juncture, we would recommend adopting a more discriminative approach to Value investing to maintain a Quality bias. Whilst this may cap upside in the event of continued buoyant equity markets, we think this is a small price to pay for downside protection in the event of further market turbulence. With this in mind, we focus our attention on income investing and add defensive Value exposure via our DGARP income strategy.

⁶ Valuation Dispersion is defined as the median 12mth fwd earnings yield of the cheapest quintile relative to the median earnings yield of the most expensive quintile.

⁷ What Works in Equity Markets: December Style Review and 2011 Style Snapshot, Citi Investment Research & Analysis, January 2012

Income Investing - DGARP

Figure 11. CDS and Yields - Euro Sovereigns vs Corporates



Source: Citi Investment Research and Analysis

With recent unreliable returns from equity markets and with equity yields now higher than bond yields, investors are on a global search for yield and focus has turned to dividends. Within Europe one can indeed find yields higher than sovereigns with lower than sovereign risk – CDS spreads for large caps are lower than European sovereigns whilst yields remain elevated⁸.

Dividend payers, especially in recent times, have been classed as having a Quality tilt as opposed to being viewed as a Value play and are viewed as having the most reliable earnings and cash flow streams.

Whilst it holds true that, historically, income investors have generally been rewarded, it is also widely accepted that the outperformance is cyclical and that dividend yield strategies do not deliver consistent risk adjusted returns over time and, as we have highlighted in previous research⁹, there are distinct periods where dividend yield strategies do not offer attractive returns.

Figure 12. Cumulative Returns of Long/Short Dividend Yield Portfolios



Source: Citi Investment Research and Analysis

Figure 13. Performance Statistics – Dividend Yield and DGARP

	Unconstrained			Sector Neutral		
Dividend Yield	High Yld	Low Yld	High/Low	High Yld	Low Yld	High/Low
Annualised Return	12.8%	2.6%	7.8%	11.8%	4.2%	6.1%
Annualised Volatility	17.5%	23.6%	12.4%	17.5%	21.5%	8.6%
Risk Adjusted	0.73	0.11	0.63	0.67	0.19	0.71
DGARP	Long	Short	L/S	Long	Short	L/S
Annualised Return	14.0%	2.1%	9.0%	14.5%	3.8%	8.7%
Annualised Volatility	21.6%	26.2%	16.3%	20.5%	23.9%	13.3%
Risk Adjusted	0.65	0.08	0.55	0.71	0.16	0.65

Source: Citi Investment Research and Analysis

To help overcome this issue and smooth returns to a simple Dividend Yield strategy, we overlay a DPS Growth factor to employ a tactic we refer to as DGARP.

Dividend Growth at a Reasonable Price

By combining Dividend Yield and Dividend Growth we create our Dividend Growth at a Reasonable Price (DGARP) factor.

Working on the hypothesis that high Dividend Yielding companies that can, contemporaneously, demonstrate DPS Growth should offer further outperformance, our DGARP factor is a simple linear combination of trailing Dividend Yield (LTM) and historical DPS Growth.

⁸ Global Equity Strategist: The Global Search for Yield, Citi Investment Research & Analysis, 1 February 2012

⁹ What Works in Equity Markets: Income Investing: Value and Quality, Citi Investment Research & Analysis, August 2009

Figure 14. Annualised Returns (Risk Adjusted Returns) for Unconstrained Double Sorted Dividend Yield and Dividend Growth Portfolios

	Lowest Yield	Q2	Q3	Q4	Highest Yield
Lowest Growth	2.1% (0.1)	2.3% (0.1)	5% (0.3)	8% (0.4)	8.7% (0.5)
Q2	9.7% (0.4)	5.6% (0.3)	8.4% (0.5)	7.5% (0.5)	13.6% (0.8)
Q3	3.4% (0.1)	9.4% (0.5)	10.1% (0.6)	9% (0.6)	11.2% (0.7)
Q4	0% (0.0)	7.4% (0.4)	6.9% (0.4)	7.5% (0.4)	11.9% (0.7)
Highest Growth	3.7% (0.1)	3.7% (0.2)	13.5% (0.6)	10.3% (0.5)	14% (0.6)

Source: Citi Investment Research and Analysis

DGARP

14% annualised returns
0.65 risk adjusted returns

An intersection of the highest Dividend Yield portfolio with the Highest DPS Growth portfolio offers an annualised return of 14% (0.65 risk adjusted). This is 12% higher than that offered by the intersection of the corresponding low Dividend Yield and Low Dividend Growth portfolios (2.1% annualised, 0.08 risk adjusted) and results in annualised long/short returns of 9.0% (0.55 risk adjusted) with a similar picture emerging when we condition the DGARP portfolios for sector neutrality.

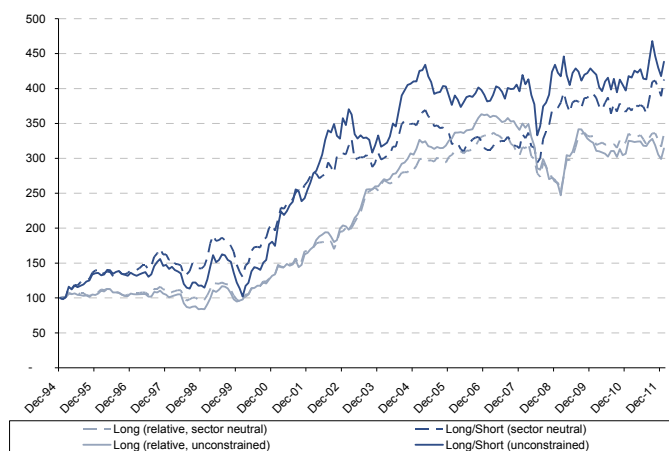
Figure 15. Annualised Returns (Risk Adjusted Returns) for Sector Neutral Double Sorted Dividend Yield and Dividend Growth Portfolios

	Lowest Yield	Q2	Q3	Q4	Highest Yield
Lowest Growth	3.8% (0.2)	2.7% (0.1)	6.4% (0.4)	9.3% (0.5)	7.7% (0.4)
Q2	5.1% (0.2)	7% (0.4)	6.7% (0.4)	8.6% (0.5)	10.2% (0.6)
Q3	13.9% (0.8)	6.7% (0.4)	8.4% (0.5)	6.9% (0.4)	10.9% (0.6)
Q4	0.3% (0.0)	7.1% (0.4)	9.4% (0.6)	9.8% (0.6)	9.2% (0.5)
Highest Growth	4.1% (0.2)	6.3% (0.3)	12.7% (0.6)	9% (0.4)	14.5% (0.7)

Source: Citi Investment Research and Analysis

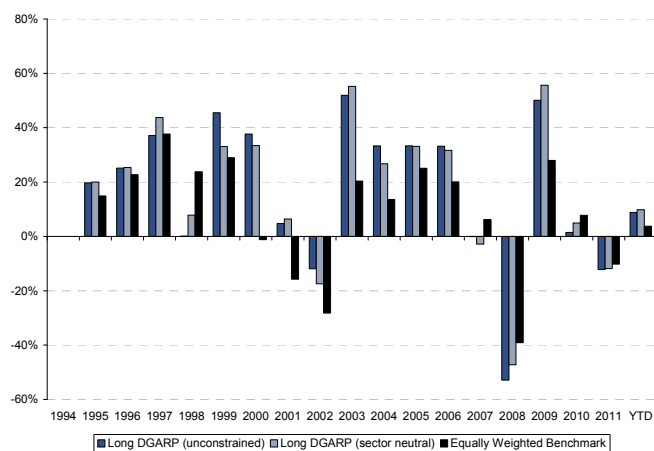
Historically, adopting the unconstrained DGARP approach would have resulted in outperformance over the benchmark (MSCI Europe) in 12 out of 19 years or 63% of the time. For the sector neutral approach, the hit rate improves to 68%.

Figure 16. Cumulative Relative Returns of DGARP Strategies



Source: Citi Investment Research and Analysis

Figure 17. Annual Returns of DGARP Strategies



Source: Citi Investment Research and Analysis

DGARP - Stock Screen

We present the latest long opportunities emerging from our DGARP strategy – that is stocks that rank in the top quintile for both the Dividend Yield and DPS Growth factors.

For reference, using the methodology adopted by our strategists¹⁰, we also present Risk (CDS) adjusted Dividend Yields where available to illustrate potential risk adjusted returns.

Figure 18. DGARP: Latest Long Portfolio, MSCI Europe

Sedol	Name	Sector	DGARP Dividend Yield	DGARP Dividend Growth	12mth fwd Dividend Yield	12mth fwd Payout Ratio	CDS (bps)	CDS Adjusted fwd Dividend Yield
5176177	FRANCE TELECOM	Telecommunication Services	12.2%	46.6%	11.9%	94%	126	10.6%
7107250	OPAP	Consumer Discretionary	20.8%	90.6%	11.8%	63%		
5956078	KPN (KON.)	Telecommunication Services	10.4%	94.7%	11.0%	86%	129	9.7%
7634394	TELECOM ITALIA ORD	Telecommunication Services	7.4%	61.2%	9.3%	57%	420	5.1%
4834777	VIVENDI	Telecommunication Services	8.6%	55.5%	9.2%	62%	173	7.5%
4103596	EDP ENERGIAS DE PORTUGAL	Utilities	7.7%	54.0%	9.0%	66%	884	0.1%
5705946	BANCO SANTANDER	Financials	9.3%	63.4%	8.9%	66%	255	6.3%
7745638	FONCIERE DES REGIONS	Financials	8.1%	59.1%	8.4%	78%		
B01FLQ6	ACS ACTIV. CONST. Y SVCS	Industrials	8.3%	33.0%	8.2%	65%		
4031879	VEOLIA ENVIRONNEMENT	Utilities	7.6%	39.6%	7.8%	89%	226	5.6%
B0C2CQ3	GDF-SUEZ	Utilities	7.1%	40.4%	7.4%	85%	135	6.0%
5543986	CNP ASSURANCES	Financials	7.0%	55.5%	7.2%	45%		
5997118	TF1 TELEVISION FRANCAISE	Consumer Discretionary	6.3%	54.0%	7.2%	76%		
B09LSH6	INMARSAT	Telecommunication Services	7.2%	93.3%	7.0%	60%		
4768962	RWE STAMM	Utilities	11.4%	80.7%	6.8%	52%	134	5.5%
B3B8D04	SUEZ ENVIRONNEMENT	Utilities	6.5%	51.1%	6.8%	81%		
5964640	SANOMA	Consumer Discretionary	9.7%	47.7%	6.8%	81%		
4476210	INDRA SISTEMAS A	Information Technology	6.6%	63.5%	6.5%	58%		
4547213	LAGARDERE	Consumer Discretionary	5.8%	36.9%	6.1%	60%	183	4.2%
7582556	KLEPIERRE	Financials	5.7%	92.1%	5.9%	69%	192	4.0%
4554406	ICADE	Financials	8.3%	83.9%	5.8%	113%		
B283W97	CAIXABANK	Financials	9.7%	65.9%	5.6%	64%		
4065663	ABERTIS INFRAESTRUCTURAS	Industrials	5.8%	44.7%	5.5%	74%	254	3.0%
7142091	SKANSKA B	Industrials	9.6%	94.0%	5.1%	77%		
5902941	NOKIA CORP	Information Technology	6.6%	41.9%	4.9%	104%	316	1.7%
5641567	CARREFOUR	Consumer Staples	6.0%	63.4%	4.8%	56%	212	2.7%

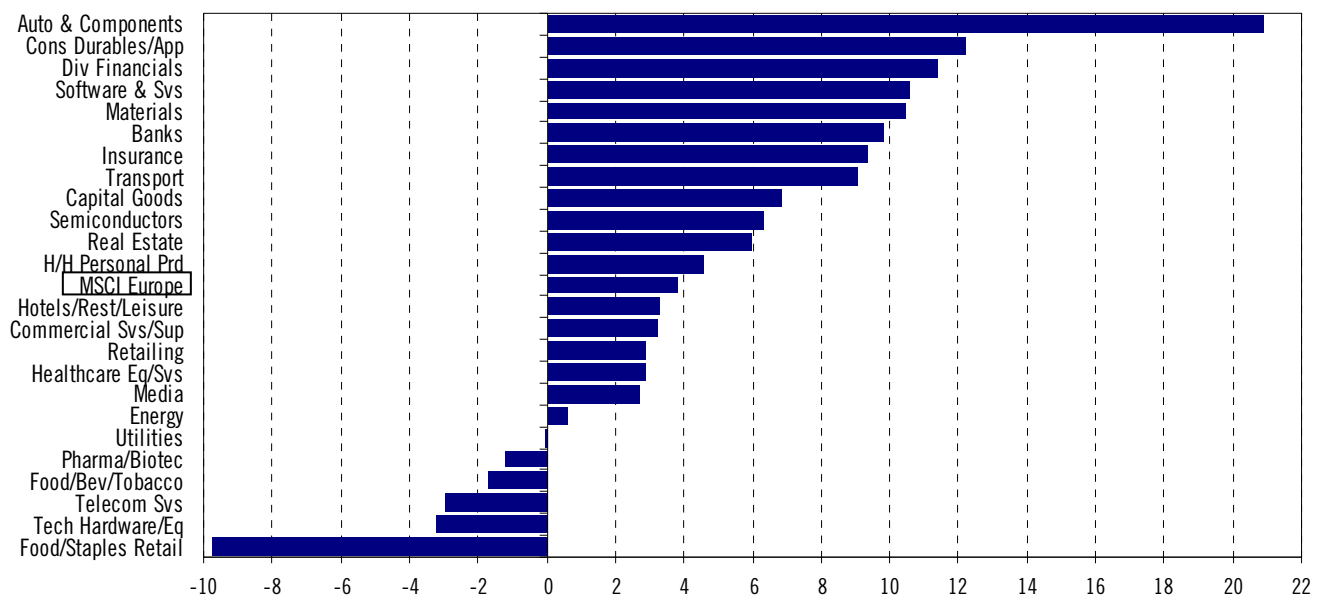
Source: Citi Investment Research and Analysis

¹⁰ European Portfolio Strategist, CDS Adjusted Dividends, Citi Investment Research & Analysis, 13 October 2011

What Has the Market Done in January?

- **Markets:** January was a solid month for equities. The MSCI Europe index was up nearly 4% in EUR terms. This was the strongest January for equities in over ten years.
- **Size:** Given apparent change in risk aversion, small cap stock performed strongly in January compared to large caps. Using the MSCI indices, the Europe Large Cap index was up 3.55% while the Small Cap index was up 9.10%.
- **Sectors:** Sector performance rank was almost reversed in January relative to the previous month in clear switch from defensives to cyclicals. In particular, the Auto sector was up over 20% while in December it was down close to 5%, down approximately 20% in 2011.

Figure 19. MSCI Europe Industry Group One-Month Total Euro Returns (Percentage)



Source: Citi Investment Research and Analysis & MSCI

What is in Style?

- **What do we do?** : We compare the performance of a portfolio with the highest 20% of factor values against the performance of a portfolio with the lowest 20% of factor values for the individual style factors.
- **What worked, what didn't?** : An about turn at the style level with last year's losers outperforming in January. Value and GARP led the way at the expense of Low Risk, Momentum and Quality as investors added risk and beta following LTRO and successful Italian and Spanish bond Auctions.

Figure 20. Style Performance Across Market, January 2012

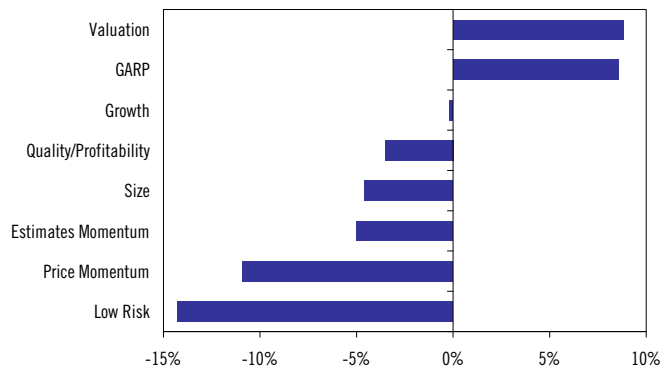
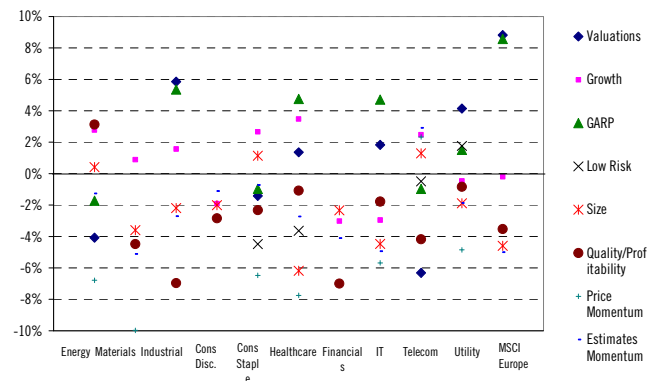


Figure 21. Style Performance Across Sectors, January 2012



Source: Citi Investment Research and Analysis, IBES, Worldscope, FTSE and MSCI

Source: Citi Investment Research and Analysis, IBES, Worldscope, FTSE and MSCI

January 2012 Style Leaders and Laggards

- Figure 22 shows the return spread between the high and low factor portfolios by factor for the last month and for 2011, respectively. Figure 23 shows the annualised return spread between the high and low factor portfolios by factor since 1995. Note that, as the distribution of factor values varies by sector and factors may not affect all sectors in the same manner, the performance within each sector and across the market is shown. For further details of our method, please see the Appendix on Style Performance.

Figure 22. Performance Spread Between High (Top 20%) and Low (Bottom 20%) Factor Portfolios in January 2012

	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Financials	Information Technology	Telecoms	Utilities	MSCI Europe	MSCI UK
Valuation	-4.1%	14.3%	5.9%	11.0%	-1.4%	1.4%	10.7%	1.8%	-6.3%	4.1%	8.8%	10.5%
Earnings Yield - 12 month forward	-12.2%	11.1%	6.3%	13.3%	-0.8%	4.5%	12.7%	4.6%	-2.2%	5.7%	8.5%	6.7%
Earnings Yield- 12 month historical	-7.8%	12.2%	4.1%	14.4%	-0.9%	2.0%	6.5%	5.6%	-2.2%	6.2%	6.1%	7.9%
Cash Flow To Price	2.1%	11.8%	4.1%	9.8%	1.2%	8.4%	12.9%	4.0%	-2.4%	3.3%	6.8%	8.1%
Dividend Yield	4.9%	4.5%	1.8%	1.0%	-1.9%	-5.5%	-7.1%	-0.4%	-7.5%	6.9%	-1.2%	-0.6%
Book to Price Ratio	-1.0%	10.9%	8.6%	14.5%	2.3%	5.8%	14.0%	6.6%	-1.7%	-4.3%	9.7%	7.9%
Sales to Price Ratio	-2.5%	9.4%	6.1%	13.4%	-0.8%	7.3%	NA	5.7%	-2.7%	3.7%	6.3%	-2.6%
EBITDA / EV	-7.8%	9.7%	2.9%	5.9%	1.2%	5.9%	NA	2.1%	-2.9%	0.5%	5.6%	5.3%
Sales / EV	2.9%	12.0%	5.0%	8.0%	-0.8%	8.3%	NA	1.8%	0.3%	-0.4%	6.4%	1.0%
Growth	2.8%	0.9%	1.6%	-1.9%	2.7%	3.5%	-3.0%	-3.0%	2.5%	-0.5%	-0.2%	1.2%
Earnings Growth (12 month forward)	11.4%	-2.5%	-2.8%	-5.9%	1.6%	-4.2%	7.2%	-4.6%	0.6%	-2.5%	0.9%	-1.4%
CIR Growth-Value Score	1.2%	-1.3%	-0.4%	-7.1%	2.7%	3.5%	-8.9%	-5.4%	3.7%	0.8%	-3.4%	1.1%
One Year Sales Growth	-14.7%	6.8%	7.3%	9.4%	1.5%	3.5%	NA	2.8%	-1.8%	-3.0%	7.2%	5.8%
Long Term Earnings Growth	-14.1%	-1.9%	-0.2%	7.2%	1.3%	0.7%	-2.7%	1.1%	2.1%	1.6%	0.2%	0.8%
One Year EPS Growth	0.4%	7.8%	4.4%	8.5%	1.7%	-3.3%	7.5%	8.6%	-0.6%	4.9%	8.4%	4.5%
GARP	-1.7%	15.0%	5.4%	13.2%	-1.0%	4.8%	12.3%	4.7%	-1.0%	1.5%	8.6%	8.1%
Deviation from Fair P/E	3.0%	11.6%	5.4%	11.6%	-1.4%	3.1%	6.5%	6.9%	-5.3%	5.8%	8.2%	8.4%
Deviation from Fair P/B	-11.2%	10.1%	8.7%	13.9%	0.5%	3.7%	6.3%	4.6%	-2.7%	4.7%	8.1%	8.1%
Deviation from Fair P/CF	-3.7%	9.0%	3.2%	6.7%	-4.1%	5.1%	NA	5.7%	1.5%	2.3%	4.7%	-3.3%
Deviation from Fair P/S	-0.1%	10.2%	2.3%	7.9%	-3.3%	1.5%	8.9%	5.5%	-2.3%	0.7%	6.4%	9.1%
PEG (Inverted)	3.6%	9.5%	-1.3%	4.2%	0.2%	4.5%	7.0%	-0.5%	2.0%	0.8%	5.7%	1.8%
Low Risk	-13.2%	-10.1%	-10.2%	-16.2%	-4.5%	-3.6%	-13.7%	-11.3%	-0.5%	1.8%	-14.3%	-12.7%
Debt to Equity (Inverted)	1.3%	-0.7%	-2.2%	-5.7%	0.9%	-0.1%	NA	0.2%	-2.0%	-5.8%	-0.4%	3.4%
Earnings Stability	0.1%	-3.5%	-9.1%	-8.3%	-4.7%	-1.7%	-0.8%	0.9%	2.1%	1.8%	-6.4%	-3.5%
Beta against MSCI AC World (Low-High)	-8.0%	-16.2%	-9.3%	-16.6%	-5.3%	-6.7%	-15.0%	-16.2%	-3.0%	2.4%	-14.3%	-11.9%
Beta against MSCI Country (Low-High)	-3.6%	-8.8%	-6.5%	-12.6%	-3.7%	5.1%	-11.7%	-13.3%	-1.7%	4.7%	-13.2%	-12.4%
Size (Market Cap)	0.4%	-3.6%	-2.2%	-2.0%	1.1%	-6.2%	-2.3%	-4.5%	1.3%	-1.9%	-4.6%	-1.0%
Quality/Profitability	3.1%	-4.5%	-7.0%	-2.8%	-2.3%	-1.1%	-7.0%	-1.8%	-4.2%	-0.8%	-3.5%	-2.9%
Earnings Certainty	10.2%	-9.5%	-8.6%	-14.6%	-3.9%	-5.1%	-9.1%	-1.4%	3.2%	5.5%	-9.1%	-9.9%
Return on Equity	4.7%	-1.2%	-5.2%	-3.3%	-4.6%	-7.6%	-8.5%	-7.5%	3.5%	5.0%	-4.8%	-2.2%
Net Profit Margin on Sales	3.9%	-0.0%	-6.8%	-5.6%	0.8%	-7.7%	-11.4%	-4.9%	2.4%	2.4%	-4.8%	2.9%
Margin Growth	6.2%	-2.0%	-3.1%	6.2%	-0.7%	-3.5%	7.5%	-2.2%	1.2%	-2.2%	2.2%	-1.5%
Earnings Quality (Accruals) (Inverted)	-6.7%	-2.4%	-5.3%	-0.6%	-2.5%	2.0%	NA	1.0%	-4.7%	-8.1%	-2.2%	0.6%
Balance Sheet Quality (NOA) (Inverted)	6.3%	1.7%	-1.9%	4.6%	-1.6%	1.2%	NA	0.2%	-4.0%	-1.1%	1.1%	0.7%
Volatility Adjusted Price Momentum	-6.8%	-10.0%	-12.5%	-10.8%	-6.5%	-7.8%	-13.9%	-5.7%	2.3%	-4.9%	-10.9%	-7.3%
Price Momentum - 1 month	-9.0%	-10.6%	-9.7%	-8.4%	-3.8%	-7.8%	-5.2%	-8.9%	5.0%	-0.5%	-9.5%	-8.5%
Price Momentum - 3 months	-6.0%	-7.3%	-9.4%	-5.3%	-1.4%	2.3%	-3.5%	-2.4%	4.3%	-3.0%	-6.1%	-4.4%
Price Momentum - 12 months	-8.0%	-7.3%	-8.8%	-9.4%	-6.0%	-8.3%	-10.2%	-2.2%	3.1%	-4.7%	-9.5%	-7.7%
Price Momentum - First 11 months	-8.3%	-7.3%	-7.4%	-9.2%	-6.1%	-8.3%	-10.9%	-1.6%	4.2%	-4.7%	-9.3%	-7.4%
Estimates Momentum	-1.3%	-5.1%	-2.7%	-1.1%	-0.7%	-2.7%	-4.1%	-4.9%	2.9%	-1.9%	-5.0%	-4.4%
1 Month Change in Earnings Forecast	11.1%	-5.1%	-5.5%	-3.7%	-2.8%	-2.6%	-7.2%	-0.0%	3.9%	-5.9%	-5.5%	-3.5%
Earnings Revisions	-5.3%	-7.1%	-5.2%	-5.5%	-0.3%	-3.8%	-8.5%	-8.4%	3.1%	-2.4%	-6.0%	-5.4%
Sales Revisions	5.3%	-9.6%	-2.8%	1.5%	-0.6%	-6.4%	NA	-8.1%	1.0%	-0.7%	-2.5%	-5.0%
Cash Revisions	-11.9%	1.3%	1.5%	-1.8%	-1.4%	5.0%	NA	4.4%	3.4%	5.3%	-2.5%	-6.7%

Source: Citi Investment Research and Analysis, IBES, Worldscope, FTSE and MSCI

Long-Term Style Leaders and Laggards

- For the pan-Europe universe, Valuation, Quality/Profitability, and Estimates Momentum are the quant factors that deliver consistent outperformance since January 1995.

Figure 23. Performance Spread Between High (Top 20%) and Low (Bottom 20%) Factor Portfolios since January 1995 (annualized)

	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Financials	Information Technology	Telecoms	Utilities	MSCI Europe	MSCI UK
Valuation	-3.1%	10.5%	5.7%	-1.8%	3.8%	-2.5%	5.5%	-1.6%	0.4%	0.7%	3.3%	10.5%
Earnings Yield - 12 month forward	-0.2%	11.2%	3.2%	-3.2%	4.2%	3.5%	8.8%	-3.7%	-0.9%	7.5%	3.9%	6.7%
Earnings Yield- 12 month historical	3.0%	17.9%	5.3%	-2.7%	7.8%	2.3%	10.8%	-6.8%	2.4%	7.0%	6.0%	7.9%
Cash Flow To Price	14.1%	9.1%	-0.1%	2.1%	4.8%	7.5%	2.4%	-10.6%	7.9%	9.0%	4.5%	8.1%
Dividend Yield	10.0%	8.8%	10.0%	-1.1%	12.1%	0.1%	15.6%	-4.2%	-1.6%	-1.0%	8.1%	-0.6%
Book to Price Ratio	2.2%	5.5%	-0.2%	-0.9%	-2.2%	5.5%	3.1%	-9.5%	-2.7%	4.7%	1.1%	7.9%
Sales to Price Ratio	-7.5%	3.0%	2.7%	-0.2%	-1.7%	11.1%	NA	-9.1%	0.2%	0.7%	2.3%	-2.6%
EBITDA / EV	3.5%	15.8%	5.4%	3.5%	3.3%	-2.7%	NA	-9.3%	6.2%	1.1%	6.3%	5.3%
Sales / EV	-11.7%	5.7%	5.6%	5.1%	-2.1%	6.5%	NA	-8.1%	0.0%	1.0%	3.4%	1.0%
Growth	-4.9%	-2.1%	-6.2%	-0.5%	-0.7%	-13.8%	-1.8%	-2.4%	-6.3%	-6.0%	-3.2%	1.2%
Earnings Growth (12 month forward)	-14.8%	-18.2%	-3.1%	-2.7%	-3.3%	-4.2%	-4.8%	-9.5%	-1.4%	-0.9%	-6.9%	-1.4%
CIR Growth-Value Score	2.4%	-3.4%	-4.2%	-1.6%	2.9%	-11.0%	-5.7%	2.2%	-5.5%	-4.9%	-2.8%	1.1%
One Year Sales Growth	-8.3%	-0.1%	-3.9%	-6.7%	-3.9%	-9.0%	NA	-7.0%	-4.1%	-3.8%	-4.8%	5.8%
Long Term Earnings Growth	-9.9%	1.2%	-3.0%	-1.9%	-2.8%	1.9%	0.7%	-1.0%	-2.1%	0.4%	0.3%	0.8%
One Year EPS Growth	-3.8%	2.1%	2.0%	-2.2%	-6.5%	-0.5%	-1.3%	4.6%	-3.3%	5.3%	2.2%	4.5%
GARP	-3.9%	7.1%	2.2%	-1.0%	2.9%	10.4%	8.1%	-8.2%	1.6%	2.6%	3.1%	8.1%
Deviation from Fair P/E	-3.7%	4.5%	2.3%	-1.3%	6.6%	8.1%	8.5%	-11.3%	-1.5%	7.5%	4.0%	8.4%
Deviation from Fair P/B	2.1%	8.8%	2.8%	-2.3%	3.9%	3.5%	10.2%	-6.3%	-1.5%	8.5%	4.1%	8.1%
Deviation from Fair P/CF	-9.2%	1.2%	1.9%	1.1%	-3.2%	9.5%	NA	-5.0%	2.7%	1.8%	2.8%	-3.3%
Deviation from Fair P/S	8.9%	9.0%	1.0%	1.5%	2.4%	12.6%	4.9%	-6.2%	5.6%	7.2%	5.0%	9.1%
PEG (Inverted)	-8.2%	-5.5%	5.0%	-0.1%	-1.3%	5.0%	1.7%	-3.8%	1.6%	4.8%	-1.5%	1.8%
Low Risk	-6.6%	0.3%	2.3%	1.0%	-6.2%	0.9%	0.4%	-3.9%	-4.7%	-0.6%	1.7%	-12.7%
Debt to Equity (Inverted)	-6.4%	6.9%	6.8%	2.3%	6.6%	-5.2%	NA	5.0%	5.6%	-2.2%	2.4%	3.4%
Earnings Stability	1.9%	2.1%	-0.4%	0.4%	-0.2%	8.9%	1.9%	-2.7%	-5.1%	-1.6%	2.7%	-3.5%
Beta against MSCI AC World (Low-High)	-5.8%	0.7%	0.1%	-2.8%	-9.6%	-7.1%	1.4%	-4.1%	-9.0%	-3.7%	-0.7%	-11.9%
Beta against MSCI Country (Low-High)	-12.9%	-3.7%	3.6%	-1.3%	-7.1%	-2.2%	-2.1%	-5.7%	-1.7%	-3.4%	0.2%	-12.4%
Size (Market Cap)	-10.4%	0.8%	-2.2%	0.5%	-2.6%	-6.7%	-2.0%	2.0%	-9.8%	-5.2%	0.3%	-1.0%
Quality/Profitability	-9.3%	0.6%	11.3%	6.8%	10.4%	-1.9%	3.3%	15.9%	-1.3%	-3.0%	6.8%	-2.9%
Earnings Certainty	-2.9%	-1.9%	0.0%	-0.0%	1.5%	-4.0%	0.3%	-6.8%	4.5%	-0.9%	0.9%	-9.9%
Return on Equity	-0.7%	8.3%	4.4%	2.0%	5.4%	-2.3%	2.5%	2.3%	5.8%	0.4%	5.9%	-2.2%
Net Profit Margin on Sales	1.0%	6.4%	0.5%	-1.9%	2.2%	-10.3%	1.0%	11.1%	2.2%	1.2%	2.8%	2.9%
Margin Growth	3.6%	-0.6%	1.4%	2.6%	8.2%	-0.0%	7.7%	0.3%	-4.5%	3.4%	4.1%	-1.5%
Earnings Quality (Accruals) (Inverted)	-7.2%	-1.8%	9.6%	9.0%	6.4%	13.6%	NA	5.6%	-2.2%	-0.5%	7.4%	0.6%
Balance Sheet Quality (NOA) (Inverted)	-9.0%	-3.0%	3.9%	4.3%	6.8%	2.0%	NA	8.7%	-4.6%	-6.8%	2.4%	0.7%
Volatility Adjusted Price Momentum	-5.9%	-3.1%	-2.4%	4.8%	-2.7%	-4.4%	-4.8%	3.5%	-5.6%	-6.2%	2.1%	-7.3%
Price Momentum - 1 month	-19.0%	-5.5%	-7.0%	-5.7%	-7.5%	-13.9%	-5.0%	-3.5%	-10.7%	-10.8%	-3.1%	-8.5%
Price Momentum - 3 months	-15.1%	-3.1%	-3.5%	0.2%	-4.2%	-7.7%	-10.2%	13.4%	-6.0%	-5.9%	0.5%	-4.4%
Price Momentum - 12 months	8.2%	-0.7%	6.5%	7.7%	3.4%	-3.4%	2.2%	-1.1%	1.5%	-3.5%	7.4%	-7.7%
Price Momentum - First 11 months	13.4%	-0.8%	6.0%	7.5%	5.3%	-0.7%	5.4%	-3.4%	-0.4%	-0.6%	6.6%	-7.4%
Estimates Momentum	-6.6%	-0.7%	5.2%	10.7%	6.7%	-1.5%	3.4%	12.2%	-3.2%	-0.8%	6.1%	-4.4%
1 Month Change in Earnings Forecast	-15.9%	-4.8%	1.1%	10.3%	-4.4%	-5.8%	-5.1%	9.4%	-5.1%	-0.0%	-0.3%	-3.5%
Earnings Revisions	-7.8%	-1.7%	7.6%	10.4%	2.5%	-0.2%	3.6%	11.8%	-2.3%	1.8%	6.8%	-5.4%
Sales Revisions	0.8%	-4.0%	-0.1%	5.0%	6.8%	-4.5%	NA	6.1%	-6.6%	1.9%	2.8%	-5.0%
Cash Revisions	-1.8%	0.4%	3.3%	7.7%	6.0%	2.9%	NA	9.2%	-1.4%	-1.3%	6.3%	-6.7%

Source: Citi Investment Research and Analysis, IBES, Worldscope, FTSE and MSCI

Quant Model Portfolio

Our model portfolio is constructed to reflect our top-down style views. The portfolio is rather concentrated, with typically less than 50 positions and an estimated tracking error of 5% maximum. It is also constrained to have a market beta close to 1 and be size neutral. The stocks are predominantly chosen based on their attractiveness scores, which are generated using a multifactor model. The weights in the factors could change periodically to reflect our views on styles. Our current style weights are: Composite Valuation (25%), Price Momentum (25%), Estimate Revisions (25%) and Quality (25%).

Figure 24. Style Weightings

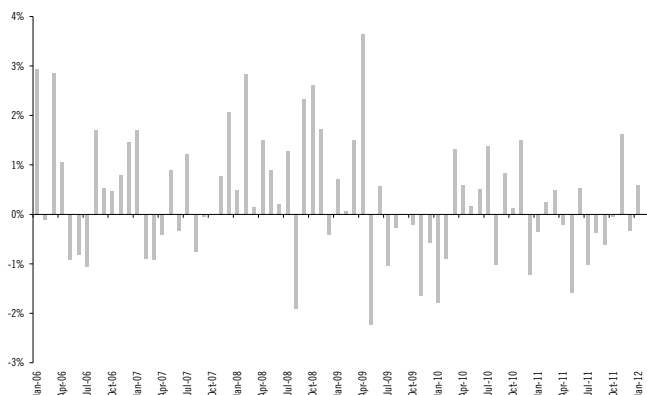
	Value	Quality/Profitability	Price Momentum	Estimate Revisions
Weights	25%	25%	25%	25%

Source: Citi Investment Research and Analysis

Our Value factor is further split between 25% P/E, 25% Dividend Yield, 25% EV/EBITDA, and 25% the equal weighted combination of P/CF, P/BV and P/S. The quality factor includes Margins, Earnings Quality (ROE is used for Financials) and Earnings Certainty. The price momentum element is represented by the 12-month volatility-adjusted price momentum factor. Finally, estimate revisions are proxied with the diffusion ratio (upgrades – downgrades / total number of estimates).

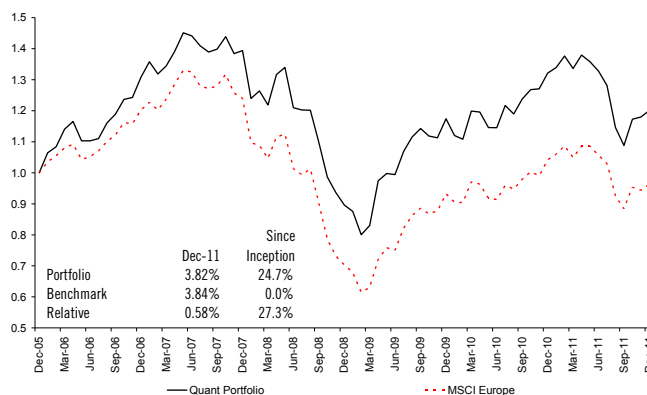
After a very tough year in 2011, the quant model portfolio came back in January with some modest outperformance. With the market up nearly 4%, the portfolio was up slightly more to return 58bps outperformance. Performance was concentrated in the Industrials, Consumer Discretionary and Financials sectors. At the country level, Germany, France and Switzerland were the biggest outperformers.

Figure 25. Since Inception Performance of Model Portfolio vs. MSCI Europe (€ Total Returns)



Source: Citi Investment Research and Analysis & MSCI

Figure 26. Since Inception Monthly Relative Returns of Model Portfolio vs. MSCI Europe (€ Total Returns)



Source: Citi Investment Research and Analysis & MSCI

Figure 27. Current Quant Model Portfolio

Sedol	Name	Country	Sector	Market Cap (\$ Mill)	Benchmark Weight	Portfolio Weight	Active Weight	Last Month's Weight	Trade
B15C55	Total S.A.	France	Energy	85,767	1.79%	7.3%	5.5%	7.0%	0.2%
B03MM4	Royal Dutch Shell PLC (CL B)	United Kingdom	Energy	74,702	1.55%	7.0%	5.5%	6.4%	0.6%
098952	AstraZeneca PLC	United Kingdom	Health Care	49,485	1.03%	6.5%	5.4%	4.3%	2.1%
B08SNH	National Grid PLC	United Kingdom	Utilities	27,116	0.56%	6.0%	5.4%	5.8%	0.2%
594936	ASML Holding N.V.	Netherlands	Information Tech.	14,161	0.30%	5.7%	5.4%	0.0%	5.7%
458836	Michelin	France	Consumer Disc.	9,414	0.20%	5.6%	5.4%	6.0%	-0.5%
473249	Telenor ASA	Norway	Telco. Services	9,027	0.19%	5.6%	5.4%	5.2%	0.4%
522603	Sampo Oyj	Finland	Financials	8,460	0.18%	5.5%	5.4%	5.5%	0.0%
056039	Legal & General Group PLC	United Kingdom	Financials	8,168	0.17%	5.5%	5.4%	5.9%	-0.4%
320898	Next PLC	United Kingdom	Consumer Disc.	5,445	0.11%	5.5%	5.4%	5.0%	0.5%
B1XCBX	Boliden AB	Sweden	Materials	3,569	0.08%	5.4%	5.4%	5.1%	0.4%
B00D9P	Belgacom S.A.	Belgium	Telco. Services	3,630	0.08%	5.4%	5.4%	5.1%	0.4%
312748	Marks & Spencer Group PLC	United Kingdom	Consumer Disc.	6,245	0.13%	5.2%	5.1%	2.9%	2.4%
713360	StatOilHydro ASA	Norway	Energy	21,408	0.45%	4.3%	3.9%	0.8%	3.6%
087541	Tate & Lyle PLC	United Kingdom	Consumer Staples	3,730	0.08%	2.7%	2.6%	0.0%	2.7%
725147	Snam Rete Gas S.p.A.	Italy	Utilities	5,538	0.12%	2.5%	2.4%	2.3%	0.2%
718472	Swatch Group AG	Switzerland	Consumer Disc.	9,935	0.22%	2.2%	2.0%	1.8%	0.4%
707752	Novo Nordisk A/S	Denmark	Health Care	38,440	0.80%	2.2%	1.4%	1.9%	0.3%
567173	Sanofi-Aventis S.A.	France	Health Care	64,721	1.34%	1.6%	0.3%	0.0%	1.6%
079087	Scottish & Southern Energy	United Kingdom	Utilities	13,814	0.29%	1.5%	1.3%	0.0%	1.5%
711038	Roche Holding AG	Switzerland	Health Care	90,928	1.85%	1.5%	-0.4%	1.3%	0.2%
451957	Kerry Group PLC	Ireland	Consumer Staples	3,944	0.08%	1.3%	1.2%	1.2%	0.1%
B12T3J	Unilever N.V.	Netherlands	Consumer Staples	41,458	0.87%	1.3%	0.4%	1.0%	0.3%
B39J2M	United Utilities Group PLC	United Kingdom	Utilities	4,948	0.10%	1.0%	0.9%	0.8%	0.2%
714505	ENI S.p.A.	Italy	Energy	40,614	0.85%	0.9%	0.0%	0.8%	0.1%
570366	Svenska Handelsbanken A	Sweden	Financials	11,211	0.24%	0.8%	0.5%	0.0%	0.8%
040650	Hammerson PLC	United Kingdom	Financials	3,239	0.07%	0.0%	-0.1%	2.7%	-2.7%
318094	Land Securities Group PLC	United Kingdom	Financials	6,306	0.13%	0.0%	-0.1%	5.6%	-5.6%
426330	DnB NOR ASA	Norway	Financials	7,889	0.17%	0.0%	-0.2%	5.6%	-5.6%
494290	E.ON AG	Germany	Utilities	29,436	0.63%	0.0%	-0.6%	1.2%	-1.2%
595607	Koninklijke KPN N.V.	Netherlands	Telco. Services	12,382	0.26%	0.0%	-0.3%	4.8%	-4.8%
707624	Unibail-Rodamco S.A.	France	Financials	13,495	0.29%	0.0%	-0.3%	2.2%	-2.2%
B01FLQ	Actividades de Const. Servicios	Spain	Industrials	3,339	0.07%	0.0%	-0.1%	2.0%	-2.0%

Stocks in bold illustrate new buys while those stocks sold out of the portfolio can be found at the bottom of the screen with a portfolio weight of zero.

Source: Citi Investment Research and Analysis & MSCI

Interactive Tool

In response to client needs, we have developed an interactive style backtesting product to complement the *What Works in Equity Markets* publication. The tool comes in the form of an excel add-in that clients can easily install on their desktop. The tool offers:

- Access to over 10,000 univariate backtests covering 50 factors and 16 broad investing universes.
- Flexibility in deciding which time period to use to calculate style returns (earliest start date is January 1995).
- Returns are total return based and are available in various currencies.
- Ability to look at the analysis in a number of methods — Simple Returns, Annualised Returns, Information Ratios, Hit Rates and Factor Correlations.
- Individual factor in depth analysis.
- Downloadable factor return series in a user-defined manner.
- Analysis down to sector level.

Please contact the European Quantitative Research team (gqrlondon@citi.com) if you wish to receive this tool.

Figure 28. Citi Quant Style Add-in

Microsoft Excel - MSCIRegions.xls [Read-Only]

File

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FactSet

CitiGroup-GQR

dataCentral

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Source: Citi Investment Research and Analysis

Appendix and Methodology

Style performance

Construction of Style Portfolios

At the start of each month, the MSCI Europe constituents are ranked by their factor value (eg dividend yield). The high factor value portfolio contains the 20% of stocks with the highest factor values, and the low factor value portfolio contains the 20% of stocks with the lowest factor values.

We have equally weighted the stocks in the portfolios to reduce the chance of a few large companies distorting performance, and then calculate performance over the month based on total returns (in US dollars).

Detailed Backtest Reports

Log in to our website (www.gqr.ssmb.com) for detailed backtest results of more than 40 style factors for the MSCI Europe, MSCI UK and the other 17 stock indices. An example of the output you can get from our web page is included below.

If you would like to get a login/password and become a registered user of this website please send an e-mail to gqrlondon@citi.com.

Style Factors

Most of the style factors we use are self-explanatory. Here we list a number of them that deserve a more detailed explanation:

Deviation from fair P/E — The difference between the fair P/E and actual P/E. The fair P/E is estimated using a cross-sectional regression of P/E on expected earnings growth, market capitalisation and interest rates. A similar approach is used to compute the deviation from fair P/B, P/CF and P/S.

Citi growth-value score — A score between 0 (pure value) and 1 (pure growth) is assigned to each stock. The methodology is described in the previous section on Citi style indices.

Earnings stability — The R-squared from a regression of five annual EPS values (three historical and two forecast) against a time trend. (For more details, see our report *Searching for Alpha: Focus on Earnings Stability*, European Quantitative Strategy, February 2003).

Price momentum — All our price momentum measures are based on the cumulative product of monthly total returns over the given time period. The exception is the Citi momentum indicator, which is the t-statistic of a regression of a 260-day history of the stock price against a time trend.

Earnings revisions — The time-weighted average of analyst upgrades less downgrades scaled by the total number of estimates for fiscal years 1 and 2.

Earnings certainty — The inverse of the coefficient of variation in the next 12-month EPS estimates (stocks are excluded if there are less than five estimates or EPS is less than one cent). This is the same as the inverse of our EPS dispersion measure. (For more detail, see our report *Searching for Alpha: Sell When Analysts Disagree*, European Quantitative Strategy, December 2003).

Citi expected earnings surprise score — The difference between actual EPS and predicted median EPS scaled by the standard deviation of analyst estimates. (For more details, see our report *Searching for Alpha: Still Profiting from Surprises*, European Quantitative Strategy, March 2010.)

Earnings quality — Year-on-year change in net operating assets or the difference between accounting and cash earnings (accruals). (For more details, see our report *Searching for Alpha: Quantifying Earnings Quality*, European Quantitative Strategy, October 2004.)

Balance sheet quality — The level of net operating assets. NOA incorporates all the changes in NOA and can be used as proxy for cumulated accruals. Since accumulation of earnings without cash flow is unsustainable in the long term, having high net operating assets is a sign of balance sheet bloat. (For more details, see our report *Searching for Alpha: Quantifying Earnings Quality*, European Quantitative Strategy, October 2004.)

Global Quantitative Research Team

Figure 7. Global Quantitative Research Team

(for informational purposes only)

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Notes

Appendix A-1

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