Stock Selection Model Performance Review

Assessing the drivers of performance in 2012

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In this report, we review the performance of S&P Capital IQ's four U.S stock selection models in 2012. These models were launched in January 2011, and this analysis will assess the underlying drivers of each model's performance over the 12 months ended December 31, 2012.

Table 1 gives the summary performance of all four models in 2012; all four models generated positive return spreads, top quintile excess return and information coefficients during the year, although performance varied across models. The Growth Benchmark Model was the best in terms of long-short return[1], top quintile (Q1) excess return[2] and information coefficient (IC)[3], while the Value Benchmark Model was the weakest on all three measures.

Table 1: Model Summary Performance Results: January 2012 – December 2012

Model Name	Universe	Avg 1-Month Spread	Avg Q1 Monthly Excess Return	Avg 1-month IC
Growth Benchmark Model ("GBM")	Russell 3000 Growth	1.53%	0.73%	0.05
Value Benchmark Model ("VBM")	Russell 3000 Value	0.31%	0.05%	0.01
Quality Model ("QM")	Russell 3000	0.87%	0.41%	0.03
Price Momentum Model ("PMM")	Russell 3000	1.06%	0.34%	0.04

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

All four models were constructed using a factor selection process (rolled up into sub-components) that emphasized signal diversity. The Value and Growth Sub-components in GBM were the best two (out of seven) in terms of return spread (average monthly spread return of 1.57% and 1.03% respectively), suggesting that a strategy based on picking growth stocks with reasonable valuation multiples would have been effective in 2012. VBM's Price Momentum Sub-component generated the largest average monthly spread return (1.01%), while the Quality Model's Growth Stability Sub-component, formulated to select companies with stable and growing earnings, was the best QM component with an average monthly spread return of 0.86%.

The behavior of equity markets in 2012 was similar to what we observed in 2011, with markets oscillating between de-risking and re-risking episodes. Episodes of elevated re-risking - when high beta and/or low quality assets are in favor can be challenging for model performance.

[1] Long-short return, as used in this report, is the return to a top quintile portfolio minus the return of the bottom quintile portfolio
[2] Q1 excess return is the average return to the top quintile minus the return of the equal-weighted benchmark
[3] IC is the rank correlation of alpha forecasts to forward stock return

We used our web-based Alpha Factor Library's (AFL) Volatility Style Composite (VSC)[4] to capture risk-on or risk-off regimes in 2012. AFL currently has over 450 alpha signals, and it is a quick and useful tool in analyzing and comparing historical factor performance. We classify any month where VSC is the best performing style (based on long-short return), in the S&P 500, out of the eight styles we track on AFL, as risk-on, and all other months as risk-off. Using this metric, five months were classified as risk-on in 2012: January, February, August, September and December. Four (six) of the risk-on (risk-off) months coincided with the outperformance of small (large) cap stocks over large (small) cap stocks.

Table 2 details the performance of all four models in 2012 within the context of our defined risk-on/risk-off regimes. Performance for each model is measured using the respective universe stated in Table 1.

Table 2: Model Summary Performance Results - Risk-on vs Risk-off Months: January 2012 – December 2012

	Risk-on Months		Risk-off Months	
Model Name	Avg 1-Month Spread	Avg 1-month IC	Avg 1-Month Spread	Avg 1-month IC
Growth Benchmark Model	0.34%	0.01	2.38%	0.07
Value Benchmark Model	-0.95%	-0.03	1.20%	0.04
Quality Model	-0.74%	-0.02	1.88%	0.07
Price Momentum Model	-1.51%	-0.05	2.90%	0.11

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

We notice a divergence in performance between risk-on and risk-off months; three of the four models post average negative 1-month return spreads and ICs in the risk-on environment (the exception being the Growth Benchmark Model), while all four models record positive average 1-month spreads and ICs in the risk-off environment. PMM was the worst (best) in risk-on (risk-off) regime from a spread return or IC standpoint. PMM's extreme performance in both risk regimes (compared to that of the other three models) is partly due to the positive large cap exposure of the model's long portfolio compared to its short portfolio[5]. Accordingly, PMM generated large positive returns in risk-off environments (when large cap names were rewarded for safety) and large negative returns in risk-on environments (when investors' risk appetite increased and large cap names were out of favor).

In the following sections, we will undertake a review of the underlying drivers of each model's performance in 2012, and also review the quintile portfolio exposures of each model and the effect of neutralizing some of these exposures on model performance.

[4] See Appendix A for a list of factors in the VSC

[5] Since large cap names outperformed small cap names in the previous two years prior to January 2012, PMM's top quintile portfolio had larger cap names compared to the bottom quintile portfolio.

1 Growth Benchmark Model

The Growth Benchmark Model ("GBM") was created to outperform a growth benchmark, which we selected to be the Russell 3000 Growth index. The model rewards companies that have established a consistent track record of earnings growth and also identifies emerging growth candidates. In addition, the Growth Benchmark Model was formulated to outperform even when "growth" is not in favor. The model is composed of seven sub-components – Earnings Momentum, Historical Growth, Liquidity & Leverage, Price Momentum, Value, Quality and Capital Efficiency. Table 3 shows the summary performance of the model from January 1987 to December 2012.

Table 3: Summary Performance Statistics for Growth Benchmark Model – Russell 3000 Growth (January 1987 – December 2012)

Return Summary						
	Q1	Q2	Q3	Q4	Q5	Long-Short Return
Average Monthly Return	1.64%	1.16%	0.89%	0.54%	-0.10%	1.74%***
Annualized Return	21.52%	14.86%	11.25%	6.73%	-1.15%	22.91%
Annualized Info. Ratio	1.03	0.71	0.51	0.29	-0.04	1.86

Information Coefficient Summary	
Avg 1-month IC	0.06***
1-month IC Info Ratio	0.94
1-month IC Hit Rate	85%***

*** Significant at 1% level

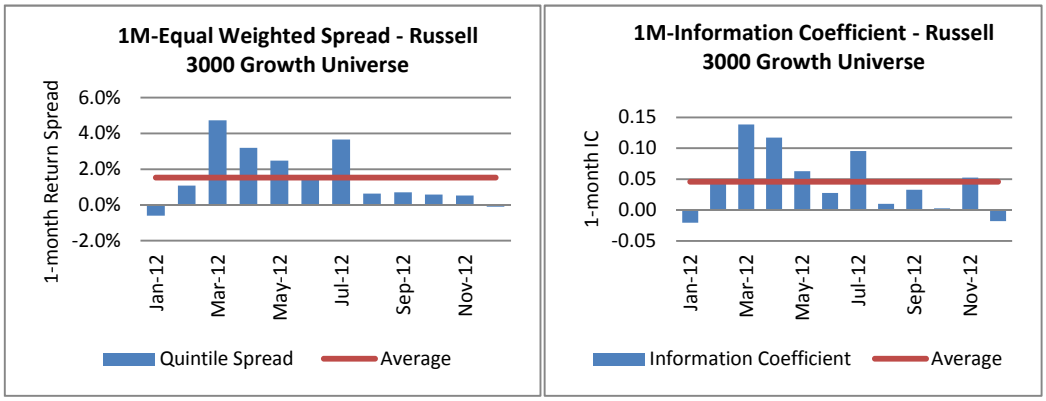
Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

The model generated a monthly average equal-weighted return spread and IC of 1.74% and 0.06 respectively, both statistically significant at the 1% level. The annualized information ratio of the top quintile is 1.03, while the IC hit rate, (percent of times the IC is positive) is 85%, which is also statistically significant at the 1% level.

1.1 Model Performance in 2012

The 1-month equal-weighted quintile return spread and 1-month information coefficient time series results for the Russell 3000 Growth Index are displayed in Figure 1. The average monthly spread and IC (red line in both graphs) were 1.53% and 0.05 respectively. The model experienced two draw downs in 2012 - January (-0.60%) and December (-0.10%). Given that most stock selection signals struggled at the beginning of the year (except those related to risk), January was the worst month for the Growth Model; five of the seven subcomponents that make up the model had negative returns in January, with only Value and Growth themes posting positive return spreads. In between January and December, the Growth Model delivered positive spreads and ICs for 10 consecutive months. March was the best month with a spread return and IC of 4.74% and 0.14 respectively.

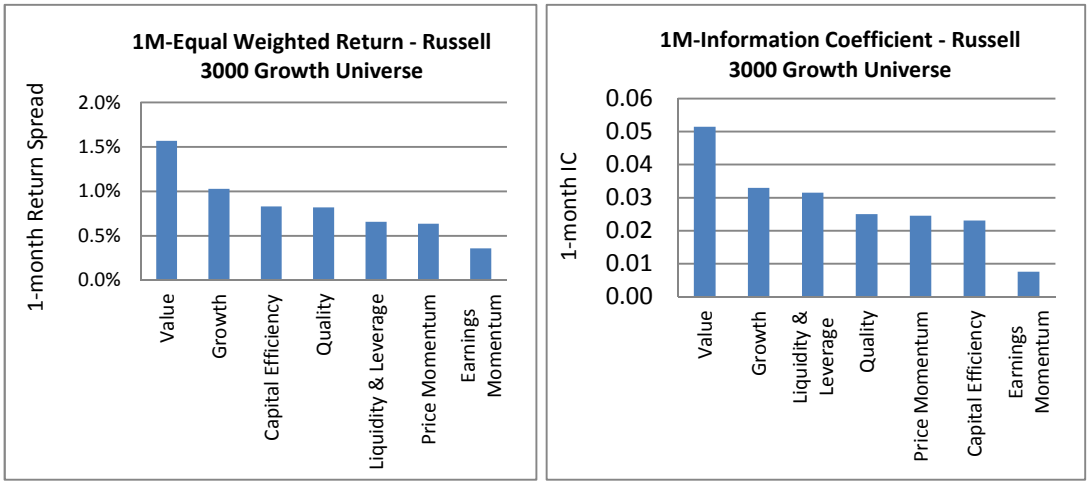
Figure 1: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 Growth January 2012 – December 2012



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

Figure 2 shows the average 1-month spread and average IC for each subcomponent of the Growth Model over the Russell 3000 Growth universe for 2012. Value and Growth sub-components were the top two based on both average 1-month return spread and 1-month IC, while Earnings Momentum was the weakest based on the same metrics.

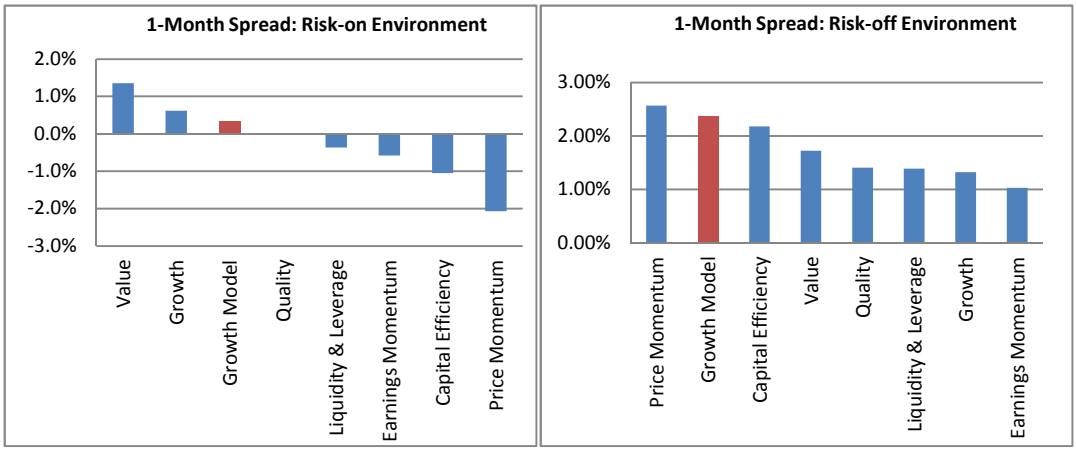
Figure 2: Growth Benchmark Model: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 Growth (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

We show average 1-month spread return in risk-on and risk-off environments for GBM's seven sub-components, including the over-all Model (red bars) in Figure 3. Price Momentum sub-component was the worst (best) subcomponent of the Growth Model in risk-on (risk-off) regime. Similar to what we noted for PMM, the behavior of GBM's Price Momentum sub-component was influenced by the positive exposure of its top quintile (compared to that of the bottom quintile) to large cap names. Consequently, the Price Momentum sub-component tacked on big gains when large cap stocks outperformed small cap stocks and losses when the reverse was the case.

Figure 3: Growth Benchmark Model: 1M-Equal Weighted Spread Russell 3000 Growth Universe in Risk-on/Risk-off Environments (January 2012 – December 2012)



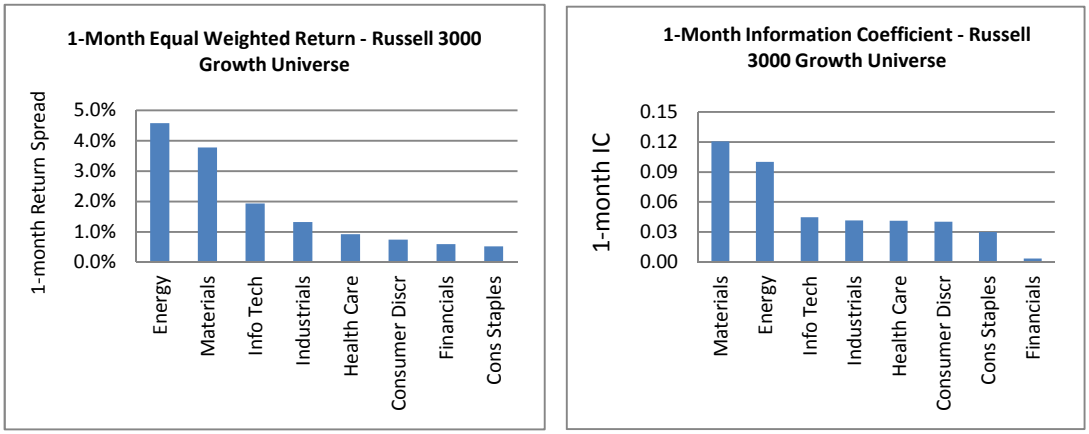
Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

The Value and Growth sub-components, which account for about 40% of GBM's total weight, were the only two sub-components with positive spreads in the risk-on environment, and this helped the model to deliver a positive spread in this regime (0.34%). Price Momentum, which was the worst sub-component with an average 1-month return spread of -2.07%, accounts for only 8% of model weight. All seven sub-components were positive in the risk-off environment and two of GBM's sub-components that reward companies with strong balance sheets and efficient capital use (capital Efficiency and Quality sub-components) delivered the second and fourth best spread returns in this period.

1.2 Sector Performance

The return spread and IC of the model within eight of the ten GICS sectors is detailed in Figure 4. We exclude telecom and utilities because of limited coverage (twenty-nine and nine securities on average respectively).

Figure 4: Growth Benchmark Model: Sector 1-Month Average Return and 1-Month Average Information Coefficient – Russell 3000 Growth Universe (January 2012 – December 2012)



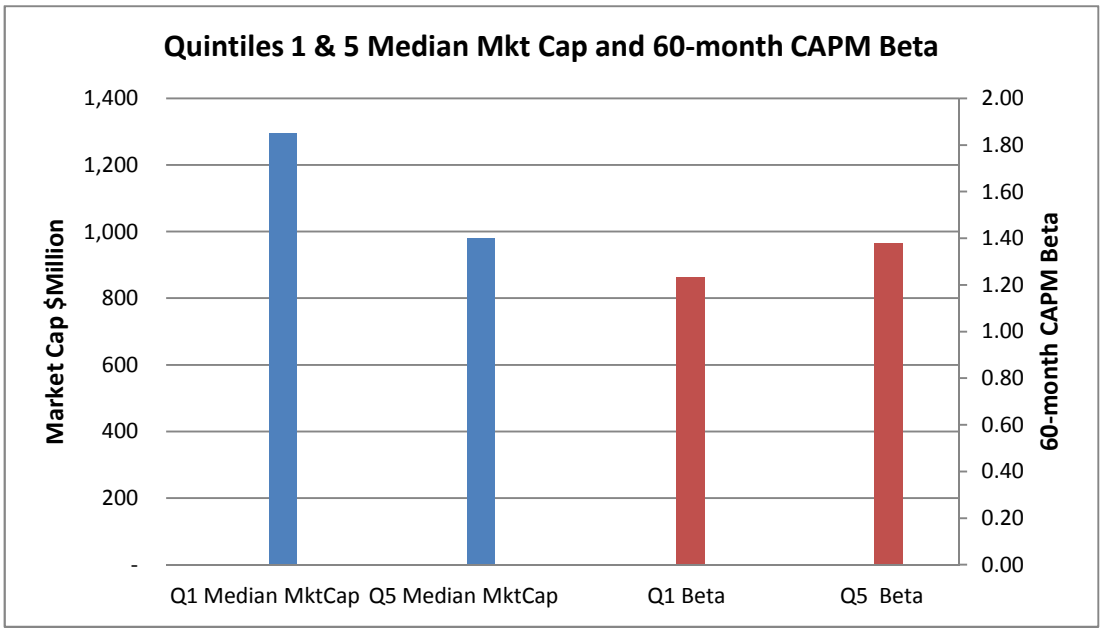
Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

The Growth Model produced positive 1-month average spreads and 1-month average ICs in all the eight sectors. Energy, Materials and Info Tech were the top three sectors in terms of average return spread and IC.

1.3 Quintile Portfolio Characteristics / Portfolio Tilt Neutralization

We examine size and beta characteristics of quintile 1 and 5 portfolios. Figure 5 shows the median market capitalization (left axis) and median 60-month CAPM beta (right axis) of quintile 1 and quintile 5 portfolios. The median market cap of the long portfolio (Q1) is $1.30 billion compared to $0.98 billion for the short portfolio (Q5), indicating that our long portfolio is moderately tilted towards large cap names. Given this large cap exposure of the long portfolio, it's not surprising that it has a lower median 60-CAPM beta compared to the short portfolio (1.23 vs 1.38). Large cap growth stocks (proxied by the Russell 1000 Growth Index) outperformed their small cap counterparts (proxied by the Russell 2000 Growth Index) by 67bps in 2012, so it is reasonable to expect the Growth Benchmark Model to have benefited from this positive large cap exposure. In addition, volatility was the worst investment style out of the eight we track on AFL in 2012. GBM's top quintile's lower exposure to volatility (proxied by 60-month CAPM) compared to the bottom quintile might also have contributed to the model's strong long-short spread in 2012. We detail the performance of the model after we eliminate both beta and market cap biases[6] in Table 4.

Figure 5: Growth Benchmark Model: Median Market Cap and Median 60-Month CAPM Beta for Quintile 1 and Quintile 5 Portfolios - Russell 3000 Growth Universe (Jan 2012 – Dec 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

[6] We generate 16 size/beta groups using double sorts and each stock is assigned into a category. We then rank all stocks in each group based on model scores

The Growth Benchmark Model still delivered a healthy average month spread of 1.03% after we apply our beta and size neutralizations[7] (Table 4), although this spread is 50bps lower than that of the original model (1.53%). We also observe a slight deterioration in average 1-month IC from 0.05 to 0.04.

Table 4: Growth Benchmark Model: Original and Beta/Size Neutralized Results – Russell 3000 Growth Universe (January 2012 – December 2012)

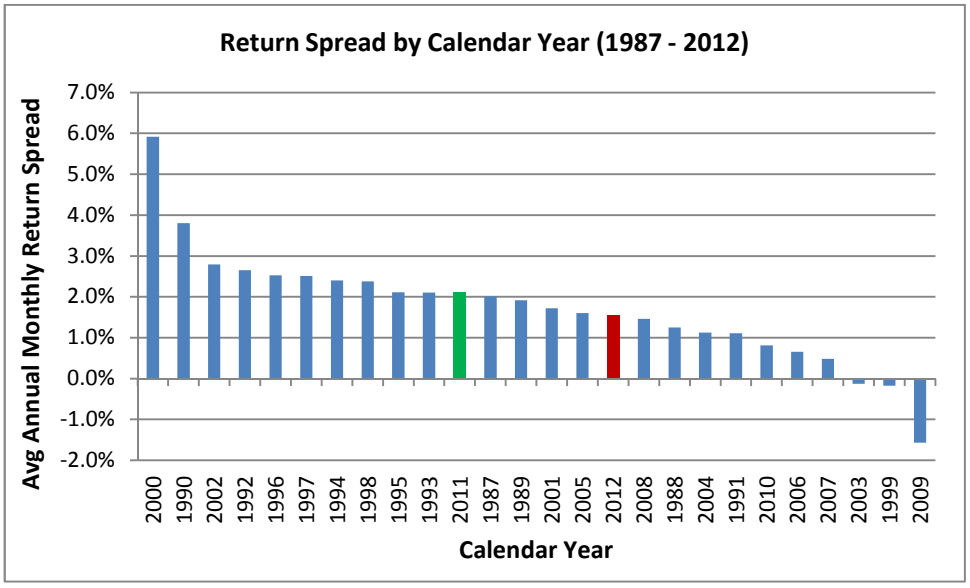
Model	Average 1-month Spread	Average 1-month IC
GBM	1.53%	0.05
Size/Beta Neutral GBM	1.03%	0.04

Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

1.4 Historical Comparison and Regime Analysis

The model's 2012 return spread (red bar) was in the 40th percentile of all 26 calendar year returns considered (Figure 6); 2011's return was in the 60th percentile. The worst performance was in 2009 (low price, high beta rally) at -1.57%; other calendar years with negative monthly spreads are 1999 (tech bubble) and 2003 (junk rally) with spreads of -0.18% and -0.13% respectively.

Figure 6: Growth Benchmark Model: Calendar Year Average Monthly Quintile Spread: - Russell 3000 Growth Universe (January 1987 to December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

[7] Median market cap and median 60-month CAPM beta of top and bottom quintiles was approx $1.2billion and 1.26 respectively after size and beta neutralizations

Considering the moderate deterioration we noticed in model performance when we accounted for volatility and size exposures, we decided to review the performance of GBM during periods when investors are risk averse, or have heightened risk appetites. However, rather than using only two regimes (risk-on/off), we decided to use three regimes: risk-averse, risk-neutral and risk-seeking. Similar to risk-on periods, all months where VSC is the best performing style on AFL are classified as "risk-seeking"; months where VSC is the worst style are categorized as "risk- averse"; and all other months that do not fall into the aforementioned buckets are classified as "risk-neutral". This approach will enable us to separate the model's performance into periods when investors are extremely skeptical of taking on risk (risk-averse) and periods when they have normal risk-appetites (risk-neutral). Using this new regime definition, we ended up with 90 risk-seeking months, 101 risk-averse months and 121 risk-neutral months between 1987 and 2012. Table 5 shows the 1-month average return spread and 1-month IC in our three defined regimes.

Table 5: Regime Analysis - Growth Benchmark Model: Russell 3000 Growth Universe (January 1987 to December 2012)

Increasing Risk

	1-month Return Spread	1-month IC
Risk Averse	3.15%***	0.08***
Risk Neutral	2.03%***	0.06***
Risk Seeking	-0.26%	0.02***

***Significant at 1% level

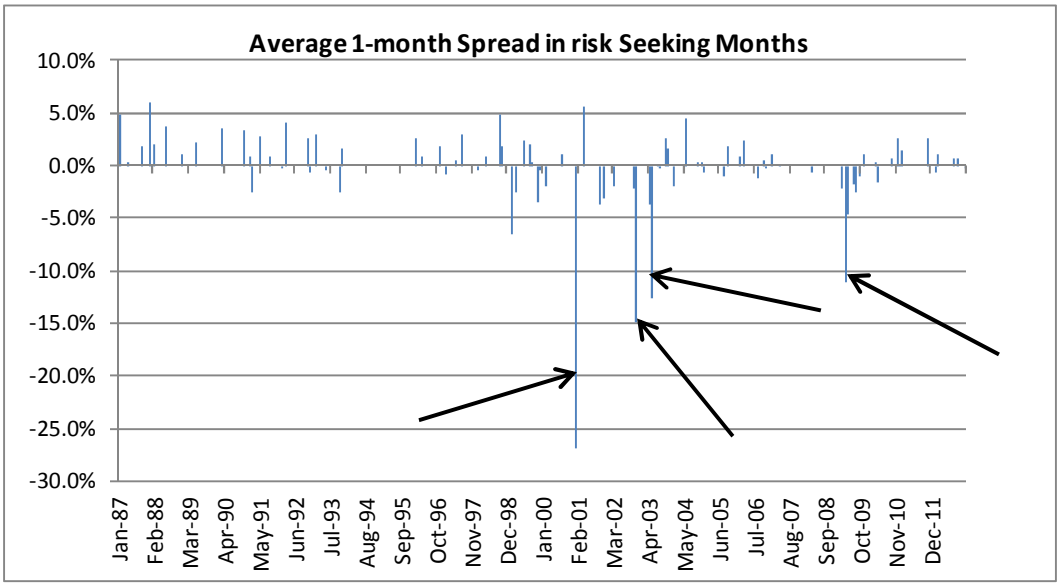
Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

The model's performance characteristics decline as we ratchet up risk appetite. The Growth Benchmark Model generated strong average 1-month return spreads and IC in both risk-averse and neutral regimes (statistically significant at the 1% level) We expected GBM's performance to be modest when risk appetite is highest, as the model was constructed to select high quality names with high growth prospects. Whilst the model had a positive and statistically significant average 1-month IC, its return spread was negative at -0.26% (not statistically significant). However, the model's return spread hit rate[8] in the risk seeking regime was 59%, statistically significant at the 10% level. So why did the model generate a negative spread in this regime when all other metrics: spread hit rate, IC hit rate and average 1-month IC were positive and statistically significant?

We plot the time series long-short spread of the model in risk seeking months in Figure 7. As we suspected, GBM's slightly negative return spread was due to a few months with extremely large negative return spreads, all arrowed. Volatility sharply outperformed other styles, especially those that emphasize quality/capital efficiency in these four months, and three of the arrowed months also rank as the top three for volatility spreads since January 1987 (April 2009 at 41%, November 2002 at 34% and January 2001 at 33%).

[8] Hit rate measures the proportion of data periods with positive long-short spreads or ICs to the total number of available periods.

Figure 7: Growth Benchmark Model: Time Series Monthly Quintile Spread in Risk Seeking Months - Russell 3000 Growth Universe (January 1987 to December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

2 Value Benchmark Model

The Value Benchmark Model identifies depressed, under-priced stocks with strong underlying fundamentals, using intrinsic and relative valuation measures. The model selects companies with high earnings quality, stable growth rates and increasing street sentiment. The Value Benchmark Model has six sub-components – Earnings Quality, Financial Health, Growth Stability, Price Momentum, Street Sentiment, and Valuation. Summary performance results from January 1987 to December 2012 are presented in Table 6.

Table 6: Summary Performance Statistics for Value Benchmark Model – Russell 3000 Value (January 1987 – December 2012)

Return Summary						
	Q1	Q2	Q3	Q4	Q5	Long-Short Return
Average Monthly Return	1.40%	1.01%	0.75%	0.40%	-0.44%	1.84%***
Annualized Return	18.22%	12.82%	9.33%	4.87%	-5.12%	24.48%
Annualized Info. Ratio	1.02	0.72	0.52	0.25	-0.24	2.95

Information Coefficient Summary	
Avg 1-month IC	0.06***
1-month IC Info Ratio	1.03
1-month IC Hit Rate	85%***

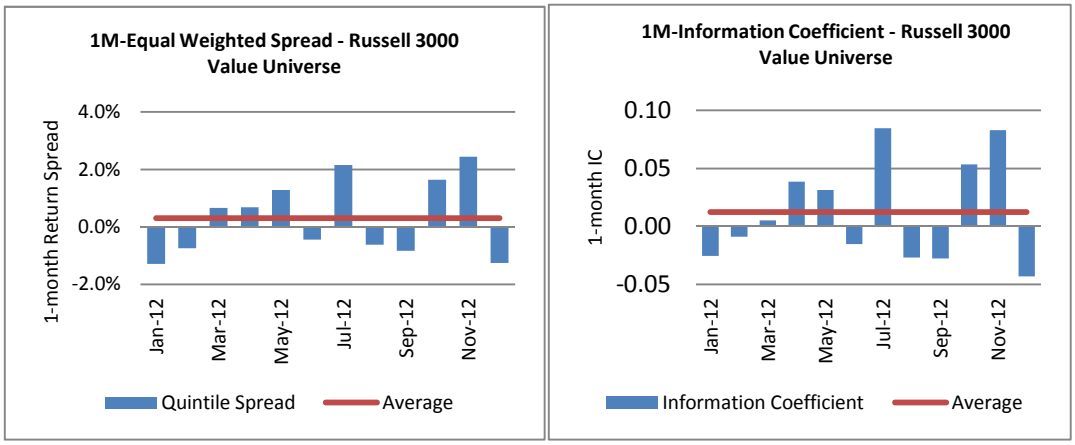
*** 1% level of significance

Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

2.1 Model Performance in 2012

Figure 8 shows the average monthly 1-month equal-weighted spread and average 1-month information coefficient for the model in the Russell 3000 Value Index for 2012. The average monthly spread and IC were 0.31% and 0.01 respectively. VBM's performance was positive in six months, unlike 2011 when the model's average 1-month spreads and ICs were positive in every month. January and December were the worst months (both return spread and IC), while the model recorded its best performance in July and November.

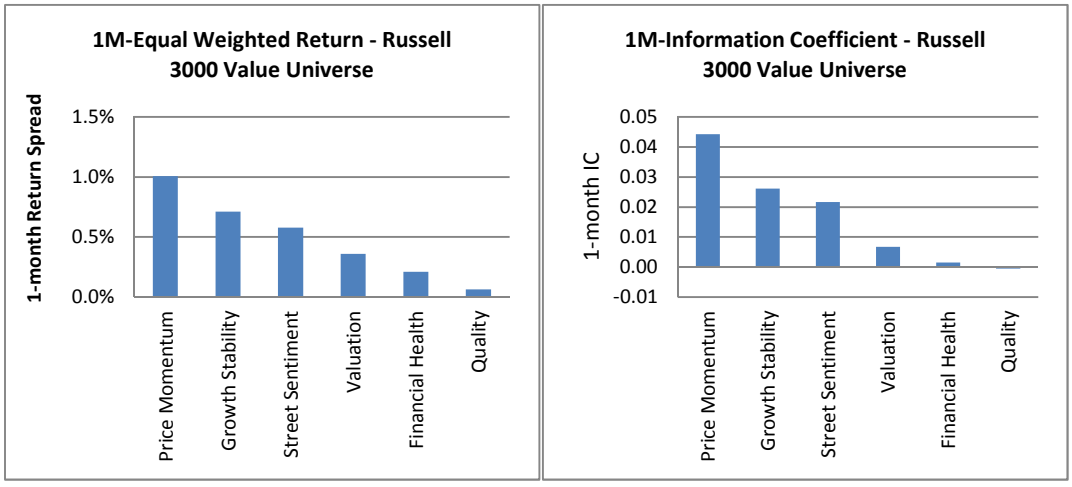
Figure 8: Value Benchmark Model: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 Value (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

We show the average 1-month spread and average 1-month IC of each sub-component over the Russell 3000 Value universe in Figure 9. Price Momentum was the strongest sub-component in terms of return spread and IC, while Quality was the weakest.

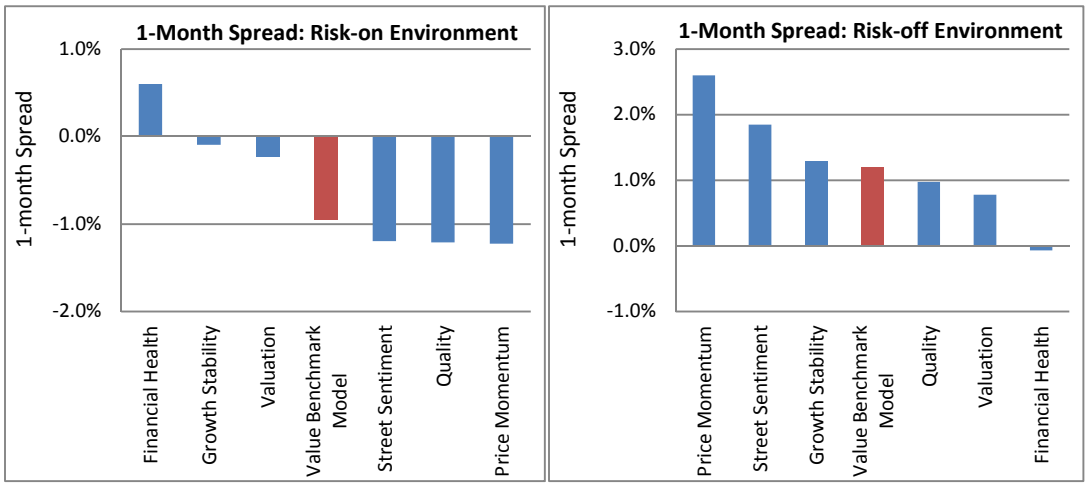
Figure 9: Value Benchmark Model: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 Value (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

Whilst all the six sub-components posted positive average 1-month return spreads in 2012, three components (Valuation, Financial Health and Quality) that account for over 70% of model weight were the bottom three sub-components in terms of return spread and IC. The relatively modest performance of these three sub-components (Valuation was the best with an average 1-month return spread of 0.36%) weighed on VBM's overall performance in 2012.

Figure 10: Value Benchmark Model: 1M-Equal Weighted Spread Russell 3000 Value Universe in Risk-on/Risk-off Environments (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not guarantee of future results.

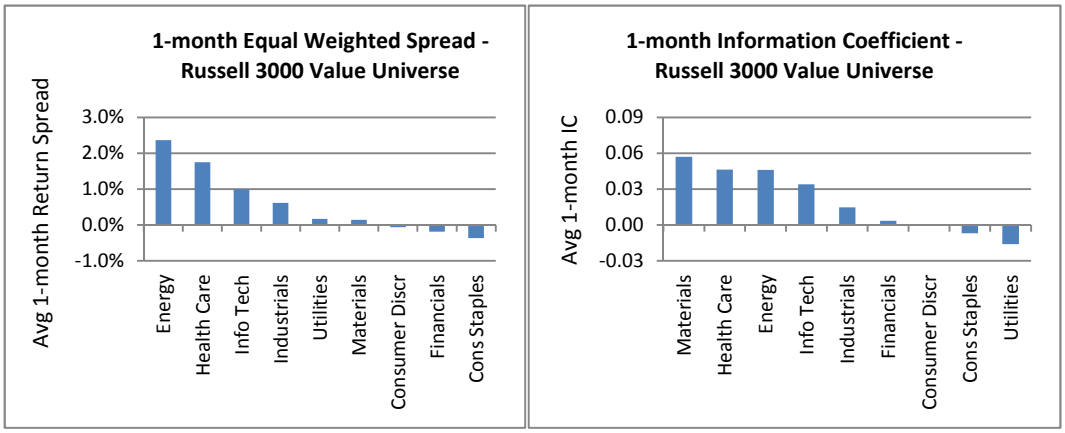
We show average 1-month spread return in risk-on and risk-off environments for VBM's six sub-components, including the over-all Model (red bars) in Figure 10. Financial Health sub-component was the best sub-component in risk-on regime, but the worst in risk-off regime. Similar to what we observed for the Growth Benchmark Model, the Price Momentum subcomponent was the worst (best) subcomponent in risk-on (risk-off) regimes.

2.2 Sector Performance

The average 1-month return spread and IC of the model within nine of the ten GICS sectors is detailed in Figure 11 (we exclude telecom because of limited coverage). Six (seven) of the sectors generated positive 1-month average spreads (1-month average ICs) in 2012. Average 1-month spread return was strongest in Energy and Healthcare, and weakest in Consumer Staples and Financials. Free Cash Flow Yield, which we identified as an important alpha signal in our May 2012 report on the Oil & Gas Industry [9], was one of the best factors (in terms of return spread) in the Energy Sector in 2012.

[9] The Oil & Gas Industry: Drilling for Alpha Using Global Point-in-Time Data

Figure 11: Value Benchmark Model: Sector 1-Month Average Return and 1-Month Average Information Coefficient – Russell 3000 Value Universe (January 2012 – December 2012)

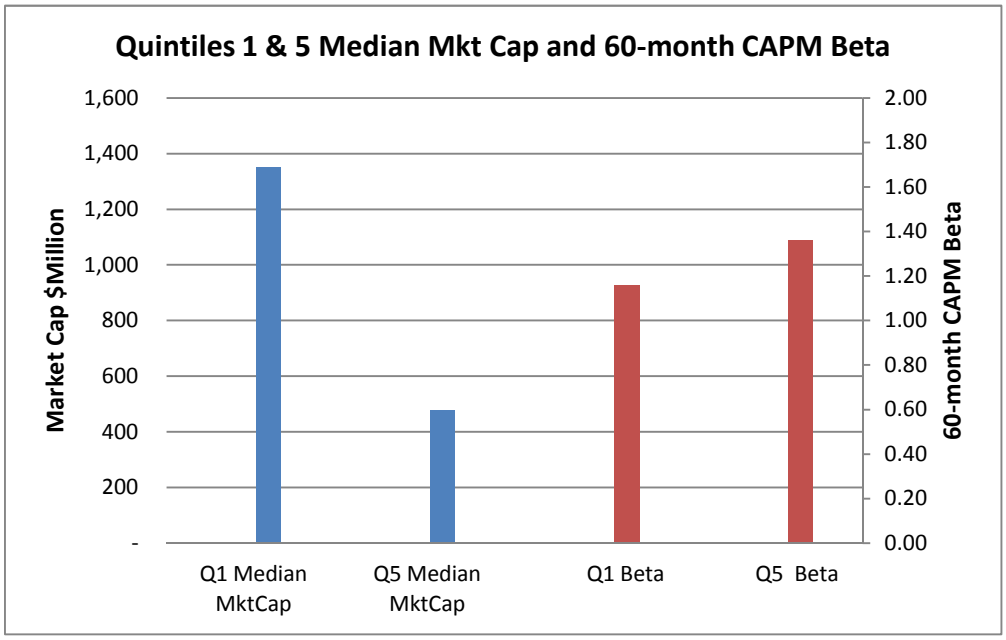


Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

2.3 Quintile Portfolio Characteristics / Portfolio Tilt Neutralization

We take a closer look at the size and beta characteristics of the model's top (quintile 1) and bottom (quintile 5) portfolios. VBM's median market capitalization (left axis) and median 60-month CAPM beta (right axis) of quintile 1 and quintile 5 portfolios are displayed in Figure 12.

Figure 12: Value Benchmark Model: Median Market Cap and Median 60-Month CAPM Beta for Quintile 1 and Quintile 5 Portfolios - Russell 3000 Value Universe (Jan 2012 – Dec 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

The median market cap of the long portfolio (Q1) is $1.35 billion compared to $0.48 billion for the short portfolio (Q5), indicating a large cap tilt for the VBM's long portfolio. In addition, Q1 has a lower 60-month CAPM beta (1.16) compared to Q5 (1.36). We show the performance of the

model after correcting for the top quintile's size and beta biases[10] in Table 7. The model's average 1-month spread return shrank from 0.31% to 0.20%, while average 1-month IC declined from 0.01 to 0. The model's top quintile clearly benefitted from its lower beta exposure and this is reflected in both the lower return spread and IC we report for Size/Beta Neutral VBM in Table 7.

Table 7: Value Benchmark Model: Original and Beta/Size Neutralized Results – Russell 3000 Value Universe (January 2012 – December 2012)

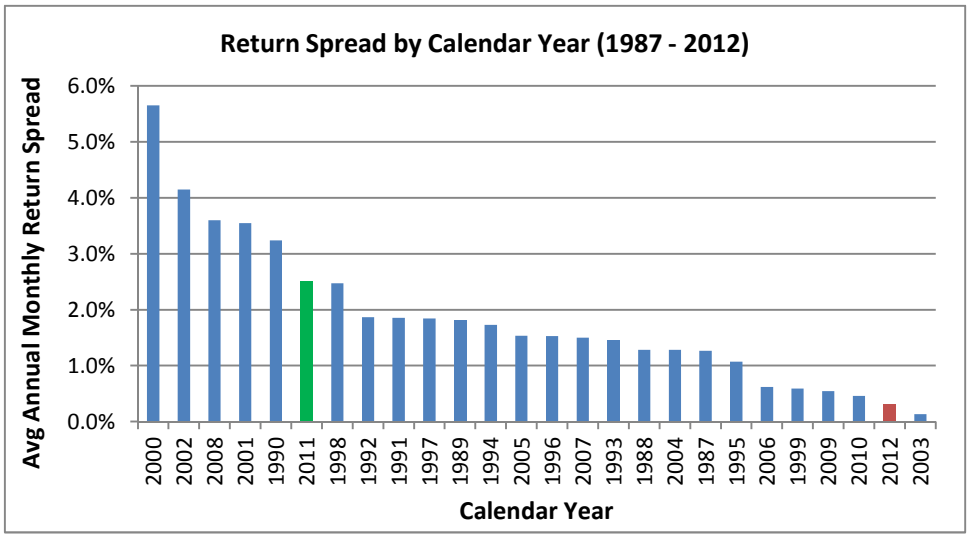
Model	Average 1-month Spread	Average 1-month IC
VBM	0.31%	0.01
Size/Beta Neutral VBM	0.20%	0.00

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

2.4 Historical Comparison and Regime Analysis

The model's average 1-month return spread by calendar year is displayed in Figure 13. The top four calendar years were strong periods for value based strategies in general. 2012's return spread (red bar) is the second worst over the entire 26 year history. It is noteworthy to point out that the Value Benchmark Model has generated a positive spread in every single year, even in 1999 (when value type strategies struggled in the face of the tech boom) and 2009 (a year where performance was driven by high beta and low price stocks).

Figure 13: Value Benchmark Model: Calendar Year Average Monthly Quintile Spread: Russell 3000 Value Universe (January 1987 to December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

[10] Q1 and Q5 both had average market cap and beta of $0.94B and 1.2 respectively after we adjusted the model for size and beta exposures.

Using the regime classification we discussed in section 1.4, we investigate the performance of VBM in risk-averse, risk-neutral and risk-seeking environments. The result of our analysis is shown in Table 8.

Table 8: Regime Analysis – Value Benchmark Model: Russell 3000 Value Universe (January 1987 to December 2012)

	1-month Return Spread	1-month IC
Risk Averse	3.25%***	0.09***
Risk Neutral	1.70%***	0.06***
Risk Seeking	0.44%**	0.02***

*** 1% level of significance; ** 5% level of significance

Source S&P Capital IQ Quantamental Research

The Value Benchmark Model generates statistically significant return spreads and ICs in all three regimes (Table 8), with return spread largest (smallest) when investors are risk averse (seeking).

3 Quality Model

S&P Capital IQ's Quality Model seeks to extend the analysis of earnings quality beyond accruals and includes several measures of balance sheet efficiency/strength that have been shown to be good indicators of medium and long-term earnings quality. The Quality Model is comprised of five components: Growth Stability, Operating Efficiency, Complimentary Valuation, Financial Health and Quality. Similar to our Growth and Value Models, we applied specific treatments for banks and non-bank financials. Table 9 shows the summary performance statistics for the model from January 1987 to December 2012.

Table 9: Summary Performance Statistics for Quality Model Russell 3000 (January 1987 – December 2012)

Return Summary						
	Q1	Q2	Q3	Q4	Q5	Long-Short Return
Average Monthly Return	1.27%	0.97%	0.61%	0.22%	-0.57%	1.84%***
Annualized Return	16.35%	12.35%	7.59%	2.65%	-6.66%	24.50%
Annualized Info. Ratio	0.92	0.68	0.40	0.13	-0.29	2.49

Information Coefficient Summary	
Avg 1-month IC	0.06***
1-month IC Info Ratio	0.91
1-month IC Hit Rate	82%***

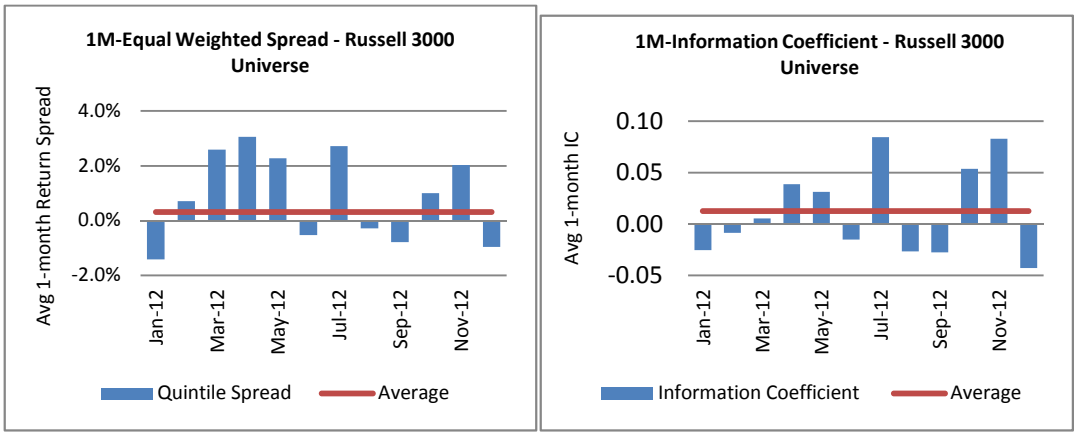
*** 1% level of significance

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

3.1 Model Performance in 2012

The Quality Model's performance was relatively strong in 2012 (Figure 14) with an average 1-month equal-weighted spread and information coefficient of 0.87% and 0.03 respectively. Four of the model's five draw downs occurred in months where VSC was the top style we track on AFL. Considering that the model prefers high quality names, which tend to have lower volatility compared to low quality issues, it may underperform in periods when risk appetite is high.

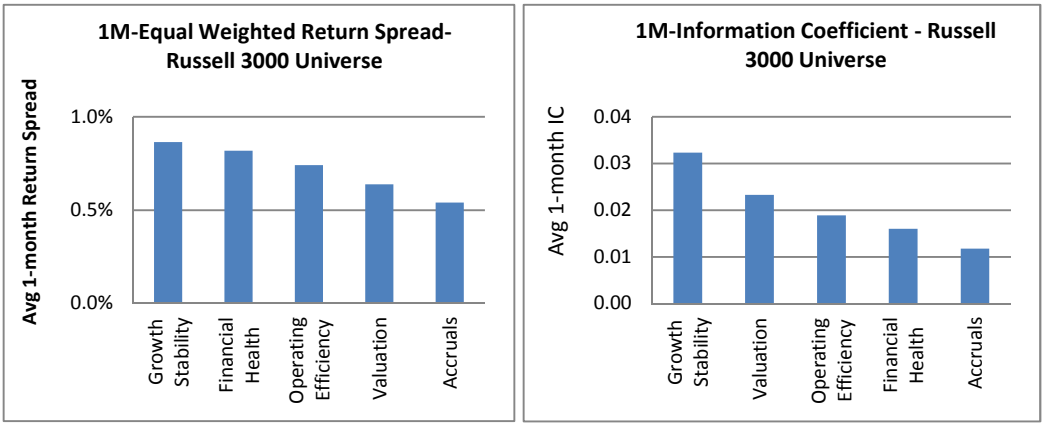
Figure 14: Quality Model: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 (January 2011 – December 2012)



Source. S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

All five sub-components posted positive average 1-month return spreads and ICs in 2012 (Figure 15), with Growth Stability and Accruals sub-components being the strongest and weakest respectively. Growth Stability rewards companies with growing stable earnings, while Accruals selects companies that generate strong cash flows. Financial Health assesses a company's financial leverage and interest coverage, while Operating Efficiency rewards firms that can better utilize assets to generate earnings and strong cash flows.

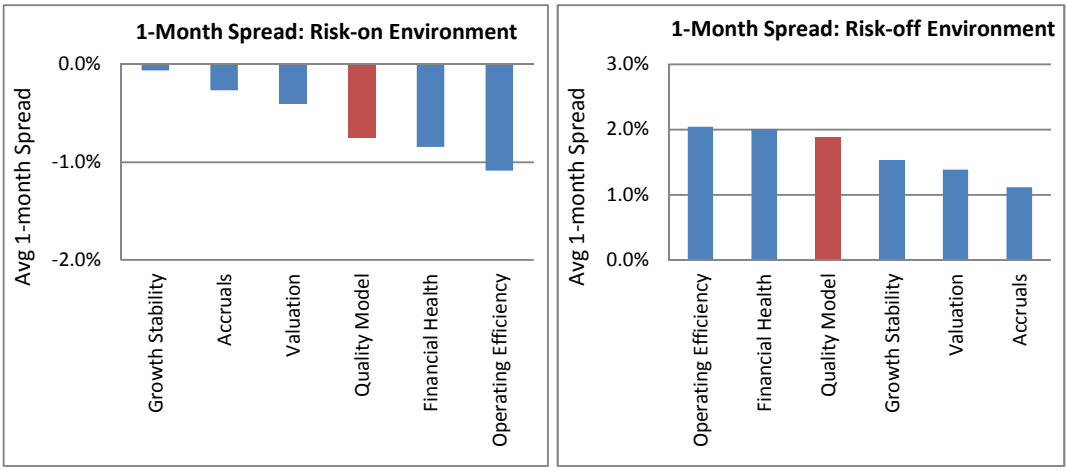
Figure 15: Quality Model Components: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

We show the average 1-month return spreads of all sub-components, including QM (red bar) in Figure 16. Not surprisingly, all sub-components had negative return spreads in the risk-on regime as investors shunned high quality names and sought low quality, high beta stocks. In contrast, all five sub-components had positive return spreads in the risk-off regime.

Figure 16: Quality Model: 1M-Equal Weighted Spread Russell 3000 Value Universe in Risk-on/Risk-off Environments (January 2012 – December 2012)

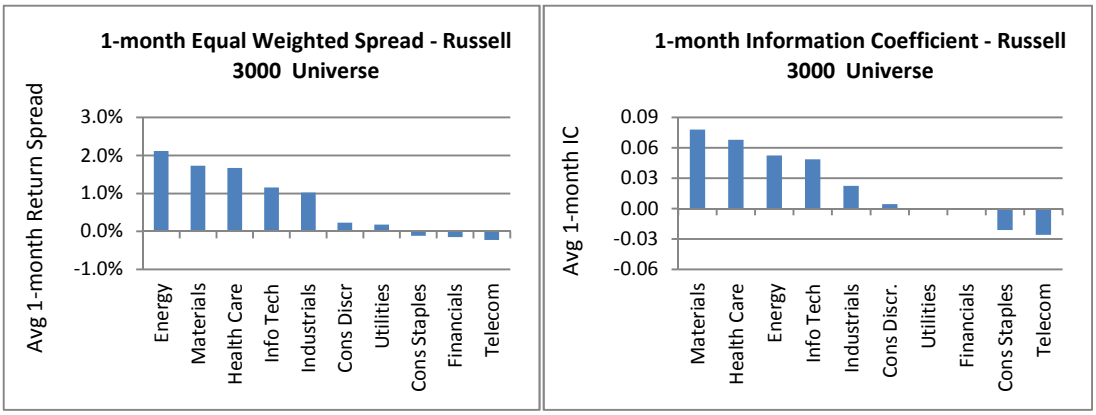


Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

3.2 Sector Performance

The top three sectors in terms of average 1-month spreads and ICs were Energy, Materials and Healthcare (Figure 17). The bottom three sectors were Consumer Staples, Financials and Telecoms.

Figure 17: Quality Model: Sector 1-Month Average Return and 1-Month Average Information Coefficient – Russell 3000 Universe (January 2012 – December 2012)



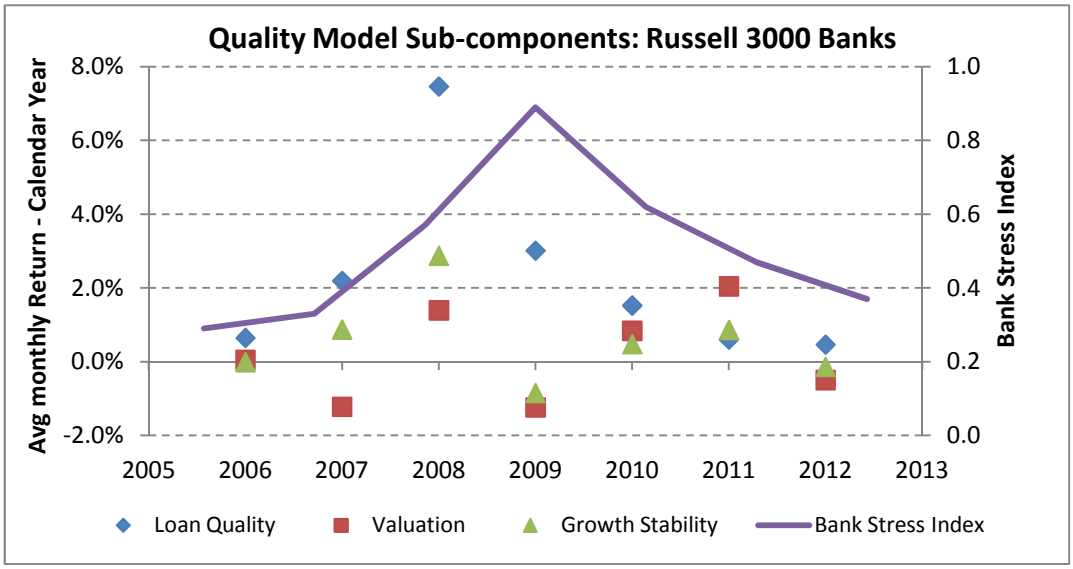
Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

The model has only three sub-components for banks (which constitute about a third of stocks) in the Financials Sector – Loan/Asset Quality, Growth Stability and Valuation. We wrote in our

October 2011 Report[11] that Loan Quality is a useful indicator for future performance when the banking industry is "stressed". Even though we saw the risk-on/risk-off trade play out in 2012, the switch from one regime to the other was not driven by systematic stress in the banking industry, but by other macro issues, such as the fiscal cliff debate in the U.S. As a result, Loan Quality as a theme was not a particularly successful stock-picking strategy for banks in 2012.

Figure 18 shows the average 1-month spread return for each calendar year from 2006 to 2012 for the three sub-components in QM (left axis), together with the median annual Bank Stress Index (right axis) for banks in the Russell 3000. The Bank Stress Index (BSI)[12] is a standardized measure, ranging from 0 (low) to 1(high), which we use to quantify the level of stress in the banking system. We see a run-up in the efficacy of Loan Quality (blue diamond shape) as the banking crisis intensified (BSI peaked in 2009) and a decline in return to the strategy as the crisis subsided (BSI is currently back to 2006 levels) and banks cleaned up their books. The returns to Loan Quality are currently below levels seen in 2006 before the onset of the banking crisis.

Figure 18: Quality Model: Sub-components 1-Month Average Calendar Year Spread Return – Russell 3000 Bank Universe (2006 – 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

3.3 Quintile Portfolio Characteristics / Portfolio Tilt Neutralization

The size and beta characteristics of QM's top (quintile 1) and bottom (quintile 5) portfolios are shown in Table 10. As expected, the long portfolio (quintile 1) is tilted towards large cap names, as these names tend to provide more predictable earnings and dividend streams, unlike small cap stocks. We also observe that the top quintile portfolio has a lower beta than the bottom quintile (1.13 vs. 1.40), in line with what we documented for GBM and VBM.

[11] The Banking Industry: New Bank Specific Data as an Alpha Source
[12] Please refer to our October 2011 publication on the banking industry for the detailed calculation of BSI

Table 10: Beta and Market Capitalization of Quality Model's Q1 and Q5 Equal-Weighted Portfolios – Russell 3000 (January 2012 – December 2012)

	Quintile 1	Quintile 5
Size	$1.36B	$0.52B
Beta	1.13	1.40

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

How would the model have performed without the beta and market cap tilts? Table 11 displays average 1-month return spread and IC after we eliminate both tilts[13]. The model's results are still encouraging as it generated an average monthly long-short return of 0.5%.

Table 11: Quality Model – Performance Results with Elimination of Beta and Market Cap Tilts: Russell 3000 (January 2012 – December 2012)

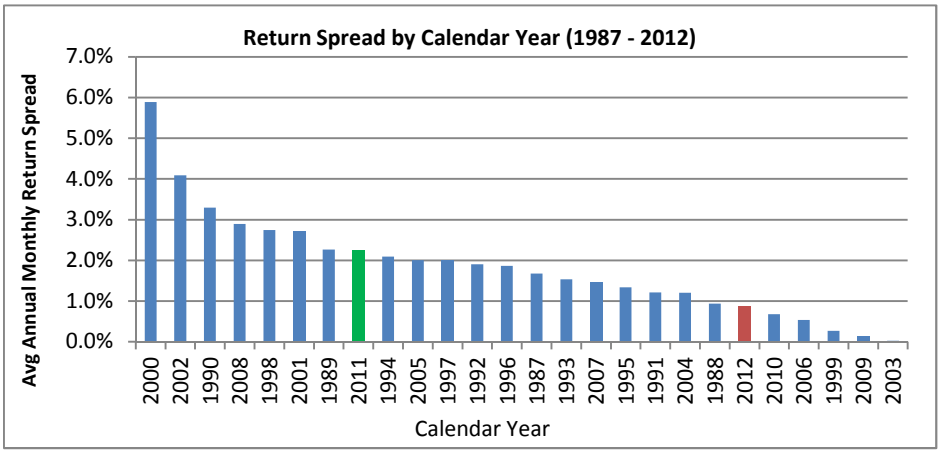
Model	Average 1-month Spread	Average 1-month IC
QM	0.87%	0.03
Size/Beta Neutral QM	0.50%	0.02

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

3.4 Historical Comparison and Regime Analysis

2012's long short return ranks in the 20th percentile of calendar year returns since 1987 (Figure 19). The best calendar long-short return was in 2000 when value and high quality stocks rallied after the collapse of the tech bubble. The worst return for QM was in 2003 (0.02%) when low quality stocks out-performed their high quality counterparts.

Figure 19: Quality Model: Calendar Year Average Monthly Quintile Spread: Russell 3000 Universe (January 1987 to December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

[13] Q1 and Q5 both had average market cap and beta of $1.1B and 1.24 respectively after we adjusted the model for size and beta exposures.

As expected, QM's performance is strongest in risk-averse periods (Table 12) when investors seek firms with stable earnings / cashflows and strong balance sheets. The model's 1-month average long-short spread is -0.05% in risk seeking months, although the 1-month IC is positive and statistically significant at the 5% level. Similar to what we noted for GBM, QM's spread return in risk seeking periods was negatively impacted by a few months with large negative returns (months when risk appetite was extremely elevated).

Table 12: Regime Analysis – Quality Model: Russell 3000 Universe (January 1987 to December 2012)

Increasing Risk

	1-month Return Spread	1-month IC
Risk Averse	3.64%***	0.10***
Risk Neutral	1.74%***	0.06***
Risk Seeking	-0.05%	0.01**

*** Significant at 1% level; ** significant at the 5% level

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

4 Price Momentum Model

S&P Capital IQ's Price Momentum Model was constructed to predict future stock price movement using price and trading volume data. The model is made up of short-term and long-term components; the former uses a short to medium term look-back window, typically 1-day to 3-months for factor construction, while the latter adopts a longer window, around 3 to 12 months for signal formulation. Table 13 details the summary performance statistics for the model over the last 26 years. The model has been very successful over this time period, generating monthly return spreads and IC of 2.25% and 0.07 respectively (both statistically significant at the 1% level).

Table 13: Summary Performance Statistics for Price Momentum Model – Russell 3000 January 1987 – December 2012

Return Summary						
	Q1	Q2	Q3	Q4	Q5	Long-Short Return
Average Monthly Return	1.46%	1.04%	0.60%	0.06%	-0.79%	2.25%
Annualized Return	18.97%	13.17%	7.44%	0.71%	-9.05%	30.53%
Annualized Info. Ratio	1.10	0.72	0.36	0.02	-0.37	2.41

Information Coefficient Summary	
Avg 1-month IC	0.07***
1-month IC Info Ratio	0.83
1-month IC Hit Rate	84%***

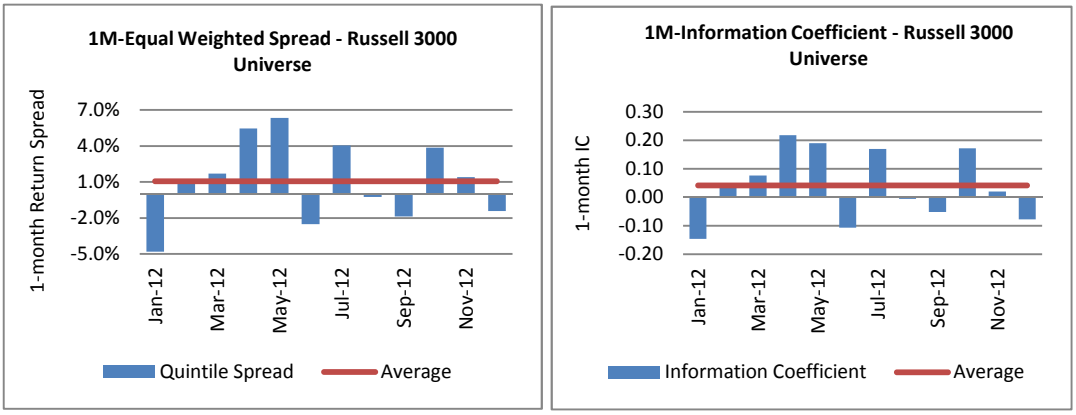
*** Significant at 1% level

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results

4.1 Model Performance in 2012

Figure 20 shows the average 1-month equal-weighted spread and average 1-month information coefficient for the Price Momentum Model in the Russell 3000. The average monthly spread and IC (red line in both graphs) were 1.06% and 0.04 respectively. The model experienced its largest long-short return draw down in January (-4.8%), while it generated spread returns greater than 4% in three months: April, May, and July.

Figure 20: Price Momentum Model: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

Table 14 shows the average 1-month spread and average IC for each subcomponent of the Price Momentum Model over the Russell 3000 universe for 2012. The Long-term Component's spread and IC were 22% and 36% higher than that of the Short-term Component.

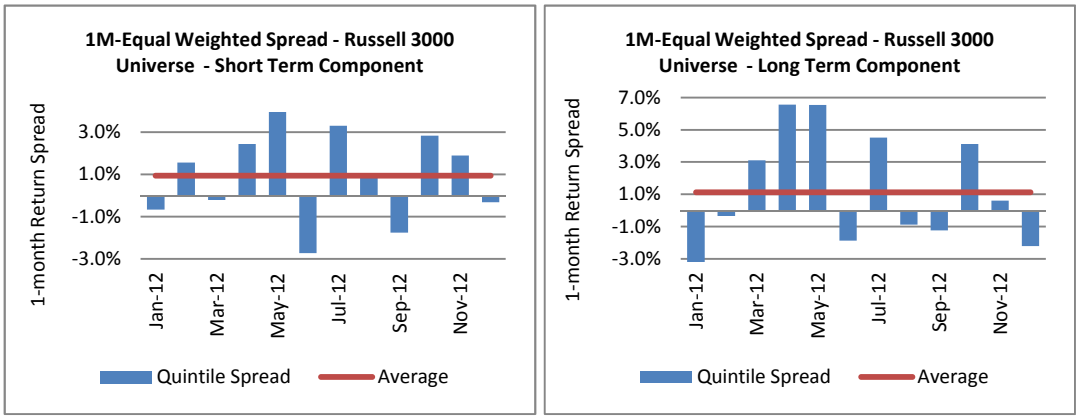
Table 14: Price Momentum Model: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 (January 2012 – December 2012)

Component	1-month Spread	1-month IC
Short-Term Component	0.93%	0.03
Long-Term Component	1.13%	0.04

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

Figure 21 shows the average 1-month spread and average IC for both Short and Long Term Components of the Price Momentum Model over the Russell 3000 universe for 2012.

Figure 21: Price Momentum Model – Short & Long Term Components: 1M-Equal Weighted Spread (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

We notice that that both components generally tend to complement each other - for instance the Short-term Component was up by 0.93% in February, while the Long-term Component was down by -0.34%; we see similar trends in March and August. Although there are months where both Short and Long term Components generate negative return spreads, the complementary nature of both components helps to mitigate large draw downs if the model had been based solely on either the Long or Short Component.

In Table 15, we show average 1-month spread return and average IC in risk-on and risk-off environments for PMM's Short and Long term components, including the over-all Model ("PMM"). The Short (Long) Term Component had a worse (better) performance in risk-off (risk-on) regime. Overall, the Short-term Component posted a flat result in risk-on regime, while the Long-term Component generated an average monthly spread return of 3.37% in our risk-off environment.

Table 15: Price Momentum Model – Sub- Components: 1M-Equal Weighted Spread and Information Coefficient – Russell 3000 (January 2012 – December 2012)

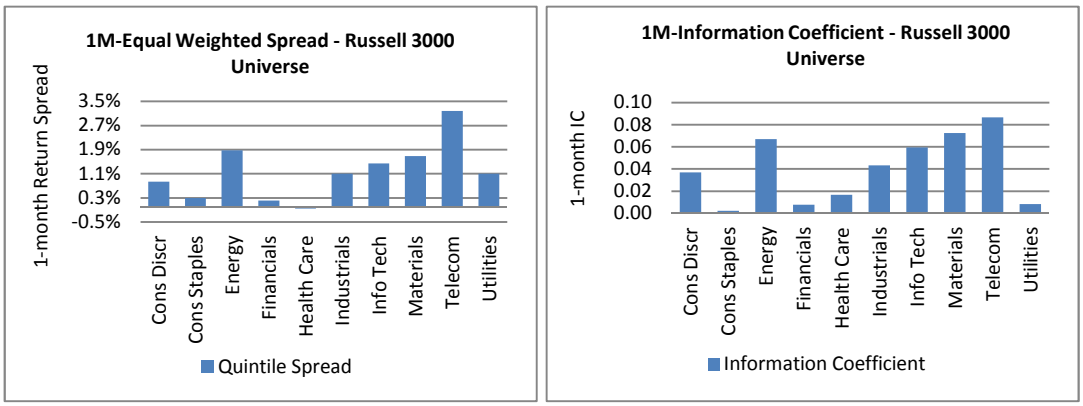
	Risk-on Months		Risk-off Months	
Model Components	Avg 1-Month Spread	Avg 1-Month IC	Avg 1-Month Spread	Avg 1-Month IC
Short Term	-0.05%	-0.01	1.64%	0.06
Long Term	-2.01%	-0.07	3.37%	0.13
PMM	-1.51%	-0.05	2.90%	0.11

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

4.2 Sector Performance

The model generated positive spreads and ICs (Figure 22) in all sectors, except for the Health Care sector which was slightly negative. The top three sectors in terms of performance (IC or return) were Telecom, Energy, and Materials.

Figure 22: Price Momentum Model: Sector 1-Month Average Return and 1-Month Average Information Coefficient – Russell 3000 Universe (January 2012 – December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

4.3 Quintile Portfolio Characteristics / Portfolio Tilt Neutralization

We looked at two characteristics - size and beta - of PMM's long (quintile 1) and short (quintile 5) portfolios. Table 16 shows the PMM's median market capitalization and median 60-month CAPM beta of quintile 1 and quintile 5 portfolios.

Table 16: Price Momentum Model: Median Market Cap and Median 60-Month CAPM Beta for Quintile 1 and Quintile 5 Portfolios - Russell 3000 Universe (Jan 2012 – Dec 2012)

	Quintile 1	Quintile 5
Size	$1.65B	$0.58B
Beta	1.11	1.55

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

Similar to what we observed from other models, the top quintile of the Price Momentum Model has a large cap bias (compared to the bottom quintile); the median market cap of the long portfolio (Q1) is $1.65 billion compared to $0.58 billion for the short portfolio (Q5). Quintile 1 also has a lower exposure to the market (60-month CAPM beta of 1.11) compared to quintile 5 (1.36). We show the performance characteristics of the model after we eliminate both size and beta tilts[14] (Table 17). PMM's average 1-month spread return shrank from 1.06% to 0.88%, while average 1-month IC declined from 0.04 to 0.03 after beta and size neutralization.

[14] Q1 and Q5 had median market cap and 60-month CAPM Beta of $1.1B and 1.2 respectively after neutralization

Table 17: Price Momentum Model: Original and Beta/Size Neutralized Results – Russell 3000 Universe (January 2012 – December 2012)

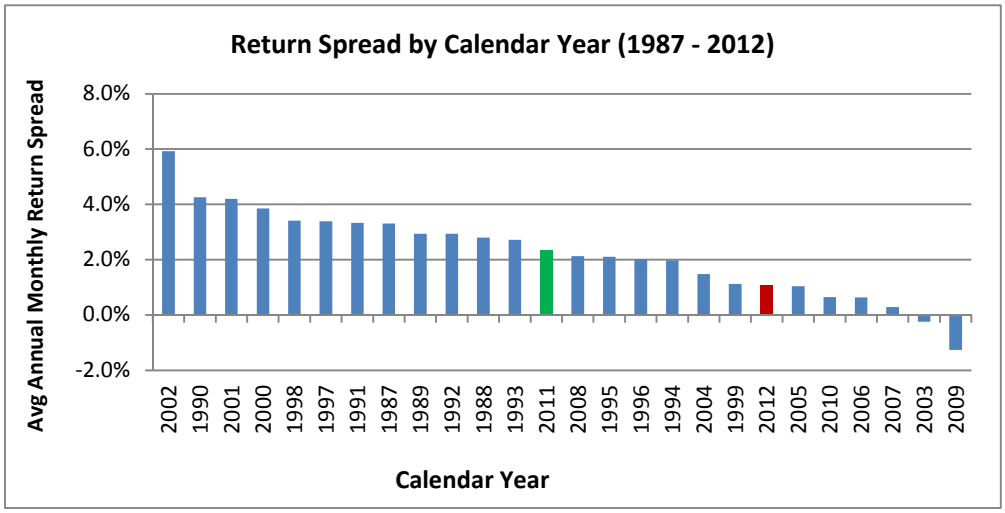
Model	Average 1-month Spread	Average 1-month IC
PMM	1.06%	0.04
Size/Beta Neutral PMM	0.88%	0.03

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

4.4 Historical Comparison and Regime Analysis

The average 1-month quintile spread by each calendar year is charted in Figure 23. The model's average monthly calendar spread was negative in only two years - 2009 when momentum as a theme failed spectacularly, and 2003.

Figure 23: Price Momentum Model: Calendar Year Average Monthly Quintile Spread: Russell 3000 Universe (January 1987 to December 2012)



Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

We analyze PMM's performance in our three defined environments (Table 18); the model delivered statistically significant return spreads and ICs in two regimes (risk-averse and risk neutral) and insignificant return spread/IC in the risk-seeking regime.

Table 18: Regime Analysis – Price Momentum Model: Russell 3000 Universe (January 1987 to December 2012)

Increasing Risk

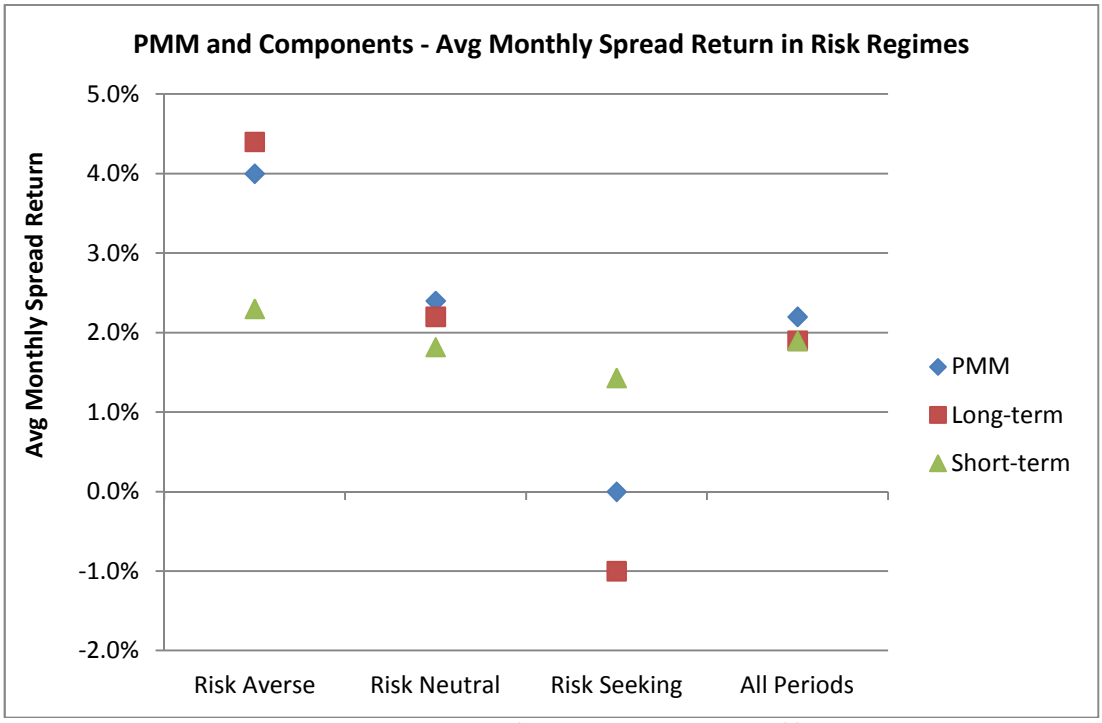
	1-month Return Spread	1-month IC
Risk Averse	4.05%***	0.12***
Risk Neutral	2.41%***	0.08***
Risk Seeking	0.00%	0.01

*** 1% level of significance

Source: S&P Capital IQ Quantamental Research. Past performance is not a guarantee of future results.

The benefit of using two components with different stock selection criteria is immediately apparent when we break down the performance of PMM (into its Short and Long term Components) in the three risk regimes (Figure 24).

Figure 24: Regime Analysis - Price Momentum Model and Sub-components: Russell 3000 Universe (January 1987 to December 2012)



Source S&P Capital IQ Quantamental Research. . Past performance is not a guarantee of future results

The Long-term Component shines in risk-averse periods (average monthly long-short return of 4.36%), but is a drag on performance in risk-seeking periods (average monthly return of -1.0%). On the other hand, the Short-term Component generates positive average monthly spread returns in all three regimes, including risk-seeking (all statistically significant at the 1% level).

5 Model Stability

Model stability in 2012 as measured by the autocorrelation of monthly ranks is listed in Table 19. The correlation numbers are in line with what we observed during model back-tests.

Table 19: Model 1-month Rank Autocorrelation (January 2012 -December 2012)

Model	1-month Rank Autocorrelation
Price Momentum	0.61
Quality	0.90
Growth	0.91
Value	0.93

Source: S&P Capital IQ Quantamental Research

6 Conclusions

In this research report, we summarized the performance of S&P Capital IQ's four stock selection models (Value Benchmark, Growth Benchmark, Quality, and Price Momentum) in 2012. All four models generated positive return spreads in 2012, with the Growth Benchmark Model posting the strongest results. We show that our models had positive exposures to large cap, high quality and low beta names during the year. We also found that neutralizing these exposures did not eliminate model spreads, although performance deteriorated slightly when benchmarked to the spreads of original models.

APPENDIX A

Style	Factor	Definition
Volatility	12M Realized Volatility	This factor is computed as the annualized volatility of monthly stock returns over the prior 12 months.
	1M Vol	This factor is computed as the annualized volatility of daily stock returns over the prior month.
	60M CAPM Beta	This is the sensitivity of a stock's return to the return of the market.
	90DCV	This is calculated as the ratio of the standard deviation of daily closing prices over the prior 90 days to the average of daily closing prices over the past 90 days.

Our Recent Research

January 2013: Research Brief: Exploiting the January Effect Examining Variations in Trend Following Strategies

At the beginning of every year, one topic frequented by many institutional investors is the January Effect. Investors often point to January as the most pronounced example of seasonality, where longer term trend following strategies suddenly underperform and short-term reversal and mean-reversion dominate. But which strategies have performed well in January and is this performance sustainable? With several studies in the Literature documenting the January Effect on company capitalization, we decided to undertake our own review using our S&P Capital IQ Alpha Factor Library (AFL), to examine various strategies' effectiveness during the month.

December 2012: Do CEO and CFO Departures Matter? - The Signal Content of CEO and CFO Turnover

In October of this year, the US equity market was caught off guard with the seemingly sudden departure of Citibank CEO Vikram Pandit. While CEO departures are almost always headline news, CFO departures are not often accompanied with such recognition. We explore the impact of CEO and CFO departures and find consistent results in the US and the Developed World. CEO and CFO departures often signify a turning point in both the company's stock performance and the company's operating metrics.

November 2012: 11 Industries, 70 Alpha Signals -The Value of Industry-Specific Metrics

Investors routinely utilize industry intelligence in their investment process. But which information is relevant? Which is irrelevant? Our work yields some surprising results. This work complements our previous industry work on Retail [June 2011], Banking [Oct 2011], and Oil & Gas [May 2012]. Using S&P Capital IQ's Global Point-in-Time database and Compustat Industry-Specific data, we look at 70 factors in 11 industries: airlines, hospitals & facilities, managed healthcare, pharmaceuticals & biotechnology, homebuilding, insurance, telecommunications, utilities, gold miners, hotels & gaming, and restaurants

October 2012: Introducing S&P Capital IQ's Fundamental Canada Equity Risk Models

In July 2012 we released our regional risk models -- the Pan-Asia ex. Japan and the Pan-European Models, and updated versions of our US and Global Risk Models. Continuing in our efforts to provide a broad set of models to the asset management community, we are now releasing our second single country risk model -- Canada Fundamental Equity Risk Model.

September 2012: Factor Insight: Earnings Announcement Return – Is A Return Based Surprise Superior to an Earnings Based Surprise?

In this report, we compare the performance of SUE to one based on returns around a firm's earnings announcement date (EAR), proposed by Brandt et al (2008). We test both factors globally and find EAR dominates SUE in the U.S in the post Reg FD era on both a long-short return and top quintile excess return basis.

August 2012: Supply Chain Interactions Part 1: Industries Profiting from Lead-Lag Industry Relationships

Supply chain relationships are among the most visible and measurable, as revenues and costs shape the realized economic and financial performance of connected companies. Studies have shown that events within a supply chain do introduce these ripple effects, and theories

incorporating this information into an investment process have garnered attention in recent years. We construct a map quantifying industry level connections along the supply chain. Using this map, and trailing industry returns as a proxy for industry level information shocks, we construct inter-industry momentum signals. These signals exhibit lead-lag relationships over short horizons, as the information shocks diffuse through the market and manifest themselves in the performance of related industries.

July 2012: Releasing S&P Capital IQ's Regional and Updated Global & US Equity Risk Models
Over the course of the last two years we released our Global and US Fundamental Equity Risk Models. As a natural progression we are releasing the first set of Regional Models – the Pan-Asia ex. Japan and the Pan-Europe Fundamental Equity Risk Models. This document will explain some of the salient aspects of the process adopted for constructing the Regional Models. We have also made additional improvements to our US & Global Equity Risk Models, and we shall explain these changes.

June 2012: Riding Industry Momentum – Enhancing the Residual Reversal Factor
Unlike individual stocks whose short-term returns tend to revert from one month to the next, industry portfolios exhibit return momentum even at a one-month horizon. We examine a strategy that takes advantage of both industry level momentum and stock level reversal. We combine our residual reversal factor with an industry momentum score, and find that the factor performance is greatly enhanced in the Russell 3000 universe between January 1987 and February 2012. The decile return spread is increased by 42 bps per month on average.

May 2012: The Oil & Gas Industry - Drilling for Alpha Using Global Point-in-Time Industry Data
In the oil & gas industry, a key determinant of value and future cash flow streams is the level of oil & gas reserves a firm holds. While most fundamental analysts/investors take into consideration a company's reserves in arriving at price targets, a majority of systematic driven processes do not. Using S&P Capital IQ's Global Point-in-Time database, we investigate the importance of reserve and production information provided by oil & gas companies.

May 2012: Case Study: S&P Capital IQ – The Platform for Investment Decisions
Ten years ago, AAPL traded just below $12 and closed at $583.98 on April 30, 2012. That is an average annual return of 48.1% over the period. During this same time the S&P 500 grew at an annual rate of only 2.65%. On April 2nd, Topeka Capital Markets initiated coverage of AAPL with a price target of $1001. If achieved, this would make AAPL the first company to ever reach a $1 trillion market cap. In this case study, we highlight some key S&P Capital IQ functionality in analyzing AAPL hypothetically reaching $1000:

March 2012: Exploring Alpha from the Securities Lending Market – New Alpha Stemming from Improved Data
Numerous studies have examined the information content of short interest and found that heavily shorted stocks tend to underperform and liquid stocks with low levels of short interest subsequently outperform. Most studies relied on short interest data obtained directly from the exchanges available with a significant delay.

January 2012: S&P Capital IQ Stock Selection Model Review – Understanding the Drivers of Performance in 2011
In this report, we review the performance of S&P Capital IQ's four U.S stock selection models in 2011. These models were launched in January 2011, and this analysis will assess the underlying drivers of each model's performance over the last 12 months.

January 2012: Intelligent Estimates – A Superior Model of Earnings Surprise
As residual stakeholders, equity investors place enormous importance on a company's earnings. Analysts regularly forecast companies' future earnings. The prospects for a company's future earnings then become the basis for the price an investor will pay for a company's shares. Market participants follow sell side analysts' forecasts closely, identifying those analysts that demonstrate forecasting prowess and track those analysts' forecasts going forward.

December 2011: Factor Insight – Residual Reversal

November 2011: Research Brief: Return Correlation and Dispersion – All or Nothing

October 2011: The Banking Industry

September 2011: Methods in Dynamic Weighting

September 2011: Research Brief: Return Correlation and Dispersion - Tough Times for Active Managers

July 2011: Research Briefs- A Topical Digest of Investment Strategy Insights

June 2011: A Retail Industry Strategy: Does Industry Specific Data tell a different story?

May 2011: Introducing S&P Capital IQ's Global Fundamental Equity Risk Models

May 2011: Topical Papers That Caught Our Interest

April 2011: Can Dividend Policy Changes Yield Alpha?

April 2011: CQA Spring 2011 Conference Notes

March 2011: How Much Alpha is in Preliminary Data?

February 2011: Industry Insights – Biotechnology: FDA Approval Catalyst Strategy

January 2011: US Stock Selection Models Introduction

January 2011: Variations on Minimum Variance

January 2011: Interesting and Influential Papers We Read in 2010

November 2010: Is your Bank Under Stress? Introducing our Dynamic Bank Model

October 2010: Getting the Most from Point-in-Time Data

October 2010: Another Brick in the Wall: The Historic Failure of Price Momentum

July 2010: Introducing S&P Capital IQ's Fundamental US Equity Risk Model