# Introducing S&P Capital IQ Global Stock Selection Models for Developed Markets

Authors

Vivian Ning, CFA
Quantamental Research
312-233-7148
vning@spcapitaliq.com

Temi Oyeniyi, CFA
Quantamental Research
312-233-7151
toyeniyi@spcapitaliq.com

Li Ma
Quantitative Analyst
312-233-7124
lma@spcapitaliq.com

With the growing demand for alpha and quantamental solutions globally, S&P Capital IQ Quantamental Research has developed a suite of global stock selection models targeting Canada and the developed markets of Europe and Asia Pacific. Building on the success of S&P Capital IQ's US Stock selection models ["US Stock Selection Models Introduction" January 2011], all three models are specifically designed for investors benchmarked to the S&P Global Developed BMI [Broad Market Index], and are constructed using S&P Capital IQ's industry leading Global Point-In-Time data, and the Alpha Factor Library [AFL][1], our web-based factor research platform.

These models have generated robust performance metrics in the BMI developed markets over our test period, 1990 – 2013, and have generated some interesting insights into the behavior of the different markets:

- **Canadian Model**: Over the testing period of January 1990 – June 2013, the model generates a monthly average equal-weighted long-short spread[2] and information coefficient [IC] [3] of 2.09% and 0.08, respectively, with statistical significance at the 1% level.

- **Asia Ex Japan Model**: We observe an average monthly spread return and IC of 2.01% and 0.09 respectively in S&P BMI Dev Asia Ex Japan over the period of June 1999 – July 2013, both statistically significant at the 1% level.

- **European Model**: The model delivers an average monthly spread return and IC of 1.96% and 0.09, respectively [statistically significant at the 1% level] using S&P BMI Dev Europe universe from June 1999 – June 2013.

- **Robust Model Performance after Controlling for Market Cap and Beta Exposures:** All three models post statistically significant ICs and return spreads after eliminating both Market Cap and Beta tilts. The average 1-month return spreads [ICs] for Canadian, Asia Ex Japan, and European models are 1.72% [0.065], 1.98% [0.076], and 1.7% [0.074] respectively after controlling for market cap and beta exposures.

[1] S&P Capital IQ's Alpha Factor Library consists of 450+ stocker selection signals with associated metrics such as information coefficients and factors return spreads. All factor performance is downloaded by time period, regime, country, and sector dimensions.
[2] Long-short return spread, as used in this report, is the return to a top quintile portfolio minus the return of the bottom quintile portfolio.
[3] IC is the rank correlation of alpha forecasts to forward stock return.

## 1. Data and Universe Definition

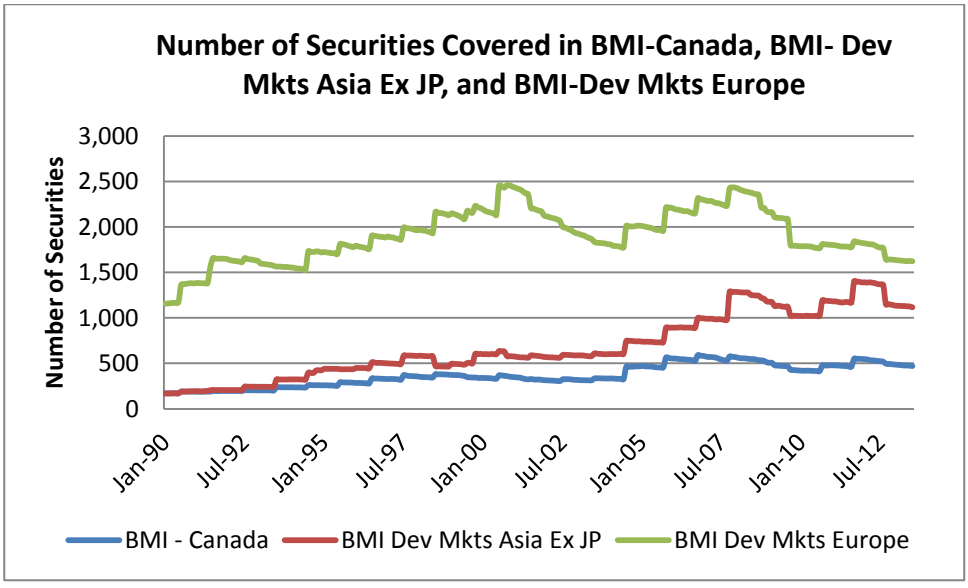
We construct all three models using S&P Capital IQ Point-In-Time (S&P CIQ PIT) data. This data allows us to eliminate any source of look-ahead bias inherent to many back tested strategies. We are able to see the true performance of these models to differentiate between stocks using only the data that was available at the time. Also, inspired by our earlier work (see "Is Your Bank under Stress" November 2010 and "The Banking Industry – New Bank Specific Data as an Alpha Source" October 2011), we incorporate bank specific data to capture the unique dynamics of banking industry. The signals constructed on this unique data set are often uncorrelated to popular signals used across industries and sectors; therefore they address the deficiencies in traditional fundamental signals and provide additional alpha source in modeling the banking industry.

We use the following universes for model construction and testing:

- S&P BMI Developed Markets Europe
- S&P BMI Developed Markets Asia Pacific, excluding Japan
- S&P BMI Canada

The sample data period for European and Asia Ex JP markets is from June 1999 to July 2013, and from January 1990 to July 2013 for Canada. Exhibit 1 shows coverage for the securities for the three markets over time.

**Exhibit 1: Coverage in S&P Global BMI Developed Markets**
January 1990 – July 2013




Source S&P Capital IQ Quantamental Research

# 2. Model Construction and Testing

## 2.1 Methodology

The building blocks for all three models are the 450+ global factors available in the AFL. All of our models are comprised of five different investment themes, rolled up into a final composite score. Incorporating a range of investment themes ensures that the model is robust and mitigates model underperformance when specific themes are performing poorly. The investment themes represented in each model are Valuation, Quality, Growth Stability, Street Sentiment, and Price Momentum. To ensure we do not take any implicit sector bets, we used a sector neutral formulation for factor ranking, with the exception of signals classified under the Price Momentum which were ranked cross sectionally.

We equally weight all the underlying factors in each investment theme (also called "sub-component"), and then apply a distinct weight to each sub-component to come up with a final composite score. We require that the sum of factor weight for each stock be at least 80% before we calculate a composite score. This ensures that a security's final ranking is reflective of broad range of information and not being driven solely by factors in the model with only a few data points.

We follow the best back-testing practice by dividing our entire sample period into in and out-of-sample periods to avoid data mining and possible over-fitting. The in-sample period for Asia Ex Japan and European models was June 1999 – December 2006, and from January 1990 to December 2002 for the Canadian model. The remaining months were considered as out-sample. All returns presented for the models and relative benchmarks were equal-weighted, except otherwise stated. The model returns in the following sections are excess returns.

## 2.2 Model Testing and Results

### 2.2.1 Canada Model

Exhibit 2 shows the summary performance of the Canadian model from January 1990 to July 2013.

**Exhibit 2: Summary Performance Statistics for Canadian Model**

S&P BMI – Canada

January 1990 – July 2013

| Return Summary | | | | | | |
|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q5 | Long-Short Spread |
| Average Monthly Exc. Return[4] | 0.99% | 0.33% | 0.19% | -0.35% | -1.05% | 2.09%*** |
| Annualized Exc. Return[5] | 11.9% | 3.9% | 2.3% | -4.2% | -13.0% | 25.1%*** |
| Annualized Info. Ratio[6] | 1.60 | 0.65 | 0.42 | -0.70 | -1.08 | 2.13*** |

[4] Average Monthly Exc. Return is equally weighted average 1-month excess return (equally weighted universe return as benchmark).
[5] Annualized Exc. Return is annualized excess return (equally weighted universe return as benchmark).
[6] Annualized Info. Ratio is defined by annualized excess return divided by tracking error.

| Information Coefficient Summary | |
|---|---|
| Avg 1-Month IC | 0.08*** |
| 1-month IC Info Ratio | 0.75*** |
| 1-month IC Hit Rate | 77%*** |

*** Significant at the 1% level

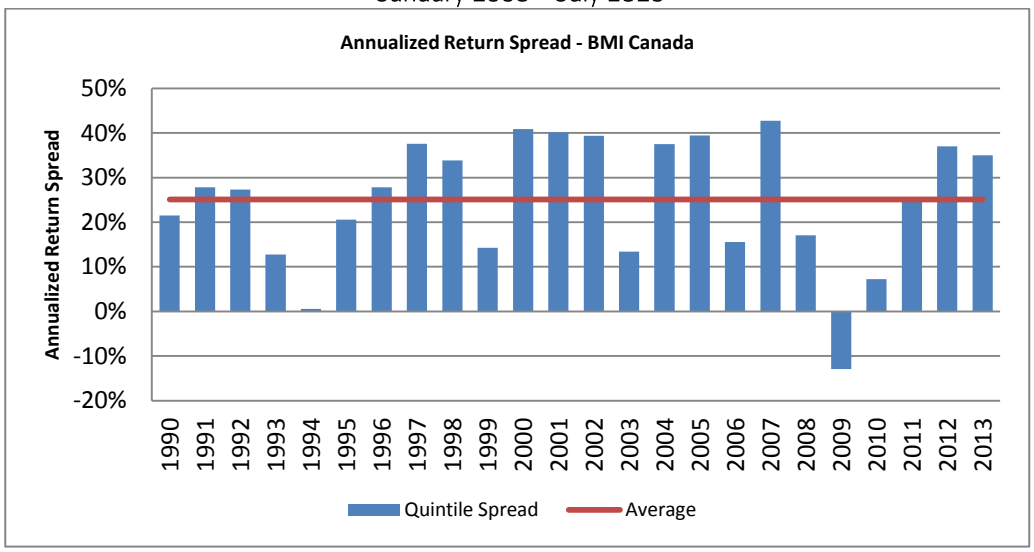
Source S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

The model generated a monthly average equal-weighted return spread and IC of 2.09% and 0.08 respectively, with significance at the 1% level. The annualized return spread and information ratio (IR) were 25.15% and 2.13 (statistically significant at the 1% level). The annualized information ratio of the top quintile was 1.6; the IC hit rate (defined as percent of times the IC is positive) was 77%, which is also statistically significant at the 1% level. The annualized return for a long portfolio (quintile 1) and short portfolio (quintile 5) were 11.9% and -13.0%, respectively.

#### 2.2.1.1 Model Performance

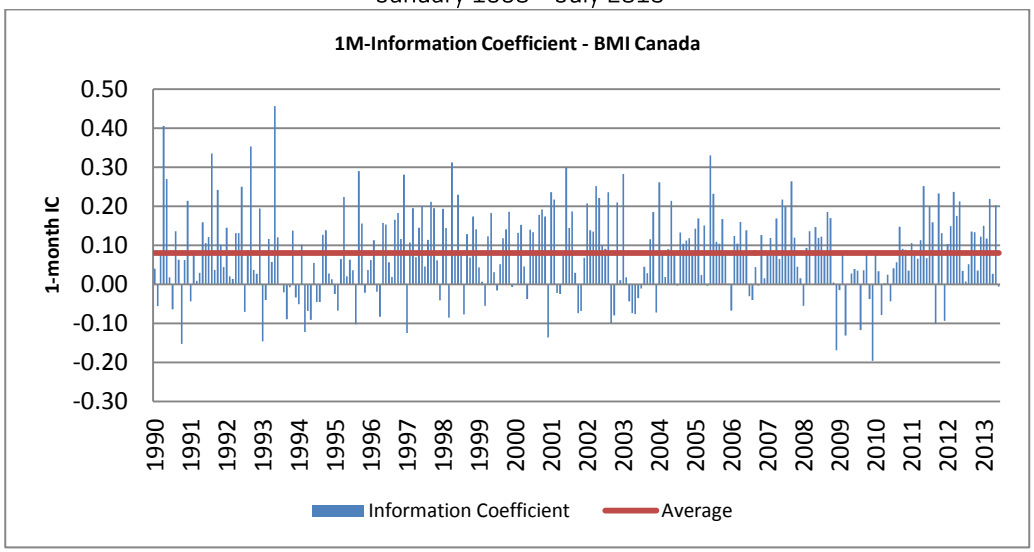
We chart the calendar year quintile return spread and 1-month IC time series for BMI Canada in Exhibit 3 and Exhibit 4. The average annualized return spread and monthly IC were 25.07% and 0.08, respectively, over the entire period. The model experienced its worst return (-12.9%) and IC (-0.02) performance in 2009, which was the year low quality and high beta stocks significantly out-performed the broader market.

**Exhibit 3: Calendar Year Return Spread**
S&P BMI – Canada
January 1990 – July 2013




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

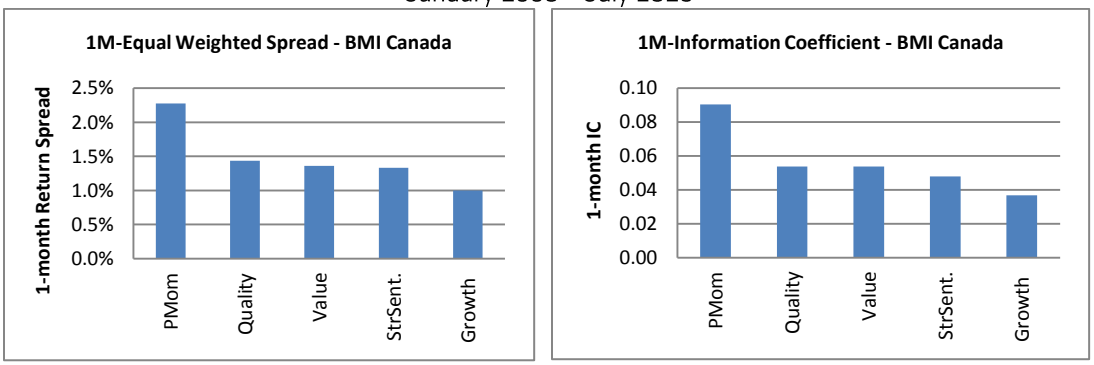
Exhibit 4: 1M-Average Information Coefficient
S&P BMI – Canada
January 1990 – July 2013




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

Exhibit 5 shows the average 1-month spread and average IC for each sub-component of the Canadian model. Price Momentum, Quality and Value were top three components based on both average 1-month return spread and IC, while Growth was the weakest based on the same metrics.

Exhibit 5: Canadian Model Breakdown: 1M-EW Spread and Information Coefficient
S&P BMI – Canada
January 1990 – July 2013




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

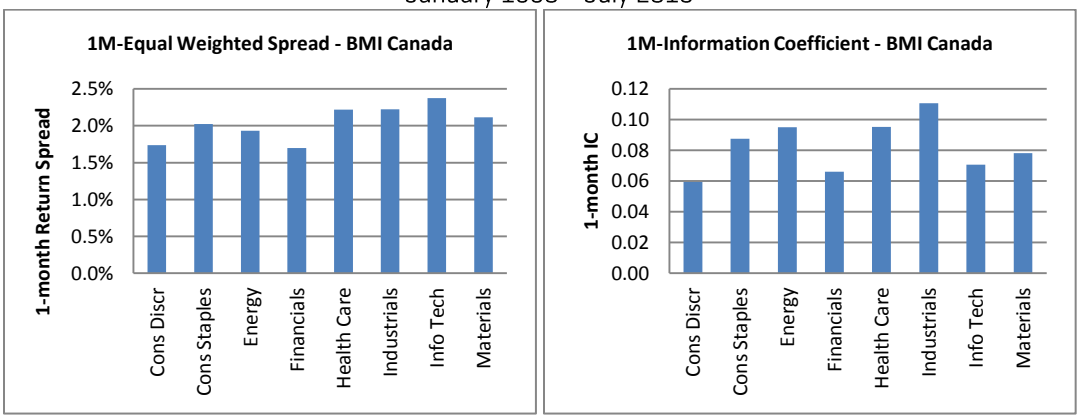
#### 2.2.1.2 Sector Performance

The GICS sector based 1-month equal-weighted return spread and IC for Canadian model is shown in Exhibit 6. We exclude Telecom and Utilities because of limited coverage (less than 10 securities on average respectively). The model delivered positive 1-month average return spread and 1-month IC across all eight sectors. Information Technology and Health Care were the top two sectors in terms of average 1-month spread. Specifically, we observe strong performance in both Energy and Materials sectors, which account for approximately 50% of the market value of the BMI Canada Universe. The primary drivers of performance in both sectors were the Quality and Price Momentum themes.

**Exhibit 6: Canadian Model: Sector 1M-EW Spread and Information Coefficient**

S&P BMI – Canada

January 1990 – July 2013




Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

#### 2.2.1.3 Model Performance in Different Risk Regimes

Over the years, one of the biggest challenges investors have been facing is finding an investment strategy that generates competitive returns under different risk environments. The two risk regimes are characterized by two different levels of risk appetite: "Risk-Seeking" (A period where investors show heightened risk appetites) and "Risk-Averse" (A period where investors increase the level of risk aversion). We used the Volatility Style Composite (VSC) [7] to capture risk-seeking and risk-averse regimes. Specifically, any month where the VSC is the best performing style (based upon long-short return spread), in the S&P TSX Composite, out of the eight styles we track in AFL, is classified as "Risk-Seeking"; and all other months are considered to be "Risk-Averse". Based on this metric, 51(230) out of 281 months are classified as Risk-Seeking (Risk-Averse) months from January 1990 to July 2013. The model performance (based on 1-month average return spread and 1-month IC) in our defined Risk-Seeking/Risk-Averse regimes is detailed in Exhibit 7.

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

**Exhibit 7: Regime Analysis – Canadian Model**

S&P BMI – Canada
January 1990 – July 2013

| | 1-month Return Spread | 1-month IC | Number of Months |
|---|---|---|---|
| All Months | 2.10%*** | 0.080*** | 281 |
| Risk Seeking | 1.53%*** | 0.059*** | 51 |
| Risk Averse | 2.21%*** | 0.085*** | 230 |

***Significant at the 1% level

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

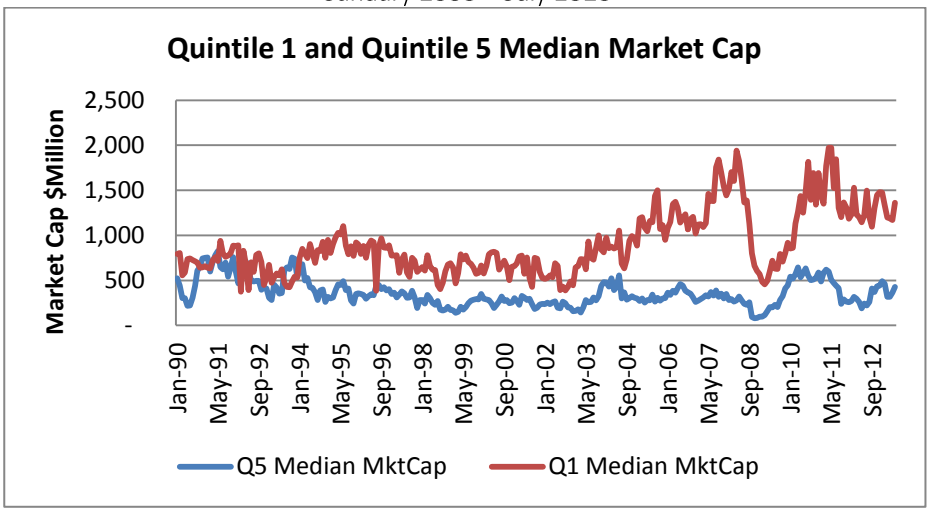
The Canada model experienced stronger (weaker) performance in Risk-Averse (Risk-Seeking) periods as evidenced by its higher 1-month return spread and IC during Risk-Averse regime, with significance at the 1% level. The average 1-month spread and IC declined to 1.51% and 0.059 in Risk-Seeking months (but still statistically significant at the 1% level).

#### 2.2.1.4 Quintile Portfolio Characteristics and Tilt Neutralization

We examine size and beta characteristics of quintile 1 and 5 portfolios. The time series of median market capitalization and 60-month CAPM beta of quintile 1 and quintile 5 are displayed in Exhibit 8 and Exhibit 9. Exhibit 8 indicates that our long portfolio is moderately tilted towards large cap names. We expect the long portfolio to have a lower median 60-month CAPM beta given its large cap exposure. The time series of 60-month beta shows the median beta of both long and short portfolios to be similar prior to 2001, although they have diverged since then.

**Exhibit 8: Canadian Model – Time Series of Median Market Cap for Quintile 1 and Quintile 5 Portfolios**

S&P BMI – Canada
January 1990 – July 2013

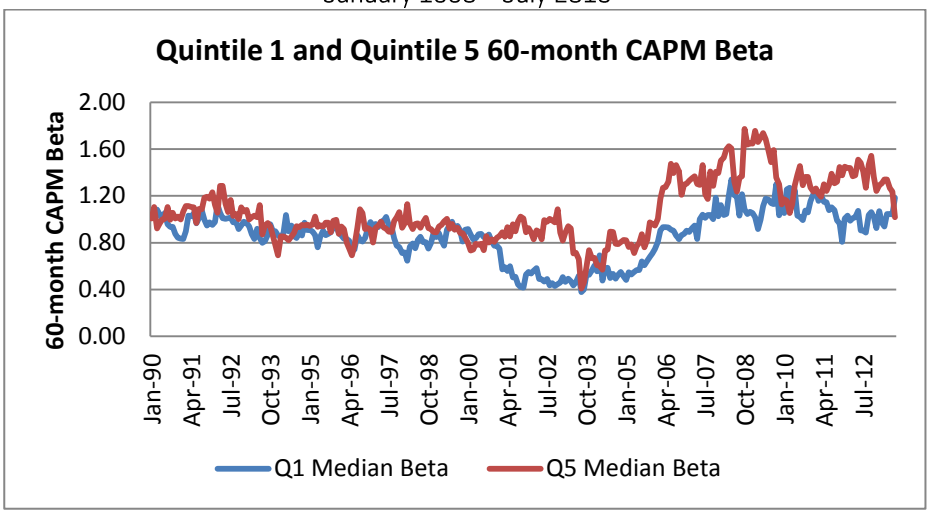



Source S&P Capital IQ Quantamental Research

Exhibit 9: Canadian Model – Time Series of Median 60-Month CAPM Beta for Quintile 1 and Quintile 5 Portfolios

S&P BMI – Canada

January 1990 – July 2013




Source S&P Capital IQ Quantamental Research

We show the performance characteristics of the model after we eliminate both size and beta tilts (the residuals from cross-sectional regression of standardized (Z-Score) model ranks on standardized Market Cap and Beta ranks). After controlling for both market cap and beta tilts, we observe a slight deterioration in average 1-month return spread (from 2.1% to 1.72%) and 1-month IC (from 0.08 to 0.07). However, both metrics are still statistically significant at the 1% level.

Exhibit 10: Canadian Model – Original and Size/Beta Neutralized Performance

S&P BMI – Canada

January 1990 – July 2013

| Model | 1-month Return Spread | 1-month IC |
|---|---|---|
| Original Model | 2.10%*** | 0.08*** |
| Size/Beta Neutral Model | 1.72%*** | 0.07*** |

Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

### 2.2.2 Asia Pacific Ex Japan Model

Exhibit 11 details the performance statistics of the Asia Pacific ex Japan model over the last 15 years. The model has been successful over this time period, generating monthly return spread and IC of 2.01% and 0.09 respectively (both significant at the 1% level). The annualized long short spread and IR were 24.01% and 2.01 respectively, with significance at the 1% level. The annualized excess returns for long portfolio (quintile 1) and short (quintile 5) were 11.9% and -12.11%, respectively. The annualized information ratio of the top quintile was 2.15; the IC hit rate was 83%, which is also statistically significant at the 1% level.

**Exhibit 11: Summary Performance Statistics for Asia Ex JP Model**

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013

| Return Summary | | | | | | |
|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q5 | Long-Short Spread |
| Average Monthly Exc. Return | 0.99% | 0.44% | 0.24% | -0.21% | -1.01% | 2.01%*** |
| Annualized Exc. Return | 11.90% | 5.31% | 2.88% | -2.51% | -12.11% | 24.01%*** |
| Annualized Info. Ratio | 2.15 | 1.12 | 0.73 | -0.61 | -1.65 | 2.01*** |

| Information Coefficient Summary | |
|---|---|
| Avg 1-Month IC | 0.089*** |
| 1-month IC Info Ratio | 0.98*** |
| 1-month IC Hit Rate | 83%*** |

*** Significant at 1% level

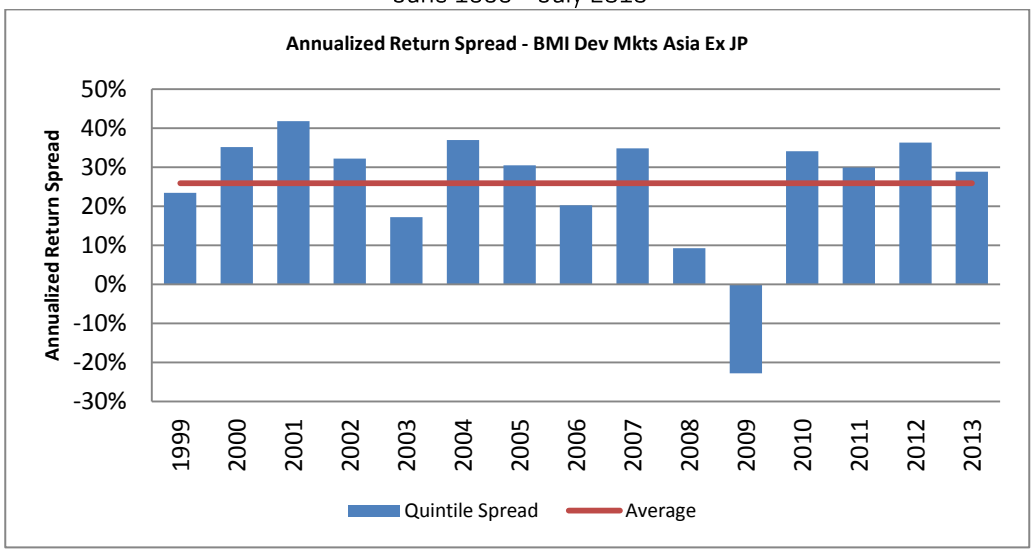
Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

#### 2.2.2.1 Model Performance

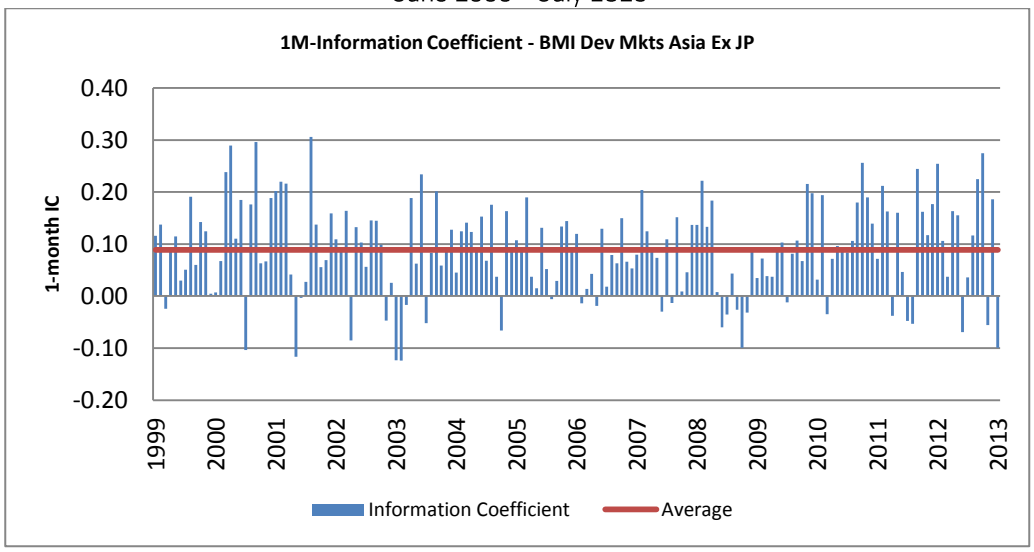
The time series of the calendar year quintile return spread and 1-month IC are shown in Exhibit 12 and Exhibit 13. The annualized (average 1-month) return spread and monthly IC were 25.86% (2.00%) and 0.089, respectively. Similar to the Canadian model, the Asia Pacific Ex JP model delivered its worst performance in 2009 at -22.8%. The model's best performance when measured by annualized spread was in 2001 (41.83%). Value and Quality sub-components were the primary drivers of performance in 2001 with the annualized long-short return spread of 48.8% and 40% respectively.

Exhibit 12: Calendar Year Return Spread
S&P BMI Dev Mkts – Asia Ex JP
June 1999 – July 2013




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

Exhibit 13: 1M-Average Information Coefficient
S&P BMI Dev Mkts – Asia Ex JP
June 1999 – July 2013



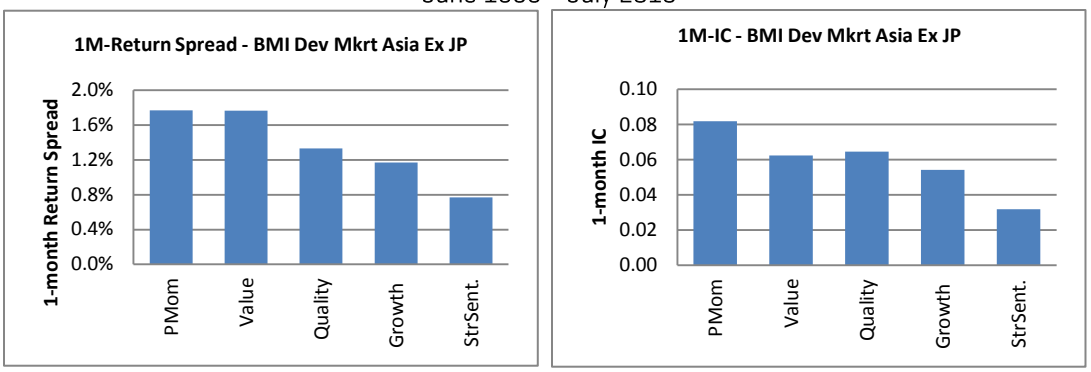

Source S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

Exhibit 14 details the average 1-month spread and average IC for each model component in S&P BMI Dev Mkts Asia Ex JP over the testing period (June 1999 – July 2013). Price Momentum, Value, and Quality were top three best performed components based upon both average 1-month return spread; while Street Sentiment showed the weakest average return spread and IC.

**Exhibit 14: Asia Ex JP Model Breakdown: 1M-EW Spread and Information Coefficient**

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

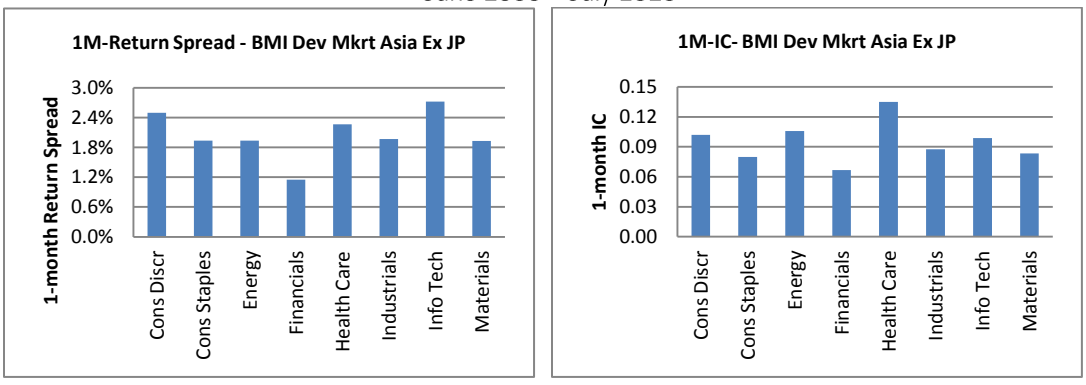
### 2.2.2.2 Sector Performance

The model had positive return spreads and ICs (Exhibit 15) in all eight sectors (Telecom and Utilities are excluded from the chart due to the limited coverage). The top three sectors in terms of return were Information Technology, Consumer Discretionary, and Health Care; while Health Care, Energy, and Consumer Discretionary were the best performing sectors measured in ICs.

**Exhibit 15: Asia Ex JP Model: Sector 1M-EW Spread and Information Coefficient**

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

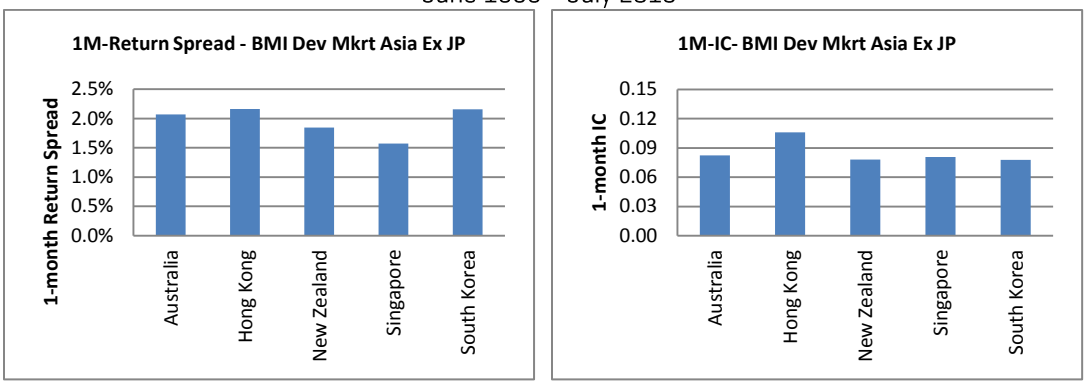
#### 2.2.2.3 Country Performance

The model performance breakdown by countries is charted in Exhibit 16. Hong Kong was the best performing country in terms of both return (2.16%) and IC (0.106).

**Exhibit 16: Asia Ex JP Model: Country 1M-EW Spread and Information Coefficient**

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

#### 2.2.2.4 Model Performance in Different Risk Regimes

In this section, we look at the model performance in different risk regimes defined by the Volatility Style Composite. From June 1999 to July 2013, 42 (127) out of 169 months were classified as Risk-Seeking (Risk-Averse) months. Exhibit 17 shows the model performance (based on 1-month average return spread and 1-month IC) in the two regimes. As expected, the model generated a stronger performance in the Risk-Averse environment (return spread of 2.34% and IC of 0.096, both statistically significant at the 1% level). The 1-month average long-short spread was 0.85% in the Risk-Seeking regime (statistically significant at the 10% level), while the IC (0.064) is significant at the 1% level.

**Exhibit 17: Regime Analysis – Asia Ex JP Model**

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013

| | 1-month Return Spread | 1-month IC | Number of Months |
|---|---|---|---|
| All Months | 2.0%*** | 0.089*** | 169 |
| Risk-Seeking | 0.85%* | 0.064*** | 42 |
| Risk-Averse | 2.34%*** | 0.096*** | 127 |

***Significant at the 1% level

*Significant at the 10% level

Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

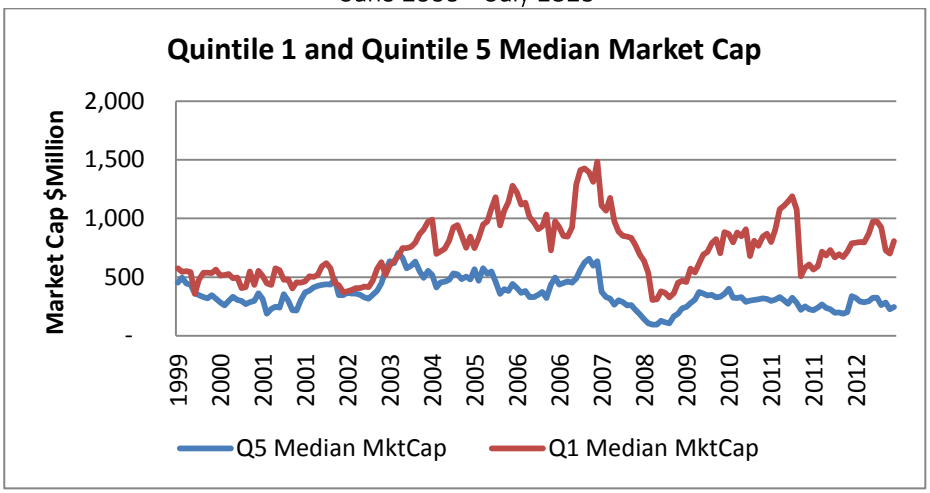
#### 2.2.2.5 Quintile Portfolio Characteristics and Tilt Neutralization

We look at two characteristics of Quintile 1 and Quintile 5 portfolios, market capitalization and beta. Exhibit 18 and Exhibit 19 show the time series of median market capitalization and 60-month CAPM beta for quintile 1 and quintile 5. Quintile 1 has a large Cap bias over the entire period compared to quintile 5, while quintile 5 displays a higher exposure to beta compared to quintile 1.

Exhibit 18: Asia Ex JP Model – Time Series of Median Market Cap for Quintile 1 and Quintile 5 Portfolios

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013

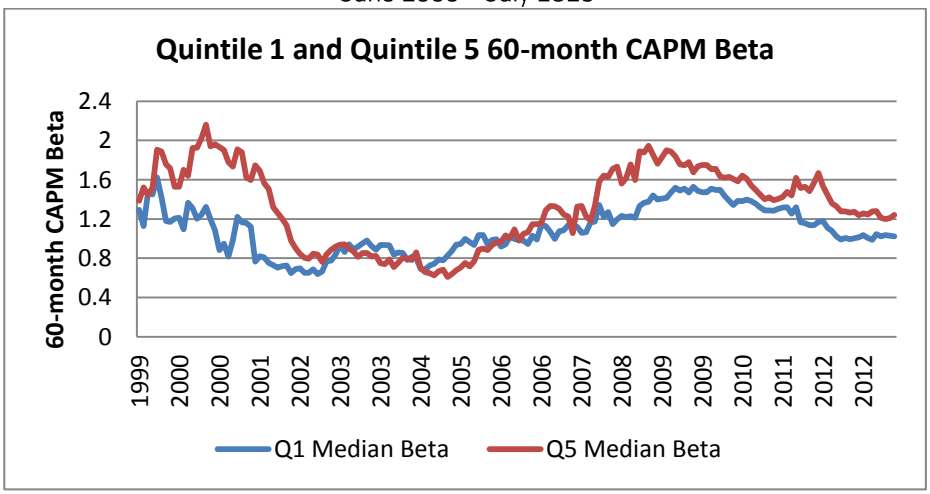



Source S&P Capital IQ Quantamental Research

Exhibit 19: Asia Ex JP Model – Time Series of Median 60-Month CAPM Beta for Quintile 1 and Quintile 5 Portfolios

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

The performance characteristics of the model neutralized for size and beta are shown in Exhibit 20. The model's average 1-month return spread is largely unchanged after the neutralization process, while we see about 15% drop in IC from 0.09 to 0.08, but still statistically significant at the 1% level.

**Exhibit 20: Asia Ex JP Model – Original and Size/Beta Neutralized Performance**

S&P BMI Dev Mkts – Asia Ex JP

June 1999 – July 2013

| Model | 1-month Return Spread | 1-month IC |
|---|---|---|
| Original Model | 2.01%*** | 0.089*** |
| Size/Beta Neutral Model | 1.98%*** | 0.076*** |

Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

### 2.2.3 Europe Model

The summary performance statistics for the European Model from June 1999 to July 2013 is presented in Exhibit 21. The model has been very successful over this time period, generating monthly return spread and IC of 1.96% and 0.085 respectively (both significant at the 1% level). The annualized return spread and IR were 23.5% and 2.64, with significance at the 1% level. The annualized excess returns for top and bottom quintiles were 9.6% and -13.93% respectively. The annualized information ratio of the top quintile was 1.64; the IC hit rate was 86%, which is also statistically significant at the 1% level.

**Exhibit 21: Summary Performance Statistics for Europe Model**

S&P BMI Dev Mkts – Europe

June 1999 – July 2013

| Return Summary | | | | | | |
|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q5 | Long-Short Spread |
| Average Monthly Exc.Return | 0.80% | 0.33% | -0.02% | -0.33% | -1.16% | 1.96%*** |
| Annualized Exc. Return | 9.60% | 3.90% | -0.27% | -3.95% | -13.93% | 23.50%*** |
| Annualized Info. Ratio | 1.64 | 0.91 | -0.07 | -1.42 | -3.36 | 2.64*** |

| Information Coefficient Summary | |
|---|---|
| Avg 1-Month IC | 0.085*** |
| 1-month IC Info Ratio | 0.95*** |
| 1-month IC Hit Rate | 86%*** |

*** Significant at the 1% level

Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

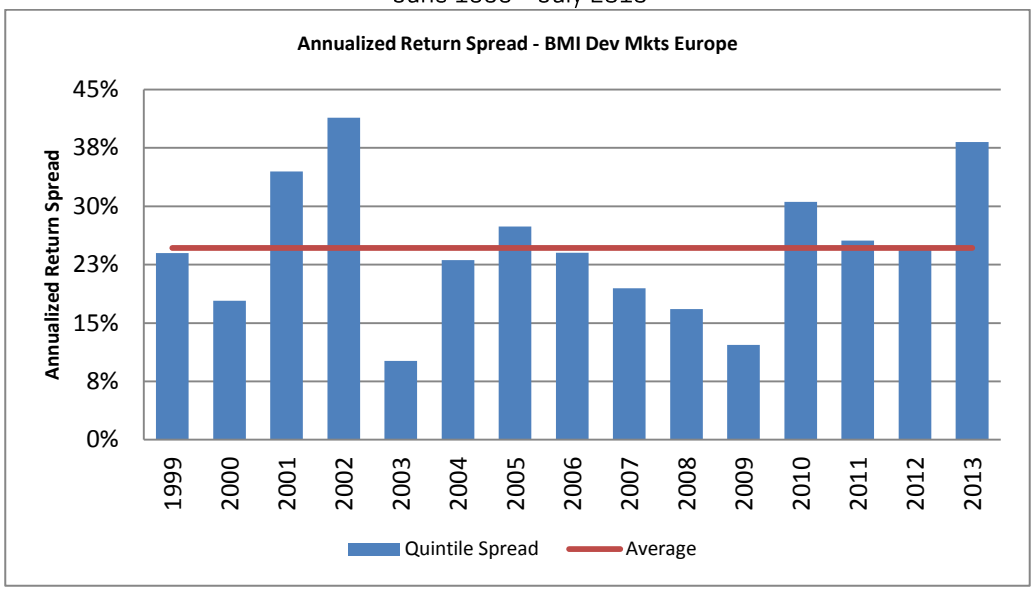
#### 2.2.3.1 Model Performance

We show the time series of calendar year quintile return spread in Exhibit 22 – the annualized return spreads were positive across all calendar years with average of 24.45% (see red line). The model had the best performance in 2002 in terms of return spread (41.37%), while it experienced the weakest performance in 2003 with an annualized return of 10.11%. The positive performance we see in 2009 compared to the Canadian and Asia Ex JP models was driven by the strong performance of the Value sub-component of the European Model, which was up by 40% on a long-short basis in 2009. This performance was large enough to diminish the impact of the loss posted by the Price Momentum sub-composite (-38.3%) on the overall model. Exhibit 23 charts the time series and 1-month average of information coefficient.

**Exhibit 22: Calendar Year Return Spread**

S&P BMI Dev Mkts – Europe

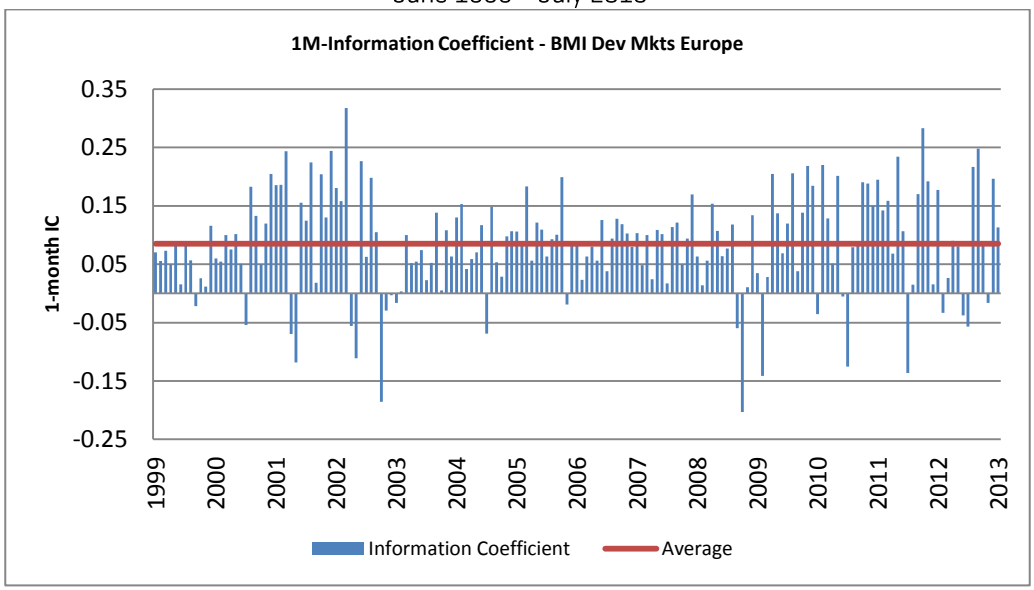
June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

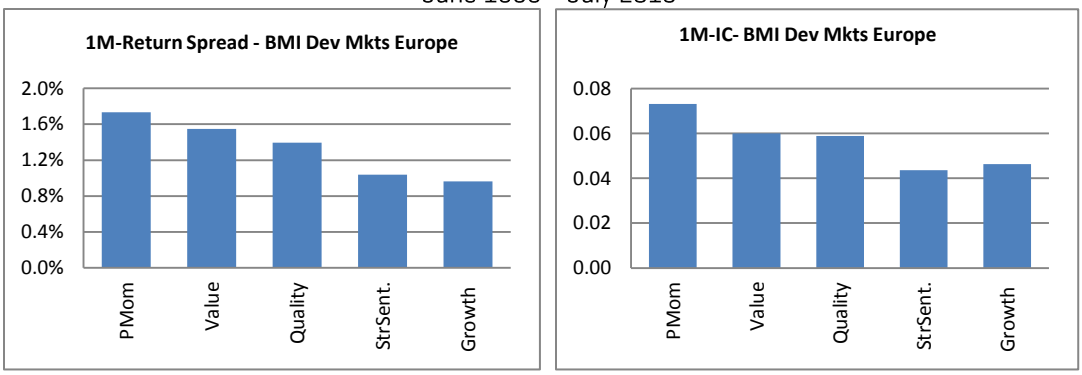
Exhibit 23: 1M-Aveage Information Coefficient
S&P BMI Dev Mkts – Europe
June 1999 – July 2013




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

We also look at the performance statistics for each sub-component over the testing period – the average 1-month return spread and IC are displayed in Exhibit 24. Price Momentum and Value were top two components based upon both average 1-month return spread and IC, while Growth [Street Sentiment] was the weakest based upon the measure of average return spread [IC].

Exhibit 24: Europe Model Breakdown: 1M-EW Spread and Information Coefficient
S&P BMI Dev Mkts – Europe
June 1999 – July 2013




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

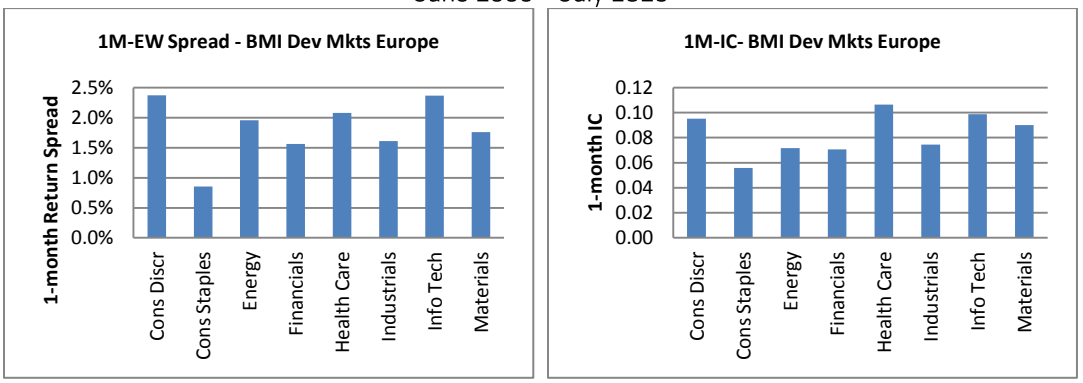
#### 2.2.3.2 Sector Performance

The model had positive return spreads and ICs (Exhibit 25) across all eight sectors (Telecommunication and Utilities are excluded due to limited coverage). Consumer Discretionary and Information Technology experienced the strongest performance in terms of 1-month return spread. Average 1-month return spread and IC were weakest in Consumer Staples.

**Exhibit 25: Europe Model: Sector 1M-EW Spread and Information Coefficient**

S&P BMI Dev Mkts – Europe

June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

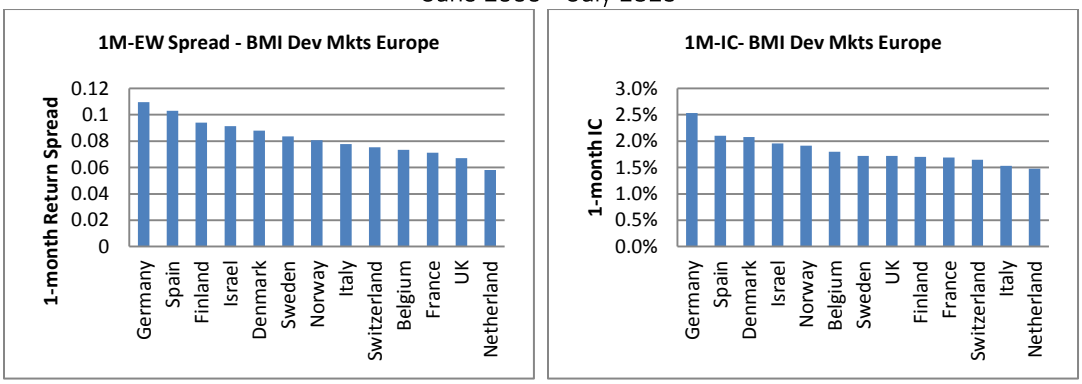
#### 2.2.3.3 Country Performance

The model performance breakdown by countries is shown in Exhibit 26 (only 10 countries are shown; the rest countries in Developed Europe are not shown due to limited coverage). The model's performance from both return spread and IC was strongest in Germany at 2.53% and 0.11 respectively.

**Exhibit 26: Europe Model: Country 1M-EW Spread and Information Coefficient**

S&P BMI Dev Mkts – Europe

June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

#### 2.2.3.4 Model Performance in Different Risk Regimes

We analyze the model's performance in Risk-Seeking and Risk-Averse regimes as defined by the Volatility Style Composite. From June 1999 to July 2013, 39 (130) out of 169 months were classified as Risk-Seeking (Risk-Averse) months. The model's performance statistics are presented in Exhibit 27. As expected, the model generated a stronger performance measure in the Risk-Averse period with a 1-month average return spread of 2.20% and 1-month IC of 0.093, both statistically significant at the 1% level. During the Risk-Seeking regime, the model's average 1-month average long-short spread and IC were 1.22% (significant at the 5% level) and 0.059 (significant at the 1%) respectively.

**Exhibit 27: Regime Analysis – Europe Model**

S&P BMI Dev Mkts – Europe
June 1999 – July 2013

| | 1-month Return Spread | 1-month IC | Number of Months |
|---|---|---|---|
| All Months | 1.96%*** | 0.085*** | 169 |
| Risk-Seeking | 1.22%** | 0.059*** | 39 |
| Risk-Averse | 2.20%*** | 0.093*** | 130 |

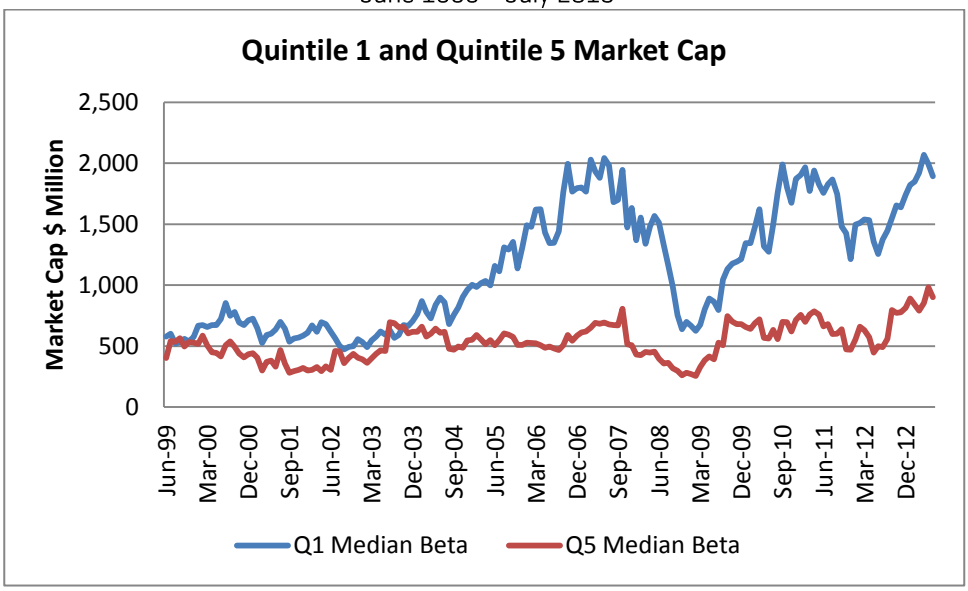
***Significant at the 1% level
**Significant at the 5% level

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

#### 2.2.3.5 Quintile Portfolio Characteristics and Tilt Neutralization

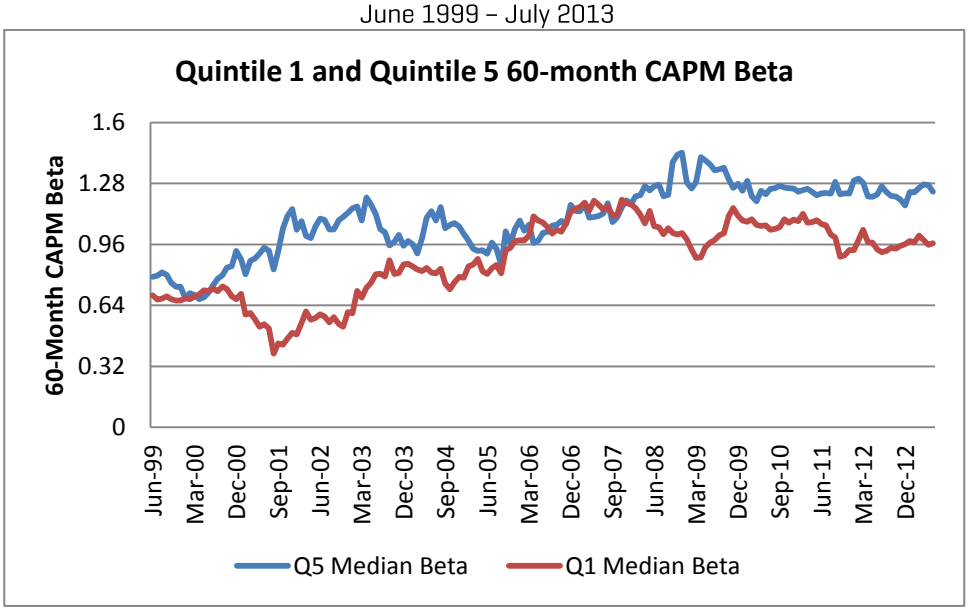
We also examine the size and beta characteristics of model's top (quintile 1) and bottom (quintile 5) portfolios. The results (time series of median market capitalization and 60-month CAPM beta) are charted in Exhibit 28 and Exhibit 29. Similar to what we observed from other models, the long portfolio has large Cap bias compared to the short portfolio, while the short portfolio has higher median beta exposure compared to the long portfolio in most periods.

Exhibit 28: Europe Model – Time Series of Median Market Cap
for Quintile 1 and Quintile 5 Portfolios
S&P BMI Dev Mkts – Europe
June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

Exhibit 29: Europe Model – Time Series of Median 60-Month CAPM Beta
for Quintile 1 and Quintile 5 Portfolios
S&P BMI Dev Mkts – Europe
June 1999 – July 2013




Source S&P Capital IQ Quantamental Research

The performance characteristics of the neutralized model are detailed in Exhibit 30. After we apply beta and size neutralizations, the model still generated a decent 1-month return spread, although the spread is about 26bps lower than that of the original model (1.96%). We also observe a slight deterioration in average 1-month IC from 0.085 to 0.074. Both 1-month spread and IC remain statistically significant at the 1% level.

**Exhibit 30: Europe Model – Original and Size/Beta Neutralized Performance**

S&P BMI Dev Mkts – Europe

June 1999 – July 2013

| Model | 1-month Return Spread | 1-month IC |
|---|---|---|
| Original Model | 1.96%*** | 0.085*** |
| Size/Beta Neutral Model | 1.70%*** | 0.074*** |

Source S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

## 3. Summary

In this report, we have outlined the methodology and process used to construct S&P Capital IQ global stock selection models for developed markets. We examined the performance characteristics of all three models based on a range of metrics – Investment Style, Sector, Country, and Risk-Seeking/Risk-Averse Regimes. Our results show that the models are robust and generate statistically significant excess returns across developed markets.

## 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

**July 2013:** Inspirational Papers on Innovative Topics: Asset Allocation, Insider Trading & Event Studies

Inspiration drives innovation. The writings of Plutarch inspired Shakespeare, Galapagos finches inspired Darwin, and the German Autobahn inspired Eisenhower, but what inspires investment researchers to develop the next innovations for investors? When we get a new investment idea, we seek out literature on that topic to inspire us to bring the idea to fruition. This literature can help to further develop our own thoughts, polish up and expand on our priors, and avoid the pitfalls experienced by earlier researchers. Inspiration from academia enhances our ability to provide innovative solutions for our clients.

**June 2013:** Supply Chain Interactions Part 2: Companies – Connected Company Returns Examined as Event Signals

Leveraging Compustat customer segment data, we investigate the impact of news for customers and subsequent stock returns for their suppliers, over the time period May 2000 through April 2011 and find that:

- Shares of suppliers with major customer relationships reacted to positive and negative earnings surprise of their customers with a statistically significant 0.93% to 1.97% abnormal spread in the 5 to 60 trading days following the surprise.
- A monthly rebalanced backtest of long-short supplier portfolios based on customer momentum would have resulted in a statistically significant 0.81% average monthly return, or 0.70% after controlling for common risk factor exposures.
- The customer momentum signal historically performs best in cyclical sectors such as Materials and Consumer Discretionary.

**June 2013:** Behind the Asset Growth Anomaly – Over-promising but Under-delivering

In this paper, we revisit the asset growth anomaly. Our results indicate:

- Asset growth demonstrates return predictive power globally with and without controlling for size, value, 12-month price momentum, and 1-month price reversal factors.
- Information coefficient correlation analyses indicate that there are potential diversification benefits from adding asset growth to other alpha factors.
- The companies that demonstrated the highest asset growth show subsequent deterioration in their top-line and bottom-line growth rates while companies that had the lowest asset growth experience subsequent improvement in their top-line and bottom-line growth rates.

**April 2013:** Complicated Firms Made Easy – Using Industry Pure-Plays to Forecast Conglomerate Returns

This month we build upon the work done by Cohen and Lou in their 2010 paper, "Complicated Firms", to determine if we can exploit industry level information from pure-play firms to predict the future performance of multi-industry, complicated firms. Leveraging Compustat segment data and Standard Industrial Classification (SIC) 2 digit codes, we exploit the lag in incorporating industry level information between simple and complicated firms to forecast the future performance of complicated firms. This is done by constructing pseudo-conglomerate returns,

revisions, and valuation signals that combine the relevant information of all the industries in which a complicated firm operates. These pseudo-conglomerate signals simply weight industry level information (ex: industry return) proportionately to the complicated firm's reported sales in each industry.

March 2013: Risk Models That Work When You Need Them – Short Term Risk Model Enhancements

Equity Risk models are subject to a common criticism. We examined three techniques to further enhance the S&P Capital IQ Fundamental Factor risk models: Utilized the cross sectional dispersion of stock and factor returns by adjusting model factors and stock specific volatilities, change the model production frequency from monthly to daily to capture recent data, and shorten data look back window (1 year as opposed to 2 years) resulting in a more reactive model. Dispersion based adjustments, and high frequency of model generation both improved model results, while a shortened calibration window showed no appreciable improvement.

March 2013: Follow the Smart Money – Riding the Coattails of Activist Investors

Can profits be made by following the actions of activists? One month after the commencement of activism, the strategy yielded a market-adjusted excess return of 3.4%. After controlling for market, size, value, and industry, the excess return was 2.7. Twelve months after the disclosure of activist involvement, the strategy produced an average excess return of 14.1% after controlling for market, size, value, and momentum. We did not find evidence of return reversal up to two years after activism or of diminished excess returns in 2008 -- 2012 vis-à-vis those in 2003 -- 2007.

February 2013: Stock Selection Model Performance Review: Assessing the Drivers of Performance in 2012

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.

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

May 2012: Case Study: S&P Capital IQ – The Platform for Investment Decisions

March 2012: Exploring Alpha from the Securities Lending Market – New Alpha Stemming from Improved Data

January 2012: S&P Capital IQ Stock Selection Model Review – Understanding the Drivers of Performance in 2011

January 2012: Intelligent Estimates – A Superior Model of Earnings Surprise

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 Brief - 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