

Introducing S&P Capital IQ Stock Selection Model for the Japanese Market

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, CFA
Quantamental Research
312-233-7124
lma@spcapitaliq.com

Richard Tortoriello
Quantamental Research
212-438-9506
richard.tortoriello@spcapitaliq.com

S&P Capital IQ[®] provides professional investors with high quality data, stock selection models [signals], and value-added research, helping its clients achieve superior results. Since the launch of S&P Capital IQ's four U.S. stock selection models [["US Stock Selection Models Introduction"](#)] in January 2011, we released a suite of global stock selection models targeting both developed [["Introducing S&P Capital IQ Global Stock Selection Models for Developed Markets"](#)] and emerging markets [["Obtaining an Edge in Emerging Markets"](#)]. In this report, we introduce a stock selection model for the Japanese equity market that completes our global model offering.

The S&P Capital IQ Japan model offers a systematic and robust approach to stock picking in Japan. The model was tested within the S&P Japan Broad Market Index (BMI) and we document the following:

- **The Japan model generated statistically significant excess returns in the S&P Japan BMI.** From January 1999 to May 2015, the model generated an average monthly equal-weighted long-short spread¹ of 1.41%, a 1-month top quintile (Q1) excess return² of 0.66%, and a 1-month information coefficient (IC)³ of 0.07. All performance metrics were statistically significant at the 1% level.
- **Institutional Ownership, or 'Smart money,' based signals are complementary to fundamental and technical signals:** The addition of the smart money component improved the annualized information ratio, long-only and long-short returns by at least 5%. Hit rates⁴ also improved across all performance metrics.
- **The model showed robust performance across 7 GICS sectors (Energy, Telecommunications, and Utilities are excluded due to limited coverage):** The model's 1-month top quintile excess return was positive across all 7 GICS sectors, with statistical significance at the 1% level (except Financials and Consumer Staples).
- **Consistent Performance in both Value and Growth regimes:** Average 1-month top quintile excess return was 0.67% and 0.66% in the Value and Growth regimes respectively.
- **Robust model performance after controlling for market capitalization and beta exposures:** The Japan model posted statistically significant top quintile excess return (0.64%), IC (0.064) and long/short spread (1.34%) after eliminating both market cap and beta tilts.

¹ 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.

² Average monthly Q1 excess return is equally weighted average 1-month excess return based on equally weighted universe return as benchmark.

³ Information Coefficient (IC) is the rank correlation of alpha forecasts to forward stock return.

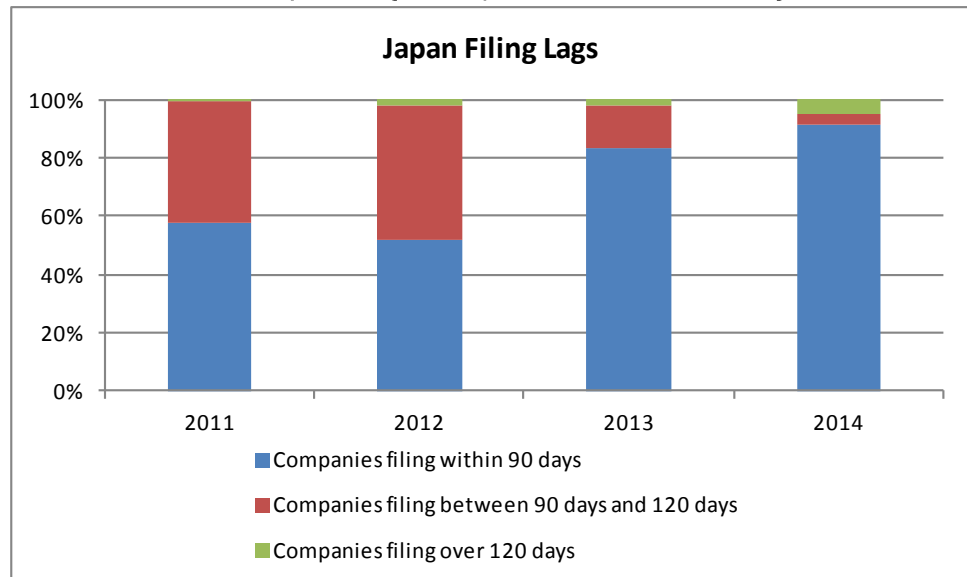
⁴ Hit rate is defined as the percentage of times long-only or long-short return is positive.

1. Key Model Differentiators

100% Point-in-Time

We constructed the Japan ["JP"] model using S&P Capital IQ's Point-In-Time [S&P Capital IQ PIT] data. This data allows us to eliminate any potential look-ahead bias, a problem inherent in back-tested strategies that do not employ PIT data. In addition, the use of PIT data allows the user to take advantage of data published before a company's filing deadline. Exhibit 1 shows the annual filing schedule for companies in the S&P Japan BMI for 2011–2014 fiscal years. The chart shows the breakdown and cumulative percentage of filers in three filing bins. By law, Japanese companies are required to file their annual reports within 90 days of their fiscal year end. Over the past four years, about 71% [on average] of companies filed their annual reports within the 90 day window, while 29% filed after the required 90 day period. A small proportion of companies [2.3%] filed at least 30 days after due dates [120 days after fiscal year end].

Exhibit 1: Company Filing Schedule
S&P Japan BMI (January 2011 – December 2014)



Source S&P Capital IQ Quantamental Research⁵

Institutional Ownership

The Japan model includes several signals constructed from S&P Capital IQ's institutional ownership ["IO"] data set. The value of institutional ownership has been widely studied by academia, especially as it relates to the U.S equity markets. Our back-tests suggest that signals constructed from Institutional ownership data complement traditional equity strategies in the Japan market, as IO signals have low to moderate correlation with signals constructed from fundamental data sets.

⁵ The date for all exhibits in this report is as of 05/31/2015, unless otherwise indicated.

Explicit Control for Sector and Market Cap Tilts

To control for sector tilts, factors were ranked using a sector neutral approach [except for the sentiment based signals]. Securities were also ranked separately using a market cap bifurcation [large and small cap] to make sure the model is robust across the market cap spectrum.

2. Model Construction Methodology

The building blocks for the JP model are the 275+ global factors available in the Alpha Factor Library [AFL], S&P Capital IQ's web-based tool for factor analysis. The model itself is comprised of six different themes – Valuation, Quality, Growth Stability, Street Sentiment, Market Sentiment and Smart Money [Institutional Ownership] – all rolled up into a final composite score. We used a sector neutral ranking methodology [except for the two sentiment based themes] and separate ranking within two market cap buckets to minimize unintended sector bets and reduce market cap tilt.

Factor selection was based on each factor's in-sample performance, its correlation with other factor candidates, and turnover. Factors within each theme were equal-weighted, while a distinct weight [based on the performance, turnover, and correlation among the sub-components] was applied to each theme to arrive at a final composite score. We required that the sum of factor weightings for each stock be at least 80% before we assigned a composite score. This ensures that a security's final ranking is reflective of a broad range of information and is not being driven by a few factors. For our in-sample period, we randomly selected half of our data points in the S&P Japan BMI between January 1999 and December 2014; the other half was used for out-of-sample model validation.

All returns presented in this paper are equal-weighted, winsorized to 3 standard deviations and denominated in USD, except otherwise stated.

3. Model Performance

Exhibit 2 shows the model's summary returns and information coefficient [IC] statistics for the entire sample period [the in sample and out sample breakdown is provided in Appendix B]. Over the 15 year test-period, the model generated a monthly average equal-weighted return spread and top quintile [Q1] excess return of 1.41% and 0.66%, respectively, both statistically significant at the 1% level. The annualized information ratio of the top quintile was 2.47 with a 1-month hit rate of 78% [statistically significant at the 1% level].

When we measured the model's performance by IC, we also observed impressive summary statistics: average 1-month IC and 1-month IC hit rate were 0.07 and 80%, both significant at the 1% level.

Exhibit 2: Summary Performance Statistics for Japan Model
S&P Japan BMI (January 1999 – May 2015)

Return Summary						
	Q1	Q2	Q3	Q4	Q5	Long-Short Spread
Average Monthly Excess Return	0.66%***	0.22%**	0.08%	-0.20%***	-0.75%***	1.41%***
Annualized Excess Return	8.23%	2.69%	0.94%	-2.42%	-8.62%	16.03%
Annualized Info. Ratio	2.47	0.80	0.39	-0.88	-1.58	2.25
Hit Rate	78%***	64%***	56%	35%***	28%***	75%***

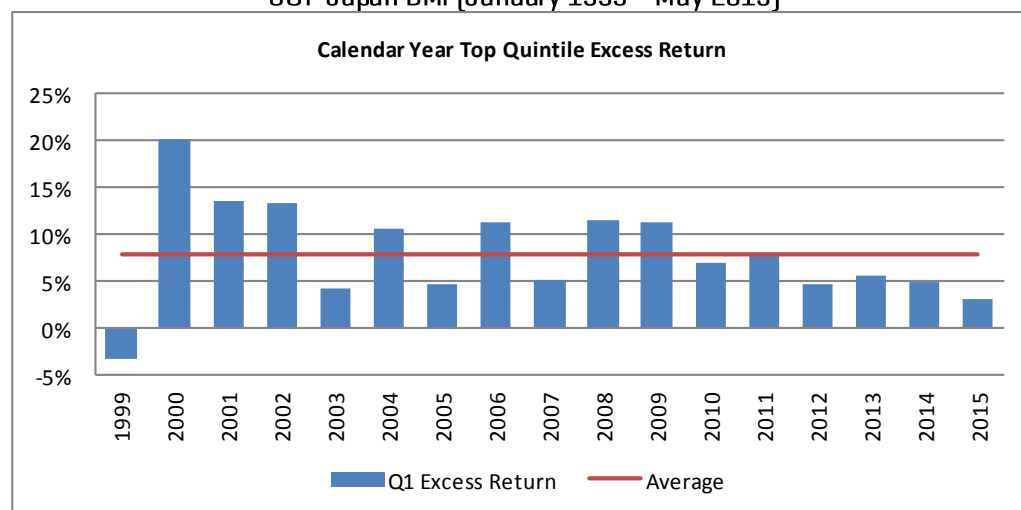
Information Coefficient Summary	
Average 1-Month IC	0.07***
1-month IC Info Ratio	0.84
1-month IC Hit Rate	80%***

*** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

We chart the calendar year time series of top quintile excess return in Exhibit 3. The model delivered a positive top quintile excess return and return spread in every calendar year from 2000, with the strongest excess return of 20.11% in 2000 (the calendar year return spread is provided in Appendix C). The model had its worst performance in 1999 - during the global technology bubble.

Exhibit 3: Calendar Year Top Quintile Excess Return
S&P Japan BMI (January 1999 – May 2015)



Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

3.1 Model Components

The model is comprised of six complementary themes; each seeks to exploit a documented market anomaly. The six themes are based on both fundamental [Value, Growth, and Quality] and sentiment [Street Sentiment, Market Sentiment, and Smart Money] factors. A detailed description of each sub-component is provided in Exhibit 4.

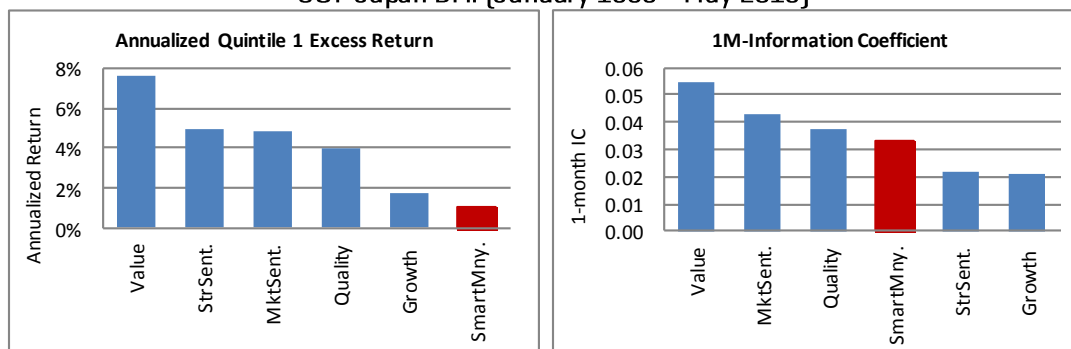
Exhibit 4: Japan Model Sub-Component Description		
Fundamental	Value	Identifies companies that are attractive based on traditional valuation metrics such as book value to price and cash flow to price ⁶ .
	Quality	In addition to the well documented accruals anomaly, this sub-component includes several measures of balance sheet efficiency and capital utilization such as return on asset and cash burn.
	Growth	This sub-component favors companies that have established a consistent track record of growing not only revenues and earnings, but also free cash flows. The representative factors include EPS and cash flow stability.
Sentiment	Street Sentiment	Our Street Sentiment theme rewards companies experiencing positive analyst upgrades. The representative factors include number of EPS FY1 revision and revision magnitude.
	Market Sentiment	The Market Sentiment theme is based on volatility and reversal based signals. The representative factors include 130 day minimum return and 24 month residual return variance.
	Smart Money	This theme includes signals that track the activities of institutional share holders such as hedge funds and mutual funds. The representative factors are institutional ownership concentration, turnover, and breadth stability.

Source S&P Capital IQ Quantamental Research

The performance of the sub-components is displayed in Exhibit 5. The Value sub-component is the best performing theme when measured by annualized quintile 1 excess return (7.56%) and average 1-month IC (0.055), both significant at the 1% level. The Smart Money sub-component (red bar) is the weakest by annualized top quintile excess return (1.09%).

⁶ Please see Appendix D for all underlying factors in each sub-component.

Exhibit 5: Japan Model Breakdown: 1M-EW Spread and Information Coefficient
S&P Japan BMI (January 1999 – May 2015)



Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

3.1.1 Market Sentiment

The weak performance of long-term price momentum strategies in Japan is well documented in academic literature⁷ and we reached the same conclusion based on our back test results. However, several academic studies have found reversal signals and factors that capture the low volatility premium to be effective in Japan⁸. The Japan model includes a Market Sentiment ('MktSent') sub-component that captures both effects – short term reversal and low volatility premium. The Market Sentiment sub-component generated a 1-month average top quintile excess return and hit rate of 0.40% and 66% respectively, both statistically significant at the 1% level [Exhibit 6]. This sub-component also has a low correlation with the five other sub-components [see Exhibit 8 on page 8].

Exhibit 6: Market Sentiment –Beta Neutralized Performance
S&P Japan BMI (January 1999 – May 2015)

	Beta Neutral 'MS'
Average 1-month Quintile 1 Excess Return	0.40%***
1-month Quintile 1 Excess Return Hit Rate	66%***
Average 1-month IC	0.043***
1-month IC Hit Rate	67%***

*** Significant at the 1% level

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

⁷ See Asness and Moskowitz [2013].

⁸ Liu and Lee [2001]; Yamada and Nagawatari [2011].

3.1.2 Smart Money [Institutional Ownership] Sub-Component

Institutional investors are generally referred to as ‘smart money’. They tend to be experienced, well informed, and have the ability to expend considerable resources to evaluate and identify investment opportunities. While the relationship between Institutional Ownership (“IO”) and future stock return is well documented in the U.S.⁹, there is little research on this relationship for the Japanese market. One reason for this lack of research is the poor coverage of ownership data for the Japanese market, which is not typically reported in the financial statements filed by Japanese companies. We extend the work done on the U.S market to the Japanese market, using the S&P Capital IQ Global IO dataset that collects the ownership information filed by institutional investment firms, mutual funds and insiders/individual owners¹⁰. The complete list of factors in the IO sub-component is detailed in Exhibit 7.

Exhibit 7: Definition of Institutional Ownership¹¹ based Factors

Level	Percentage of company shares owned by institutional shareholders.
Concentration	Ratio of shares held by top 5% of institutional investors to shares held by all institutional investors.
Turnover	Change in shares held by institutional investors to total shares held by all investors.
Breadth Stability	Standardized measure of the average number of institutional investors holding a firm’s shares.
Foreign Ownership	Percentage of shares held by foreign institutional investors.

Source S&P Capital IQ Quantamental Research

3.1.3 Smart Money vs. Traditional Signals

How different are smart-money factors from fundamental/technical signals? Exhibit 8 shows the 1-month IC correlation matrix between SM and other sub-components in the JP model. As indicated, the smart money sub-component has a low correlation [highlighted in green] with all the other five sub-components. Given this low correlation, we expect there will be an incremental benefit to blending SM factors with fundamental/technical signals.

⁹ See Lichtenberg and Pushner [1994]; Sasaki and Yonezawa [2000]; Miyajima, et al., [2002]; Sakai and Asaoka [2003]; Gompers and Metrick [2001]; Ovtcharova [2003]; Jiambalvo [2002]; Cai and Fang [2003]; Chen, Hong, and Stein [2002]; Dimitrov and Gatchev [2010]; Dimitrov and Gatchev [2010].

¹⁰ See Appendix E and F for the information and coverage on S&P Capital IQ’s Institutional ownership data; characteristics of IO for the Japanese market is detailed in Appendix G.

¹¹ For the rest of report, we refer to institutional ownership [IO] and smart money [SM] interchangeably.

Exhibit 8: IC Correlation Matrix
S&P Japan BMI [January 2005 – May 2015]

	Smart Money	Market Sentiment	Growth	Quality	Street Sentiment	Value
Smart Money	1.00					
Market Sentiment	0.29	1.00				
Growth	-0.09	0.15	1.00			
Quality	0.19	0.45	0.47	1.00		
Street Sentiment	-0.10	-0.02	0.52	0.27	1.00	
Value	0.04	0.28	0.09	0.31	-0.19	1.00

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

3.1.4 Contribution of 'Smart Money' Signals to the Model

Given the positive relationship between institutional ownership and company size, we broke the S&P Japan BMI into two subsets – the largest 50% and smallest 50% of securities ranked by dollar market cap. We then evaluated model performance within each bucket to isolate the size effect. The performance of the model and its sub-components [fundamental and smart money] based on market capitalization is displayed in Exhibit 9.

Although the smart money based signal is not as effective as the fundamental sub-components, the model's overall performance improved when the two signals were blended. We saw the largest benefit from a long/short return perspective [model performance improved by 10bps monthly, compared to just 2bps for the long only], suggesting that the smart money sub-component may be a useful indicator in avoiding potential underperforming stocks. The improvement in model performance after the addition of the smart money sub-component is visible in the two market capitalization segments. The hit rate across all performance metrics also improved [Appendix H].

Exhibit 9: Model Performance breakdown by Smart Money and Traditional Signals
S&P Japan BMI [January 2005 – May 2015]

	All Stocks	Largest 50%	Smallest 50%
Average Monthly Q1 Excess Return - Fund ¹²	0.58%***	0.46%***	0.67%***
Average Monthly Q1 Excess Return - SmtMny ¹³	0.15%	0.14%	0.22%***
Average Monthly Q1 Excess Return - Fund + SmtMny ¹⁴	0.60%***	0.48%***	0.72%***
Average 1-month Long/Short Spread - Fund	1.23%***	0.88%***	1.55%***
Average 1-month Long/Short Spread - SmtMny	0.57%***	0.42%***	0.64%***
Average 1-month Long/Short Spread - Fund + SmtMny	1.33%***	1.02%***	1.64%***
Q1 Annualized Information Ratio - Fund	2.49	1.62	2.22
Q1 Annualized Information Ratio - SmtMny	0.35	0.49	0.79
Q1 Annualized Information Ratio - Fund + SmtMny	2.61	1.83	2.44
Average 1-month IC - Fund	0.065***	0.050***	0.081***
Average 1-month IC - SmtMny	0.033***	0.023***	0.036***
Average 1-month IC - Fund + SmtMny	0.070***	0.054***	0.084***

*** Significant at the 1% level

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

3.2 Sector Performance

We exclude Energy, Telecommunications, and Utilities from the sector analysis because of limited coverage. The average 1-month IC and annualized top quintile excess return for the seven remaining sectors are displayed in Exhibit 10. All seven sectors delivered positive annualized top quintile excess return and average 1-month IC, statistically significant at the 1% level [except for Financials and Consumer Staples¹⁵]. Healthcare was the best performing sector in terms of both top quintile excess return and 1-month IC. The model performance was also strong in the top two largest sectors by membership (Industrials and Consumer Discretionary) with an annualized top quintile excess return of 8.4% and 10.9% respectively.

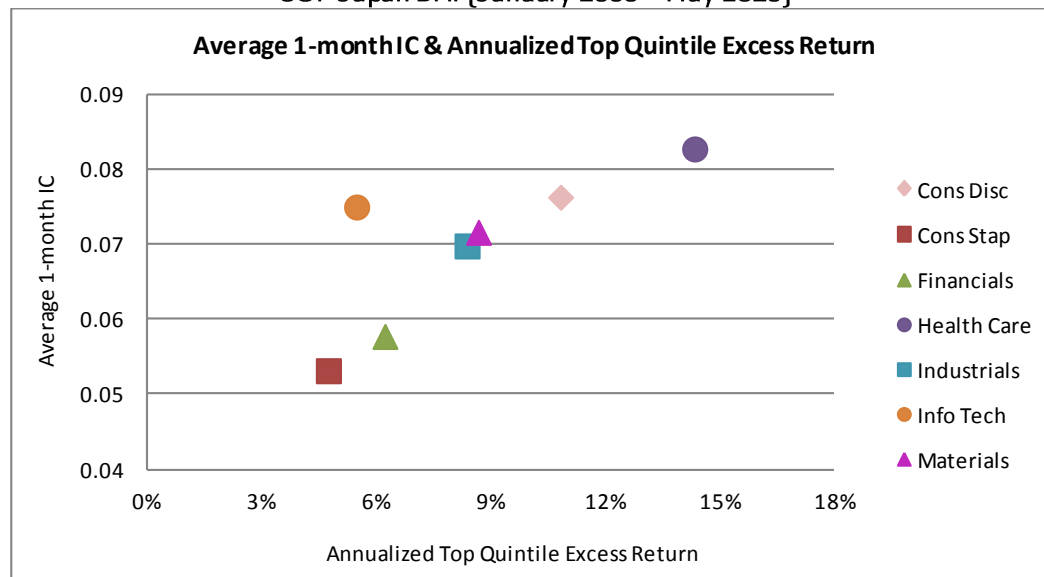
¹² Fund – fundamental based

¹³ SmtMny – smart money based

¹⁴ Fund + SmtMny – both fundamental and smart money based

¹⁵ For Financials, the top quintile excess return is statistically significant at the 10% level. Q1 excess return for Consumer Staples is not significant

Exhibit 10: Sector Performance: Average 1-month IC and Annualized Top Quintile Excess Return
S&P Japan BMI (January 1999 – May 2015)



Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

4. Regime Analysis

We assess the performance of the model in two style environments by comparing the performance of the model in growth and value regimes. We used the S&P Japan BMI Growth and Value Index to classify value/growth market regimes and classified all months where the returns of the S&P Japan Growth Index were higher than those of the S&P Japan Value Index as 'Growth Regime'. All other months were classified as 'Value Regime'. The performance of the JP model based on this classification is detailed in Exhibit 11. Although the model performed slightly better in the Value environment, it delivered positive Q1 excess returns in both regimes [all performance metrics are statistically significant at the 1% level].

Exhibit 11: Model Performance in Growth and Value Regime
S&P Japan BMI (January 1999 – May 2015)

	All Months	Growth	Value
Average 1-month Q1 Excess Return	0.66%***	0.66%***	0.67%***
1-month Q1 Excess Return Hit Rate	78%***	77%***	79%***
Average 1-month IC	0.069***	0.065***	0.074***
1-month IC Hit Rate	80%***	75%***	85%***
Average 1-month Long/Short Spread	1.41%***	1.31%***	1.53%***
1-month Long/Short Spread Hit Rate	75%***	73%***	78%***
Number of Months	194	94	100

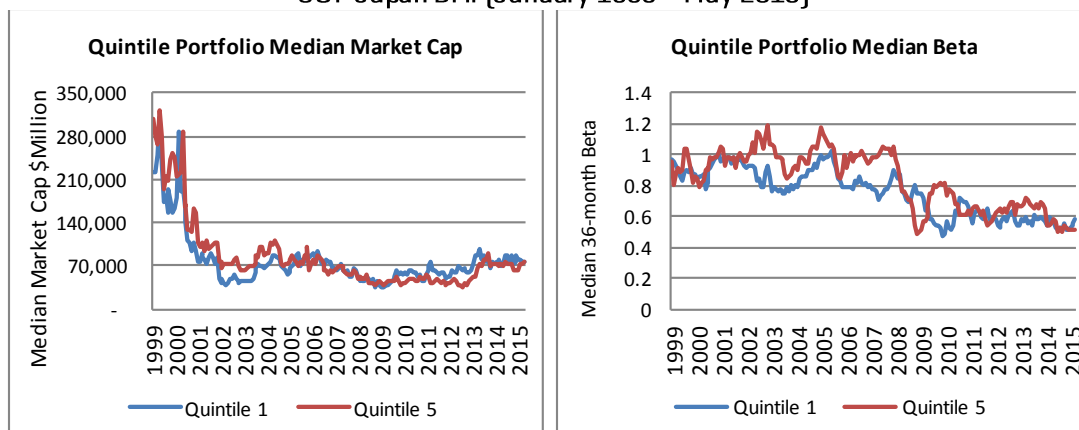
***Significant at the 1% level

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

5. Portfolio Characteristics and Tilt Neutralization

We examine size and beta characteristics of quintile 1 (long) and 5 (short) portfolios. The time series of median market capitalization and 36-month beta of quintile 1 and quintile 5 are displayed in Exhibit 12. The chart indicates that the median market cap of quintile 1 and quintile 5 portfolios are comparable for most of the time, with a few instances of divergence. However, quintile 1 is tilted towards lower beta stock compared to quintile 5 portfolio (evidenced by a lower median 36-month beta).

Exhibit 12: Japan Model – Time Series of Median Market Cap and Median 36-month Beta for Quintile 1 and Quintile 5 Portfolios
S&P Japan BMI (January 1999 – May 2015)



Source S&P Capital IQ Quantamental Research

We show the performance of the JP model after we eliminate both beta and size bias (by taking the residuals from a monthly regression of standardized ranks based on beta and market cap) together with the initial model in Exhibit 13. The performance for the neutralized model is similar to those of our original model. We see a slight drop in quintile 1 excess return (from 0.66% to 0.64%) and IC (from 0.069 to 0.064), with all metrics still statistically significant at the 1% level.

Exhibit 13: Japan Model – Original and Size/Beta Neutralized Performance

S&P Japan BMI [January 1999 – May 2015]

	Original Model	Size/Beta Neutral Model
Average 1-month Quintile 1 Excess Return	0.66%***	0.64%***
1-month Return Hit Rate	78%***	81%***
Average 1-month IC	0.069***	0.064***
1-month IC Hit Rate	80%***	84%***
Average 1-month Spread Return	1.42%***	1.34%***
1-month Spread Return Hit Rate	75%***	76%***

*** Significant at the 1% level

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

We understand that large institutional investors may not be able to invest in some of the securities in the S&P Japan BMI index due to market cap and/or liquidity constraints. To address this concern, we tested the model performance in a series of market cap based buckets – from the largest 50% to 90% of securities ranked by market cap.

Our results are displayed in Exhibit 14. The first column ‘All Stocks’ restates the model performance based on all securities in the universe. The next five columns show the performance of the model when we include only a subset of the universe based on market capitalization – for instance, the column ‘Top 90%’ shows performance based on the largest 90% of securities ranked by dollar market cap. The model’s 1-month average top quintile excess return is similar across the entire market cap spectrum, suggesting that the performance on the long-only portfolio is not driven by the smallest cap names. Long-short returns are higher for the “All Stocks” bucket (compared to the “Top 50%” bucket), an indication that some of the short portfolio performance (“All Stocks”) is driven by small cap and potentially hard to short names.

**Exhibit 14: Model Performance – based on Market-Cap Subsets:
S&P Japan BMI (January 1999 – May 2015)**

	All Stocks	Top 90%	Top 80%	Top 70%	Top 60%	Top 50%
Average Monthly Q1 Active Return	0.66%***	0.65%***	0.63%***	0.63%***	0.63%***	0.62%***
Average Monthly Q1 Active Return Hit Rate	78%***	78%***	77%***	75%***	74%***	69%***
Average 1-month L/S Spread	1.41%***	1.37%***	1.35%***	1.33%***	1.35%***	1.25%***
Average 1-month L/S Spread Hit Rate	75%***	75%***	74%***	73%***	72%***	72%***
Average 1-month IC	0.069***	0.067***	0.063***	0.062***	0.061***	0.057***
Average 1-month IC Hit Rate	80%***	80%***	78%***	77%***	76%***	74%***
Median \$Market Cap ('Million)	670	779	938	1,140	1,416	1,836
Median \$ADTV ('Thousand)	2,038	2,522	3,244	4,268	5,776	8,013

*** Significant at the 1% level

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

6. Summary

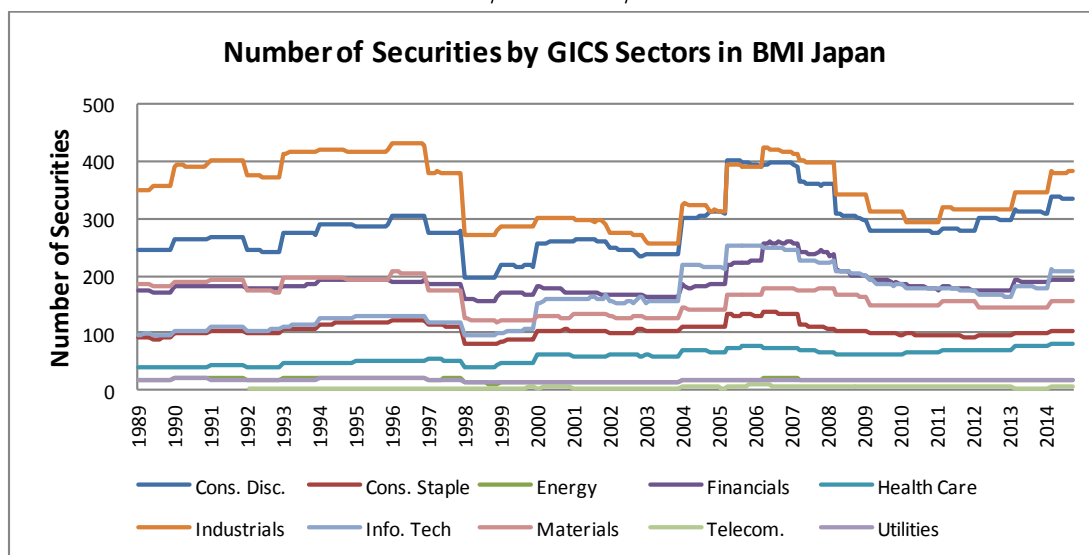
In this report, we outlined the methodology and process we used to construct S&P Capital IQ's stock selection model for the Japanese market. Built using S&P Capital IQ's Point in Time data, the model incorporates unique insights from institutional ownership data and was formulated to mitigate both sector and size effects.

We documented statistically significant performance metrics for the model between 1999 and 2015. The model delivered annualized top quintile excess return of 0.66% over our test period, with a hit rate of 78%. Model performance was also robust across sectors and was consistent in both value and growth regimes. Analysis of model performance across different market cap buckets suggests that performance is not driven by small cap stocks or illiquid securities.

APPENDIX A

Coverage in S&P Japan BMI – by GICS Sectors

January 1989 – May 2015



Source S&P Capital IQ Quantamental Research

APPENDIX B

Summary Performance Statistics for Japan Model All-Sample [All], In-Sample [IS], and Out-of-Sample [OS] S&P Japan BMI [January 1999 – May 2015]

Return Summary						
	Q1	Q2	Q3	Q4	Q5	Long-Short Spread
Average Monthly Excess Return - All	0.66%***	0.22%***	0.08%	-0.20%***	-0.75%***	1.41%***
Average Monthly Excess Return - IS	0.62%***	0.20%**	0.18%	-0.24%***	-0.74%***	1.36%***
Average Monthly Excess Return - OS	0.71%***	0.25%**	-0.02%	-0.15%***	-0.79%***	1.50%***
Annualized Excess Return - All	8.23%	2.69%	0.94%	-2.42%	-8.62%	16.03%
Annualized Excess Return - IS	7.69%	2.44%	2.13%	-2.83%	-8.53%	16.22%
Annualized Excess Return - OS	8.90%	3.06%	-0.28%	-1.77%	-9.08%	17.98%
Annualized Info. Ratio - All	2.47	0.80	0.39	-0.88	-1.58	2.25
Annualized Info. Ratio - IS	1.82	0.71	0.58	-0.72	-1.38	1.93
Annualized Info. Ratio - OS	2.09	0.43	-0.30	-0.73	-1.76	2.23
Hit Rate - All	78%***	64%***	56%	35%***	28%***	75%***
Hit Rate - IS	75%***	55%	55%	38%***	32%***	73%***
Hit Rate - OS	78%***	62%***	49%	41%***	28%***	75%***

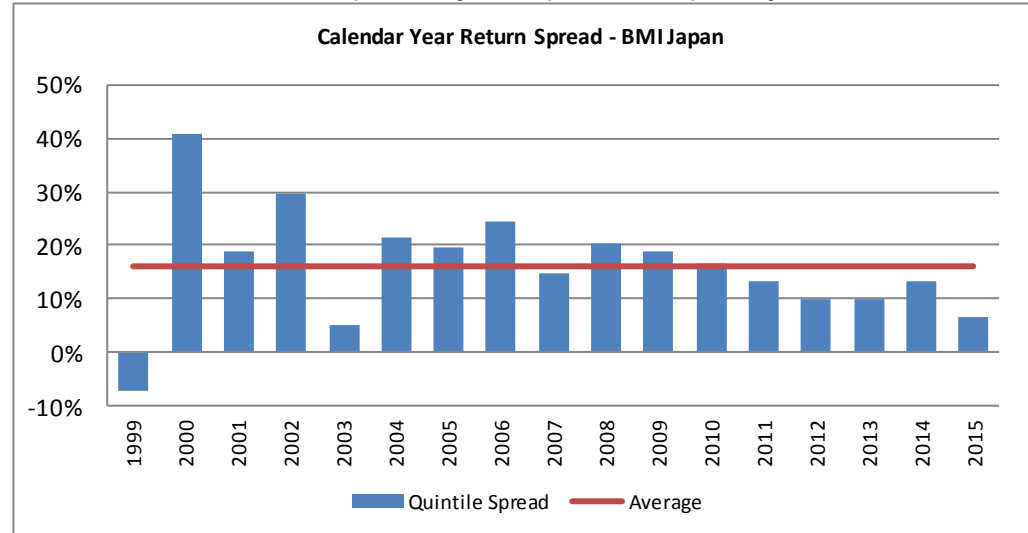
Information Coefficient Summary	
Avg 1-Month IC - All	0.07***
Avg 1-Month IC - IS	0.07***
Avg 1-Month IC - OS	0.07***
1-month IC Info Ratio - All	0.84
1-month IC Info Ratio - IS	0.78
1-month IC Info Ratio - OS	0.78
1-month IC Hit Rate - All	80%***
1-month IC Hit Rate - IS	76%***
1-month IC Hit Rate - OS	78%***

*** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level

Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

APPENDIX C

Calendar Year Return Spread
S&P Japan BMI (January 1999 – May 2015)



Source: S&P Capital IQ Quantamental Research. For the above exhibits, backtested returns do not represent actual trading results and were constructed with the benefit of hindsight. Returns do not include payments of any sales charges or fees. Such costs would lower performance. Indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results.

APPENDIX D

Factors in JPM Model

Signal Source	Theme	Factors
Fundamental	Valuation	Book to Price Cash Flow to Price Earnings to Price EBITDA to Enterprise Value Operating Cash Flow to Price
	Quality	Accruals Cash Burn Stability of Return on Assets Cash Flow Return on Invested Capital Tobin's Q Retained Earnings to Total Assets
	Growth	EPS Stability 3Y Change in Sales to Price 1Y Change in Free Cash Flow per Share 3Y Change in Operating Cash Flow to Price
Sentimental	Street Sentiment	Number of EPS FY1 Revisions 3M Revision in FY1 EPS Estimates Revision Magnitude
	Market Sentiment	60M CAPM Alpha 130 Day Minimum Return 24M Residual Return Variance
	Smart Money	Ownership Level Ownership Turnover Ownership Concentration Ownership Breadth Stability Foreign Ownership

APPENDIX E

Ownership Data

S&P Capital IQ provides detailed equity ownership data on public and private companies worldwide, comprising institutional investment firms, mutual funds, and insiders/individual owners. We have a dedicated global research team reviewing over 1,500 documents daily to ensure fast and accurate processing. Our data is sourced from a variety of filings, forms, websites and direct relationships to ensure thorough and comprehensive information. For greater flexibility to our clients, our data is available via the S&P Capital IQ platform, Excel PlugIn, Xpressfeed, and in our Real time product. With our historical data views, security and company-level ownership, peer/comparison

breakdowns, screening data points and other essential reports, S&P Capital IQ enables our clients to perform quick and in-depth analysis. Equity ownership for over 55,000 public and private companies comprised of more than 25,000 institutional investment firms, 44,000 mutual funds, and 290,000 insiders/individual owners. History is available back to 2004 for Institutional Ownership and 2008 for Insider Trading Data.

About the S&P Capital IQ Ownership Data Packages

S&P Capital IQ delivers ownership data through the following S&P Capital IQ Ownership data packages:

Ownership Summary This package provides aggregate ownership information at both the company and issue level during specified time periods, including shares traded within a period, as well as counts of the counterparties involved. History is available back to 2004.

Ownership Detail This package provides detailed institutional ownership holding information at both the company and issue level, including shares held, transaction sizes, and ranking. History is available back to 2004.

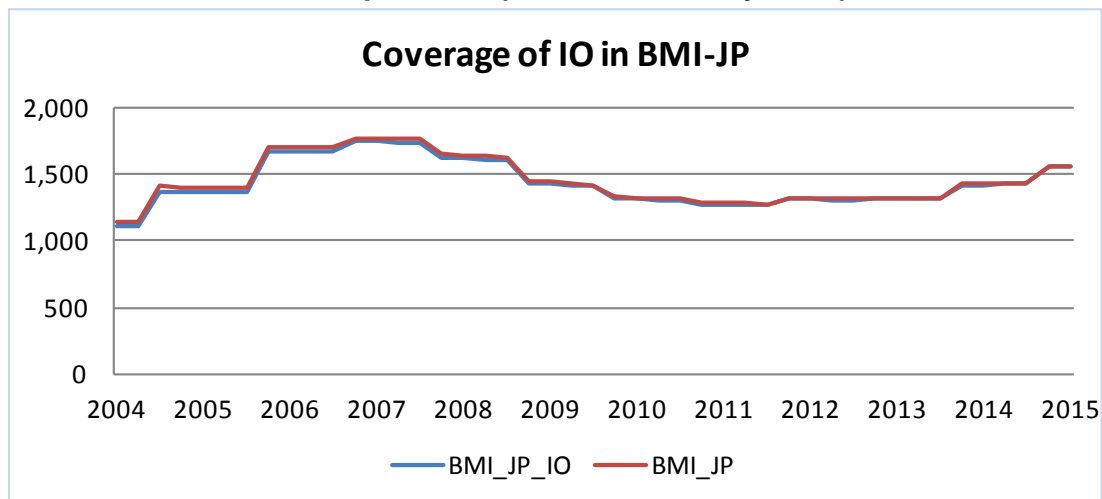
Ownership Portfolio Holdings This package provides detailed ownership holding information at the issue level, including shares held and transaction sizes.

Items covered by Ownership Data

Shares Held	The number of shares of the company held by investors at the end of the period.
Shares Bought	The number of shares of the company purchased by investors during the period.
Shares Sold	The number of shares of the company sold by investors during the period.
Number of New Buyers	The number of investors who opened a new position in the company by purchasing shares during the period.
Number of Buyers	The number of investors who purchased shares of the company during the period.
Number of Sellers	The number of investors who sold shares of the company during the period.
Number of Closed Positions	The number of investors who sold all shares and closed their holding position in the company during the period.
Number of Holders	The total number of investors who own shares of the company.
Percent of Institutional Ownership	The percentage of shares outstanding of the company owned by institutional shareholders.
Change in Percent of Institutional Ownership	The net shares changed as a percent of shares outstanding.

APPENDIX F

Coverage of Institutional Ownership (IO) S&P Japan BMI (June 2004 – May 2015)



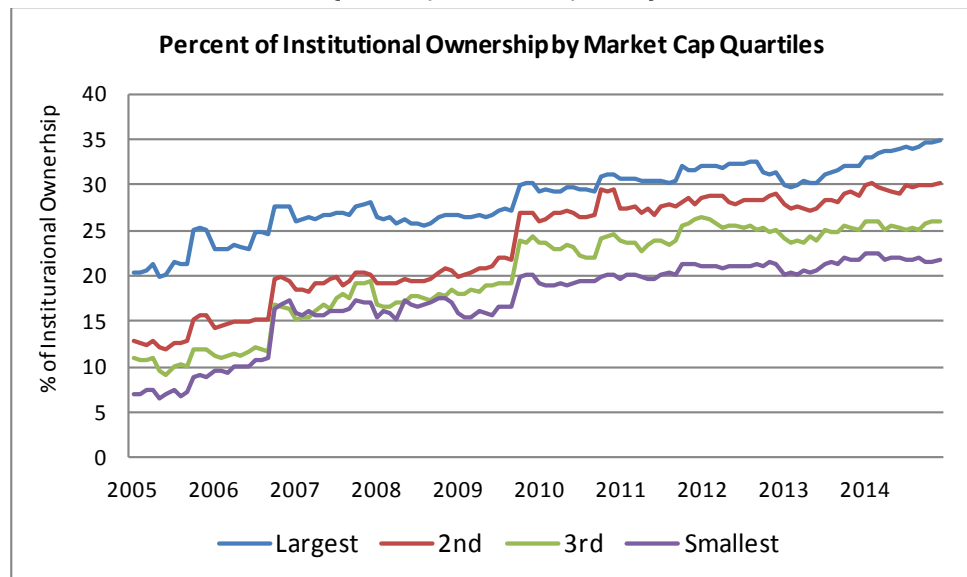
APPENDIX G

Characteristics of IO

An extensive academic study showed that institutional ownership [expressed as a percentage of a firm's outstanding shares] increases with the company size in the U.S market. It is also documented the changes in institutional preferences for common stocks in the U.S market over time – increased institutional holdings of smaller stocks and a decreased holding of larger stocks. Does the ownership data for the Japanese market show a similar pattern?

We partitioned the S&P Japan BMI into quartiles based on dollar market cap. We show the breakdown of average percent of ownership in five market cap buckets in Exhibit 8. 'Largest' indicates the largest quartile ranked by dollar market cap; 'smallest' includes the smallest quartile of securities ranked by market cap. Note that the Japanese market shows a trend toward increased institutional ownership over time; which is similar to what we observed in the U.S market.

**Percentage Distribution of Institutional Ownership by Market Cap Quartiles S&P Japan BMI
[January 2005 – May 2015]**



Source S&P Capital IQ Quantamental Research

APPENDIX H

**Hit Rate of Performance Metrics by Sub-Components
S&P Japan BMI (June 2004 – May 2015)**

	All Stocks	Largest 50%	Smallest 50%
Avg Monthly Q1 Excess Return Hit Rate - Fund	77%***	67%***	71%***
Avg Monthly Q1 Excess Return Hit Rate - SmtMny	57%	57%	61%**
Avg Monthly Q1 Excess Return Hit Rate - Fund + SmtMny	79%***	69%***	75%***
Avg 1-month Long/Short Spread Hit Rate - Fund	75%***	68%***	74%***
Avg 1-month Long/Short Spread Hit Rate - SmtMny	62%**	57%	63%**
Avg 1-month Long/Short Spread Hit Rate - Fund + SmtMny	79%***	71%***	76%***
Average 1-month IC Hit Rate - Fund	82%***	69%***	80%***
Average 1-month IC Hit Rate - SmtMny	66%***	59%*	63%**
Average 1-month IC Hit Rate - Fund + SmtMny	84%***	71%***	83%***

*** 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

Reference

Asness, Clifford S., Moskowitz, Tobias J., Pedersen, Lasse H., 2013, "Value and Momentum Everywhere", The Journal of Finance, Vol. 68, no. 3, 925-985.

Cai, Fang and Lu Zheng, Institutional Trading and Stock Returns, University of Michigan Business School, February, 2003.

Carson Boneck, Vivian Ning, and Temilade Oyeniyi, January 2011, "US Stock Selection Models Introduction, the Foundations of Outperformance", S&P Capital IQ Quantitative Research

Chunlin Liu and Yul Lee, 2001, Does the Momentum Strategy Work Universally? Evidence from the Japanese Stock Market

Gompers, Paul A., and Andrew Metrick, 2001, Institutional investors and equity prices, Quarterly Journal of Economics 116, 229-259.

Hirotsugu Sakai, Hitoshi Asaoka, 2003, The Japanese Corporate Governance System and Firm Performance: toward sustainable growth.

Jiambalvo, James, Shivaram Rajgopal, and MohanVenkatachalam, "Institutional Ownership and the Extent to which Stock Prices Reflect Future Earnings", Contemporary Accounting Research Vol.19 No. 1 [Spring 2002]: 117-45.

Lichtenberg, Frank R., and George M. Pushner [1994], "Ownership structure and corporate performance in Japan," Japan and the World Economy, 6, pp. 239-261.
Marshall E. Blume and Donald B. Keim, "The Changing Preference of Institutional Investors for Common Stocks", March 11, 2014.

Miyajima, Hideaki, Keisuke Nitta, Nao Saito and Yusuke Omi [2002], "Governance structure and productivity of Japanese firms in the 1990s: Did changes of governance structure contribute to improving management efficiency? [in Japanese]" Working Paper Series, WIF02-001, Waseda University.

Naoki Shinada [2009], "Stock ownership and corporate performance in Japan: Corporate governance by institutional investors", RIETI Discussion Paper Series 10-E-005

Ning, Vivian., Ma, Li., Oyeniyi, Temi., 2013, "Introducing S&P Capital IQ Global Stock Selection Models for Developed Markets", S&P Capital IQ Quantamental Research.

Ovtcharova, Galina, "Institutional Ownership and Long-Term Stock Returns", Working Papers Series, January 2003.

Sasaki, Takafumi and Yasuhiro Yonezawa [2000], "Corporate governance and shareholder value [in Japanese], Securities Analysts Journal, 9, pp. 28-46.

Sloan, Richard G., 1996, "Do Stock Prices Fully Reflect Information in Accruals and Cash flows About Future Earnings?", The Accounting Review, Vol. 71, no. 3, 289-315.

Temilade Oyeniya and Vivian Ning, January 2012, "S&P Capital IQ Stock Selection Model Review, Understanding the Drivers of Performance in 2011", S&P Capital IQ Quantitative Research

Temilade Oyeniya and Vivian Ning, January 2013, "Stock Selection Model Performance Review, Assessing the Drivers of Performance in 2012", S&P Capital IQ Quantamental Research.

Toru Yamada and Manabu Nagawatari, 2011, Investor Expectations and the Volatility Puzzle in the Japanese Stock Market.

Our Recent Research

July 2015: [Research Brief – Liquidity Fragility](#)

As liquidity in the bond market becomes increasingly constrained, there has been a growing chorus of concerns raised by Mohamed A. El-Erian, John Paulson, Jamie Dimon, Larry Summers and recently the Federal Reserve. As we learned in the Global Financial Crisis, when liquidity seizes in one market, margin calls are met by raising cash in one of the most liquid markets in the world: the US equity market. How should equity investors be thinking about liquidity in their market?

June 2015: [Equity Market Pulse – Quarterly Equity Market Insights Issue 4](#)

The Q2 issue of Equity Market Pulse features a spotlight on developed Europe, which has the highest estimated growth rates and most attractive valuations among developed markets.

May 2015: [Investing in a World with Increasing Investor Activism](#)

Investor activism has gained mainstream acceptance as activists with larger-than-life personas have waged a string of successful campaigns. Activist hedge funds' assets under management (AUM) have swelled to \$120 billion, an increase of \$30 billion in 2014 alone. It was among the best performing hedge fund strategies in 2014 as well as over the last three- and five-year periods. In this report, we explore an investment strategy that looks to ride the momentum surrounding the announcement of investor activism. We further explore what, if any, changes to targeted companies activists are able to influence.

April 2015: [Drilling for Alpha in the Oil and Gas Industry – Insights from Industry Specific Data & Company Financials](#)

During the recent slide in oil prices, clients frequently asked us which strategies have historically been effective in selecting stocks in declining energy markets. This report answers this question, along with its corollary: which strategies work in rising energy markets? We also explore the value of oil & gas reserve data used by fundamental analysts/investors, but not used in a majority of systematic investment strategies. The analysis in this report should help both fundamental and quantitatively-oriented investors determine how to best use industry-specific and generic investment metrics when selecting securities from a pool of global oil & gas companies.

March 2015: [Equity Market Pulse – Quarterly Equity Market Insights Issue 3](#)

Driven by proprietary data and analytics from S&P Capital IQ™, Equity Market Pulse provides professional investors with insights into global equity market fundamentals and performance at a glance. Spanning developed and emerging markets in the Americas, Europe, and Asia, it provides perspective on fundamentals, valuations and investment strategy effectiveness.

February 2015: [U.S. Stock Selection Model Performance Review – The most effective investment strategies in 2014](#)

Since the launch of the four S&P Capital IQ™ U.S. stock selection models in January 2011, the performance of all four models [Growth Benchmark Model, Value Benchmark Model, Quality Model, and Price Momentum Model] has been positive and 2014 was no exception. Our models' key differentiators – distinct formulation for large cap and small cap stocks, special treatment for the financial sector, sector neutrality to target stock specific alpha, and factor diversity – enabled the models to outperform across various market environments. In this report, we review the underlying drivers of each model's performance over the 12 months ended December 31, 2014,

document performance from January 2011 when the models went live, and provide full model performance history from January 1987.

January 2015: [Global Pension Plans: Are Fully Funded Plans a Relic of the Past?](#)

In this brief we leverage S&P Capital IQ's extensive collection of pension data to examine:

- Companies with the strongest and weakest pension funding status globally.
- Global trends in pension funding and accounting.
- Companies with the most aggressive versus conservative pension accounting assumptions.
- Underfunded plans with the least and most three-year improvement in funding.

January 2015: [Profitability: Growth-Like Strategy. Value-Like Returns](#)

Value-based strategies have been the favorite weapons in many investors' arsenals, historically yielding large returns and consistently outperforming. Most value investors focus on the price side of the equation – i.e., buying assets that are priced below their intrinsic values. Yet, there's another dimension to the value equation that has been complementary to value and just as critical in generating excess returns. Enter profitability. Profitability has historically worked as an investment strategy because instead of focusing on the cheapness of an asset it focuses on the productiveness of an asset – i.e., its ability to generate earnings for the investor. Our results from January 1996 to August 2014 show: The S&P 500® continues to be the preeminent regional performer in terms of both financial results and price appreciation Risk and Return: Tracks the dynamics of equity market returns and volatility.

November 2014: [Equity Market Pulse – Quarterly Equity Market Insights Issue 2](#)

Driven by S&P Capital IQ's™ proprietary data and analytics, **Equity Market Pulse** provides professional investors with insights into global equity market fundamentals and performance at a glance. Spanning developed and emerging markets in the Americas, Europe, and Asia, it provides perspective on valuations, operating efficiency, and investment strategy effectiveness.

October 2014: [Lenders Lead. Owners Follow – The Relationship between Credit Indicators and Equity Returns](#)

This paper demonstrates a strong link exists between credit events and equity returns, suggesting a potential investment strategy. Whereas previous academic work focused on ratings changes within the U.S., this analysis takes a global perspective and includes the post-financial crisis period. Shareholders should note that even in a benign credit environment Standard & Poor's Ratings Services ["S&P Ratings Services"] downgraded 68 U.S. speculative grade companies in the second quarter of 2014, and forecasts the rate of speculative grade defaults to increase next year to 2.2% from 1.6% in 2014. Year to date, there have been 303 instances where credit default swap spreads have widened by more than 50 basis points.

August 2014: [Equity Market Pulse – Quarterly Equity Market Insights Issue 1](#)

Equity Market Pulse provides professional investors with insights into global equity market fundamentals and performance at a glance. Spanning developed and emerging markets in the Americas, Europe, and Asia, it provides perspective on valuations, operating efficiency, and investment strategy effectiveness. The content of the Equity Market Pulse is driven by S&P Capital

IQ's fundamental data and analytics including S&P Capital IQ Estimates, Global Point-in-Time Fundamentals, and the Alpha Factor Library. The analysis is broken into four themes:

July 2014: [Factor Insight: Reducing the Downside of a Trend Following Strategy](#)

In this report, we review an approach that reduces the downside risk of a trend following strategy. This new signal first separates a stock's return into its systematic and stock-specific components, and then picks stocks solely on the latter. We compare the performance of this new signal [alpha momentum] to a typical trend following strategy [total momentum] and report the following:

May 2014: [Introducing S&P Capital IQ's Fundamental China A-Share Equity Risk Model](#)

Factor risk models play an important role in equity portfolio management. Portfolio managers depend upon factor risk models to obtain portfolio risk prediction and risk attribution against a group of largely orthogonal factors each with meaningful econometric explanations. S&P Capital IQ is dedicated to providing a broad set of high-quality models and products to the global asset management community. Since 2010, we have released a series of single country risk models as well as global and regional equity risk models. We are now releasing single country risk model covering China A-Shares equities.

April 2014: [Riding the Coattails of Activist Investors Yields Short and Long Term Outperformance](#)

On August 13, 2013, Apple's stock price rose 4.75% on high volume after Carl Icahn, a renowned activist investor, tweeted that his firm had accumulated a large position in the company. In the ensuing 6 months, the stock rose an additional 9.33% as Icahn demanded that the company add another \$50 billion to its existing stock buyback plan. Icahn backed off from this demand on February 10, 2014, but not before Apple's stock price had risen to \$528.99 from \$461.88 where it was before he embarked on the campaign. By then, the company had already aggressively repurchased its stock, including \$14 billion in a two-week stretch. As high-profile campaigns have occurred with greater frequency and resulted in more successes, the AUM for investor activist funds has tripled to \$95 billion in 2013, 3 times the amount in 2008.

March 2014: [Insights from Academic Literature: Corporate Character, Trading Insights, & New Data Sources](#)

February 2014: [Obtaining an Edge in Emerging Markets](#)

February 2014: [U.S Stock Selection Model Performance Review](#)

January 2014: [Buying Outperformance: Do share repurchase announcements lead to higher returns?](#)

October 2013: [Informative Insider Trading – The Hidden Profits in Corporate Insider Filings](#)

September 2013: [Beggar Thy Neighbor – Research Brief: Exploring Pension Plans](#)

August 2013: [Introducing S&P Capital IQ Global Stock Selection Models for Developed Markets: The Foundations of Outperformance](#)

July 2013: [Inspirational Papers on Innovative Topics: Asset Allocation, Insider Trading & Event Studies](#)

June 2013: [Supply Chain Interactions Part 2: Companies – Connected Company Returns Examined as Event Signals](#)

June 2013: [Behind the Asset Growth Anomaly – Over-promising but Under-delivering](#)

April 2013: [Complicated Firms Made Easy - Using Industry Pure-Plays to Forecast Conglomerate Returns.](#)

March 2013: [Risk Models That Work When You Need Them – Short Term Risk Model Enhancements](#)

March 2013: [Follow the Smart Money – Riding the Coattails of Activist Investors](#)

February 2013: [Stock Selection Model Performance Review: Assessing the Drivers of Performance in 2012](#)

January 2013: [Research Brief: Exploiting the January Effect Examining Variations in Trend Following Strategies](#)

December 2012: [Do CEO and CFO Departures Matter? – The Signal Content of CEO and CFO Turnover](#)

November 2012: [11 Industries, 70 Alpha Signals –The Value of Industry-Specific Metrics](#)

October 2012: [Introducing S&P Capital IQ's Fundamental Canada Equity Risk Models](#)

September 2012: [Factor Insight: Earnings Announcement Return – Is A Return Based Surprise Superior to an Earnings Based Surprise?](#)

August 2012: [Supply Chain Interactions Part 1: Industries Profiting from Lead-Lag Industry Relationships](#)

July 2012: [Releasing S&P Capital IQ's Regional and Updated Global & US Equity Risk Models](#)

June 2012: [Riding Industry Momentum – Enhancing the Residual Reversal Factor](#)

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](#)

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](#)

Copyright © 2013 by Standard & Poor's Financial Services LLC. All rights reserved.

No content (including ratings, credit-related analyses and data, valuations, model, software or other application or output therefrom) or any part thereof [Content] may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of Standard & Poor's Financial Services LLC or its affiliates (collectively, S&P). The Content shall not be used for any unlawful or unauthorized purposes. S&P and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively S&P Parties) do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Parties are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, for the results obtained from the use of the Content, or for the security or maintenance of any data input by the user. The Content is provided on an "as is" basis. S&P PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Content even if advised of the possibility of such damages.

Credit-related and other analyses, including ratings, and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. S&P's opinions, analyses and rating acknowledgment decisions (described below) are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P does not act as a fiduciary or an investment advisor except where registered as such. While S&P has obtained information from sources it believes to be reliable, S&P does not perform an audit and undertakes no duty of due diligence or independent verification of any information it receives.

To the extent that regulatory authorities allow a rating agency to acknowledge in one jurisdiction a rating issued in another jurisdiction for certain regulatory purposes, S&P reserves the right to assign, withdraw or suspend such acknowledgement at any time and in its sole discretion. S&P Parties disclaim any duty whatsoever arising out of the assignment, withdrawal or suspension of an acknowledgement as well as any liability for any damage alleged to have been suffered on account thereof.

S&P keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P may have information that is not available to other S&P business units. S&P has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

S&P may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P reserves the right to disseminate its opinions and analyses. S&P's public ratings and analyses are made available on its Web sites, www.standardandpoors.com (free of charge), and www.ratingsdirect.com and www.globalcreditportal.com [subscription], and may be distributed through other means, including via S&P publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.

Standard & Poor's and S&P are registered trademarks of Standard & Poor's Financial Services LLC. Capital IQ is a registered trademark of Capital IQ Inc.

The Global Industry Classification Standard (GICS®) was developed by and is the exclusive property and a trademark of Standard & Poor's and MSCI. Neither MSCI, Standard & Poor's nor any other party involved in making or compiling any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, Standard & Poor's, any of their affiliates or any third party involved in making or compiling any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.