Earnings & Sentiment Factors were top performers across the world, being particularly strong in Emerging Markets. Price Momentum continued to do well after the underperformance earlier in the year. It continues to struggle in Australia, though. Value was poor in Asia Ex but did well in other Emerging markets, Japan and Australia. It has failed for the second straight month in Europe. Quality continued to outperform in Europe and EM (x Asia) but was less impressive in rest of the developed world. A common theme emerging based on feedback from several clients suggests that 'Quality at a Reasonable Price' is gaining more traction, perhaps reflecting some of the uncertainty seen on the macro front.

Our generic multi-Factor Q-Score Model was strong in the Emerging Markets and Japan but struggled to impress in Europe, US and Australia.

This monthly publication summarizes performance of a range of popular Quant factors. In all, nine (MSCI based) universes are included in the report: US, Europe, Japan, Australia, Asia ex Japan, GEM, EM ex Asia, Global Developed and All World.

For each universe we include a summary of performance over the last month, 12 months, QTD and YTD for four popular composite alpha sources that we refer to as the Value, Earnings, Quality and Price families.

We also include a table detailing performance over the last month for 42 popular alpha and risk factors.

Monthly L/S Returns for June 2014 around the world



|  |  |
| --- | --- |
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|  |  |
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**See page 45 for contact details**

Source: Barra, MSCI, Thomson Reuters, J.P. Morgan

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# Introduction

This report published monthly summarises factor returns for a range of popular quant factors in a range of global universes.

All factors are normalized relative to country or sector as appropriate. Returns are equal weighted and monthly rebalanced. The long portfolio consists of the top 10% (decile 1) of stocks for the relevant Factor with the short portfolios consisting of the bottom 10% (decile 10).

The Universes included are shown in the table below. Factor definitions can be found at the end of this report.

Table : Universes Included



Source: J.P. Morgan

## Family Summary

For each universe we include a summary of performance over the last month, 12 months, YTD and QTD for 4 popular composite alpha sources that we refer to as the Value, Earnings, Quality and Price families. We also include performance information for a simple combination of these family factors (refer to factor definitions for more information).

## Factor Summary

We also include a table detailing performance over the last month for 42 popular alpha and risk factors. For each factor we provide returns data as well as the monthly Information coefficient (IC) calculated by correlating start of month scores with subsequent returns. This provides a more robust picture on factor efficacy than returns alone given it is possible for the returns to be distorted by outliers.

Factors are shown in two tables. One is sorted by L/S return over the month and one by factor family.

## Factor Summary Chart

For a quick visual reference the same 42 factors are charted for each universe. The chart shows monthly L/S returns and average monthly L/S returns over the last year.

For more information on this product or for any custom backtest requests please contact Quant Strategy ([quant\_strategy@jpmorgan.com](mailto:quant_strategy@jpmorgan.com)).

Quick summary

Earnings & Sentiment Factors were top performers across the world, being particularly strong in Emerging Markets. Price Momentum continued to do well after the underperformance earlier in the year. Value was poor in Asia Ex but did well in other Emerging markets, Japan and Australia. Quality continued to outperform in Europe and EM (x Asia) but was less impressive in rest of the developed world.

Our generic multi-Factor Q-Score Model was strong in the Emerging Markets and Japan but struggled to impress in Europe, US and Australia.

Table : Monthly L/S Returns for June 2014 for global universes

Earnings & Sentiment Factors were strong across the world with all regions showing flat to positive returns.

Our Q-Score Model was strong in Emerging Markets and Japan but underperformed in rest of the developed markets.



Source: Barra, MSCI, Thomson Reuters, J.P. Morgan

Table : Monthly Information Coefficients for June 2014 for global universes



Source: Barra, MSCI, Thomson Reuters, J.P. Morgan

Figure : Performance of a simple Quant composite signal through June



Source: Barra, MSCI, Thomson Reuters, J.P. Morgan

MSCI All World Country Performance – June 2014





Source: MSCI, Bloomberg, J.P. Morgan

Family Summary – MSCI Asia ex Japan



Factor Summary – MSCI Asia ex Japan



Family Summary – MSCI Japan



Factor Summary – MSCI Japan



Family Summary – MSCI Australia



Factor Summary – MSCI Australia



Family Summary – MSCI Europe



Factor Summary – MSCI Europe



Family Summary – MSCI US



Factor Summary – MSCI US



Family Summary – MSCI GEM



Factor Summary – MSCI GEM



Family Summary – MSCI EM ex Asia



Factor Summary – MSCI EM ex Asia



Family Summary – MSCI Global Developed



Factor Summary – MSCI Global Developed



Family Summary – MSCI All World



Factor Summary – MSCI All World



Factor Summary Chart – MSCI Asia ex Japan



Factor Summary Chart – Japan



Factor Summary Chart – MSCI Australia



Factor Summary Chart – MSCI Europe



Factor Summary Chart – MSCI US



Factor Summary Chart – MSCI GEM



Factor Summary Chart – MSCI EM ex Asia



Factor Summary Chart – MSCI Global Developed



Factor Summary Chart – MSCI All world



Information Coefficient Matrix – Valuation



Information Coefficient Matrix – Earnings



Information Coefficient Matrix – Price



Information Coefficient Matrix – Quality



Information Coefficient Matrix – Model



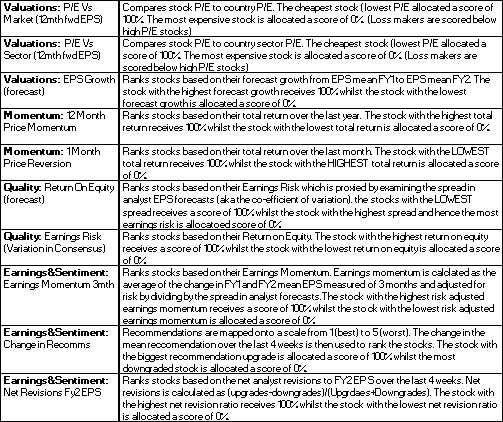
# Factor Definitions

|  |  |
| --- | --- |
| **VALUATION FACTORS** |  |
| Historical Book/Market Ratio | This factor ranks stocks based on month end market cap and most recent published 12 month trailing Historical Book Value. Source: MSCI |
| Historical P/Cash Earnings Ratio | Stocks are ranked by their P/Cash Earnings Ratio. The difference between earnings and cash earnings is that depreciation on fixed assets is added to earnings to arrive at cash earnings. Cash earnings also include amortization when it is not separately reported on the accounts. Source: MSCI |
| Cash Flow Yield | Forecast Cash Flow for both FY1 and FY2 is combined and then stocks are ranked such that those stocks with the highest Cash Flow yield are allocated to quintile 1. Source: Thomson |
| Historical Earnings Yield | Stocks are ranked by their P/Historical Earnings Ratio. Those stocks with the lowest ratio are allocated to quintile 1 and those with the highest to quintile 5. Historical earnings are updated quarterly, semi annually or annually depending on the country. Source: MSCI |
| 1 year forward PE | A pro-rata of consensus analyst FY1 and FY2 forecasts is used to create a 12 month forward earnings estimate number. Stocks are ranked such that those with the lowest ratio are allocated to quintile 1 and those with the highest to quintile 5. Source: Thomson |
| 1 year forward PE Relative To History | Stocks are ranked by their current forecast P/E ratio relative to their historical 3 year average P/E1 year forward forecast PE Relative To History. Those stocks that are 'cheapest' relative to their history are allocated to quintile 1 and those that are most expensive to quintile 5. Source: Thomson |
| 1 year forward PE Relative To Sector | Stocks are ranked based on their own forecast P/E relative to the P/E of their sector. This alleviates the inherent sector bias from the factor with those stocks that are cheapest relative to their sector being allocated to quintile 1 and those which are most expensive to quintile 5. Source: Thomson |
| Historical P/Sales Ratio | Stocks are ranked by their P/Historical Sales Ratio such that those stocks generating the largest amount of sales per share are allocated to quintile 1. Source: MSCI |
| Historical Dividend Yield | Stocks are ranked by their current 12mth trailing divided yield such that the biggest dividend payers are allocated to quintile 1 and the smallest dividend payers to quintile 5. Source: MSCI |
| **SENTIMENT FACTORS** |  |
| Recommendation | The consensus recommendations for all stocks are ranked from strong buy to strong sell. Those stocks with the best recommendations are allocated to quintile 1 and those with the worst recommendation to quintile 5. Previous work by JPMQuant suggests that this factor is more potent in developing markets and tends to be a poor performer in developed markets such as Australia the US and Japan. Source: Thomson. |
| 1 Mth Change in Recom | Stocks are ranked by their change in consensus recommendation over the last month. Those with the biggest improvement are allocated to quintile 1 (regardless of whether they have moved from Strong Sell to Sell or Buy to Strong Buy etc) and those with the biggest decline are allocated to quintile 5. Change in recommendation appears to be more useful than absolute level in many of the developed markets analysed but suffers from significantly larger turnover. Source: Thomson |
| 3 Mth Change in Recom | Stocks are ranked by their change in consensus recommendation over the last 3 months. Those with the biggest improvement are allocated to quintile 1 (regardless of whether they have moved from Strong Sell to Sell or Buy to Strong Buy etc) and those with the biggest decline are allocated to quintile 5. Change in recommendation appears to be more useful than absolute level in many of the developed markets analysed but suffers from significantly larger turnover. Source: Thomson |
| **PRICE FACTORS** |  |
| 12 Mth Price Momentum | The 12 Mth Price Momentum factor is calculated by ranking stocks by their total return over the previous 12 months. Momentum is a powerful factor observable in many markets. Source: MSCI |
| Volatility Adjusted Price Momentum | 12 month price momentum divided by the volatility of monthly returns over the prior 12 months. This factor looks to reward stocks delivering consistent momentum. Source: MSCI |
| 1 Mth Price Momentum | The 1 Mth Price Momentum factor is calculated by ranking stocks by their total return over the previous month. It is often employed 'in reverse' on account of the reversion that is observable in many markets and sectors. (Last months winners become this months losers and vice-versa.) Source: MSCI |
| 3 Mth Price Momentum | The 3 Mth Price Momentum factor is calculated by ranking stocks by their total return over the previous 3 months. Momentum is a powerful factor observable in many markets. Source: MSCI |
| 6 Mth Price Momentum | The 6 Mth Price Momentum factor is calculated by ranking stocks by their total return over the previous 6 months. Momentum is a powerful factor observable in many markets. Source: MSCI |
| Percent Off 52 Week High | This factor ranks stocks by their Percent Off 52 Week High descending such that those stocks at or close to their highs are allocated to quintile 1 and those stocks furthest from their highs are allocated to quintile 5. This factor has a strong correlation with momentum. Source: ExShare |
| 6 Mth Price Acceleration | To calculate the 6 Mth Price Acceleration we perform a regression on a year of daily prices to calculate the gradient of the trend (adjusted for volatility). We do the same thing "as of" 6 months ago and look at the change in the gradient to provide us with a measure of price acceleration. Stocks are ranked such that those stocks that have accelerated the most are awarded the highest scores. Source: ExShare |
| 3 Mth Price Acceleration | To calculate the 3 Mth Price Acceleration we perform a regression on a year of daily prices to calculate the gradient of the trend (adjusted for volatility). We do the same thing "as of" 3 months ago and look at the change in the gradient to provide us with a measure of price acceleration. Stocks are ranked such that those stocks that have accelerated the most are awarded the highest scores. Source: ExShare |
| 10 Day Relative Strength | A popular traders tool the Relative Strength Indicator is used to highlight stocks as overbought or oversold. Generally an RSI of 80 or higher indicates and overbought stock and an RSI of sub 20 indicates an oversold stock. We calculate the RSI over both 2 weeks (10 trading days) and also over one month. Source: ExShare |
| 30 Day Relative Strength | As above but based on a 30 day window |
| 60 Day Volatility | We rank stocks according to their 60 days Volatility. The most volatile stocks are added to the long portfolio. Source: Thomson |
| **EARNINGS FACTORS** |  |
| Risk-Adjusted Earnings Momentum | To adjust for any risk associated with a stock's earnings revisions the earnings revision number is normalized by the coefficient of variation. This serves to penalise stocks with high earnings risk and reward stocks with high earnings certainty. This is arguably a cleaner measurement of earnings revisions. Source: Thomson |
| Forecast Earnings Growth | Using consensus forecasts for FY1 and FY2 we calculate the forecast growth and we then use this to rank our universe. Analysts are notoriously over optimistic with growth forecasts and this is reflected in the poor performance of this factor in most test universes. Source: Thomson |
| Earnings Momentum (1Mth Change) | This factor ranks stocks by their 1 month forward earnings momentum. For each stock we calculate the change in FY1 earnings over the last month and the change in FY2 earnings over the last month. We calculate the one month revision number by taking the average of the change in FY1 and FY2. Source: Thomson |
| Earnings Momentum (3Mth Change) | This factor ranks stocks by their 3 month forward earnings momentum. For each stock we calculate the change in FY1 earnings over the last 3 months and the change in FY2 earnings over the last 3 months We calculate the 3 month revision number by taking the average of the change in FY1 and FY2. Source: Thomson |
| Earnings Momentum | This factor ranks stocks by their composite forward earnings momentum (1Mth + 3 Mth). For each stock we calculate the change in FY1 earnings over the last month and the last 3 months and the change in FY2 earnings over the last month and the last 3 months. We calculate both a 3 month revision number and a one month revision number by taking the average of the change in FY1 and FY2 and then finally we calculate a composite value as the average of the 1 month and 3 month values. Source: Thomson |
| 5 yrs Historical Earnings Growth | Companies are ranked by their average annualised EPS growth over the past 5 years. Those companies with the highest average growth are allocated to quintile 1 and those with the lowest average growth are allocated to quintile 5. Source: Thomson |
| Net Revisions to FY1 | A broad brush approach to earnings revisions that is arguably more suited to markets with questionable data quality. We calculate a FY1 Net Revision by looking at all analyst revisions in the last 4 weeks and calculating the number of upward revisions less the number of downward revisions expressed as a percentage of the total number of revisions made. Source: Thomson |
| Net Revisions to FY2 | A broad brush approach to earnings revisions that is arguably more suited to markets with questionable data quality. We calculate a FY2 Net Revision by looking at all analyst revisions in the last 4 weeks and calculating the number of upward revisions less the number of downward revisions expressed as a percentage of the total number of revisions made. Source: Thomson |
| **QUALITY FACTORS** |  |
| Earnings Risk (also known as EPS Co-Eff of Variation) | We rank stocks by the average of FY1 and FY2 Coefficient of Variation. We use coefficient of variation as a proxy for earnings risk with those stocks with the largest spread in earnings being considered most 'risky'. We find that the stocks with the smaller coefficient of variation (and hence the most earnings certainty) tend to outperform their riskier peers. Source: Thomson |
| Coverage | We rank stocks by Number of Consensus Estimates (FY1) which we use to indicate the number of covering analysts. Quintile 1 is formed from the most readily covered stocks and Quintile 5 is formed from the least covered stocks. This factor is often regarded as a proxy for information uncertainty rather than an Alpha or Risk Factor and previous research by JPMQuant in the Australian market supports this thesis. Source: Thomson |
| Historical Return On Equity | Stocks are ranked on their historical return on equity (ROE) with those stocks with the largest ROE being allocated to quintile 1 and those with the poorest ROE being allocated to quintile 5. To eliminate any forward looking bias, the ROE figure is only updated on the date that the numbers became available to the market. Source: MSCI |
| ROE Growth | To calculate the change In ROE we look compare a stocks ROE with it's ROE 12 months prior at each point in time. Those stocks that have seen the biggest increase in ROE are allocated to quintile 1 and those that have seen the biggest decline in ROE are allocated to quintile 5. Source: MSCI |
| Return On Assets | Stocks are ranked on their return on Assets (ROA) with those stocks with the largest ROA being allocated to quintile 1 and those with the poorest ROA being allocated to quintile 5. Source: MSCI |
| **RISK FACTORS** |  |
| MSCI BETA | Beta for the stock relative to its local benchmark index. |
| **COMPOSITE FAMILY FACTORS** |  |
| Earnings & Sentiment | Combines three flavours of momentum measure. Risk adjusted 3 mth EPS momentum, FY2 Net revisions and Recommendation one month change are all normalised and combined equally to form the composite. |
| Valuation | PE + PE relative to sector + forecast Growth |
| Price | Equally combines a normalised 12 month price momentum factor (75%) with a 1 month price reversion factor (25%). |
| Quality | Combines ROE and Earnings Risk (inverted such that stocks with tightest forecasts are rewarded with a higher score) |
| Composite Q-Score Model | A multi factor combination of Valuation, Earnings& Sentiment, Quality and Price composite factors. |
|  |  |
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|  |  |
|  |  |

# The JPM Q-Score - A Composite Approach

The JPM Q-Score model is designed to act as a ‘catch all’ generic quant model suitable for use in many markets is. The factors used in our Q-Score have been selected as they are ten of the most popular quant factors ‘in general use’. That said they are popular for a reason having been widely researched by many practitioners (ourselves included) and historically have been found to be some of the strongest and most consistent ‘alpha generators’ in the quant analysts’ stock selection armoury.

Figure : The Quant Return Drivers – Ranking process



Source: J.P. Morgan Quant

## What are we capturing with these factors?

These ten factors can broadly be divided into four key categories (or factor families) to which we believe a portion of the stocks subsequent return can be attributed.

There is extensive literature available on each of these categories and we have ourselves explored many of these effects over the last ten or so years. Clearly this is not the correct forum for going into great detail and instead a (very!) brief summary follows:

### VALUATION

Many quant researchers have explored the ‘Value Anomaly’ and it is widely recognised that low PE stocks outperform high PE stocks over the long term. Similar analysis has shown consistent results using P/Sales, P/Dividend and P/Book ratios. Our studies have also shown that Earnings Growth can complement straight Value factors in many markets.

### MOMENTUM

Momentum theory for stock prices suggests that companies that do well in one (long term) investment period will continue to do well in the subsequent investment horizon. Over short time frames (<1month) studies have also highlighted the tendency of stocks to overreact leading to short term reversion. We have widely observed these phenomena in our own testing.

### EARNINGS & SENTIMENT

We believe that the market is not efficient at incorporating new information and a window of opportunity exists to exploit recent analyst revisions in earnings and recommendations. Similarly analyst behavioural biases lead to subsequent changes suggesting an exploitable serial correlation in earnings upgrades/downgrades.

### QUALITY

Whilst arguably less readily observable than some other factors (especially in more emerging markets), it is generally accepted that it is desirable to tilt portfolios towards highly profitable and good quality businesses. Similarly over the long term the market also appears to reward 'earnings certainty' and penalise those stocks that carry a large degree of earnings risk.

## Generating the Q-Score

Given we have now quantified each stocks exposure to what we believe are four of the key drivers of return the next step is to combine theses scores into an over metric that can be considered indicative of the stocks expected return. We call this the Q-Score and we use a standard quantitative approach to combining the individual factor scores. This involves normalizing our data and establishing the factor premiums (or weights) that we are going to allocate to each of the drivers. We have a number of techniques that we use to help us establish the factor premiums though we would urge ‘budding quant analysts’ not to fall into the trap of thinking that this is by any means an exact science!

In the case of our Q-Score we are not trying to build a quant process per se and are instead looking to provide the market with a general indication of likely outperformance on a per stock basis. For that reason we have kept things relatively simple. We have used the same factor premiums across all markets and have not tailored the Q-Score to any particular investment style. Rather we have looked to provide a ‘Generic Alpha score’ that can be used across a global spectrum.

In the table below we show the factor premiums that have been applied to the ten input factors to generate the overall Q-Score. Note that due to limits in data availability we have applied some additional rules to our process. In particular no Q-Score is allocated to a company that does not have an exposure to our key factor families of Value and Earnings. A stock may be missing either a Quality exposure or a Momentum exposure (but not missing both!) and still be allocated a Q-Score. When considering the individual drivers a minimum of 50% of the drivers must be available for a family score to be calculated with some factors being mandatory members of the family. The mandatory items are shown in the table as **bold**.

Figure : Converting the Quant Return Drivers into the Q-Score

|  |  |
| --- | --- |
| **VALUATION *[30%]***  **COMPONENT FACTORS**  **P/E Vs Market (12mth fwd EPS) *[34%]***  **P/E Vs Country Sector (12mth fwd EPS) *[33%]***  EPS Growth (FY1 mean to FY2 mean) *[33%]* | **EARNINGS & SENTIMENT *[30%]***  **COMPONENT FACTORS**  **Earnings Momentum 3mth (Risk Adj.) *[34%]***  1Mth change in consensus recomms*[33%]*  Net Revisions to mean FY2 EPS *[33%]* |
| **MOMENTUM *[20%]***  **COMPONENT FACTORS**  **12Mth Price Momentum *[75%]***  **1Mth Price Reversion *[25%]*** | **QUALITY *[20%]***  **COMPONENT FACTORS**  ROE (average of FY1 &FY2 forecast) *[50%]*  Earnings Risk (Variation in forecast EPS) *[50%]* |

Source: J.P.Morgan Quant

The J.P. Morgan Q-Score composite quant factor is generally the starting point we use in most of our research and the benchmark that we look to ‘beat’ through the introduction of new ideas.

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**Important Disclosures**

**Company-Specific Disclosures:** Important disclosures, including price charts, are available for compendium reports and all J.P. Morgan–covered companies by visiting<https://jpmm.com/research/disclosures>, calling 1-800-477-0406, or e-mailing [research.disclosure.inquiries@jpmorgan.com](mailto:research.disclosure.inquiries@jpmorgan.com) with your request. J.P. Morgan’s Strategy, Technical, and Quantitative Research teams may screen companies not covered by J.P. Morgan. For important disclosures for these companies, please call 1-800-477-0406 or e-mail [research.disclosure.inquiries@jpmorgan.com](mailto:research.disclosure.inquiries@jpmorgan.com).

**Explanation of Equity Research Ratings, Designations and Analyst(s) Coverage Universe:**J.P. Morgan uses the following rating system: Overweight [Over the next six to twelve months, we expect this stock will outperform the average total return of the stocks in the analyst’s (or the analyst’s team’s) coverage universe.] Neutral [Over the next six to twelve months, we expect this stock will perform in line with the average total return of the stocks in the analyst’s (or the analyst’s team’s) coverage universe.] Underweight [Over the next six to twelve months, we expect this stock will underperform the average total return of the stocks in the analyst’s (or the analyst’s team’s) coverage universe.] Not Rated (NR): J.P. Morgan has removed the rating and, if applicable, the price target, for this stock because of either a lack of a sufficient fundamental basis or for legal, regulatory or policy reasons. The previous rating and, if applicable, the price target, no longer should be relied upon. An NR designation is not a recommendation or a rating. In our Asia (ex-Australia) and U.K. small- and mid-cap equity research, each stock’s expected total return is compared to the expected total return of a benchmark country market index, not to those analysts’ coverage universe. If it does not appear in the Important Disclosures section of this report, the certifying analyst’s coverage universe can be found on J.P. Morgan’s research website, www.jpmorganmarkets.com.

**J.P. Morgan Equity Research Ratings Distribution, as of June 30, 2014**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Overweight** (buy) | **Neutral** (hold) | **Underweight** (sell) |
| J.P. Morgan Global Equity Research Coverage | 45% | 43% | 11% |
| IB clients\* | 55% | 49% | 34% |
| JPMS Equity Research Coverage | 46% | 47% | 7% |
| IB clients\* | 75% | 66% | 54% |

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