markit®

Sector rotation model

February 12, 2015

MARKIT RESEARCH SIGNALS

markit

Globalization has resulted in the intermingling of country and industry risk factors enhancing the importance of sector allocation decisions.

Given that stocks in the same sector are exposed, in general, to a common set of underlying drivers of that business group, we introduce a Sector Rotation model combining top-down and bottom-up signals to systematically score the relative attractiveness of sector groups.

- Our strategy pairs Markit Sector Purchasing Managers' Index (PMI) Survey data and proprietary CDS, securities lending and ETF sentiment indicators with momentum and fundamental factors to create a robust multi-factor sector signal as part of an overall portfolio strategy
- Our initial research focuses on developed European markets, where the model delivered an average monthly return spread of 0.50% for favorable versus unfavorable sectors over the development period, extending to 8.04% at a 12-month horizon with positive out-of-sample performance
- We demonstrate return spread improvements when overlaying the Sector Rotation model with our earnings momentum, value momentum, and deep value stock selection models, including an improvement of 229 bps annually to the earnings momentum strategy

Introduction

Sector allocation has become an increasingly important aspect of portfolio construction as globalization has blurred the once clear delineation of country and sector diversification effects. A well-diversified portfolio may have hidden sector exposures and fully integrated markets would imply that sector effects are of greater importance.

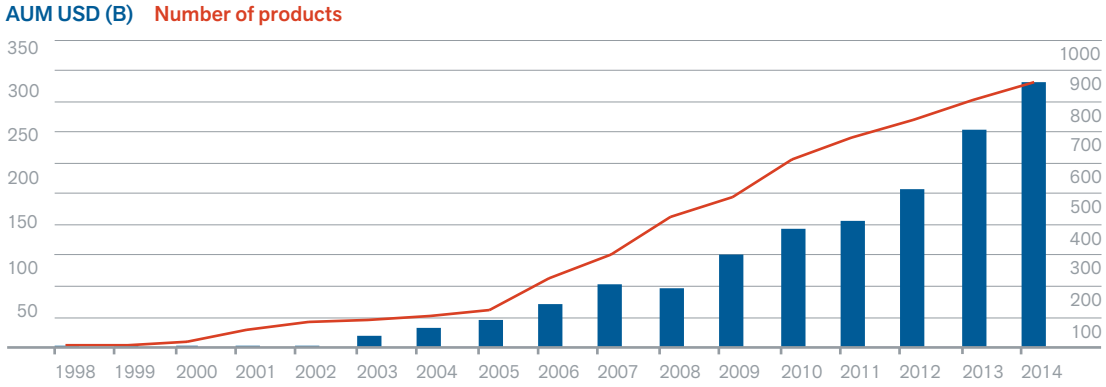
As economies move through the various stages of the business cycle, most investors expect certain sectors to outperform. A successful sector rotation strategy not only incorporates the business cycle stages, but also identifies the sectors that are expected to perform well in the future thus increasing potential excess alpha.

An underlying principle of sector rotation strategies is that the investment returns of companies in the same sector are highly correlated. This is because the price of these stocks usually move based on similar fundamental and economic drivers.

For example, when the internet bubble burst in 2000, the majority of technology companies moved sharply lower. Furthermore, during the 2008 financial crisis most financial stocks were impacted. More recently the plunge in oil prices during 2014 caused energy companies to underperform the market.

The advent of sector ETFs has allowed investors to easily implement sector decisions, with global assets under management and number of products growing exponentially (Figure 1).

Figure 1: Sector ETF global assets under management, Jan 1998 – Nov 2014



To this end, we introduce a model for systematically identifying relative sector performance using both top-down and bottom-up strategies to enhance investment returns. Our methodology pairs Markit Sector PMI Survey data with fundamental, momentum and sentiment factors to create a robust multi-factor sector signal.

In this research note, we introduce our Sector Rotation model for developed Europe. We begin by defining the parameters that make up the model. Next, we present performance and attribution analysis. We conclude with results of applying the model as an overlay to several of our stylistic stock selection models.

Data and methodology

Our initial research focuses on the developed European markets since time series PMI data is available for the vast majority of European sectors from January 2001.

Paired with our proprietary CDS, securities lending and ETF sentiment indicators, in combination with momentum and fundamental factors, we score the following 10 sectors:

- Basic Materials
- Cyclical Goods & Services
- Energy
- Financials
- Healthcare
- Industrials
- Non-cyclical Goods & Services
- Technology
- Telecommunication Services
- Utilities

We begin with European equities in the Markit Developed World universe, which consists of the top 80% of the cumulative market cap companies in the developed European markets. These securities are then sorted according to our sector classification scheme, with company returns cap weighted to build the overall sector return.

The test period spans from January 1999 through October 2014, with an in-sample period from January 1999 -December 2012, and an out-of-sample period from January 2013-October 2014. Performance statistics are computed based on a strategy of going long the buy-list sectors and shorting the sell-list sectors, with robustness statistics that include hit rates representing the percent of positive occurrences for the spreads. We report 1-, 3-, 6- and 12-month statistics for overlapping periods.

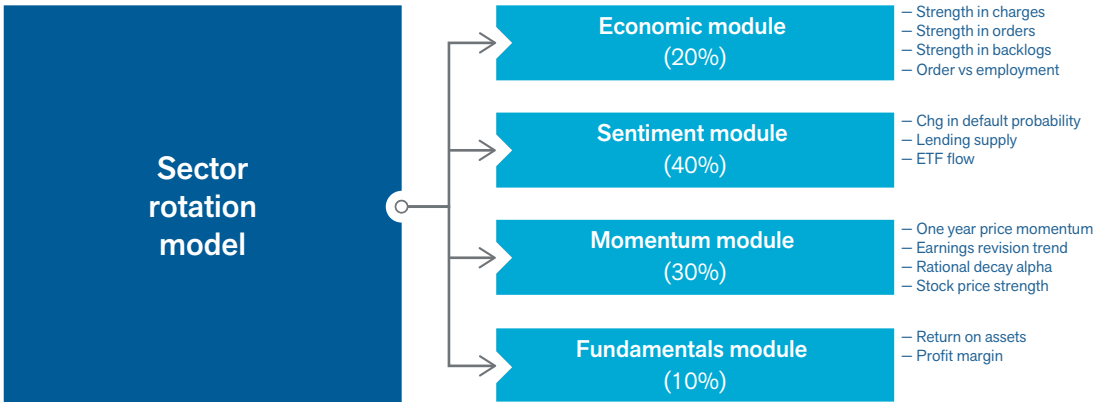
Model construction

Our Sector Rotation model consists of four main modules – Economic, Sentiment, Momentum and Fundamentals.

As a key component of our strategy, PMI data has been an accurate and valuable leading indicator for economic conditions versus the less timely official information and can be market moving when released to the public. Combined with the additional style components, our model creates a systematic allocation strategy incorporating the business cycle stages to take advantage of equity returns in growing sectors and underweight or short contracting sectors.

In general, favorable (unfavorable) signals from our composite score are assigned to the top 3 (bottom 3) sectors. Figure 2 displays the model construction as described in further detail below.

Figure 2: Sector Rotation model construction



Economic module (20%)

PMI data is used by economists to gain insight into underlying economic conditions because it is released well in advance of comparable official economic data (see the Appendix for more detail). Given the importance of PMI information, central banks are known to put considerable weight on the surveys when formulating interest rate decisions.

While the global figures capture the headlines, the input survey information can be aggregated to the sector level for further granularity. This sector data tracks the same variables as standard national PMI surveys, adding depth to the existing PMI coverage and allowing for identification of key growth sectors and associated drivers on a monthly basis. We hypothesize that economic survey information aggregated to the sector level can be used to forecast equity returns.The dataset contains information across a number of business metrics, though they can differ depending on the type of sector (manufacturing, services or construction). We therefore focus our analysis on the common variables of output, new orders, output prices, backlogs of work, and employment metrics.

Four factors are used in our economic module representing a mix of specific index values and changes in economic momentum across sectors:

- Strength in Charges (25%) – momentum in the raw value of Charges compared with the past 12-month average. Charges represent the selling prices that companies charge for their goods, in other words, output prices.
- Strength in Orders (25%) – momentum in the raw value of Orders compared with the past 12-month average. Orders provide an indication of expected revenue by gauging the flow of new orders.
- Strength in Backlogs (25%) – momentum in the raw value of Backlogs compared with the past 12-month average. Backlogs are a measure of the level of work outstanding held by companies.
- Orders versus Employment (25%) – raw value of Orders minus Employment component in PMI. Increasing orders and decreasing employment levels are an indication of more attractive productivity.

These factors capture improvement at the sector level and identify relative strength in economic expectation across sectors.

We compute a cross-sectional z-score of each measure and then take the average to determine the aggregate score. Buy (sell) signals are assigned to the largest (smallest) values above 1 (below -1). In other words, the signal uses top level figures from new PMI data to create a scoring system designed to measure the relative attractiveness of each sector.

It should be noted that sector PMI data is not available for Telecommunications, Utilities and Energy sectors; thus their final model scores are prorated across the remaining modules discussed below.

Sentiment module (40%)

The Sentiment module turns to proprietary Markit data from CDS, securities lending, and ETF markets for additional insights to gauge trends in sentiment and is intended to capture the overall market view of a sector:

- Change in Default Probability (33.3%) – market cap weighted 1-year Default Probability minus the previous 12-month average. This measure gauges the overall risk level of the sector based on the relative change in the default probability, with decreasing risk levels preferred.
- Lending Supply (33.3%) – percentage of stocks within each sector in the bottom Lending Supply decile. Lending Supply represents the total quantity of stock in lendable inventory relative to shares outstanding and represents a proxy for institutional ownership.
- ETF Flow (33.3%) - money flowing into sector ETFs aggregated over the previous 6 months. We find ETF flow to be a contrarian indicator, with the theory that it represents retail flow chasing recent returns and reacting slower than institutional flow.

Sectors are then ranked according to each factor and the sum of the ranks is computed to determine the sentiment composite.

Momentum module (30%)

Momentum indicators calculate the rate of change of price, earnings or earnings estimates. Price momentum measures are constructed with the most basic of all security information – historical prices, returns and volumes. They have attracted considerable attention from practitioners and academics alike due to their consistent profitability and challenge to the efficient market hypothesis.

Likewise, earnings momentum strategies have been proven both in research and in practice to add alpha to the investment process. In particular, the market tends to have a delayed response to the full impact of the information content of earnings estimate revisions. As such, estimate revisions provide an incremental catalyst to the earnings momentum investment opportunity set.

Research indicates that sector rotation is largely momentum driven, and the Momentum module is intended to capture overall sector directional movements using four faster moving technical measures:

- 1-year Price Momentum (15%) – market capitalization weighted 1-year Price Momentum at the sector level. This trend following indicator identifies the directional strength of price trends for stocks in the sector.
- Earnings Revision Trend (35%) – percent of companies within each sector with positive revisions in FY1 earnings forecast minus negative revisions. The direction of revisions indicates changes in analysts' outlook on earnings.
- Rational Decay Alpha (15%) – market capitalization weighted Rational Decay Alpha at the sector level. Rational Decay Alpha portrays the direction of price trends after adjusting for short-term reversals, using our proprietary decay algorithm
- Stock Price Strength (35%) – percent of companies within each sector above versus below their 52-week moving average price. The level of a stock's price relative to its long-term average indicates the direction of price strength.

All factors look for positive trends in underlying measures. Sectors are then ranked according to each factor and the sum of the ranks is computed to determine the momentum composite.

Fundamentals module (10%)

Dating back to the teachings of Graham and Dodd, fundamental investing has evolved significantly, but remains a steadfast component of asset pricing. In constructing the Fundamentals module, we include two key measures of fundamental value intended to capture the health of the underlying industries by looking at signals of overall sector strength, which were found to be more useful in sector selection than overall valuation levels:

- Return on Assets (50%) – market capitalization weighted Return on Assets at the sector level divided by the past 36-month average. Return on Assets is a common gauge of how efficiently a company is using its total assets to generate profits.
- Profit Margin (50%) – market capitalization weighted Profit Margin at the sector level divided by the past 36-month average. Profit Margin is used to measure operating efficiency at a company and signifies its control over costs for generating sales.

Sectors are then ranked according to each factor and the sum of the ranks is computed to determine the Fundamentals composite.

Results

We turn now to performance statistics for the Sector Rotation model. We separate the results based on the in-sample development period (through December 2012) and the subsequent out-of-sample performance.

We report spreads of equal-weighted sector returns for favorable versus unfavorable sectors along with the hit rates (percent of occurrences of positive spreads). Returns are computed in euros over 1-, 3-, 6- and 12-month holding periods. Results at the module and model level are displayed here and individual factor performance is included in the Appendix.

Over its construction period, the model delivered an average monthly favorable versus unfavorable spread of 0.50% which extended out to 8.04% over a 12-month holding period. Robustness is confirmed with hit rates of 61% and 74%, respectively.

Individual modules effectively contributed to overall model performance with positive return spreads and hit rates well in excess of 50% in general. The Sentiment module posted the strongest 1-month average return spread of 0.81%, with Lending Supply (0.77%) and ETF Flow (0.65%) being key contributors.

The Economic module was a close second with an average return spread of 0.80%, with noted Strength in Orders (0.93%) and Orders versus Employment (0.79%) performances. At the 12-month horizon, the Sentiment module recorded a significant 7.45% average return spread with an impressive 80% hit rate, particularly driven by Lending Supply (return spread: 9.21%; hit rate 89%).

This solid performance carried over to the recent out-of-sample period. Since January 2013, the model has recorded an average 0.71% favorable versus unfavorable spread with outperformance in 68% of months. At the 12-month horizon the model returned an average 5.20% spread with 69% accuracy out of sample.

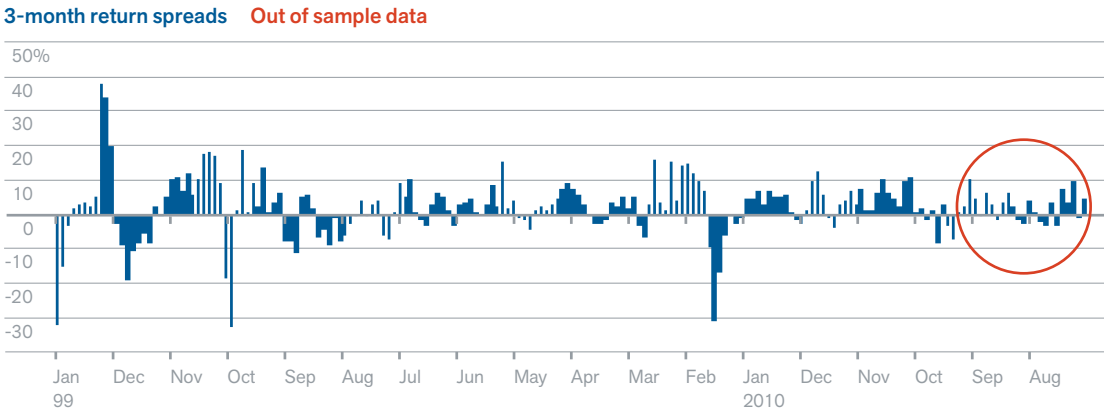
Table 1: Sector Rotation model performance statistics, Jan 1999 – Oct 2014

	Favorable – Unfavorable spread (%)				Hit rate (%)			
Factor	**1 Mo**	**3 Mo**	**6 Mo**	**12 Mo**	**1 Mo**	**3 Mo**	**6 Mo**	**12 Mo**
In-sample (Jan 1999 – Dec 2012)								
Economic module	0.80	1.42	1.75	5.16	52	58	59	59
Sentiment module	0.81	2.22	4.02	7.45	62	66	75	80
Momentum module	0.28	1.11	2.83	6.62	57	61	65	74
Fundamentals module	0.53	1.32	2.51	3.23	51	54	60	60
Sector model	0.50	1.80	3.75	8.04	61	67	70	74
Out-of-sample (Jan 2013 – Oct 2014)								
Economic module	1.06	2.59	2.33	-1.73	68	68	53	39
Sentiment module	0.59	2.37	4.31	5.00	55	82	90	85
Momentum module	0.31	0.65	1.33	1.85	50	55	53	54
Fundamentals module	0.50	0.16	0.68	1.26	59	46	53	46
Sector model	0.71	2.15	4.14	5.20	68	64	74	69

To further illustrate the time series performance of the model, we present monthly returns over the full sample period. Here we focus on 3-month returns (overlapping periods) representing a reasonable implementation in portfolio construction.

Figure 3 demonstrates an average 3-month return spread of 1.84% over the full period for favorable versus unfavorable sectors with outperformance in 60% of observations with no major drawdowns in the out-of-sample data. We also observe no extended periods of underperformance in the full test period, which is a desirable feature in application.

Figure 3: Sector Rotation model 3-month return spreads, Jan 1999 – Oct 2014



Application

We round out the report with several examples demonstrating how to apply the Sector Rotation model in combination with our Value Momentum[1] (VMA), Deep Value[2] (DVM) and Earnings Momentum[3] (EMM) models.

The base case for our application is centered on equal-weight stock returns for decile 1 (D1) and decile 10 (D10) names as identified by each stock selection model.

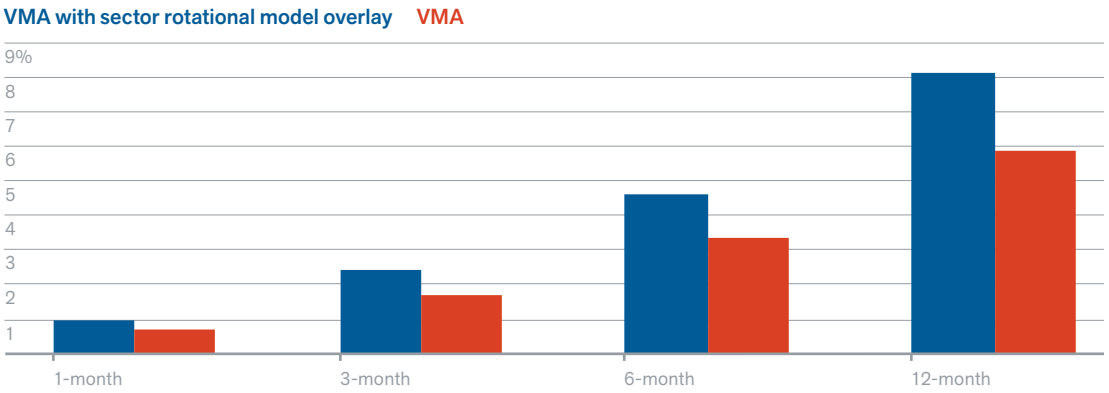
The test case begins by adjusting D1 stocks in favorable-rated (unfavorable-rated) sectors with an overweight (underweight) in aggregate of 20%. Stocks in neutral-rated sectors maintain the same weights as in the base case. Within D10, we establish opposite positions on stock weightings (i.e., aggressive shorting of stocks within sell-rated sectors, lighter shorting of those within buy-rated sectors).

Results are tabulated again for 1-, 3-, 6- and 12-month (overlapping) holding periods. We report D1 and D10 excess returns along with D1-D10 spreads and hit rates. Stock weighting adjustments are summarized at a 20% level for each model (Tables 2 – 4, respectively).

In addition to the results below on a cross-sectional basis, we further check the robustness of our methodology by employing sector-neutral rankings (see Appendix).

Figure 4 displays average decile spreads for the VMA example across the various holding periods. The sector model overlay with VMA posted an average 1-month decile return spread of 0.97% compared with the base model spread of 0.71%. This 26 bp difference extrapolated out to 229 bps based on an average 12-month decile return spread of 8.15% versus 5.86% for the base model. We also remark that the spread differential was stronger for D10 excess returns (-4.89% versus -3.30%) compared with D1 (3.26% versus 2.56%).

Figure 4: VMA cross-sectional decile return spreads, Jan 2005 – Oct 2014



DVM and EMM base models were similarly enhanced with the sector model overlay. EMM had the larger decile spread increases of 27 bps and 223 bps at the 1- and 12-month horizons. For DVM, we report an improvement in 1-month (12-month) holding period decile spreads of 20 bps (170 bps). Hit rates also improved in general across all models and holding periods, with the largest increase from 73% to 84% occurring for EMM 12-month spreads (overlapping periods).

We recognize our stock selection models may have time-varying sector exposures which the Sector Rotation model may neutralize or enhance, so we further analyzed the results using sector-neutral ranks. The sector-neutral results confirm robustness of the sector model overlay implementation. In general, the VMA and EMM sector-neutral method was somewhat stronger, while DVM saw superior cross-sectional results across holding periods which may be expected given that valuations tend to move whole segments of the market (results in the Appendix).

Table 2: VMA cross-sectional performance statistics, Jan 2005 – Oct 2014

	VMA with Sector Rotation model overlay				VMA			
	1M	3M	6M	12M	1M	3M	6M	12M
D1 Excess Return (%)	0.43	1.04	1.91	3.26	0.30	0.70	1.36	2.56
D10 Excess Return (%)	-0.54	-1.40	-2.73	-4.89	-0.41	-1.00	-1.98	-3.30
D1-D10 Spread (%)	0.97	2.44	4.64	8.15	0.71	1.70	3.33	5.86
Hit Rate (%)	63	71	86	85	66	71	79	82

Table 3: DVM cross-sectional performance statistics, Jan 2005 – Oct 2014

	DVM with Sector Rotation model overlay				DVM			
	1M	3M	6M	12M	1M	3M	6M	12M
D1 Excess Return (%)	0.21	0.57	1.60	2.39	0.12	0.36	1.04	1.64
D10 Excess Return (%)	-0.31	-0.81	-1.79	-2.65	-0.22	-0.58	-1.39	-1.70
D1-D10 Spread (%)	0.53	1.38	3.40	5.04	0.33	0.94	2.43	3.34
Hit Rate (%)	53	58	64	60	55	61	62	58

Table 4: EMM cross-sectional performance statistics, Jan 2005 – Oct 2014

	EMM with Sector Rotation model overlay				EMM			
	1M	3M	6M	12M	1M	3M	6M	12M
D1 Excess Return (%)	0.40	0.96	2.10	3.73	0.30	0.66	1.64	3.02
D10 Excess Return (%)	-0.59	-1.35	-2.71	-4.49	-0.42	-0.88	-1.83	-2.97
D1-D10 Spread (%)	0.99	2.30	4.82	8.23	0.72	1.54	3.47	6.00
Hit Rate (%)	66	67	80	84	64	67	75	73

Conclusion

We introduce a model for sector allocation for European equities in the Markit Developed World universe, the first in a series of regional focus (North America and Asia-Pacific to follow).

Built using four modules, Economic, Sentiment, Momentum and Fundamentals, this model computes a buy/hold/sell score across 10 sectors from multiple data sources including PMI, fundamental data, price data, CDS spreads and short sentiment data to aggregate more focused sector level information to gain better insight and take advantage of key drivers within a market.

We begin with a detailed description of the construction of each module. The PMI module is a top-down measure computed using a scoring system designed to measure changes in momentum between sectors based on Markit Sector PMI survey data. The Fundamentals module is a gauge of fundamental value, while the Momentum and Sentiment modules capture technical sector attributes. The former focuses on price and earnings momentum and the latter turns to CDS and securities lending markets for additional insights in sentiment trends.

Turning to performance analytics, the model demonstrated efficacy over the construction period delivering an average monthly favorable versus unfavorable 1-month (12-month) spread of 0.50% (8.04%). Solid performance carried over to the recent out-of-sample period (since January 2013), where the model has recorded an average 0.71% spread (68% hit rate) extending to 5.20% (69% hit rate) at the 12-month horizon.

Focusing on the 3-month holding period for a practical application, the model demonstrates desirable performance features exemplified by no major drawdowns in the out-of-sample data along with no extended cycles of underperformance across the full analysis period.

Examples using the Sector Rotation model in combination with VMA, DVM and EMM models demonstrate the benefits of adding a sector rotation overlay to the investment processes. This strategy posted average monthly improvements of 26 bps, 20 bps and 27bps, respectively, beyond the base models, with robustness across holding periods.

Appendix

PMI data

Across the world's largest developed and emerging economies, Purchasing Managers' Index (PMI) surveys for the manufacturing, services and construction sectors have become key benchmark indicators of economic conditions. Based on monthly questionnaires provided to over 20,000 companies across more than 30 countries, the surveys are designed to track changes in variables such as output, new orders, inventories, employment and prices.

More specifically, manufacturers are asked questions regarding output, new orders, new export orders, inventories of finished goods, employment, backlogs of work, input prices, output prices, suppliers' delivery times, quantity of purchases and inventories of purchases. Construction companies are asked about business activity (output), incoming new business, housing activity, civil engineering activity, commercial activity, employment, input prices, suppliers' delivery times, quantity of purchases, future business activity, sub-contractor usage, sub-contractor rates, sub-contractor availability and subcontractor quality. Service sector companies answer questions about business activity (output), incoming new business, backlogs of work, employment, input prices, output prices and future business activity.

The survey data sets are based on diffusion indices, which are calculated across all variables. The indexes vary between 0 and 100 with a level of 50.0 signaling no change from the previous month. Readings above 50.0 signal an increase relative to the previous month, while reading below 50.0 indicates a decrease. Thus, the greater the divergence from 50.0, the greater the estimated rate of change signaled.

Given the extensive global coverage of whole economy PMI panels, Markit Economics has recently derived sector indices at both a Global and European level. Defined according to Markit classifications, this sector data tracks the same variables as standard national PMI surveys, adding depth to existing global PMI coverage and allowing for the identification of key growth industries and associated drivers on a monthly basis.

Factor performance

Table A1: Economic module performance statistics, Feb 2000 – Oct 2014

	Favorable – Unfavorable spread (%)				Hit rate (%)			
Factor	1 Mo	3 Mo	6 Mo	12 Mo	1 Mo	3 Mo	6 Mo	12 Mo
In-sample (Feb 2000 – Dec 2012)								
Strength in Charges*	0.06	-0.50	-0.68	3.50	57	49	49	62
Strength in Orders**	0.93	1.25	1.94	3.39	58	55	52	55
Strength in Backlogs*	0.31	0.96	1.74	3.69	48	53	58	56
Orders versus Employment	0.79	1.32	2.09	5.01	56	56	53	60
Out-of-sample (Jan 2013 – Oct 2014)								
Strength in Charges	0.20	1.66	2.15	-1.72	64	68	58	31
Strength in Orders	0.98	2.64	3.04	-0.81	68	64	58	46
Strength in Backlogs	0.82	2.96	4.76	0.81	64	59	63	46
Orders versus Employment	1.04	1.28	0.01	-2.22	64	55	47	39

*History begins Feb 2004 **History begins Feb 2001

Table A2: Sentiment module performance statistics, Jan 2005 – Oct 2014

	Favorable – Unfavorable spread (%)				Hit rate (%)			
Factor	1 Mo	3 Mo	6 Mo	12 Mo	1 Mo	3 Mo	6 Mo	12 Mo
In-sample (Jan 2005 – Dec 2012)								
Change in Default Probability	0.12	0.07	0.62	2.43	55	48	59	67
Lending Supply*	0.77	2.29	4.42	9.21	63	72	74	89
ETF Flow	0.65	2.03	2.94	4.18	60	69	70	69
Out-of-sample (Jan 2013 – Oct 2014)								
Change in Default Probability	0.25	1.59	2.88	5.16	55	64	58	62
Lending Supply	-0.01	-0.43	-0.44	-0.67	50	41	42	54
ETF Flow	0.63	2.38	3.39	3.48	50	64	74	77

*History begins Jul 2006

Table A3: Momentum module performance statistics, Jan 1999 – Oct 2014

	Favorable – Unfavorable spread (%)				Hit rate (%)			
Factor	1 Mo	3 Mo	6 Mo	12 Mo	1 Mo	3 Mo	6 Mo	12 Mo
In-sample (Jan 1999 – Dec 2012)								
1-Year Price Momentum	0.11	0.85	2.97	4.98	54	58	62	64
Earnings Revision Trend	-0.02	-0.15	1.63	7.02	51	52	59	68
Rational Decay Alpha	0.55	1.41	0.81	2.45	51	55	60	57
Stock Price Strength	0.57	1.50	2.68	5.99	58	61	68	75
Out-of-sample (Jan 2013 – Oct 2014)								
1-Year Price Momentum	-0.16	-2.05	-3.46	-3.29	46	27	21	23
Earnings Revision Trend	0.25	1.50	3.24	6.07	59	68	74	100
Rational Decay Alpha	0.61	-0.38	-0.63	-2.16	59	46	47	23
Stock Price Strength	0.11	-0.10	-0.72	-1.47	50	46	42	31

markit

Table A4: Fundamentals module performance statistics, Jan 1999 – Oct 2014

	Favorable – Unfavorable spread (%)				Hit rate (%)			
Factor	1 Mo	3 Mo	6 Mo	12 Mo	1 Mo	3 Mo	6 Mo	12 Mo
In-sample (Jan 1999 – Dec 2012)								
Return on Assets	0.49	1.63	3.30	3.98	53	52	54	55
Profit Margin	0.49	0.93	1.81	2.92	58	55	57	57
Out-of-sample (Jan 2013 – Oct 2014)								
Return on Assets	0.27	0.97	1.99	0.79	59	41	53	46
Profit Margin	0.42	0.36	0.45	2.35	55	55	47	77

Table A5: VMA sector-neutral performance statistics, Jan 2005 – Oct2014

	VMA with Sector Rotation model overlay				VMA			
	1M	3M	6M	12M	1M	3M	6M	12M
D1 Excess Return (%)	0.37	1.12	2.07	3.49	0.35	0.88	1.63	2.69
D10 Excess Return (%)	-0.60	-1.47	-2.83	-4.75	-0.46	-1.07	-2.06	-3.36
D1-D10 Spread (%)	0.97	2.58	4.90	8.24	0.80	1.95	3.68	6.05
Hit Rate (%)	67	75	86	87	65	75	85	83

Table A6: DVM sector-neutral performance statistics, Jan 2005 – Oct2014

	DVM with Sector Rotation model overlay				DVM			
	1M	3M	6M	12M	1M	3M	6M	12M
D1 Excess Return (%)	0.31	0.79	1.42	1.98	0.29	0.60	1.04	1.70
D10 Excess Return (%)	-0.21	-0.82	-1.65	-3.14	-0.13	-0.48	-1.23	-2.29
D1-D10 Spread (%)	0.53	1.62	3.07	5.13	0.42	1.08	2.27	3.99
Hit Rate (%)	58	64	68	64	57	59	68	62

Table A7: EMM sector-neutral performance statistics, Jan 2005 – Oct2014

	EMM with Sector Rotation model overlay				EMM			
	1M	3M	6M	12M	1M	3M	6M	12M
D1 Excess Return (%)	0.53	1.17	2.31	3.84	0.36	0.80	1.76	2.89
D10 Excess Return (%)	-0.60	-1.28	-2.38	-3.50	-0.41	-0.89	-1.49	-2.04
D1-D10 Spread (%)	1.13	2.45	4.69	7.35	0.78	1.69	3.24	4.93
Hit Rate (%)	70	70	81	79	68	67	75	73

Endnotes

1. The Value Momentum model is a comprehensive approach including factors that span the value, price and earnings momentum style spectrum
2. The Deep Value model seeks to identify securities trading at a steep discount to their intrinsic value
3. The Earnings Momentum model incorporates analyst forecasts alongside past earnings strength to estimate future earnings potential

More information

For more information on the products and services from Markit, please contact us at **sales@markit.com** or call one of our sales offices:

London	+44 20 7260 2000	**Hong Kong**	+852 3478 3948
New York	+1 212 931 4900	**Tokyo**	+81 3 6402 0130
Amsterdam	+31 20 50 25 800	**Toronto**	+1 416 777 4485
Boulder	+1 303 417 9999	**Singapore**	+65 6922 4200
Dallas	+1 972 560 4420	**Sydney**	+61 2 8076 1100
Frankfurt	+49 69 299 868 100	**markit.com**	

® Markit makes no warranty, expressed or implied, as to accuracy, completeness or timeliness, or as to the results to be obtained by recipients of the products and services described herein, and shall not in any way be liable for any inaccuracies, errors or omissions herein. Copyright © 2015, Markit Group Limited and Leading Risk. All rights reserved. Any unauthorised use, disclosure, reproduction or dissemination, in full or in part, in any media or by any means, without the prior written permission of Markit Group Limited is strictly prohibited.

02/12/15