



IHS Markit™

# Monthly Model Performance Report

April 2017

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## Monthly Performance Recap

**US:** Within the US Large Cap universe the Historical Growth model had the strongest one month decile return spread performance returning 3.92%. The performance of the Historical Growth model was driven by the performance of the short portfolio. Over the US Small Cap universe our Relative Value model had the strongest one month decile return spread performance, returning 6.13%, while the Earnings Momentum model lagged.

**Developed Europe:** Our Price Momentum model was the top performer on a one month decile return spread basis, returning 1.73%, while the Earnings Momentum model trailed. The performance of the Price Momentum model was driven by the performance of decile 10.

**Developed Pacific:** The Relative Value and Deep Value models had the strongest one month decile return spread performance, returning 1.97% and 1.66%, while the Earnings Momentum model lagged.

**Emerging Markets:** Within the Emerging Markets universe our models struggled. The Price Momentum model was the only model with positive performance returning 1.66%. The performance of the model was driven by the short portfolio.

**Sector Rotation:** The US Large Cap Sector Rotation model returned 0.30%. The positive returns of the model were driven by the Materials and Consumer Discretionary sectors that were ranked as favorable and had positive returns. The US Small Cap Sector Rotation model struggled during the month returning -1.60%. The Developed Europe Sector Rotation model performed well returning 1.40%. The performance was driven by the Financials sector which was ranked favorable in our model and performed well during the month.

**Specialty Models:** The Oil and Gas and the Bank and Thrift 2 models had the strongest one month quintile return spread performance returning 5.86% and 3.40%, respectively. The Technology model was the most improved model during the month on a one month decile spread basis improving by 3.35% over its performance in March.

## Markit Model Matrix

	Deep Value	Earnings Momentum	Price Momentum	Relative Value	Value Momentum
Markit US Large Cap	2.608	-1.194	0.473	0.746	0.037
Markit US Small Cap	5.137	-2.774	1.034	6.128	3.022
Markit Developed World ex North America	-0.670	-0.884	-0.327	-0.179	-1.937
QSG Canada 500	1.859	-1.887	3.415	0.924	1.677
QSG Developed Pacific	1.664	-0.414	1.325	1.966	1.542
QSG Emerging Markets	-0.409	-0.332	1.655	-0.441	-0.596
QSG Frontier Markets	0.647	0.979	0.696	3.730	0.976
QSG Europe 1000	0.496	-0.327	1.734	-0.113	1.487
QSG Japan 2000	3.106	-1.385	1.549	2.370	2.836
QSG Australia-New Zealand 250	-0.822	-1.412	1.627	-1.716	-0.573

## US Large Cap<sup>(1)</sup>

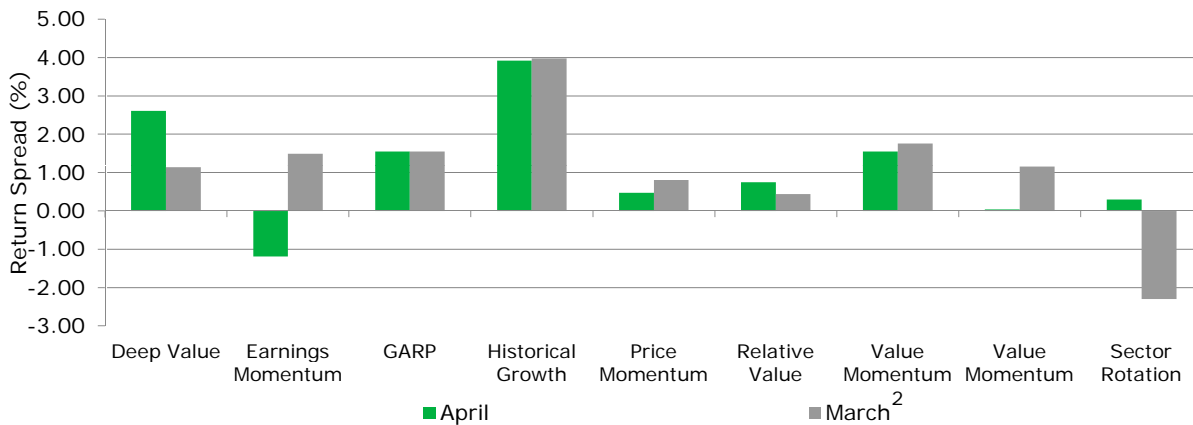
Within the US Large Cap universe the Historical Growth model had the strongest one month decile return spread performance returning 3.92% during the month. The performance of the Historical Growth model was driven by the performance of the short portfolio.

The US Large Cap Sector Rotation model returned 0.30%. The positive returns of the model were driven by the Materials and Consumer Discretionary sectors that were ranked as favorable and had positive returns during the month.

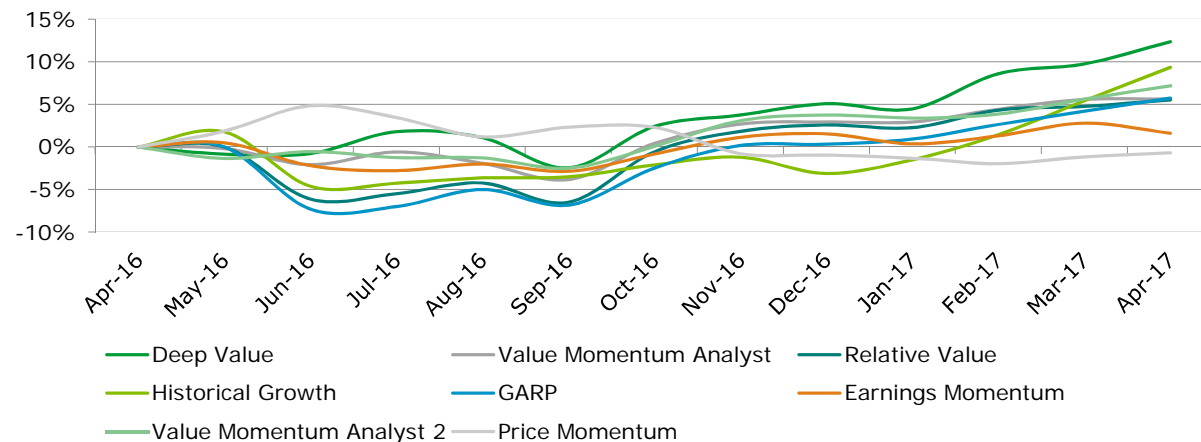
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	2.61	7.88	12.35	0.85	3.80	3.75	-1.76	-4.07	-8.60	0.07	0.11	0.04
<b>Earnings Momentum</b>	-1.19	1.25	1.61	-0.96	0.11	0.87	0.24	-1.14	-0.75	-0.04	0.04	0.02
<b>GARP</b>	1.55	4.81	5.73	0.48	1.67	2.08	-1.07	-3.14	-3.65	0.13	0.14	0.04
<b>Historical Growth</b>	3.92	10.83	9.34	1.74	5.20	1.17	-2.17	-5.64	-8.17	0.18	0.17	0.03
<b>Price Momentum</b>	0.47	0.62	-0.68	0.62	1.17	1.08	0.15	0.55	1.76	0.07	-0.01	0.00
<b>Relative Value</b>	0.75	3.25	5.52	-0.27	0.43	1.86	-1.01	-2.81	-3.66	0.06	0.10	0.04
<b>Value Momentum 2</b>	1.55	3.77	7.18	0.42	0.59	1.68	-1.13	-3.18	-5.50	0.09	0.08	0.05
<b>Value Momentum</b>	0.04	2.69	5.63	-0.41	0.64	1.12	-0.45	-2.06	-4.51	0.00	0.05	0.03
<b>Sector Rotation <sup>(4)</sup></b>	0.30	0.70	2.20	0.20	1.00	-0.50	-0.10	0.20	-2.70	-	-	-

Equal Weighted US Large Cap Universe 1-Month Return = 0.68%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## US Small Cap<sup>(1)</sup>

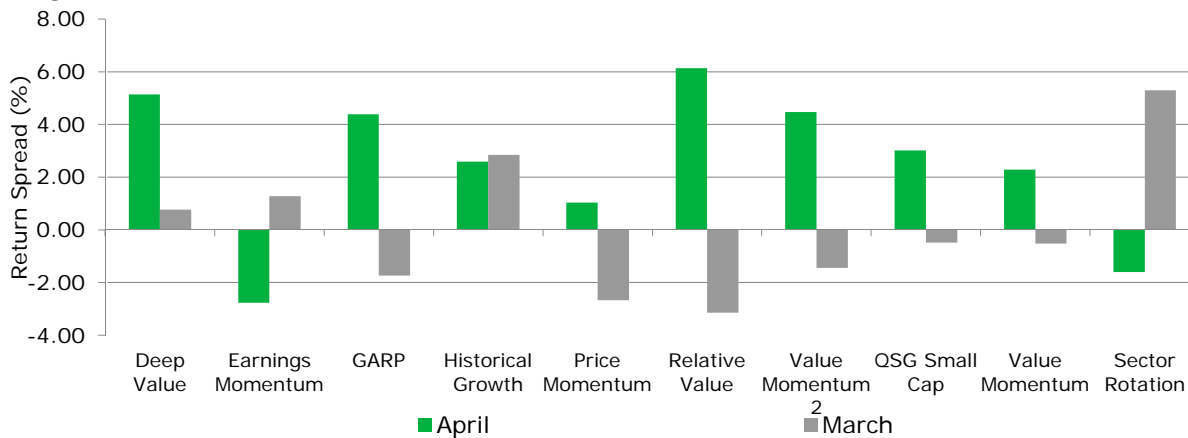
Over the US Small Cap universe our Relative Value model had the strongest one month decile return spread performance, returning 6.13%, while the Earnings Momentum model lagged. The performance of the Relative Value model was driven by the performance of the short portfolio.

The US Small Cap Sector Rotation model struggled during the month returning -1.60%. The Energy sector was ranked favorable in our model and struggled during the month.

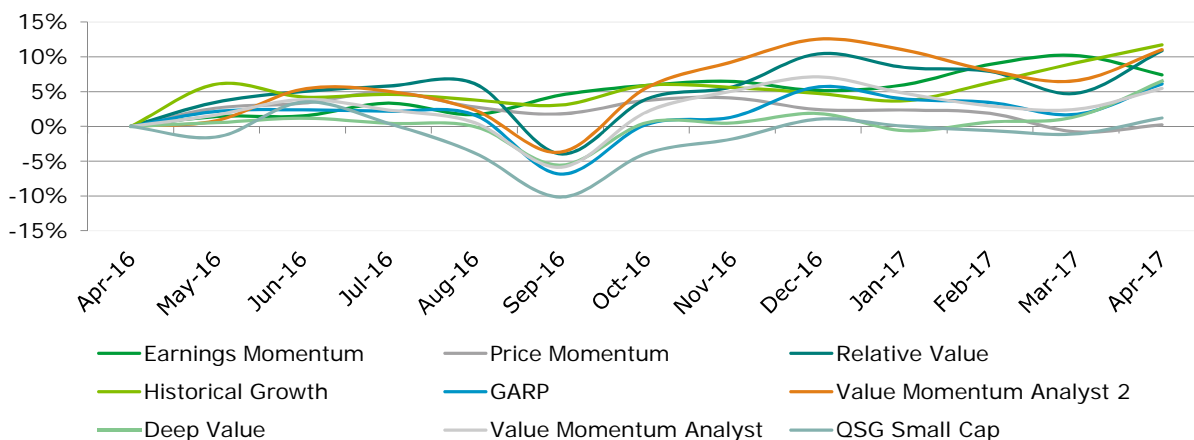
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	5.14	7.13	6.52	1.30	1.51	-2.02	-3.84	-5.62	-8.55	0.14	0.06	0.04
<b>Earnings Momentum</b>	-2.77	1.42	7.40	-1.90	0.34	5.38	0.87	-1.08	-2.02	-0.04	0.02	0.02
<b>GARP</b>	4.39	2.16	6.09	1.19	2.41	0.51	-3.20	0.24	-5.58	0.14	0.07	0.05
<b>Historical Growth</b>	2.59	8.06	11.76	0.80	3.65	3.33	-1.79	-4.41	-8.43	0.13	0.09	0.04
<b>Price Momentum</b>	1.03	-2.12	0.23	0.17	-0.93	0.39	-0.87	1.19	0.16	0.06	-0.01	0.00
<b>Relative Value</b>	6.13	2.40	10.87	1.53	1.63	1.34	-4.60	-0.77	-9.52	0.13	0.05	0.05
<b>Value Momentum 2</b>	4.47	0.05	11.01	1.59	0.67	5.68	-2.87	0.62	-5.33	0.12	0.02	0.04
<b>Value Momentum</b>	3.02	0.70	5.46	1.42	0.35	4.38	-1.60	-0.35	-1.08	0.11	0.03	0.03
<b>QSG Small Cap</b>	2.28	1.19	1.22	0.54	0.51	-0.89	-1.74	-0.68	-2.10	0.11	0.04	0.02
<b>Sector Rotation <sup>(4)</sup></b>	-1.60	3.50	7.60	0.20	-0.30	1.30	1.80	-3.80	-6.30	-	-	-

Equal Weighted US Small Cap Universe 1-Month Return = 0.56%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## Canada 500<sup>(1)</sup>

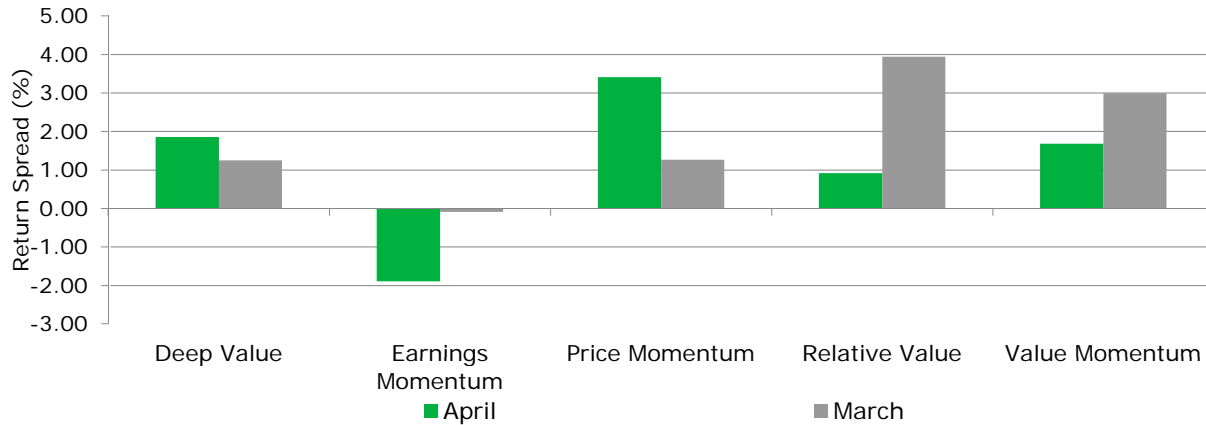
Over the Canadian universe our Price Momentum model had the strongest one month decile return spread performance, returning 3.41%. The Price Momentum model was the most improved model during the month on a one month decile spread basis improving by 2.14% over its performance in March.

The 52-Week High factor within the Price Momentum model had a one month decile return spread of 5.23% and was the largest contributor to the model's performance in April.

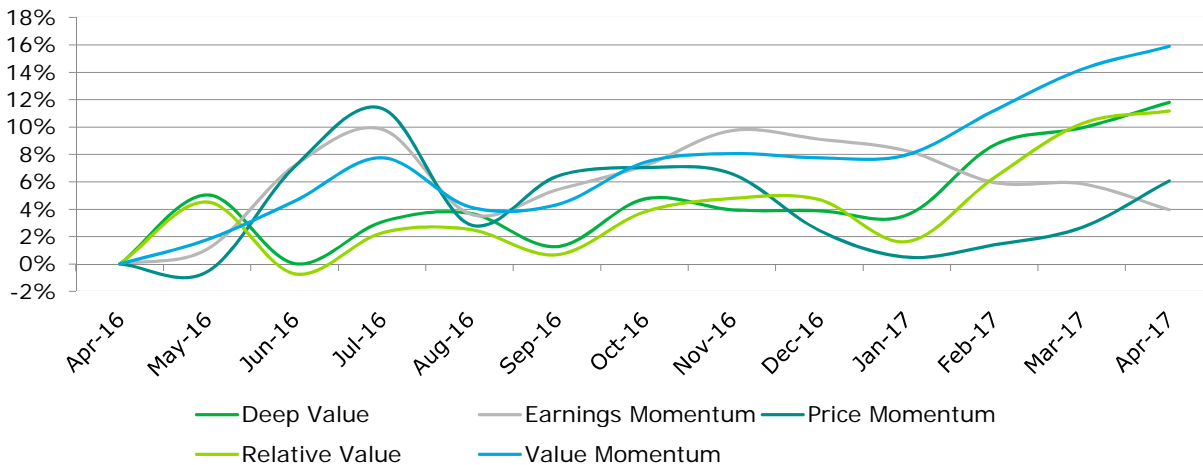
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	1.86	8.23	11.81	0.30	3.60	8.49	-1.56	-4.63	-3.31	0.14	0.13	0.06
<b>Earnings Momentum</b>	-1.89	-4.30	3.96	-0.89	-2.99	0.77	1.00	1.30	-3.19	-0.09	-0.05	0.01
<b>Price Momentum</b>	3.41	5.59	6.08	1.51	2.59	2.61	-1.90	-3.00	-3.47	0.17	0.07	0.01
<b>Relative Value</b>	0.92	9.54	11.16	0.25	4.27	6.34	-0.67	-5.28	-4.83	0.12	0.15	0.07
<b>Value Momentum</b>	1.68	7.92	15.90	0.88	3.19	7.59	-0.80	-4.73	-8.30	0.09	0.10	0.06

Equal Weighted Canada 500 Universe 1-Month Return = -0.51%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## Japan 2000<sup>(1)</sup>

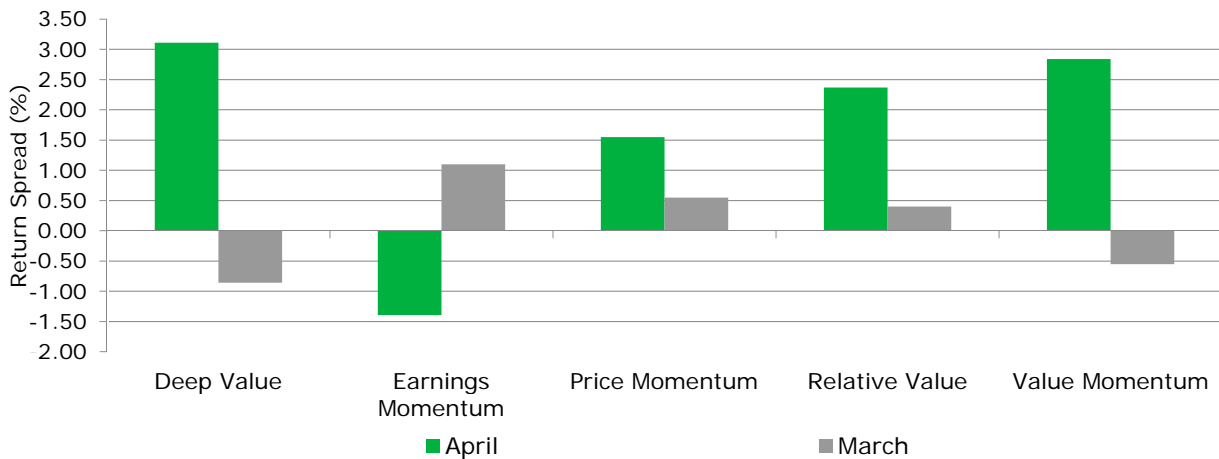
Within the Japan universe our Deep Value model had the strongest one month decile return spread performance returning 3.11%.

The Deep Value model was the most improved during the month on a one month decile spread basis improving by 3.97% over its performance in March.

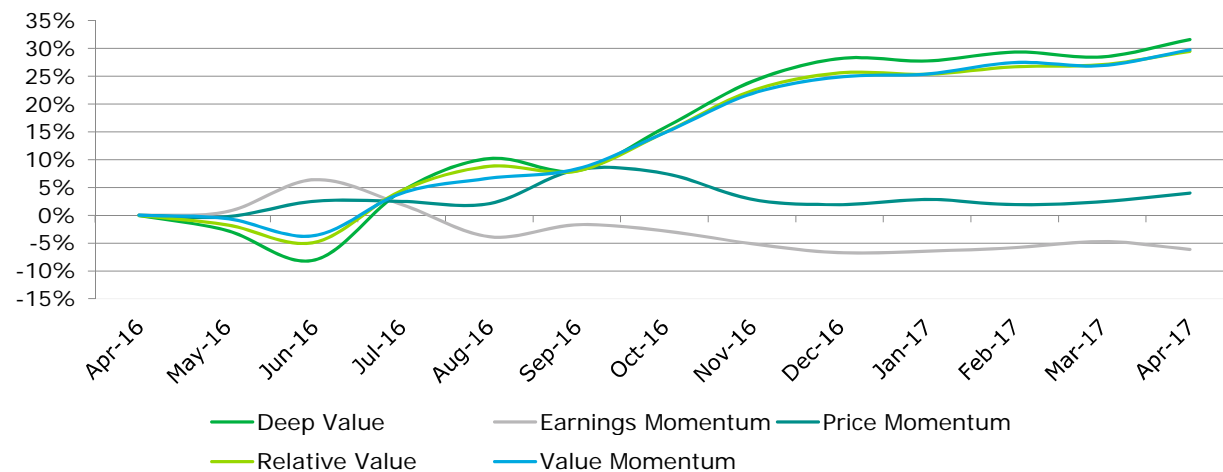
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	3.11	3.85	31.62	0.27	0.17	14.08	-2.84	-3.68	-17.54	0.11	0.06	0.12
<b>Earnings Momentum</b>	-1.39	0.34	-6.08	-0.51	0.53	0.08	0.88	0.19	6.17	-0.04	0.00	-0.03
<b>Price Momentum</b>	1.55	1.15	3.99	0.28	-0.46	-1.20	-1.26	-1.62	-5.20	0.13	0.05	0.03
<b>Relative Value</b>	2.37	4.10	29.47	-0.25	0.23	11.90	-2.62	-3.87	-17.57	0.10	0.06	0.10
<b>Value Momentum</b>	2.84	4.34	29.77	0.41	-0.37	12.62	-2.43	-4.72	-17.14	0.12	0.06	0.11

Equal Weighted Japan 2000 Universe 1-Month Return = 0.54%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## Australia-New Zealand 250<sup>(1)</sup>

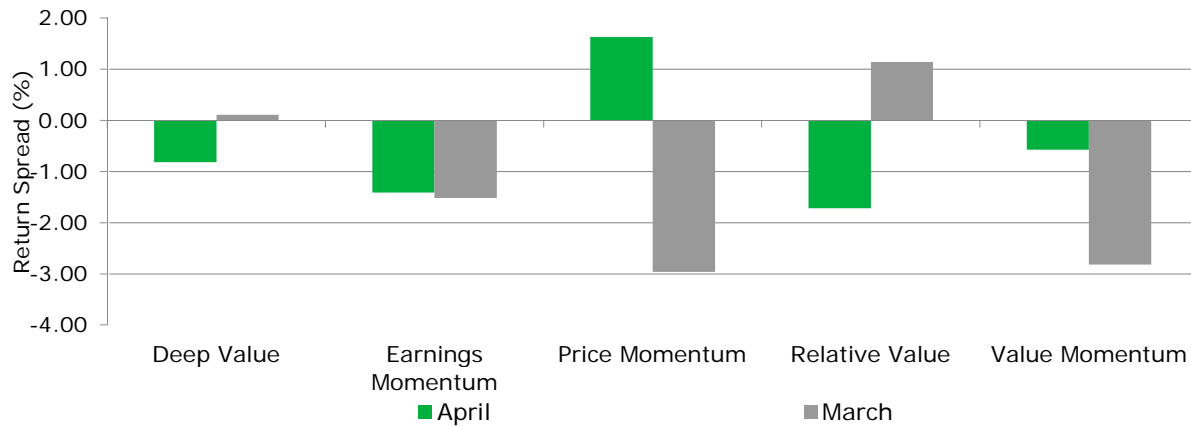
The Price Momentum model had the strongest one month decile return spread performance within the Australia-New Zealand universe returning 1.63%, while the Relative Value model lagged.

The Liquidity and Leverage Rank factor within the Price Momentum model had a one month decile return spread of 2.64% and was the largest contributor to the model's performance in April.

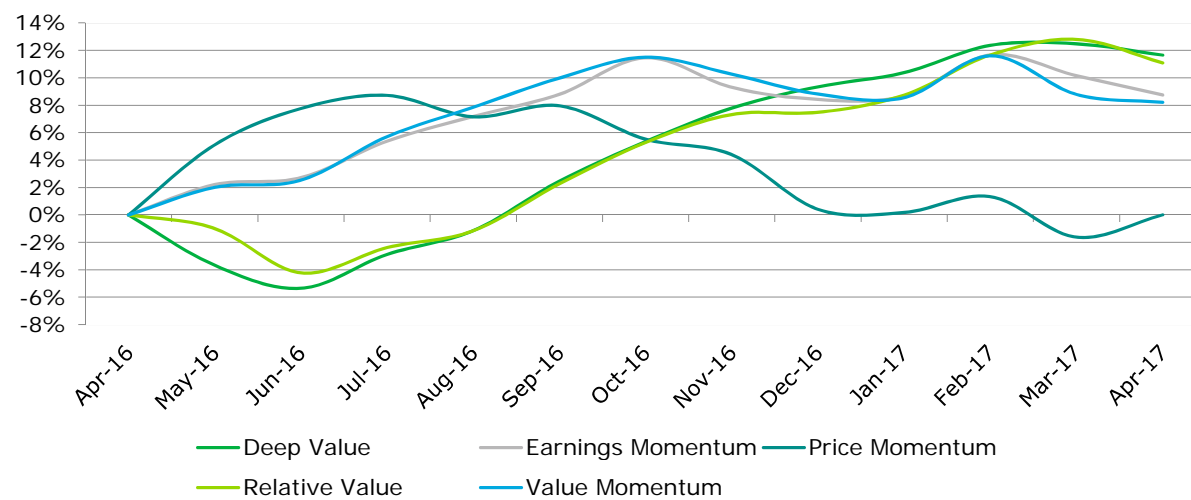
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-0.82	1.28	11.65	-0.83	0.34	5.63	-0.01	-0.95	-6.02	-0.06	0.06	0.06
<b>Earnings Momentum</b>	-1.41	0.09	8.75	-0.33	0.74	5.13	1.08	0.66	-3.61	-0.08	-0.02	0.01
<b>Price Momentum</b>	1.63	-0.17	0.01	0.32	0.47	2.02	-1.31	0.64	2.01	0.11	0.02	-0.02
<b>Relative Value</b>	-1.72	2.35	11.09	-0.94	0.72	3.82	0.77	-1.63	-7.27	-0.02	0.09	0.07
<b>Value Momentum</b>	-0.57	-0.34	8.21	-0.90	0.36	8.21	-0.33	0.69	0.00	-0.02	0.00	0.01

Equal Weighted Australia New Zealand 250 Universe 1-Month Return = 0.97%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe



## Developed Europe<sup>(1)</sup>

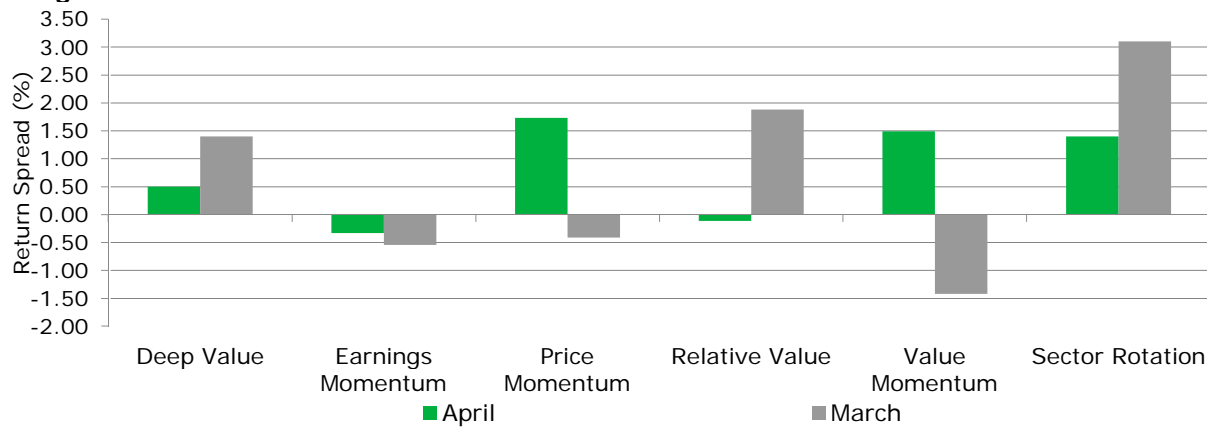
Within the Developed Europe universe our Price Momentum model was the top performer on a one month decile return spread basis, returning 1.73%, while the Earnings Momentum model trailed. The performance of the Price Momentum model was driven by the performance of decile 10.

The Developed Europe Sector Rotation model performed well during the month returning 1.40%. The Financials sector was ranked favorable in our model and performed well during the month.

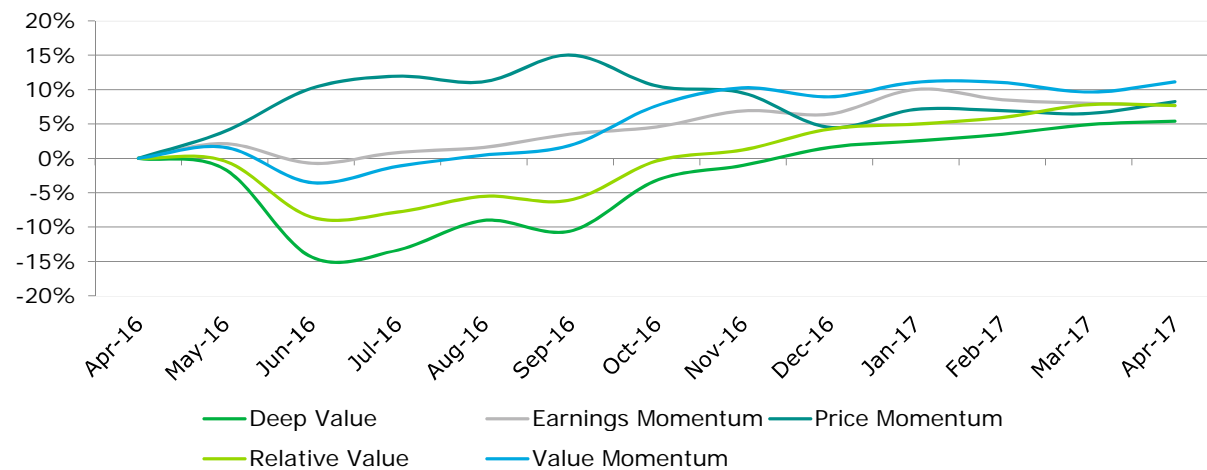
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	0.50	2.87	5.40	0.56	0.48	3.49	0.07	-2.39	-1.92	-0.01	0.01	0.03
<b>Earnings Momentum</b>	-0.33	-2.37	7.66	-0.64	-2.15	6.38	-0.31	0.22	-1.28	0.02	-0.01	0.03
<b>Price Momentum</b>	1.73	1.14	8.25	0.82	-0.18	4.42	-0.92	-1.32	-3.83	0.09	0.02	0.02
<b>Relative Value</b>	-0.11	2.73	7.71	-0.23	0.04	4.07	-0.12	-2.69	-3.64	0.01	0.04	0.04
<b>Value Momentum</b>	1.49	0.04	11.10	1.18	-0.67	9.65	-0.31	-0.70	-1.45	0.01	0.00	0.04
<b>Sector Rotation <sup>(4)</sup></b>	1.40	-7.30	-0.50	1.70	-5.20	-5.10	0.30	2.00	-4.50	-	-	-

Equal Weighted Europe 1000 Universe 1-Month Return = 3.75%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## Developed Pacific<sup>(1)</sup>

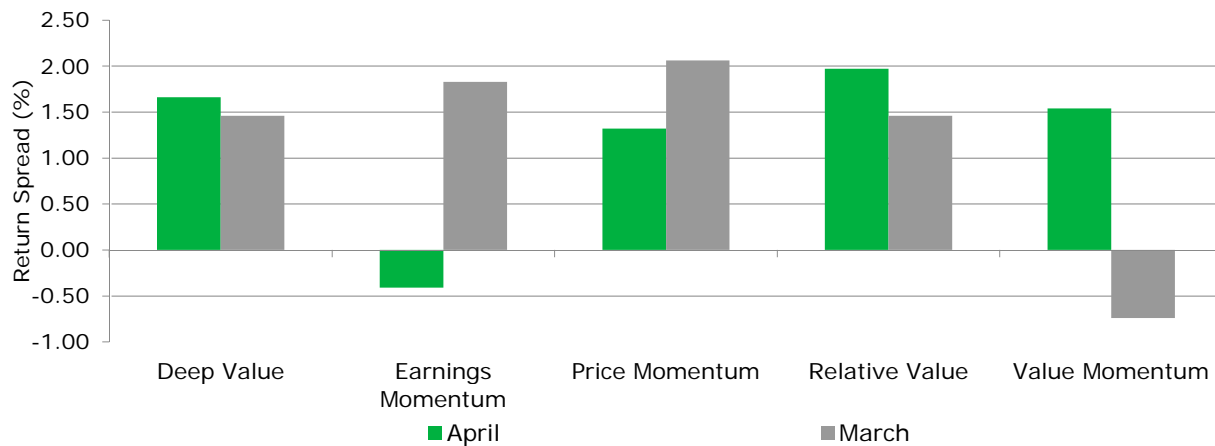
Over the Developed Pacific universe, the Relative Value and Deep Value models had the strongest one month decile return spread performance, returning 1.97% and 1.66%, while the Earnings Momentum model lagged.

The Value Momentum model was the most improved model during the month with its one month decile spread performance improving by 2.28%.

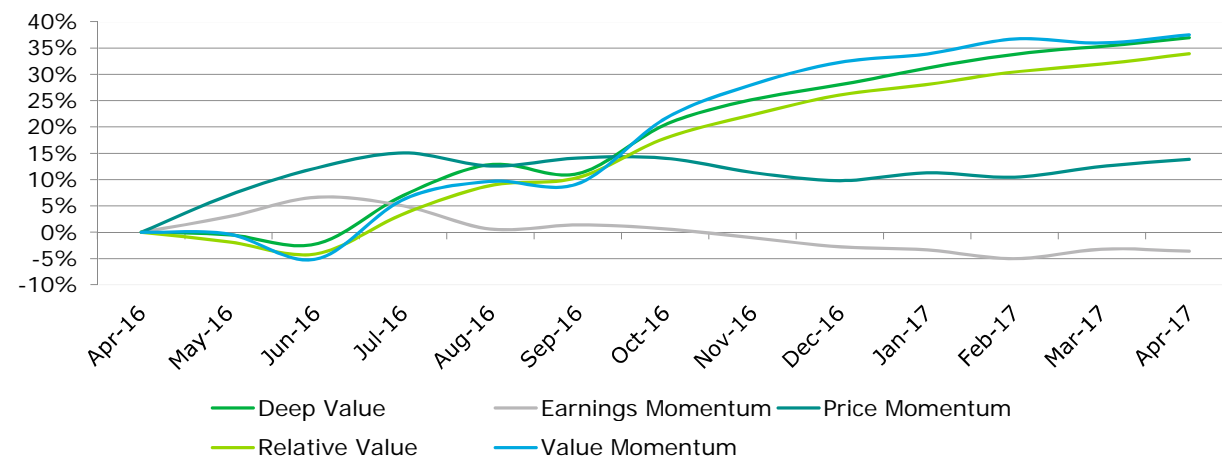
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	1.66	5.80	36.96	0.38	2.60	15.31	-1.28	-3.20	-21.66	0.05	0.06	0.10
<b>Earnings Momentum</b>	-0.41	-0.26	-3.60	-0.27	1.28	2.86	0.14	1.53	6.46	0.03	0.03	0.00
<b>Price Momentum</b>	1.32	2.55	13.86	0.22	0.84	2.54	-1.10	-1.72	-11.32	0.08	0.04	0.04
<b>Relative Value</b>	1.97	5.85	33.89	0.89	3.76	14.10	-1.08	-2.10	-19.80	0.06	0.06	0.10
<b>Value Momentum</b>	1.54	3.62	37.49	0.22	1.36	17.29	-1.32	-2.26	-20.20	0.03	0.02	0.10

Equal Weighted Developed Pacific Universe 1-Month Return = 1.37%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## Developed World Ex North America (EAFE) <sup>(1)</sup>

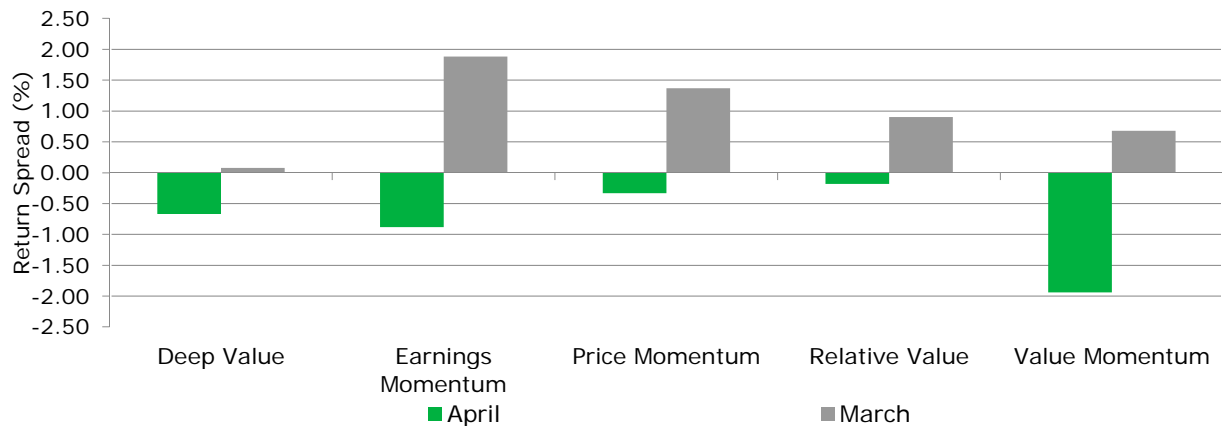
The models over the Developed World Ex North America (EAFE) universe struggled during the month.

The Value Momentum model's one year cumulative performance has improved to 27.35% and is the top performing model across all country's in our library.

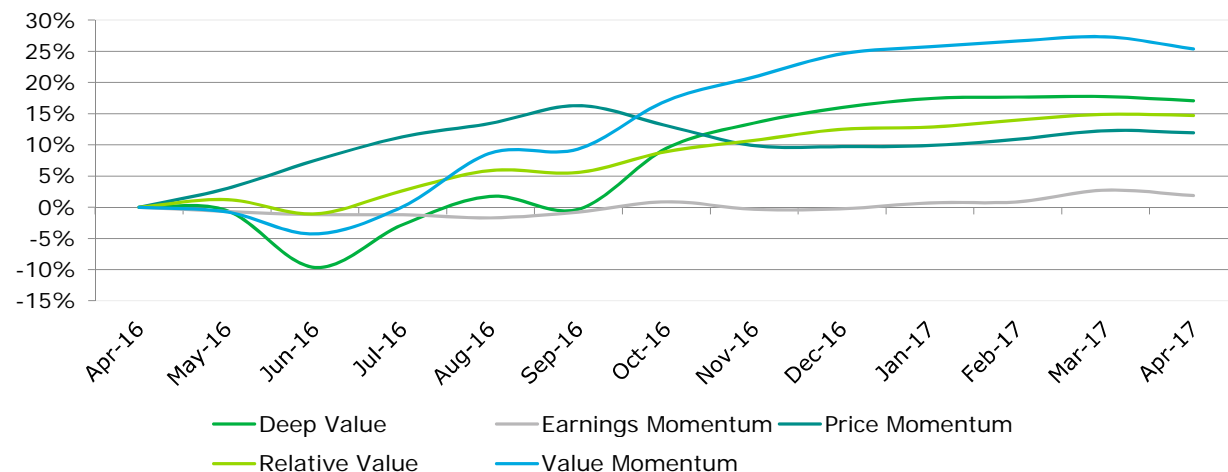
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return			D10 Excess Return			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-0.67	-0.36	17.09	0.09	0.16	9.49	0.76	0.52	-7.60	-0.07	-0.02	0.05
<b>Earnings Momentum</b>	-0.88	1.17	1.89	-0.68	-0.92	1.67	0.20	-2.09	-0.22	-0.03	0.02	0.01
<b>Price Momentum</b>	-0.33	2.05	11.94	-0.08	1.50	7.09	0.25	-0.55	-4.85	-0.05	0.03	0.03
<b>Relative Value</b>	-0.18	1.87	14.70	-0.49	1.05	6.48	-0.31	-0.82	-8.21	-0.03	0.03	0.05
<b>Value Momentum</b>	-1.94	-0.35	25.41	-0.86	-0.33	14.67	1.07	0.02	-10.74	-0.08	-0.02	0.08

Equal Weighted Developed World Ex North America (EAFE) 1-Month Return = 2.69%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## Emerging Markets<sup>(1)</sup>

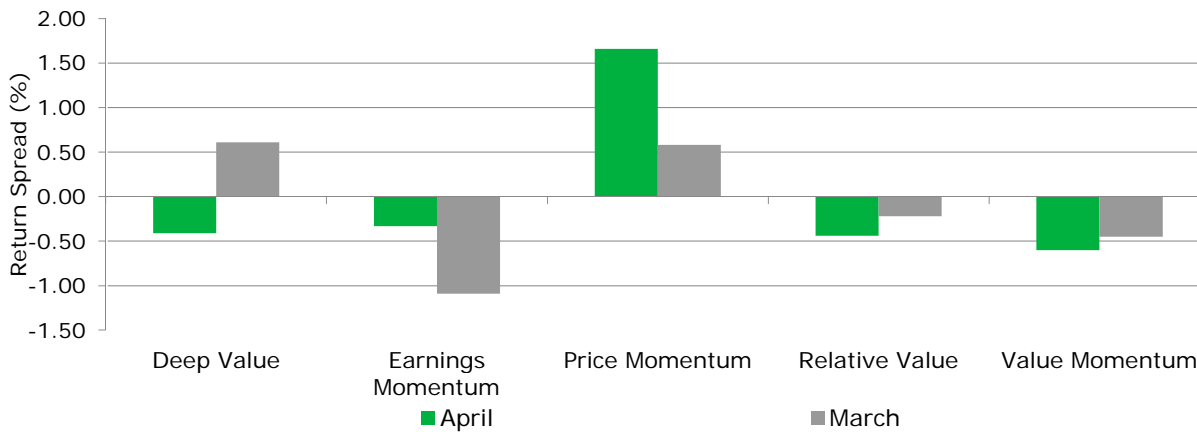
Within the Emerging Markets universe our models struggled. The Price Momentum model was the only model with positive performance returning 1.66%. The performance of the model was driven by the short portfolio.

The 52-Week High factor within the Price Momentum model, had a one month decile return spread of 3.18% and was the largest contributor to the model's performance in April.

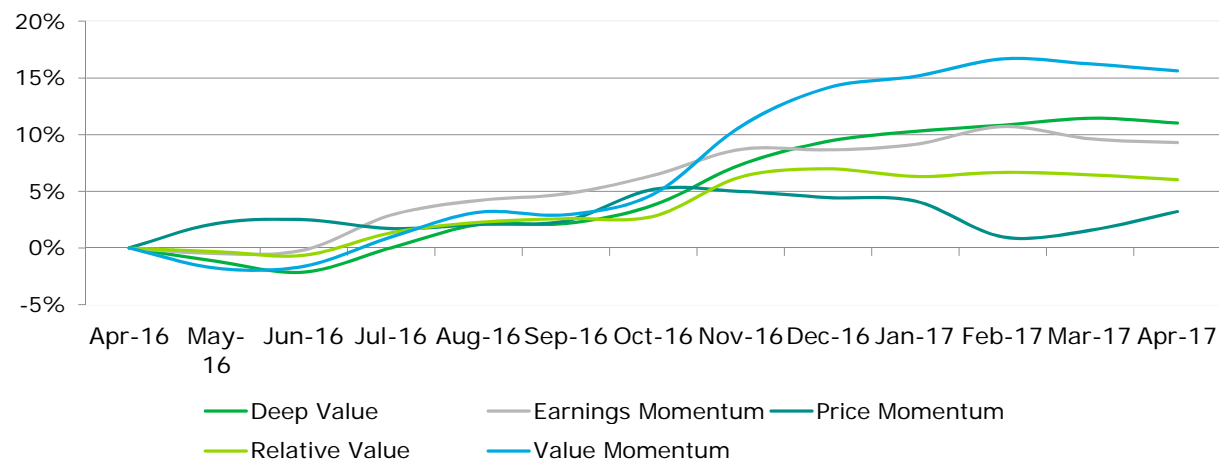
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-0.41	0.74	11.04	-0.26	0.43	5.97	0.14	-0.31	-5.07	-0.01	0.02	0.05
<b>Earnings Momentum</b>	-0.33	0.15	9.29	0.25	1.41	7.96	0.58	1.26	-1.33	0.00	0.01	0.03
<b>Price Momentum</b>	1.66	-0.93	3.20	0.71	-1.07	0.90	-0.95	-0.14	-2.29	0.10	0.01	0.03
<b>Relative Value</b>	-0.44	-0.29	6.02	-0.73	-0.68	1.21	-0.29	-0.39	-4.81	-0.02	0.01	0.03
<b>Value Momentum</b>	-0.60	0.51	15.66	-0.47	-0.04	7.90	0.13	-0.54	-7.76	-0.03	0.01	0.06

Equal Weighted Emerging Markets Universe 1-Month Return = 1.41%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## Frontier Markets<sup>(1)</sup>

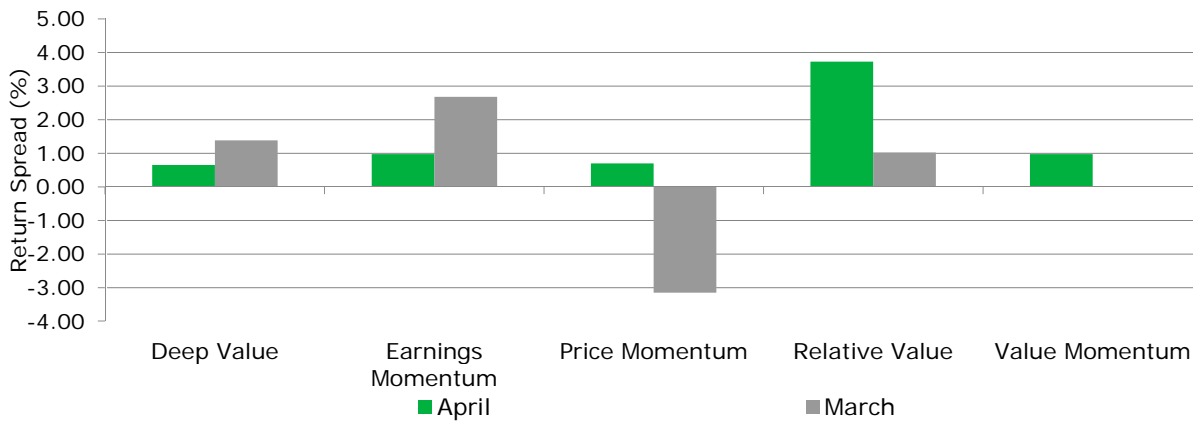
Over the Frontier Market's thematic models the Relative Value model had the strongest one month decile return spread performance, returning 3.73%.

The Industry Relative TTM EBITDA-to-Price factor within the Relative Value model, had a one month decile return spread of 4.67% and was the largest contributor to the model's performance in April.

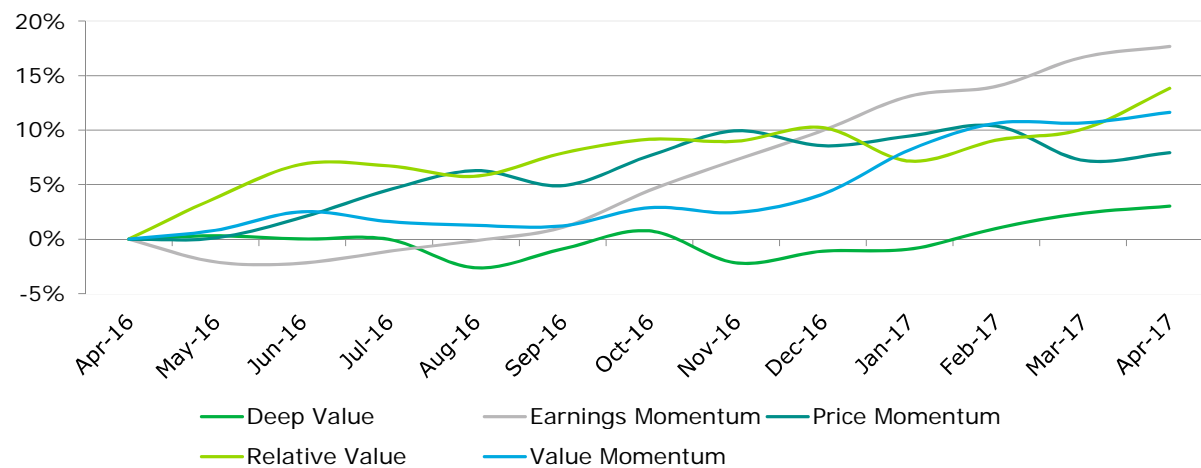
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	0.65	3.93	3.04	0.97	3.67	0.82	0.33	-0.26	-2.21	0.06	0.09	0.04
<b>Earnings Momentum</b>	0.98	4.56	17.67	1.40	4.00	9.91	0.42	-0.56	-7.76	0.08	0.09	0.06
<b>Price Momentum</b>	0.70	-1.54	7.92	-0.45	-0.64	3.88	-1.15	0.90	-4.04	0.10	0.05	0.06
<b>Relative Value</b>	3.73	6.66	13.81	1.35	2.83	4.29	-2.38	-3.84	-9.52	0.11	0.08	0.06
<b>Value Momentum</b>	0.98	3.44	11.62	-0.26	1.72	6.04	-1.24	-1.72	-5.58	0.02	0.05	0.04

Equal Weighted Frontier Markets Universe 1-Month Return = 1.31%

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

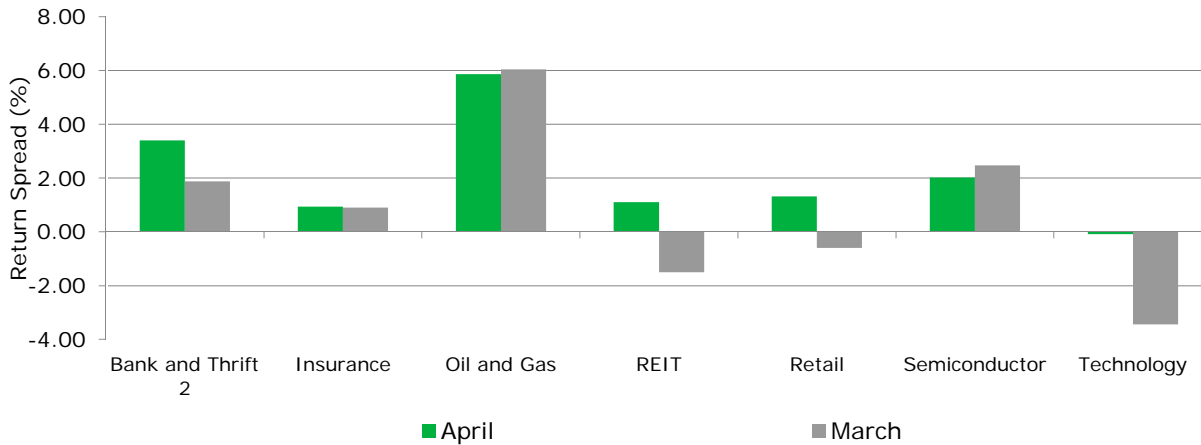
## Specialty Models<sup>(1)</sup>

Within our specialty model library the Oil and Gas and the Bank and Thrift 2 models had the strongest one month quintile return spread performance returning 5.86% and 3.40%, respectively, while the Insurance and the Technology models struggled.

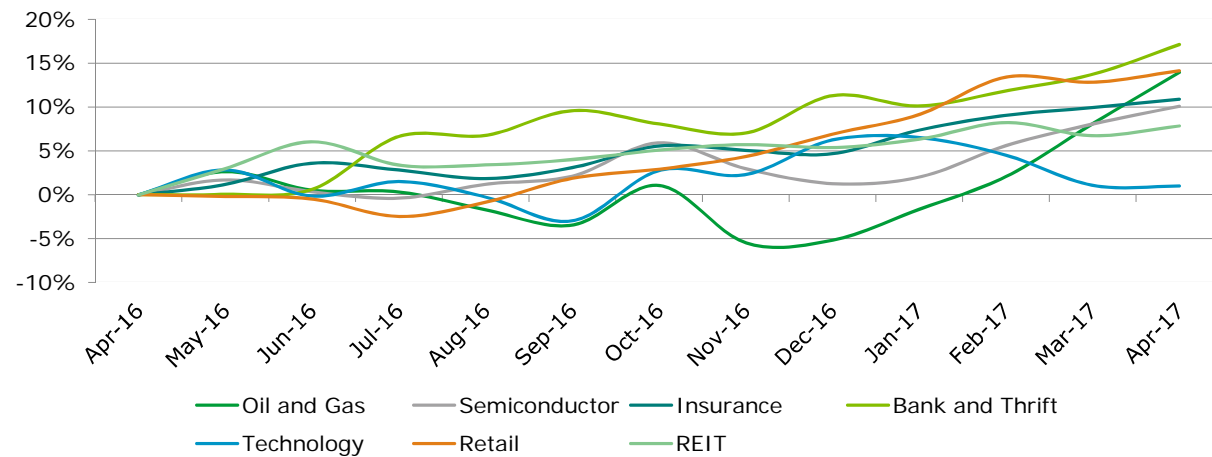
The Technology model was the most improved model during the month on a one month decile spread basis improving by 3.35% over its performance in March.

Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Bank and Thrift 2<sup>(4)</sup></b>	3.40	7.02	17.13	1.05	3.73	6.02	-2.36	-3.29	-11.10	0.22	0.16	0.10
<b>Insurance</b>	0.94	3.52	10.91	1.95	3.55	8.21	1.01	0.04	-2.69	0.18	0.13	0.06
<b>Oil and Gas</b>	5.86	15.63	13.96	2.68	6.64	7.12	-3.17	-8.98	-6.84	0.27	0.25	0.08
<b>REIT</b>	1.11	1.51	7.84	-0.04	0.80	0.42	-1.14	-0.71	-7.42	0.09	0.00	0.01
<b>Retail</b>	1.32	5.00	14.17	1.83	3.18	9.66	0.51	-1.82	-4.52	0.09	0.10	0.06
<b>Semiconductor</b>	2.02	8.08	10.10	0.13	3.50	4.56	-1.89	-4.58	-5.55	0.07	0.08	0.04
<b>Technology</b>	-0.09	-5.53	1.02	-0.75	-3.04	1.26	-0.66	2.48	0.24	-0.05	-0.09	-0.01

### Long/Short Return Performance



### 1 Year Cumulative Spread Returns (1-Month Holding Period)



(1) Universe construction methodology in Appendix 1.1  
 (2) Model descriptions available in Appendix 1.2  
 (3) Performance metrics calculations available in Appendix 1.3  
 (4) Deciles are used for the Bank and Thrift 2 universe

## APPENDIX

### 1.1 UNIVERSE DESCRIPTIONS

**US Large Cap:** Top 90% of US stocks by cumulative market-cap, including securities held by passively benchmarked ETF's tracking the same market segment.

**US Small Cap:** Securities in 91-98% of US stocks by cumulative market-cap, including securities held by passively benchmarked ETF's tracking the same market segment.

**Canada 500:** Top 500 Canada stocks by market-cap.

**Japan 2000:** Top 2000 Japan stocks by market-cap.

**Australia - New Zealand 250:** Top 250 stocks by market-cap in Australia and New Zealand.

**Developed Europe:** Top 1000 securities in the Developed Europe markets by market-cap.

**Developed Pacific:** Top 95% of stocks by cumulative free float market-cap among developed countries in the region, subject to a minimum free float market-cap of USD 250 mm.

**Developed World Ex-North America (EAFE):** Top 80% of stocks by cumulative market-cap stocks, in global developed countries excluding US/ Canada.

**Emerging Markets:** Top 95% of stocks by cumulative free float market-cap among emerging market countries, subject to a minimum free float market cap of USD 100 mm.

**Frontier Markets:** Top 95% of stocks by cumulative free float market-cap among frontier market countries, subject to a minimum free float market cap of USD 100 mm.

**Bank and Thrift:** All bank and thrift stocks that are part of the US Total Cap universe (top 98% of US stocks), with a share price > \$5 and market-cap >= .01% of the largest bank in the universe.

**Insurance Universe:** All insurance companies listed on US exchanges, excluding ADR's and Insurance brokers.

**Oil & Gas:** Global stocks in the oil & gas industry

**REIT:** All US REITs that are part of the US Total Cap universe (top 98% of US stocks), excluding mortgage REIT's.

**Retail:** All Retail companies in the US Total Cap universe (top 98% of US stocks), including those in the Cyclical and Non-Cyclical sectors.

**Semiconductors:** Global securities classified in the Semiconductor industry.

**Technology:** All Technology companies in the US Total Cap universe (top 98% of US stocks).

## **1.2 MODEL DESCRIPTIONS**

The reported Decile 1 Excess Returns and Decile 10 Excess Returns are Cumulative Sum

**Deep Value Model (DVM):** seeks to identify securities trading at a steep discount to their intrinsic

**Earnings Momentum Model (EMM):** incorporates analyst forecasts alongside in conjunction with past earnings strength to estimate future earnings potential.

**Price Momentum Model (PMM):** seeks to combine price changes with several risk factors to provide a consistent short term investment signal.

**Relative Value Model (RVM):** an alternative approach to the DVM that considers valuation indicators on an industry adjusted basis thus mitigating any concentration risk.

**Value Momentum Analyst (VMA):** a comprehensive style model which includes factors from Value, Price and Earnings Momentum themes to identify attractive/ unattractive securities.

**GARP Model (GARP):** designed to identify attractively valued stocks using valuation techniques that take growth into consideration. The Valuation component selects stocks with attractive valuation characteristics.

**Historical Growth Model (HGM):** identifies stocks with an above-average track-record of earnings growth, strong sales growth and high sustainable growth. This blended approach enables our Historical Growth Model to not only identifies traditional growth stocks, but also value stocks on the verge of growth.

**Small Cap Model:** seeks to exploit the noticeable excess performance in the small cap arena. Constituent factors selected for its individual and orthogonal power within the small cap space.

**Bank and Thrift II Model (QBM2):** seeks to generate consistent outperformance by leveraging specialty data sources to create bank-and-thrift-specific factors which complement a set of broad factors exhibiting strong performance within the bank and thrift industries.

**Insurance Model (QIM):** provides a robust methodology to enhance stock selection processes by comparing the relative performance of insurance companies on a consistent valuation framework designed to identify stocks with significant alpha generating potential.

**Oil and Gas Model (OGM):** uses a comprehensive scoring system that systematically values companies utilizing energy specific operating metrics and fundamental factors relevant to the oil and gas industry.

**Retail Model (QRT):** designed to generate alpha by employing general factor signals alongside key retail specific measures. Retail specific indicators include Same Store Sales and Earnings Expectations.

**REIT Model (QRM):** incorporates detailed property level information such as occupancy rate, location, and building quality to construct a bottom up approach assessment of REIT Net Asset Value; along with several other metrics.

**Technology Model (QTA2):** a multidimensional approach of combining several industry-specific models with a cross-sectional overlay. The model seeks to generate alpha by accounting for the inherent cyclicity and volatility of sub-industries.



### **1.3 PERFORMANCE STATS CALCULATION**

*The reported Information Coefficient (correlation between model ranks and equity return) is the average over the given time period. The reported Decile 1 and Decile 10 Excess Returns are Cumulative Sum (CUMSUM) and are measured as the excess return of their respective benchmark over a given time period*

*The reported Decile 1 Excess Returns and Decile 10 Excess Returns are Cumulative Sum (CUSUM) returns and are measured as the excess return of their respective benchmark over the given time period.*

*The reported Long-Short Spread Returns are Cumulative SUM returns and are calculated by subtracting the total returns of stocks in the bottom decile/quintile from those in the top decile/quintile over the given time period.*

*Quintiles are used for performance stats calculations, instead of deciles, in cases of smaller universe sizes.*

*The reported performance stats are all in local currency.*

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