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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 19.96%, while the Price Momentum model lagged. Over the US Small Cap universe our Historical Growth model had the strongest one month decile return spread performance, returning 10.29%, while the Relative Value model lagged. The performance of the Historical Growth model was driven by the performance of the short portfolio.

### Developed Europe:

Within the Developed Europe universe our Price Momentum model was the top performer on a one month decile return spread basis, returning 6.21%, while the Deep Value model trailed.

### Developed Pacific:

Over the Developed Pacific universe, the Earnings Momentum model had the strongest one month decile return spread performance, returning 3.00%, while the Price Momentum model lagged. The Price Momentum model's one year cumulative performance is currently 8.41%.

### Emerging Markets:

Within the Emerging Markets universe our Earnings Momentum model had the strongest one month decile return spread performance, returning 2.08%, while the Deep Value model lagged. The Earnings Momentum model's one year cumulative performance is the highest for the EM universe at 17.24%.

### Sector Rotation:

The US Large Cap Sector Rotation model returned 14.10%. The Tech sector had a favorable ranking and the Energy sector had an unfavorable ranking. The US Small Cap Sector Rotation model performed well, returning 2.50%. The Tech sector had a favorable ranking and the Healthcare sector had an unfavorable ranking. The Developed Europe Sector Rotation model returned 7.60%. The Healthcare sector had a favorable ranking and the Energy sector had a unfavorable ranking.

### Specialty Models:

Within our specialty model library the Insurance and the Oil and Gas models had the strongest one month quintile return spread performance returning 2.37% and 1.91%, respectively, while the Retail and the Bank and Thrift 2 models struggled. The Oil and Gas model's one year cumulative performance is the highest at 14.61% while the REIT 2 model's performance is the lowest at -5.83%.

## IHS Markit Model Matrix

	Deep Value	Earnings Momentum	Price Momentum	Relative Value	Value Momentum
US Large Cap	0.662	0.735	-9.940	-0.224	1.183
US Small Cap	-2.433	1.210	-4.332	-9.089	-2.652
Developed World ex North America	-9.979	-6.821	-7.183	-7.648	-5.867
Canada 500	-3.025	4.244	10.756	0.410	-4.578
Developed Pacific STDCAP	-3.292	3.002	-4.943	-2.897	-2.586
Emerging Markets STDCAP	-1.852	2.078	1.680	1.930	-0.222
Frontier Markets STDCAP	-2.808	0.874	5.814	-1.829	-2.888
Europe 1000	-11.066	-8.007	6.213	-7.389	-5.607
Japan 2000	-1.437	1.112	-1.958	-0.982	-1.014
Australia-New Zealand 250	-5.155	7.671	-2.012	3.498	-4.008

Worst

Best

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

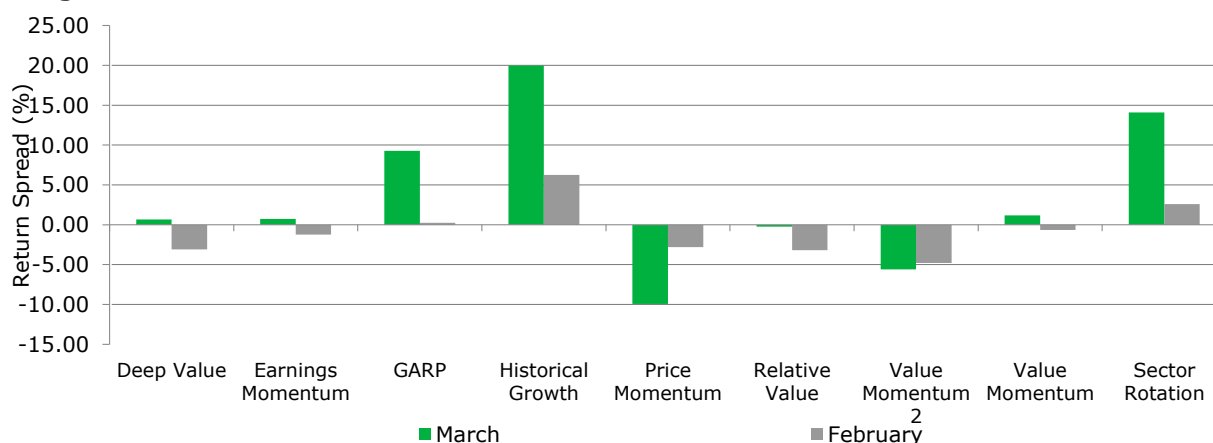
Within the US Large Cap universe the Historical Growth model had the strongest one month decile return spread performance, returning 19.96%, while the Price Momentum model lagged.

The US Large Cap Sector Rotation model returned 14.10%. The Tech sector had a favorable ranking and the Energy sector had an unfavorable ranking.

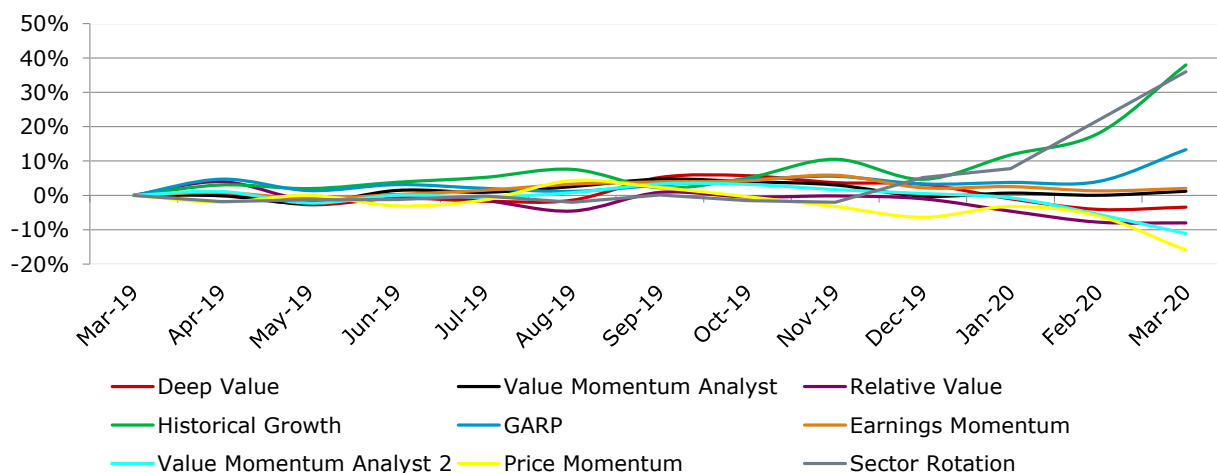
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	0.66	-6.67	-3.42	3.11	0.45	1.90	2.45	7.12	5.32	-0.05	-0.10	0.00
<b>Earnings Momentum</b>	0.73	-0.18	2.02	-1.40	-4.30	-2.92	-2.13	-4.12	-4.94	-0.01	0.00	0.01
<b>GARP</b>	9.27	9.98	13.31	4.19	4.89	5.68	-5.08	-5.10	-7.63	0.16	0.06	0.05
<b>Historical Growth</b>	19.96	33.29	37.98	7.19	14.54	16.95	-12.77	-18.75	-21.03	0.28	0.21	0.08
<b>Price Momentum</b>	-9.94	-9.58	-15.95	-5.30	-5.10	-9.95	4.64	4.47	6.00	-0.13	-0.04	-0.03
<b>Relative Value</b>	-0.22	-7.02	-8.02	-2.42	-5.53	-6.29	-2.19	1.49	1.73	0.02	-0.06	0.01
<b>Value Momentum 2</b>	-5.60	-11.66	-11.14	-5.51	-9.15	-9.70	0.09	2.51	1.44	-0.07	-0.08	-0.02
<b>Value Momentum</b>	1.18	1.42	1.20	-1.43	-2.22	-3.73	-2.61	-3.65	-4.93	-0.04	-0.03	0.00
<b>Sector Rotation</b>	14.10	19.90	1.90	5.10	6.30	6.50	-9.00	-13.60	4.50	-	-	-

Equal Weighted US Large Cap Universe 1-Month Return = -21.53%

### 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

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

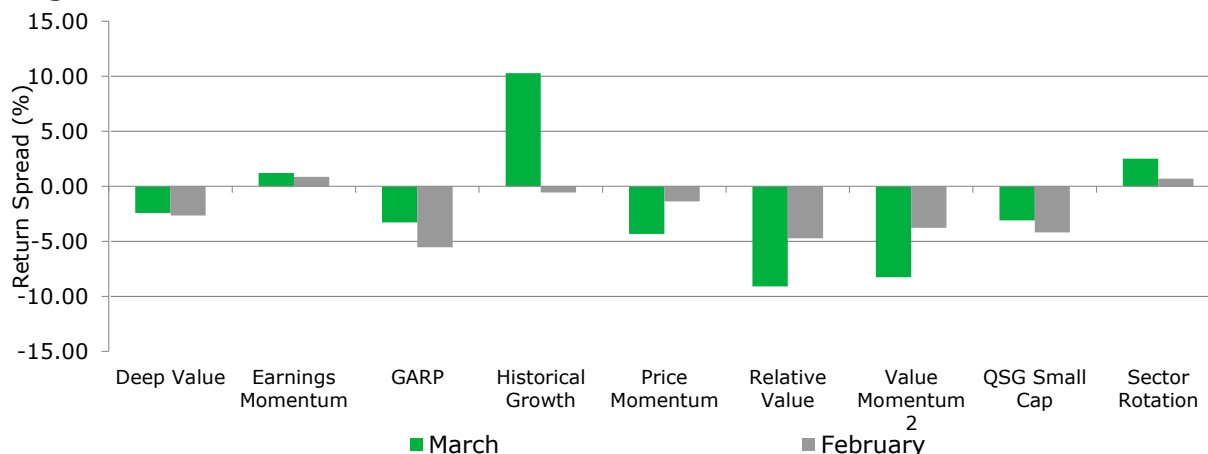
Over the US Small Cap universe our Historical Growth model had the strongest one month decile return spread performance, returning 10.29%, while the Relative Value model lagged. The performance of the Historical Growth model was driven by the performance of the short portfolio.

The US Small Cap Sector Rotation model performed well, returning 2.50%. The Tech sector had a favorable ranking and the Healthcare sector had an unfavorable ranking.

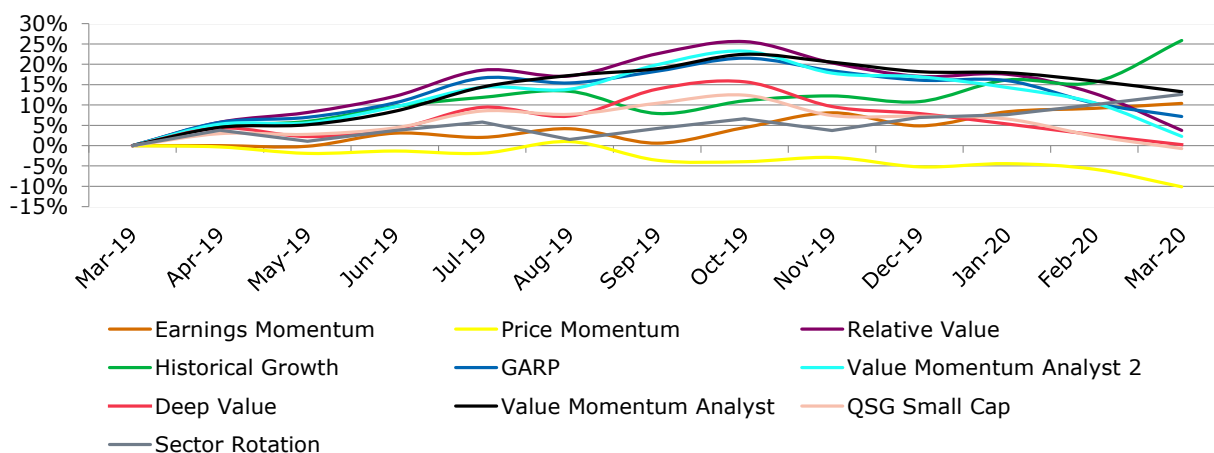
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-2.43	-7.66	0.23	0.89	0.33	-0.01	3.32	7.98	-0.24	-0.01	-0.04	0.03
<b>Earnings Momentum</b>	1.21	5.52	10.39	-2.30	-1.15	0.35	-3.51	-6.68	-10.03	-0.03	0.01	0.02
<b>GARP</b>	-3.28	-8.95	7.16	-1.66	-2.80	1.52	1.63	6.15	-5.63	0.00	-0.01	0.04
<b>Historical Growth</b>	10.29	15.04	25.86	2.70	5.76	8.39	-7.59	-9.28	-17.47	0.12	0.08	0.04
<b>Price Momentum</b>	-4.33	-4.91	-10.14	-2.70	-1.49	-6.63	1.63	3.42	3.50	-0.09	-0.03	-0.02
<b>Relative Value</b>	-9.09	-13.28	3.73	-5.44	-7.83	-2.74	3.64	5.45	-6.48	-0.05	-0.05	0.04
<b>Value Momentum 2</b>	-8.26	-14.66	2.27	-3.69	-7.27	-2.34	4.57	7.39	-4.62	-0.07	-0.07	0.02
<b>QSG Small Cap</b>	-3.09	-7.98	-0.73	-2.48	-5.25	-4.25	0.61	2.73	-3.52	-0.07	-0.07	0.01
<b>Sector Rotation</b>	2.50	-0.10	15.10	1.10	-2.80	14.70	-1.40	-2.70	-0.40	-	-	-

Equal Weighted US Small Cap Universe 1-Month Return = -24.78%

### 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

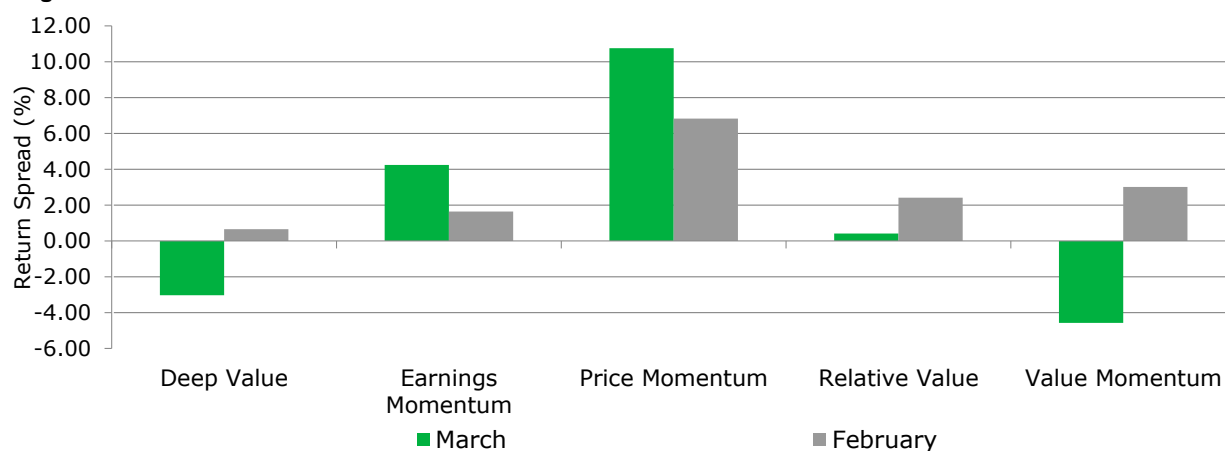
## Canada 500<sup>(1)</sup>

Over the Canadian universe our Price Momentum model had the strongest one month decile return spread performance, returning 10.76%, while the Value Momentum model lagged. The 52-Week High factor within the Price Momentum model had a one month decile return spread of 15.29% and was the largest contributor to the model's performance in March.

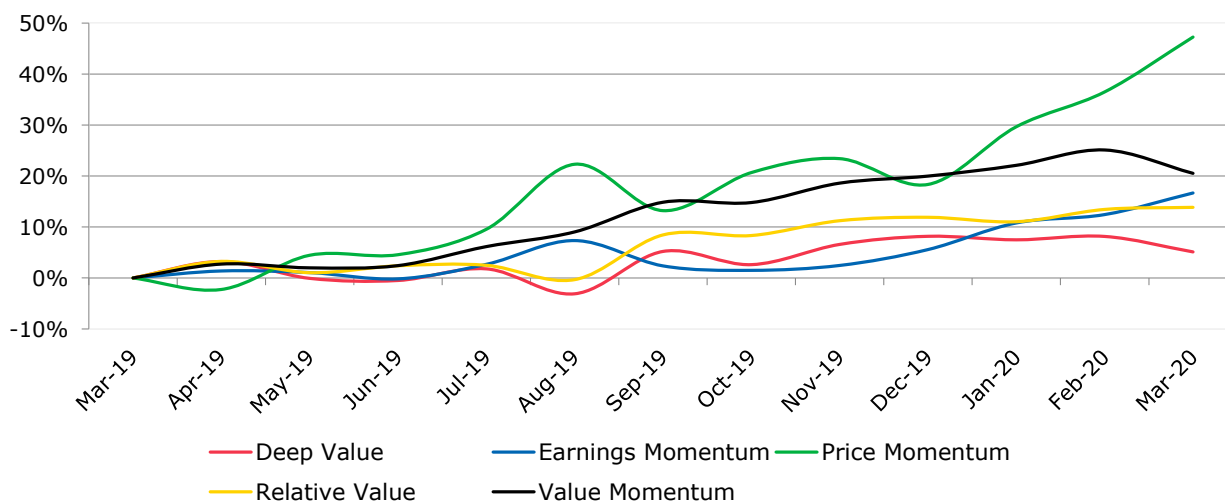
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-3.03	-3.05	5.12	0.61	-1.38	-2.95	3.63	1.68	-8.07	0.00	0.00	0.03
<b>Earnings Momentum</b>	4.24	11.10	16.71	-0.06	0.31	-0.52	-4.30	-10.79	-17.23	0.04	0.10	0.02
<b>Price Momentum</b>	10.76	28.91	47.25	4.64	12.43	20.24	-6.11	-16.47	-27.01	0.18	0.30	0.13
<b>Relative Value</b>	0.41	1.96	13.87	1.00	-0.27	2.12	0.59	-2.23	-11.75	-0.01	0.02	0.05
<b>Value Momentum</b>	-4.58	0.54	20.54	-1.86	-0.78	3.14	2.71	-1.32	-17.40	-0.09	0.04	0.07

Equal Weighted Canada 500 Universe 1-Month Return = -25.44%

### 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

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

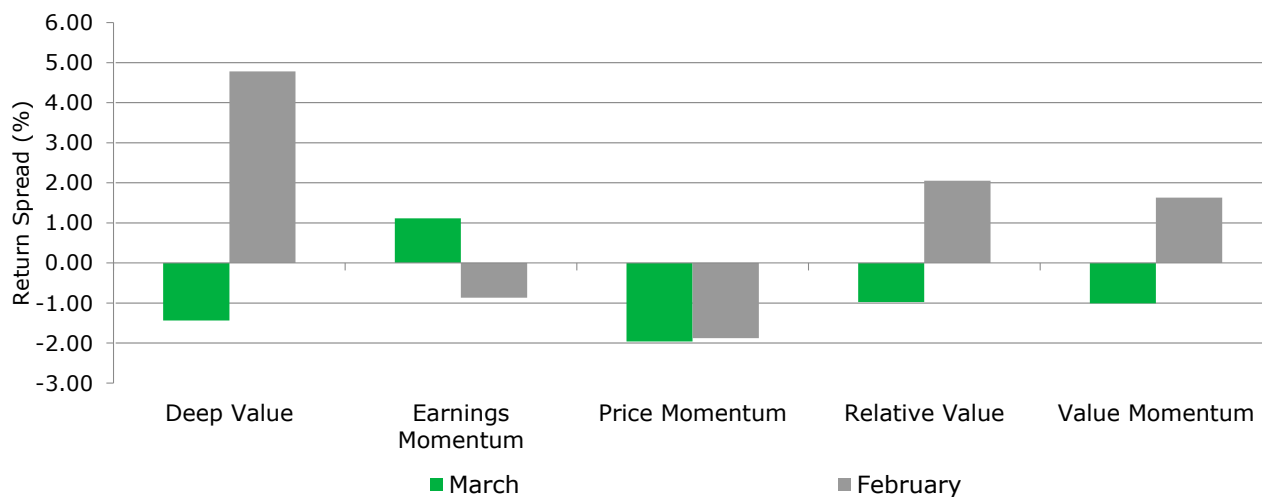
Within the Japan universe our Earnings Momentum model had the strongest one month decile return spread performance returning 1.11%, while Price Momentum lagged.

The Earnings Momentum model was the most improved during the month on a one month decile spread basis improving by 1.98% over its performance in February.

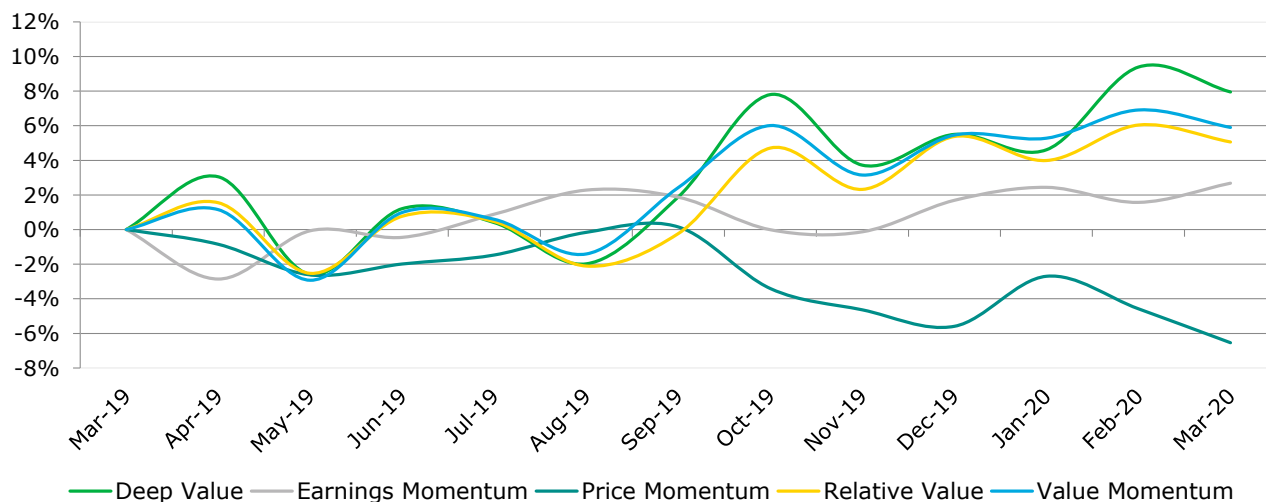
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-1.44	2.45	7.94	-1.84	-2.86	-1.48	-0.40	-5.30	-9.42	-0.07	-0.01	0.05
<b>Earnings Momentum</b>	1.11	1.00	2.68	-1.59	-1.97	-1.33	-2.70	-2.97	-4.01	0.04	0.01	0.00
<b>Price Momentum</b>	-1.96	-0.95	-6.55	-2.26	-2.17	-6.25	-0.30	-1.22	0.30	-0.02	0.01	-0.02
<b>Relative Value</b>	-0.98	-0.33	5.08	-0.36	-1.06	0.68	0.63	-0.74	-4.40	0.00	-0.02	0.03
<b>Value Momentum</b>	-1.01	0.43	5.90	-0.71	-1.64	-0.09	0.30	-2.07	-5.99	-0.04	-0.02	0.04

Equal Weighted Japan 2000 Universe 1-Month Return = -5.31%

### 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

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

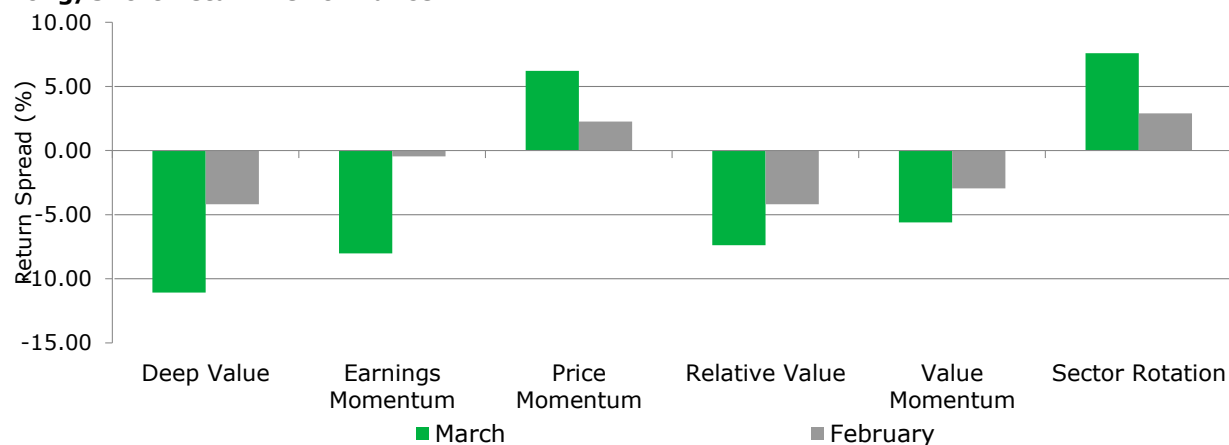
Within the Developed Europe universe our Price Momentum model was the top performer on a one month decile return spread basis, returning 6.21%, while the Deep Value model trailed.

The Developed Europe Sector Rotation model returned 7.60%. The Healthcare sector had a favorable ranking and the Energy sector had a unfavorable ranking.

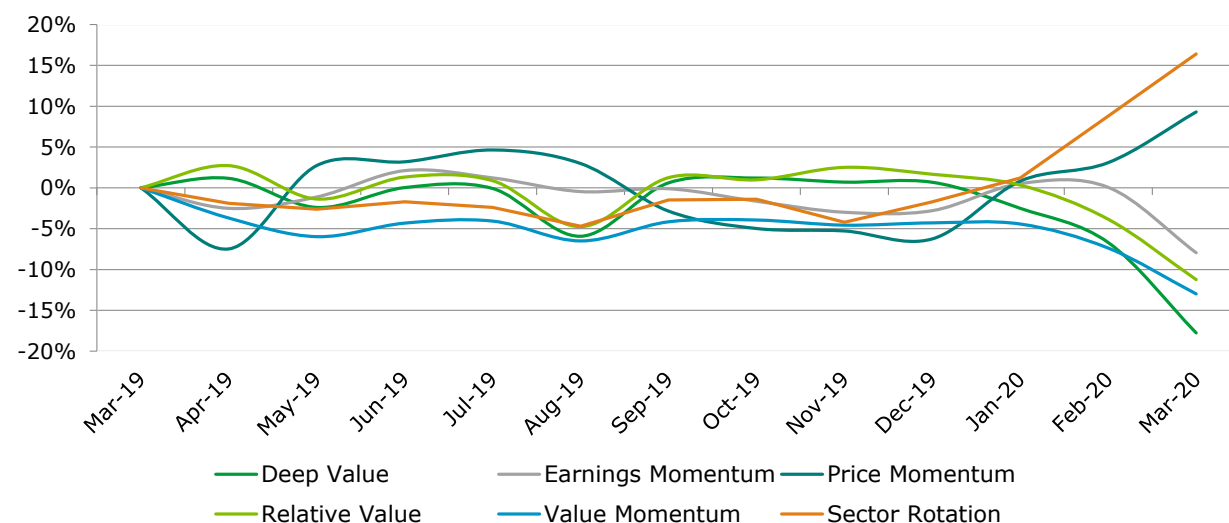
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-11.07	-18.45	-17.77	-5.16	-8.49	-6.53	5.90	9.95	11.24	-0.29	-0.21	-0.06
<b>Earnings Momentum</b>	-8.01	-5.16	-7.95	-4.14	-3.38	-6.88	3.87	1.79	1.07	-0.14	-0.01	-0.01
<b>Price Momentum</b>	6.21	15.55	9.30	2.83	6.91	2.69	-3.39	-8.64	-6.61	0.09	0.17	0.02
<b>Relative Value</b>	-7.39	-12.90	-11.24	-3.82	-6.40	-2.31	3.57	6.49	8.93	-0.19	-0.17	-0.04
<b>Value Momentum</b>	-5.61	-8.70	-12.98	-4.01	-5.03	-5.60	1.60	3.66	7.38	-0.15	-0.09	-0.03
<b>Sector Rotation</b>	7.60	11.30	3.70	3.90	8.80	5.70	-3.80	-2.50	2.00	-	-	-

Equal Weighted Europe 1000 Universe 1-Month Return = -18.11%

### 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

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

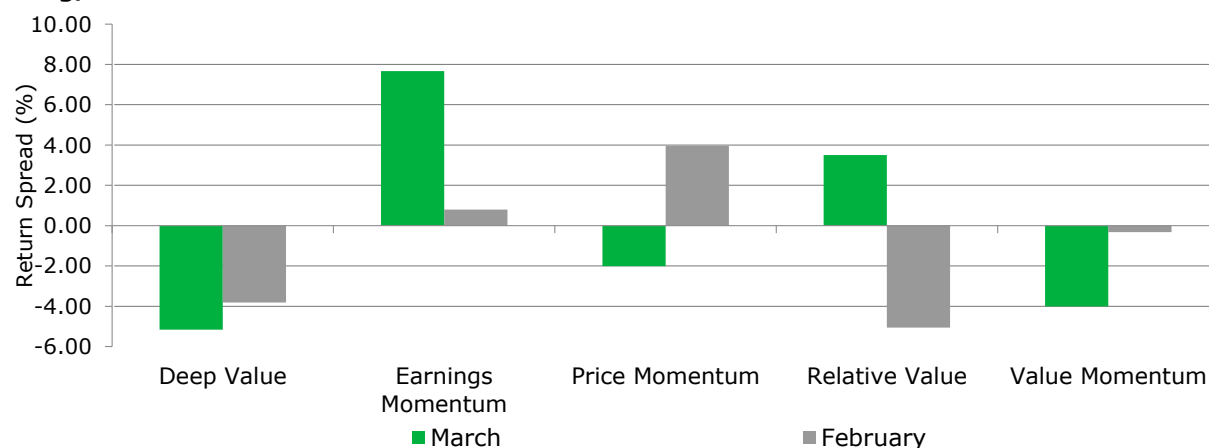
The Earnings Momentum and the Relative Value models had the strongest one month decile return spread performance within the Australia-New Zealand universe returning 7.67% and 3.50%, respectively.

The Liquidity and Leverage Rank factor within the Earnings Momentum model had a one month decile return spread of 6.63% and was the largest contributor to the model's performance in March.

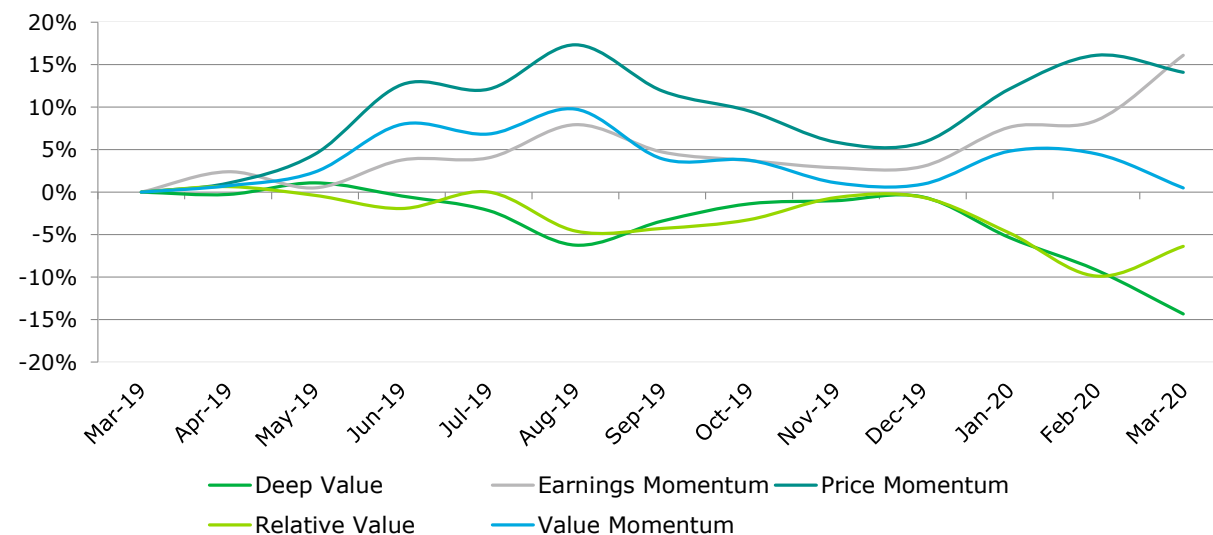
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-5.16	-13.76	-14.33	-2.73	-7.68	-8.66	2.42	6.08	5.67	-0.10	-0.19	-0.06
<b>Earnings Momentum</b>	7.67	13.08	16.12	3.10	5.41	10.18	-4.57	-7.67	-5.94	0.10	0.13	0.04
<b>Price Momentum</b>	-2.01	8.26	14.10	0.11	5.17	10.10	2.13	-3.09	-4.00	-0.04	0.10	0.02
<b>Relative Value</b>	3.50	-5.77	-6.37	1.39	-3.62	-3.98	-2.11	2.15	2.39	0.03	-0.11	-0.03
<b>Value Momentum</b>	-4.01	-0.44	0.51	-3.29	-1.92	-1.50	0.71	-1.48	-2.01	-0.06	0.05	0.01

Equal Weighted Australia New Zealand 250 Universe 1-Month Return = -21.78%

### 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



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

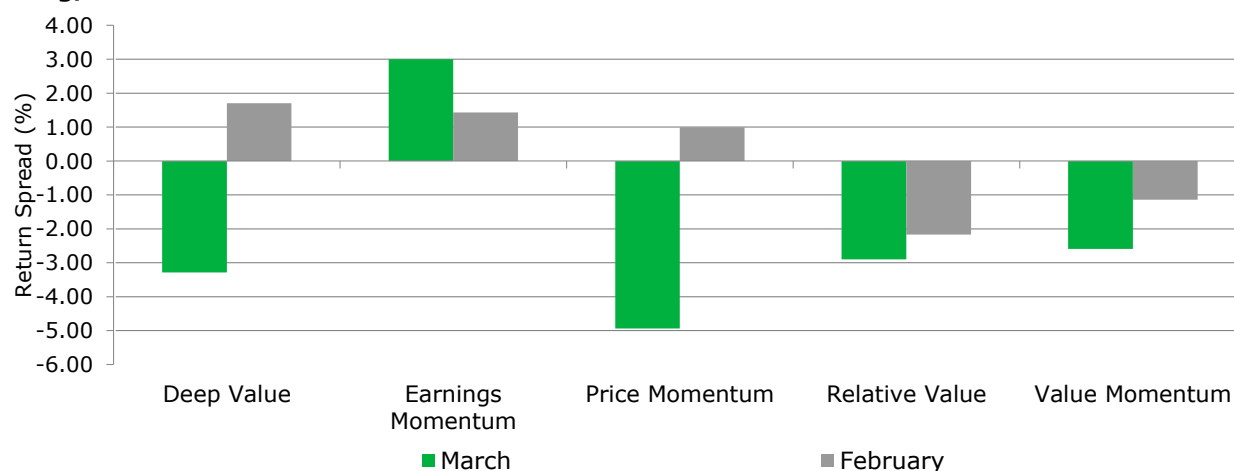
Over the Developed Pacific universe, the Earnings Momentum model had the strongest one month decile return spread performance, returning 3.00%, while the Price Momentum model lagged.

The Price Momentum model's one year cumulative performance is currently 8.41%.

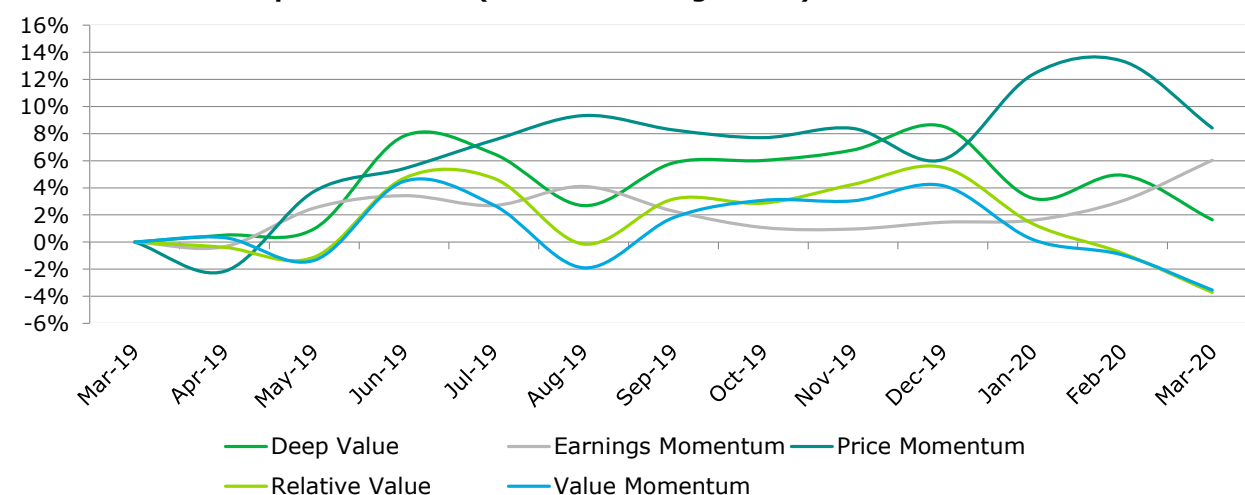
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-3.29	-6.90	1.64	-2.65	-4.13	-5.37	0.64	2.78	-7.01	-0.09	-0.10	-0.01
<b>Earnings Momentum</b>	3.00	4.58	6.04	0.39	0.90	5.43	-2.61	-3.68	-0.61	0.10	0.05	0.02
<b>Price Momentum</b>	-4.94	2.33	8.41	-5.07	-1.60	0.54	-0.13	-3.93	-7.87	-0.01	0.09	0.04
<b>Relative Value</b>	-2.90	-9.23	-3.73	-0.17	-3.51	-5.41	2.72	5.72	-1.68	-0.02	-0.10	-0.01
<b>Value Momentum</b>	-2.59	-7.70	-3.53	0.06	-2.45	-4.77	2.65	5.24	-1.25	0.00	-0.09	-0.01

Equal Weighted Developed Pacific Universe 1-Month Return = -10.26%

### 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

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

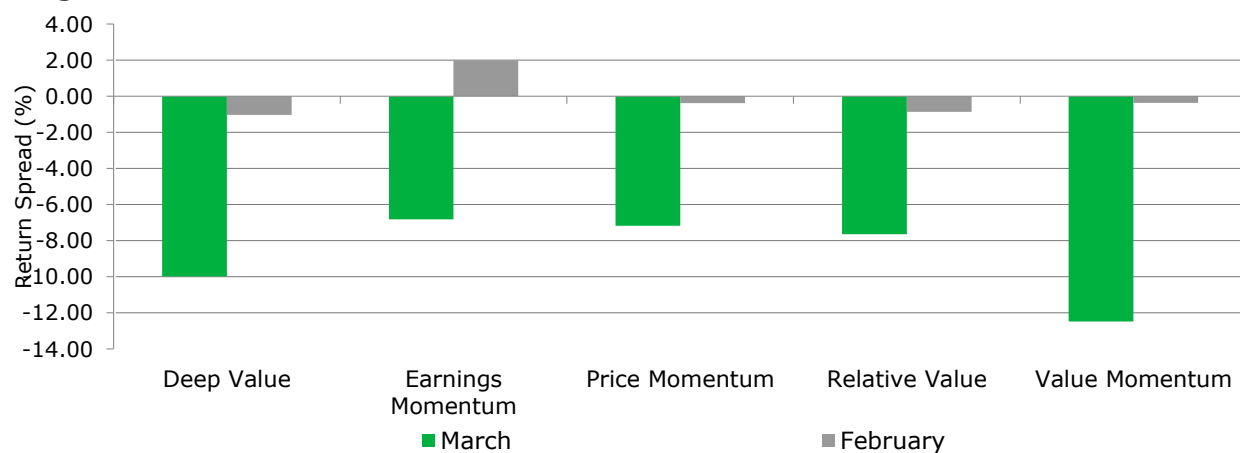
The models over the Developed World Ex North America (EAFE) universe struggled during the month.

The Price Momentum model's one year cumulative performance number is the highest at -8.19%.

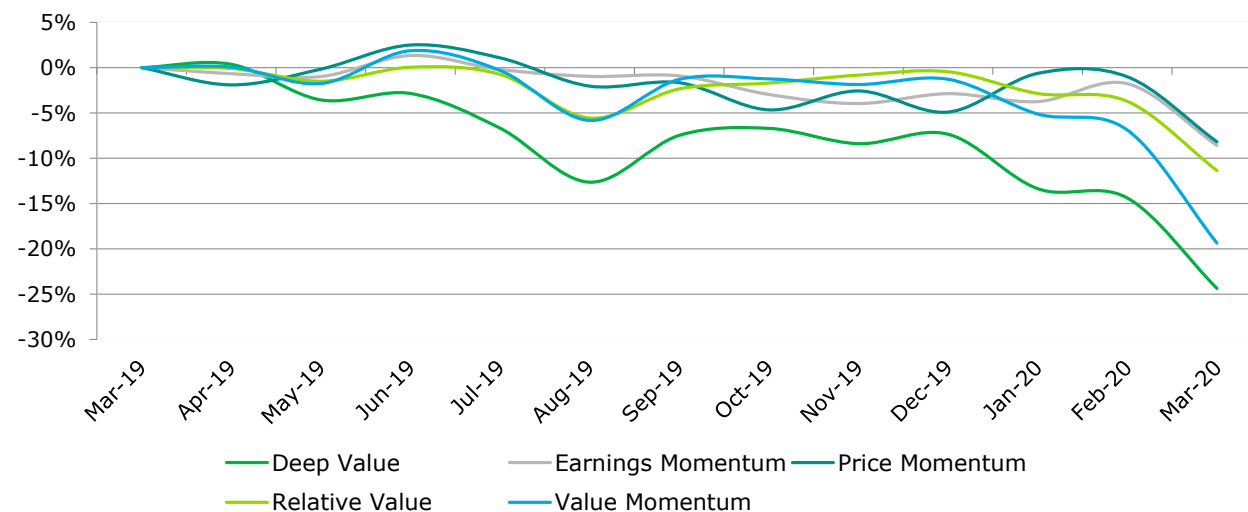
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return			D10 Excess Return			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-9.98	-17.02	-24.35	-4.21	-8.11	-13.02	5.77	8.91	11.33	-0.22	-0.19	-0.06
<b>Earnings Momentum</b>	-6.82	-5.71	-8.58	-3.52	-4.42	-8.32	3.30	1.29	0.26	-0.13	-0.02	0.00
<b>Price Momentum</b>	-7.18	-3.30	-8.21	-5.31	-2.31	-4.18	1.87	0.99	4.02	-0.08	0.03	0.00
<b>Relative Value</b>	-7.65	-10.92	-11.37	-4.96	-6.59	-7.47	2.68	4.33	3.90	-0.17	-0.13	-0.03
<b>Value Momentum</b>	-12.48	-14.91	-18.58	-6.58	-8.39	-10.39	5.90	6.52	8.19	-0.24	-0.14	-0.05

Equal Weighted Developed World Ex North America (EAFE) 1-Month Return = -15.19%

### 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

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

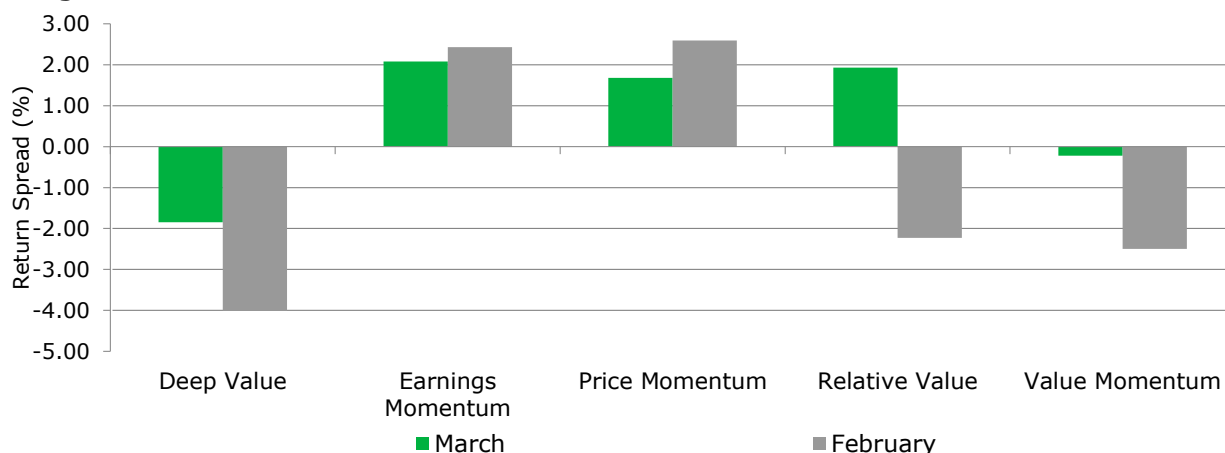
Within the Emerging Markets universe our Earnings Momentum model had the strongest one month decile return spread performance, returning 2.08%, while the Deep Value model lagged.

The Earnings Momentum model's one year cumulative performance is the highest for the EM universe at 17.24%.

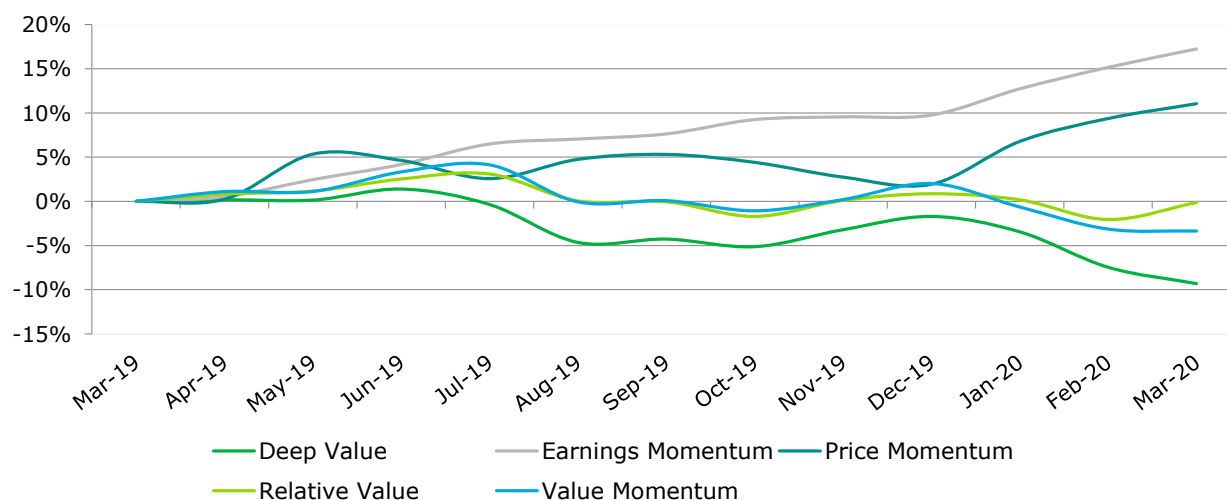
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-1.85	-7.60	-9.31	-1.57	-4.32	-4.06	0.28	3.28	5.25	-0.04	-0.09	-0.02
<b>Earnings Momentum</b>	2.08	7.48	17.23	-0.31	0.74	5.63	-2.39	-6.73	-11.60	0.05	0.08	0.04
<b>Price Momentum</b>	1.68	9.11	11.06	0.19	4.00	4.38	-1.49	-5.11	-6.68	0.03	0.12	0.05
<b>Relative Value</b>	1.93	-0.99	-0.14	0.64	-0.56	2.15	-1.29	0.43	2.29	0.04	-0.03	0.00
<b>Value Momentum</b>	-0.22	-5.38	-3.35	-0.25	-1.89	0.19	-0.02	3.49	3.54	0.00	-0.07	0.00

Equal Weighted Emerging Markets Universe 1-Month Return = -19.56%

### 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

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

Over the Frontier Market's thematic models, the Price Momentum model had the strongest one month decile return spread performance, returning 5.81%.

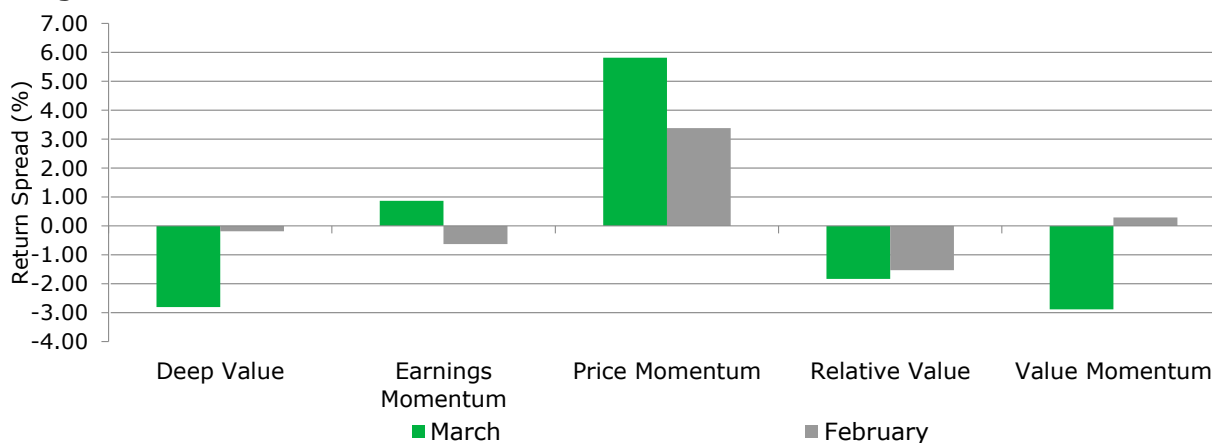
The Price Momentum model's one year cumulative performance has improved to 24.12%.

The Average Trading Volume in Preceding 6-month factor within the Price Momentum model, had a one month decile return spread of 13.35% and was the largest contributor to the model's performance in March.

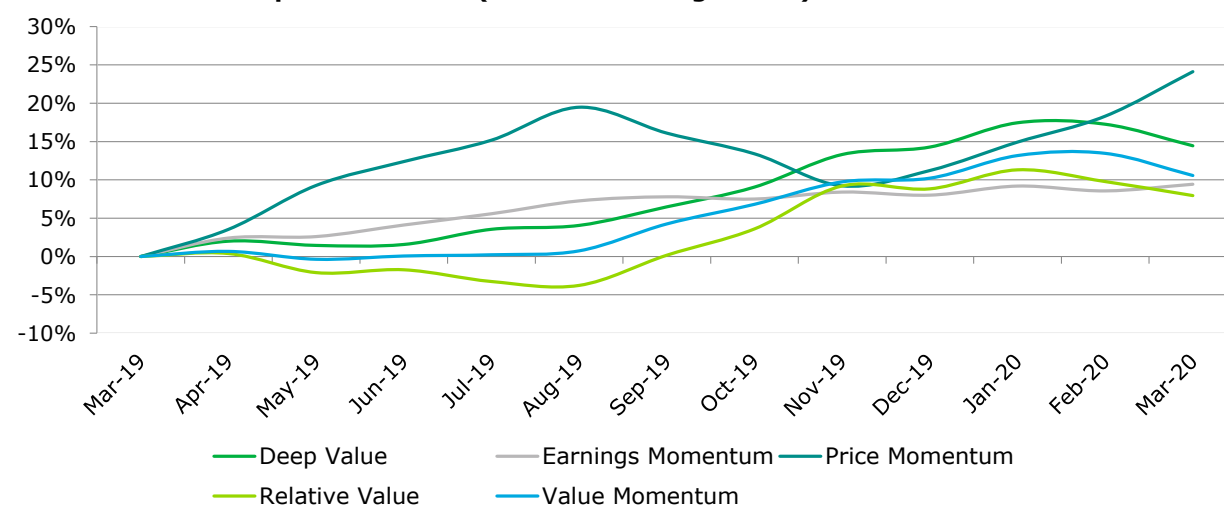
Model <sup>(2)</sup>	Decile Return Spread <sup>(3)</sup>			D1 Excess Return <sup>(3)</sup>			D10 Excess Return <sup>(3)</sup>			Information Coefficient <sup>(3)</sup>		
	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo	1mo	3mo	12mo
<b>Deep Value</b>	-2.81	0.17	14.44	-2.23	-0.24	6.34	0.58	-0.41	-8.10	-0.10	0.02	0.06
<b>Earnings Momentum</b>	0.87	1.42	9.43	-1.21	0.00	0.29	-2.08	-1.43	-9.14	0.03	0.03	0.05
<b>Price Momentum</b>	5.81	12.91	24.11	1.77	4.98	10.51	-4.05	-7.93	-13.60	0.16	0.17	0.12
<b>Relative Value</b>	-1.83	-0.88	7.94	-0.24	0.10	3.62	1.59	0.97	-4.33	-0.02	0.02	0.02
<b>Value Momentum</b>	-2.89	0.36	10.58	-0.19	2.16	7.46	2.70	1.80	-3.12	-0.06	0.03	0.05

Equal Weighted Frontier Markets Universe 1-Month Return = -17.93%

### 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

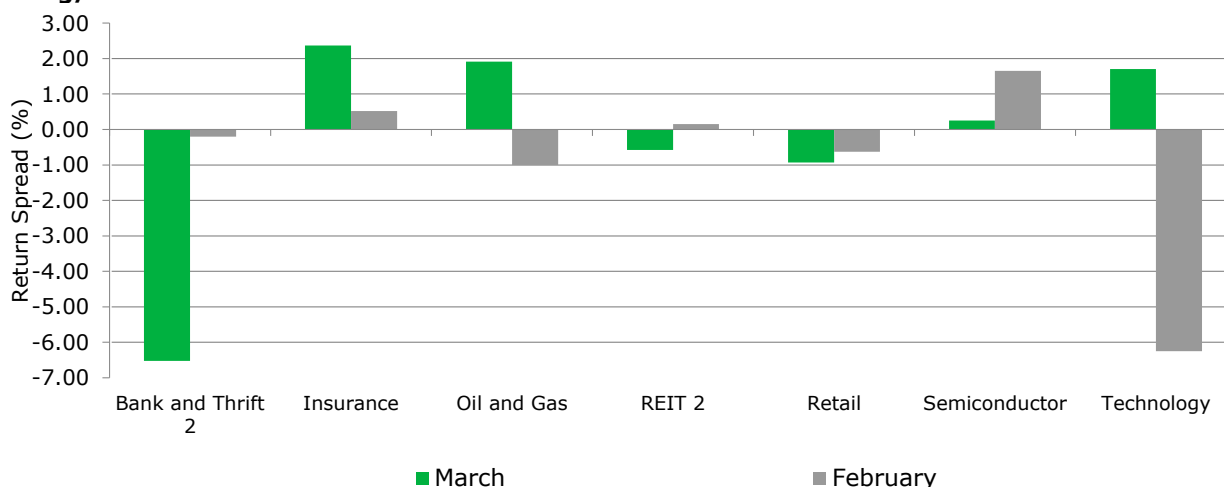
## Specialty Models<sup>(1)</sup>

Within our specialty model library the Insurance and the Oil and Gas models had the strongest one month quintile return spread performance returning 2.37% and 1.91%, respectively, while the Retail and the Bank and Thrift 2 models struggled.

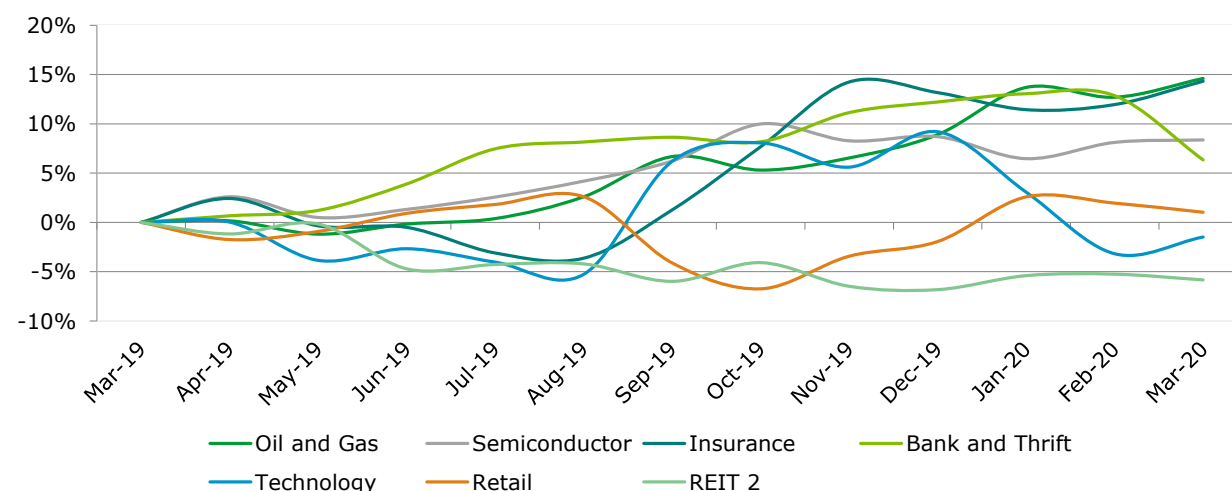
The Oil and Gas model's one year cumulative performance is the highest at 14.61% while the REIT 2 model's performance is the lowest at -5.83%.

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>	-6.52	-5.87	6.34	-3.26	-2.77	2.56	3.26	3.10	-3.78	-0.13	0.01	0.05
<b>Insurance</b>	2.37	1.17	14.33	-1.10	-0.01	10.50	-3.48	-1.18	-3.83	0.00	-0.06	0.04
<b>Oil and Gas</b>	1.91	5.70	14.61	-2.78	-4.04	-0.42	-4.68	-9.73	-15.02	-0.01	0.01	0.02
<b>REIT 2</b>	-0.58	0.98	-5.82	-2.17	-2.27	-5.49	-1.59	-3.26	0.33	-0.06	-0.06	-0.05
<b>Retail</b>	-0.93	2.97	1.05	-3.40	-1.14	-8.01	-2.47	-4.12	-9.06	0.01	0.04	0.01
<b>Semiconductor</b>	0.25	-0.32	8.37	-0.84	-1.72	1.53	-1.09	-1.40	-6.85	0.02	0.02	0.03
<b>Technology</b>	1.70	-10.68	-1.48	-0.82	-6.63	0.04	-2.52	4.05	1.51	0.05	-0.09	0.00

### 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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