Deutsche Bank
Markets Research

The Quant View

Updating our best quant ideas

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Quantitative macro and micro forecasts for this month
In this report we present our latest quantitative forecasts for the coming month. Our models are designed to generate both bottom-up stock selection ideas as well as top-down asset, country, and style allocation calls.

A more bearish market outlook
For the first time this year, our Variance Risk Premium (VRP) market-timing indicator has swung into bearish territory. This means that investors have become a little complacent in pricing risk as the market has rallied, and suggests a degree of caution is warranted.

Stock selection comeback continues
Despite renewed turmoil in Europe, the environment for bottom-up stock selection continues to improve. The relative proportion of a manager's opportunity set that is coming from stock picking is at its highest level since 2007. This should bode well for active management.

Rotating into Financials and Health Care, out of Technology and Telecoms
Our flagship QCD model for U.S. equities favors Financials and Health Care, and has turned negative on Information Technology and Telecoms. At the country level our CCRM Country Rotation model likes Emerging Asia and is avoiding Italy and the European periphery.

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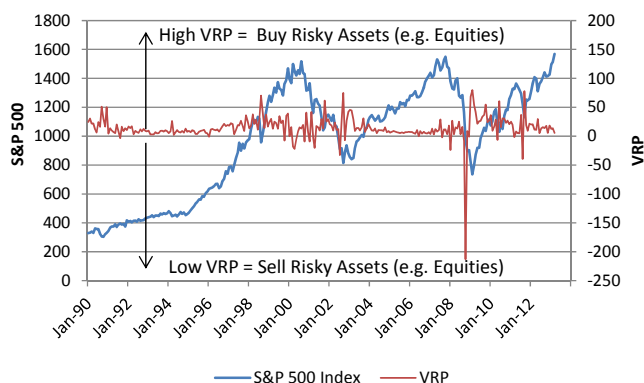
Quantifying markets

Macro update

Variance Risk Premium

Our Variance Risk Premium (VRP) indicator is a contrarian indicator that measures market overreaction and underreaction to realized risk. In simple terms, VRP is the difference between options-implied risk (i.e. the VIX index) and realized risk (i.e. the actual risk in the market measured historically over the last month). If VRP is high, we see this as a buying opportunity for risky assets, like equities and high yield bonds. Why? The intuition is as follows. When VRP is high, VIX has typically shot up dramatically (i.e. the market is in panic mode). At the same time, realized risk has probably also risen, but not to the same extent. In other words, the market has overreacted relative to what the actual, realized data is telling us. Our research shows that such episodes are good buying opportunities for risky assets on about a three month horizon.[1] On the other hand, when VRP is low, it tends to be a complacency indicator: investors are failing to price in rising realized risk in the market, and as a result we should be selling risky assets like equities.

For the first time this year, the VRP reading for April has swung into bearish territory. Year-to-date the market has rallied by 10%, and for the first time our VRP metric is starting to suggest complacency has set in, i.e. investors are not pricing in enough risk relative to the realized risk in the market. The current reading of 5.80, which is about half a standard deviation below the long-term average, does not represent a strong sell, but it does suggest a degree of caution is warranted if one wants to continue to ride the rally.

Figure 1: Variance Risk Premium (VRP)	Figure 2: Recent VRP (lagged) and market returns
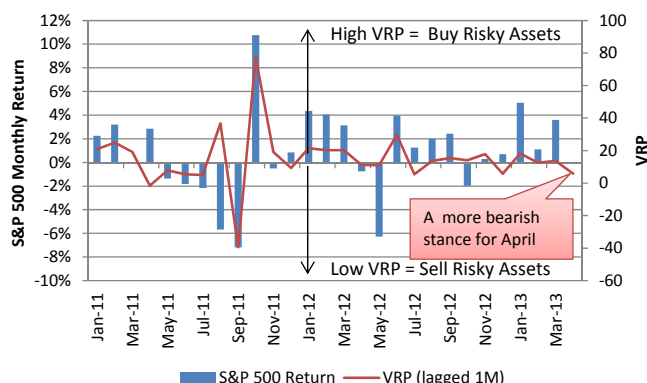
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

The opportunity set for investors

Another metric we keep a close eye on is the so-called "opportunity set" for investors. Think of this as the total alpha on the table. Our main interest is to understand what is driving that opportunity, because this can allow us to position our strategies to pick in the orchard with the juiciest fruit. In Figure 3 we show the opportunity set for global

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[1] For more details on the VRP, including our backtesting work, see: Luo et al., 2011, "Signal Processing: Quant Tactical Asset Allocation (QTAA)", *Deutsche Bank Quantitative Strategy*, 19 September 2011.

equity investors, and in Figure 4 we show the same thing for emerging market equity investors.

Figure 3: Global opportunity set	Figure 4: Emerging markets opportunity set

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank
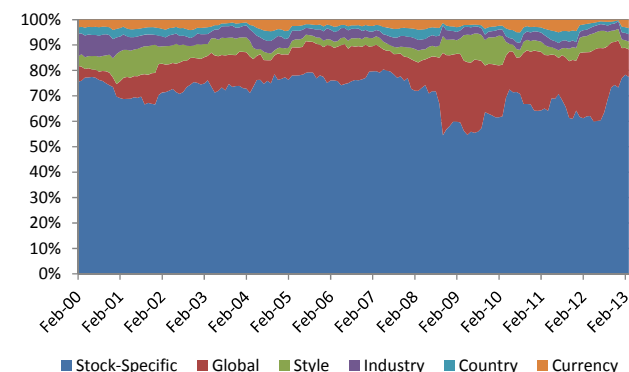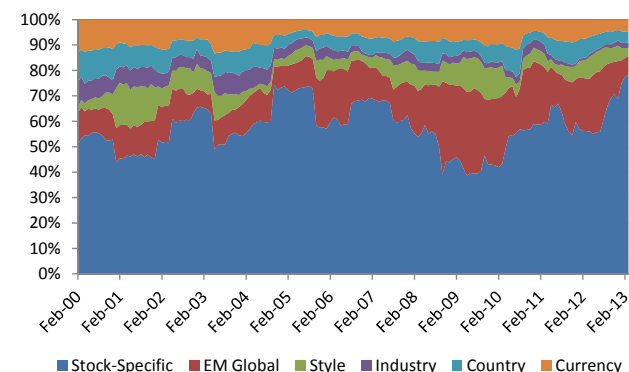
Both charts actually tell a similar story. The key result is the size of the blue portion relative to the other colors. The blue represents the opportunity explained by stock selection, whereas we can think of the other colors as representing the opportunity from top-down calls like picking the right countries, industries, and styles. When the financial crisis exploded in 2008, we moved into a much more macro-dominated world. As a result, the portion of overall opportunity that could be explained by individual company characteristics (e.g. valuation, growth profile, earnings quality, etc.) shrunk sharply; no one cared if a stock looked good on fundamentals if it was exposed to Europe for example. Needless to say, such an environment was challenging for quants and non-quants alike, since both camps tend to use stock specific information to differentiate between stocks.

However, the good news is that both charts show that bottom-up stock picking is making a strong comeback. The blue area in both the global and emerging markets charts has reached levels last seen in 2007. This suggests that despite renewed macro fears in Europe, there is still ample opportunity to trade stocks on their own merits. Or put another way, investors just aren't as concerned about big picture macro threats as they were in the past five years.[2]

Keeping an eye on correlations

Closely related to the opportunity set is the median pairwise correlation among stocks in the market. This is calculated by taking every possible pair of stocks, and computing the correlation of their monthly returns based on the past 24 months of data, and then taking the median across all the pairs. Figure 5 shows the median pairwise correlation for the U.S. market. While it has come down from the peak in the financial crisis, it is still relatively high compared to its long-term average, so investors are not yet completely out of the woods.

Another interesting metric to keep an eye on is the ratio of within-sector correlation to cross-sector correlation (Figure 6). This ratio is usually higher than one, since stocks almost always have a higher correlation with other stocks in the same sector compared

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[2] For technical details on our definition of the opportunity set, see: Alvarez et al., 2012, "Portfolios Under Construction: Correlation and Opportunity", *Deutsche Bank Quantitative Strategy*, 24 January 2012.

to stocks in a different sector. However, when the ratio spikes up, it tends to indicate that stocks in a certain sector are trading in unison, perhaps because that sector is becoming overheated. A classic example is the big spike up during the rise and fall of the dot com bubble; during that time stocks within the Tech sector went up (and then down) together, with little differentiation among the stocks within that sector. Currently the ratio is near its lower bound relative to history, which indicates that a single sector is not really to blame for the higher pairwise correlations – it's more about macro fears right now.

Figure 5: Median pairwise correlation for U.S. market (Russell 3000, 24M trailing monthly returns)
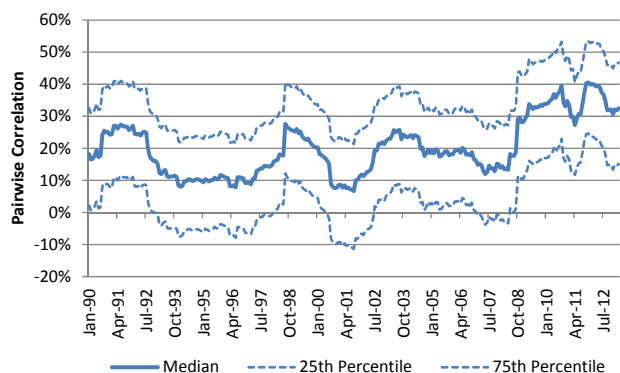
Figure 6: Ratio of within-sector correlation to cross-sector correlation
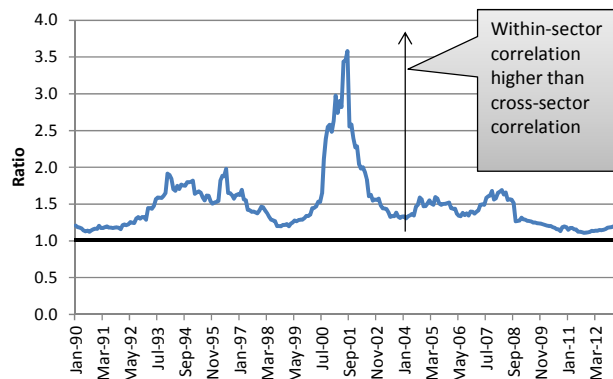
Factor performance

U.S. factor performance

March was another strong month for U.S. domestic factor performance (Figure 7). Across the six styles we track, Quality was the only one with mixed performance. Within that style, about half the Quality factors that we track underperformed. This is probably indicative of a little over-exuberance in the current market rally; the line between a fundamentally-driven rally and a junk rally is a fine one, and this could be the sign things are a little overheated (i.e. investors are starting to bid up even low quality names in their quest to re-risk). In conjunction with the bearish VRP reading we mentioned earlier, this could be a further warning sign that the market is looking a little overblown.

Aside from Quality, the other styles showed continued strong performance. One of the best performing factors was simple 12-month price momentum, which is a strong indicator that the market is trend-driven right now. Confirming this is the fact that 1-month reversal had another significant drawdown.

Valuation factors also did well, which suggests that most quant models – which tend to have a value plus momentum flavor – should be doing well in the current environment. We certainly found that; our QCD model for U.S. domestic equities had another strong month in March (see later in this report for more details).

Global factor performance

Figure 8 show the performance of global factors last month. The biggest contrast between the U.S. and the global results is the poor performance of Value in a global setting. Across the board Value factors had negative performance, sometimes significantly so.

Other results are more in-line with the U.S. For example, 12-month price momentum was a strong performer globally. Sentiment factors also did very well; in fact every single Sentiment factor generated a positive payoff last month.

For more details see our website

For the most recent daily factor performance, as well as factor performance delineated by different universes (e.g. large cap, small cap) and regions, please see our Global Quantitative Strategy website at https://eqindex.db.com/gqs/. Note that you need a username and password to log on to this website. If you don't have login details, please contact us at DBEQS.Americas@db.com and we'd be happy to set you up.

Figure 7: US factor performance, measured as rank IC (Russell 3000 universe)

Factor Name	Direction[1]	Current # of Stocks	Average IC (%) Last M	Average IC (%) 12M Avg	Average IC (%) 3Y Avg	Since Inception Avg	Since Inception Std Dev	Since Inception Avg / Std Dev	Since Inception Max	Since Inception Min	Since Inception p-value[2]	# of Months	Avg # of Stocks	Hit Rate (%)	Serial Corr (%)[3]
1. Value															
1 Dividend yield, trailing 12M	Ascending	2,928	0.89	3.99	2.67	2.99	14.42	0.21	42.59	(33.26)	0.00	303	2,872	55.12	99.23
2 Expected dividend yield	Ascending	2,928	0.78	4.18	3.01	3.24	14.96	0.22	44.46	(33.89)	0.00	303	2,872	54.46	99.32
3 Price-to-operating EPS, trailing 12M, Basic	Descending	2,336	0.97	0.78	0.90	2.78	10.44	0.27	30.82	(32.28)	0.00	227	2,355	59.47	95.21
4 Operating earnings yield, trailing 12M, Basic	Ascending	2,908	0.06	3.19	4.15	4.89	13.10	0.37	47.24	(33.30)	0.00	227	2,871	61.23	96.42
5 Earnings yield, forecast FY1 mean	Ascending	2,767	1.71	2.60	3.46	4.42	12.40	0.36	48.88	(34.61)	0.00	303	2,535	62.38	94.97
6 Earnings yield, forecast FY2 mean	Ascending	2,752	0.35	1.99	2.70	3.88	11.99	0.32	47.02	(34.31)	0.00	303	2,433	63.37	94.33
7 Earnings yield x IBES 5Y growth	Ascending	1,731	3.85	0.86	1.29	1.79	10.46	0.17	41.11	(26.63)	0.01	227	1,929	59.03	93.45
8 Sector-rel Operating earnings yield, trailing 12M, Basic	Ascending	2,908	(0.31)	2.52	3.68	4.34	8.40	0.52	28.96	(14.90)	0.00	227	2,869	68.72	95.98
9 Hist-rel Operating earnings yield, trailing 12M, Basic	Ascending	2,131	1.40	(1.19)	1.38	1.69	6.97	0.24	20.73	(18.74)	0.01	133	2,012	62.41	96.84
10 Operating cash flow yield (income stmt def)	Ascending	2,928	2.73	2.91	3.22	4.12	10.92	0.38	47.14	(32.67)	0.00	303	2,872	64.36	96.02
11 Cash flow yield, FY1 mean	Ascending	1,605	3.99	0.89	0.65	2.75	17.68	0.16	66.06	(54.29)	0.01	273	746	58.24	95.74
12 Free cash flow yield	Ascending	2,838	5.11	3.81	3.20	4.91	7.95	0.62	31.93	(22.64)	0.00	266	2,505	75.19	94.64
13 Price-to-sales, trailing 12M	Descending	2,875	4.24	1.86	0.57	1.80	10.97	0.16	30.02	(41.46)	0.00	303	2,797	56.77	99.14
14 Price-to-book	Descending	2,839	(5.29)	1.19	(0.78)	0.86	10.70	0.08	26.28	(35.75)	0.16	303	2,762	49.50	97.70
15 EBITDA/EV	Ascending	2,888	1.71	1.62	2.75	4.18	9.74	0.43	39.32	(27.15)	0.00	303	2,818	67.66	95.55
16 Price-to-book adj for ROE, sector adj	Descending	2,685	(4.51)	0.23	(1.13)	0.45	8.76	0.05	22.50	(33.21)	0.37	303	2,429	49.17	95.58
2. Growth															
17 Hist 5Y operating EPS growth	Descending	2,857	0.28	2.02	2.84	1.06	8.76	0.12	30.58	(22.70)	0.08	215	2,730	52.56	97.24
18 Hist 5Y operating EPS acceleration	Ascending	2,857	3.86	1.97	0.64	0.88	6.71	0.13	25.31	(16.13)	0.06	215	2,730	54.42	94.71
19 IBES 5Y EPS growth	Ascending	2,407	(2.06)	(0.49)	1.81	0.88	8.14	0.11	21.65	(27.86)	0.06	303	2,295	53.80	98.29
20 IBES 5Y EPS growth/stability	Ascending	2,407	(0.71)	(0.20)	1.93	1.31	7.74	0.17	20.64	(19.20)	0.00	303	2,295	54.13	98.62
21 IBES LTG EPS mean	Descending	1,987	(0.36)	1.31	(0.70)	1.74	15.88	0.11	37.64	(52.38)	0.06	303	2,154	49.83	97.79
22 IBES FY2 mean DPS growth	Ascending	2,114	2.87	2.55	1.76	0.99	8.56	0.12	24.12	(21.96)	0.19	130	1,466	50.77	87.74
23 IBES FY1 mean EPS growth	Ascending	2,650	3.03	2.92	1.55	1.06	7.54	0.14	20.76	(24.42)	0.01	303	2,514	61.06	88.79
24 Year-over-year quarterly EPS growth	Ascending	2,918	4.66	4.27	3.16	2.58	7.08	0.36	23.85	(21.12)	0.00	227	2,875	66.96	81.62
25 IBES FY1 mean CFPS growth	Descending	1,119	(0.80)	(2.97)	(1.33)	0.45	11.22	0.04	38.08	(42.07)	0.55	230	509	50.43	92.70
26 IBES SUE, amortized	Ascending	2,543	0.33	(0.11)	1.86	0.77	6.53	0.12	20.62	(16.30)	0.07	242	1,062	53.72	73.77
3. Price Momentum and Reversal															
27 Total return, 1D	Descending	2,928	(1.61)	1.24	2.66	5.03	7.18	0.70	15.52	(33.75)	0.00	303	2,872	78.22	1.64
28 Total return, 21D (1M)	Descending	2,928	(7.79)	(0.59)	0.54	1.84	10.97	0.17	29.03	(43.69)	0.00	303	2,871	58.09	0.42
29 Maximum daily return in last 1M (lottery factor)	Descending	2,920	(4.84)	4.90	3.90	5.18	14.99	0.35	39.13	(56.07)	0.00	303	2,742	64.36	54.39
30 21D volatility of volume/price	Ascending	2,928	3.86	2.73	2.31	0.27	6.57	0.04	24.16	(16.78)	0.48	303	2,861	51.49	56.49
31 Total return, 252D (12M)	Ascending	2,838	12.34	5.69	3.02	3.31	14.15	0.23	39.62	(57.00)	0.00	303	2,791	64.36	89.95
32 12M-1M total return	Ascending	2,838	11.14	5.86	3.51	4.15	13.25	0.31	37.65	(49.06)	0.00	303	2,791	65.35	88.43
33 Price-to-52 week high	Ascending	342	11.00	4.96	3.41	3.21	17.84	0.18	49.63	(62.50)	0.00	303	1,939	62.05	83.42
34 Total return, 1260D (60M)	Ascending	2,517	1.53	0.10	2.67	1.13	11.00	0.10	25.63	(35.41)	0.08	291	2,231	56.70	97.47
4. Sentiment															
35 IBES LTG Mean EPS Revision, 3M	Ascending	1,968	(0.42)	0.92	1.21	0.88	3.78	0.23	11.16	(12.06)	0.00	303	2,125	61.72	59.75
36 IBES FY1 Mean EPS Revision, 3M	Ascending	2,727	3.71	1.72	1.98	2.96	8.48	0.35	29.96	(33.00)	0.00	303	2,473	67.99	75.43
37 IBES FY1 EPS up/down ratio, 3M	Ascending	2,510	5.40	1.26	2.00	3.12	7.89	0.40	27.54	(24.41)	0.00	303	2,334	67.99	79.61
38 Expectation gap, short-term - long-term	Descending	2,167	(0.23)	2.10	1.98	1.23	5.18	0.24	9.60	(19.91)	0.00	303	2,123	58.09	91.12
39 IBES FY1 Mean CFPS Revision, 3M	Ascending	1,510	1.88	1.21	1.81	2.01	16.09	0.13	69.38	(75.04)	0.04	272	679	62.13	64.41
40 IBES FY1 Mean SAL Revision, 3M	Ascending	2,679	3.20	2.04	2.26	1.09	7.92	0.14	27.43	(24.32)	0.05	202	2,158	60.40	71.52
41 IBES FY1 Mean FFO Revision, 3M	Ascending	137	2.78	0.20	2.92	2.94	21.12	0.14	71.43	(80.00)	0.02	275	83	57.45	69.59
42 IBES FY1 Mean DPS Revision, 3M	Ascending	1,249	0.20	0.26	1.01	0.66	5.20	0.13	14.91	(17.55)	0.15	127	989	58.27	62.37
43 IBES FY1 Mean ROE Revision, 3M	Ascending	2,110	1.90	(0.22)	0.91	0.66	6.71	0.10	23.70	(22.19)	0.27	127	1,716	58.27	66.24
44 Recommendation, mean	Descending	2,773	4.59	1.70	2.06	0.81	7.57	0.11	21.85	(19.41)	0.10	232	2,674	56.47	94.36
45 Mean recommendation revision, 3M	Descending	2,765	2.49	0.83	0.46	1.26	4.11	0.31	19.86	(11.55)	0.00	229	2,661	62.88	59.86
46 Target price implied return	Ascending	2,711	(5.53)	(1.22)	0.06	0.00	16.96	0.00	60.74	(39.59)	1.00	168	2,453	52.98	80.06
47 Mean target price revision, 3M	Ascending	2,700	8.38	1.65	1.54	2.45	12.79	0.19	30.14	(41.94)	0.02	165	2,440	64.24	74.91
5. Quality															
48 ROE, trailing 12M	Ascending	2,905	2.74	1.84	3.52	3.90	10.14	0.38	33.42	(29.52)	0.00	227	2,862	64.32	96.79
49 Return on invested capital (ROIC)	Ascending	2,899	(0.99)	1.17	3.88	4.22	10.31	0.41	33.02	(31.24)	0.00	227	2,854	68.28	98.27
50 Sales to total assets (asset turnover)	Ascending	2,913	1.36	(0.62)	1.62	1.57	8.68	0.18	22.78	(22.02)	0.00	303	2,812	56.11	99.45
51 Operating profit margin	Ascending	2,867	(7.89)	(2.23)	0.60	1.18	5.45	0.22	16.98	(14.17)	0.00	303	2,716	59.74	98.43
52 Current ratio	Descending	2,262	5.70	2.88	1.24	1.87	10.25	0.18	31.95	(38.66)	0.00	303	2,238	54.46	97.94
53 Long-term debt/equity	Ascending	2,819	8.27	4.85	2.19	0.84	9.62	0.09	35.65	(28.14)	0.13	303	2,746	48.84	98.55
54 Altman's z-score	Ascending	2,221	(4.85)	(1.05)	1.40	0.27	9.22	0.03	31.74	(30.44)	0.61	303	2,157	49.17	98.36
55 Merton's distance to default	Ascending	2,222	(1.41)	1.77	3.14	3.36	11.81	0.28	33.03	(41.45)	0.00	303	2,335	65.68	95.08
56 Ohlson default model	Descending	2,222	(9.45)	(0.60)	1.77	2.34	6.38	0.37	16.95	(18.63)	0.00	266	2,123	68.42	98.29
57 Accruals (Sloan 1996 def)	Descending	2,167	(7.12)	(0.05)	(0.25)	0.55	4.19	0.13	12.07	(15.48)	0.02	303	2,137	55.12	88.52
58 Firm-specific discretionary accruals	Descending	1,136	(7.53)	(0.43)	(0.20)	0.50	3.18	0.16	7.82	(10.87)	0.02	243	2,123	55.56	81.56
59 Hist 5Y operating EPS stability, coef of determination	Ascending	2,857	(0.02)	(0.25)	(0.24)	0.80	5.05	0.16	20.01	(12.27)	0.02	215	2,730	52.09	96.87
60 IBES 5Y EPS stability	Descending	2,407	3.12	1.17	1.19	1.18	8.65	0.14	25.00	(34.33)	0.02	303	2,295	54.13	98.95
61 IBES FY1 EPS dispersion	Descending	2,767	(2.72)	1.53	3.20	1.56	9.13	0.17	31.67	(25.17)	0.00	303	2,535	60.07	84.20
62 Payout on trailing operating EPS	Ascending	2,249	0.22	1.92	0.61	0.85	13.47	0.06	38.55	(30.91)	0.27	303	2,211	49.83	99.23
63 YoY change in # of shares outstanding	Descending	2,872	2.50	3.28	2.88	2.62	8.92	0.29	19.53	(46.21)	0.00	303	2,767	60.40	94.25
64 YoY change in debt outstanding	Descending	2,229	(1.42)	0.09	(0.59)	0.27	4.07	0.07	13.07	(10.40)	0.24	303	2,220	55.78	90.00
65 Net external financing/net operating assets	Ascending	2,918	2.84	3.43	2.74	2.50	8.48	0.29	44.61	(21.76)	0.00	303	2,834	61.39	94.76
66 Piotroski's F-score	Ascending	2,928	2.71	2.87	3.23	2.95	8.13	0.36	29.20	(27.83)	0.00	303	2,874	67.66	88.17
67 Mohanram's G-score	Ascending	537	0.93	(1.52)	1.47	2.68	10.64	0.25	35.27	(32.14)	0.00	215	381	57.21	95.45
6. Technicals															
68 # of days to cover short	Descending	2,936	(0.78)	2.44	2.46	2.25	7.29	0.31	33.80	(25.16)	0.00	303	2,008	58.75	91.34
69 CAPM beta, 5Y monthly	Descending	2,926	(0.99)	(0.76)	0.11	1.05	13.83	0.08	40.19	(42.70)	0.24	244	2,907	51.23	97.69
70 CAPM idosyncratic vol, 1Y daily	Descending	2,903	2.52	6.45	5.93	5.29	18.14	0.29	42.60	(60.80)	0.00	291	2,880	62.20	99.19
71 Realized vol, 1Y daily	Descending	2,878	3.05	6.05	5.34	5.12	18.76	0.27	42.69	(59.63)	0.00	303	2,790	61.39	99.16
72 Skewness, 1Y daily	Descending	2,878	(5.37)	(0.83)	0.62	1.25	5.36	0.23	13.93	(22.86)	0.00	303	2,790	57.43	89.73
73 Kurtosis, 1Y daily	Descending	2,878	0.68	0.93	1.82	1.47	5.46	0.27	15.28	(15.82)	0.00	303	2,790	62.38	91.48
74 Idiosyncratic vol surprise	Descending	2,903	3.23	3.68	1.95	2.90	8.03	0.36	22.66	(33.71)	0.00	290	2,861	67.24	87.80
75 Normalized abnormal volume	Ascending	2,928	5.20	3.92	3.30	2.31	6.38	0.36	23.10	(16.38)	0.00	303	2,865	66.01	64.17
76 Float turnover, 12M	Descending	2,753	2.14	0.86	(0.03)	0.26	10.75	0.02	23.53	(26.97)	0.68	292	2,784	48.63	99.77
77 Moving average crossover, 15W-36W	Ascending	2,862	9.13	1.35	0.28	2.22	13.26	0.17	46.29	(55.07)	0.00	303	2,523	60.40	90.75
78 Log float-adj capitalization	Ascending	2,928	4.62	4.22	4.18	3.55	10.97	0.32	29.53	(40.68)	0.00	303	2,868	61.72	99.40
79 # of month in the database	Ascending	2,928	(1.47)	1.78	1.61	2.22	8.84	0.25	35.61	(23.86)	0.00	303	2,872	57.43	99.99
80 DB composite options factor	Ascending	2,016	(2.72)	(0.22)	1.55	1.51	3.69	0.41	13.99	(13.88)	0.00	140	2,024	66.43	22.83

Note:
1 Direction indicates how the factor scores are sorted. Ascending order means higher factors scores are likely to be associated with higher subsequent stock returns, and vice versa for descending order.
2 P-value indicates the statistical significance of the factor's performance. A smaller p-value suggests that is it more likely the factor's performance is different from zero.
3 This is the autocorrelation of the factor scores over time. Higher serial correlation indicates lower portfolio turnover based on the factor.
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Figure 8: Global factor performance, measured as rank IC (S&P BMI World universe)

Factor Name	Direction[1]	Current # of Stocks	Average IC (%) Last M	12M Avg	3Y Avg	Since Inception Avg	Std Dev	Avg / Std Dev	Max	Min	p-value[2]	# of Months	Avg # of Stocks	Hit Rate (%)	Serial Corr (%)[3]
1. Value															
1 Dividend yield, trailing 12M	Ascending	9,767	(1.50)	3.97	4.21	4.32	10.41	0.41	36.74	(23.63)	0.00	279	8,078	63.44	97.97
2 Dividend yield, FY1	Ascending	7,418	(3.56)	3.69	3.80	4.45	10.86	0.41	32.17	(22.90)	0.00	222	5,188	64.41	98.17
3 Dividend yield, FY2	Ascending	7,351	(6.11)	3.53	3.43	4.35	10.91	0.40	33.19	(24.39)	0.00	212	5,145	64.15	98.16
4 Price/Earnings	Descending	8,267	(10.97)	(0.97)	0.42	4.11	13.21	0.31	39.66	(50.73)	0.00	272	6,268	62.13	96.34
5 Price-to-FY0 EPS	Descending	7,390	(11.01)	(1.47)	(0.86)	2.95	10.35	0.28	28.98	(37.08)	0.00	279	5,994	62.37	96.38
6 Earnings yield, FY0	Ascending	8,421	(6.78)	1.49	1.66	4.05	9.25	0.44	31.67	(18.68)	0.00	279	6,972	64.87	96.29
7 Earnings yield, forecast FY1 mean	Ascending	7,943	(2.81)	2.25	2.39	4.80	10.93	0.44	35.35	(22.20)	0.00	279	6,425	64.16	95.67
8 Earnings yield, forecast FY2 mean	Ascending	7,900	(7.00)	0.78	1.04	4.41	11.93	0.37	37.31	(31.50)	0.00	279	6,250	63.08	95.71
9 Cash flow yield, FY0	Ascending	5,998	1.23	(0.48)	0.45	4.09	6.46	0.63	26.42	(11.80)	0.00	155	4,893	74.84	97.08
10 Cash flow yield, FY1 mean	Ascending	5,609	(6.26)	(2.04)	(1.14)	2.03	9.81	0.21	31.42	(32.01)	0.00	211	4,443	57.82	96.02
11 Price/Sales	Descending	9,277	(5.26)	(2.38)	(0.62)	1.46	9.64	0.15	26.48	(31.59)	0.01	279	7,458	55.56	99.23
12 Price/Book	Descending	9,452	(9.69)	(2.26)	(1.63)	1.22	10.55	0.12	31.56	(37.54)	0.05	279	7,504	56.99	98.33
13 Est Book-to-price, median	Ascending	6,912	(10.47)	(2.40)	(2.50)	1.24	9.97	0.12	30.37	(26.29)	0.11	163	5,347	52.76	98.05
14 EBITDA to EV	Ascending	7,303	19.15	4.91	5.24	3.93	10.81	0.36	36.69	(26.20)	0.00	279	4,624	62.72	95.60
15 Sales/EV	Ascending	9,332	0.10	(1.01)	0.78	1.92	7.93	0.24	24.81	(20.06)	0.00	279	7,424	60.57	98.98
2. Growth															
16 IBES 5Y EPS growth	Ascending	7,889	3.52	1.86	2.02	1.13	6.18	0.18	19.09	(21.86)	0.00	279	6,174	59.14	98.06
17 EPS Growth	Ascending	9,047	6.45	3.33	1.87	2.10	6.89	0.31	29.72	(28.97)	0.00	263	6,849	64.26	88.55
18 IBES LTG EPS mean	Descending	5,180	(7.39)	0.17	0.29	1.38	12.20	0.11	28.22	(40.36)	0.06	279	4,150	52.69	96.80
19 IBES FY1 mean EPS growth	Ascending	7,409	10.88	1.70	0.59	0.42	6.08	0.07	14.44	(20.10)	0.25	279	6,338	54.84	88.53
20 IBES FY1 mean CFPS growth	Descending	4,475	1.77	0.46	0.73	1.72	4.24	0.41	7.47	(11.39)	0.00	155	3,868	65.16	91.75
21 IBES FY2 mean DPS growth	Ascending	7,335	(7.58)	1.40	0.00	2.54	11.06	0.23	38.85	(31.49)	0.00	221	5,027	59.73	88.06
22 Asset growth	Descending	9,207	4.03	0.72	0.89	0.56	8.56	0.07	21.57	(27.36)	0.27	279	7,247	51.61	93.72
3. Price Momentum and Reversal															
23 Total return, 1D	Descending	9,787	(0.18)	2.02	3.09	3.61	7.45	0.48	21.94	(41.58)	0.00	279	8,093	70.97	2.02
24 Weekly Total Return	Descending	9,787	(8.88)	(0.28)	3.26	2.99	8.77	0.34	30.60	(33.64)	0.00	279	8,092	64.87	1.44
25 Total return, 21D (1M)	Ascending	9,786	13.93	2.94	0.88	0.12	11.50	0.01	27.69	(44.07)	0.86	279	8,087	53.05	4.17
26 Total return, 252D (12M)	Ascending	9,619	22.41	9.58	5.59	4.42	14.58	0.30	41.64	(46.50)	0.00	279	7,894	66.67	90.64
27 12M-1M total return	Ascending	9,619	20.66	9.55	6.02	5.05	14.05	0.36	40.96	(42.52)	0.00	279	7,894	68.82	88.70
28 Total return, 1260D (60M)	Ascending	8,592	11.43	4.04	2.61	1.48	14.16	0.10	40.32	(44.84)	0.08	279	6,382	58.42	97.81
4. Sentiment															
29 IBES LTG Mean EPS Revision, 1M	Ascending	5,154	2.27	0.40	0.56	0.66	2.59	0.25	7.26	(8.59)	0.00	279	4,111	62.72	0.53
30 IBES LTG Mean EPS Revision, 3M	Ascending	5,131	3.74	0.94	0.84	0.85	3.35	0.25	11.05	(10.26)	0.00	279	4,055	61.29	60.07
31 IBES FY1 EPS up/down ratio, 1M	Ascending	5,564	11.08	3.48	3.50	3.68	5.43	0.68	17.76	(13.76)	0.00	279	4,323	76.70	34.80
32 IBES FY1 EPS up/down ratio, 3M	Ascending	7,027	12.25	4.97	3.98	3.66	5.80	0.63	17.92	(12.36)	0.00	279	5,800	75.27	78.49
33 IBES FY1 Mean EPS Revision, 1M	Ascending	7,803	10.30	3.45	2.69	2.90	5.08	0.57	16.50	(12.79)	0.00	279	6,278	72.40	24.18
34 IBES FY1 Mean EPS Revision, 3M	Ascending	7,750	13.37	5.30	3.95	3.40	6.65	0.51	19.37	(20.12)	0.00	279	6,187	73.48	74.15
35 IBES FY1 Mean CFPS Revision, 3M	Ascending	5,346	5.70	3.39	2.67	2.52	5.57	0.45	15.81	(23.83)	0.00	201	4,266	77.61	63.92
36 IBES FY1 Mean DPS Revision, 1M	Ascending	5,798	6.98	3.27	3.05	1.77	4.40	0.40	12.65	(16.63)	0.00	220	4,301	71.82	10.94
37 IBES FY1 Mean DPS Revision, 3M	Ascending	5,776	13.13	4.80	3.79	2.19	5.89	0.37	19.08	(24.51)	0.00	218	4,241	72.48	65.56
38 IBES FY1 Mean FFO Revision, 1M	Ascending	5,003	11.73	3.88	3.51	2.24	4.06	0.55	11.73	(8.89)	0.00	147	3,962	77.55	13.44
39 IBES FY1 Mean FFO Revision, 3M	Ascending	4,939	15.12	6.10	4.60	2.83	5.74	0.49	16.27	(14.53)	0.00	144	3,869	74.31	67.67
40 IBES FY1 Mean ROE Revision, 1M	Ascending	7,210	6.21	2.32	1.95	1.78	4.09	0.44	13.70	(10.51)	0.00	199	5,306	69.85	14.21
41 IBES FY1 Mean ROE Revision, 3M	Ascending	7,133	6.85	3.01	2.33	2.18	5.01	0.44	13.58	(13.58)	0.00	197	5,175	69.54	68.33
42 Target price implied return	Descending	8,067	6.85	2.80	1.37	0.88	14.73	0.06	55.58	(36.25)	0.45	163	6,221	52.76	82.33
43 Recommendation, mean	Descending	8,256	6.13	2.84	2.49	1.78	6.86	0.26	17.41	(16.84)	0.00	232	7,165	65.52	94.44
44 Mean recommendation revision, 3M	Descending	8,239	3.98	1.44	1.41	1.91	2.93	0.65	10.01	(10.13)	0.00	229	7,143	75.55	60.06
5. Quality															
45 Return on Equity	Ascending	9,160	1.47	4.14	4.07	4.27	10.22	0.42	30.68	(34.69)	0.00	231	7,644	66.23	97.11
46 return on capital	Ascending	9,244	(0.64)	3.51	3.79	4.51	12.38	0.36	49.47	(34.02)	0.00	279	6,928	64.52	97.96
47 Return on Assets	Ascending	9,373	15.26	5.04	5.27	4.75	13.30	0.36	44.20	(30.31)	0.00	279	7,027	63.80	98.16
48 Asset Turnover	Ascending	9,392	21.92	2.37	3.51	2.53	16.27	0.16	44.64	(51.55)	0.01	279	7,519	58.06	99.84
49 Gross margin	Ascending	8,608	5.23	2.45	2.30	1.84	5.86	0.31	16.60	(13.45)	0.00	279	6,836	63.08	98.88
50 EBITDA margin	Ascending	9,379	19.49	4.15	3.98	4.00	13.85	0.29	42.97	(41.30)	0.00	279	7,538	65.16	96.82
51 Berry Ratio	Ascending	7,194	(5.71)	1.65	1.29	2.96	9.32	0.32	29.57	(20.79)	0.00	279	5,277	60.22	97.69
52 IBES FY1 EPS dispersion	Descending	7,943	20.23	3.73	3.69	0.42	9.53	0.04	32.68	(25.37)	0.46	279	6,425	50.54	87.88
53 IBES 5Y EPS growth/stability	Ascending	7,889	4.22	2.27	2.41	1.47	6.02	0.24	20.47	(20.47)	0.00	279	6,173	58.78	98.30
54 YoY change in debt outstanding	Descending	7,722	3.65	(0.04)	0.05	0.23	3.93	0.06	11.51	(11.34)	0.33	279	6,263	53.05	91.56
55 Current ratio	Descending	7,722	(4.23)	1.09	0.66	0.64	8.94	0.07	27.86	(27.01)	0.23	279	6,127	49.82	98.51
56 Long-term debt/equity	Ascending	9,256	2.46	2.87	1.10	0.79	6.48	0.12	22.37	(18.17)	0.04	279	7,432	54.84	98.89
57 Merton's distance to default	Ascending	7,864	9.10	4.08	4.13	2.62	11.20	0.23	31.19	(31.18)	0.00	279	6,439	59.86	93.26
58 Capex to Dep	Descending	7,033	16.14	3.30	2.21	1.42	6.43	0.22	22.38	(19.93)	0.00	279	5,099	60.93	96.90
6. Technicals															
59 Realized vol, 1Y daily	Descending	9,655	13.34	6.86	5.49	5.14	15.41	0.33	29.45	(44.64)	0.00	279	7,902	61.29	98.97
60 Skewness, 1Y daily	Descending	9,655	(0.60)	0.75	1.78	1.64	5.35	0.31	15.03	(32.98)	0.00	279	7,902	63.80	90.03
61 Moving average crossover, 15W-36W	Ascending	9,342	5.21	3.23	1.30	2.93	14.64	0.20	37.15	(45.46)	0.00	279	6,883	62.37	91.34
62 Normalized abnormal volume	Ascending	9,767	11.44	3.34	2.66	2.24	6.56	0.34	20.47	(14.71)	0.00	279	7,851	60.57	66.19

Note:

1 Direction indicates how the factor scores are sorted. Ascending order means higher factors scores are likely to be associated with higher subsequent stock returns, and vice versa for descending order.

2 P-value indicates the statistical significance of the factor's performance. A smaller p-value suggests that is it more likely the factor's performance is different from zero.

3 This is the autocorrelation of the factor scores over time. Higher serial correlation indicates lower portfolio turnover based on the factor.

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Bottom-up stock selection

QCD U.S. stock selection model

- The QCD model is our flagship stock selection model for U.S. equities.

- The model incorporates a number of unique features including dynamic factor selection, a non-linear TREE component, and active style and sector rotation.

- For complete details on the model, please see Luo et al., "QCD Model: DB Quant Handbook", 22 July 2010.

Current stock recommendations

Figure 9 shows the best 20 buy ideas and sell ideas from today's model. Note that a complete ranking for all Russell 3000 stocks is available in spreadsheet format. If you would like to get a copy of the spreadsheet, please contact us at DBEQS.Americas@db.com.

Figure 9: Current QCD model stock recommendations

BEST BUY IDEAS (SECTOR NEUTRAL)					BEST SELL IDEAS (SECTOR NEUTRAL)				
Ticker	Name	CUSIP	GICS Sector	QCD Score (higher is better long)	Ticker	Name	CUSIP	GICS Sector	QCD Score (lower is better short)
CAH	CARDINAL HEALTH INC	14149Y108	Health Care	14.2%	PRKR	PARKERVISION INC	701354102	Information Technology	-37.8%
WNR	WESTERN REFINING INC	959319104	Energy	13.9%	KIOR	KIOR INC	497217109	Energy	-37.7%
PRE	PARTNERRE LTD	G6852T105	Financials	13.7%	TWER	TOWERSTREAM CORP	892000100	Telecommunication Services	-35.2%
BBSI	BARRETT BUSINESS SVCS INC	068463108	Industrials	13.5%	IQNT	NEUTRAL TANDEM INC	64128B108	Telecommunication Services	-35.1%
STC	STEWART INFORMATION SERVICES	860372101	Financials	13.4%	HNR	HARVEST NATURAL RESOURCES	41754V103	Energy	-32.0%
PDLI	PDL BIOPHARMA INC	69329Y104	Health Care	13.4%	GSVC	GSV CAPITAL CORP	36191J101	Financials	-29.8%
LGF	LIONS GATE ENTERTAINMENT CP	535919203	Consumer Discretionary	13.3%	RBCN	RUBICON TECHNOLOGY INC	78112T107	Information Technology	-29.4%
ABM	ABM INDUSTRIES INC	000957100	Industrials	12.4%	ZIOP	ZIOPHARM ONCOLOGY INC	98973P101	Health Care	-28.3%
LYB	LYONDELLBASELL INDUSTRIES NV	N53745100	Materials	12.2%	MCP	MOLYCORP INC	608753109	Materials	-28.3%
IPAR	INTER PARFUMS INC	458334109	Consumer Staples	12.1%	GERN	GERON CORP	374163103	Health Care	-28.2%
TSO	TESORO CORP	881609101	Energy	11.7%	TAHO	TAHOE RESOURCES INC	873868103	Materials	-27.2%
NWY	NEW YORK & CO INC	649295102	Consumer Discretionary	11.7%	ACFN	ACORN ENERGY INC	004848107	Industrials	-26.8%
KR	KROGER CO	501044101	Consumer Staples	11.2%	BYD	BOYD GAMING CORP	103304101	Consumer Discretionary	-23.9%
LPX	LOUISIANA-PACIFIC CORP	546347105	Materials	10.0%	SKUL	SKULLCANDY INC	83083J104	Consumer Discretionary	-23.8%
UGI	UGI CORP	902681105	Utilities	9.0%	FMD	FIRST MARBLEHEAD CORP	320771108	Financials	-20.9%
GNE	GENIE ENERGY LTD	372284208	Utilities	8.3%	GNK	GENCO SHIPPING & TRADING	Y2685T107	Industrials	-20.3%
SNX	SYNNEX CORP	87162W100	Information Technology	8.0%	CDZI	CADIZ INC	127537207	Utilities	-18.5%
AEIS	ADVANCED ENERGY INDS INC	007973100	Information Technology	7.3%	DMND	DIAMOND FOODS INC	252603105	Consumer Staples	-18.0%
FRP	FAIRPOINT COMMUNICATIONS INC	305560302	Telecommunication Services	-2.1%	CEDC	CENTRAL EUROPEAN DIST CORP	153435102	Consumer Staples	-17.1%
T	AT&T INC	00206R102	Telecommunication Services	-2.6%	ADGE	AMERICAN DG ENERGY INC	025398108	Utilities	-13.3%

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Current sector recommendations

The QCD model also implicitly makes sector predictions. Figure 10 shows the current ranking of the 10 GICS Level 1 Sectors, ranked from best (most likely to outperform this month) to worse (least likely to outperform). The bars show the key drivers for each call.

Figure 10: Current QCD sector recommendations
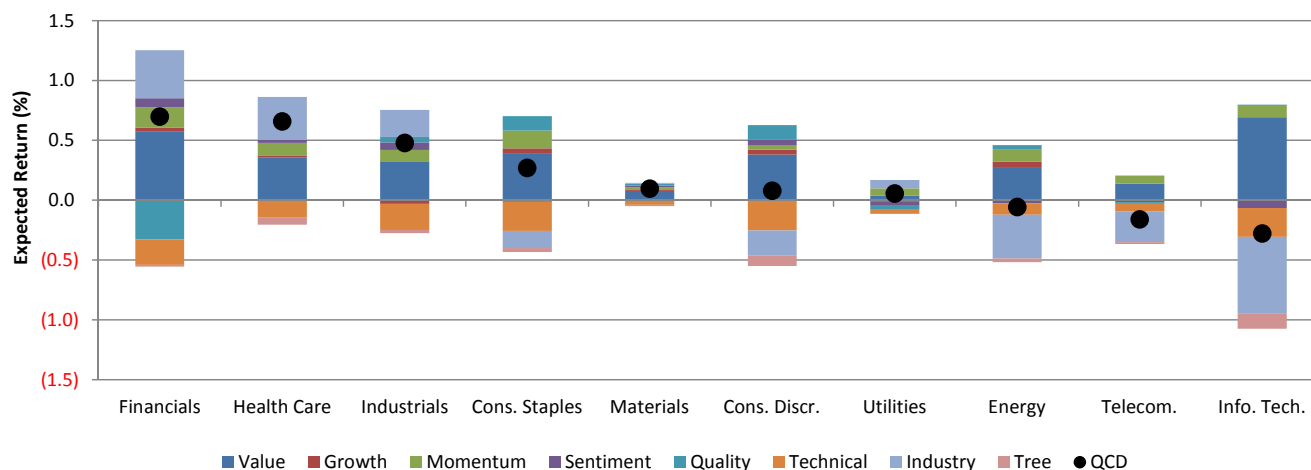
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Model performance

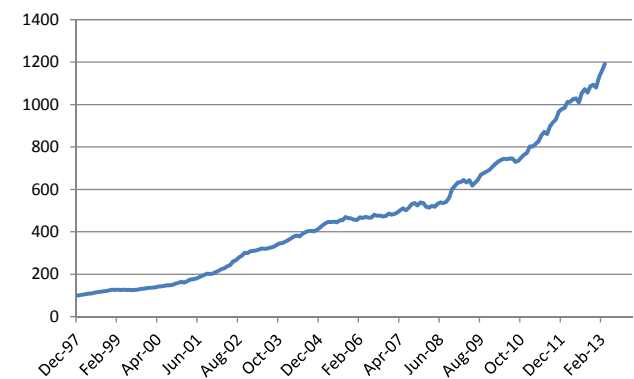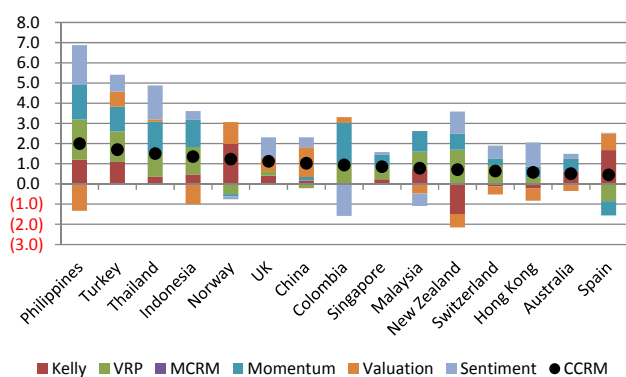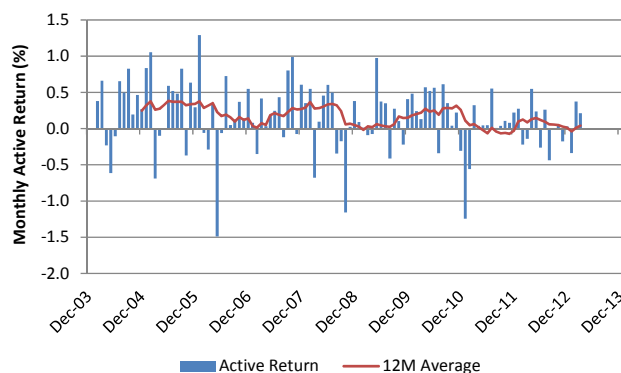The QCD model has performed well since inception. Figure 11 shows the pure signal performance, measured as a monthly sector-neutral rank information coefficient (IC). Figure 12 shows the performance of an actual model portfolio, after costs, based on a realistically optimized market-neutral strategy.

Figure 11: Model performance, sector-neutral rank IC
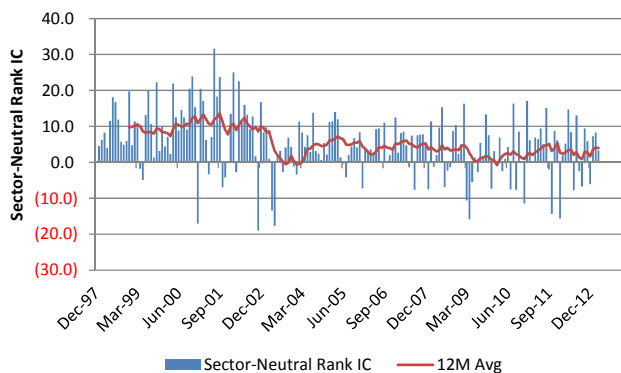
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Figure 12: Model portfolio active return, after costs
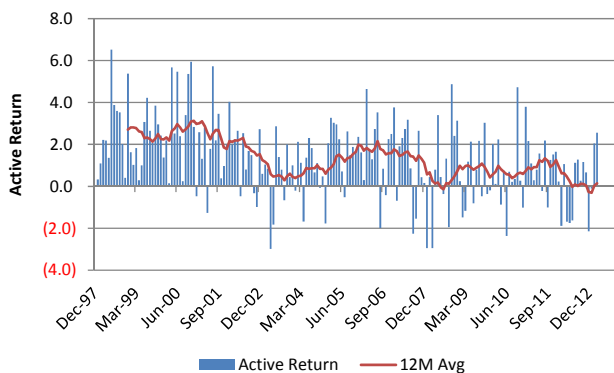
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Figure 13 shows the cumulative performance of the optimized strategy, and Figure 14 shows the annualized Sharpe ratio (after costs) by calendar year.

Figure 13: Model portfolio cumulative, after costs
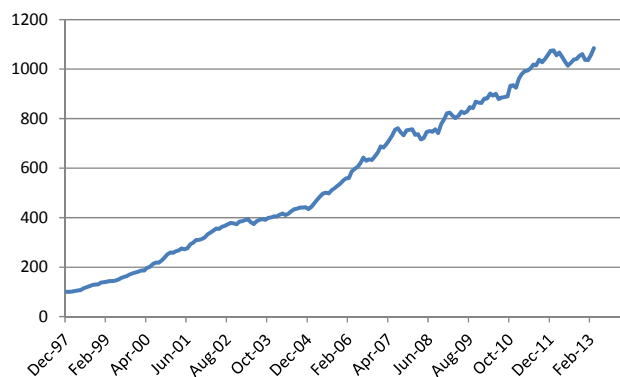
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Figure 14: Annualized Sharpe ratio, after costs
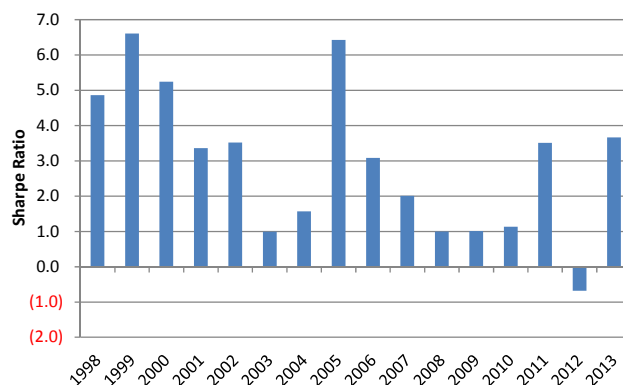
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank
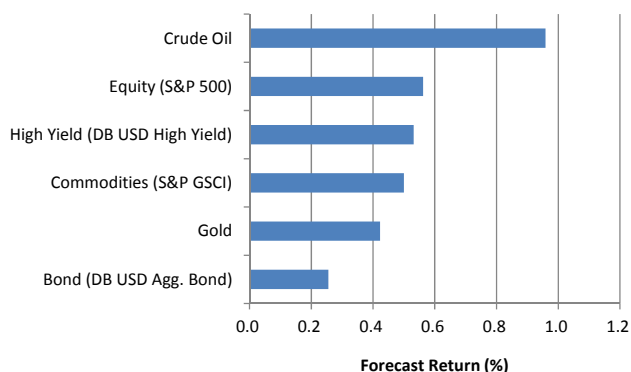
N-LASR global stock selection model

- The N-LASR model is our flagship stock selection model for global equities.

- The model is based on a machine learning algorithm called AdaBoost, and is designed to adaptively learn which factors to use, often in a non-linear way.

- For complete details on the model, please see Wang et al., "Signal Processing: The Rise of the Machines", 5 June 2012.
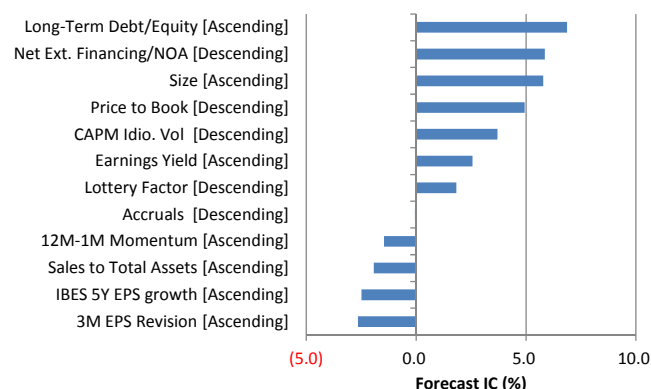
Current stock recommendations

Figure 15 shows the best 20 buy ideas and sell ideas from today's model. Note that a complete ranking for all global stocks is available in spreadsheet format. If you would like to get a copy of the spreadsheet, please contact us at DBEQS.Americas@db.com.

Figure 15: Current N-LASR model stock recommendations

BEST BUY IDEAS					BEST SELL IDEAS				
Ticker	Name	SEDOL	County	N-LASR Score (higher is better long)	Ticker	Name	SEDOL	County	N-LASR Score (lower is better short)
497 HK	CSI Properties Ltd.	B1WSH5	Hong Kong	2.35	2388 TT	Via Technologies Inc	614682	Taiwan	-2.52
CBRL	CRACKER BARREL OLD CTRY STOR	2231091	USA	2.32	1805 JT	Tobishima Corp	689300	Japan	-2.42
TLS AU	Telstra Corp Ltd	608728	Australia	2.27	3431 JT	Miyaji Engineering Group	668755	Japan	-2.38
BATS LN	British American Tobacco Plc	028758	UK	2.16	1821 JT	Sumitomo Mitsui Construction Co	659724	Japan	-2.31
CAR.UN	CANADIAN APT PPTYS REIT	2117599	Canada	2.10	ARCHER NO	Archer Ltd	B2850B	Norway	-2.29
991 HK	Datang International Power Generation Co I	608071	China	2.10	6753 JT	Sharp Corp	680060	Japan	-2.28
NRG	NRG ENERGY INC	2212922	USA	2.09	ZO1 GY	zooplus AG	B2R9XL	Germany	-2.27
2380 HK	China Power International Development Ltc	B02ZKQ	China	2.06	5912 JT	Japan Bridge	647059	Japan	-2.27
AIM.	AIMIA INC	B84YZ75	Canada	2.05	MTSI	MA-COM TECHNOLOGY SOLUTIONS	B5B15Y5	USA	-2.25
T.	TELUS CORP	2381093	Canada	2.05	5541 JT	Pacific Metals Co	666634	Japan	-2.21
4569 JT	Kyorin Holdings Inc	B0YZFP	Japan	2.05	5707 JT	Toho Zinc Co	689556	Japan	-2.21
VCI	VALASSIS COMMUNICATIONS INC	2913106	USA	2.05	CPHD	CEPHEID INC	2589143	USA	-2.21
ROG VX	Roche Hldgs AG Ptg Genus	711038	Switzerland	2.04	6482 JT	Yushin Precision Equipment	698389	Japan	-2.19
3988 HK	Bank of China Ltd H Shares	B15456	China	2.04	1719 JT	Hazama Corp	668799	Japan	-2.17
9433 JT	KDDI Corp	624899	Japan	2.03	MII SP	Mewah International Inc	B3RQ6Q	Singapore	-2.17
GNK LN	Greene King	B0HZP1	UK	2.02	6339 JT	Sintokogio	680462	Japan	-2.15
PRT AU	Prime Media Group Limited	672198	Australia	2.01	HMED SP	Healthway Medical Corp. Ltd.	B3BDL9	Singapore	-2.14
VRL AU	Village Roadshow Ltd	625953	Australia	2.00	818 HK	Hi Sun Technology (China) Ltd.	B17MXJ	China	-2.14
WYN	WYNDHAM WORLDWIDE CORP	B198391	USA	1.99	069080 KS	Webzen Inc	661448	Korea	-2.13
GPS	GAP INC	2360326	USA	1.99	WBMD	WEBMD HEALTH CORP	B0LMJC9	USA	-2.13

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Model performance

The N-LASR model has performed well since inception. Figure 16 shows the average pure signal performance, measured as a monthly rank information coefficient (IC), in different regions. Figure 17 shows the performance of a global model portfolio, after costs, based on a realistically optimized market-neutral strategy.

Figure 16: Regional model performance, average rank IC
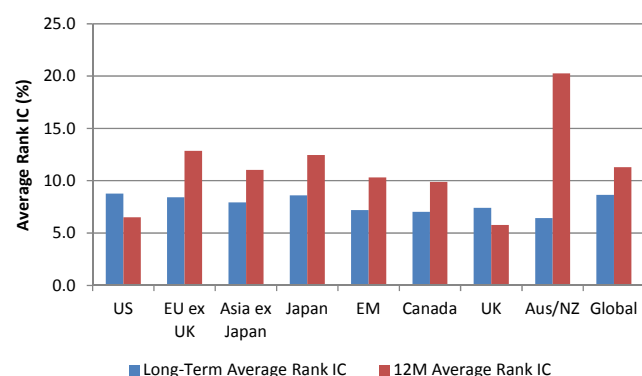
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Figure 17: Global portfolio active return, after costs
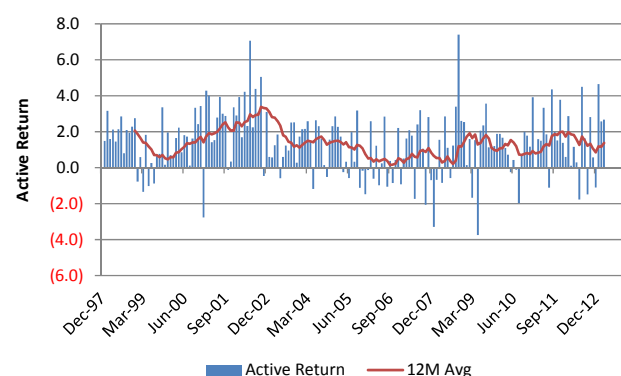
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Figure 18 shows the cumulative performance of the optimized strategy, and Figure 19 shows the annualized Sharpe ratio (after costs) by calendar year.

Figure 18: Global portfolio cumulative, after costs	Figure 19: Annualized Sharpe ratio, after costs
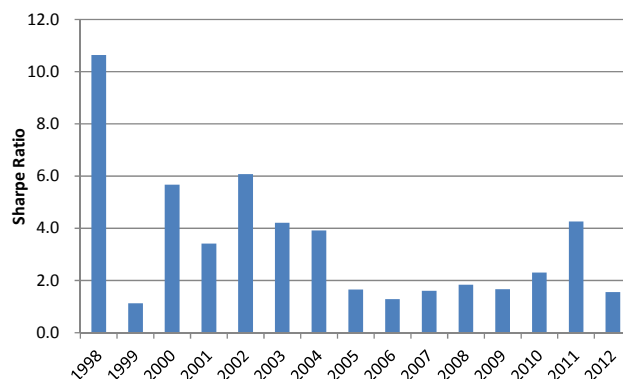
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Top-down country rotation

CCRM country rotation model

- Our Composite Country Rotation Model (CCRM) uses three sets of inputs to dynamically rotate between countries in the MSCI All Country World Index.

- The inputs include top-down macro signals (e.g. VRP, Kelly's Tail Risk), aggregate bottom-up fundamental signals (e.g. country-level valuation and momentum), and lead-lag signals based on economic trade linkages.

- For complete details on the model, please see Luo et al., "Signal Processing: New Insights in Country Rotation", 9 February 2012.

Current recommendations

Figure 20 and Figure 21 show the top and bottom third of countries, as ranked currently by our CCRM model. The bars show what is driving these calls.

Figure 20: Top tercile countries	Figure 21: Bottom tercile countries
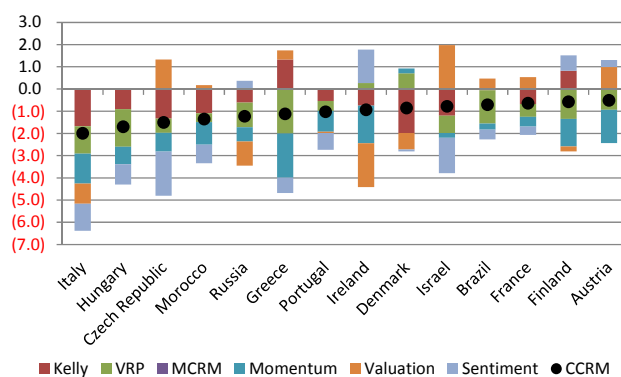
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Model performance

Figure 22 and Figure 23 show the performance of the model over time.

Figure 22: Monthly returns	Figure 23: Cumulative performance
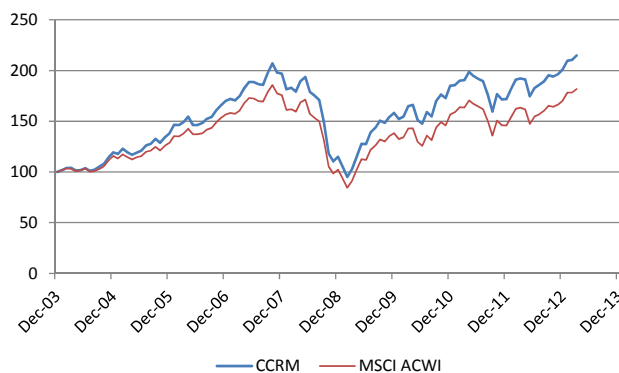
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Top-down asset allocation

Quant Tactical Asset Allocation (QTAA) model

- Our Quantitative Tactical Asset Allocation (QTAA) model uses a model-of-models methodology to rotate between six asset classes.

- The model uses a wide range of fundamental and market-based factors as inputs, and dynamically selects a subset of those factors to use at each point in time.

- For complete details on the model, please see Luo et al., "Signal Processing: Quant Tactical Asset Allocation", 19 September 2011.

Current recommendations and performance

Figure 24 shows the current ranking of our six asset classes, ranked from best to worse in terms of month-ahead forecast returns. Figure 25 shows the monthly performance of the QTAA model over time.

Figure 24: Current QTAA forecasts	Figure 25: Performance of QTAA model
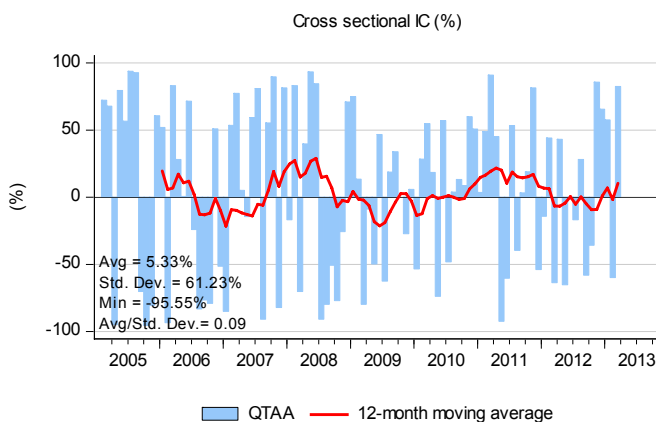
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

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Top-down style rotation

Style rotation model

- Our Style Rotation model dynamically rotates between 12 "typical" quant factors.

- The model uses market-based and macroeconomic inputs to predict month-ahead factor returns using a backwards stepwise linear regression model.

- For complete details on the model, please see Luo et al., "Signal Processing: Style Rotation", 7 September 2010.

Current recommendations and performance

Figure 26 shows the current ranking of our 12 factors, ranked from best to worse in terms of month-ahead forecast performance. Figure 27 shows the monthly performance of the Style Rotation model over time.

Figure 26: Current style rotation forecasts	Figure 27: Performance of style rotation model
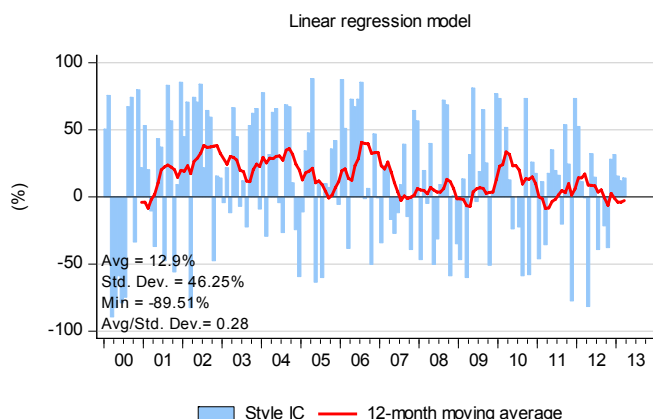
Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Source: Bloomberg Finance LLP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Appendix 1

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