



Updating our best quant ideas for small caps

Quantitative macro and micro forecasts for this month

In this report we present our latest small cap quantitative forecasts for the coming month. Our models are designed to generate both bottom-up stock selection ideas as well sector rotation and market timing calls.

Reversal strategies are in favor but momentum is not

In July, we saw a strong run up in the one month reversal factor. However, twelve month momentum has changed course and faltered. Watching the performance and direction of momentum and reversal in tandem should tell us something about the current state of the market.

What is this telling us?

The strong run up in one month reversal may suggest that investors are being more opportunistic about stock selection. The underperformance of momentum hints that investors are not putting too much faith in past performance.

But that's not the entire story

In this month's Quant View small cap edition, we show that common beta exposure can be a strong driver of factor performance. Are the underlying factors driving performance, or are you just playing beta in disguise? We discuss this in detail in this month's report.

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Source: gettyimages.com

Deutsche Bank Securities Inc.

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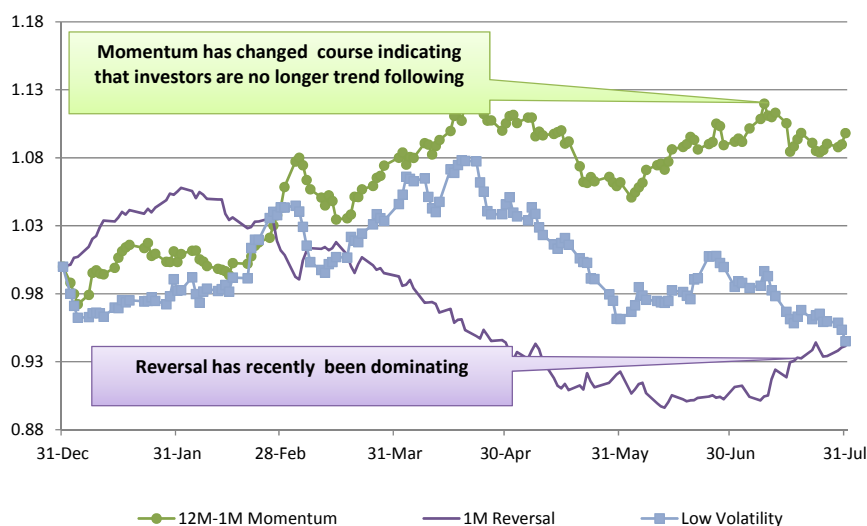


Quantifying Markets

Two sides of the same coin?

Since early July we have seen a strong run up in the one month reversal factor (Figure 1). At the same time, twelve month momentum has changed course and faltered. These are two important strategies within the quant playbook. One month reversal simply buys the stocks that have had the worst performance and sells the stocks with the best performance within the last month. This is the simplest type of mean reversion strategy. On the other hand, momentum is a trending strategy. Twelve month momentum buys stocks that have been performing well and sells stocks that have been underperforming during the past year (after subtracting the most recent month's performance to avoid the aforementioned mentioned reversal effect). So what does this all mean?

Figure 1: Performance of momentum, reversal, and low volatility



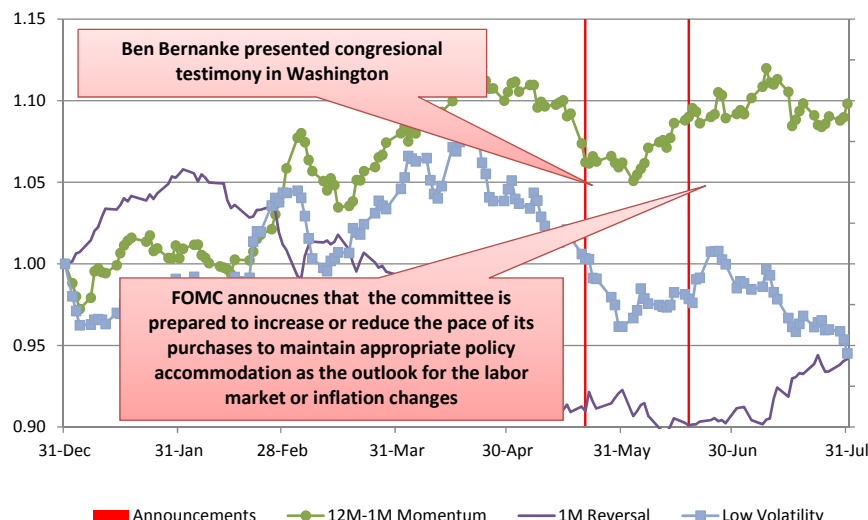
Source: Bloomberg Finance LP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Watching the performance and direction of momentum and reversal in tandem can tell us something about the current state of the market. Undoubtedly, recent factor performance has been dominated by Fed made comments regarding QE tapering on May 22th and June 19th (Figure 2).¹

¹ See Jussa et al., 2011, "The Quant View: Small Cap Edition", Deutsche Bank Quantitative Strategy, 1 July 2013



Figure 2: Factor performance surrounding Fed commentary



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

Anecdotally speaking, the fact that reversal is outperforming may suggest that investors are being more opportunistic about stock selection. Perhaps taking profits in the short-term as well as buying on short-term weakness. On the other hand, long term strategies have recently plateaued and are underperforming, hinting that investors are not putting too much faith in past performance. This under performance in momentum is problematic for investors, since momentum is a staple ingredient in any quant portfolio. Let's dig deeper into the characteristics of momentum to better understand what is occurring.

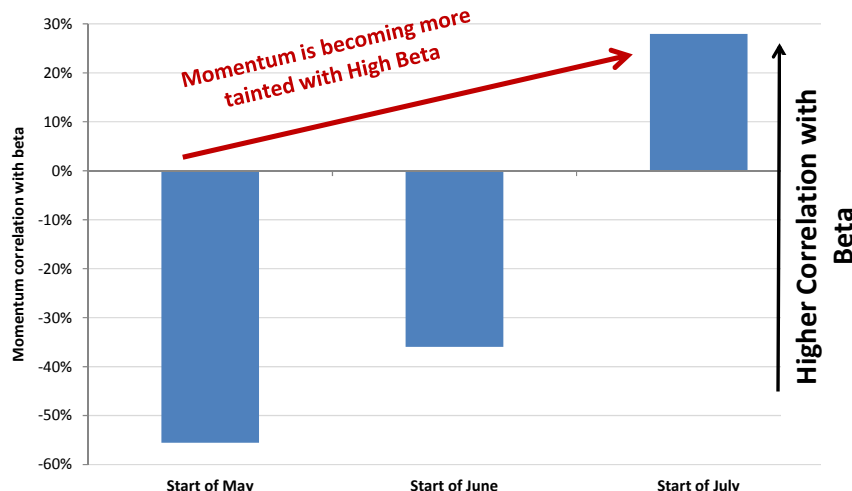
Bad beta!

In our paper "Reviving Momentum", we showed that cross-sectional beta exposure can be a strong driver of factor performance, particularly around market turning points.² We saw two such turning points recently: QE tapering-related angst May 22nd and after June 19th when the Fed clarified some of the commentary surrounding QE tapering. Perhaps momentum has become tainted with beta once again? Figure 3 shows the correlation between the momentum portfolio and the beta portfolio for May, June, and July.

² Alvarez et al., 2011, "Signal Processing: Reviving Momentum – Mission Impossible?", *Deutsche Bank Quantitative Strategy*, 6 July 2011



Figure 3: Beta exposure of momentum during May, June, and July



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

During the month of May and June, we see that momentum is composed of low beta. In July, we see that the momentum portfolio is increasingly picking up exposure to high beta stocks. So in effect, in May and June, if you are betting on momentum, you are in fact betting on low beta to some extent. We've made this point before, but it's worth making again. Be cognizant of the beta exposures in your factors. What you want to understand is whether it is the underlying factor that is driving performance, or are you just playing beta in disguise? This is important at all times of course, but is especially crucial when you do not have a particular view on the market direction.

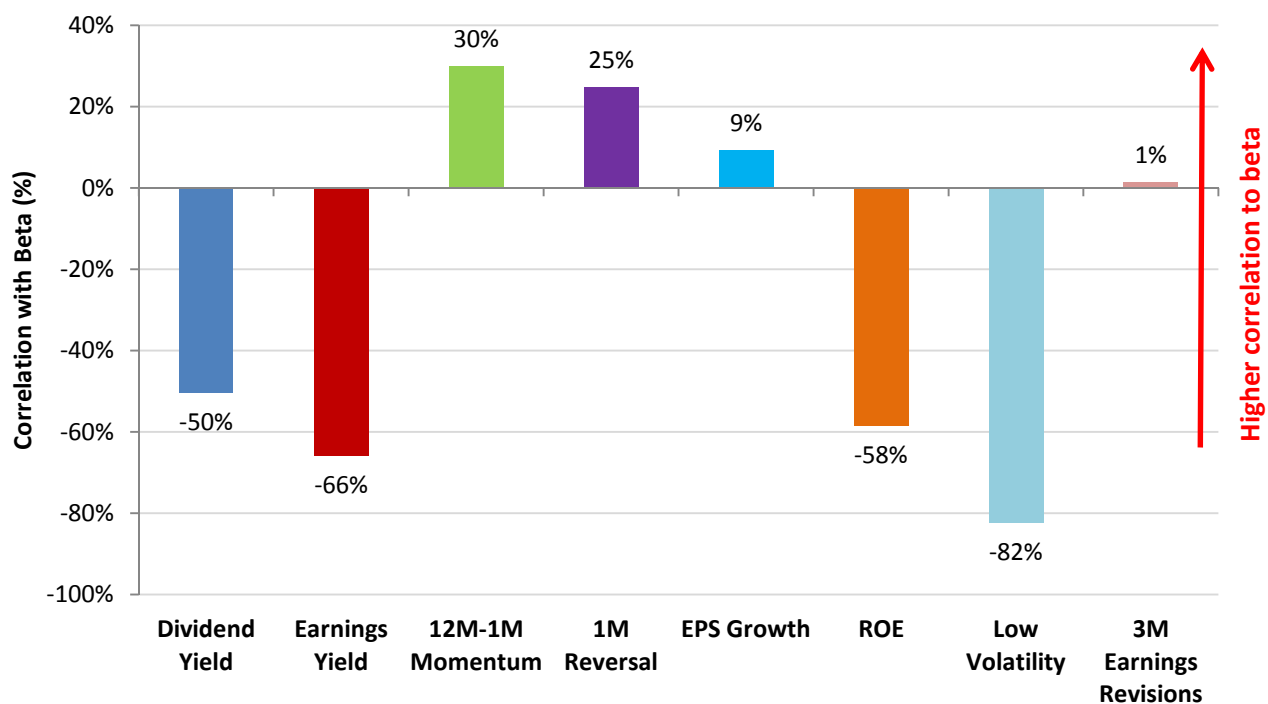
Watch your beta exposure

If you do not have a particularly strong view on the market direction, then we advise to neutralizing your factors' exposure to beta.³ As a reference, the Figure 4 below shows the current beta exposures of the standard factors we track in our "DB Quant Dashboard". If you don't have a strong view on the future direction of the market, then we'd highly recommend neutralizing these exposures. If, on the other hand, you want to make an active call on market direction, this can help you position your factor exposures to do so. For example, a bullish call would involve tilts towards the factors with positive beta exposure (i.e. momentum and reversal). On the other hand, a bearish perspective would involve tilts towards the factors with negative beta exposure (i.e. low volatility and earnings yield)

³ For more information on how to neutralize your factor exposures to beta, please see: Alvarez et al., 2011, "Signal Processing: Reviving Momentum – Mission Impossible?", *Deutsche Bank Quantitative Strategy*, 6 July 2011



Figure 4: Factor correlation to beta portfolio



Source: Deutsche Bank



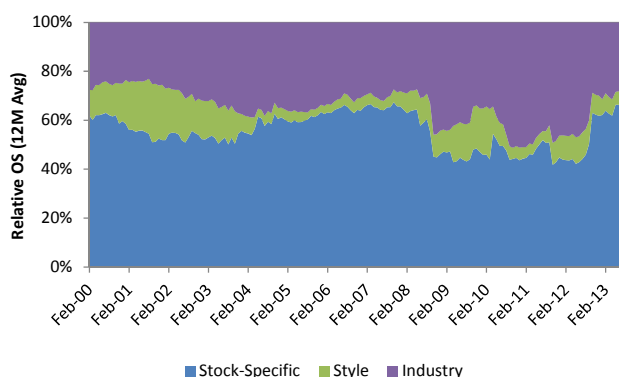
Small caps, big opportunity

In this month's "The Quant View: Small Cap Edition" we analyze various quantitative and fundamental models to show that there is greater stock level differentiation among smaller cap stocks, which presents alpha opportunities for investors. This monthly publication will also point out the various noteworthy observations from our models specifically for small cap stocks. For this report, we will use the Russell 2000 index to define our small caps universe. Where we compare to large caps, we will use the Russell 1000 as our proxy.

The small cap opportunity set

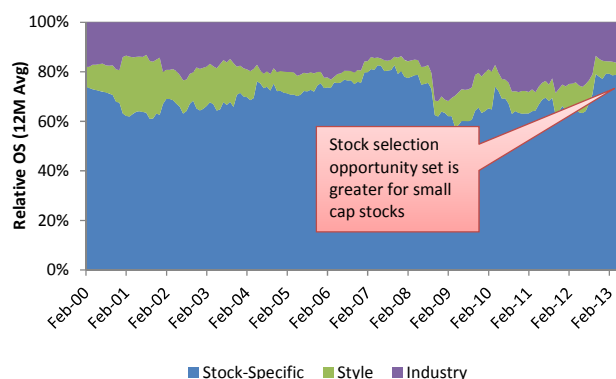
We think of the opportunity set as the total available alpha on the table. Our main interest is to understand what is driving that opportunity, because this can allow us to position our strategies to pick in the orchard with the juiciest fruit. In Figure 5 we show the opportunity set for the large cap universe, and in Figure 6 we show the opportunity set for the small cap universe.

Figure 5: Large cap opportunity set



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

Figure 6: Small cap opportunity set



Source: Bloomberg Finance LP, 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 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.

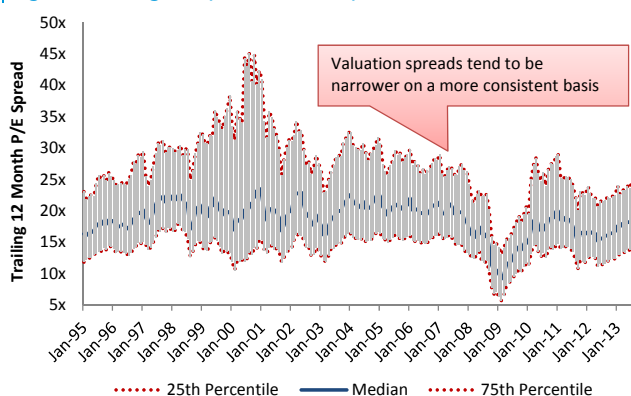
However, the good news is that both charts show that bottom-up stock picking is making a strong comeback. The blue area in both charts has reached levels last seen in 2007. The crucial observation is that the relative opportunity coming from stock selection is higher for small cap stocks. In other words, this universe is particularly fruitful for managers with skill in picking individual stocks. Note that the relative opportunity set has remained relatively steady during the past month for small caps.



Valuation spreads

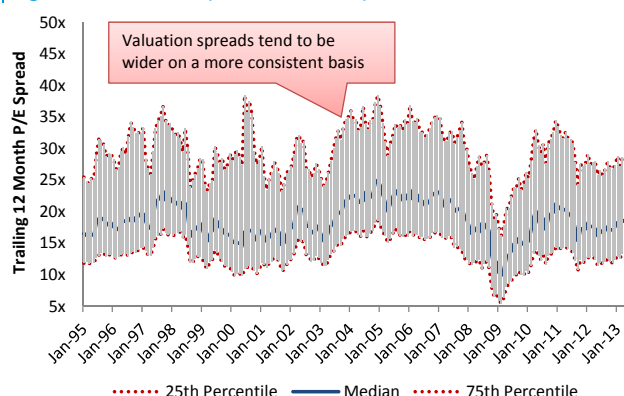
Similar to the opportunity set, valuation spreads allow investors to gauge the level of stock selection opportunity in the market. Widening valuation spreads typically indicate more stock-level differentiation and therefore a better environment for stock selection. On the other hand, narrowing valuation spreads are indicative of lower levels of stock differentiation. Figure 7 and Figure 8 show the median, 25th percentile, and 75th percentile of trailing price to earnings for the Russell 1000 and 2000 index constituents. Interestingly, we see that valuation spreads are wider on a more consistent basis for small cap stocks. This reinforces the earlier evidence we saw in the opportunity set; the small cap space is rich with opportunity for skilled stock pickers. Note that during the past month, valuation spreads have remained fairly consistent within small caps.

Figure 7: Large cap valuation spreads



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

Figure 8: Small caps valuation spreads



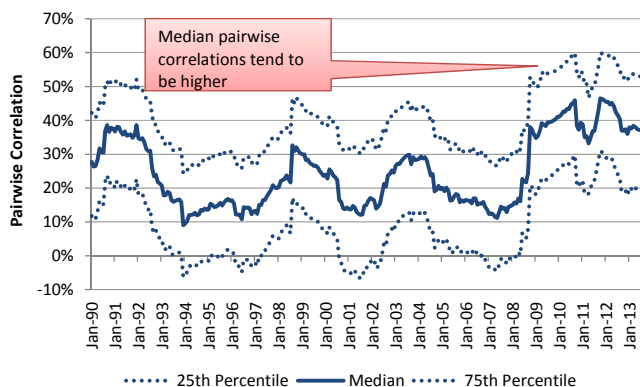
Source: Bloomberg Finance LP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Keeping an eye on correlations

Closely related to the opportunity set and valuation spreads 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 9 shows the median pairwise correlation for large caps. 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. Interestingly, in general median pairwise correlations for small cap stocks (Figure 10) tend to be lower when compared to large cap stocks. This tells us that small cap names tend to trade more on their own merits, rather than being driven by common factors. Note that during the past month, median pairwise correlations have remained relatively steady within small caps.

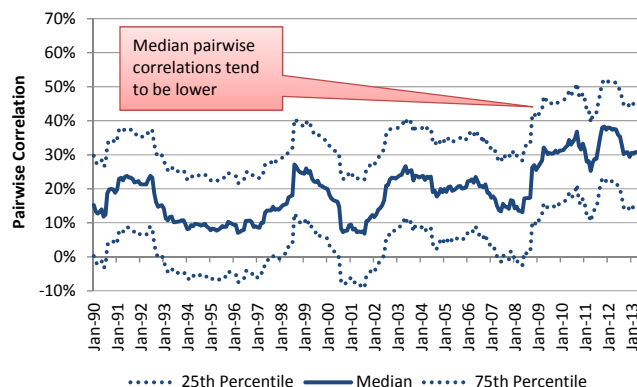


Figure 9: Median pairwise correlation for large caps



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

Figure 10: Median pairwise correlation for small caps



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

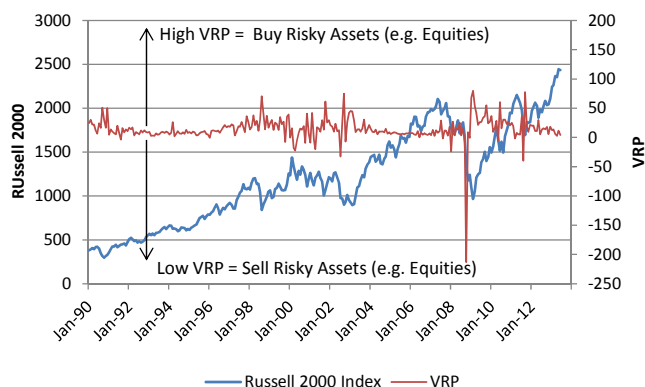
Macro update

Our results so far indicate that the small cap world is a favorable environment for applying stock picking skill. But market timing is also important. Picking good stocks is nice, but when everything is falling even doing that is sometimes not enough. What kind of quant tools can we use to do market timing?

Our favorite market timing indicator

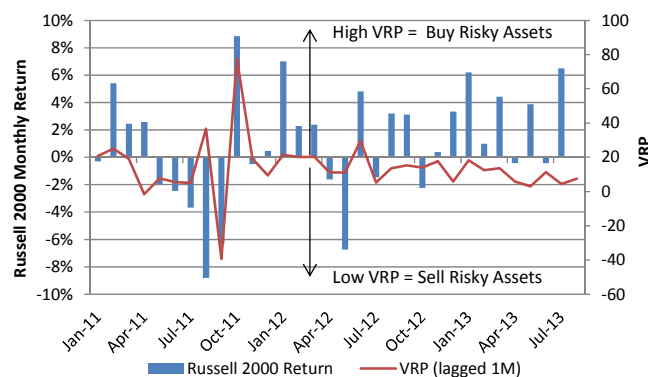
Our Variance Risk Premium (VRP) indicator is a contrarian indicator that measures market overreaction and underreaction to realized risk. Today our VRP indicator is reading 7, compared to a long-term average of 14.3. The VRP has edged upward since last month's reading of 4 suggesting a fairly neutral stance. Generally we pay attention to the VRP when it hits extreme levels (like +/- 2 standard deviations).

Figure 11: Variance Risk Premium (VRP)



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

Figure 12: Recent VRP (lagged) and market returns



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



The Small Cap Dashboard

Which styles have been working in small caps?

This month we highlight the DB Small Cap Dashboard, an easy-to-use cheat sheet that shows which styles have been working within small cap stocks. We track cumulative factor performance year-to-date, and highlight what we think are the noteworthy observations. Figure 13 shows the results for small caps.

A few important themes emerge from the dashboard this month.

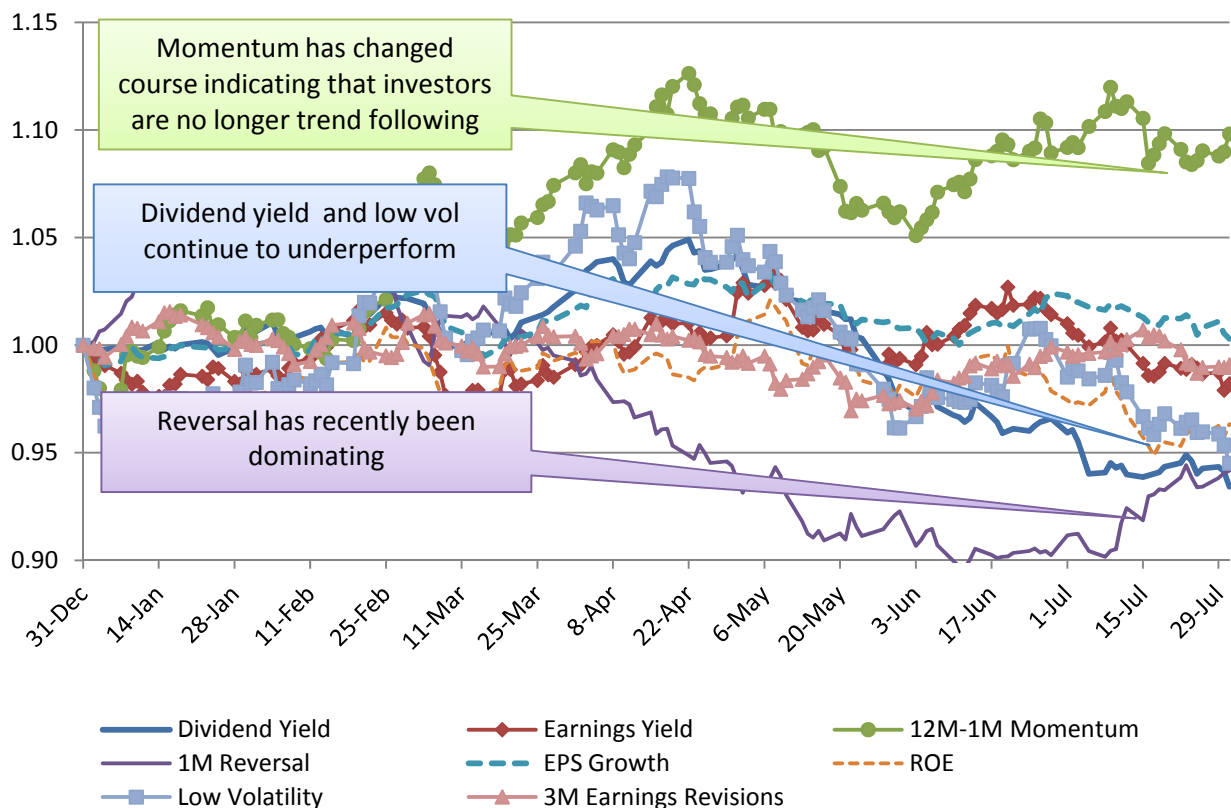
- Since the beginning of July, momentum has sold off indicating that investors are not putting too much faith in past performance.
- Low volatility and dividend yielding stocks continue to underperform.
- Reversal has made a sharp comeback hinting that investors are becoming more opportunistic in this market.

[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 13: Small Caps (Russell 2000): YTD cumulative factor performance (Q10-Q1 return spread)



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



Bottom-up stock selection

Top stock picks from our QCD stock selection model

- The QCD model is our flagship stock selection model for U.S. small cap 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 14 shows the best 20 buy ideas and sell ideas from today's model. Note that a complete ranking for all Russell 2000 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 14: Current QCD model stock recommendations fro Russell 2000 universe

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)
SRI	STONERIDGE INC	86183P102	Consumer Discretionary	16.2%	BPZ	BPZ RESOURCES INC	055639108	Energy	-18.7%
NILE	BLUE NILE INC	09578R103	Consumer Discretionary	15.5%	EOX	EMERALD OIL INC	29101U209	Energy	-18.4%
PDLI	PDL BIOPHARMA INC	69329Y104	Health Care	15.0%	RBCN	RUBICON TECHNOLOGY INC	78112T107	Information Technology	-17.7%
PTRY	PANTRY INC	698657103	Consumer Staples	13.2%	RIGL	RIGEL PHARMACEUTICALS INC	766559603	Health Care	-17.3%
MN	MANNING & NAPIER INC	56382Q102	Financials	13.1%	MDW	MIDWAY GOLD CORP	598153104	Materials	-17.0%
ONE	HIGHER ONE HOLDINGS INC	42983D104	Information Technology	13.0%	IVAC	INTEVAC INC	461148108	Information Technology	-17.0%
SVU	SUPERVALU INC	868536103	Consumer Staples	11.6%	MTG	MGIC INVESTMENT CORP/WI	552848103	Financials	-16.4%
TTEC	TELETECH HOLDINGS INC	879939106	Information Technology	11.4%	PZG	PARAMOUNT GOLD AND SILVER	69924P102	Materials	-15.6%
TREE	TREE.COM INC	894675107	Financials	10.9%	TWER	TOWERSTREAM CORP	892000100	Telecommunication Services	-14.4%
EDG	EDGEN GROUP INC	28014Q107	Industrials	10.9%	UNIS	UNILIFE CORP	90478E103	Health Care	-13.7%
PRXL	PAREXEL INTERNATIONAL CORP	699462107	Health Care	10.6%	SWSH	SWISHER HYGIENE INC	870808102	Industrials	-13.5%
RUSHA	RUSH ENTERPRISES INC	781846209	Industrials	9.9%	AMSC	AMERICAN SUPERCONDUCTOR CP	030111108	Industrials	-13.4%
IDT	IDT CORP	448947507	Telecommunication Services	7.9%	SWS	SWS GROUP INC	78503N107	Financials	-13.1%
CALL	MAGICJACK VOCALTEC LTD	M6787E101	Telecommunication Services	7.4%	LEAP	LEAP WIRELESS INTL INC	521863308	Telecommunication Services	-11.3%
ALJ	ALON USA ENERGY INC	020520102	Energy	7.1%	AT	ATLANTIC POWER CORP	04878Q863	Utilities	-9.9%
ADES	ADVANCED EMISSIONS SOLUTIONS	00770C101	Materials	6.3%	GRIF	GRIFFIN LAND & NURSERIES INC	398231100	Consumer Staples	-8.9%
WNR	WESTERN REFINING INC	959319104	Energy	4.6%	ALCO	ALICO INC	016230104	Consumer Staples	-6.6%
ZEUS	OLYMPIC STEEL INC	68162K106	Materials	3.8%	GNE	GENIE ENERGY LTD	372284208	Utilities	-6.2%
OTTR	OTTER TAIL CORP	689648103	Utilities	2.0%	BYD	BOYD GAMING CORP	103304101	Consumer Discretionary	-5.8%
OWCO	CONSOLIDATED WATER CO INC	G23773107	Utilities	1.7%	BEBE	BEBE STORES INC	075571109	Consumer Discretionary	-4.5%

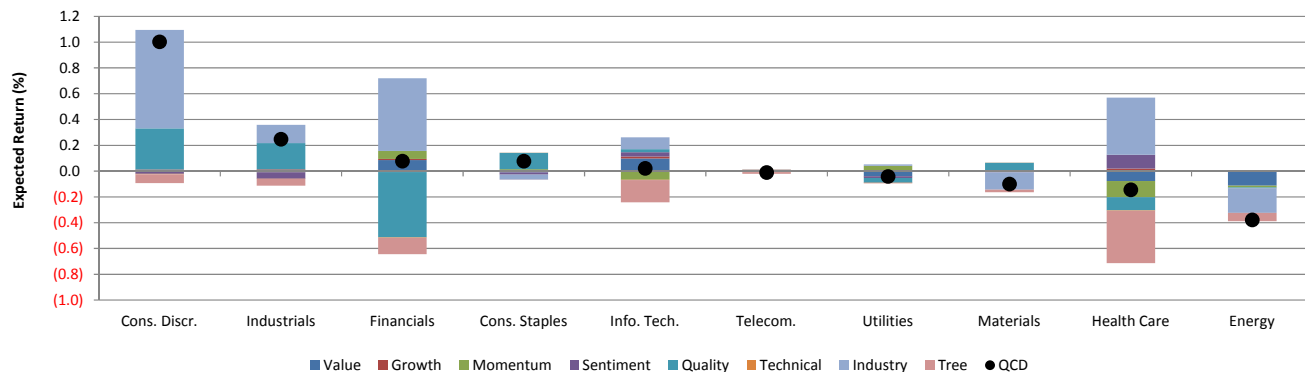
Source: Bloomberg Finance LP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Current sector recommendations

The QCD model also implicitly makes sector predictions. Figure 15 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 15: Current QCD sector recommendations for Russell 2000 universe

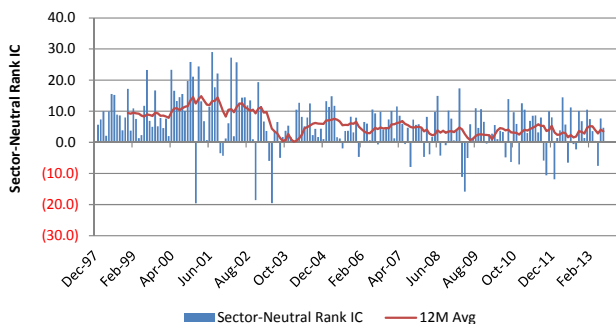


Source: Bloomberg Finance LP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Small cap model performance

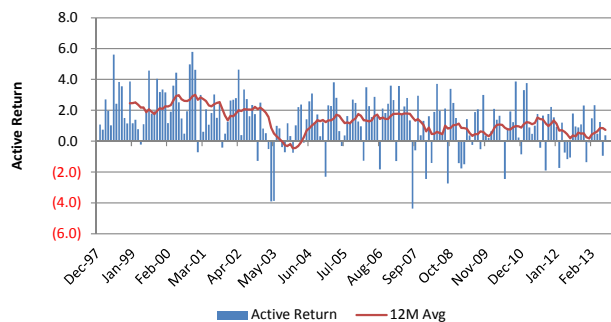
The QCD model has performed well since inception. Figure 16 shows the pure signal performance, measured as a monthly sector-neutral rank information coefficient (IC). Figure 17 shows the performance of an actual model portfolio, after costs, based on a realistically optimized market-neutral strategy.

Figure 16: Model performance, sector-neutral rank IC



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

Figure 17: Model portfolio active return, after costs

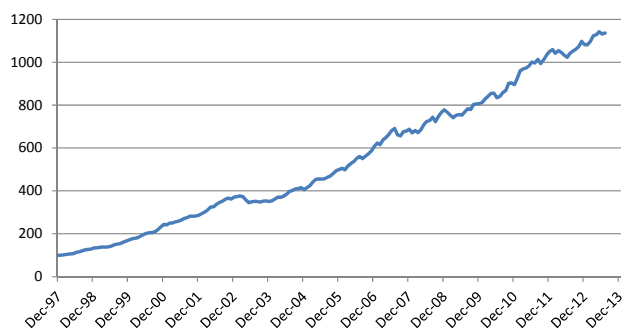


Source: Bloomberg Finance LP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

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

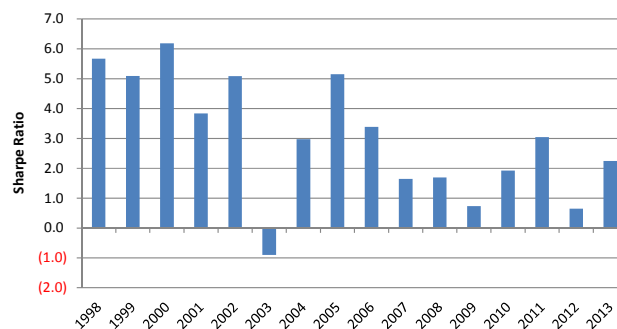


Figure 18: Model portfolio cumulative, after costs



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

Figure 19: Annualized Sharpe ratio, after costs



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



Top stock picks from our N-LASR global stock selection model

- The N-LASR model is our flagship stock selection model for small cap 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 20 shows the best 20 buy ideas and sell ideas from today's model. Note that a complete ranking for all small cap 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 20: Current N-LASR model stock recommendations for Russell 2000 universe

BEST BUY IDEAS					BEST SELL IDEAS				
Ticker	Name	SEDOL	Country	N-LASR Score (higher is better long)	Ticker	Name	SEDOL	Country	N-LASR Score (lower is better short)
SUSQ	SUSQUEHANNA BANCSHARES INC	2858876	USA	2.22	ADTN	ADTRAN INC	2052924	USA	-1.81
HDNG	HARDINGE INC	2403522	USA	2.11	PSMI	PEREGRINE SEMICONDUCTOR CORP	B875013	USA	-1.79
CCMP	CABOT MICROELECTRONICS CORP	2572381	USA	2.04	AKR	ACADIA REALTY TRUST	2566522	USA	-1.78
SHLM	SCHULMAN (A.) INC	2779342	USA	1.94	KEYN	KEYNOTE SYSTEMS INC	2492177	USA	-1.74
UFCS	UNITED FIRE GROUP INC	84WXG84	USA	1.79	ISRL	ISRAMCO INC	2247571	USA	-1.67
HELE	HELEN OF TROY LTD	2419530	USA	1.78	GOV	GOVERNMENT PPTY'S INCOME TR	B4ZG8D9	USA	-1.66
NUVA	NUVASIVE INC	800GIC2	USA	1.76	HIW	HIGHWOODS PROPERTIES INC	2420640	USA	-1.65
USTR	UNITED STATIONERS INC	2923815	USA	1.74	ACRE	ARES COMMERCIAL REAL ESTATE	B77PWP5	USA	-1.64
ABM	ABM INDUSTRIES INC	2024901	USA	1.73	EGP	EASTGROUP PROPERTIES	2455761	USA	-1.61
APEI	AMERICAN PUBLIC EDUCATION	8292GM4	USA	1.68	SAM	BOSTON BEER INC -CL A	2113393	USA	-1.61
CFFI	C&F FINANCIAL CORP	2494515	USA	1.67	NHI	NATIONAL HEALTH INVESTORS	2626125	USA	-1.59
BBOX	BLACK BOX CORP	2546977	USA	1.66	SFL	SHIP FINANCE INTL LTD	B019MJ8	USA	-1.59
MSFG	MAINSOURCE FINL GROUP INC	2475156	USA	1.58	REN	RESOLUTE ENERGY CORP	B4PVR71	USA	-1.58
PKOH	PARK OHIO HOLDINGS CORP	2671363	USA	1.58	PTP	PLATINUM UNDERWRITERS HLDG	2958516	USA	-1.54
SKYW	SKYWEST INC	2814210	USA	1.58	HL	HECLA MINING CO	2418601	USA	-1.51
NNBR	NN INC	2620558	USA	1.57	SCHN	SCHNITZER STEEL INDS -CL A	2821298	USA	-1.50
OMG	OM GROUP INC	2653684	USA	1.54	AMRE	AMREIT INC	B832L94	USA	-1.50
LCUT	LIFETIME BRANDS INC	2515773	USA	1.54	UBNT	UBIQUITI NETWORKS INC	B76VD62	USA	-1.49
PLT	PLANTRONICS INC	2692030	USA	1.53	AEC	ASSOCIATED ESTATES RLTY CORP	2044396	USA	-1.48
PERY	ELLIS PERRY INTL INC	2851701	USA	1.52	SSNC	SS&C TECHNOLOGIES HLDGS INC	B58YSC6	USA	-1.47

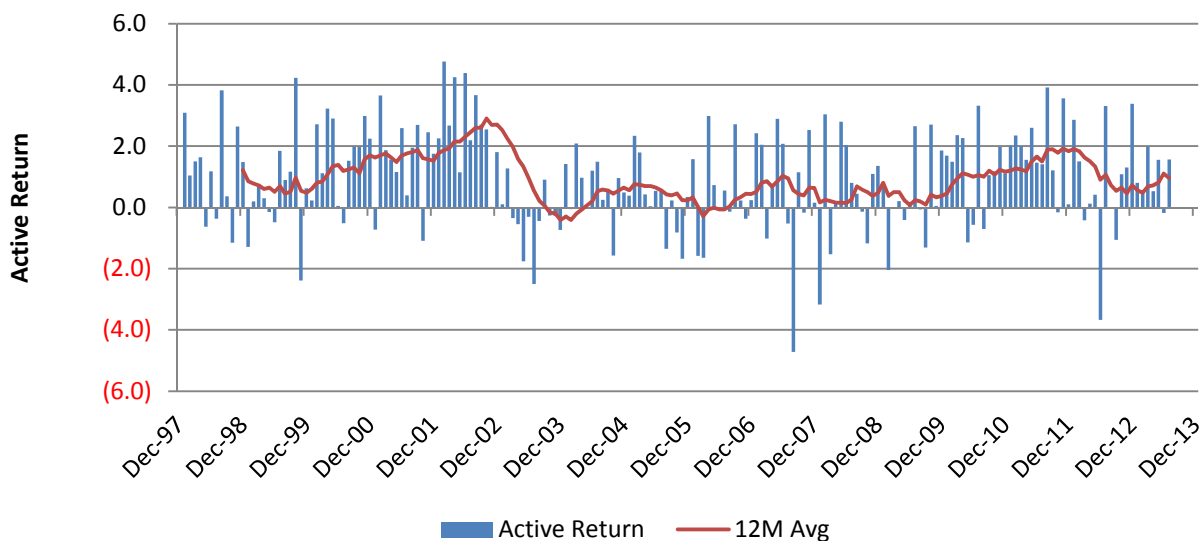
Source: Bloomberg Finance LP, Compustat, IBES, MSCI, Russell, S&P, Thomson Reuters, Worldscope, Deutsche Bank

Small cap model performance

The N-LASR model has performed well since inception. Figure 21 shows the average pure signal performance, measured as a monthly rank information coefficient (IC).



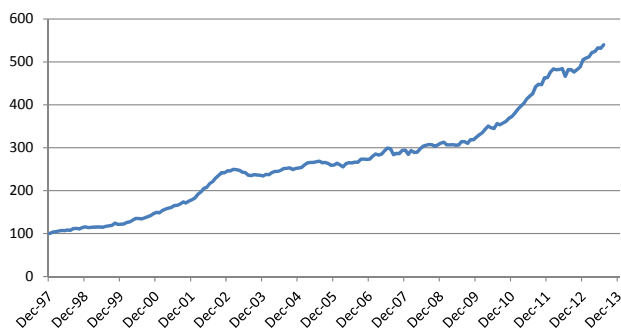
Figure 21: Model portfolio active return, after costs



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

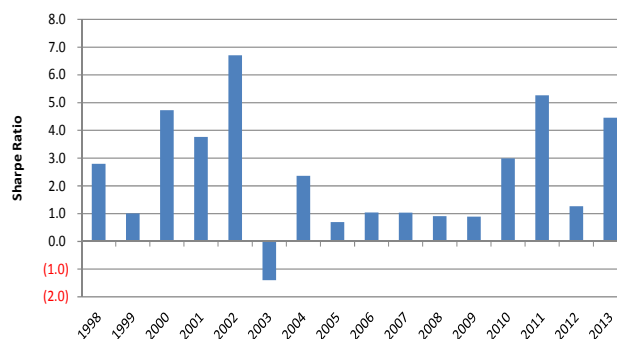
Figure 22 shows the cumulative performance of the optimized strategy, and Figure 23 shows the annualized Sharpe ratio (after costs) by calendar year.

Figure 22: Portfolio cumulative, after costs



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

Figure 23: Annualized Sharpe ratio, after costs



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



Appendix 1

Important Disclosures

Additional information available upon request

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