Deutsche Bank

12 April 2011

Emerging Issues

What's hot in the world of quant?

Research Summary
In this report we highlight the latest trends in quant thinking from a unique angle: we aggregate up the discussion topics from every client meeting we have done in the past year. The results give us an interesting snapshop of what quant managers are thinking about right now.

A unique look at what is on the mind of quantitative investors

So what is everyone else talking about?
Since we launched our research just over a year ago, we have had the privilege of doing over 700 one-on-one meetings with quantitative investors around the world. In each of those meetings, we noted down the topics that you, our clients, requested we present on. This report aggregates that information into a unique set of statistics that tell an interesting story about what ideas are top of mind for buy-side quants right now.

It's all about alpha
One theme that comes through loud and clear is that alpha is still the name of the game for most quants. Over the past year, our research on new stock-selection signals – particularly those derived from novel databases – has consistently been near the top of the list of most frequently discussed topics.

But macro is catching up
However, we have also noticed a burgeoning interest in the wider macroeconomic environment, and specifically in ways that quants can incorporate market-wide indicators into their models. The traditional approach of building bottom-up models that play on stock-specifics has struggled in a world where the big macro themes are often the marginal driver of stock returns.

Style rotation: the way of the future or a fool's game?
One obvious way to build the macro regime into quant models is to do style rotation. Indeed it is probably no surprise that this has been the single most discussed -- not to mention divisive – topic we have researched this year. Quant managers seem to have bifurcated into two camps: those who believe factor timing is the way of the future, and those who see it as a low breadth activity that requires an unattainable skill level to work in real life.

And the winner is…
Read on for the complete breakdown of what's hot and what's not in the world of quant.

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A letter to our readers

So what is everyone else talking about?

This report draws on our conversations with over 700 buy-side quant managers over the past year

Since we launched our research one year ago, we have had the privilege of meeting many of you in person. In fact, in the past year alone we have done over 700 one-on-one meetings with clients around the world. In our travels, we have been lucky enough to share ideas and engage in stimulating discussions with some of the most sophisticated money managers in the world – from ultra high frequency statistical arbitrage firms to low turnover long-only mutual funds and everyone in between. And in those meetings, we were asked one question more than any other: what's everyone else talking about?

We aggregate up meeting-level data to derive a novel picture of the themes that buy-side managers have on their mind

With that in mind, this new report is – in the best traditions of our discipline – an attempt to answer that question in a quantitative way. In every meeting we conducted over the last year, we made a note of the topics we discussed. As those of you who have met us know, we invariably start our meetings by asking you, the client, to pick which of our recent topics are of most interest to you. Thus we have built up a database of which topics most frequently pique the interest of buy-side managers. In this report we present these data and going forward we will continue to track the statistics presented in the rest of the report.

Alpha is still the name of the game

Alpha is still at the heart of the quantitative investment process…

After parsing the data, a couple of themes emerge. First, quantitative investing is still all about generating alpha. In our research we try to tackle all aspects of the quantitative investment process – from alpha generation to portfolio construction to risk management – but research on new factors and new databases always seems to attract the most attention. Our research reports looking at using options data, industry-specific data, high frequency data, and securities lending data are good examples; all four were among the topics that our clients most frequently requested we present to them.

But macro is on the mind

…but recently macro topics have been attracting more attention

However, the emphasis on bottom-up stock selection is starting to change. Through the financial crisis, ensuing recession, and sporadic recovery, stock-specific fundamentals have often taken a back seat to macro factors as the marginal driver of stock returns. This has forced quantitative managers to look for new ways to incorporate the wider world into their models, for example by using macro variables to try to pick when certain quant factors will work. Indeed, our single most popular report in the last year has been our style rotation research.

As always, feedback is much appreciated

This report is quite different from the usual sell-side quantitative research, so any feedback you have would be particularly welcome. Let us know if you find the information in this report useful, and if there are any other statistics you'd like to see in future editions.

Regards,

Yin, Rocky, Miguel, Javed, and John
Deutsche Bank North American Quantitative Strategy

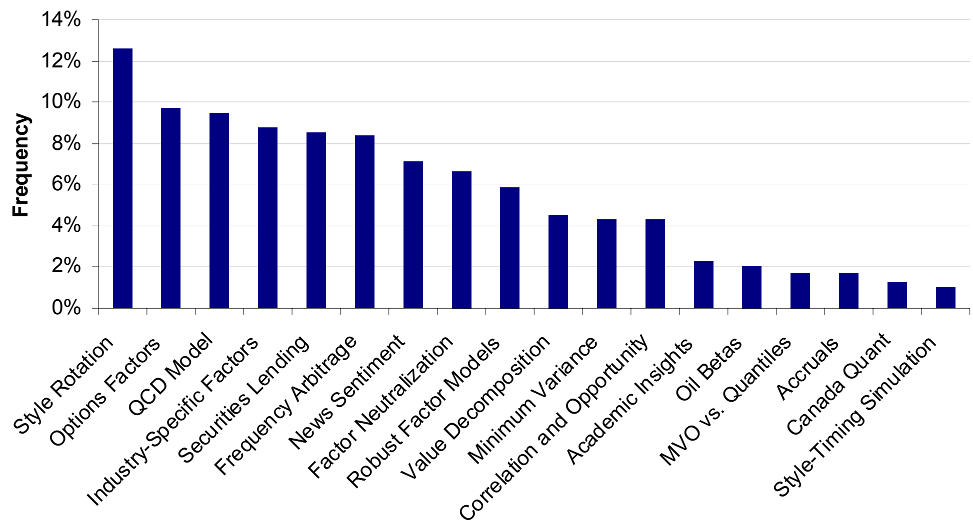
And the winner is…

Most popular report

Our style rotation research was the single most discussed topic we wrote on in the last year

Figure 1 shows the popularity of each of our research topics since we launched our research just over a year ago. In that time we have done over 700 one-on-one meetings, so the chart shows the percentage of meetings that each topic was discussed at. The all-time leader is our style rotation research from September last year; clients requested we present on this paper at just over 12% of all our meetings.[1]

Figure 1: Most popular DB Quant research papers, April 2010-present



Source: Deutsche Bank

Controversy sells

In part, the popularity of style rotation lies in its controversy: half our clients believe it and half do not

Based on these results, our first conclusion is that controversy sells. Without a doubt, style rotation has been the most polarizing topic we have discussed in our research so far. In fact, it's fair to say that our client base has largely bifurcated into two camps. The first camp believes that the traditional alpha factors have largely morphed into risk factors, and hence the future of quant lies in finding ways to pick when factors will work and when they won't. On the other side of the trenches, the opposing camp believes that style rotation is inherently a low-breadth activity, and it is impossible to become skillful enough at timing factors to overcome this lack of breadth.

Being on the sell side, we have the luxury of contributing to both sides of the debate. While we do believe there is enough evidence to suggest style rotation has some merit, we have also proposed what we call more "defensive" approaches to the style rotation conundrum. For example, our reports on factor neutralization[2] and robust factor models[3] have also been popular (ranking 8th and 9th out of all our topics). Both these studies suggest ways to mitigate

[1] Luo, Y., R. Cahan, J. Jussa, and M. Alvarez, 2010, "GTAA/Signal Processing: Style rotation", *Deutsche Bank Quantitative Strategy*, 7 September 2010

[2] Alvarez, M., Y. Luo, R. Cahan, and J. Jussa, 2010, "Portfolios Under Construction: Volatility = 1/N", *Deutsche Bank Quantitative Strategy*, 16 June 2010

[3] Luo, Y., R. Cahan, M. Alvarez, J. Jussa, and Z. Chen, 2011, "Portfolios Under Construction: Robust factor models", *Deutsche Bank Quantitative Strategy*, 24 January 2011

the impact that the uncertain macroeconomic environment has on factor performance, without the need to explicitly time factors.

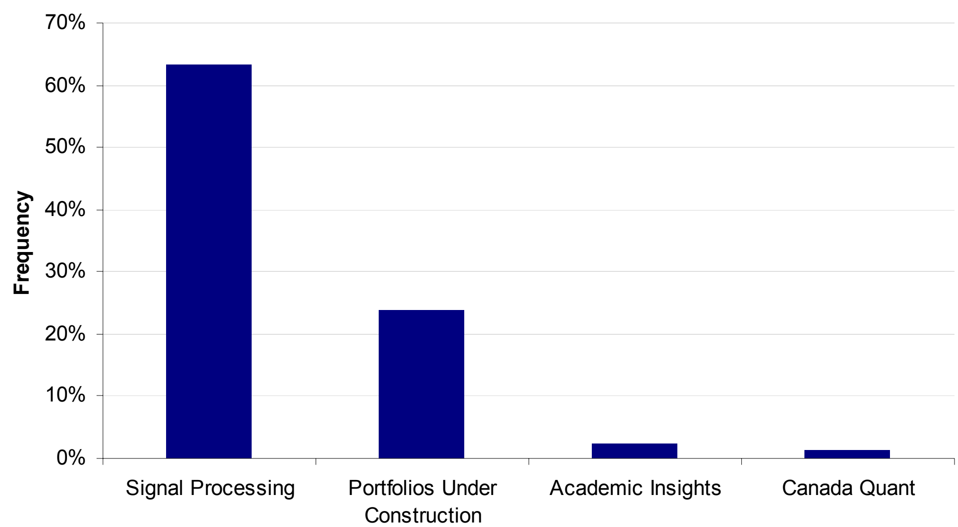
Everyone loves alpha

One thing we can all agree on is that finding new alpha sources is always a worthwhile activity

Our second conclusion is that quant is still all about generating alpha. The search for new factors has always been an important part of quantitative research, but has probably been getting even more attention in recent years as the bread and butter factors like value, momentum, and quality have been mired in a malaise of high volatility and low returns. Our discussions with clients bear this out. Since we began publishing, 7 out of the 10 most popular topics have been alpha related. For example, our work on using options data to pick stocks has been a perennially popular topic[4], as has our flagship QCD stock-selection model[5] and our work on industry-specific factors[6].

In fact, if we rate our regular research series by popularity, it's a no contest: alpha wins hands down (Figure 2). Topics from our *Signal Processing* research series, where we look for new and innovative stock-selection factors, were discussed at over 60% of all meetings.

Figure 2: Most popular DB Quant research series, April 2010-present



Source: Deutsche Bank

Portfolio construction is also topical; with alpha hard to come by, preserving what alpha one does have is vital

Despite the heavy skew towards alpha, we are noticing an increasing interest in portfolio construction topics. In a world where alpha is hard to come by, preserving what alpha one does have through efficient portfolio construction is a sensible approach. Anecdotally our clients are telling us that this is an area that has not gotten the attention it deserves by sell-side quant analysts in the past. Our hope is that over time we can help make Figure 2 a little more balanced between alpha and portfolio construction, since we believe both can make an equally important contribution to overall portfolio performance.

[4] Cahan, R., Y. Luo, J. Jussa, and M. Alvarez, 2010, "Signal Processing: The options issue", *Deutsche Bank Quantitative Strategy*, 12 May 2010

[5] Luo, Y., R. Cahan, J. Jussa, and M. Alvarez, 2010, "QCD Model: DB Quant Handbook", *Deutsche Bank Quantitative Strategy*, 22 July 2010

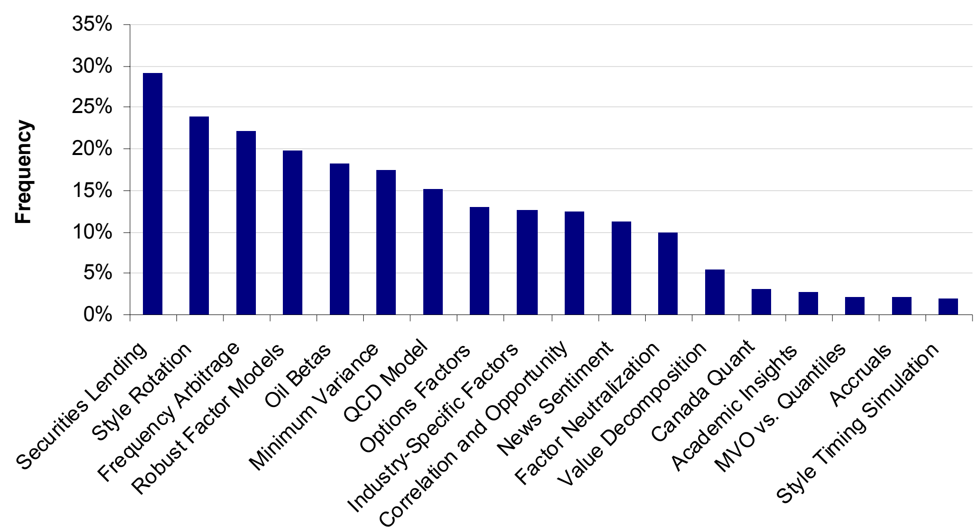
[6] Luo, Y., R. Cahan, J. Jussa, and M. Alvarez, 2010, "Signal Processing: Industry-specific factors", *Deutsche Bank Quantitative Strategy*, 7 June 2010

Opportunity-adjusted popularity

A fairer way to present the statistics is to adjust the frequency of each topic for the publication date – some topics were published recently and hence have had less opportunity to be discussed

Of course, this wouldn't be a quant report without at least a little bit of data mining. Those readers watching closely would have noticed that the statistics presented above are a little unfair; the more recent research was not available for discussion at all meetings so the percentages in the chart are unfairly skewed towards the older research topics. To correct for this, we also compute Figure 3. This chart shows how often each topic was discussed, as a percent of the total meetings *after the publication date for each report.*

Figure 3: Most popular DB Quant research papers adjusted for opportunity, April 2010-present



Source: Deutsche Bank

It turns out that the picture doesn't change too much. Style rotation is still one of the most popular topics, but some of our newer alpha topics – for example our securities lending research[7] and our frequency arbitrage study[8] – move up the rankings a little.

Time-series results

Quant ideas are sticky; unlike a fundamental stock idea, quant research has shelf life

Of course, as quants we love a good time-series, so Figure 4 shows the most popular research topics by quarter. There is a little bit of autocorrelation in the sense that topics that are popular in one quarter tend to persist into at least the next quarter.

We don't have enough data to fit a Kalman filter yet, but watch this space.

Figure 4: The winner's podium, by quarter

Quarter	Gold	Silver	Bronze	Runner-Up
2010Q2	Value Decomposition	Accruals	Capital Gains Overhand	MVO vs. Quantiles
2010Q3	News Sentiment	Options Factors	QCD Model	Industry-Specific Factors
2010Q4	Style Rotation	QCD Model	Factor Neutralization	Frequency Arbitrage
2011Q1	Frequency Arbitrage	Securities Lending	Style Rotation	Minimum Variance

Source: Deutsche Bank

7 Cahan, R., Y. Luo, M. Alvarez, J. Jussa, and Z. Chen, 2011, "Signal Processing: The long and the short of it", *Deutsche Bank Quantitative Strategy*, 18 January 2011

8 Cahan, R., Y. Luo, J. Jussa, and M. Alvarez, 2010, "Signal Processing: Frequency arbitrage", *Deutsche Bank Quantitative Strategy,* 10 November 2010

The big themes

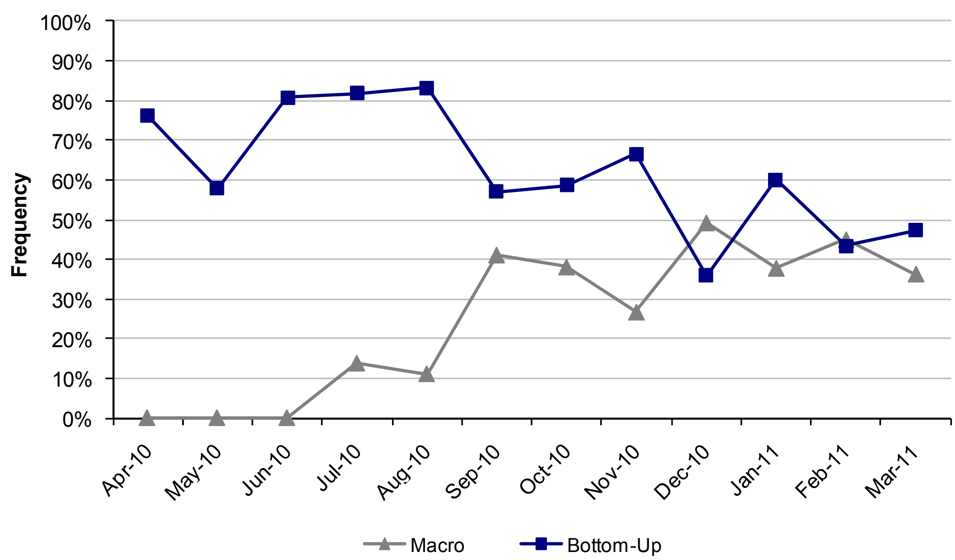
There is a burgeoning realization that bottom-up stock-selection models need to start incorporating more of the macro environment

If we had to pull out one theme from our conversations with money managers over the past year, it would be the growing recognition that incorporating macro data into quant models is prudent in this environment. Traditionally, most quant models have been somewhat divorced from the macro environment. From the end of the dot com crash to the start of the financial crisis, benign economic conditions meant that most quant investors were able to focus on building models that played primarily on stock-level characteristics. However, since the onset of the financial crisis, the marginal driver of stock returns has largely been big macro themes, and the so called risk-on/risk-off trade. This has led many quants to seek new ways to systematically incorporate economic and market-wide indicators into their models.

We can see this in the data – over the latter half of 2010 there was a big increase in interest in "macro" themes

We can see this trend quite clearly in our meeting records. Figure 5 shows the percentage of meetings where we discussed "macro" topics versus "bottom-up" topics over time. We can think of bottom-up topics as those related to using stock-level characteristics to build portfolios, whereas the macro topics are the ones where we try to incorporate macro data into our models. Bottom-up stock selection may still be on top by a whisker, but the race is certainly a lot tighter than it used to be.

Figure 5: Percentage of meetings where each theme was mentioned, by month



Source: Deutsche Bank

Figure 6 shows which research reports fall under each broad category.

Figure 6: Research reports falling under each category

Macro	Bottom-Up
Factor Neutralization	Value Decomposition
Style Rotation	Options Factors
Style Timing Simulation	Accruals
Correlation and Opportunity	Industry-Specific Factors
Robust Factor Models	News Sentiment
Oil Betas	QCD Model
	Frequency Arbitrage
	Securities Lending

Source: Deutsche Bank

Regional differences

Quant is a scalable business; a good idea in one market can easily be translated into another market

One of the best features of quantitative investing is that it is a very scalable business – a good idea in one market can quite easily (data permitting) be tested in another market. As a result, we have been lucky enough to discuss our research not just with our North American clients, but also with a large audience in the rest of the world. In our travels we noticed something quite interesting: there are some noticeable differences between regions. For example, we have noticed that broadly speaking our European clients are more interested in top-down strategies -- like asset allocation and country/sector rotation -- whereas our U.S. clients are much more focused on "traditional", bottom-up quantitative research that targets firm-level characteristics. This probably reflects the different compositions of the two markets – in the domestic U.S. we never have to worry about cross-country effects, and the equity markets are deep and liquid enough that stock-level models give us the best breadth to work with.

Figure 7 shows the most popular research topics by region. Style rotation has been a hit in just about every region we visit. Industry-specific factors and our options research also appear frequently.

Figure 7: Most popular topics by region

Region	Gold	Silver	Bronze	Runner-Up
Boston	Style Rotation	Frequency Arbitrage	News Sentiment	Minimum Variance
US West	Style Rotation	Industry-Specific Factors	Securities Lending	Options Factors
Midwest	Factor Neutralization	Industry-Specific Factors	Securities Lending	Value Decomposition
NY/NJ/CT	Securities Lending	Robust Factor Models	QCD Model	Options Factors
Europe	Options Factors	Style Rotation	Industry-Specific Factors	Frequency Arbitrage
Asia	Style Rotation	Industry-Specific Factors	Options Factors	Factor Neutralization
Mid-Atlantic	Industry-Specific Factors	Options Factors	QCD Model	News Sentiment
Southeast	Style Rotation	QCD Model	Robust Factor Models	Options Factors
Canada	Factor Neutralization	QCD Model	Style Rotation	Securities Lending

Source: Deutsche Bank

Where are all the quants?

Interestingly, Asia is becoming an increasingly important quant market, despite the paucity of data and occasional lack of liquidity

Quantitative investing is a global discipline, a trend which will only accelerate as data quality and liquidity in emerging and frontier markets improves. At the start of the year, we mailed out a 700+ page hard copy book called the "DB Quant Yearbook", which contained a copy of all the research we published in 2010 (24 papers).[9] In the end, over 1,200 clients requested a copy, and for each client we made a note of their geographical region. Figure 8 shows the breakdown.

We were somewhat surprised by the strong interest from Asia in particular. Asian markets are not often thought of as "quanty" markets, given the sometimes patchy data, and problems with liquidity and market access. Nonetheless, there does appear to be a growing interest in applying quantitative investing in the Asian region, which suggests this will be the next frontier (or the next crowded trade?) for quant managers.

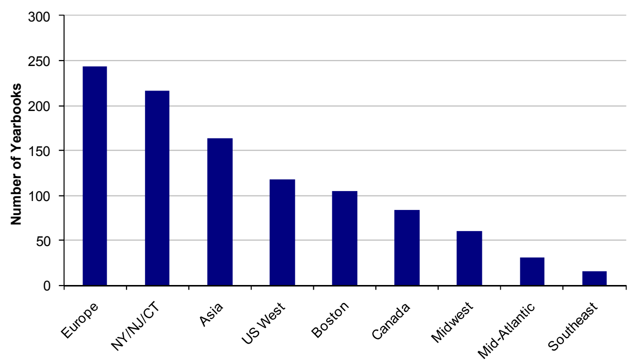
[9] We still have a few hard copies of this book available. If you are interested in getting a copy please contact us at DBEQS.Americas@db.com or +1 212 250 8983.

European clients lean more towards portfolio construction topics

Outside of Asia, Europe remains a heavy consumer of quantitative research. One observation from our travels there is that there is a much stronger emphasis on portfolio construction compared to what we see in the U.S. For example, our recent work on minimum variance investing[10] was extremely popular with the European client base (although this is not yet reflected in the table above, given this is a fairly recent report).

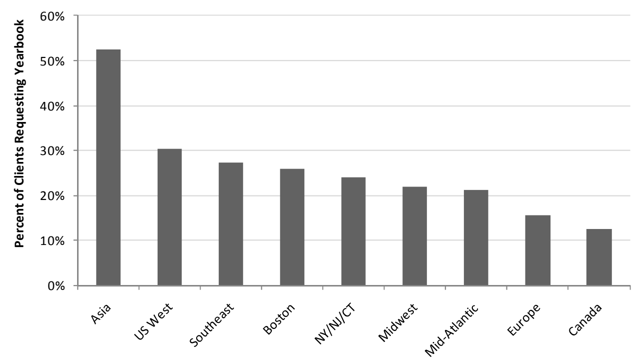
Within the U.S., the traditional quant hotbeds of Boston, the tri-state area, and the west coast continue to dominate.

Figure 8: 2010 DB Quant Yearbook distribution by number of clients requesting in each region



Source: Deutsche Bank

Figure 9: Percentage of clients in each region requesting a copy of the 2010 DB Quant Yearbook



Source: Deutsche Bank

Figure 9 shows the percentage of clients in each region who requested a copy of the yearbook. This is probably a fairer way to measure interest in quantitative research, because it adjusts for a huge size disparity between the regions. On this chart, Asia again stands out. Clearly quant is rapidly gaining a foothold in the Asian markets, notwithstanding the aforementioned difficulties in procuring good data or finding enough liquidity and breadth.

Conclusion

These statistics just scratch the surface, but we hope they have given some insight into what quants have been talking about recently

The statistics presented in this report touch on just a few of the many ways we could look at the data. If you have any suggestions on charts or tables you would like to see, please let us know. Going forward, we think it will be interesting to continue to track the split between bottom-up and macro ideas: to our mind this is one of the most important trends in the quant investing space right now. As the macro environment continues to stabilize, will stock-specifics return to the fore, or has there been a permanent shift towards more macro-aware models?

In a similar vein, we will be tracking the popularity of portfolio construction topics with interest. We believe good, disciplined portfolio construction is just as important as alpha. Indeed, our research usually shows that having one without the other is a recipe for underperformance. We will continue to do our part to make sure portfolio construction topics get the attention they deserve in our research.

We are indebted to our clients for taking the time to meet with us

Finally, none of this would be possible without all of you generously sharing your time with us. Doing over 700 meetings in a year is only possible because our clients have been kind enough to take the time out of their busy days to share their thoughts with us. We look forward to continuing the dialogue with all of you in the months and years ahead.

[10] Alvarez, M., Y. Luo, R. Cahan, J. Jussa, and Z. Chen, 2011, "Portfolios Under Construction: Minimum variance: Exposing the magic", *Deutsche Bank Quantitative Strategy*, 9 February 2011

Our complete research library

Deutsche Bank's US/Global quantitative strategy team produces one monthly newsletter, *Quantum*, and six regular research series: 1) *Signal Processing* on stock-selection factors/signals; 2) *Portfolios Under Construction* on risk and portfolio construction; 3) *Emerging Issues* on topical and emerging issues); 4) *QCD Model* on stock-selection models; 5) *Academic Insights* on academic research; and 6) *Canada Quant*.

All our research is distributed from DBEQS.Americas@db.com. Please contact us to be added to our research distribution list.

Quantum

Quantum is our monthly newsletter. The aim of *Quantum* is to make it easier for clients to keep track of all the research we publish, and to serve as a forum to highlight the latest news and thinking in the quant investing world. If you only read one email from us every month, make it *Quantum*.

- **Quantum** (March 31, 2011)
- **Quantum** (February 28, 2011)
- **Quantum** (January 27, 2011)
- **Quantum** (November 29, 2010)
- **Quantum** (October 28, 2010)
- **Quantum** (September 20, 2010)

Signal Processing

This is our flagship monthly alpha signal research series. We try to identify new data sources, build new and innovative factors, and investigate various style rotation models.

- **Oil Shock: A Quant Perspective** (March 25, 2011). Once again the price of oil is caught up in a nexus of political and economic uncertainty. In this report we develop a better way to measure a stock's sensitivity to oil price movements. The enhanced oil beta that we develop is less backwards-looking than the traditional regression beta, and does a better job at capturing future oil price sensitivity.
- **The Long and the Short of It** (January 18, 2011). We use the DataExplorers securities lending database to develop new alpha signals based on stock lending and borrowing data. We show that we can combine these signals into a composite factor that works well in forecasting month-ahead stock returns. We also develop a way to adjust the factor scores for shorting costs, which helps steer the factor towards less costly names on the short side.
- **Frequency Arbitrage** (November 10, 2010). We try to bridge the gap between high and low frequency quant, and find that factors derived from high frequency data do have predictive power even for "traditional", lower-frequency quant investors.
- **Style Rotation** (September 7, 2010). We investigate three potential data sources to predict style factor performance: macroeconomic, capital market, and seasonal patterns. We find most academic research using economic variables in style timing suffers significant look-ahead bias. We test ten style prediction models, ranging from simple averages (assuming no style timing ability), linear regression, robust regression, Markov switching, state-space, to nonlinear TREE, FOREST, and PLANET techniques. We find

style rotation strategies can exhibit significant timing ability, which translates into better portfolio performance. Indeed, the multi-factor model built on style rotation strategies outperforms the naïve model (assuming no style rotation) by 54% in IR in the past 10 years. In the past three years, style rotation boosts IR by 1.30.

- **Beyond the Headlines** (July 19, 2010). In this research, we study text mining and natural language processing (NLP) in stock selection. We use three nonlinear model techniques (TREE, FOREST, and PLANET) to analyze news sentiment data and find signals can be used in both high and low frequency strategies.
- **Industry-Specific Factors** (June 7, 2010). Industry-specific data and factors like loan loss provision, same store sales growth, or break-even load factor have better predicative power than traditional/generic factors. We study 164 industry-specific factors in 12 industries. We found adding industry-specific factors to traditional multi-factor models can enhance model IC and portfolio IR.
- **The Options Issue** (May 12, 2010). We find the options market tends to lead the equity market. We find four signals from the options market have significant predictive power in forecasting month-ahead stock returns.
- **Launching US Quantitative Strategy** (April 12, 2010). We study three factors: 1) decomposing value factors – valuation ratios can be decomposed into a trend component (persistent) and cyclical component – both can be used to enhance value factor performance; 2) accruals and earnings quality – a small scaling adjustment can make a big difference; 3) market friction and price delay.

Portfolios Under Construction

In this series, we study various issues related to risk modeling and portfolio construction.

- **Minimum Variance: Exposing the "Magic"** (February 9, 2011). There are some nice properties for minimum variance portfolios, i.e., higher IR than the market portfolios, low turnover, and low correlation with traditional strategies. However, we find MVP is not necessarily a low-risk strategy. In the end, we propose a slight and simple enhancement to the strategy, which significantly improves MVP IR without increasing its risk. We also demonstrate that we can combine the MVP strategy with other active alpha models.
- **Robust Factor Models** (January 24, 2011). Traditionally, managers focus on selecting factors, while using the sample factor covariance matrix in constructing multifactor models. We compare the performance of the sample factor covariance matrix with 12 structured models (constant correlation, single index, four Bayesian shrinkage estimators, and six multivariate GARCH models). Our backtesting suggests that robust factor models incorporating structured covariance matrices improve portfolio IR significantly.
- **Correlation and Opportunity** (December 3, 2010). We find that stock return correlation has a long-term cyclical component that is linked to economic cycles. Negative economic sentiment is linked to increasing correlation.
- **Factor Neutralization and Beyond** (September 21, 2010). We expand our previous factor neutralization for the US market to Europe and find similar evidence. Many alpha factors have significant exposures to volatility. Neutralizing volatility exposure can improve factor consistency.
- **It's all in the Timing** (August 19, 2010). We examine, using "perfect foresight" simulations, whether style-timing actually adds value above and beyond the additional turnover costs incurred. We also use a real-world example, our QCD model, and find style timing is difficult, but not impossible.

- **Volatility = 1/N** (June 16, 2010). Many alpha factors have significant exposures to volatility. Neutralizing volatility exposure can improve factor consistency.
- **Quantiles versus Mean Variance** (April 23, 2010). Comparing quantile portfolios with mean-variance optimization. Two extreme cases of constructing a portfolio – quantiling or mean-variance optimization – can we learn something from both sides?

Emerging Issues

The goal of this series is to provide a more timely coverage of topical and emerging issues on the market. This series should be useful to quant and non-quant managers alike.

- **Global Macro – Quant Equity (GMQE) Model** (March 18, 2010). Even a temporary shock of a single economic variable is likely to affect other economic variables for a period of time. In this research, we build a VAR-based macroeconomic model to predict the shocks on the VIX index and oil price. From our economic forecasts, we further calculate the implied factor, industry, and stock performance. We call the bottom-up stock selection model with macro input, Global Macro – Quant Equity (GMQE) model.
- **Quant Crisis? What Crisis?** (January 28, 2011). We believe that sound quantitative research and investment should rest on in-depth and serious research rather than passive reaction to market speculation. We propose factor neutralization and robust factor modeling as two techniques dealing with sudden changes in risk regimes.

QCD Model

QCD is our flagship stock-selection model and illustrates our philosophy for picking stocks quantitatively. The model is updated every month, and is accompanied by an interactive spreadsheet.

- **DB Quant Handbook** (July 22, 2010). QCD is our main stock-selection model with a few unique features: factors are dynamically re-selected every month based on predetermined algorithms; a nonlinear TREE model is combined with a linear panel data econometric model; and style rotation and industry timing models are incorporated in the bottom-up stock-selection model.
- **QCD Model Update** (April 6, 2011)
- **QCD Model Update** (March 9, 2011)
- **QCD Model Update** (February 7, 2011)
- **QCD Model Update** (January 6, 2011)
- **QCD Model Update** (December 6, 2010)
- **QCD Model Update** (November 2, 2010)
- **QCD Model Update** (October 6, 2010)
- **QCD Model Update** (September 8, 2010)
- **QCD Model Update** (August 6, 2010)

Academic Insights

On a monthly basis, we compile a list of practical academic papers related to investing. Every third month we also delve deeper into the most interesting ideas by carrying out our own backtesting and analysis.

- **Academic Insights** (March 29, 2011).
- **Academic Insights** (February 25, 2011).

- **Academic Insights** (January 20, 2011).
- **Academic Insights** (November 23, 2010).
- **Academic Insights** (October 27, 2010). *Backtesting edition* – We explore an interesting academic finding that momentum works better for high volatility stocks and reversal works better for low volatility stocks. We suggest four potential ways to exploit this relationship.
- **Academic Insights** (September 27, 2010)
- **Academic Insights** (August 23, 2010)
- **Academic Insights** (July 22, 2010). *Backtesting edition* – We confirm an academic finding that gross profitability over total assets is a better measure of profitability than traditional metrics like ROE and ROA. Furthermore, we show that this ratio is useful for conditioning value factors.
- **Academic Insights** (June 16, 2010)
- **Academic Insights** (May 20, 2010)
- **Academic Insights** (April 16, 2010). *Backtesting edition* – We show how a concept called the "capital gains overhang" can be used to exploit a behavioral bias and enhance the earnings surprise factor.
- **Academic Insights** (March 15, 2010)
- **Academic Insights** (February 12, 2010)

Canada Quant

On a monthly basis, we publish quant strategies unique to the Canadian equity market.

- **The Illusion of M&A and Asset Expansion** (February 14, 2011). In this research piece, we test whether M&A activity and other asset expansion transactions actually lead to a subsequent increase in stock returns. Contrary to the common belief, we find that companies that increase and expand their asset base actually have a tendency underperform.
- **New Options in Canada** (November 23, 2010). In this research, we expand a previous US quant research and find factors based on options data (put/call ratio, options implied volatility, skew, relative volume, and put-call parity) are useful in predicting stock returns in Canada.
- **Introducing Canada Quantitative Strategy** (October 24, 2010). Quant investing in Canada used to be easy – all you needed was price momentum and earnings revision. In the past three years, however, as more and more quant investors outside of Canada start to diversify into less crowded markets like Canada, the performance of traditional factors has dropped severely. In this research, we suggest two potential ways to add alpha in Canada in this challenging environment – identifying new and less crowded factors; and style rotation.

Appendix 1

Important Disclosures

Additional information available upon request

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