Deutsche Bank
Markets Research

Global

Quantitative Strategy
Academic Insights

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Harnessing the best ideas from academia

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Welcome to our monthly Academic Insights report

Each month we survey the academic literature for interesting published and working papers related to quantitative investing. We review five papers in detail and also provide a list of other papers that piqued our interest this month.

Fresh insights from academia

Cue the shark music. Just when you thought it was safe to go back in the water, another macro event threatens to derail global markets. So this month's collection of academic papers has a bit of a macro flavor too. In fact, one paper we review this month looks specifically at how one can forecast future market returns using a wide array of macro news items distilled down into common drivers.

Another useful paper this month tackles the tricky problem of modeling the banking sector. The usual array of factors – particularly accounting-based and valuation factors – are ill-suited to banks given their unique characteristics. This paper shows a way to decompose a bank's ROE into components that do a much better job of forecasting future performance.

Key papers this month

This month we focus on five papers spanning a range of topics including alpha generation, portfolio construction, and risk management:

- Economic cycles and expected stock returns
- Analyzing banks: Management and investor perspectives
- The returns to carry and momentum strategies: Business cycle, hedge fund capital and limits to arbitrage
- Industry characteristics and financial risk spillovers
- The calm before the storm

Upcoming events

We also highlight upcoming conferences and seminars in the quantitative investing space that may be of interest.

The best of the rest

At the back of this report we include abstracts from some additional papers that we think are also quite interesting. These are arranged by topic to make skimming the list quicker. If you need any further information on any of the papers in this report, please contact the Deutsche Bank Equity Quantitative Strategy team at (+1) 212 250 8983 or (+44) 20 754 71684 or (+852) 2203 6990, or email us at DBEQS.Global@db.com.

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A letter to our readers

Welcome to *Academic Insights*

Just when you thought it was safe to go back in the water, a seemingly innocuous island in the Mediterranean threatens to send markets tumbling back into risk-off mode. Fittingly, this month's papers have a macroeconomic bent.

Just when things were looking up, we have another macro event to derail things

It's the economy, stupid

In one of our recent papers, we studied the impact of macroeconomic news on the returns of stocks and bonds around the world. We found the economic news matters, and more importantly there are predictable – and profitable – relationships between economic announcements and asset returns.[1] Two papers this month are closely related, and indeed find similar results to ours. The first, by Beber, Brandt, and Luisi [2013], takes a wide range of macroeconomic data series, and uses a principle components analysis to extract underlying macro factors. They then show how these factors, which they build on a daily frequency, are useful in predicting future stock returns.

A recent paper studies how to use a daily macroeconomic news factor to predict stock returns

The second interesting paper on this front is by Ahmerkamp and Grant [2013], who study the impact of macroeconomic variables not on asset returns themselves, but instead on cross-asset class risk premia, specifically carry and momentum. Given the growing focus on carving up asset classes into such fundamental return drivers, this paper is useful for understanding how a portfolio of such factors will react to underlying macro variables.

Recent research also suggests that risk premia from strategies like carry and momentum are linked to the macro economy

Fear is contagious

Continuing on the Cyprus theme, another interesting paper this month studies the way that risk spills over from the financial sector into other parts of the market. The authors, Wang, Chiu, and Pena [2013], use a metric that measures tail co-dependence in financials versus non-financials to study how risk propagates from one sector to the other. Unsurprisingly, they do find that risk tends to flow out of the financial sector into other sectors. This might seem like stating the obvious, but some of the results in the paper will be useful for understanding how to mitigate such risks, for example, which sectors and under which market conditions is this contagion risk most elevated?

We don't need an academic paper to tell us that risk can spill out of the financial sector into other sectors; but how can we measure this spillover?

Building a better bank model

Speaking of financials, one of the common problems with quant factors is that most of them don't work for banks; the standard suite of accounting and valuation metrics that work well for industrials are almost completely irrelevant for the unique business model of banks. However, all is not lost. A new paper by Esterer, Grossmann, and Schroder [2013] shows how to decompose the ROE of a bank into components that line up with the business units of a typical bank. More importantly, they show that some of these components are much more predictive of future performance than headline ROE.

Banks are tricky for quant models, so this paper is a welcome starting point for a better set of bank-specific factors

Regards,
The Deutsche Bank Quantitative Strategy Team

[1] Luo et al., "Independence Day", *Deutsche Bank Quantitative Strategy*, 7 February, 2013

Five key papers this month

Paper 1: "Economic cycles and expected stock returns"

- Alessandro Beber, Michael W. Brandt, and Maurizio Luisi
- SSRN, available at: http://ssrn.com/abstract=2228978
- Reviewed by Sheng Wang

Why it's worth reading

This paper studies the link between macroeconomic variables and future stock returns in a novel way. The authors introduce a technique to extract daily latent factors from macroeconomic news available at different times and frequency. Their measures of current macroeconomic dynamics are strong predictors of future stock market returns at different time horizons. This result cannot be explained by traditional predictors discussed in prior literature.

This paper fits in nicely with some of the work we have been doing recently looking at the impact of macroeconomic news on stock market returns

Data and methodology

Similar to some of our recent research, this paper uses data on the dates, release times and actual released figures for macroeconomic announcements from January 1997 to December 2011 from Bloomberg through the Economic Calendar screen.[2] Their analysis is based on forecasting the future returns of major indexes in different regions. The key independent variables are the macroeconomic announcements, which are converted to daily series by filling down whatever the latest reading was for each series. The series are then bucketed into some broad buckets: *Growth*, *Economic Activity*, and *Macro Sentiment*. Within each bucket, they run a PCA analysis to extract the first principle component; this becomes the factor representing that bucket. They also construct what they call a "disagreement" factor, which is essentially the percent of variance explained by that first principle component (if this is low, then there is a lot of disagreement among the economic variables in that bucket). They then regress the future stock returns of different horizons on these factors, controlling for traditional predictors like the P/E ratio, etc. A global version of the factors is built by pooling all the macroeconomic announcement together and replicating the same analysis.

The authors convert a wide range of economic indicators to a daily frequency, and then use PCA to extract underlying economic factors, which they use to predict stock returns

Results

The current macroeconomic estimates, such as monthly first difference in the *Growth* or *Economic Activity* factors, are strong predictors of future stock market excess returns, for horizons between 5 and 120 trading days. These results are even stronger when the explanatory variable is a measure of *Macro Sentiment* that is orthogonal to *Economic Activity*. The results are consistent for different regions, and cannot be explained by traditional predictors.

The economic news factors are indeed useful for predicting stock returns for 5 to 120 days ahead

Our take

Using macroeconomic variables to predict stock market returns is one of our favorite topics[3]. This paper shows that using PCA to extract latent economic drivers from a wide range of indicators can be a fruitful approach for reducing the dimensionality of the problem (in our own research we have used things like backwards stepwise regression to solve the same problem).

This paper ties in nicely with our own "Independence Day" paper that we published last month, and confirms the importance of macro news in driving market returns

[2] Luo et al., "Independence Day", *Deutsche Bank Quantitative Strategy*, 7 February, 2013
[3] Luo et al., "From Macro to Micro", *Deutsche Bank Quantitative Strategy*, 2 May 2012.

Paper 2: "Analyzing banks: Management and investor perspectives"

- Florian Esterer, Stefan Grossmann, and David Schroder
- SSRN, available at http://ssrn.com/abstract=2217827
- Reviewed by Rochester Cahan

Why it's worth reading

Banks are always causing problems for quant models. Most of the accounting-based factors that work well in other sectors do not make much sense for financials. Academics often get around this problem by simply ignoring financials; quantitative portfolio managers rarely have such a luxury. After all, as the authors point out, banks make up 8% of the MSCI World. Instead, quants are increasingly using industry-specific models to better tailor their models to problematic sectors like the banks.[4] This particular paper is an excellent starting point for building just such a model.

Banks are one of the hardest sectors for quants to model; most the traditional accounting-based factors don't make much sense for banks

Data and methodology

The crux of this paper is a new framework for decomposing the return on equity (ROE) of a bank into components. For industrials companies, the DuPont decomposition of ROE is well known, and indeed is staple fodder for Finance 101 students the world over. However, the DuPont decomposition is ill-suited to banks since it tries to break up ROE into an operating component and a financing component; for a bank these functions are largely intertwined. Instead, the authors start with a clean slate for banks, and begin by assuming a simplified balance sheet structure. On the asset side, balance sheet items are aggregated into three items: loans, investments, and other assets. On the other side, liabilities are divided into four items: deposits, debt, other liabilities, and equities. From there, the authors break ROE down into six specific ratios: returns from loans, fees, and investments, less returns paid on deposits, operating costs, and other costs. From there, they show how each of these ratios can be further broken down to give a very granular picture of which are contributing most to ROE.

This paper shows how to decompose a bank's ROE into components that match the key business activities of this type of firm

The second part of the study is to take the constituents of ROE, and study which best predict future operating performance and future stock performance. Specifically the authors use a global set of banks over 26 years, and study whether the components of ROE better predict future profitability over the next 24 months and future stock returns over the next 12 to 24 months.

The authors study whether the constituent elements of ROE are useful for predicting future operating performance and stock price performance

Results

The key result is that the components of ROE better forecast both future operating performance as well as future stock returns. However, an interesting takeaway is that the components that do best in each case are different. For example, investors seem to put much more emphasis on income from fees, whereas future operating performance depends more on income from loans as well as loan losses. Similarly, investors seem to be more focused on deposits while debt matters more for future profitability.

It turns out the decomposition is indeed useful for forecasting, but interestingly different metrics matter for operating performance and stock performance

Our take

This is an excellent paper for anyone who isn't sure where to start when analyzing the banks. The framework described is simple enough to be implemented by practitioners, and yet detailed enough to improve considerably on naïve performance metrics like simple ROE.

This is a great starting point for anyone wanting to build a better model in the banks space

[4] Luo et al., "Industry Specific Factors", *Deutsche Bank Quantitative Strategy*, 8 June 2010

Paper 3: "The returns to carry and momentum strategies: Business cycle, hedge fund capital and limits to arbitrage"

- Jan Danilo Ahmerkamp and James Grant
- SSRN, available at: http://ssrn.com/abstract=2227387
- Reviewed by Marco Salvini

Why it's worth reading

Cross-asset class risk premia allocation is a hot topic among the investor community right now. The authors examine the returns to carry and momentum strategies across a wide set of asset classes and try to answer three challenging questions: (1) How much variation across asset classes is there in terms of carry and momentum signals?; (2) How correlated are the strategies?; (3) Do common macroeconomic variables explain return premia?

Cross-asset class risk premia are a hot topic right now; this paper studies their link to macroeconomic factors

Data and methodology

The universe covers 55 global futures contracts from 1980 to 2012. Futures returns are constructed using the methodology introduced by Moskowitz at al. [2011]. The carry and momentum signals are computed as time series strategies. The momentum signal is defined as the past 12-month cumulative returns for each asset class. The carry signal is defined as the normalized difference between the asset front month futures contract and second to maturity futures contract. The trading strategies are implemented by taking long positions in asset that have a positive carry and momentum signal, respectively, and shorting assets with a negative carry and momentum signal, respectively. They also explore a combo trading strategy that takes a long position in an asset if and only if the momentum and the carry signal are positive and a short position if and only if both signals are negative. Finally, they construct the portfolios as an equally weighted average of the inverse volatility of asset returns. To investigate the relationship between carry and momentum strategies and macroeconomic variables, they regress strategy returns against the following one-month lagged variables: dividend yield, default spread, yield on 3-month T-bill, and term spread.

The study focuses on carry and momentum across asset classes, and studies the properties of the risk premia arising from each

Results

From 1980 to 2012, the momentum strategy delivers the highest returns (8.6% per annum). In contrast the carry strategy delivers annualized returns of 6.1%. However, the volatility of the carry strategy is significantly lower (4.7% per annum) relative to the momentum strategy (6.7%). The combo strategy outperforms the momentum and carry strategies in terms of risk adjusted returns (Sharpe Ratio of 1.4). The correlation within momentum, carry, and combo strategies are all positive, ranging from 0.13 for commodity combo and carry strategies to 0.43 for equity momentum and bond combo. The results of the regression analysis show that dividend yield is statistically negative related to all strategies. The default spread is only positively related to the carry strategy. The short rate is statistically positive related to the all strategies, but only marginally for momentum returns.

A combination strategy that combines carry and momentum delivers and attractive Sharpe Ratio, consistent with what we have found in our own research

Our take

We have investigated quite extensively the risk premia allocation topic, and found many similar results[5]. We think this paper is further evidence of what we call a "paradigm shift" in how asset owners think about the asset allocation decision.

The evidence in favor of risk premia investing across asset classes is mounting by the day

[5] Mesomeris et al., "A New Asset Allocation Paradigm", *Deutsche Bank Quantitative Strategy*, July 2012

Paper 4: "Industry characteristics and financial risk spillovers"

- Chih-Wei Wang, Wan-Chien Chiu, and Juan Ignacio Pena
- SSRN, available at http://ssrn.com/abstract=2223246
- Reviewed by Javed Jussa

Why it's worth reading

Financial institutions are a vital component of the economy and provide a key source of funding for both growing and mature companies. As such, the economy as a whole and other non-financial sectors are directly impacted by events within the financial industry. This is clearly evidenced by the spillover effects of the financial crisis on other industries and the overall economy. This paper examines the extent to which financial industry risk spills into other key economic industries. This paper is very timely given the way recent events in Cyprus are "spilling" out into financial markets and indeed the real economy.

No one needs to look very far back in time to see the that risk spillovers from financials into the wider market can be devastating

Data and methodology

Using U.S. stock market data from 2001 to 2011, this paper examines the volatility and tail risk spillover from the financial sector to the industrial and service sectors. A two stage VAR-GARCH model is used to model the volatility transmission. This paper further examines whether the tail risk spillover is driven by certain industry characteristics. The authors discuss a new proxy for capturing financial tail risk spillover called conditional coexcedence (CCX), which measures the frequency of simultaneous extreme negative stock returns in the financial sector and other sectors.[6] This probability of tail-risk spillover metric is computed during crisis and non-crisis periods. The determinants of CCX are also modeled using Generalized Method of Moments estimation where the explanatory variables are debt financing, industry valuation, industry investment as well as other control variables.

This research studies how volatility spills over from financials into the rest of the market, via an interesting tail risk measure called coexcedence

Results

This paper finds an increase in volatility and tail risk within the financial industry causes a corresponding increase in other sectors and that the spillover effect is exacerbated during crisis periods. Additionally, the tail risk spillover measured by CCX is stronger for: more competitive industries, industries that utilize more debt financing, and industries that have lower valuation metrics.

No surprises here; volatility does indeed spill out from financials, the this effect is strongest in crisis periods

Our take

This is an interesting paper and the results are in line with what we would intuitively expect, and indeed what we have observed through the never-ending string of crises in the past five years. An interesting area of further research would be to examine how various portfolio construction techniques can be used to contain such spillover effects. Such future research may be very timely and practical for investors as the European banking industry remains unstable and the strong likelihood of contagion still persists.

This is an interesting idea, but to use it practically we need to understand how we might protect ourselves from such spillage

[6] We have used a similar methodology to measure the "crowdedness" of quant strategies, see: Cahan et al., "The Risk in Low Risk", *Deutsche Bank Quantitative Strategy*, 19 July 2012

Paper 5: "The calm before the storm"

- Ferhat Akbas
- SSRN, available at http://ssrn.com/abstract=764065
- Reviewed by Ada Lau

Why it's worth reading

This paper argues that stocks with low abnormal volume convey unfavorable value-related information, indicating negative earnings surprises. Traditionally the post-event drifts for bad news are weaker than that for good news, and as shown in our previous research[7], bad news is priced in more quickly than good news. Being able to relate low abnormal volume with bad news could be useful, especially for short sellers.

Low abnormal volume indicates bad news

Data and methodology

US stock data for 1980-2011 is obtained from Compustat, CRSP, 13-F filings, I/B/E/S and OptionMetrics. Abnormal volume is measured by the ratio of the average share turnover of a stock in a 5-day event period to its turnover in a 50-day reference period prior to quarterly earnings announcement dates. A stock is classified as one with low (high) abnormal volume if this ratio is in the bottom (top) quintile. Earnings surprises are defined as the average of 3-day cumulative abnormal returns (CAR) around announcement, and also as the standardized unexpected earnings forecasts (SUEF). Earnings surprises are regressed on two dummy variables indicating low or high abnormal volume, together with control variables such as past earnings surprises, size, turnover, etc. The analysis is repeated with a constraint on short selling, where stocks with low institutional ownerships or stocks without an exchange-traded option are regarded as more difficult to short. The author repeats the analysis using another 5-day event period with a 5-day gap prior to the announcement date in order to check if the relation between earnings surprises and abnormal volume remains significant. If so, arguments such as changes in visibility (i.e. investors' attention to the stock) and compensation for risk cannot be used to explain such relation, and it will reinforce the argument based on value-related information.

Abnormal volume is the ratio of the average share turnover of a stock in a 5-day event period to its turnover in a 50-day reference period prior to earnings announcement dates

Results

The author finds that stocks with low abnormal volume have significantly more negative earnings surprises, and such relation is stronger for stocks with more binding short sale constraints. Low abnormal volume continues to show predictive power even when measured with a 5-day gap prior to announcement, but high abnormal volume loses its predictive power possibly because of the increase in visibility. Due to this asymmetry, compensation for risk cannot explain the relation between earnings surprises (weather measured by CAR or SUEF) and abnormal volume.

Value related information (and neither risk nor visibility) predicts negative earnings surprises

Our take

The author's attempt to compare alternative explanations for the relationship between abnormal volume and earnings surprises makes for compelling reading. That value related information (and neither risk nor visibility) predicts negative earnings surprises condition on low abnormal volume hints at possible overlay strategies. It would be interesting to see if low abnormal volume could add value to event-based strategies capitalizing on M&A related news[8] or director's dealings[9].

It would be interesting to see if low abnormal volume could add value to event-based strategies capitalizing on M&A related news or director's dealings

[7] Cahan et al., "Beyond the Headlines", *Deutsche Bank Quantitative Strategy*, 19 July 2010
[8] Avettand-Fenoel et al., "Targeting M&A News", *Deutsche Bank Quantitative Strategy*, 12 October 2011
[9] Avettand-Fenoel et al., "Are Insiders Alpha Generators?", *Deutsche Bank Quantitative Strategy*, 26 September 2012

Upcoming conferences

Europe

Figure 1: European event calendar

Date	Location	Conference
8-9 April 2013	Edinburgh	Quantitative and Asset Management Workshop 2013 http://www.eurofidai.org/december2012.html
13 May 2013	London	London Quant Group Spring Seminar http://www.lqg.org.uk/spring-seminar-2013/
26-28 June 2013	Monaco	Factset Symposium www.factset.com/symposium_emea
26-29 June 2013	Reading, UK	European Financial Management Association Annual Meeting http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2013-Reading/2013meetings.shtml
8-11 September 2013	Monaco	London Quant Group Autumn Seminar http://www.lqg.org.uk/autumn-seminar-2013/
14-16 December 2013	London	Computational and Financial Econometrics http://www.cfenetwork.org/CFE2013/

Source: Deutsche Bank

North America

Figure 2: North American event calendar

Date	Location	Conference
3 April 2013	New York	Second Edition of the EDHEC-Princeton Academic meets Practice Conference http://www.regonline.co.uk/builder/site/Default.aspx?EventID=1172884
15 April 2013	New York	SQA Seminar: Inefficiencies in the Pricing of Exchange Traded Funds https://m360.sqa-us.org/ViewEvent.aspx?id=76424&instance=0
17 April 2013	Las Vegas	CQA Spring Conference www.cqa.org
17-18 May 2013	Chicago	R/Finance http://www.rinfinance.com/
31 May 2013	New York	SQA Fuzzy Day Conference: Sustainable Investing: Hype or Opportunity www.sqa-us.org
13 June 2013	New York	CQA/SQA Trading Seminar www.cqa.org
11 July 2013	Boston	CQA Academic Review Session www.cqa.org
16-18 July 2013	New York	CFA Institute/EDHEC-Risk Advances in Asset Allocation Seminar http://www.cfainstitute.org/learning/products/events/Pages/04152013_77335.aspx
8-9 October 2013	New York	EDHEC-Risk Days in North America http://www.edhec-risk.com/events/edhec_conferences/northamericadays2013?newsletter=yes
11 September 2013	Chicago	CQA Fall Conference www.cqa.org
10-12 November 2013	New Orleans	Factset Symposium http://www.factset.com/campaigns/symposium2013

Source: Deutsche Bank

Asia

Figure 3: Asian event calendar

Date	Location	Conference
15-16 May 2013	Singapore	EDHEC-Risk Days Asia http://www.edhec-risk.com/events/edhec_conferences/asiadays2013
19-22 May 2013	Singapore	66th Annual CFA Institute Annual Conference http://www.cfainstitute.org/learning/products/events/Pages/05192013_66150.aspx

Source: Deutsche Bank

Other papers of interest

Alpha generation and stock-selection signals

Fundamental based market strategies

- Angelo Aspris, Nigel Finch, Sean Foley, and Zachary Meyer
- SSRN, available at http://ssrn.com/abstract=2231809
- Abstract: "A pronounced body of literature has raised the possibility that portfolio outperformance based on a simple accounting-based investment strategy can persist through time because markets may ignore and potentially misinterpret financial market signals. Employing a fundamental based strategy, we show that superior performance can be earned consistently through time by identifying and investing in firms with more favourable performance and credit signals. The strength of the portfolios are additionally characterised by the ability of the strategies to avoid firms with poor future prospects. These findings are robust across varying time periods after both transaction costs and related market constraints are considered."

Overreacting to a history of underreaction?

- Jonathan Milian
- SSRN, available at http://ssrn.com/abstract=2229479
- Abstract: "Prior research has documented a long history of positive autocorrelation in firms' earnings announcement news. This is one of the main features of the post-earnings announcement drift phenomenon and is typically attributed to investors' underreaction to earnings news. I document that this autocorrelation has become significantly negative for firms with active exchange-traded options. For these easy-to-arbitrage firms, the firms in the highest decile of prior earnings announcement abnormal return (prior earnings surprise), on average, underperform the firms in the lowest decile by 1.29% (0.73%) at their next earnings announcement. Additional analyses are consistent with investors learning about post-earnings announcement drift and overcompensating. It seems that due to their well-documented history of apparently underreacting to earnings news, investors are now overreacting to earnings announcement news. This paper shows that attempts to exploit a popular trading strategy based on relative valuation can significantly reverse the previously documented pattern."

Pollution and firm value

- Alberta Di Giuli
- SSRN, available at http://ssrn.com/abstract=2227034
- Abstract: "This paper tests the effect of pollution and peaks in pollution caused by companies on their market value and on the value of their competitors. Using the US TRI (Toxic Release Inventory) database of chemical toxic emissions, provided by the EPA (Environmental Protection Agency), to track SP500 firms' emissions from 1996 to 2007, we find that the market does not penalize firms that pollutes heavily (at least in the long run), and consumers do not punish polluting firms switching to competitors. Pollution peaks are associated with an increase in the market values of competitors in the year of the peak. Results suggest that the positive effect is driven by investors' overreaction and fear of possible consumer switch, loss of reputation and penalties for the polluting firm."

Do short sellers front-run insider sales?

- Mozaffar Khan and Hai Lu
- SSRN, available at http://ssrn.com/abstract=2226710
- Abstract: "We study the behavior of short sellers as informed market participants and examine potential sources of their information. Using a newly available dataset with high-frequency short sales data, we find evidence of significant increases in short sales immediately prior to large insider sales, but not prior to small insider sales. We examine a number of explanations that the increase in short sales is driven by public information, either about the firm or about the impending insider sale. The evidence is inconsistent with these explanations, but is consistent with front-running facilitated by leaked information. The front-running appears to be concentrated in firms with poor accounting quality, suggesting that information about a large insider sale reinforces short sellers' adverse opinion about firm value when accounting quality is poor."

The asset growth effect: Insights from international equity markets

- Akiko Watanabe, Yan Xu, Tong Yao, and Tong Yu
- SSRN, available at http://ssrn.com/abstract=2222295
- Abstract: "Firms with higher asset growth rates subsequently experience lower stock returns in international equity markets, consistent with the U.S. evidence. This negative effect of asset growth on returns is stronger in more developed capital markets and markets where stocks are more efficiently priced, but is unrelated to country characteristics representing limits to arbitrage,investor protection, and accounting quality. The evidence suggests that the cross-sectional relation between asset growth and stock return is more likely due to an optimal investment effect than due to over-investment, market timing, or other forms of mispricing."

Optimization, portfolio construction, and risk management

Reconciling ex post and ex ante volatility figures

- Andreas Steiner
- SSRN, available at http://ssrn.com/abstract=2231195
- Abstract: "Ex post volatility is defined as dispersion of ex post portfolio returns over the measurement period. Ex post volatility takes into account the variability in asset returns and changes of asset weights over time due to trading and drift. Ex ante volatility, on the other hand, is defined as forward-looking portfolio volatility calculated from current assets weights and asset covariance estimates. Except in very unrealistic circumstances, the two volatility measurements will typically differ. In this research note, we propose a Brinson-style attribution scheme that can be used to quantify the effects. Being able to attribute differences in ex ante and ex post volatilities to trading and risk surprises provides valuable information in investment process reviews for internal purposes as well as client communications."

Do high-frequency data improve high-dimensional portfolio allocations?

- Nikolaus Hautsch, Lada M. Kyj, and Peter Malec
- SSRN, available at http://ssrn.com/abstract=2228772
- Abstract: "This paper addresses the open debate about the usefulness of high-frequency (HF) data in large-scale portfolio allocation. We consider the problem of constructing global minimum variance portfolios based on the constituents of the S&P 500 over a four-year period covering the 2008 financial crisis. HF-based covariance matrix predictions are obtained by applying a blocked realized kernel estimator, different smoothing windows, various regularization methods and two forecasting models. We show that HF-based predictions yield a significantly lower portfolio volatility than methods employing daily returns. Particularly during the volatile crisis period, these performance gains hold over longer horizons than previous studies have shown and translate into substantial utility gains from the perspective of an investor with pronounced risk aversion."

Portfolio optimization under solvency constraints: A dynamical approach

- Sujith Asanga, Vali Alexandru Asimit, Alex Badescu, and Steven Haberman
- SSRN, available at http://ssrn.com/abstract=2226369
- Abstract: "We develop portfolio optimization problems to a non-life insurance company for finding the minimum capital required, which simultaneously satisfy solvency and portfolio performance constraints. Motivated by standard insurance regulations, we consider solvency capital requirements based on three criteria: Ruin Probability, Conditional Value-at-Risk and Expected Policyholder Deficit ratio. We propose a novel semi-parametric formulation for each problem and explore the advantages of implementing this methodology over other potential approaches. When liabilities follow a Log-Normal distribution, we provide sufficient conditions for convexity for all our problems. Using different expected Return on Capital target levels, we construct efficient frontiers when portfolio assets are modelled with a special class of multivariate GARCH models. We found that the correlation between assets plays an important role in the behaviour of the optimal capital required and the portfolio structure. The stability and out-of-sample performance of our optimal solutions are empirically tested with respect to both, the solvency requirement and the portfolio performance, through a double rolling window estimation exercise. Our results indicate that a time-varying correlation model outperforms the constant and no-correlation counterparts."

Using maximum drawdowns to capture tail risk

- Wesley Gray and Jack Vogel
- SSRN, available at http://ssrn.com/abstract=2226689
- Abstract: "We propose the use of maximum drawdown, the maximum peak to trough loss across a time series of compounded returns, as a simple method to capture an element of risk unnoticed by linear factor models: tail risk. Unlike other tail-risk metrics, maximum drawdown is intuitive and easy-to-calculate. We look at maximum drawdowns to assess tail risks associated with market neutral strategies identified in the academic literature. Our evidence suggests that academic anomalies are not anomalous: all strategies endure large drawdowns at some point in the time series. Many of these losses would trigger margin calls and investor withdrawals, forcing an investor to liquidate."

Is your covariance matrix still relevant? An asset allocation-based analysis of dynamic volatility models

- James Colon
- SSRN, available at http://ssrn.com/abstract=2226033
- Abstract: "Ever since Harry Markowitz published his seminal paper on portfolio selection, investors have incorporated estimates of future volatilities and correlations into their asset allocation process. While portfolio construction methods continue to evolve, many investors continue to forecast volatility using traditional approaches that are ill-suited to the time-changing nature of volatility. In this paper, I analyze the performance of seven different multivariate-volatility models using a new, risk-parity based approach to determine each model's accuracy. I find that traditional, sample covariance methods perform poorly when trying to forecast short-term volatility, and that a more dynamic model often provides superior out-of-sample forecasts."

Industry characteristics and financial risk spillovers

- Chih-Wei Wang, Wan-Chien Chiu, and Juan Ignacio Pena
- SSRN, available at http://ssrn.com/abstract=2223246
- Abstract: "This paper proposes a new measure of tail risk spillover, namely the conditional coexceedance which is the number of joint occurrences of extreme negative returns in an industry conditional on an extreme negative return in the financial sector. The empirical application provides evidence of significant volatility and tail risk spillovers from the financial sector to many real economy sectors in the U.S. economy in the period from 2001 to 2011. These spillovers increase in crisis periods. The conditional coexceedance in a given sector is positively related to its amount of debt financing, and negatively related to its relative valuation and investment. Therefore real economy sectors which require substantial external financing, and whose value and investment activity are relatively lower are prime candidates for depreciation in the wake of crisis in the financial sector. We also find some evidence suggesting that the higher the industry's degree of competition the stronger the tail risk spillover from the financial sector."

Asset Allocation and sector/style/country rotation

Equity and bond exposure of convertible bond funds: Regions matter

- Geert Van Campenhout and Rosanne Vanpee
- SSRN, available at http://ssrn.com/abstract=2229100
- Abstract: "This paper shows that the characteristics of convertible bond funds (CBFs) differ considerably based on the regional asset allocation of the fund. More specifically, U.S. CBF returns correlate more strongly with equity returns, while European and Asian CBFs returns show a higher correlation with bond returns. This is a consequence of the finding that U.S. convertibles are more equity-like in nature than European and Asian convertibles, which are constructed more like a bond. Moreover, we show that global CBFs have different characteristics depending on the nationality of the asset management company. A global CBF managed by a European (U.S.) asset management firm exhibits more bond (equity) like features because portfolio managers tend to compose home biased portfolios. Our results have important repercussions for both investors and researchers, as the characteristics of a convertible bond fund will differ, not only based on the regional asset allocation of the fund, but also based on the domicile of the asset management firm. Thus, the performance of the fund and its correlation with other assets may turn out to be different from the investor's ex ante expectations and expectations of fund managers and clients risk to be divergent."

Concentrated production and heavy tails in commodity returns

- Nicolas Merener
- SSRN, available at http://ssrn.com/abstract=2229561
- Abstract: "I study the impact of commodity production concentration on the likelihood of extreme commodity returns. I explore this issue in a sample of 17 agricultural, mineral and energy commodities of global scope that are liquidly traded through futures in London, New York and Chicago. I find that the occurrence of extreme price moves during 2006-2010, as implied by daily return kurtosis or the shape parameter of the distribution of extreme returns, was positively correlated with measures of production concentration such as the Herfindahl index computed on national shares of global output or the market share of the top three producers. The results are economically significant and robust to the inclusion of controls for futures liquidity and commodity market size. These findings are consistent with a simple model of spatially distributed local supply shocks that impact aggregate supply and hence global commodity prices."

Diversifying risks in bond portfolios: A cross-border approach

- David Sun
- SSRN, available at http://ssrn.com/abstract=2228718
- Abstract: "This study aims at recalibrating corporate bond idiosyncratic risks in the context of international portfolio diversification. With a more discriminating risk decomposition scheme, we will demonstrate in this study that portfolio diversification can be improved accordingly. Pricing of innovative financial instruments can also benefit from the application of the scheme introduced in this very study. Based on the idea of Dastidar and Phelps (2011) and findings from Jarrow, Lando and Yu (2005) and Churm and Panigirtzoglou (2007), we extend the empirical framework of Sun, Lin and Nieh (2007) in credit spread decomposition to corporate bonds in a multinational framework. In light of the rapid integration of international capital markets, the decomposition is to include not only systematic and idiosyncratic credit spreads within each country, but also a cross-country systematic component of credit spread. This framework therefore helps substantially in the practice of diversifying international of fixed income portfolios for fund managers and multinational corporations."

Economic valuation of liquidity timing

- Dennis Karstanje, Elvira Sojli, Wing Wah Tham, and Michel Van der Wel
- SSRN, available at http://ssrn.com/abstract=2225758
- Abstract: "This paper provides a comprehensive economic evaluation of the short-horizon predictive ability of liquidity on monthly stock returns, using dynamic asset allocation strategies. We assess the economic value of the out-of-sample power of empirical models based on different liquidity measures and find three key results: liquidity timing leads to tangible economic gains; a risk-averse investor will pay a high performance fee to switch from a dynamic portfolio strategy based on various liquidity measures to one that conditions on the Zeros measure (Lesmond, Ogden, and Trzcinka, 1999); the Zeros measure outperforms other liquidity measures because of its robustness in extreme market conditions. These findings are stable over time and robust to controlling for existing market return predictors or considering risk-adjusted returns."

Distilling the macroeconomic news flow

- Alessandro Beber, Michael Brandt, and Maurizio Luisi
- SSRN, available at http://ssrn.com/abstract=2220457
- Abstract: "We propose a simple cross-sectional technique to extract daily latent factors from economic news releases available at different dates and frequencies. Our approach can effectively handle the large number of heterogeneous announcements that are relevant for tracking current economic conditions. We apply the technique to extract real-time measures of inflation, output, employment, and macroeconomic sentiment, as well as corresponding measures of disagreement among economists about these dimensions of the data. We find that our procedure provides more timely and accurate forecasts of the future evolution of the economy than other real-time forecasting approaches in the literature."

Trading and market impact

Optimal execution in the presence of short-term trading

- Adriana Criscuolo and Henri Waelbroeck
- SSRN, available at http://ssrn.com/abstract=2227139
- Abstract: "Starting from basic hypotheses on how footprints from hidden orders are interpreted by short-term traders, we derive a fair price model that predicts market impact for non-uniform participation rate schedules. We use this model to derive an optimal execution schedule for a risk-averse trader. The optimal schedule delays front-loading to avoid the information shock of an abrupt start. We also consider optimal strategies with respect to the Volume-Weighted Average Price (VWAP) benchmark. We show that the VWAP-optimized schedule for a large order is similar to the risk-averse one. In an example, we compute the cost of front-loading, and the additional cost of the information shock that results from an aggressive trade start."

Detecting and forecasting high frequency price jumps in the stock market

- Thibaut Moyaert
- SSRN, available at http://ssrn.com/abstract=2226455
- Abstract: "In this paper, we investigate some predictable patterns in high frequency price jumps using trades, orders and quotes data on the Euronext 100 Index. A fixed volume chart allows us to control for trading volume effects and avoid non trading issues at high frequency aggregation. We detect jumps through four different methods that encompass constant volatility, time-varying volatility and periodicity. Our forecasting model is a logistic model adjusted to rare events. At an average 2-minute trading volume frequency, we find that price jumps are mainly driven by liquidity gaps in the order book. The origin of those gaps is still an open question. They may be due to order cancellations or to a low resiliency of the stock market. Our results suggest that market participants could take advantage of some predictable patterns in price jumps in order to enhance their hedging or investment strategies."

Ultra high frequency statistical arbitrage across international index futures

- Hamad Alsayed and Frank McGroarty
- SSRN, available at http://ssrn.com/abstract=2225753
- Abstract: "We show that exploitable lead-lag relations of the order of a few hundred milliseconds exist in the three pairings between the S&P 500, FTSE 100, and DAX futures contracts. These relations exhibit clear intra-daily patterns, particularly around the US open, the European close, and the announcement of macroeconomic data. Using this information, we forecast mid-quote changes in lagging contracts with a directional accuracy in excess of 85%. A simple statistical arbitrage strategy exploiting these relations yields economically significant profits which are robust to market impact costs and the bid-ask spread. However, returns are sensitive to the risk of slippage, and the most profitable trading opportunities rarely exist for longer than 300 milliseconds. Hence, we highlight price slippage and infrastructure costs as the most significant limits to arbitrage in this market setting. Overall, our results accord with the view that informational inefficiencies incentivize arbitrageurs to appropriate pricing anomalies."

The effect of single-stock circuit breakers on the quality of fragmented markets

- Peter Gomber, Martin Haferkorn, Marco Lutat, and Kai Zimmermann
- SSRN, available at http://ssrn.com/abstract=2221903
- Abstract: "Since the May 6th, 2010 flash crash in the U.S., appropriate measures ensuring safe, fair and reliable markets become more relevant from the perspective of investors and regulators. Circuit breakers in various forms are already implemented for individual markets to ensure price continuity and prevent potential market failure and crash scenarios. However, coordinated inter-market safeguards have hardly been adopted, but are considered essential in a fragmented environment to prevent situations, where main markets halt trading but stock prices continue to decline as traders migrate to satellite markets. The objective of this paper is to empirically study the impact of circuit breakers in a single-market and inter-market setup. We find a decline in market volatility after the trading halt in the home and satellite market which come at the cost of higher spreads. Moreover, the satellite market's quality and price discovery during CBs is weakened and only recovers as the other market restarts trading."

Finance theory and techniques

Merger arbitrage short selling and price pressure

- Tingting Liu, Juan (Julie) Wu
- SSRN, available at http://ssrn.com/abstract=2230048
- Abstract: "This paper extends Mitchell, Pulvino and Stafford (2004) by studying merger arbitrage short selling using daily shorting flow data in a more recent period. We show that short selling increases significantly at merger announcements for acquirers in stock-financed mergers, and over 60 percent of the negative returns can be attributed to merger arbitrage short selling. Merger arbitrageurs' daily short position in the acquirer stock is positively related to the estimated arbitrage spread. Heightened arbitrage shorting and price declines in acquirers are also observed near the end of the pricing period for floating-exchange-ratio stock mergers. After the deals are closed, short selling reverses to its pre-announcement level. These findings suggest that merger arbitrageurs play an increasingly critical role in capital markets and their trading behavior can have important implications for the estimates of wealth effects associated with mergers."

The failure of the capital asset pricing model (CAPM): An update and discussion

- Graham Bornholt
- SSRN, available at http://ssrn.com/abstract=2224400
- Abstract: "Dempsey (2013) highlights the empirical failure of the capital asset pricing model (CAPM). I study the beta, value and momentum anomalies using industry returns, with particular emphasis on the post-1993 period. Strong evidence of these effects is observed over the whole sample. However in recent years, while the value and momentum anomalies appear to continue, the beta anomaly appears to have weakened. Notwithstanding these results, I show that the value and momentum anomalies, and the value of beta, are largely irrelevant to the calculation of industry cost of equity."

Derivatives and volatility

The factor structure in equity options prices

- Peter Christoffersen, Mathieu Fournier, and Kris Jacobs
- SSRN, available at http://ssrn.com/abstract=2224270
- Abstract: "Principal component analysis of equity options on Dow-Jones firms reveals a strong factor structure. The first principal component explains 77% of the variation in the equity volatility level, 49% of the variation in the equity option skew and 57% of the implied volatility term structure across equities. Furthermore, the first principal component has a 91% correlation with S&P500 index option volatility, a 42% correlation with the index option skew, and a 74% correlation with the index option term structure. Based on these findings we develop an equity option valuation model that captures the cross-sectional market factor structure as well as stochastic volatility through time. The model assumes a Heston (1993) style stochastic volatility model for the market return but additionally allows for stochastic idiosyncratic volatility for each firm. The model delivers theoretical predictions consistent with the empirical findings in Duan and Wei (2009). We provide a tractable approach for estimating the model on index and equity option data. The model provides a good fit to a large panel of options on stocks in the Dow-Jones index."

Appendix 1

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