April 17, 2013

Quantitative strategists

Joseph J. Mezrich
joseph.mezrich@instinet.com
1-212-310-4241

Yasushi Ishikawa
yasushi.ishikawa@instinet.com
1-212-310-4106

Instinet, LLC
1095 Avenue of the Americas
New York, N.Y. 10036

The uncertainty that matters – the drag on the market

- What is measurable and what matters are not always the same – uncertainty over economic policy is currently more relevant than market volatility (VIX) in setting the equity market's level.

- Economic policy uncertainty – as measured using the three-component index proposed by Baker, Bloom and Davis (2013) – does not equate to market volatility, a common indicator of uncertainty. The former is high at present and the latter is low. Except in the March 2009-May 2010 period, economic policy uncertainty has closely tracked the long-term earnings growth priced in equities.

- The economic policy uncertainty index today is far higher than before 2007, indicating substantial economic policy uncertainty exists, pushing down implied long-term earnings growth in equities to around 0.2%. This is in sharp contrast with the 11% implied growth at the 2007 market peak. We conclude the market would move substantially higher on the back of improved implied earnings growth if economic policy uncertainty declined – we estimate the S&P 500 could rise 12% to 1740 if implied long-term earnings growth rose to only 3% on reduced uncertainty.

Earnings growth implied in equities closely reflects economic uncertainty
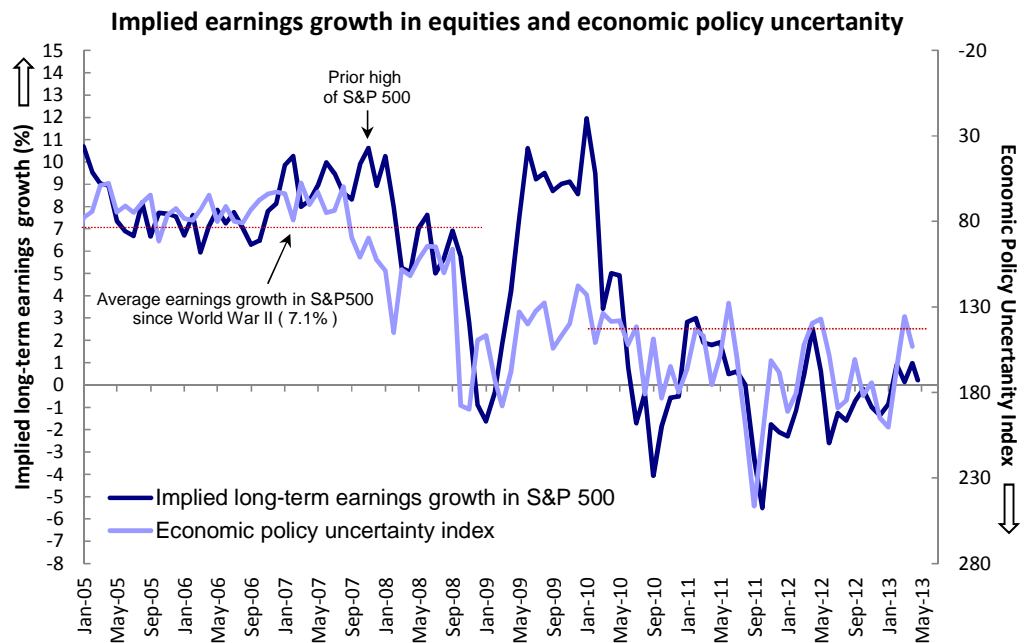
Implied earnings growth in equities and economic policy uncertainty

Note: Shows the implied long-term earnings growth (LTG) of the S&P 500 (dark blue line) and US economic policy uncertainty index (reversed, light blue line). Implied LTG (from FY1 to FY5) is derived by inputting the expected equity risk premium in Duke University's CFO survey (4.0% in March 2013 survey), based on a residual income model. Last data points are as of 17 April 2013 for implied earnings growth and 31 March 2013 for economic uncertainty index.
Source: Instinet, Graham and Harvey (2012), http://www.policyuncertainty.com/, I/B/E/S, S&P, Compustat, IDC.

HIGH-TOUCHTRADING | ALGORITHMICTRADING | FRONT-ENDTECHNOLOGY | LIQUIDITYSOURCING | TRANSACTIONANALYSIS | COMMISSIONMANAGEMENT | INDEPENDENTRESEARCH

The uncertainty that matters – the drag on the market

What is measurable and what matters are not always the same – uncertainty over economic policy is currently more relevant than the VIX in setting the equity market's level

The S&P 500 is now pricing 0.2% annualized earnings growth over the next five years, well below 11% at the 2007 market peak and the historical average of 7%, likely because economic policy uncertainty is depressing growth expectations

Economic policy uncertainty – as measured by the economic policy uncertainty index (Baker, Bloom and Davis, 2013) – does not necessarily equate to equity market volatility (VIX): the former is high at present and the latter is low (Exhibit 1)

There is an old joke about the fellow who lost his keys in the street one night. He looked for them under a lamp post, not because they were lost there, but because that was the only place there was light. Similarly, there is often confusion between what you can measure and what matters. Volatility is often taken as the indicator of market uncertainty, but the uncertainty that matters may not be reflected in measures such as the VIX. The point of this report is to highlight the role of economic policy uncertainty as directly related to how the market prices itself. Lately we find economic policy uncertainty is more relevant than the VIX in setting the equity market's level.

The S&P 500 broke into record territory this month, recently dropping below the October 2007 record. Whether the market will continue higher after the current pause depends to a great extent on what the market is pricing for future earnings growth. Our analysis indicates the market is pricing a very subdued 0.2% annualized earnings growth over the next five years. That is in sharp contrast to the 11% growth priced at the 2007 market peak, which was well above the average historical growth of 7% delivered by S&P 500 companies since World War II. At the October 2007 peak the market was expensive in terms of the growth that was being priced. Currently, with the market above the 2007 peak, the market looks cheap based on the growth that is being priced. Economic policy uncertainty is likely depressing growth expectations. That conclusion is based on a comparison between our estimate of the market's implied earnings growth and uncertainty as measured by the economic policy uncertainty index recently introduced by Baker, Bloom and Davis (2013).

Economic uncertainty, as measured by this index, is based on three components: one measuring newspaper coverage of policy-related economic uncertainty by counting the mention of policy uncertainty in ten popular newspapers, the second measuring the number of federal tax code provisions set to expire in future years, and the third measuring disagreement among economic forecasters as a proxy for uncertainty. According this index, economic policy uncertainty is not reflected in market volatility. That is seen in Exhibit 1, which plots the history of the economic policy uncertainty index and the VIX. The index of economic policy uncertainty has been very high since 2009, whereas the VIX has collapsed. In contrast to the VIX, the relationship between economic policy uncertainty and the market's implied earnings growth is striking. That is seen in Exhibit 2.

1. Equity market volatility is low, but economic uncertainty is still high

Economic policy uncertainty and equity market volatility
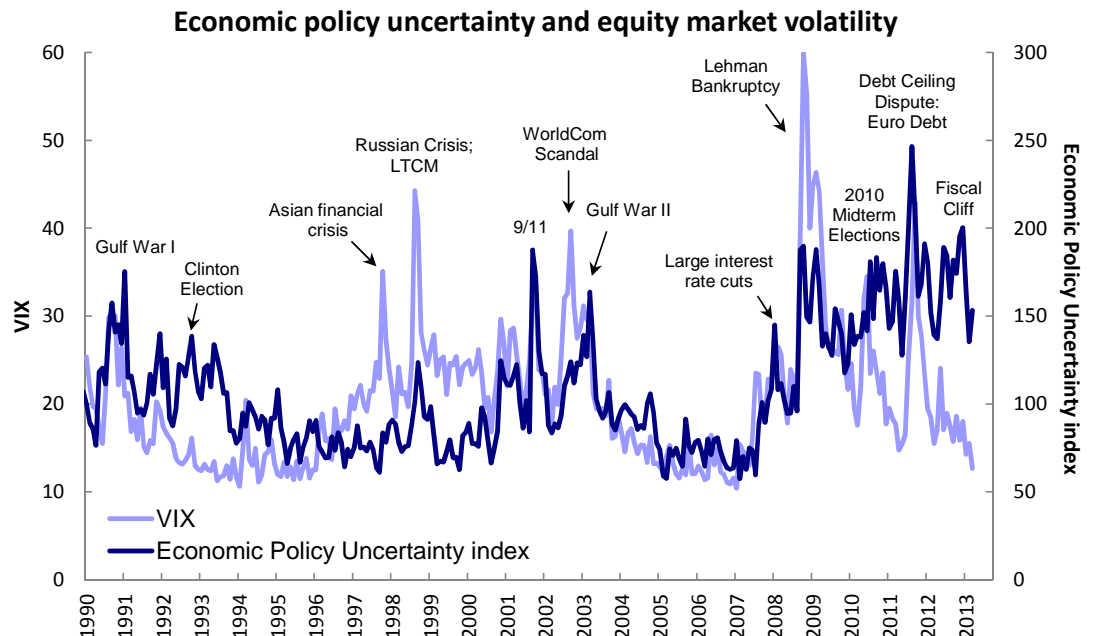
Note: Shows US economic policy uncertainty index (monthly) and VIX index (implied volatility of one-month S&P 500 index option). Period of analysis is from January 1990 through March 2013.
*Source: Instinet, http://www.policyuncertainty.com/.*

The method we use to calculate the implied long-term earnings growth in the S&P 500 (see Appendix for detail)

The implied long-term earnings growth priced in the S&P 500 is a measure of the cash market's sentiment. If we assume the current level of the S&P 500 is the market's estimate of the discounted present value of future earnings, then given analysts' consensus expectations of earnings over the next two fiscal years and an estimate of the expected equity risk premium, we can calculate the market's implied long-term earnings growth. For this analysis, we aggregate I/B/E/S consensus FY1 and FY2 analyst earnings forecasts for stocks in the S&P 500 and use the Duke University CFO survey for the expected equity risk premium. The discount rate is taken as the 10-year Treasury yield plus the Duke University CFO survey estimate of the expected equity risk premium (for details, see Appendix).

Except in the March 2009-May 2010 period, the economic policy uncertainty index has closely tracked implied long-term earnings growth in an inverse relationship – implied long-term earnings growth is now only 0.2% (Exhibit 2) . . .

The history of implied long-term earnings growth in the S&P 500 is shown as the dark blue line in Exhibit 2. The red horizontal line on the left in Exhibit 2 is the average experienced earnings growth since World War II, about 7%. The market's implied earnings growth tended to price this historical level of about 7% until the Lehman bankruptcy, but has been gyrating since the crisis erupted as it hunts for equilibrium. As Exhibit 2 shows, the implied earnings growth has gone negative, recovered, and gone negative a number of times over the past four years. The S&P 500 implied earnings growth is now slightly positive, but well below the 3% earnings growth indicated by the horizontal red line on the right of Exhibit 2 – a level that has been touched a few times since 2009. The index on economic policy uncertainty has tightly tracked the market's implied earnings growth, except for the period between March 2009 and May 2010. That anomalous period of exuberance began with the March 2009 market lift off from its bottom until the sobering period than began with the May 2010 flash crash and followed with the eruption of the euro crisis.

2. Earnings growth implied in equities closely reflects economic uncertainty
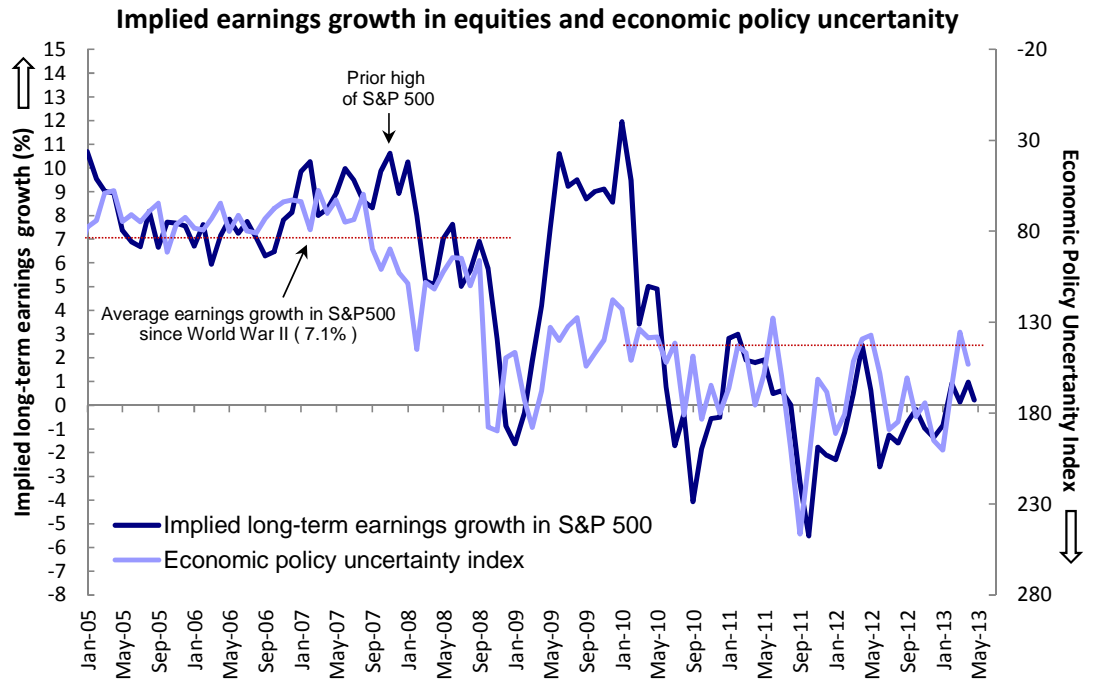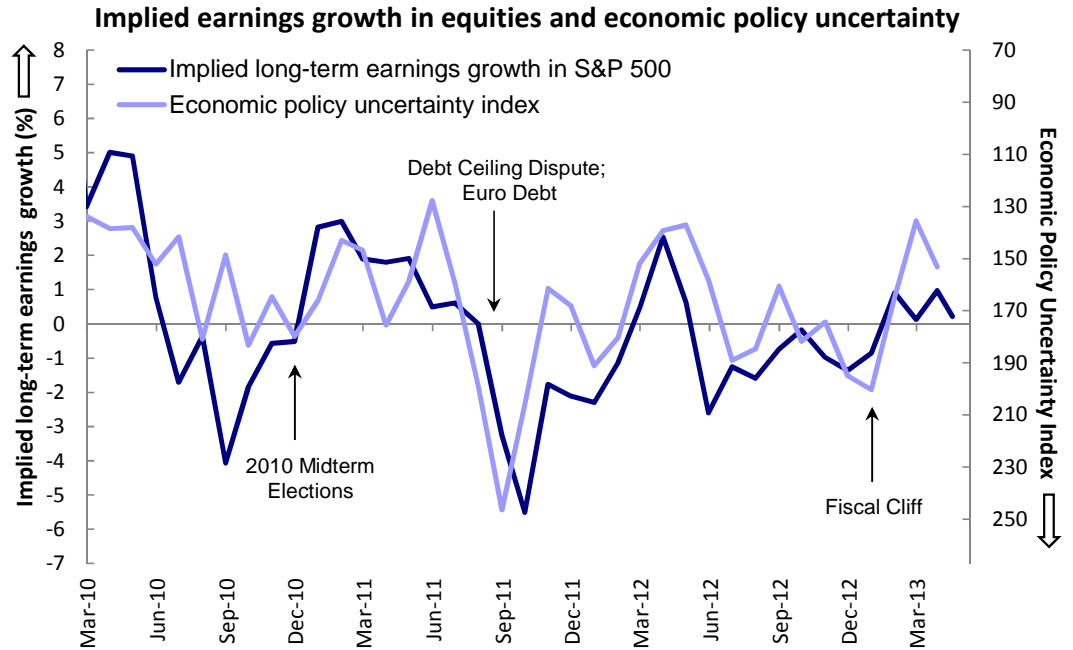

Implied earnings growth in equities and economic policy uncertanity

Note: Shows the implied long-term earnings growth (LTG) of the S&P 500 (dark blue line) and US economic policy uncertainty index (reversed, light blue line). Implied LTG (from FY1 to FY5) is derived by inputting the expected equity risk premium in Duke University's CFO survey (4.0% in March 2013 survey), based on a residual income model. Implied earnings growth is as of 17 April 2013 and economic policy uncertainty index is as of 31 March 2013.
Source: Instinet, Graham and Harvey (2012), http://www.policyuncertainty.com/, I/B/E/S, S&P, Compustat, IDC.

. . . and the economic policy uncertainty index today is far higher than before 2007, indicating substantial economic policy uncertainty exists (Exhibit 3)

Exhibit 3 focuses on the relationship between implied earnings growth and economic policy uncertainty for the past three years. The co-movement of these two measures is clear. Note for example the experience of the 'fiscal cliff' at the end of 2012 (see annotation on the right side of Exhibit 3). Implied earnings growth rose because economic policy uncertainty was reduced when the 'cliff' was experienced. There is still substantial economic policy uncertainty, as seen by comparing the current index level to the pre-2007 level in Exhibit 2.

3. Economic uncertainty and earnings growth priced in equities in the past three years

Implied earnings growth in equities and economic policy uncertainty

Note: Shows the implied long-term earnings growth (LTG) of the S&P 500 (dark blue line) and US economic policy uncertainty index (reversed, light blue line). Implied LTG (from FY1 to FY5) is derived by inputting the expected equity risk premium in Duke University's CFO survey (4.0% in March 2013 survey), based on a residual income model. Implied earnings growth is as of 17 April 2013 and economic policy uncertainty index is as of 31 March 2013.
Source: Instinet, Graham and Harvey (2012), http://www.policyuncertainty.com/, I/B/E/S, S&P, Compustat, IDC

Our conclusion: the market would move substantially higher on the back of improved implied earnings growth if economic policy uncertainty declined – we estimate the S&P 500 could rise 12% if implied long-term earnings growth rose to only 3% on reduced uncertainty

What can we conclude? We believe the market would be re-priced substantially higher on the back of improved implied earnings growth if economic policy uncertainty declined. Specifically, a rise in implied earnings growth to only 3%, which is the upper range since 2010 as indicated by red line in the right side of Exhibit 2, would take the S&P 500 up another 12%, from the current 1552 (as of April 17) to 1740.

.

Appendix A: How we calculate implied long-term earnings growth

Our estimate of the market's implied earnings growth uses a residual income model. The classic Residual Income Model (RIM) values a company based on its current book value plus an infinite sum of discounted "residual" income. Conceptually, "residual" is the return generated by a firm over and above the firm's cost of capital. Over the years, there have been many approaches to derive and utilize RIM, e.g. Preinreich (1938), Edwards and Bell (1961), Peasnell (1982), Bernard (1994), Ohlson (1990, 1995). Our approach most closely follows Frankel and Lee (1997, 1998) as well as Lee et al (1999). A theoretical value for the S&P500 is generated based on a bottom-up analysis of discounted cash flow for S&P500 constituents. The market capitalization of each stock is aggregated to produce a capitalization for the market, which we assume to be equal to model-estimated value for the S&P500. A two-stage valuation approach is calculated from (Compustat and I/B/E/S) financial statements to generate each firm's value V as follows:

$$V = B_0 + \sum_{i=1}^{5} \frac{NI_i - rB_{i-1}}{(1+r)^i} + \sum_{i=6}^{\infty} \frac{(ROE_i - r)B_{i-1}}{(1+r)^i} \qquad (1)$$

where NI_i = net income at time i,

r = cost of capital,

B_{i-1} = book value of firm at time i-1,

ROE_i = return on equity at time i,

V = estimated market cap based on model.

Stage 1: *i* = years 1 to 5

NI_1 = I/B/E/S consensus estimate for FY1 net income,

NI_2 = I/B/E/S consensus estimate for FY2 net income,

NI_3 and NI_4 are estimated by linear extrapolation from NI_2 through NI_5, as shown in Equations (2) and (3).

$$NI_3 = NI_2 + (NI_5 - NI_2) \cdot 1/3 \qquad (2)$$

$$NI_4 = NI_2 + (NI_5 - NI_2) \cdot 2/3 \qquad (3)$$

NI_5 was calculated using NI_1 and the long-term growth rate

$$NI_5 = NI_1 \cdot (1 + LTG)^4 \qquad (4)$$

Stage 2: *i* = years 6 to ∞

$ROE_i - r$ is estimated using an exponential decay process with decay constant λ. The half-life of $ROE_i - r$ is assumed to be 10 years (the 10th year into the second stage):

$$ROE_i - r = (ROE_5 - r) \cdot e^{-\lambda t} \quad ,$$

$$\lambda = \frac{\ln(1/2)}{10} \qquad (5)$$

A firm's life is assumed to be 100 years, so Equation (1) becomes:

$$V = B_0 + \sum_{i=1}^{5} \frac{NI_i - rB_{i-1}}{(1+r)^i} + \sum_{i=6}^{100} \frac{(ROE_i - r)B_{i-1}}{(1+r)^i} \tag{6}$$

where

$$B_{i-1} = B_{i-2} + (1 - POR)E_{i-1} \tag{7}$$

and *POR* is a dividend payout ratio based on the past 5 years.
The cost of capital r consists of two parts:

$$r = r_f + r_p \tag{8}$$

where

r_f = risk free rate

r_p = expected equity risk premium for S&P 500 index.

We use the 10-year Treasury yield for the risk free rate. For the equity risk premium r_p, we use expected equity risk premium based on the Duke University CFO survey from June 2000 to March 2013 (see the Exhibit below). Latest expected equity risk premium in March 2013 survey was 4.0%, and we assume here the expected equity risk premium is unchanged since then. By plugging all of our parameters into Equation (6) using the current market cap for *V*, we can solve for the market's implied long-term growth rate (LTG).

A. Expected risk premium for 10-years S&P 500 return based on CFOs survey

Expected equity risk premium by Duke CFO's survey
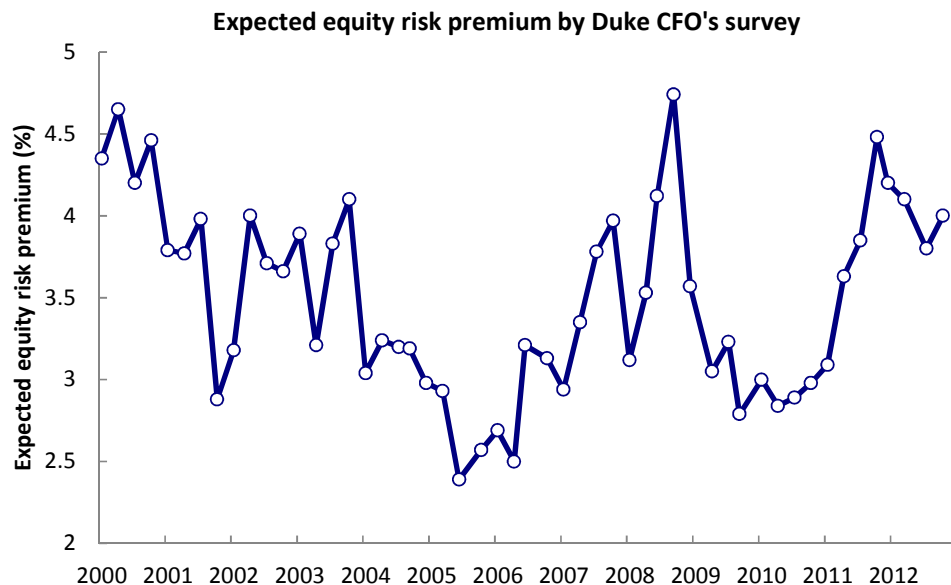
Note: Shows the average of equity risk premium for 10-year S&P 500 return relative to a 10-year U.S. Treasury bond yield, based on Duke University's CFO survey. Data ranges from June 2000 through March 2013. In March 2013 survey, 506 Chief Financial Officers (CFOs) are responding to the survey.
Source: Instinet, Graham and Harvey (2012).

References

Scott R. Baker, Nicholas Bloom, and Steven J. Davis, "Measuring Economic Policy Uncertainty," *working paper*, 3 April 2013.

John R. Graham and Campbell R. Harvey, "The Equity Risk Premium in 2012," *working paper,* 13 March 2012.

Victor L. Bernard, "Accounting-based valuation methods, determinants of book-to-market ratios, and implications for financial statement analysis," *working paper*, University of Michigan, (1994).

Edgar O. Edwards and Philip W. Bell, *The Theory and Measurement of Business Income*, University of California Press, (1961).

Eugene F. Fama and Kenneth R. French, "Industry costs of equity." *Journal of Financial Economics,* Vol. 43 (1997), pp. 153-193.

Richard Frankel and Charles M.C. Lee, "Accounting diversity and international valuation," Working paper, University of Michigan and Cornell University, (1997).

Richard Frankel and Charles M.C. Lee, "Accounting valuation, market expectation, and cross-sectional stock returns," *Journal of Accounting and Economics,* Vol. 25 (1998), pp. 283-319.

Charles M. C. Lee, James Myers and Bhaskaran Swaminathan, "What is the Intrinsic Value of the Dow?" *Journal of Finance*, Vol. 54, No. 5 (1999), pp.1693-1741.

Bruce N. Lehman, "Earnings, dividend policy, and present value relations: building blocks of dividend policy invariant cash flows," *Review of Quantitative Finance an*d *Accounting,* Vol. 3 (1993), pp. 263-282.

James A. Ohlson, "A synthesis of security valuation theory and the role of dividends, cash flows, and earnings," *Contemporary Accounting Research,* Vol. 6 (1990), pp. 648-676.

James A. Ohlson, "Earnings, Book Values, and Dividends in Security Valuation," *Contemporary Accounting Research,* Vol. 11 (1995), pp. 661-687.

K.V. Peasnell, "Some formal connections between economic values and yields and accounting numbers," *Journal of Business Finance and Accounting*, (1982), pp. 361-381.

Gabriel A. D. Preinreich, "Annual survey of economic theory: the theory of depreciation," *Econometrica,* Vol. 6 (1938), pp. 219-241.

Appendix B: Publication list

Date	Title	Date	Title
11-May-09	Some good news in option's panic pricing	8-Aug-11	The "Guns of August" - what's priced in equities?
10-Jun-09	US Quant Monthly: June 2009 - Failure of the multi-factor gambit	11-Aug-11	Stock correlation at historical high - good!
10-Jul-09	US Quant Monthly: July 2009 - The multi-factor gambit across space and time	16-Aug-11	Fundamental managers lag quants this August and this year
18-Aug-09	Are options pricing the dreaded W?	22-Aug-11	Panic pricing and the process of bottoming
20-Aug-09	US Quant Monthly: August 2009 - The Bungee Jump Market	26-Aug-11	Equity risk / credit risk disconnect and the waiting game
3-Sep-08	Groupthink priced in stocks: Implied correlation a caution for September?	31-Aug-11	The market's big question: Can profits grow when the economy slows?
8-Sep-09	Context matters: regional differences in value investing	7-Sep-11	August spared quants, but was tough on fundamental funds
11-Sep-09	Unpacking price momentum: the need for speed	12-Sep-11	Global stock correlation - puzzle in the west, opportunity in the east
16-Sep-09	US Quant Monthly: September 2009 - Fading of the risk	13-Sep-11	New Sector and Industry Selection Model
24-Sep-09	Factor correlation breakdown and a trade	26-Sep-11	The positive backdrop, diversified earnings with a "Twist"
12-Oct-09	Speed and crowding: converging dilemmas for quant investing	10-Oct-11	Active management headwinds: correlation and fund flows, quant vs. fundamental
13-Oct-09	US Quant Monthly: October 2009 - Factor similarity	14-Nov-11	Losers now look priced to win
2-Nov-09	Speed and crowding – take 2: What a difference a day makes	28-Nov-11	Personal best: Improving value and momentum
11-Nov-09	US Quant Monthly: November 2009 - When does sector neutrality matter?	15-Dec-11	Unintended bets: the winners in 2011 need to be replaced
16-Nov-09	A year after living dangerously - Where is volatility headed?	21-Dec-11	The Best of Times, the Worst of Times
18-Nov-09	Global CDS-Equity Arbitrage Strategy	11-Jan-12	Sector selection using the optimal normalized fundamentals
2-Dec-09	Factor correlation still broken: The value-divergence / risk trade continues	20-Jan-12	2012: An investment odyssey — rising systemic risk, extreme stock correlation and the value mirage
11-Dec-09	US Quant Monthly: December 2009 - Gallery of opportunity and caution	3-Feb-12	Risk-Macro Investing
11-Jan-10	Is price momentum permanently damaged?	6-Feb-12	January's historic correlation collapse
13-Jan-10	US Quant Monthly: January 2010 - Large cap, small cap, long and short	22-Feb-12	More market upside - decoding correlation
19-Jan-10	Saved by randomness: estimate dispersion a remedy for price momentum	6-Mar-12	Risk relief can still drive US and Europe
2-Feb-10	Value momentum conundrum	15-Mar-12	Wisdom of crowds or madness of crowds?
2-Feb-10	Hard landing for volatility	19-Apr-12	Strategies focusing on spenders
9-Feb-10	View from the skew	23-Apr-12	Stock correlation rising again
16-Feb-10	US Quant Monthly: February 2010, Factor persistence - escaping the speed trap	1-May-12	"Upside Story" - what's priced in the market
4-Mar-10	Unintended influence of analysts	31-May-12	Why value has been crushed, why momentum has soared
11-Mar-10	US Quant Monthly: March 2010, Searching for signals	5-Jun-12	Laws of active management — fundamental vs. quant ; the role of correlation and dispersion
15-Mar-10	A range-bound reply of 2004?	2-Jul-12	Summer edition - "Upside Story"?
12-Apr-10	Value and momentum: Why they usually diversify but sometimes pleasantly surprise	11-Jul-12	Who wins, who loses: Correlation drives the quant-fundamental divide
20-Apr-10	US Quant Monthly: April 2010, Risk appetite, splintered value, accruals	12-Jul-12	What is factor magnitude correlation – why does it matter?
20-Apr-10	Sector Perspectives: April 2010, A better factor momentum?	24-Jul-12	Volatility skew, implied earnings growth, and the market
4-May-10	When did accruals really stop working?	4-Sep-12	Decision rules to forecast momentum
6-May-10	Market turmoil – a picture of delayed reaction	14-Sep-12	Nice market pop – now what?
7-May-10	Market turmoil – risk update	24-Sep-12	Boosting dividend yield via beta adjustment
14-May-10	US Quant Monthly: May 2010- What happened in April?	28-Sep-12	This diversifier continues to work
18-May-10	Sector Perspectives: May 2010- Earnings surprise priced in, what's next?	15-Oct-12	Q4 forecast – momentum not momentous
7-May-10	Pessimism priced in options	19-Nov-12	Cliffhanger
26-May-10	Speed and controversy – don't blame the quants (or ways to win with accruals)	20-Nov-12	Sell on the news: The impact of news sentiment on stocks
22-Jun-10	US Quant Monthly: June 2010- Factor diversification remains an urgent need	13-Dec-12	Equity market pricing of downside risk – the currency connection
30-Jun-10	Volatility, valuation, and the range-bound market of 2010	17-Jan-13	Factors fast and slow
15-Jul-10	US Quant Monthly: July 2010 - Profitability swings and the winning value strategy	22-Jan-13	Everyone back in the pool?
17-Aug-10	US Quant Monthly: August 2010 - Correlation conundrum	29-Jan-13	Skew optimism, fuel for market upside
18-Aug-10	Correlation part 2… another look, another worry	5-Feb-13	Asset Allocation by Competitive Momentum
25-Aug-10	Large vs. small cap & the new normal: large cap era about to begin?	20-Feb-13	Watch the Euro; macro continues to drive stocks
22-Sep-10	US Quant Monthly: September 2010 - The failure of Churchill's maxim: factors now fade faster	25-Feb-13	Correlation hurts investors; institutionalization has raised correlation
12-Oct-10	Amplifying dividend appeal: Dividends don't always deliver	28-Feb-13	Macro damage update
15-Oct-10	Rally real - hang tight during bumps	5-Mar-13	Correlation hurdle for active investing: developed vs. emerging markets
25-Oct-10	US Quant Monthly: October 2010 - Return to spender-rewards of research		
28-Oct-10	Dollar damage for equities ahead?		
2-Nov-10	Do bonds lead stocks, or is stagflation priced?		
10-Nov-10	US Quant Monthly: November 2010 - Factor performance review		
15-Nov-10	Liquidity, monetary policy and the lingering small cap premium		
17-Nov-10	Quants and the recent need for speed		
7-Dec-10	US Quant Monthly: December 2010		
13-Dec-10	Low volatility: A simple tool for factor selection		
7-Jan-11	US Quant Monthly: January 2011 - Welcome back, Quants?		
3-Feb-11	Rumble in Europe unheard in US - Positive sign of decoupling		
10-Feb-11	Low volatility strategy - picking what's priceless		
22-Feb-11	Sector selection - it's fundamental		
7-Mar-11	Value vs. Growth / Quant vs. Fundamental		
21-Mar-11	A flock of black swans		
22-Mar-11	Return of the correlation conundrum		
6-Apr-11	Quant beats fundamental in Q1, but are quants really back?		
10-May-11	Stagflation priced in the market		
24-May-11	Commodity Tracker Using an Equity Factor		
7-Jun-11	The fading of small caps after QE2		
6-Jul-11	Now you see it, now you don't - low volatility alpha as index distribution arbitrage		
18-Jul-11	Dynamic Factor Allocation		
19-Jul-11	At mid-year 2011 quants are still winning		
27-Jul-11	Low-volatility effect - risk, return and cap distribution		

Source: Instinet, Nomura Securities International, Inc.

Disclaimer

Notice for Quantitative Desk Commentary

The information, tools and material presented in this sales and trading commentary (this "commentary") have been prepared or distributed by individual Sales Trading personnel of Instinet, LLC ("Instinet"). This commentary is not "research" as that term is defined by U.S. securities laws, rules and regulations. This commentary is intended for institutional investors only, and you shall not redistribute or share the information in this commentary with any third party without Instinet's express prior consent. Affiliates of Instinet may receive this commentary simultaneously with Instinet clients.

This commentary is for your information only, and may not to be construed as an offer to sell or a solicitation of an offer to buy any security mentioned herein. Any projections, valuations or statistical analyses are provided to assist the recipient in its independent evaluation of the matters described herein. They may be based on subjective assessments and assumptions and may use methodologies that produce different results and, to the extent that they are based on historical information, they should not be relied upon as an accurate prediction of future performance.

Complete copies of any research reports prepared by affiliates of Nomura Holdings, Inc. ("Nomura"), a publicly traded company and affiliate of Instinet, that are referenced, summarized or excerpted in this commentary should be read in conjunction with the full text of the actual report and related disclosures, available at www.nomura.com/research. These reports may contain dated information and are made available for historical purposes only. Such reports should not be relied upon in substitution for the exercise of independent judgment, are intended for your use only, and may not be transmitted to other parties. Contact your Instinet sales representative at 212-310-9510 if you need any assistance with accessing the reports.

Nothing herein shall form the basis of or be relied on in connection with any contract or commitment whatsoever. Neither Instinet nor any other person accepts any liability whatsoever for any loss (howsoever arising and whether direct, indirect, for lost profits or otherwise) from any use of the information contained herein or otherwise arising in connection herewith.

The information presented herein has been obtained from or based upon sources believed by the sales person or trader to be reliable, but none of Instinet or its employees, the trader or sales person represent or warrant its accuracy, completeness or timeliness, and are not responsible for losses or damages arising out of errors, omissions or changes in market factors. Instinet expressly disclaims all representations and warranties related to this material including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. This Commentary is provided "as is" and "when available."

Derivative investments require investors to assess several characteristics and risk factors that may not be present in other types of transactions.

Instinet's affiliates may from time to time perform investment banking or other services (including acting as advisor, manager or lender) for or solicit investment banking or other business from, companies mentioned herein. Instinet's affiliates may make a market or deal as principal in the securities mentioned in this document or in options, futures, or other derivatives based thereon. In addition, Instinet's affiliates, and its or their shareholders, directors, officers and/or employees may from time to time have long or short positions in such securities or in options, futures, or other derivative instruments based thereon.

This commentary is the sole proprietary material of Instinet and its licensors, and may not, in whole or in part, be (i) copied, photocopied, or duplicated in any form, by any means, or (ii) redistributed, posted, published, excerpted, or quoted without Instinet's prior written consent. If this material has been distributed by electronic transmission, such as e-mail, then such transmission cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. Instinet, its affiliates and their directors, officers, employees and agents do not accept liability for any errors or omissions in the contents of this material, which may arise as a result of electronic transmission. If verification is required, please request a hard-copy version.

Instinet, LLC is a registered broker-dealer in the United States and a member of SIPC. Instinet, LLC is affiliated with Nomura Holdings, Inc., a publicly-traded company, and its subsidiaries and branches worldwide.

© 2013 Instinet, LLC. All rights reserved.

The MSCI sourced information is the exclusive property of Morgan Stanley Capital International Inc.(MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, re-disseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI, Morgan Stanley Capital International and the MSCI indexes are services marks of MSCI and its affiliates.

HIGH-TOUCHTRADING | ALGORITHMICTRADING | FRONT-ENDTECHNOLOGY | LIQUIDITYSOURCING | TRANSACTIONANALYSIS | COMMISSIONMANAGEMENT | INDEPENDENTRESEARCH

Options

Options are not suitable for all investors. The risks of options trading should be weighed against the potential rewards.

Risks

Call or put purchasing: The risk of purchasing a call/put is that investors will lose the entire premium paid.

Uncovered call writing: The risk of selling an uncovered call is unlimited and may result in losses significantly greater than the premium received.

Uncovered put writing: The risk of selling an uncovered put is significant and may result in losses significantly greater than the premium received.

Call or put vertical spread purchasing (same expiration month for both options): The basic risk of effecting a long spread transaction is limited to the premium paid when the position is established.

Call or put vertical spread writing/writing calls or puts (usually referred to as uncovered writing, combinations or straddles (same expiration month for both options): The basic risk of effecting a short spread transaction is limited to the difference between the strike prices less the amount received in premiums.

Call or put calendar spread purchasing (different expiration months & short must expire prior to the long): The basic risk of effecting a long calendar spread transaction is limited to the premium paid when the position is established. Because of the importance of tax considerations to many options transactions, the investor considering options should consult with his/her tax advisor as to how taxes affect the outcome of contemplated options transactions.

Supporting documents that form the basis of our recommendations are available on request.

The Options Clearing Corporation's publication Characteristics and Risks of Standardized Options is available at: http://www.theocc.com/about/publications/character-risks.jsp

HIGH-TOUCHTRADING | ALGORITHMICTRADING | FRONT-ENDTECHNOLOGY | LIQUIDITYSOURCING | TRANSACTIONANALYSIS | COMMISSIONMANAGEMENT | INDEPENDENTRESEARCH

10