FQ INSIGHT:

The Outlook for Low Volatility Strategies

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Encouraged by highly volatile equity returns and fortified with new research, investors have been increasing allocations to specialized low volatility equity strategies. These strategies seek participation in equity market growth but with significantly lower volatility than standard capitalization-weighted indices. While it is beyond the scope of this note to describe these strategies in detail, or to delve into the theories behind why they are thought to work, in a nutshell, they reduce portfolio volatility mainly by overweighting stocks that have below-average volatility.

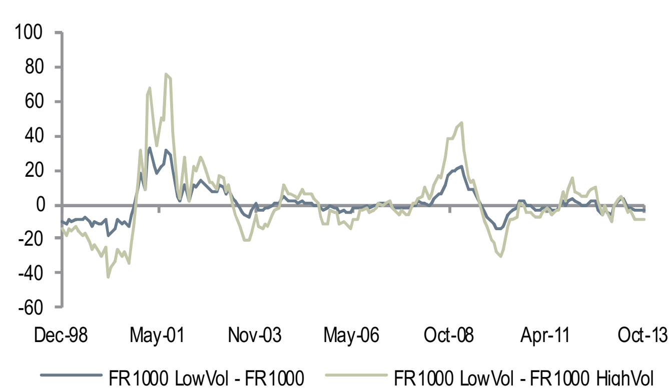
As with any factor or style, the relative performance of low volatility stocks goes through cycles, as shown in Exhibit 1. While many of those investing in low volatility equity are long-term investors, our research suggests that it is possible to add further value by using a disciplined approach to choose when, and by how much, to hold exposure to low volatility equity. After 2010 and the gradually diminishing influence of the financial crisis, fluctuations in the return spread of low volatility stocks versus the broad market moderated. So far this year through the end of October, low volatility equity has underperformed capitalization-weighted indices in both the US and global markets.[1]

Summary of our outlook

- The current environment favors high volatility stocks over low volatility stocks
- The business cycle supports high volatility stocks – a strengthening global economy favors more risky companies
- Investor sentiment favors high volatility stocks - sentiment is a contrarian

EXHIBIT 1: LOW VOL STRATEGY PERFORMANCE CYCLES[2]

Rolling 12 month performance difference (December 1998 - October 2013)



Sources: First Quadrant, L.P., Russell, MarketQA, Compustat

EXHIBIT 2: VALUATION OF VOLATILITY[3]

(December 1989 - October 2013)

Sources: First Quadrant, L.P., Russell, MarketQA, Compustat indicator for this purpose, and the measure we use indicates low sentiment

- On a valuation basis, low volatility stocks are fairly valued compared to the broad market. Low volatility stocks became expensive during the flight to quality in the financial crisis, but that premium has now disappeared (see Exhibit 2)

Methodology

We have developed approaches for timing several important equity factors including value/growth, size, price momentum and low volatility. Our approach to timing each factor is different, reflecting the specific dynamics and drivers underpinning each one. In forming our view of the prospects for low volatility stocks, we assess both the business cycle and investor sentiment.

The motivation for incorporating business cycle inputs is that investors behave differently in different stages of the cycle. When the economy is improving, investors are more willing to seek risk, which favors higher risk stocks. On the other hand, when the economy is deteriorating, investors become more risk averse, which favors lower risk stocks. We use a global composite of leading indicators to assess the economic cycle. Currently, while the global economy is far from robust, it is improving gradually. Our business cycle indicator, therefore, favors high volatility stocks over low volatility stocks.

The rationale for using investor sentiment is research that shows that during periods of high investor sentiment, many risky assets become over-priced, yet impediments to short-selling limit the ability of rational investors fully to exploit over-pricing. Following periods of high sentiment, low volatility stocks tend to outperform high volatility stocks. On the other hand, following periods of low investor sentiment, the reverse holds, and high volatility stocks tend to outperform. The measure of investor sentiment that we monitor combines several market factors and is relatively slow moving. Despite strong equity market returns this year, this measure still indicates that investor sentiment is low which, like the business cycle indicator, favors high volatility stocks over low volatility stocks.

Endnotes

[1]Based on Russell indices (Russell 1000, Russell 1000 Low Volatility, Russell 1000 High Volatility) for low volatility and capitalization-weighted equity.

[2]Exhibit 1: Russell 1000 Low Volatility minus Russell 1000; Russell 1000 Low Volatility minus Russell 1000 High Volatility.

[3]Exhibit 2: Russell 1000 Low Volatility ; Russell 1000; Russell 1000 Low Volatility minus Russell 1000

FIRST QUADRANT

Composite Information

US Large Cap Equity Composite	Total Return Gross	Russell 1000 Benchmark	Value-Added Gross[1]	Total Return Net	Value-Added Net[1]	Composite 3-Year Standard Deviation Gross (Annualized)	Benchmark 3-Year Standard Deviation (Annualized)	Number of Portfolios[4]	Composite Dispersion (%)	Total Composite Assets[4] (Millions USD)	% of Firm Assets[4]	Total Firm Assets[4] (Millions USD)	Total Firm AUM (Including Notional Values)[1,4,5] (Millions USD)
1990 (Jun-Dec)	-0.6%	-7.0%	+6.4%	-0.6%	+6.4%	–	–	<5	–	60	100.0	60	1,036
1991	+39.0%	+33.0%	+6.0%	+39.0%	+6.0%	–	–	<5	–	367	50.2	730	2,815
1992	+7.7%	+8.9%	-1.2%	+7.4%	-1.5%	–	–	7	–	844	56.5	1,493	4,069
1993	+11.3%	+10.2%	+1.1%	+10.9%	+0.7%	9.4%	10.5%	8	0.9	996	47.0	2,117	6,544
1994	-0.6%	+0.4%	-1.0%	-0.9%	-1.3%	7.6%	8.0%	8	0.8	1,023	38.9	2,631	8,498
1995	+34.7%	+37.8%	-3.1%	+34.4%	-3.4%	8.2%	8.3%	7	3.0	1,238	37.1	3,335	10,280
1996	+23.4%	+22.4%	+1.0%	+23.3%	+0.9%	9.2%	9.6%	7	0.9	1,191	26.7	4,464	12,488
1997	+33.9%	+32.9%	+1.0%	+33.7%	+0.8%	10.4%	11.0%	6	–	1,313	21.4	6,126	14,755
1998	+20.4%	+27.0%	-6.6%	+20.2%	-6.8%	16.0%	16.6%	6	–	1,723	22.3	7,729	14,884
1999	+18.8%	+20.9%	-2.1%	+18.6%	-2.3%	16.6%	17.1%	8	–	1,490	15.4	9,651	17,192
2000	-8.7%	-7.8%	-0.9%	-9.0%	-1.2%	18.4%	18.2%	7	1.0	827	13.7	6,039	11,109
2001	-10.8%	-12.4%	+1.6%	-11.0%	+1.4%	17.3%	17.3%	7	0.3	1,017	21.3	4,767	9,124
2002	-20.5%	-21.7%	+1.2%	-20.8%	+0.9%	17.8%	19.1%	7	1.1	2,009	38.1	5,277	8,745
2003	+28.6%	+29.9%	-1.3%	+28.3%	-1.6%	16.3%	18.5%	7	0.2	2,377	32.4	7,336	11,300
2004	+13.8%	+11.4%	+2.4%	+13.6%	+2.2%	13.1%	15.1%	7	0.5	2,678	28.7	9,323	14,150
2005	+10.9%	+6.3%	+4.6%	+10.6%	+4.3%	9.1%	9.1%	<5	–	2,555	25.9	9,852	20,519
2006	+17.7%	+15.5%	+2.2%	+17.4%	+1.9%	7.7%	7.1%	5	–	3,012	20.9	14,404	26,301
2007	+3.8%	+5.8%	-2.0%	+3.5%	-2.3%	8.8%	7.9%	<5	–	2,416	16.6	14,594	31,025
2008	-37.4%	-37.6%	+0.2%	-37.5%	+0.1%	16.4%	16.6%	5	–	1,367	14.4	9,508	20,043
2009	+21.1%	+28.4%	-7.3%	+20.9%	-7.5%	19.8%	20.9%	<5	–	1,149	14.6	7,867	17,342
2010	+13.9%	+16.1%	-2.2%	+13.8%	-2.3%	21.8%	23.1%	<5	–	752	8.8	8,558	18,713
2011	+6.4%	+1.5%	+4.9%	+6.3%	+4.8%	18.0%	19.2%	<5	–	815	10.2	7,967	16,725
2012	+15.8%	+16.4%	-0.6%	+15.6%	-0.8%	15.3%	15.5%	<5	–	943	11.9	7,891	17,104
2013 (Jan-Oct)[2]	+27.9%	+26.1%	+1.8%	+27.7%	+1.6%	12.7%	12.7%	<5	–	1,204	12.9	9,369	16,997

See additional disclosures for important information concerning this composite and the effect of fees. [1]Supplemental Information. [2]All Performance and AUM data is preliminary. [3]Includes market values for fully funded portfolios and the notional values for margin funded portfolios, all actively managed by First Quadrant. [4]At End of Period Reported. [5]Includes market values for fully funded portfolios and the notional values for margin funded portfolios, including both active mandates and those with both active and passive components, all managed by First Quadrant and non-discretionary portfolios managed by joint venture partners using First Quadrant, L.P. investment signals. First Quadrant is defined in this context as the combination of all discretionary portfolios of First Quadrant, L.P. and its joint venture partners, but only wherein FQ has full investment discretion over the portfolios.

US Large Cap Equity Past performance is no guarantee of future results. Potential for profit is accompanied by possibility of loss. GENERAL DISCLOSURES First Quadrant, L.P. claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. First Quadrant, L.P. has been independently verified for the period 1995-2012. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation. The Large Cap US Equity composite's historical returns have been examined for the period 1996-2010. The verification and performance examination reports are available upon request. First Quadrant ("FQ" or the "Firm") is defined as the combination of all discretionary portfolios of First Quadrant, L.P. and its joint venture partners, but only wherein FQ has full investment discretion over the portfolios. First Quadrant L.P. is a registered investment adviser and is an affiliate of Affiliated Managers Group, Inc. A complete list and description of the Firm's composites is available upon request. COMPOSITE DETAILS Composite Description: (Creation Date: December 2010) The US Large Cap Equity composite includes all long portfolios that use FQ's U.S.-based equity process managed against the Standard and Poor's 500 Index or Russell 1000 Index. The S&P 500 Index is capitalization-weighted index of 500 stocks. The S&P 500 Index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The S&P 500 Index is proprietary data of Standard & Poor's, a division of The McGraw-Hill Companies, Inc. All rights reserved. The Russell 1000® Index measures the performance of approximately 1000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 92% of the U.S. market. The Russell 1000® is a trademark of Russell Investments. Russell Investments is the owner of the trademarks, service marks and copyrights related to its respective indexes. The benchmark for the US Large Cap Equity Composite is the Russell 1000® Index. Portfolio Criteria: There is no minimum balance requirement for a portfolio to be included in a composite. None of the portfolios included in the composite utilize leverage. **Calculation Methodology:** Valuations and returns are computed and stated in U.S. dollars. Dividend and interest income is accounted for on an accrual basis. Prior to January 1, 2004, monthly portfolio returns were calculated using a time-weighted rate of return formula. Individual contributions and withdrawals falling below 10% of a portfolio's market value were time weighted during the month. When contributions or withdrawals exceeded 10% of a portfolio's market value, an intra-month calculation was made for the prior period to and subsequent to the contribution or withdrawal. Since January 1, 2004, monthly portfolio returns are time-weighted rates of return using the daily valuation method. Annual portfolio returns are calculated by linking the monthly returns. The dispersion of a composite is calculated using the asset-weighted standard deviation formula. Only portfolios managed for the full calendar year are included in the dispersion calculation. Where a composite contains five or fewer portfolios, a measure of dispersion is not statistically representative and is therefore not shown. The three-year annualized standard deviation measures the variability of the composite and the benchmark returns (if applicable) over the preceding 36-month period. The standard deviation is not presented for periods in which 36 months of historical composite returns are not available. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request. **Investment Management Fees:** Performance results presented net of investment management fees are based upon actual portfolio investment management fees charged to each portfolio within the composite. These net of fee results also reflect the effect of any negotiated fee arrangements, which are different than FQ's fee schedule. All performance results presented include trading commissions. The FQ investment management asset-based fee schedule (assets managed in millions) for this strategy, which is negotiable, is as follows: $20–$100, 0.50%; $100–$300, 0.40%; and more than $300, 0.25%. Asset-based fees are charged incrementally. For example, a $200 million portfolio will be charged 0.50% for the first $100 million and 0.40% for the remaining $100 million. Incentive fee arrangements are available and negotiable. Market Impact On Returns: Certain material market or economic conditions can impact the returns of an investment strategy. We have provided below what we believe to be a fair, yet subjective, assessment of those outliers that have significantly and positively impacted the strategy's performance. Over the last half of 1990 a difficult market characterized the strategy. This was followed by a very strong rally in 1991 led by growth stocks spurred by improved economic growth. The strategy timed the market shifts very ably over this time period, moving from a defensive posture in 1990 to a significantly more aggressive growth posture in 1991, which took advantage of the very strong market rally. Unusual market conditions contributed to strong portfolio performance in 2011. Pronounced trends in stock returns were beneficial for sentiment-related strategies. In addition, rising risk aversion among investors caused significant rotations toward stocks deemed to be less risky, and away from stocks considered high risk. These rotations were beneficial to the earnings quality strategy.

The Russell 1000 Index measures the performance of the large-cap segment of the U.S. equity universe. It is a subset of the Russell 3000® Index and includes approximately 1000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 92% of the U.S. market.
The Russell 1000 Index is constructed to provide a comprehensive and unbiased barometer for the large-cap segment and is completely reconstituted annually to ensure new and growing equities are reflected.
Russell 1000 Low Volatility - These indexes seek to deliver exposure to stocks with low volatility as determined by a screening and ranking methodology applied to the output of the Axioma U.S. Equity Medium Horizon Fundamental Factor Risk Model. Volatility is defined as the annualized volatility computed from the preceding 252 daily returns.
Stocks exhibiting low volatility can be used by investors to adjust volatility exposure in a portfolio. To construct an index that tracks stocks with low volatility, the Index starts with the Russell 1000 or Russell 2000 Index and ranks the constituents by volatility. Starting with the lowest volatility stock, a target portfolio is created by adding the next lowest volatility stocks until the target portfolio has a total of 200 stocks from the Russell 1000 or 400 stocks from the Russell 2000. These 200 or 400 stocks are then weighted using the inverse of their volatility such that the stocks with lowest volatility receive the highest weight. This target portfolio is referred to as the "reference factor index."
The Index then selects a portfolio of up to 200 stocks from the Russell 1000 Index or a portfolio of up to 400 stocks from the Russell 2000 Index as constituents to optimally track the returns of the target portfolio while managing turnover and neutralizing exposure to other factors, such as beta and momentum. To maintain its focus on low volatility stocks, the Index is reconstituted monthly.
Russell 1000 High Volatility - These indexes seek to deliver exposure to stocks with high volatility as determined by a screening and ranking methodology applied to the output of the Axioma U.S. Equity Medium Horizon Fundamental Factor Risk model. Volatility is a measure of a stock's variability in total returns based on its historical behavior over the last sixty days.
Stocks exhibiting high volatility can be used by investors to adjust volatility exposure in a portfolio. To construct an index that tracks stocks with high volatility, the Index starts with the Russell 1000 or Russell 2000 Index and ranks the constituents by volatility. Starting with the highest volatility stock, target portfolios are created by adding the next highest volatility stocks until the target portfolio has a total capitalization of 35% of the Russell 1000 or Russell 2000 Index. These target portfolios or "naïve factor indexes" are used to build the Russell 1000 and 2000 Volatility indexes.
The Index then selects a portfolio of up to 200 stocks from the Russell 1000 Index or a portfolio of up to 400 stocks for the Russell 2000 Index as constituents to optimally track the returns of the naïve factor index while managing turnover and neutralizing exposure to other factors, such as beta and momentum. To maintain its focus on high volatility stocks, the Index is reconstituted monthly.

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