



CSFB Equity Derivatives Strategy

Global

Market Commentary

October, 6, 2004

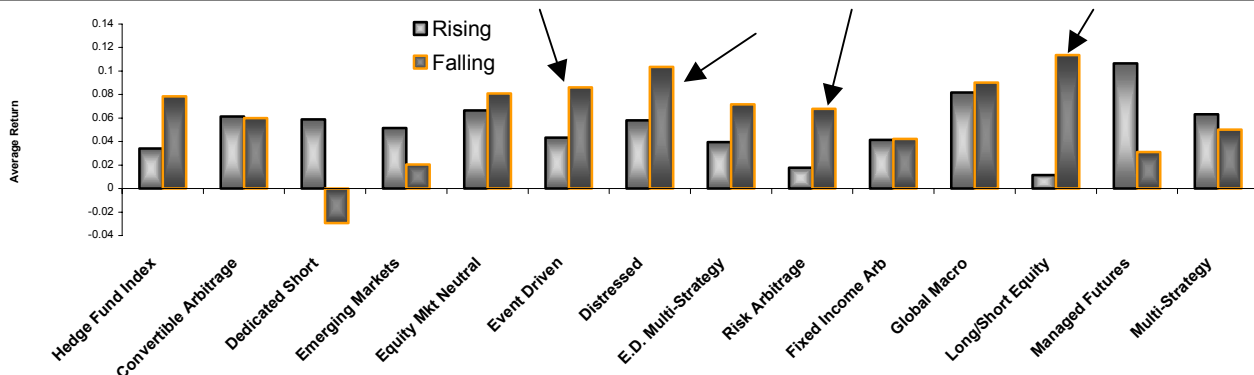
Mika Toikka
(212) 325-5798
Ed Tom
(212) 325-3584
Martin Boldt-Christmas
44 20 7888 8696
Stanislas Bourgois
44-20-7888-0459

Alpha Pains

Why It's a Tough Market

- The recent market environment has turned out to be a tough one for stock pickers. Not only is equity market volatility at very low levels but also correlation among stock returns is at historically high levels. **This is the first time in 25 years that we are seeing an environment where correlations and volatility have been moving in opposite directions in a meaningful way.** See Exhibit 6.
- **Low volatility environments make it difficult to generate differentiated returns but this is made much worse when there is a tendency for stock returns to be highly correlated.** High stock return correlations imply that stock returns are being pushed around in unison by "big picture" related issues (macro) and that single stock related issues (idiosyncratic risks) on aggregate are having less of an impact on returns than usual.
- We show historically how the correlation environment makes a big difference in the expected performance of various investment styles. We examine the 14 sub investment categories of the CSFB Tremont hedge fund index during increasing and decreasing correlation environments. As Exhibit 1 shows, there tends to be a strong relationship between a fund's style performance and the correlation environment. **Funds that are focused on idiosyncratic risk (stock pickers) tend to do much better in decreasing correlation environments (e.g. long short strategies). Funds that focus on bigger picture macro issues (e.g. emerging markets and managed futures) historically tend to do much better in increasing correlation environments.** Many funds have inherent and often substantial correlation exposure without fully realizing it.
- The derivatives markets are currently pricing in a decrease in correlation going forward although levels on an absolute basis are still expected to remain high. **Bigger picture (macro) related issues are most likely going to continue to dominate market concern, which implies that it might not be the best of environments for stock pickers.** One of our favourite trades continues to be the selling of correlation especially during market shocks where macro fears surge. Call us for details.

Exhibit 1: Hedge Fund Style Returns During Increasing and Decreasing Correlation Environments



Source: CSFB Derivatives Strategy.

New York

Mika Toikka (212) 325-5798
Peter Tannenbaum (212) 325- 6255
Edward K. Tom (212) 325- 3584
Cem Hocaoglu (212) 325- 0722
Ryan Renicker (212) 325- 1621

London

Sri Moorthy +44-20-7888- 8053
Martin Boldt-Christmas +44-20-7888- 8696
Hon Wai Lai +44-20-7888- 9637
Stanislaus Bourgois +44-20-7888- 0459
Colin Goldin +44 20 7888-9637

Tokyo

Stephen Chadwick +81-3-5777-7183
Edmund Ching +852 2101 7296
Ken Feng +81-3-5777-7183

Exhibit 2: S&P 500: Current Trading Range



Source: CSFB Derivatives Strategy.

The Year of the Trading Range

The S&P 500 has spent all of 2004 in a narrow 10% trading range (i.e. less than 100 S&P 500 points). See Exhibit 2.

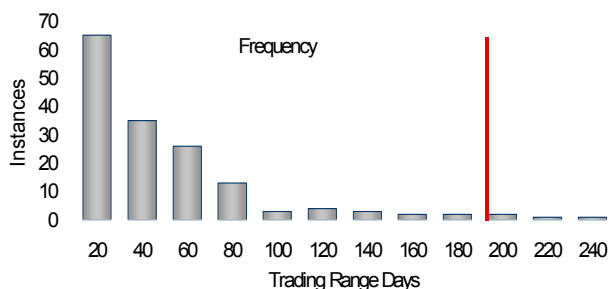
Narrow trading ranges of the duration that we have seen thus far in 2004 are a highly unusual phenomenon. Since the late 1970's there have been three instances where we have experienced a trading range this narrow that has lasted longer than the current 191 business days. See Exhibit 3 where we graph distributions of trading ranges.

A natural consequence of the extended narrow trading range has been a collapse in both implied and realized volatility.

Three month implied volatility on the S&P 500 has fallen 16 points whereas realized volatility has declined almost 5 points since the start of the year. If we take a longer-term perspective

(Exhibit 4), volatilities on the S&P 500 are fast approaching the extreme lows that we experienced in the middle of the 1990's. Note that the last two instances of trading ranges as narrow as what we are currently experiencing occurred in 1992 and 1993.

Exhibit 3: Distribution of Trading Ranges



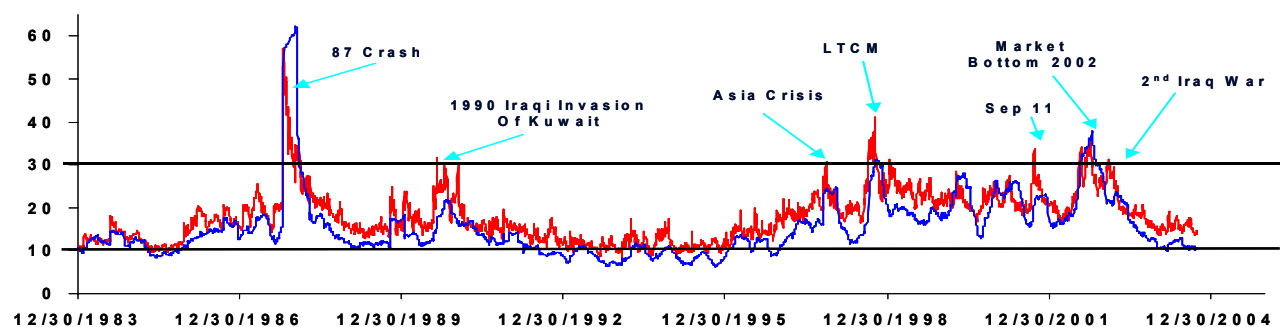
Source: CSFB Derivatives Strategy.

Consequences of Low Volatility

In Exhibit 5 we show the relative returns of single stocks versus the overall market in absolute terms. It's clear that we have had a significant contraction in market relative returns as overall equity volatilities have declined. Naturally, this contraction in relative returns makes outperforming benchmarks by picking stocks a more difficult exercise.

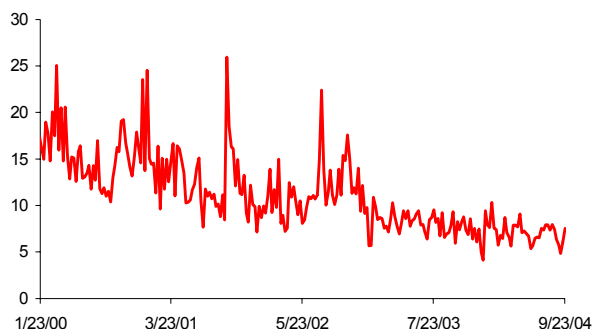
However, what really makes the current environment exceptional and very different from other low volatility environments such as the early 1990's is that not only have volatilities collapsed but also **stock return correlations**

Exhibit 4: Three Month S&P 500 Volatility is Close to the Lows Last Seen in Early 1990's



Source: CSFB Derivatives Strategy.

Exhibit 5: Relative Returns (Absolute)



Source: CSFB Derivatives Strategy.

have increased (i.e. cross sectional stock returns).

This is the first time in 25 years that we are seeing an environment where correlations and volatility have decoupled in a meaningful way. That is, correlation and volatility have moved in opposite directions. **Please see Exhibit 6.**

Note how there is a general tendency for volatility and correlation to move together (as one would expect). However, the recent environment clearly stands out as an exception.

The Role of Correlation

A market environment with high stock return correlations implies that stock returns are being driven by “big picture” (macro) related issues and stocks have a tendency to move in unison (at least more so than traditionally).

In other words, during these high correlation environments systematic risk dominates over

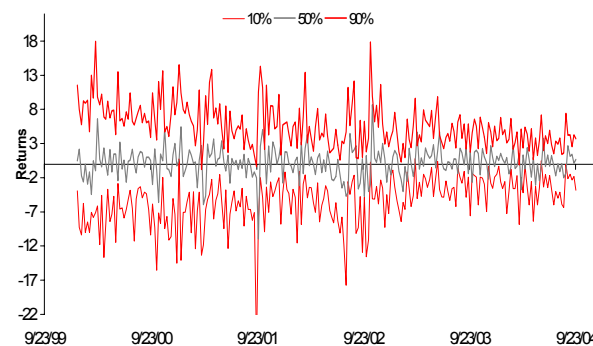
idiosyncratic (stock specific) risk.

Alpha Pains

Naturally if stock returns are moving in unison (high correlation environment), it is more difficult to pick stocks. Even though one picks the “right” stocks so to speak, the market is not rewarding one (at least not to the degree that it would in a low correlation environment) for picking these “right” stocks.

In Exhibit 7 we display cross sectional returns for a large U.S. equity universe. As the Exhibit 7 clearly shows since 2000, we have a significant contraction in single stock cross sectional variation.

Exhibit 7: Cross Sectional Return Variation



Source: CSFB Derivatives Strategy.

During these environments of high stock return correlations, adding value at the single stock level becomes much more difficult and the bigger picture “asset allocation” decisions tend to dominate.

Hence, the current environment with both low volatility and high correlation is “the worst of all worlds” for stock pickers.

Exhibit 6: Significant Divergence in Correlation and Volatility

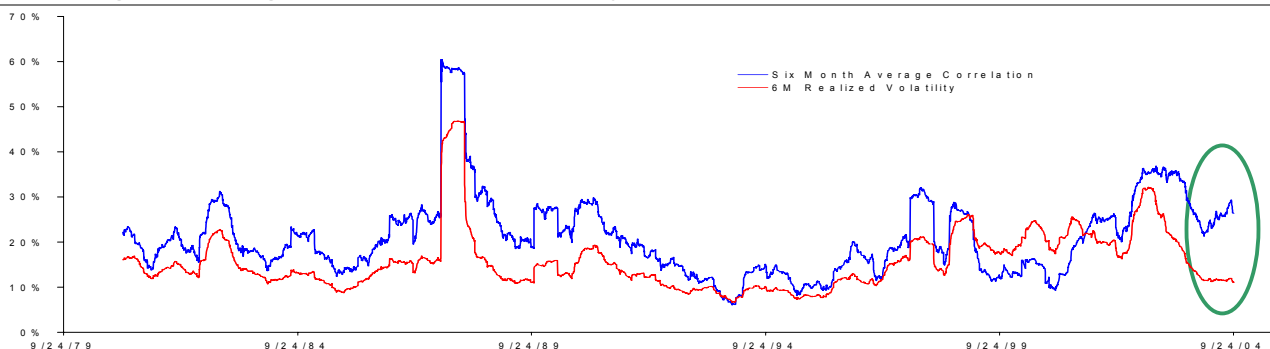
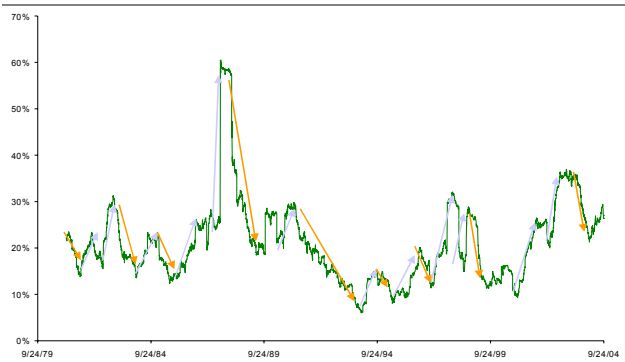


Exhibit 8: Correlation Environments



Source: CSFB Derivatives Strategy.

Implicit Correlation Bets

Correlation permeates most equity trading strategies because implicitly any strategy that has a portfolio of stocks in it is taking on correlation risk.

To empirically show the impact of correlation, we divide the past into increasing and decreasing correlation environments. We use 6-month realized correlations on the S&P 500 going back to 1979 for our analysis. See Exhibit 8.

Observe how the lowest levels of stock return correlations were reached back in the early 1990's (when volatility was also exceptionally low) and the top of the bubble in 2000. In 2000, correlation was low as there was a high degree of dispersions in returns. That is, the "new economy" stocks were going in one direction and the "old economy" stocks were going in another. During this period volatility was also exceptionally high, making for a stock pickers market.

The last several years have been a period of relatively high correlation as the market has

been driven by macro issues, for example, Sep 11, the war with Iraq, market bottom of 2002 and more recently terrorism fears, oil shocks, etc.

Note the sharp decline in correlation following the initial war with Iraq back in March of 2003. However, since then correlations have refused to decline back to "normalized" levels as macro concerns have continued to dominate.

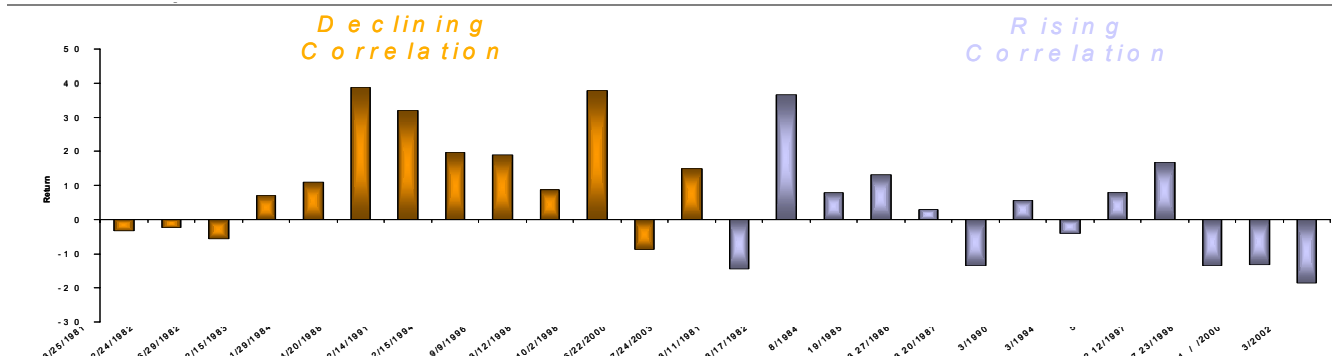
The Impact of Correlation on Equity Strategies

First we explore the impact of market direction on correlation. As Exhibit 10 indicates, there is a clear tendency to see more positive returns in decreasing correlation environments. In other words when stock specific risk dominates (high degree of return dispersion), the market tends to be higher. However, during periods of increasing correlation (i.e. increasing macro fear), there is more of a negative bias to the market (correlations between stock returns tend to increase in down markets). That said, there are still more positive return instances than negative ones in our sample of increasing correlation environments¹. See Exhibit 10.

Next, we explore the impact of these increasing and decreasing correlation environments on various investment strategies. We examine the 14 sub investment categories of the CSFB Tremont hedge fund index going back to 1994.

As Exhibit 1 shows, **there tends to be a strong relationship between a fund's style performance and the correlation environment.**

Although by no means perfect, **strategies such as Long/Short, Event Driven, Risk Arbitrage and**



Distressed Securities clearly seem to do better in environments where correlation is decreasing. These strategies are highly stock specific in their focus and hence it makes sense that managers of these strategies are adding the most value in environments that favour stock picking.

On the other hand strategies such as Managed Futures and Emerging Markets do the best in environments that are macro driven (i.e. during increasing correlation environments).

What to Expect Going Forward

To get a sense as to what the market is currently expecting with regards to correlation risk (macro risk), we turn to the derivatives markets. By comparing the relative price of index versus single stock options, we can compute implied correlation. Implied correlation is similar to implied volatility in that it is forward looking and incorporates the markets expectations. However, instead of volatility, implied correlation is the market forecast of pairwise stock return correlations (i.e. macro risk).

In Exhibit 11, we graph three month implied versus realized correlation for the S&P 500. Note that there is a tendency for implied correlation to lead the market. This can be most clearly seen in the period immediately prior to the war with Iraq in early 2003 (middle of the chart). At this point the market was assuming that the vast majority of equity risk going forward was going to be macro focused. This also turned out to be the case as can be seen by the lagging realized correlations series.

However, since approximately mid 2003, we have seen a significant divergence between what the market has expected versus what has actually been realized. That is, for the last 18 months, the option markets have continuously priced in excess macro risk. Macro fear has dominated.

After the Olympics and political conventions earlier this summer, implied correlations have started to decline. However, they still remain above current historically high realized correlations. This suggests that the market continues to emphasize macro risk.

The Ebb and Flow of Macro Risk

Ultimately, correlation, just like volatility, tends to be a mean reverting process. That is historically, periods of abnormally low or high correlation environments do not tend to last.

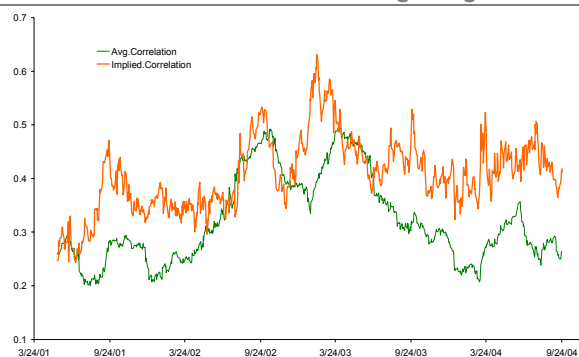
As we have shown, if correlations do start to decrease from their current relative high levels (i.e. macro issues begin to wane), it is likely going to be a positive for the market overall and especially for market strategies that focus on stock picking.²

For Derivatives Users

The high spread between implied versus realized correlation, although it has narrowed recently, still remains a potential source of trading opportunities. Short correlation trades have remained one of our favourite trades for the past two years, and we continue to recommend these trades especially if implied correlations spike due to market shocks.

The market is obsessed with macro fears and the option markets continue to price in a premium for macro risk. By selling correlation to the market, one is a supplier of “macro insurance” and the market seems to be willing to pay an excessive premiums for this type of insurance. Call us for details.

Exhibit 11: S&P 500: Current Trading Range



Source: CSFB Derivatives Strategy.

² Other potential structured developments in the market (besides macro risk) could be contributing to increased correlation levels, namely increased usage of ETFs and program trading. Although, in our view, the impact on overall stock return correlations from these products is minor.

CSFB Quantitative Equity Derivatives Strategy

Mika Toikka, Global Head, 212-325-5798, mika.toikka@csfb.com

North America

Mika Toikka

Global Head, Quantitative Equity Derivatives Strategy
212-325-5798
mika.toikka@csfb.com

Peter Tannenbaum

Head, Equity Trading Strategy
212-325-6255
peter.tannenbaum@csfb.com

Edward K. Tom

Derivatives Strategist
212-325-3594
ed.tom@csfb.com

Cem Hocaoglu, Ph.D

Portfolio Trading Strategist
212-325-0722
cem.hocaoglu@csfb.com

Phil Mackintosh

Portfolio Trading Strategist
212-325-5263
phil.mackintosh@csfb.com

Ryan Nolan Renicker, CFA

Relative Value
212-325-1621
ryan.renicker@csfb.com

Victor Lin

Portfolio Trading Strategist
212-325-5362
victor.lin@csfb.com

Europe

Sri Moorthy, Ph.D

Head, Portfolio Trading Strategy
44 207 888 8053
sri.moorthy@csfb.com

Martin Boldt-Christmas

Derivatives Strategist
44-20-7888-8696
martin.boldt-christmas@csfb.com

Stanislas Bourgois

Portfolio Trading Strategist
44 20 7888 0459
stanislas.bourgois@csfb.com

Colin Goldin

Portfolio Trading Strategist
+44 20 7888 9637
colin.goldin@csfb.com

Asia

Stephen Chadwick

Derivatives Strategist
81 3 4550 7183
stephen.chadwick@csfb.com

Edmund Ching

Portfolio Trading Strategist
852 2101 7296
edmund.ching@csfb.com

Ken Feng

Derivatives Strategist
81 3 4550 7189
ken.feng@csfb.com

Options involve risk and are not suitable for all investors. Prior to investing in options, you should have read and understand the "Characteristics and Risks of Standardized Options" publication, which can be viewed on the Web by going to the following link:

<http://www.optionsclearing.com/publications/risks/riskstoc.pdf>

Because of the importance of tax considerations to many option transactions, the investor considering options should consult with his/her tax advisor as to how taxes affect the outcome of contemplated options transactions.

Strategies involving the purchase of calls or puts have a risk of loss of the entire amount of the premium paid. Strategies that include selling uncovered calls or uncovered puts have unlimited risk and may result in losses significantly greater than the premium received."

This material has been prepared by individual traders or sales personnel of Credit Suisse First Boston LLC (CSFB) and not by the CSFB research department. It is provided for informational purposes, is intended for your use only and does not constitute an invitation or offer to subscribe for or purchase any of the products or services mentioned. The information provided is not intended to provide a sufficient basis on which to make an investment decision. It is intended only to provide observations and views of individual traders or sales personnel, which may be different from, or inconsistent with, the observations and views of CSFB research department analysts, other CSFB traders or sales personnel, or the proprietary positions of CSFB. Observations and views expressed herein may be changed by the trader or sales personnel at any time without notice. Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, expressed or implied is made regarding future performance. The information set forth above has been obtained from or based upon sources believed by the trader or sales personnel to be reliable, but each of the trader or sales personnel and CSFB does not represent or warrant its accuracy or completeness and is not responsible for losses or damages arising out of errors, omissions or changes in market factors. This material does not purport to contain all of the information that an interested party may desire and, in fact, provides only a limited view of a particular market. CSFB may, from time to time, participate or invest in transactions with issuers of securities that participate in the markets referred to herein, perform services for or solicit business from such issuers, and/or have a position or effect transactions in the securities or derivatives thereof. The most recent CSFB research on any company mentioned is at <https://s.research-and-analytics.csfb.com/login.asp>.