

Pinpointing a “Significant Event”; Volatility Events Far Exceed Natural Disasters and Government Actions

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The Securities and Exchange Commission (“SEC”) staff’s April 30, 2001 guidance letter regarding valuation issues clarifies certain aspects of a mutual fund’s obligation to use fair value prices. It states, “If the fund determines that a significant event has occurred since the closing of the foreign exchange or market, but before the fund’s NAV calculation, then the closing price for that security would not be considered a ‘readily available’ market quotation, and the fund *must* value the security pursuant to a fair value pricing methodology.” (Emphasis added.)

Based on this statement, the critical inquiry is: what constitutes a “significant event?” The SEC letter notes that occurrences not directly tied to securities markets, such as natural disasters and significant governmental actions, can cause a significant event.

Moreover, significant fluctuations in domestic or foreign markets may constitute a significant event.

Indeed, as we argue here, market fluctuations (or, volatility) constitute the overwhelming majority, roughly 97%, of significant events.

Market volatility may be the most important source of significant events for two reasons:

1. Significant market movements occur much more frequently than other events.
2. Market movements typically affect the value of most of a fund’s assets, whereas other events usually affect only a portion of a fund’s assets.

Before calculating the share of events caused by market volatility, we must first address the misperception that only large market fluctuations constitute “significant events.” Our data show that even U.S. market fluctuations of 0.75% may be significant. Based on the frequency of fluctuations of this magnitude and the capitalization of foreign equities affected, it is clear that volatility overwhelms natural disasters and significant governmental actions as a source of significant events, triggering the obligation to use fair value pricing.

Even Small Market Fluctuations Can Lead to Large Profits

As discussed in White Paper #3¹, easy arbitrage opportunities do not exist with liquid market prices. To show that stale prices allow easy profits (and so are prices that could not prevail in liquid markets), we analyzed the simple strategy of holding money in cash and switching all of it into a fund when the S&P 500 Index² rises. We averaged the performance of 10 funds, randomly selected from the 30 largest U.S. funds holding international equities.

¹ *Arbitrage Opportunities Do Not Exist in Liquid Markets* (November 2001)

² Although we use the S&P 500 Index in this discussion, each fund engaging in this analysis should find the index it is most correlated with and the correct trigger level for that index. This should be revisited regularly, especially when the portfolio composition is changing.

WHITE PAPER #4 (CONTINUED)

Using a threshold of 0.75% movement in the S&P 500 Index, the annual excess return to the market timer over the buy-and-hold shareholder during 2000 and 2001 was 61.2%. The following table decomposes this return for specific ranges and shows that smaller fluctuations contribute measurable profits. For instance, 11.4% of the excess return came from changes between 1.01% and 1.25%.

Table 1: Excess Return of Daily Switching over Buy-and-Hold During Years 2000 and 2001 Based on Various Ranges of S&P 500 Index Changes

S&P 500 Index Change	Yearly Average Number of Days	Annual Excess Return over Buy-and-Hold
0.75 to 1.00%	14	4.4%
1.01 to 1.25%	15	11.4%
1.26 to 1.50%	8	5.8%
1.51 to 1.75%	5	1.7%
1.75 to 2.00%	6	9.0%
More than 2%	15	29.0%
Total	63	61.3%

32.3%

For clarity, this table shows the excess profits accruing on S&P 500 Index increases. In actuality, much of the profit comes from not being in the fund on S&P 500 Index decreases. In fact, U.S. to foreign market correlations are even higher with decreases, so these are also significant events. On average, significant events based on volatility occurred about 50% of the time (63 days on increases plus 63 days on decreases out of 250 trading days per year.)

The above analysis covers only years 2000 and 2001, but research by Professor Eric Zitzewitz of Stanford University, a consultant to Interactive Data Pricing and Reference Data on this project, shows similar patterns occurring since 1985.

These results are dramatic – an excess profit of 61.3% from being invested in cash on half of the trading days - but is each event “significant?” Is its effect large enough to require fair value pricing? On this issue, the SEC letter states that:

“Whether a particular event is a significant event depends on whether the event will affect the value of a fund's portfolio securities.”

Mutual funds are valued down to the penny. A plausible argument can be made that fair value prices should come into play if the local close computed NAV differs from a NAV computed with fair values by more than a penny. Our historical analysis shows that on average a 0.75% move in the US markets is followed by a 0.25% move in foreign markets. For a fund with a NAV of \$20 having this type of correlation, this translates to a 5-penny move. That might turn out to be a significant event.

Calculating the Percentage of Significant Events from Volatility

An informal survey conducted by Interactive Data Pricing and Reference Data found that natural disasters and significant governmental actions that might be considered significant events happen about 10 times per year. To be conservative, let's assume they happen 20 times per year. On the other hand, as shown above, market volatility-related significant events happen about 125 times per year. Using these assumptions, volatility events represent 86% of the significant events.

This calculation assumes that each event has the same effect on foreign funds. In actuality, of course, they don't because of capitalization.

WHITE PAPER #4 (CONTINUED)

In the sample mutual fund portfolios we've tested, volatility events typically affect about 85% of the portfolio's capitalization. The 15% of foreign capitalization for which the local closing price represents "readily available" market quotations are mostly country-oriented businesses without global exposure; these typically aren't affected by volatility in the U.S. markets.

To compare volatility with country-specific events, consider that of the 50 countries with stock markets, about 35 have less than 1% of the world's non-U.S. capitalization. That means that 70% of country events affect less than 1% of foreign held assets.³ Significant events such as natural disasters and significant governmental actions-related events also tend to be concentrated in these smaller capitalization countries.

So, most country events affect less than 1% of non-U.S. capitalization, and very few country events, namely, those occurring in the UK or Japan, would affect a quarter of capitalization. Dramatically contrasting with this, market volatility events generally affect about 85% of non-U.S. capitalization. Based on this we could weight the above 125 volatility events by .85 and weight the 20 country events by .15, a generous assumption given that so many countries represent less than 1% of capitalization, making the capitalization-weighted calculation for the percent of significant events due to volatility:

$$(125 \text{ times } .85) \text{ divided by } ((125 \text{ times } .85) \text{ plus } (20 \text{ times } .15)) = 97\%$$

One might argue with these assumptions. Perhaps there are as many as 40 country events per year. But, this only reduces the results to 94%. And what about individual company events? These usually affect a small amount of capitalization, and when they don't, for example in the case of an earnings surprise from a foreign corporation, they become volatility events. So the calculation is reasonably robust.

Summary

In summary, our analysis of historical correlations and fund performance under market timing strategies shows that volatility moves as small as 0.75% in U.S. markets may represent significant events, since they can affect the value of a fund's portfolio securities. Our research also shows that in terms of capitalization affected, these volatility moves represent about 97% of the significant events.

³ A country event certainly affects a fund focused on that country but the discussion here relates to the total effect of all international assets held by U.S. funds.

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