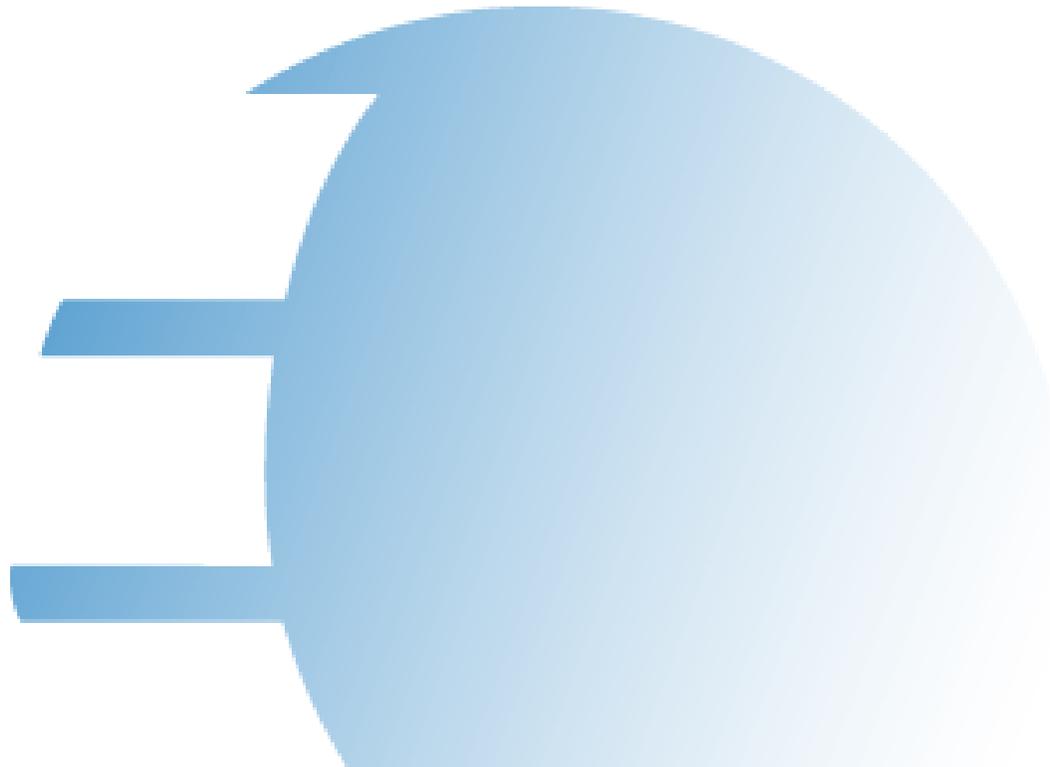


# Q3 2013 HEDGE FUND EXPOSURE & TAIL RISK

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Deconstructing Risk and Return Expectations and Stress Testing the 30 Largest Funds

November 2013



The 30 largest hedge funds in the eVestment research database represent 14% of our estimated total industry asset base as of Q3 2013. Understanding the current market exposures, risks factors, and performance expectations of these funds, especially if a crisis were to occur during the following month, offers a way to gauge the positioning of the broader hedge fund industry.

To do this we use our RiskPlus product, developed in partnership with FinAnalytica, which incorporates returns-based analysis and a fat-tailed methodology, to create a forward-looking, asset-weighted, pro forma portfolio of these 30 hedge funds. If an institutional investor were to purchase a basket of the largest hedge funds, the output of this analysis quantifies their market exposures and risks.

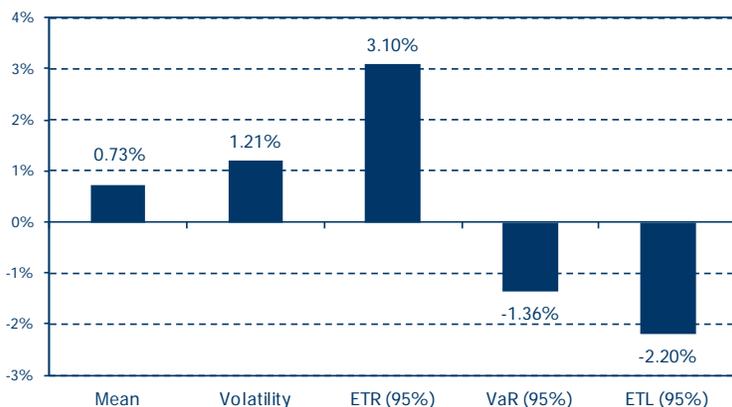
The 30 hedge funds in our analysis reported USD 370.91 billion in assets under management (AUM) at the end of Q3 2013. Individual fund AUMs ranged from USD 3.64 billion to USD 70.61 billion. Average fund AUM was USD 12.36 billion and the median USD 7.23 billion.

The remainder of this report shows the risk/return characteristics, market exposures, expected volatility from those exposures and performance of the basket in the events of market panic, market euphoria, and recreation of actual historical high-stress market environments.

## Top-Level Portfolio Risk and Return Characteristics

An asset-weighted portfolio comprised of the 30 largest hedge funds is expected to return on average 0.73% over the next month, and in the best case scenario 3.10% according to its Expected Tail Return (ETR) at a 95% confidence level, *see below for more information on these statistics*. If the portfolio experiences a loss, however, there is a 95% chance that it will not return less than -1.36% based on its Value at Risk (VaR). In the event that it does, the return should be limited to -2.20% according to its Expected Tail Loss (ETL) at a 95% confidence level. The volatility expectation for the portfolio over the next month is 1.21%.

Figure 1: Expected Portfolio Risk and Return Statistics for Next Month



## RiskPlus Statistics

Mean – the expected portfolio return, on average, over the next month.

Volatility – the monthly portfolio volatility expectation over the next month. Volatility is not necessarily a negative trait.

VaR (95%) – stands for Value at Risk, it is the threshold of loss over a given horizon. If the portfolio experiences a loss, there is a 95% chance that it will not lose more than this figure during the next month.

ETL (95%) – Expected Tail Loss, the average of returns that exceed VaR.

ETR (95%) – Expected Tail Return, it uses the same calculation as ETL, but refers to the positive side of the return distribution.

## Summary of Main Findings

- The 30 hedge funds controlling over a third of a trillion US dollars are, in aggregate, bullish on medium grade (BBB/BB) US corporate debt, US fixed rate asset backed securities, global high grade (AAA) corporate debt and US equities with a bias towards large cap and growth characteristics.
- An asset-weighted portfolio comprised of the 30 largest hedge funds is expected to return on average 0.73% over the next month, and in the best case scenario 3.10%, according to its Expected Tail Return (ETR) at a 95% confidence level.
- Of 11 historical stress test scenarios, a repeat of the 2000 burst of the dot-com tech bubble and the ensuing NASDAQ market crash presents the largest risk of loss for the asset-weighted portfolio of the 30 largest hedge funds. Despite the downward pressure if a similar event were to occur, the portfolio's negative return expectation is limited to -2.29%.
- A recurrence of the global market volatility seen in September - October 2008, the height of the financial crisis, ranks fourth in terms of expected stress test losses, an indication the group, in aggregate, is positioned relatively conservatively for such an event.
- When individual factors are stressed, the largest portfolio losses are expected to result from exposure to US investment grade fixed rate asset backed securities. While this factor is specific to the US domestic market, it is indicative of this group's exposure to global securitized credit markets.
- All other factors held constant, the group shows positive exposure to the US Dollar relative to a basket of major currencies. However, when the USD factor is stressed, and the remaining factors are conditionally impacted, a decline in the USD is expected to benefit the group.
- A rise in equity market volatility, to a degree, would benefit the group, however, should equity market volatility spike significantly, the portfolio is expected to begin to show losses.
- Within the US it appears that the largest funds see the best opportunity in the middle ground of credit markets. A portfolio breakdown shows a large positive exposure to BBB/BB-rated US corporate debt, but a large negative exposure to AAA-rated US commercial mortgage backed securities and a negative exposure to broad North American below investment grade corporate debt. This suggests that within this group there is sentiment distressed and commercial MBS markets may have, at least in the US, reached the boundaries of acceptable risk/return.
- The largest hedge funds are exhibiting a general long-bias to the broad basket of 24 commodities futures comprising the *S&P GSCI Index*, but at the same time appear short-biased towards the index's largest constituent, crude oil (representing 24.17% of the 2013 indicated index weight).
- 74.78% of the overall portfolio volatility, within the parameters of our factor model, can be explained by systematic (market) risk and 25.22% by idiosyncratic (manager) risk. Within the systematic component, the fixed income and equity factors are the largest contributors to risk, while exposures to FX and volatility factors are acting as significant risk diversifiers.

## Factor Exposures and Risks

Portfolio exposures to the factors indicate what should generally happen to the underlying performance of the portfolio based on the movement in each factor. In *figure 2* for example—all else held constant—a 1% return in the *US Crossover Corp USD* factor should lead to a 0.3188% return in the portfolio. The portfolio exposure is the weighted betas determined by a stepwise regression of the 30 largest hedge funds; therefore, a large exposure to one factor may only be the result of a few funds.

For the majority of factors, a positive exposure value implies a long position from the combined funds and a negative value a short. Exceptions include FX and Fama-French factors (Size & Style). A positive exposure value in FX indicates that the portfolio will reap the benefits when a currency depreciates relative to the USD, while a positive exposure value implies the portfolio will benefit when a currency appreciates relative to the USD. A positive exposure value in Size and/or Style indicates a heavier weighted exposure to the first variable (small caps and/or value stocks) and a negative value a heavier weighted exposure to the second variable (large caps and/or growth stocks).

- The 30 hedge funds controlling over a third of a trillion US dollars are, in aggregate, bullish on medium grade (BBB/BB) US corporate debt, US fixed rate asset backed securities, global high grade (AAA) corporate debt and US equities, based on their large positive exposures to the *US Crossover Corp USD* (+31.88%), *ABS Master Fixed Rate USD* (+16.44%), *Global Broad Mrkt Corp AAA Rated USD* (+15.80%) and *Russell 3000* (+12.47%) factors.
- The same 30 large funds are bearish on AAA-rated US commercial mortgage backed securities, speculative US and Canadian corporate debt, based on their large negative exposures to *CMBS Fixed Rate AAA Rated USD* (-21.95%) and *Citigroup High-Yield Market Index* (-10.94%) factors.
- The largest hedge funds are exhibiting a general positive exposure to the broad basket of 24 commodities futures comprising the *S&P GSCI Index* (+3.52%), but at the same time appear short-biased the index's largest constituent, crude oil (representing 24.17% of the 2013 indicated index weight); this is shown in *figure 2* by the negative exposure to the *S&P GSCI Crude Oil USD* factor (-3.02%).

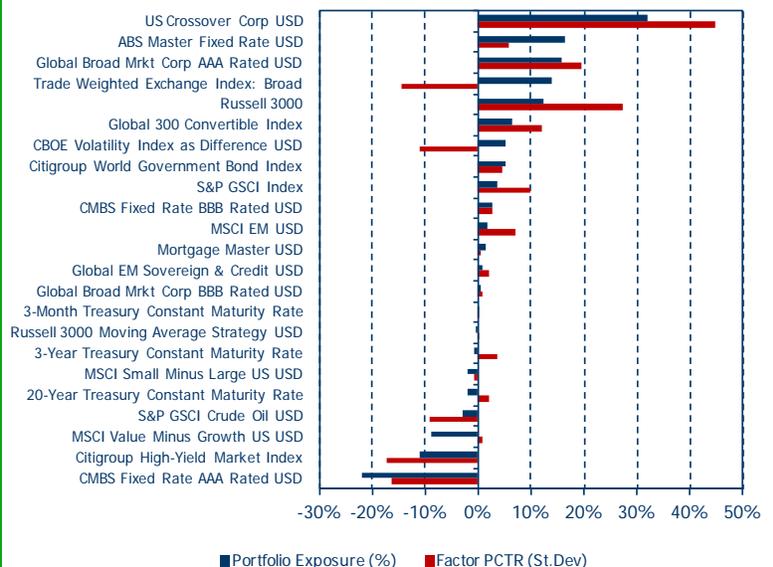
Portfolio exposure, however, explains sensitivity and not risk. The portfolio's risk, as defined by volatility, can be decomposed by taking each of the individual regressed factors' marginal contributions to risk (Factor MCTR)—which denote by how much volatility is expected to increase or decrease if exposure to a given factor were to rise by 1%—and multiplying these by their respective weights and then dividing by the portfolio's standard deviation (this only applies to the systematic risk components). This outputs each factors' percentage contribution to risk (Factor PCTR) within the context of the overall portfolio.

- Aggregating the PCTR's shows that 74.78% of the overall portfolio risk, within the parameters of our factor model, can be explained by systematic (market) risk and 25.22% by idiosyncratic (manager) risk. Within the systematic component, the fixed income and equity factors are the largest contributors to risk, at +59.30% and +34.43% respectively, while exposures to FX and volatility factors are acting as significant risk diversifiers.
- In absolute terms, the factor contributing the most to the portfolio's risk compared to the portfolio's exposure to that factor is the *Russell 3000* (+27.30% in risk but +12.47% in exposure). In relative terms, the factor contributing the most to the portfolio's risk compared to the exposure to that factor is the *3-Year Treasury Constant Maturity Rate* (ratio of risk contribution to exposure is 4.47).
- Negative exposure to speculative US and Canadian corporate debt provided the portfolio with the most diversification, as the *Citigroup High-Yield Market Index* factor reduced volatility by -17.36%.
- Portfolio exposure and factor PCTR to the *US Crossover Corp USD* factor is highest among all factors, at +31.88% and +44.91%, respectively. However, a high portfolio exposure to a particular factor does not necessarily mean that this factor will act as a high risk contributor. For example, the portfolio exposure to the *Trade Weighted Index Exchange: Broad* is +14.00% but this factor reduced portfolio volatility by -14.58%.

Figure 2: Portfolio Exposures, Factor Marginal Contribution to Risk (MCTR), and Factor Percentage Contribution to Risk (PCTR)

Factor	Portfolio Exposure (%)	Factor MCTR (St.Dev) (bps)	Factor PCTR (St.Dev)
<b>Specific Risk</b>			<b>25.22</b>
<b>Total Systematic Risk</b>			<b>74.78</b>
<b>Commodity Risk</b>			<b>0.79</b>
S&P GSCI Crude Oil USD	-3.02	4.03	-9.19
S&P GSCI Index	3.52	3.76	9.97
<b>Equity Risk</b>			<b>34.43</b>
MSCI EM USD	1.88	4.94	7.00
Russell 3000	12.47	2.90	27.30
Russell 3000 Moving Average Strategy USD	-0.41	-0.44	0.14
<b>FX Risk</b>			<b>-14.58</b>
Trade Weighted Exchange Index: Broad	14.00	-1.38	-14.58
<b>Fixed Income</b>			<b>59.30</b>
ABS Master Fixed Rate USD	16.44	0.47	5.79
CMBS Fixed Rate AAA Rated USD	-21.95	0.98	-16.23
CMBS Fixed Rate BBB Rated USD	2.79	1.30	2.75
Citigroup High-Yield Market Index	-10.94	2.10	-17.36
Citigroup World Government Bond Index	5.19	1.16	4.55
Global 300 Convertible Index	6.37	2.50	12.01
Global Broad Mrkt Corp AAA Rated USD	15.80	1.65	19.66
Global Broad Mrkt Corp BBB Rated USD	0.47	2.15	0.76
Global EM Sovereign & Credit USD	0.87	3.15	2.08
Mortgage Master USD	1.44	0.35	0.38
US Crossover Corp USD	31.88	1.87	44.91
<b>Interest Rate Risk</b>			<b>5.72</b>
3-Month Treasury Constant Maturity Rate	0.02	4.40	0.07
2-Year Treasury Constant Maturity Rate	-0.80	-5.93	3.57
30-Year Treasury Constant Maturity Rate	-1.91	-1.44	2.08
<b>Size</b>			<b>-0.68</b>
MSCI Small Minus Large US USD	-1.84	0.49	-0.68
<b>Style</b>			<b>0.85</b>
MSCI Value Minus Growth US USD	-8.75	-0.13	0.85
<b>Volatility</b>			<b>-11.05</b>
CBOE Volatility Index as Difference USD	5.19	-2.82	-11.05

Figure 3: Portfolio Exposure and Factor PCTR



## Stress Test Parameters

We take the ten largest risk contributing and risk diversifying factors and shock each of these in an effort to assess how the portfolio is expected to perform during crises which would result in -3%, -5%, and -7% returns in these factors over the course of the following month. Then we take the ten largest risk contributing and risk diversifying factors and shock each of these in an effort to glean how the portfolio is expected to perform during market exuberance which would result in +3%, +5%, and +7% returns. We stress one factor at a time, with the returns of the remaining factors calculated conditionally on this value. We use an exponentially weighted moving average (EWMA) to smooth the mean and correlation estimates. This process assumes that earlier observations should have less impact on the covariance matrix and expected returns than the more recent observations; the EWMA decay factor for the estimations is set to 0.94.

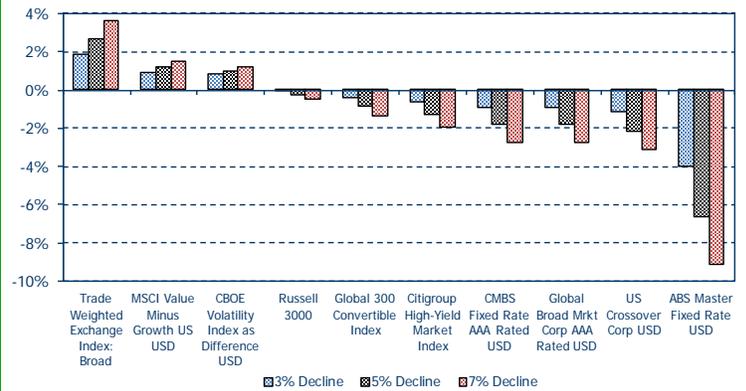
### (-) Top 10 Factor Stress Tests: -3%, -5%, -7%

- A portfolio comprising the 30 largest hedge funds is expected to lose money if any one of 7 of 10 factors were to return -3%, -5%, or -7% during the following month, *see figures 4 and 5*.
- The largest portfolio losses are expected to result from movements in fixed income factors, specifically shocks in the *ABS Master Fixed Rate USD* and *US Crossover Corp USD*. Both factors are specific to the US domestic market and indicate portfolio exposure to securitized markets and corporate debt.
- The portfolio stands to benefit from negative shocks in the value of the US Dollar, US growth stocks, and declining US equity market volatility. *Figures 4 and 5* display an inverse relationship between the returns of the portfolio and the *Trade Weighted Exchange Index Broad*, *MSCI Value Minus Growth US USD*, and *CBOE Volatility Index as Difference USD* factors.
- While negative portfolio returns are anticipated in the event 7 factors were to return -3%, -5%, or -7% during the following month, for 6 of these factors the expected negative returns are less than half the value of the modeled factor shocks.

### (+) Top 10 Factor Stress Tests: +3%, +5%, +7%

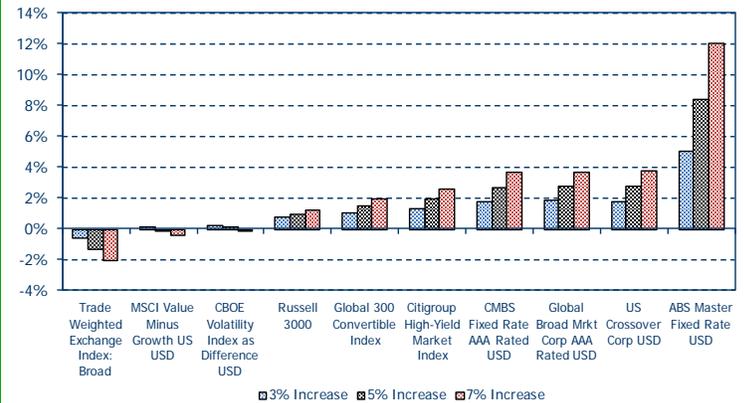
- A portfolio comprising the 30 largest hedge funds is expected to gain if any one of 7 of 10 factors were to return +3%, +5%, or +7% during the following month, *see figures 6 and 7*.
- A rise in the value of *ABS Master Fixed Rate USD* is expected to result in the highest portfolio returns; a 3% return in the factor is expected to result in a 5.00% portfolio return, a 5% return in a 8.41% return, and a 7% return in a 12.05% return.
- A rise in the value of trade-weighted US dollars will have an adverse effect on this portfolio. An owner of this portfolio would be at risk of losing money if the US dollar were to appreciate relative to a broad basket of currencies, making imports to the U.S. cheaper and exports from the U.S. more expensive during the following month.
- Increases in fixed income factor returns are expected to produce the highest portfolio returns. Amongst our top 10 factors, which were chosen according to their risk contributing or diversifying element, all positive returns amongst the fixed income factors are expected to generate higher portfolio returns than their equity, volatility, style, and foreign exchange factor counterparts.

Figures 4 and 5: (-) Stress Test Results for Top 10 Factors and Corresponding Values



Top 10 Factors	3% Decline	5% Decline	7% Decline
Trade Weighted Exchange Index: Broad	1.80%	2.67%	3.58%
MSCI Value Minus Growth US USD	0.92%	1.21%	1.50%
CBOE Volatility Index as Difference USD	0.80%	0.99%	1.18%
Russell 3000	-0.01%	-0.26%	-0.52%
Global 300 Convertible Index	-0.41%	-0.90%	-1.40%
Citigroup High-Yield Market Index	-0.68%	-1.33%	-1.99%
CMBS Fixed Rate AAA Rated USD	-0.95%	-1.85%	-2.74%
Global Broad Mrkt Corp AAA Rated USD	-0.91%	-1.84%	-2.77%
US Crossover Corp USD	-1.18%	-2.16%	-3.14%
ABS Master Fixed Rate USD	-4.02%	-6.66%	-9.14%

Figures 6 and 7: (+) Stress Test Results for Top 10 Factors and Corresponding Values



Top 10 Factors	3% Increase	5% Increase	7% Increase
Trade Weighted Exchange Index: Broad	-0.60%	-1.34%	-2.06%
MSCI Value Minus Growth US USD	0.10%	-0.16%	-0.42%
CBOE Volatility Index as Difference USD	0.27%	0.10%	-0.06%
Russell 3000	0.74%	0.99%	1.23%
Global 300 Convertible Index	1.04%	1.52%	2.00%
Citigroup High-Yield Market Index	1.28%	1.93%	2.58%
CMBS Fixed Rate AAA Rated USD	1.79%	2.72%	3.66%
Global Broad Mrkt Corp AAA Rated USD	1.87%	2.80%	3.73%
US Crossover Corp USD	1.79%	2.79%	3.80%
ABS Master Fixed Rate USD	5.00%	8.41%	12.05%

## Conditional Stress Test

We provide some results from our conditional calculations for the top 10 factors, having stressed one factor at a time by -7% with the returns of the remaining factors calculated conditionally on this stressed value. Excluding the stressed factor values (shown in red), the conditionally calculated values for the remaining US factor model can be mildly dispersed (from -7.00% to 7.01% in the case of the *CBOE Volatility Index as Difference USD* factor returning -7%) to diametrically opposed (from -44.89% to 60.73% in the case of the *US Crossover Corp USD* factor returning -7%). It is important to note that the impact of these factor results on the overall portfolio is dependent on the betas between factors and funds derived from multi-regressions. Furthermore, the U.S. Treasury Rate factors' values are dependent on movements in the rates, not price.

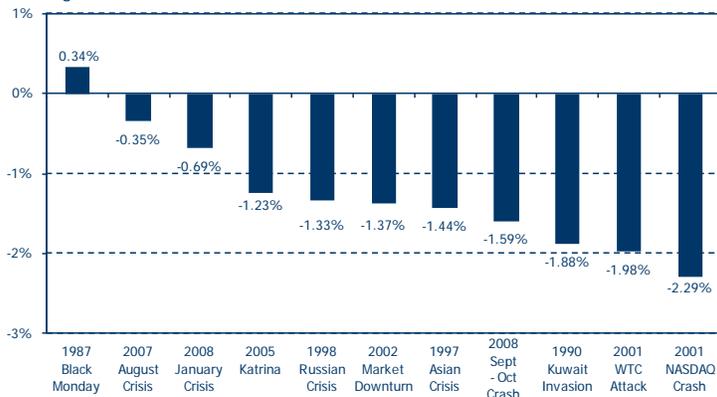
Figure 8: Conditionally calculated factor return values (in %) based on stress testing one factor at a time; column headers #1 - #5 correspond to the factors in the respective row with a -7.00 value (ex: #1 stands for *CBOE Volatility Index as Difference USD*)

Factor Name	#1	#2	#3	#4	#5
3-Month Treasury Constant Maturity Rate	-0.12	-44.89	-45.57	10.75	-27.98
3-Year Treasury Constant Maturity Rate	-0.02	60.73	16.71	66.09	1.78
20-Year Treasury Constant Maturity Rate	5.18	11.16	-2.09	8.30	8.28
ABS Master Fixed Rate USD	0.28	-1.37	-0.75	-0.82	0.28
CBOE Volatility Index as Difference USD	<b>-7.00</b>	8.68	10.21	8.78	-1.59
CMBS Fixed Rate AAA Rated USD	0.89	-3.61	-3.05	-2.31	0.15
CMBS Fixed Rate BBB Rated USD	2.32	-6.62	-7.99	-2.54	0.68
Citigroup High-Yield Market Index	2.93	-7.49	<b>-7.00</b>	-4.69	1.31
Citigroup World Government Bond Index	0.87	-3.84	-2.09	-5.32	0.56
Global 300 Convertible Index	4.36	-6.56	-6.90	-6.47	4.06
Global Broad Mrkt Corp AAA Rated USD	1.61	-5.64	-4.06	<b>-7.00</b>	0.88
Global Broad Mrkt Corp BBB Rated USD	2.07	-7.51	-5.44	-6.66	1.07
Global EM Sovereign & Credit USD	3.73	-9.68	-7.87	-8.57	2.26
MSCI EM USD	6.46	-16.00	-15.33	-15.19	6.07
MSCI Small Minus Large US USD	1.88	-0.53	-2.15	-0.13	2.74
MSCI Value Minus Growth US USD	-0.47	-0.23	-0.01	0.18	<b>-7.00</b>
Mortgage Master USD	0.17	-1.70	-0.47	-1.58	0.07
Russell 3000	6.82	-6.49	-8.54	-6.05	4.05
Russell 3000 Moving Average Strategy USD	-0.32	0.49	1.20	-0.85	1.68
S&P GSCI Crude Oil USD	7.01	-3.34	-9.03	-6.57	10.37
S&P GSCI Index	4.91	-5.87	-8.50	-7.43	8.10
Trade Weighted Exchange Index: Broad	-1.81	4.81	4.44	6.20	-1.10
US Crossover Corp USD	1.76	<b>-7.00</b>	-5.13	-4.59	0.59

## Historical Stress Tests

We also perform stress test with some historical scenarios and find that the portfolio is hedged if an event such as *1987 Black Monday* was to reoccur during the following month. For the 10 remaining historical stress test scenarios examined, the portfolio is at risk of losing money. However, the worst expected portfolio return (if the *2001 NASDAQ Crash* was to reoccur) is only -2.29%, which is significantly better than the -25.66% loss experienced by the NASDAQ from March 7 to April 4, 2001.

Figure 9: Historical Stress Test Results



## Factor Model Used In This Report

Factor Name	Node	Daily Start Date	Monthly Start Date	Description
S&P GSCI Crude Oil USD	Commodity Risk	1/8/1987	1/6/1987	A sub-index of the S&P GSCI, this factor provides investors with a reliable and publicly available benchmark for investment performance in the crude oil commodity markets. This index measures the general price movements and inflation in the world economy. It is calculated primarily on a world production-weighted basis and is comprised of the principal physical commodities that are the subject of active, liquid futures markets.
S&P GSCI Index	Commodity Risk	1/6/1970	12/30/1969	
MSCI EM USD	Equity Risk	1/2/2001	12/30/1987	The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. The Russell 3000 Index measures the performance of the largest 3000 U.S. companies representing approximately 98% of the investable U.S. equity market.
Russell 3000	Equity Risk	1/3/1979	12/28/1978	
Russell 3000 Moving Average Strategy USD	Equity Risk	1/3/1980	1/1/1980	This factor is based on a strategy that buys the Russell 3000 if it is above its 12-month moving average level of sells if it is below. This is a momentum-based factor for the broad US equities market.
ABS Master Fixed Rate USD	Fixed Income	1/3/1991	12/30/1990	The BofA Merrill Lynch US Fixed Rate Asset Backed Securities Index tracks the performance of US dollar denominated investment grade fixed rate asset backed securities publicly issued in the US domestic market. This index measures the performance of below investment grade debt issued by corporations domiciled in the United States or Canada. It includes cash-pay and deferred-interest securities. All bonds are publicly placed, have a fixed coupon, and are non-convertible.
Citigroup High-Yield Market Index	Fixed Income	11/2/2000	10/31/2000	
Citigroup World Government Bond Index	Fixed Income	1/5/1993	1/3/1993	The World Government Bond Index includes the 23 government bond markets of Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Malaysia, Mexico, the Netherlands, Norway, Poland, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States.
CMBS Fixed Rate AAA Rated USD	Fixed Income	1/6/1998	12/30/1997	The BofA Merrill Lynch US Fixed Rate CMBS Index tracks the performance of US dollar denominated investment grade fixed rate commercial mortgage backed securities publicly issued in the US domestic market.
CMBS Fixed Rate BBB Rated USD	Fixed Income	1/6/1998	12/30/1997	The BofA Merrill Lynch BBB US Fixed Rate CMBS Index is a subset of The BofA Merrill Lynch US Fixed Rate CMBS Index including all securities rated BBB1 through BBB3, inclusive.
Global 300 Convertible Index	Fixed Income	1/1/1999	12/30/1998	The BofA Merrill Lynch Global 300 Convertible Index is a global convertible index composed of companies representative of the market structure of countries in North America, Europe and the Asia/Pacific region.
Global Broad Mrkt Corp AAA Rated USD	Fixed Income	1/3/1997	12/30/1996	The BofA Merrill Lynch AAA Global Corporate Index is a subset of The BofA Merrill Lynch Global Corporate Index including all securities rated AAA.
Global Broad Mrkt Corp BBB Rated USD	Fixed Income	1/3/1997	12/30/1996	The BofA Merrill Lynch BBB Global Corporate Index is a subset of The BofA Merrill Lynch Global Corporate Index including all securities rated BBB1 through BBB3, inclusive.
Global EM Sovereign & Credit USD	Fixed Income	1/5/1999	12/30/1998	The BofA Merrill Lynch Global Emerging Markets Sovereign & Credit Index tracks the performance of USD and EUR denominated emerging market debt, including sovereign, quasi-government and corporate securities.
Mortgage Master USD	Fixed Income	4/4/1989	12/30/1975	The BofA Merrill Lynch US Mortgage Backed Securities Index tracks the performance of US dollar denominated fixed rate and hybrid residential mortgage pass-through securities publicly issued by US agencies in the US domestic market.
US Crossover Corp USD	Fixed Income	1/4/1989	12/30/1988	The BofA Merrill Lynch US Crossover Corporate Index tracks the performance of US dollar denominated BBB and BB corporate debt publicly issued in the US domestic market.
Trade Weighted Exchange Index: Broad	FX Risk	1/5/1995	1/3/1995	A weighted average of the foreign exchange value of the U.S. dollar against the currencies of a broad group of major U.S. trading partners. Broad currency index includes the Euro Area, Canada, Japan, Mexico, China, United Kingdom, Taiwan, Korea, Singapore, Hong Kong, Malaysia, Brazil, Switzerland, Thailand, Philippines, Australia, Indonesia, India, Israel, Saudi Arabia, Russia, Sweden, Argentina, Venezuela, Chile and Colombia.
3-Month Treasury Constant Maturity Rate	Interest Rate risk	1/5/1982	1/3/1982	This index published by the Federal Reserve Board based on the average yield of a range of Treasury securities, all adjusted to the equivalent of a 3-month maturity.
3-Year Treasury Constant Maturity Rate	Interest Rate risk	1/3/1969	1/1/1969	This index published by the Federal Reserve Board based on the average yield of a range of Treasury securities, all adjusted to the equivalent of a 3-year maturity.
20-Year Treasury Constant Maturity Rate	Interest Rate risk	10/5/1993	9/30/1993	This index published by the Federal Reserve Board based on the average yield of a range of Treasury securities, all adjusted to the equivalent of a 20-year maturity.
MSCI Small Minus Large US USD	Size	6/2/1992	5/28/1992	This factor accounts for the spread in returns between small and large sized firms, based on the company's market capitalization in the specified region.
MSCI Value Minus Growth US USD	Style	6/2/1992	5/28/1992	This factor accounts for the spread in returns between value and growth stocks in the specified region.
CBOE Volatility Index as Difference USD	Volatility	1/3/1990	1/1/1990	This factor is designed for use when volatility modeling assumptions require changes in the VIX index levels to be computed as simple difference rather than as percentage or logarithmic value. A positive relationship indicates the manager is long volatility.

## COMPANY DESCRIPTION

eVestment provides a flexible suite of easy-to-use, cloud-based solutions to help global investors and their consultants select investment managers, enable asset managers to successfully market their funds worldwide and assist clients to identify and capitalize on global investment trends.

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