AUCTOS
CAPITAL MANAGEMENT

Draw-down Analysis

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Draw-downs

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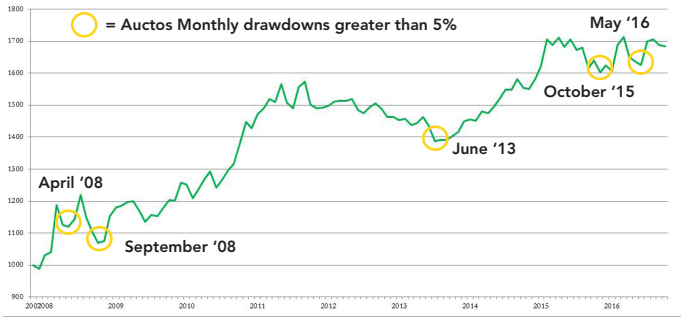
Draw-downs. Losing periods. Flat performance. Whatever you want to call these times when an investment isn't making new highs, we experience them in every asset class. They can be quite scary at times as evidenced by several massive draw-downs in the equity markets since 1999; as much as -50%. Of course, hindsight allows us to see that those were great buying opportunities in the stock market. But it wasn't that easy in real time - when investors didn't know whether to buy, hold, or fold when hitting various drawdown levels at -10%, -20%, and more. The circle in the chart below represents the point at which our program rebounded from its draw-down. ***All figures in this document are based on the composite track record for Auctos' managed accounts unless otherwise noted.***

Figure 1: Auctos Capital Management
Monthly Composite Track Record Net of Fees



It has been our observation that more often than not, investors are pulling out during these draw-downs when they should be getting in. Nobody knows exactly when a draw-down will end.

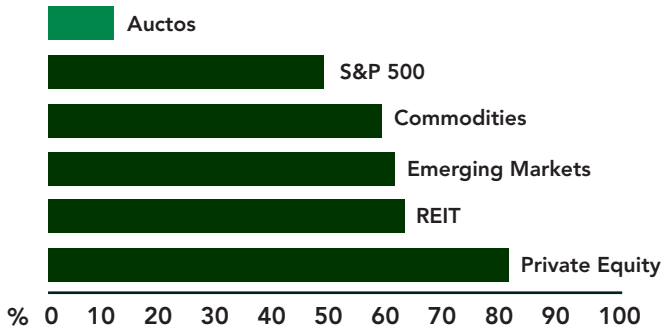
Figure 2: Hypothetical Example of Risk-Reward Analysis

	AT HIGHS	AT -5% DOWN	AT -10% DOWN
RETURN POTENTIAL	+7.5%	+12.5%	+17.5%
RISK POTENTIAL	-20%	-15%	-10%

The above table is for illustrative purposes only.

But in figure 2, the table provides an hypothetical example for risk-reward analysis that an investor can conduct. The investor is targeting a 7.5% return from the time of analysis. The table illustrates that an investors initial risk threshold is 20%. As you can see while in a 10% draw-down, the theoretical risk is reduced to 10% (20% initial risk – 10% draw down=10% risk). In this example in figure 3, the investor has the potential yield of 17.5%. (10% draw down + %7.5% return)

Figure 3: Monthly Maximum Draw-down Comparison



S&P 500 TR (TOTAL RETURN) IS AN EQUITY INDEX THAT TRACKS THE CAPITAL GAINS OF STOCKS AND ASSUMES THAT ANY CASH DISTRIBUTIONS, SUCH AS DIVIDENDS, ARE REINVESTED BACK INTO THE INDEX. COMMODITIES (BLOOMBERG COMMODITIES INDEX) IS USED TO REPRESENT COMMODITIES FUTURES PRICE MOVEMENTS. EMERGING MARKETS (MSCI EMERGING MARKETS INDEX) CAPTURES LARGE AND MID CAP REPRESENTATION ACROSS 23 EMERGING MARKETS COUNTIES. REIT (FTSE NAREIT ALL EQUITY REITS TOTAL RETURN INDEX) IS A FREE FLOAT ADJUSTED MARKET CAPITALIZATION WEIGHTED INDEX THAT INCLUDES ALL TAX QUALIFIED REITS LISTED IN THE NYSE, AMEX, AND NASDAQ NATIONAL MARKET. PRIVATE EQUITY (S & P LISTED PRIVATE EQUITY INDEX) COMPRISES THE LEADING LISTED PRIVATE EQUITY COMPANIES.

So how do we become more educated as to when good buying opportunities might present themselves during draw-downs? This always involves digging into statistics at our quant. heavy shop. Our worst yardsticks have performed nowhere nearly as poorly as what has occurred in the stock market. We believe that this is due to our focus on diversification across markets, models, and time frames paired with strict risk management rules to protect assets. Our -12.2% maximum drawdown pales in comparison to the -50.95% seen in the S&P in 2008/2009. Figure 3 above compares draw-downs from our program with other indices using monthly data.

Let's also review how this program has behaved since its inception in other areas. It is important to note that past performance is not indicative of future results. Again, we will use our monthly composite track record since inception for this analysis.

Here's the quick summary of what the "downside" looks like for the Auctos investment program:

Figure 4: Summary Downside

Average Losing Month: -1.85%
Max DD: -12.2%
Max DD duration: 17 months
Average DD: -4.58%
Number of DDs worse than -5%: 5
Average DD Duration: 6.5 months
Average Recovery Length: 3.8 months
Average Time between major DDs: 20 months

And the following table in figure 5 is an analysis of the main draw-downs we've encountered along with resulting performance after we rebounded off the performance valley.

Figure 5: Main Draw-down Analysis After Rebound

Date of low-point	Drawdown Analysis of over 5%	Performance from low-point in following 1yr	2yr	3yr
09/2008	-12.22%	12.54%	29.09%	40.46%
06/2013	-11.78%	11.52%	20.50%	22.49%
10/2015	-6.31%	5.08%	6.40%	n/a
04/2008	-5.73%	4.48%	15.55%	40.00%

What does this all mean? Since our inception in November 2007, we have not had a draw-down over -12.2% for composite managed accounts and -13.5% for a converted mutual fund track record. We know that our program is cyclical and can expect a losing period of over 5% about every 10 months on average. And we know that on average it takes the program about 3.8 months to go from a low point back to new highs. Of course, past performance is not necessarily indicative of future results; and a new maximum drawdown could always present itself in the future.

Nobody knows when draw-downs will occur; and an investor can miss opportunities if trying to "trade" the move. We heavily recommend always having exposure for diversification purposes. Furthermore, Auctos should be viewed as a long-term investment and uncorrelated bucket to balance a portfolio. Having said that, draw-downs should be viewed as an opportune time to take advantage. The quantifiable measures as to expected draw-downs and timing can help us begin to think about a better way of identifying potential buying opportunities. Given the average drawdown of -4.58%, and the max of -12.2%, what if we looked at the -5% level as a buying opportunity level the same way a distressed debt or value investor might target a bond or stock price for an investment? That's a bit more than the average but not as rare as the maximum, giving us a nice repeatable downside level at which to put more money to work. If we added an equal allocation at the beginning of the month following the month in which the program hits a drawdown of -5% or more, and then took that portion off the table at the end of the month in which we make new equity highs , we generate an extra 38% (cumulative) in profits over our track record. (inception of the program). What's more, the add on allocation increased the gains with less risk both in terms of draw-downs and volatility. The following chart provides an analysis of hypothetical performance for the base allocation and the add on allocation.

HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM. ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.

Figure 6: Base & Add Allocation

	Base Allocation	Add on Allocation
Total Return	68.49%	38%
Annualized	6.02%	6.32%
Max Drawdown	-12.22%	-8.63%
Volatility	9.65%	7.4%
Sharpe	0.62	0.85

Systematic strategies tend to lend themselves to cyclical behavior - whether because of the cyclical nature of the commodity markets used within the strategies or fact that lower volatility tends to contribute to losing periods.

However, this also tends to lead to periods of higher volatility which can lead to winning periods. While we never know when draw-downs will occur, this basic framework of adding an allocation at a set downside target shows how a systematic approach to the ups and downs of a track record can add value to a portfolio.