Falling knives: Sergey Sizov/Shutterstock/Collage: Christine Morrison

Go Ahead, Catch It!

Identifying Short-Term Bottoms In Bull Markets

When a market drops sharply, do you find yourself unable to make trading decisions for fear of losing money? You're not alone. In such situations, you need to be able to come up with a method that helps you make trading decisions more confidently. Here, we explore different types of market bottoms and identify the variables most likely to indicate an imminent short-term rebound.

by Stephen Beatson

Sharp market drops can sometimes signal opportune times to enter the market. This is particularly true when the drop has been sharp and sudden, indicating that the market has probably overreacted to recent political or macroeconomic news.

The main problem with trading during very volatile times is that anxiety and the fear of losses may prevent investors from pulling the trigger, particularly when the market is undergoing an "unprecedented" correction. It is therefore useful to recognize the existence of different types of market drops and to identify the variables that are most likely to indicate an imminent short-term rebound. This will enable investors to objectively identify high-expectancy trades and execute them in a systematic and detached manner.

Analyze It

To proceed with this analysis, it is necessary to first define the concept of a *sharp market drop*. While this could be described in a dozen different ways, for the sake of this study I will define this as a 5% or greater fall below the 50-day moving average

I will first differentiate between sharp drops occurring during bull markets and sharp drops occurring during bear markets. In this study, bull markets are defined as being in effect when the 50-day moving average is above the 200-day moving average (also know as the "golden cross") and bear markets are defined as being in effect when the 50-day moving average is below the 200-day moving average (a.k.a. the "death cross").

System rules:

- Instrument: INX (S&P 500 index), from 1990 to date
- Position size: $100,000
- Enter long after a 5% or greater drop below the 50-day moving average (and below the 10-day MA)
- Exit after 10 days.

In the table in Figure 1 you see the results for the bull market (golden cross) scenario are overall very good. This is probably because

Close > 5% below the 50-day MA. Exit after exactly 10 days.								
Market Condition	Total Trades	Winners	Losers	Avg Win / Avg Loss	Net Profit ($)	Win Rate (%)	PF	Max Drawdown (%)
Either	75	48	27	0.82	60,393	64.00	1.46	-42.83
Golden Cross	28	20	8	1.27	46,991	71.43	3.18	-10.26
Death Cross	48	28	20	0.81	14,700	58.33	1.13	-42.83

FIGURE 1: TRADING SYSTEM RESULTS. The results for the bull market (golden cross) scenario are overall very good. In the case of bear markets, the results were not so favorable and you'd have to bear a 43% drawdown.

sharp drops during bull markets are often perceived by investors as market overreactions and therefore good times to jump back into the rising long-term trend. The data shows that buying these dips and selling 10 days later would have been profitable 71% of the time, and would have generated three times more profits than losses. The equity curve for the golden cross is displayed in Figure 2.

The same cannot be said of sharp drops during bear markets (death cross). The equity curve is displayed in Figure 3. In these instances, investors may interpret the drop as further confirmation of the existence of a negative long-term trend and hence resist the urge to throw good money after bad money. Since 1990, buying these dips and selling 10 days later would have barely been a breakeven proposition, with the added discomfort of having to bear a huge 43% drawdown in the process.

Stepping into oversold markets—or "catching falling knives," as investors like to call it—is therefore best done when the market is in a long-term uptrend. So for the sake of this study, I will focus the rest of my analysis solely on sharp drops during bull markets.

The next order of business is to determine the optimal holding period for the long position. The table in Figure 4 shows results for systematically exiting the position after X days. The last row shows results for exiting on a close above the 10-day moving average.

All exit rules would have been profitable and, as you would expect, longer holding periods would have produced greater overall profitability than shorter periods, but at the cost of both lower win rates (the trade has more time to revert downward) and greater drawdown risk.

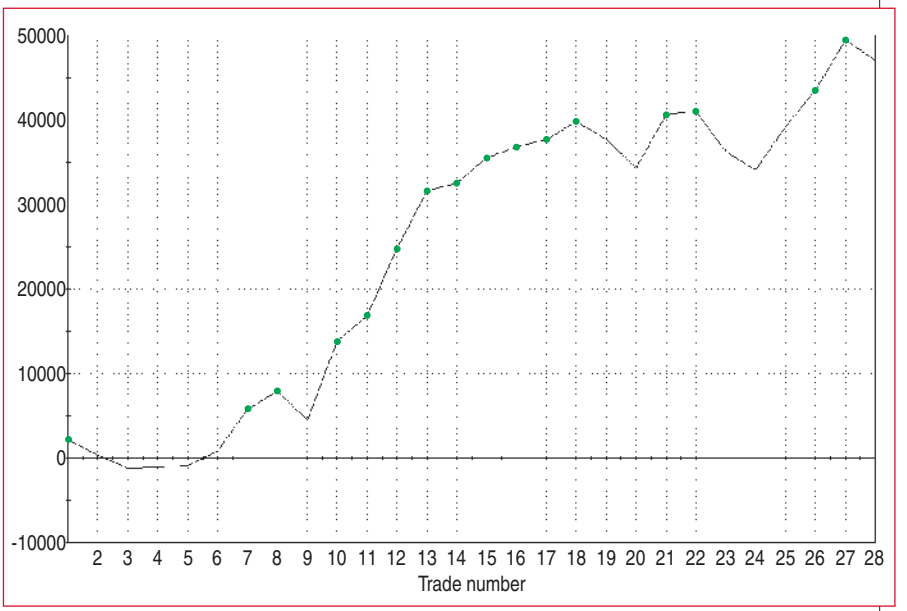


FIGURE 2: EQUITY CURVE OF GOLDEN CROSS. The results are favorable probably because sharp drops during bull markets are often perceived by investors as market overreactions and therefore good times to jump back into the rising long-term trend.

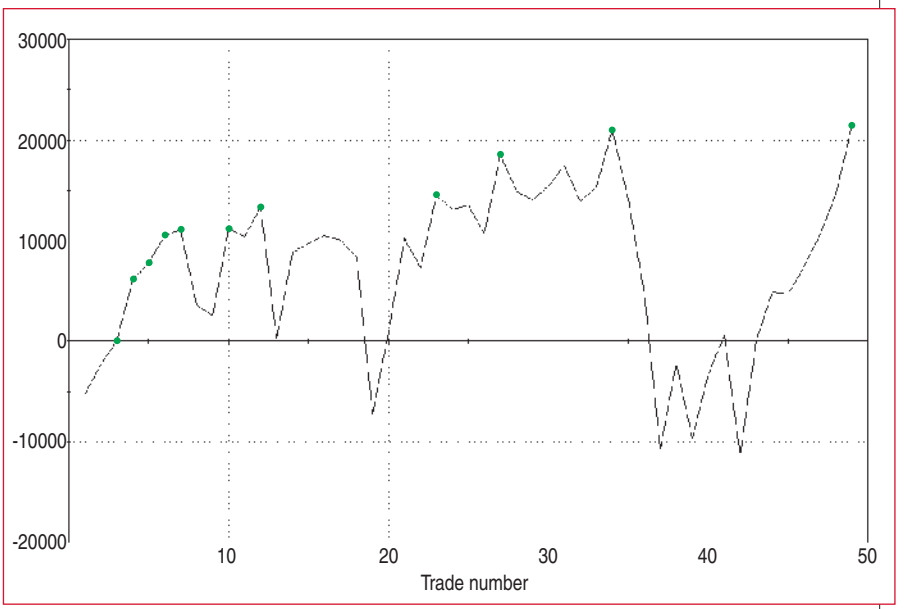


FIGURE 3: EQUITY CURVE OF THE DEATH CROSS. Investors may interpret the drop as further confirmation of the existence of a negative long-term trend and hence resist the urge to throw good money after bad money.

The 50-day MA is above the 200-day MA. Close > 5% below the 50-day MA. Exit after exactly X days.								
Exit after X days	Total Trades	Winners	Losers	Avg Win / Avg Loss	Net Profit ($)	Win Rate (%)	PF	Max Drawdown (%)
5	39	30	9	0.85	49,225	76.92	2.83	-10.26
10	28	20	8	1.27	46,991	71.43	3.18	-10.26
15	25	18	7	1.68	60,880	72.00	4.31	-11.61
20	23	16	7	1.70	60,979	69.57	3.89	-15.56
Above 10 DMA	33	29	4	1.44	61,818	87.88	10.41	-10.26

FIGURE 4: WHAT IS THE OPTIMAL HOLDING PERIOD? Longer holding periods would have produced greater overall profitability than shorter periods, but at the cost of lower win rates and greater drawdown risk. A better exit rule would be to exit on a close above the 10-day moving average.

The 50-day MA is above the 200-day MA. Close > 5% below the 50-day MA. Exit on a close > the 10-day MA.								
Today's range is	Total Trades	Winners	Losers	Avg Win / Avg Loss	Net Profit ($)	Win Rate (%)	PF	Max Drawdown (%)
Greater than yesterday	30	26	4	1.47	56,236	86.67	9.56	-10.26
Smaller than yesterday	22	20	2	2.69	43,520	90.91	26.92	-8.73

FIGURE 5: ENTERING A LONG POSITION WHEN THE DAY'S RANGE HAS EXPANDED OR CONTRACTED. The win rate, profit factor, and maximum drawdown are better when the entry is executed on a day of range contraction.

A better exit rule would be to exit on a close above the 10-day moving average, as shown in the last row of the table in Figure 4. This method is more flexible as it dynamically accommodates both quick and slow market bounces, so it offers both a good win rate and an attractive net profit value. I will therefore use this exit strategy for the rest of this study.

I will now look at timing the entry itself, as systematically entering on a 5% or greater drop without any additional rules or filters seems somewhat simplistic.

The first variable I will look at is daily range (high–low). The table in Figure 5 shows the results of entering the long position when the day's range has either expanded or contracted.

A common trait of most multiday market drops is a progressive increase in each day's trading range. As the fall intensifies, volatility increases, generating a greater loss of confidence and further price drops. A contraction in daily range during a sustained fall in prices can therefore be interpreted as a signal that confidence has been restored and that a price rebound is imminent. The results shown in Figure 5 would tend to confirm this concept. All statistics—including win rate, profit factor, and max drawdown—are better when the entry is executed on a day of range contraction. Only the net profit figure is less attractive, but this is due to the lower number of trades (22 vs. 30). Note that you can obtain similar results using different volatility measures. A falling VIX, for example, is also a good indicator of a short-term market bottom.

The next variable I will look at is volume. The table in Figure 6 shows the results of entering the long position when the day's volume has either expanded or contracted.

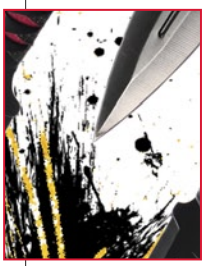
The volume variable functions in a similar manner to the range variable I analyzed earlier. During sustained market drops, volume has a strong tendency to increase as market participants scramble to exit their long positions and algorithmic trading systems step into the market to benefit from the increased volatility. When price drops reach extremes, participants with long positions become reluctant to exit at a

The 50-day MA is above the 200-day MA. Close > 5% below the 50-day MA. Exit on a close > the 10-day MA.								
Today's volume is:	Total Trades	Winners	Losers	Avg Win / Avg Loss	Net Profit ($)	Win Rate (%)	PF	Max Drawdown (%)
Greater than yesterday	25	21	4	1.39	47,956	84.00	7.30	-10.26
Smaller than yesterday	27	25	2	3.02	63,292	92.59	37.70	-8.73

FIGURE 6: ENTERING A LONG POSITION WHEN THE DAY'S VOLUME HAS EXPANDED OR CONTRACTED. A drop in volume is a fairly reliable indicator of a short-term bottom. As you can see here, trades executed on volume contraction display significantly better statistics than those executed on volume expansion.

large loss and short-sellers become disinclined to speculate on a further drop in price, leading to a fall in trading volume. A drop in trading volume is therefore a fairly reliable indicator of a short-term bottom. The data in Figure 6 supports this concept, with trades executed on volume contraction displaying significantly better statistics than those executed on volume expansion.

The equity curve in Figure 7 shows the results of this system using both the volume and range filters. In order not to substantially reduce the trade count, trade entries are timed on either a contraction in volume or a contraction in daily range. See sidebar "Example of applying the trading system" for more on how to implement such a system to your trading.



IN TUNE WITH THE BULL

As you have seen, "catching falling knives" is best done during bull markets rather than during bear markets. During the former, trade expectancy is generally very good, as the market has a tendency to revert back up toward its rising long-term trend. During the latter, however, results can be mixed, as a sustained drop in prices may serve to further confirm the falling long-term trend, making dip-buyers less inclined to step in and prop up the market.

You have also seen that a systematic entry using an arbitrary minimum decline figure (5% below the 50-day MA in this case) without any additional filters is probably not the best approach. Volume and range have shown to be reliable indicators of short-term market bottoms. Entering on a contraction of either (or ideally both) greatly increases the profit expectancy of the trade.

Finally, since some oversold positions may take longer than others to resolve themselves, a mean-reversion exit system such as an exit above the 10-day moving average is probably the best way to time exits. This approach has the advantage of offering a dynamic exit rule that allows both time and price action to dictate the appropriate moment to close the position.

Stephen Beatson is an investment consultant based in Paris, France and is the founder of the educational site TheMechanicalTrader.com.

FURTHER READING

Beatson, Stephen [2015]. "Mean Reversion And The S&P 500," *Technical Analysis of* STOCKS & COMMODITIES, Volume 33: May.

• http://themechanicaltrader.com/

‡ TradeStation

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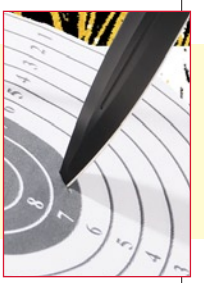
Entering on a contraction of volume and/or range will greatly increase the profit expectancy of your trades.



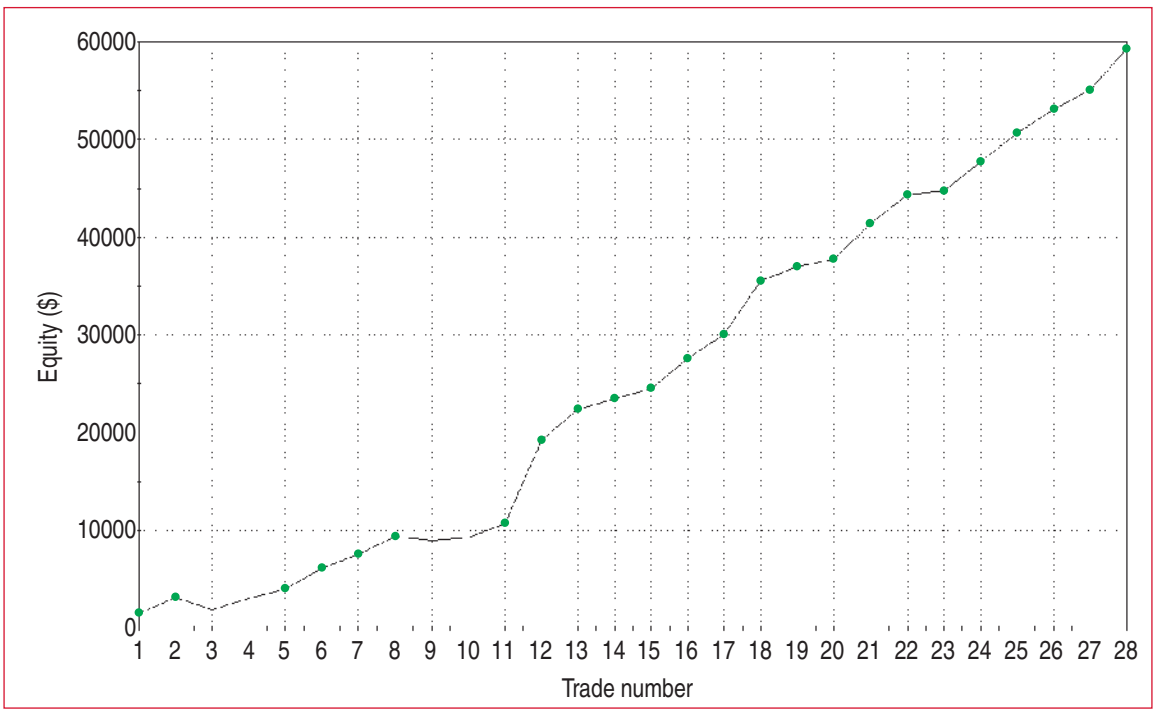


FIGURE 7: EQUITY CURVE OF SYSTEM USING VOLUME AND RANGE FILTERS. As you can see, entering trades during a contraction in volume or contraction in daily range give you a favorable equity curve.

EXAMPLE OF APPLYING THE TRADING SYSTEM

On the chart in Sidebar Figure 1 you see an example of how this trading system was applied to market events from August 20, 2015 to September 5, 2015. The last two weeks of August 2015 saw a marked multiday fall in US stock market prices. Here you see a day-by-day analysis of how the system detailed in this study would have applied.

August 20, 2015

Long-term market status:	Golden cross
Close relative to 50-day MA:	-2.77 %
Daily volume:	Rise
Daily range:	Rise
Buy signal:	NO

August 21, 2015

Long-term market status:	Golden cross
Close relative to 50-day MA:	-5.74 %
Daily volume:	Rise
Daily range:	Rise
Buy signal:	NO

August 24, 2015

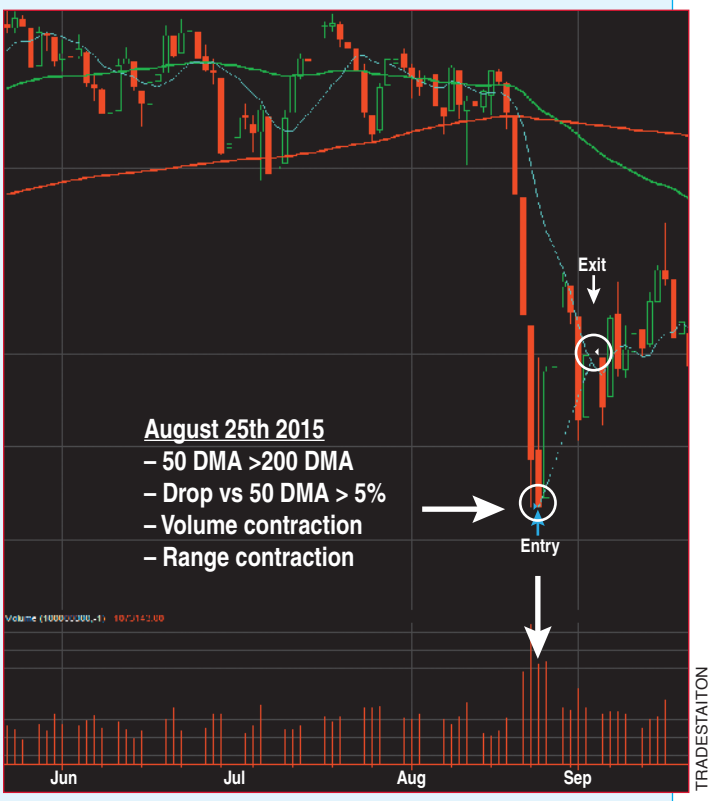
Long-term market status:	Golden cross
Close relative to 50-day MA:	-9.28 %
Daily volume:	Rise
Daily range:	Rise
Buy signal:	NO

August 25, 2015

Long-term market status:	Golden cross
Close relative to 50-day MA:	-10.32 %
Daily volume:	Fall
Daily range:	Fall
Buy signal:	YES

Entry

Based on the system rules, the entry would have occurred at the close of August 25, 2015, at a price of $1867.61



SIDEBAR FIGURE 1: APPLYING THE TRADING SYSTEM. Here you see an example of a trade entered on August 25, 2015 at $1867.61. Using the >10 day moving average exit rule would result in an exit on September 3, 2015 at $1,951.13. The trade yielded a profit of 4.47% with little or no drawdown.

Exit

The > 10 day moving average exit rule would have dictated an exit on September 3, 2015, at a price of $1,951.13.

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The bounce happened hard and fast, so the dynamic exit rule would have given back quite a lot of unrealized profit. Still, the trade would have yielded a profit of +4.47%, with the added benefit of little or no drawdown.

—Stephen Beatson