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Myth Or Truth: Is The Golden Cross A Shiny Investment Approach? An Empirical Investigation

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The “Golden Cross" Market Pattern

The claim is that the “Golden Cross” quantifies the improvement in the trend of the underlying security and will lead to a significant uptrend!

You probably have read a lot about the "**Golden Cross**" on different financial media and maybe you even thought of following such an investment strategy. The "Golden Cross" is a **technical pattern** which occurs when the **50 day moving average** of a specific underlying security crosses **above** its respective **200 day moving average**.

The claim is that this signal quantifies the **improvement** in the **trend of the underlying security** and will lead to a significant **uptrend**. Since a moving average is an indicator that measures the average movement of an asset price over time, it is a confirmation of upward momentum when a short-term moving average crosses above a longer-term moving average and vise versa.

Conversely, when the **50 day moving average** crosses **below** the 200 day moving average, it is known as the "**Death Cross**", and is considered as an exit point. **This technical pattern assumedly signals a significant downturn.**

In General, There Are Two Common Ways To Trade Such A Technical Market Pattern:

1. Long/Cash

- **Trades only the bullish signals** ("Golden Cross"), since not every investor is able to enter a short-position in the specific underlying of interest
- During a so-called "**Death Cross**", investors just take no investments (CASH) at all.

2. Long/Short

- Trades the **bullish-** ("Golden Cross") as well as the **bearish signals** ("Death Cross"), in taking a specific **long-** as well as **short** position within the specific market
- This is approach involves more risks!

In the literature (Joseph Granville, 1960) it is sometimes argued that a "Golden Cross" should also have a rising 50 as well as a rising 200 day moving average. For our analysis we will focus only on the "simple" moving average crossover since this version is more widespread among the investing community.

Methodology For Our Analysis:

Both, the Long/ Cash as well as the Long/Short strategy will be compared with a simple "Buy & Hold" for the S&P 500 Index

For our analysis we are using the S&P 500 Index as underlying market:

- All used data is split and dividend adjusted. In addition, we have taken 2 days slippage into account, but we have excluded any taxes and trading expenses
- The analyzing period was from 10/18/1950 until 04/30/2012
- In the Long/Cash version, no investment is being made during that time a "Death Cross" is predominant.
- Both, the Long/Cash as well as the Long/Short strategy will be compared with a simple "Buy & Hold" for the S&P 500.

Trade Analysis:

Long/Cash

- From 10/18/1950 until 04/30/2012 the **Long/Cash** strategy generated **63 trades**. Assuming zero transaction costs, this technical pattern would have been **profitable** with a **mean and median profit per trade of 17% and 12.9% respectively.**
- In total, **78.1 percent** of all trades would have generated a positive return.
- The best trade would have produced a profit **of 124% while the worst trade was down almost 10%.**
- If we would treat the best trade as an outlier and remove that observation from the sample, the mean and median profit per trade would have been still above 10%

Trade Overview		
	Long/Cash	Long/Short
Total Trades	63	129
Best Trade	124%	123.7%
Worst Trade	-9.86%	-12.5%
Mean Trade	17.0%	9.24%
Median Trade	12.9%	0.40%
Trades +	78.1%	55.4%
Trades -	21.9%	44.6%
Remove Outlier (124%)	Long/Cash	Long/Short
Best Trade	84.78%	84.78%
Mean Trade	13.60%	7.46%
Median Trade	12.44%	0.38%

Source: Yahoo Finance, www.wallstreetcourier.com

Long/Short

- In total, Long/Short strategy generated **129 trades**, as investors have **additionally entered a short-position**, if a Death Cross signal appears.
- Again, assuming zero transaction costs, this strategy would have been **profitable with a mean and median profit per trade of 9.24% and 0.40% percent respectively.**
- All in all, trading the Death Cross as well, this would have lowered the mean and median profit compared to the Long/Cash strategy, by 7.76% and 12.5%, respectively.
- In total, **55.4 percent of all trades would have generated a positive return**.

Performance Analysis:

- The results of back-testing the Long/Cash- and Long/Short strategy **illustrate that on a day-by-day basis**, those strategies **slightly** outperformed a naive buy-and-hold-portfolio but we have taken zero transaction costs into account.
- The **Long/Cash** portfolio has the **lowest volatility**, mainly due to the **cash investment**. Nevertheless this portfolio has the second highest annualized return and due to its low volatility it has therefore the **best Sharpe ratio** among all three portfolios.
- The main reason, why the **Long/Short portfolio has outperformed** the naive buy & hold- as well as the Long/Cash portfolio in terms of annualized returns, is the fact that this strategy has performed very **well during the past two long lasting bear markets**

Performance Ratios (1950-2012)

	S&P 500	Long/Cash	Long/Short
Cumulative Return	7002.9%	8293.7%	9819.1%
Annualized Return	7.2%	7.5%	7.8%
Volatility	15.6%	11.2%	15.6%
Sharpe Ratio (Rf=0)	0.460	0.668	0.498

Source: Yahoo Finance, www.wallstreetcourier.com

Dispersion of Yearly Results [%]

	Min	1st. Quantile	Median	Mean	3. Quantile	Max.
S&P 500	-38.5	-0.8	10.8	8.4	19.8	45.0
Long/Cash	-15.3	0.0	7.2	7.9	16.2	45.6
Long/Short	-23.8	-2.4	7.1	8.7	16.3	69.8

Source: Yahoo Finance, www.wallstreetcourier.com

Drawdown Analysis:

- If we have a closer look at the **historical five largest drawdown's**, we can see that the main benefit of **the Long/Cash- as well as the Long/Short strategy is their downside protection.**
- The tables on the right hand side show how those two strategies would have **significantly reduced** the **largest drawdown's** compared to a **simple buy & hold portfolio**
- The maximum draw down of the **Long/Cash** portfolio was **only -33.2 percent** compared to the **naive** portfolio which **has lost -56.8** percent during the financial crisis. Even the more risky **Long/Short strategy** had a lower maximum drawdown than the buy & hold portfolio.
- Nevertheless, the **recovery period** is the **longest** if investors would have followed the **Long/Short** strategy. The **Long/Cash** strategy had on average the **shortest recovery** period, if we have a look at the five largest drawdown's.

Largest Drawdowns S&P 500 (daily basis)

Nr	From	Trough	To	Depth	Length	To Trough	Recovery
1	10/09/2007	03/08/2009	no new high	-56.8%	1149	355	n.a.
2	03/26/2000	10/08/2002	05/29/2007	-49.2%	1803	637	1166
3	01/11/1973	10/02/1974	07/16/1980	-48.2%	1898	436	1462
4	12/01/1968	05/25/1970	03/05/1972	-36.1%	820	369	451
5	08/25/1987	12/03/1987	07/25/1989	-33.5%	485	71	414

Source: Yahoo Finance, www.wallstreetcourier.com

Largest Drawdowns Long/Cash (daily basis)

	From	Trough	To	Depth	Length	To Trough	Recovery
1	08/27/1987	10/20/1987	02/07/1993	-33.2%	1378	38	1340
2	07/21/1998	09/01/1998	03/21/1999	-19.3%	168	31	137
3	05/03/2011	08/09/2011	no new high	-17.9%	251	69	n.a.
4	02/18/1980	03/30/1980	11/16/1980	-17.1%	190	30	160
5	09/23/1976	11/15/1978	02/10/1980	-17.0%	854	543	311

Source: Yahoo Finance, www.wallstreetcourier.com

Largest Drawdowns Long/Short (daily basis)

	From	Trough	To	Depth	Length	To Trough	Recovery
1	08/27/1987	02/12/1991	02/08/1996	-39.1%	2138	876	1262
2	03/11/2009	01/26/2012	no new high	-33.7%	792	727	n.a.
3	10/07/1974	06/23/1980	08/10/1982	-32.1%	1982	1444	538
4	10/11/1966	07/07/1969	05/24/1970	-27.4%	882	660	222
5	07/21/1998	11/30/1998	03/22/2000	-23.2%	423	93	330

Source: Yahoo Finance, www.wallstreetcourier.com

Conclusion:

If you believe that you are in an environment where lengthy declines of more than 30% are going to be the order of the day, following the Long/Short- or Long/Cash strategy instead of a Buy & Hold approach can be useful.!

The testing results show that both, the **Long/Cash and the Long/Short strategy** have been very reliable since 1950. In the past, **78.1% and 55.4% of the trades for the Long/Cash and the Long/Short strategy respectively**, **have been winners.**

Exiting on a Death Cross would have kept investors **out of most ugly bear market declines in the past**. So if you believe that you are in an environment where lengthy declines of more **than 30% are** going to be the order of the day, following the **Long/Short- or Long/Cash strategy instead of a Buy & Hold approach can be useful.**

Upon a **Death Cross** signal the market shows **general weakness to perform on the upside.** This weakness can be **difficult to short**, if the there are no **long-lasting** periods of **weaknesses**. Moving into cash or selling short during this time may prevent you from experiencing significant drawdown's compared to a simple buy & hold strategy.

<u>However, as this method confirms an existing trend rather than predicting one, there is a chance that investors face a late-in and late-out problematic. Therefore in only 34.9 percent of all observations, those two strategies have outperformed a buy & hold portfolio in the long-run.</u>

Interested In Technical Analysis? We Would Recommend You To Consider The Following Steps:

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