Testing the Simple Moving Average across Commodities, Global Stock Indices, and Currencies

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"I absolutely believe that price patterns are being repeated. They are recurring patterns that appear over and over, but with slight variations. This is because markets are driven by humans and human nature never changes."

—Jesse Livermore

CHALLENGING THE EFFICIENT MARKETS HYPOTHESIS

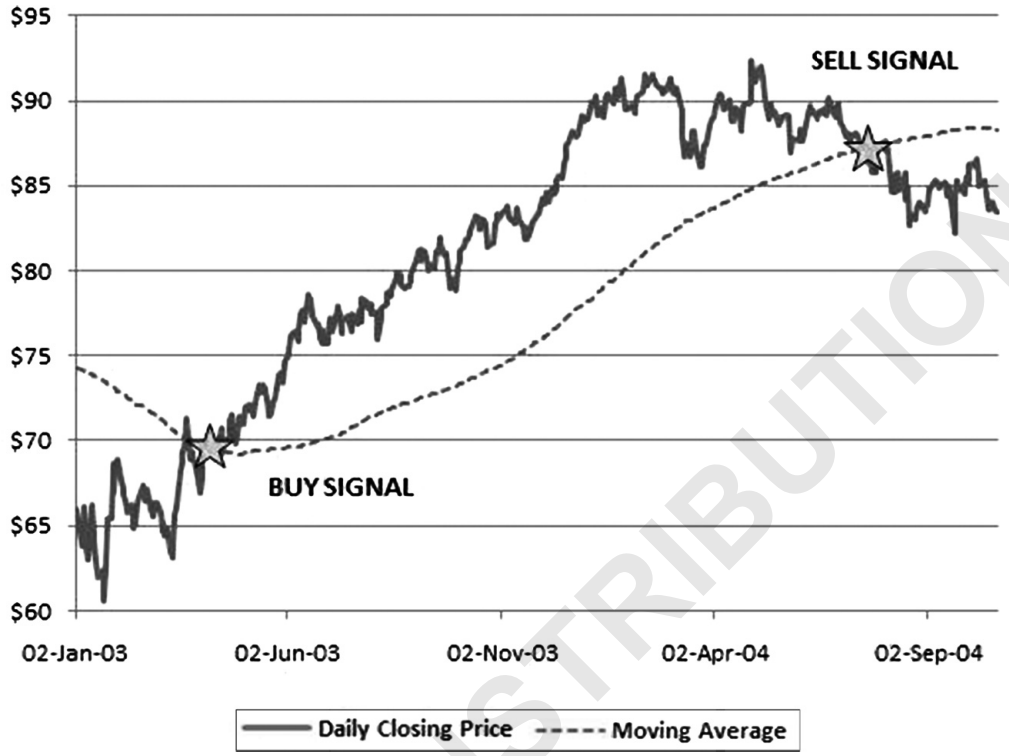
Buy and hold can safely be considered the most popular investing strategy currently for individual investors (Investment Company Institute [2008]). The popularity of the buy-and-hold approach to investing is in part attributed to acceptance of the efficient markets hypothesis (EMH). The EMH states that securities markets are informationally efficient. In other words, as long as an investor does not have access to nonpublic information, the investor cannot consistently achieve risk-adjusted returns in excess of average market returns.

The efficient markets hypothesis has not gone unchallenged, however. There have been several studies that investigated whether some price-based strategies (also known as technical strategies) can outperform the market on a risk-adjusted basis. Moving average strategies are one such set of strategies that are popular with technical traders (Brock, Lakonishok, and Lebaron [1992]). While there are several variations of moving average strategies, the most basic of these, the simple moving average strategy, involves buying a security once it starts to trade above the average of its closing prices from a specified last number of days or months and selling the security when its price falls below that same average.

In Exhibit 1, the broken line tracks the average of a security's closing prices from the last 200 days of trading. Each day, a new 200-day moving average is calculated and the broken line fluctuates up or down accordingly. When the security's price (the solid line) crosses above this average, a buy signal is generated. When it crosses below the average, a sell signal is executed. For ease of reference, we will at times refer here to the simple moving average strategy as "the strategy" and abbreviate buy and hold to "B&H."

Many research papers have been written on the topic of moving average strategies—in fact, one website counts fifty or more.[1] Many of these papers claim that moving average strategies can outperform the market on a risk-adjusted basis. In other words, an individual using these strategies can outperform a buy-and-hold strategy without the trader/investor taking on additional volatility or risk. Unfortunately, few of those papers can be considered comprehensive in their approach.

EXHIBIT 1
Simple Moving Average Trade Signals

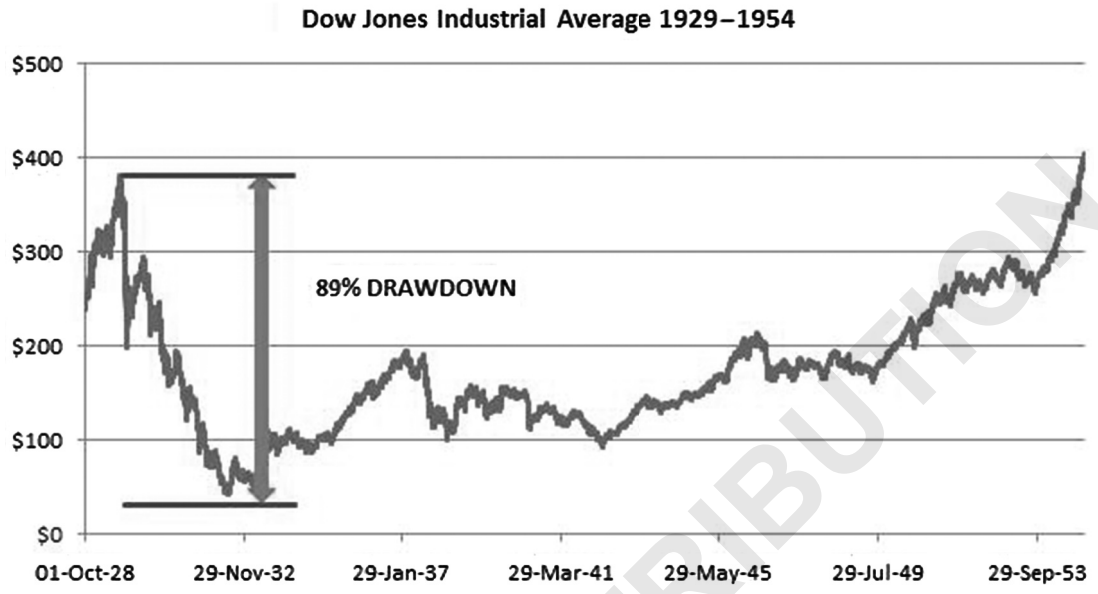


Several confine their studies to a narrow set of data, for example, testing the strategy on stocks from only one country or only on the currency market. The authors of these papers are therefore vulnerable to accusations of data snooping. Data snooping is a form of statistical bias, where by chance or intent, a strategy is claimed to be successful on a certain set of data. However, had the strategy been tested on a wider set of data, the results would have been shown to be of no statistical significance. Another shortcoming of some of these studies is they tend to center around whether moving average strategies can generate returns significantly higher than buy and hold. Few focus on the extent to which a moving average strategy can lower downside risk.

By contrast, one prominent broad-based study tested the simple moving average strategy across five asset classes using over three decades worth of data. Mebane Faber, in his 2006 white paper, "A Quantitative Approach to Tactical Asset Allocation," tested the simple moving average strategy on five asset classes: commodities (represented by the GSCI Index), U.S. stocks (S&P 500), international stocks (MSCI EAFE Index), U.S. REITs (NAREIT Index) and U.S. bonds (10-year Treasuries). Faber's study included valuable information around the extent to which the strategy would have protected an investor's portfolio from much of the downside volatility (drawdowns) experienced in bear markets. A drawdown can be defined as the percentage drop in price from a security or portfolio's peak value to its subsequent lowest point before reaching a new high.

As an example, Exhibit 2 shows that the Dow Jones Industrial Average peaked in value at $381.17 in September 1929, then experienced a drawdown or drop of 89% before bottoming out at $41.22 in July 1932, and then subsequently returning to a new high in 1954. These numbers do not account for dividend payments that would have mitigated the investor's total loss for the period. Large drawdowns can be devastating to both an investor's wealth and psyche. When faced with substantial drops in the value of their portfolio, even investors who

EXHIBIT 2
Illustrating Maximum Drawdown



previously described their strategy as buy and hold, can be panicked into selling their holdings, thereby locking in a permanent loss of wealth.

The results of Faber's study make a compelling case for the strategy. For example, a portfolio containing five equally weighted asset classes and traded using a simple 10-month moving average strategy returned 11.9% per annum compared to an 11.2% return that would have resulted had the same portfolio simply been bought and held.[2] Most impressive of all, the strategy achieved this performance while showing no negative return years for the entire 33-year test period. Faber's strategy also proved itself on a go-forward basis. When Faber rewrote his paper again in 2009, the moving average strategy had trounced buy and hold for the intervening three years, in large part because the five-asset strategy had fallen only 0.6% on average in 2008 compared to a 30.1% drop that year for the comparable buy-and-hold portfolio.

This paper replicates Faber's methodology to some extent. However, while Faber demonstrated how a simple moving average strategy could be used to great effect on broad asset class indices, one goal of this paper is to determine whether the strategy could also be successfully applied to individual subcomponents of those broader asset classes. For example, rather than just backtest the strategy on the GSCI Index, which is effectively one large portfolio composed of several different commodities combined, we tested the strategy separately on the prices of several individual commodities, one commodity at a time. We also tested the strategy on individual currencies and on the stock indices of various countries (the only single-country stock index Faber tested was the U.S. S&P 500 Index). Our results will be of interest to many investors around the globe, especially those with a home bias. Investors with a home bias prefer to allocate a much larger portion of their portfolio to their home country stock market than would be warranted by that country's representation in a global index, such as the MSCI EAFE Index.

Even though Faber proved that the strategy worked very well on diversified portfolios, such as those represented by the MSCI EAFE Index or the GCSI Commodities Index, it does not automatically follow that the strategy will work well on subcomponents of those indices (i.e., individual commodities or single-country equity indices). After all, a portfolio composed of several securities combined will always be less volatile than the average volatility of those same securities taken indi-

vidually. For example, the average monthly volatility for the 46 commodities we studied was 24.1% compared to only 8.0% for a portfolio composed of equal weights of the 46 commodities combined. This phenomenon is due to the inherent mathematical benefits of diversifying between non-perfectly correlated securities. Different volatility will mean different price patterns and, accordingly, different results for any price-based strategy such as the simple moving average. This paper, therefore, begins by testing the strategy on 46 individual commodities, 17 individual currencies, and 18 individual country stock indices. We then compared those individual security results to results from testing the strategy on three aggregate (composite) portfolios that we created (one for each asset class). This enabled us to determine to what extent Faber's favorable returns were due to the fact that his paper tested the strategy only on broadly diversified portfolios.

An additional benefit of testing the strategy on several subcomponents of broader indices is that we get a greater sample of data on which to test the strategy, thus endowing the study with greater scientific validity. The 46 commodities, 17 currencies, and 18 country stock indices we tested give us a sample size of 81 compared to Faber's sample size of 5. We unimaginatively named our composite portfolios the "46 commodity" index, the "17 currency" index, and the "18 country" stock index.

DATA SELECTION

We selected the data sample based on two criteria:

1. The data series tested should span as long a time period as possible.
2. There should be as many data samples for each asset class as possible with the constraint that the sample size should not be so large as to be unmanageable.

We were only able to satisfy both criteria for three of the major asset classes. While we would have liked to have tested the strategy on a series of several countries' bond indices and REIT indices, for example, such data was not readily available.

We chose to test the strategy on single-country equity indices rather than individual stocks, for the simple reason that had we chosen to test a representative sample of all the publically traded companies globally, we would have had to test thousands of stocks, a task that would have been unmanageable.

Because daily data was not available for the stock indices and commodities we chose to test, we opted to use monthly data instead. For the equities we tested, end-of-month data was available, whereas for commodities and currencies, the monthly data available represented the average daily closing price for the month. Incidentally, one advantage of applying the strategy using monthly rather than daily prices is that using the former greatly lowers the number of trading signals and lowers transaction costs accordingly.

We tracked returns starting with the beginning of the first full calendar year for which the applicable moving average was available. The end of the test period for all data samples was the end-of-calendar-year 2010.

Equities Data

MSCI Barra Indices are widely used as the benchmark indices by which the performance of global equity portfolios is measured. MSCI have created stock market indices for 54 countries and has data for 18 of them going back to 1969. We felt that that 18 would be a sufficient sample size and decided to test the strategy on those rather than on a broader sample of countries where data did not go back as far. All equities data tested was total return data (i.e., return gross of interest, dividends, capital gains, and distributions).

Commodities Data

The International Monetary Fund (IMF) has compiled data back to 1980 for spot benchmark prices of a broad array of commodities.[3] The IMF deemed those benchmark prices to be representative of the global market for those commodities and the largest exporter of a given commodity determines the prices.[4]

Currency Data

The Federal Reserve Bank of New York maintains data on a sample of exchange rates for 23 countries and has data back to 1981 for 17 of them.[5] We felt that 17 was a sufficiently large sample size. The exchanges rates were the noon buying rates in New York for cable transfers payable in foreign currencies.

Composite Portfolios

As mentioned earlier, we also tested the strategy on three composite portfolios. At the inception dates of each composite index, we constructed the indices based, respectively, on equal weights of each individual country equity index, currency, and commodity. We did not rebalance the indices at any point subsequent to inception.

METHODOLOGY

The strategy as we apply it here is relatively simple:

1. Buy when the current price of the security is greater than the average price of the security for the last *n* months.
2. Sell when the current price of the security falls below the average of the security's month-end closing price for the last *n* months. Move the proceeds from the sale into cash (in the case of commodities and currencies) or T-Bills (in the case of equities) and await the next buy signal.

To guard against data snooping bias, we tested the strategy using four separate *n* variables, or number of month end prices used to calculate the moving average. We chose to use 7-, 9-, 11- and 13-month moving averages, because these alternated nicely with the 6-, 8-, 10- and 12-month moving averages used in Faber's research paper.

Assumptions:

- Entry and exit prices are assumed to be at the close of business on the last trading day of the month.
- Taxes, slippage related to bid–ask spread, and trading commission costs are excluded from return calculations. We will discuss those factors later in the paper.
- For equities, returns from cash holdings are calculated based on the average 90-day T-Bill rate.[6] For currencies and commodities, we opted to forego using the T-Bill rate, and instead assume a zero return from cash holdings. Our reason for treating asset classes differently in this manner is grounded in our desire to be conservative in estimating returns from the strategy. The average T-bill rate for the periods tested was over 5%, which is large compared to typical returns for currencies and commodities. The strategy also spent a lower percentage of the time holding currencies and commodities than it did holding equities. The impact of using T-Bills rather than cash increased the strategy's return for equities (using an 11-month moving average) from 12.4% to 13.9%, whereas the return for commodities would have increased from 4.6% to 7.3% and the currency return would have increased from 2.2% to 3.6%.

RESULTS SNAPSHOT

Detailed results are outlined in Appendices 1A through 3C. In the interest of space we display full results for individual securities using only the 11-month moving average only, not for the 7-, 9-, and 13-month moving averages, which we also tested. We do however summarize average results for all four *n* variables.

Individual Securities—Volatility

Asset Class	# of Samples Volatility Lowered in	# of Samples in Test	Avg Volatility for the Strategy	Avg Volatility for B&H
Equities	72	72	17%	23%
Currency	68	68	6%	8%
Commodities	184	184	17%	24%

Note: Volatility was calculated as the standard deviation of monthly volatility.

Individual Securities—Maximum Drawdown

Asset Class	# of Samples Max Drawdown Lowered in	# of Samples in Test	Avg Max Drawdown for the Strategy	Avg Max Drawdown for B&H
Equities	72	72	(37%)	(65%)
Currency	60	68	(15%)	(44%)
Commodities	179	184	(48%)	(66%)

Note: Maximum drawdown for a period is defined as the largest percentage drop in price from a securities peak value to its subsequent lowest point before reaching a new high. It is calculated here on a monthly basis.

Individual Securities—Return

Asset Class	# of Samples Return Increased in	# of Samples in Test	Avg Return for the Strategy	Avg Return for B&H
Equities	55	72	12.6%	11.5%
Currency	59	68	2.5%	0.2%
Commodities	179	184	3.7%	2.1%

Note: Return is defined as annual compounded return.

Composite Portfolios—Volatility

Asset Class	# of Samples Volatility Lowered in	# of Samples in Test	Avg Volatility for the Strategy	Avg Volatility for B&H
18 Equity Index	4	4	14%	18%
17 Currency Index	4	4	3%	3%
46 Commodity Index	4	4	6%	8%

Note: Volatility was calculated as the standard deviation of monthly volatility.

Composite Portfolios—Maximum Drawdown

Asset Class	# of Samples Max Drawdown Lowered in	# of Samples in Test	Avg Max Drawdown for the Strategy	Avg Max Drawdown for B&H
18 Equity Index	4	4	(25%)	(59%)
17 Currency Index	4	4	(6%)	(14%)
46 Commodity Index	4	4	(13%)	(34%)

Note: Maximum drawdown for a period is defined as the largest percentage drop in price from a securities peak value to its subsequent lowest point before reaching a new high. It is calculated here on a monthly basis.

Composite Portfolios—Return

Asset Class	# of Samples Return Increased in	# of Samples in Test	Avg Return for the Strategy	Avg Return for B&H
18 Equity Index	4	4	13.1%	12.2%
17 Currency Index	4	4	2.1%	1.8%
46 Commodity Index	4	4	4.6%	2.5%

Note: Return is defined as annual compounded return.

Composite Portfolios—Average of 5 Lowest Return Years

Asset Class	# of Samples Return Increased in	# of Samples in Test	Avg Return for the Strategy	Avg Return for B&H
18 Equity Index	4	4	–8.8%	–22.7%
17 Currency Index	4	4	–1.1%	–3.9%
46 Commodity Index	4	4	–2.6%	–9.8%

Note: Average of the 5 Lowest Return Years was calculated by taking the five worst annual returns for each n *time variable tested and then averaging them.*

TAX AND TRADING CONCERNS

The strategy trades each security only a couple of times a year on average. Therefore, if we assume a moderate-sized portfolio of say, $100,000, neither bid–ask slippage nor trading commissions would lower the strategy's returns by more than one- or two-tenths of 1%.

It is difficult to estimate the impact that taxes will have on this strategy relative to buy and hold. In a tax deferred account, the strategy will not be at a tax disadvantage compared to buy and hold. In a nontax deferred account, the strategy will incur a taxable event each time it trades. Some of those trades will incur short-term taxable gains, whereas anyone buying and holding beyond a year will incur only long-term capital gains. In the United States, long-term capital gains are taxed at a lower rate than short-term gains. Faber's paper did show, however, that gains from moving average strategies tend to be long term in nature compared to losses from the strategy, which are often short term. Additionally, given the high public-debt burdens of the United States and that there is a strong probability that tax rates will rise in the future, a strategy that incurs taxes incrementally as it goes may be preferable to one where taxes are levied in one lump several years from now.

SUMMARY DISCUSSION

When tested on individual currencies, commodities, and country equity indices, the simple moving average strategy's returns were about 27% less volatile than the buy-and-hold strategy. The effects on maximum drawdown were even more pronounced, with the strategy displaying a maximum drawdown 28% less severe than the buy-and-hold maximum drawdown for commodities, 44% less for equities, and 65% less for currencies.

The efficient market hypothesis would dictate that this lower level of risk could not be achieved without the investor having to accept much lower returns. However, the results of this study clearly show that this was not the case. The strategy's before tax returns for equities

were roughly 1.1% per annum higher than buy and hold, currency returns were around 2.3% higher than buy and hold and commodity returns were around 1.6% higher on average.

We were particularly struck by the consistency with which the strategy outperformed buy and hold. Not only was the strategy's risk–return profile superior for each of the three asset classes tested, but this was the case regardless of whether we used the 7-, 9-, 11-, or 13-month variables to calculate the moving average. In fact, the only major difference changing the variable had on returns was in terms of the resulting length of holding period.

The strategy's outperformance when applied to our three composite portfolios mirrored the outperformance for the individual securities tests. In fact, the strategy performed so well on the composite indices that maximum drawdowns were only 25% for the country equity index, 6% for the currency index, and 13% for the commodities index. These are low levels of risk compared to the vast majority of trading strategies.

The strategy also outperformed buy and hold for the great majority of the decades tested. Outperformance was not excessively concentrated in any one decade.

In summary, we believe that the results of this study should be considered of very high statistical significance. The study tested a variety of data over long periods, the strategy proved consistent on several dimensions and, importantly, we used compensating methods to avoid data snooping.

CONCLUSION

All else being equal, a rational investor, when confronted with two strategies, one of which involves considerably lower risk, but equal or greater return, should always be expected to pick the less risky strategy. The obvious question then, is how the simple moving average's superior returns could persist for several decades without being competed away by individual and especially by professional investors. These investors should have rationally gravitated away from buy and hold and toward the strategy we have described in this paper.

One reason this source of market alpha remains may be due to mutual fund managers and hedge funds preferring to be almost fully invested at all times. They may worry that if they were to keep a significant percentage of their portfolio in cash for any length of time, their clients would wonder what the fund managers were doing to earn their keep.

Another reason may be that humans have an action bias. Rather than sit in cash and do nothing when the market trend is uncertain, or sideways, investors feel compelled to take a view one way or the other on future market direction. This action bias has been documented in one study of elite soccer goalkeepers (Bar-Eli, et al. [2007]). When faced with a penalty kick, the keeper almost always chose a side to dive to even though the optimal strategy would have been to stay in the center of the goal.

Whatever the reason the strategy has crept under the radar of most investors, one thing is clear, buy and hold remains by far the dominant strategy for investors. According to a 2008 survey by the Investment Company Institute, 81% of investors responded that their investing strategy is buy and hold. It is clear though, that this is a strategy many of those same investors are unable to stick with. A Dalbar study showed that from 1989 to 2009, individual investors, on average, achieved a return of only 3.2% versus 8.2% for the S&P 500 and 7.0% for bonds [2010]. The study also reported that the average length of time investors held equity or bond mutual funds was only 3.2 years. It would seem that for many, if not most investors, adopting buy and hold as one's strategy is akin to believing that an Atkins or South Beach Diet is going to be sustainable for life.

It can reasonably be assumed that the less downside risk an investor experiences, the less likely that investor is to get scared out of his or her investment strategy. Also, the more consistent the investor's returns, the less likely the investor is to get restless and performance chase overvalued securities. In our opinion, the simple moving average strategy offers those who invest in currencies, commodities, or country-specific stock indices, a strategy that they are much more likely to stick with than buy and hold.

While there can be no guarantee that the strategy will continue to outperform buy and hold, the decades-long history of outperformance we uncovered forms a compelling case that it should. In our opinion, the latter investment philosophy would be at significant risk of losing its dominant mind-share with investors were this strategy to be marketed even half as forcefully as buy and hold has been.

APPENDIX A1

COUNTRY EQUITY INDICES—11-MONTH MOVING AVERAGE STRATEGY INDIVIDUAL COMPONENTS

AVERAGE FOR ALL INDIVIDUAL COUNTRY EQUITY INDICES

	B&H	THE STRATEGY			
		7 Month	9 Month	11 Month	13 Month
Time in Market	100%	66%	67%	69%	69%
Volatility	23%	17%	17%	17%	17%
Return	11.5%	12.5%	12.6%	12.6%	12.8%
Maximum Drawdown	(65%)	(37%)	(36%)	(37%)	(36%)
Best Year	115%	108%	109%	108%	106%
Worst Year	(49%)	(20%)	(21%)	(21%)	(20%)
Avg Months in Trade	NA	7.5	9.4	11.5	13.1

18 COUNTRY EQUITY INDEX

	B&H	THE STRATEGY			
		7 Month	9 Month	11 Month	13 Month
Time in Market	100%	72%	74%	76%	76%
Volatility	18%	14%	14%	14%	14%
Return	12.2%	12.2%	13.0%	13.9%	13.1%
Maximum Drawdown	(59%)	(26%)	(24%)	(24%)	(26%)
Best Year	62%	62%	62%	62%	62%
Worst Year	(50%)	(18%)	(18%)	(18%)	(18%)
Avg Months in Trade	NA	9.2	13.5	20.1	18.0

APPENDIX A2

COUNTRY EQUITY INDICES—11-MONTH MOVING AVERAGE STRATEGY INDIVIDUAL COMPONENTS

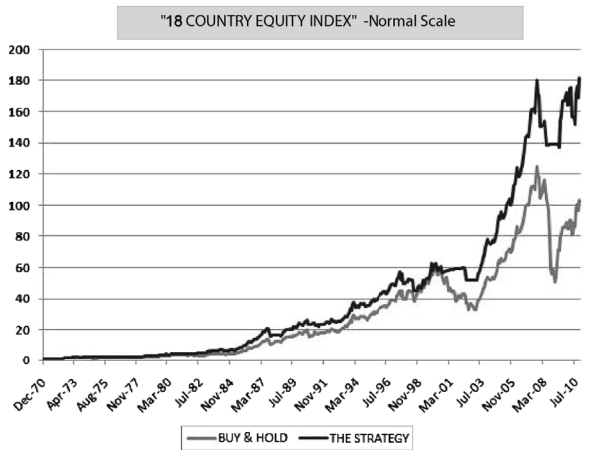
	AVG OF ALL COMPONENTS		18 COUNTRY INDEX	
	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	69%	100%	76%
Volatility	23.4%	17.5%	17.9%	13.8%
Return	11.5%	12.6%	12.3%	13.9%
Max Drawdown	(65%)	(37%)	(59%)	(24%)
Best Year	115%	108%	62%	62%
Worst Year	(49%)	(21%)	(50%)	(18%)
Average Months in Trade	NA	11.5	NA	20.1

	AUSTRIA		BELGIUM		DENMARK		FRANCE		GERMANY		ITALY	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	60%	100%	74%	100%	72%	100%	71%	100%	71%	100%	58%
Volatility	23.7%	17.9%	21.0%	15.6%	19.9%	15.8%	23.1%	16.9%	22.2%	17.0%	25.9%	18.9%
Return	9.5%	11.9%	11.5%	12.4%	14.1%	15.4%	10.9%	12.2%	11.3%	11.1%	6.6%	9.7%
Max Drawdown	(79%)	(49%)	(73%)	(46%)	(56%)	(27%)	(57%)	(26%)	(64%)	(32%)	(73%)	(43%)
Best Year	177%	178%	81%	81%	113%	113%	83%	79%	136%	128%	134%	134%
Worst Year	(68%)	(14%)	(66%)	(22%)	(47%)	(11%)	(43%)	(20%)	(45%)	(25%)	(49%)	(28%)
Average Months in Trade	NA	8.4	NA	14.1	NA	13.5	NA	13.0	NA	9.6	NA	8.4

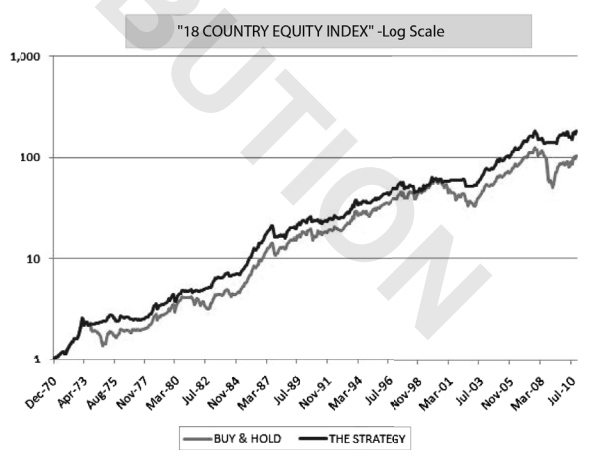
	AUSTRALIA		HONG KONG		NETHERLANDS		NORWAY		SPAIN		SWEDEN	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	67%	100%	68%	100%	77%	100%	63%	100%	66%	100%	73%
Volatility	24.6%	18.3%	36.2%	28.7%	19.5%	15.2%	28.0%	20.2%	23.6%	17.6%	24.5%	18.7%
Return	10.8%	9.1%	15.2%	17.5%	13.1%	11.1%	11.5%	13.7%	10.0%	11.5%	15.4%	15.1%
Max Drawdown	(63%)	(45%)	(88%)	(54%)	(60%)	(34%)	(69%)	(37%)	(70%)	(50%)	(72%)	(43%)
Best Year	77%	55%	163%	163%	61%	61%	184%	184%	123%	123%	81%	71%
Worst Year	(50%)	(18%)	(57%)	(24%)	(48%)	(26%)	(64%)	(35%)	(40%)	(32%)	(49%)	(29%)
Average Months in Trade	NA	8.9	NA	12.9	NA	13.7	NA	8.5	NA	9.9	NA	11.8

	CANADA		JAPAN		SINGAPORE		SWITZERLAND		UNITED KINGDOM		USA	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	71%	100%	63%	100%	65%	100%	71%	100%	72%	100%	74%
Volatility	20.1%	14.5%	21.9%	15.8%	29.5%	21.5%	18.6%	14.2%	22.6%	15.6%	15.6%	11.8%
Return	10.6%	12.0%	10.4%	13.6%	12.6%	16.1%	12.6%	12.0%	11.0%	11.5%	9.8%	11.0%
Max Drawdown	(56%)	(28%)	(61%)	(32%)	(70%)	(44%)	(47%)	(28%)	(68%)	(28%)	(51%)	(23%)
Best Year	57%	52%	127%	127%	218%	218%	107%	87%	116%	58%	38%	38%
Worst Year	(45%)	(9%)	(36%)	(19%)	(48%)	(18%)	(30%)	(20%)	(51%)	(10%)	(37%)	(12%)
Average Months in Trade	NA	12.0	NA	9.0	NA	14.7	NA	12.0	NA	11.0	NA	16.0

GROWTH OF $1 INVESTED IN STRATEGY AND IN BUY AND HOLD



GROWTH OF $1 INVESTED IN STRATEGY AND IN BUY AND HOLD



APPENDIX A3

COUNTRY EQUITY INDICES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

Individual Components

	ANNUAL RETURNS		AVG ANNUAL RETURN BY DECADE	
	B&H	THE STRATEGY	B&H	THE STRATEGY
1971	23.3%	17.0%		
1972	52.7%	50.8%		
1973	3.0%	8.8%		
1974	(20.7%)	3.7%		
1975	34.0%	9.3%		
1976	5.3%	4.6%		
1977	3.7%	8.4%		
1978	25.6%	23.0%		
1979	29.6%	27.2%		
1980	21.3%	17.0%	16.1%	16.3%
1981	(4.1%)	8.8%		
1982	(4.2%)	6.2%		
1983	29.1%	25.2%		
1984	1.9%	1.1%		
1985	67.9%	61.2%		
1986	50.4%	47.1%		
1987	6.6%	7.5%		
1988	27.1%	15.3%		
1989	31.6%	26.6%		
1990	(7.9%)	(6.9%)	17.5%	17.6%
1991	15.5%	2.8%		
1992	(5.6%)	0.4%		
1993	37.1%	26.6%		
1994	4.4%	2.7%		
1995	19.0%	16.1%		
1996	18.8%	18.0%		
1997	12.5%	14.5%		
1998	18.2%	16.8%		
1999	27.1%	23.2%		
2000	(9.8%)	(6.6%)	12.9%	11.0%
2001	(17.0%)	(2.4%)		
2002	(13.6%)	(8.7%)		
2003	44.9%	39.0%		
2004	28.7%	27.5%		
2005	14.8%	14.0%		
2006	33.5%	32.7%		
2007	17.2%	17.2%		
2008	(47.7%)	(11.7%)		
2009	46.8%	25.1%		
2010	10.9%	(5.0%)	7.4%	11.4%

	5 WORST YEARS		
	B&H	THE STRATEGY	
2008	(47.7%)	(11.7%)	2008
1974	(20.7%)	(8.7%)	2002
2001	(17.0%)	(6.9%)	1990
2002	(13.6%)	(6.6%)	2000
2000	(9.8%)	(5.0%)	2010
Average	**(21.8%)**	**(7.8%)**	

18 Country Index

	ANNUAL RETURNS		AVG ANNUAL RETURN BY DECADE	
	B&H	THE STRATEGY	B&H	THE STRATEGY
1971	24.3%	24.3%		
1972	62.5%	62.5%		
1973	(5.6%)	11.8%		
1974	(24.5%)	8.1%		
1975	27.7%	2.0%		
1976	9.7%	2.6%		
1977	2.7%	2.7%		
1978	25.9%	25.9%		
1979	28.3%	28.3%		
1980	24.0%	13.6%	15.3%	17.0%
1981	(3.6%)	0.5%		
1982	(10.9%)	8.2%		
1983	29.6%	29.6%		
1984	(2.4%)	4.0%		
1985	52.9%	44.7%		
1986	49.3%	49.3%		
1987	9.5%	8.1%		
1988	30.3%	17.0%		
1989	24.7%	24.7%		
1990	(10.5%)	(0.7%)	14.7%	17.4%
1991	16.6%	3.3%		
1992	(1.9%)	2.6%		
1993	52.1%	43.8%		
1994	(3.2%)	(3.0%)		
1995	19.1%	16.6%		
1996	19.1%	19.1%		
1997	2.9%	2.1%		
1998	15.6%	(2.7%)		
1999	29.0%	29.0%		
2000	(12.2%)	(8.5%)	12.4%	9.2%
2001	(18.9%)	3.4%		
2002	(17.1%)	(12.6%)		
2003	42.7%	40.4%		
2004	27.9%	27.9%		
2005	14.1%	14.1%		
2006	34.5%	34.5%		
2007	18.8%	18.8%		
2008	(49.7%)	(18.3%)		
2009	50.0%	23.9%		
2010	16.3%	5.4%	7.0%	12.2%

	5 WORST YEARS		
	B&H	THE STRATEGY	
2008	(49.7%)	(18.3%)	2008
1974	(24.5%)	(12.6%)	2002
2001	(18.9%)	(8.5%)	2000
2002	(17.1%)	(3.0%)	1994
2000	(12.2%)	(2.7%)	1998
Average	**(24.5%)**	**(9.0%)**	

APPENDIX B1

CURRENCIES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

	AVERAGE FOR ALL INDIVIDUAL CURRENCIES				
	B&H	THE STRATEGY			
		7 Month	9 Month	11 Month	13 Month
Time in Market	100%	49%	49%	49%	49%
Volatility	8%	6%	6%	6%	6%
Return	0.2%	2.6%	2.5%	2.6%	2.4%
Maximum Drawdown	(44%)	(15%)	(16%)	(15%)	(15%)
Best Year	31%	29%	28%	28%	28%
Worst Year	(17%)	(7%)	(7%)	(6%)	(6%)
Avg Months in Trade	NA	7.4	8.8	10.5	12.8

	17 CURRENCY INDEX				
	B&H	THE STRATEGY			
		7 Month	9 Month	11 Month	13 Month
Time in Market	100%	59%	60%	61%	62%
Volatility	3%	3%	3%	3%	3%
Return	1.8%	2.1%	2.1%	2.2%	2.2%
Maximum Drawdown	(14%)	(6%)	(6%)	(8%)	(5%)
Best Year	11%	11%	11%	11%	11%
Worst Year	(5%)	(3%)	(3%)	(3%)	(1%)
Avg Months in Trade	NA	9.4	14.1	14.3	18.0

APPENDIX B2

CURRENCIES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

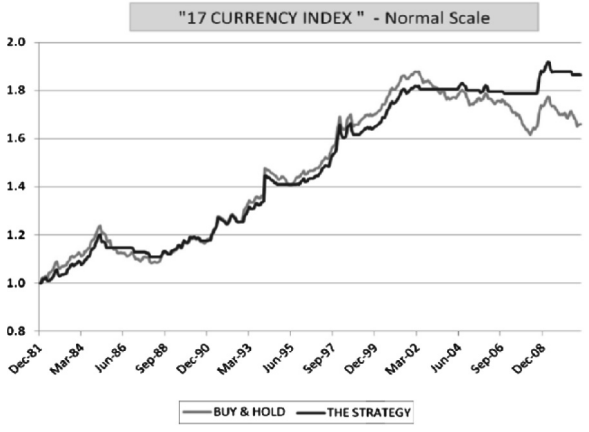
	AVG OF ALL COMPONENTS		17 CURRENCY INDEX	
	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	49%	100%	61%
Volatility	8.1%	5.9%	3.2%	2.8%
Return	0.2%	2.6%	1.8%	2.2%
Max Drawdown	(43%)	(15%)	(14%)	(8%)
Best Year	31%	28%	11%	11%
Worst Year	(17%)	(6%)	(5%)	(3%)
Average Months in Trade	NA	10.5	NA	14.3

	AUSSIE DOLLAR		NEW ZEALAND DOLLAR		SOUTH AFRICAN RAND		BRITISH POUND		CANADIAN DOLLAR		CHINESE YUAN	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	48%	100%	48%	100%	35%	100%	49%	100%	46%	100%	44%
Volatility	9.5%	5.9%	9.9%	6.3%	12.9%	6.7%	8.8%	6.0%	5.3%	3.9%	10.6%	10.3%
Return	(0.5%)	2.5%	(0.3%)	3.9%	(6.5%)	0.6%	(0.7%)	1.7%	(0.6%)	1.5%	4.7%	5.1%
Max Drawdown	(56%)	(14%)	(52%)	(11%)	(92%)	(28%)	(43%)	(20%)	(40%)	(9%)	(24%)	(4%)
Best Year	34%	31%	28%	27%	37%	37%	27%	21%	23%	21%	46%	47%
Worst Year	(23%)	(7%)	(27%)	(5%)	(36%)	(15%)	(26%)	(11%)	(16%)	(7%)	(7%)	(0%)
Average Months in Trade	NA	8.3	NA	11.0	NA	12.4	NA	7.7	NA	9.6	NA	11.0

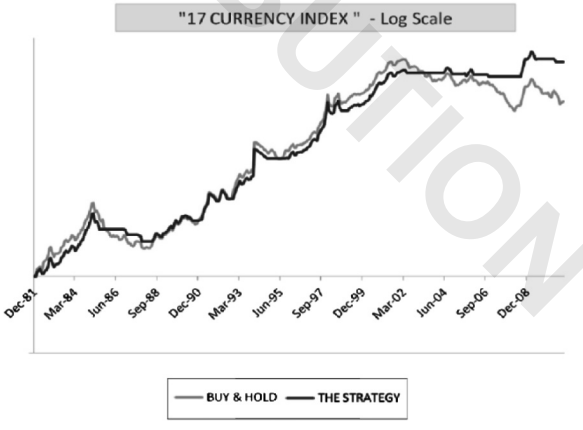
	DANISH KRONE		HONG KONG DOLLAR		INDIAN RUPEE		JAPANESE YEN		MALAYSIAN RINGIT		NORWEGIAN KRONE	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	48%	100%	57%	100%	72%	100%	40%	100%	36%	100%	48%
Volatility	9.2%	6.5%	2.7%	2.7%	6.5%	6.1%	9.5%	5.9%	6.7%	6.3%	8.9%	6.3%
Return	(0.9%)	3.5%	1.1%	1.0%	5.7%	6.3%	(3.3%)	1.0%	1.1%	1.8%	0.1%	2.1%
Max Drawdown	(60%)	(12%)	(5%)	(5%)	(20%)	(8%)	(70%)	(19%)	(30%)	(15%)	(47%)	(16%)
Best Year	17%	16%	19%	19%	42%	42%	16%	12%	50%	49%	28%	32%
Worst Year	(18%)	(6%)	(1%)	(0%)	(11%)	(3%)	(21%)	(7%)	(8%)	(3%)	(20%)	(9%)
Average Months in Trade	NA	10.6	NA	6.9	NA	23.2	NA	6.7	NA	6.6	NA	7.8

	SWEDISH KRONA		SINGAPORE DOLLAR		SRI LANKA RUPEE		SWISS FRANC		THAI BHAT	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	46%	100%	38%	100%	86%	100%	43%	100%	44%
Volatility	9.6%	7.1%	4.5%	3.5%	3.6%	3.6%	9.8%	6.4%	9.3%	7.2%
Return	0.7%	4.0%	(1.5%)	−0.1%	6.0%	5.9%	(2.1%)	1.7%	0.9%	1.6%
Max Drawdown	(45%)	(18%)	(42%)	(18%)	(6%)	(6%)	(65%)	(15%)	(44%)	(29%)
Best Year	33%	33%	18%	16%	21%	21%	16%	14%	73%	40%
Worst Year	(18%)	(9%)	(10%)	(3%)	(3%)	(5%)	(21%)	(6%)	(18%)	(14%)
Average Months in Trade	NA	9.5	NA	5.9	NA	30.5	NA	9.0	NA	7.0

GROWTH OF $1 INVESTED IN STRATEGY AND IN BUY AND HOLD



GROWTH OF $1 INVESTED IN STRATEGY AND IN BUY AND HOLD



APPENDIX B3

COMMODITIES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

Individual Components

	ANNUAL RETURNS		AVG ANNUAL RETURN BY DECADE	
	B&H	THE STRATEGY	B&H	THE STRATEGY
1982	5.5%	6.6%		
1983	2.8%	3.8%		
1984	3.9%	7.9%		
1985	(4.7%)	2.4%		
1986	(1.1%)	0.9%		
1987	(1.6%)	3.1%		
1988	2.5%	1.9%		
1989	2.2%	3.4%		
1990	(1.3%)	2.6%		
1991	2.5%	2.5%	0.9%	3.6%
1992	1.1%	1.5%		
1993	2.6%	3.5%		
1994	1.5%	3.8%		
1995	(1.9%)	1.2%		
1996	2.8%	3.2%		
1997	11.2%	9.5%		
1998	(2.3%)	(0.1%)		
1999	2.0%	1.1%		
2000	2.3%	4.4%		
2001	0.2%	1.4%	2.1%	3.0%
2002	0.2%	2.6%		
2003	0.5%	5.5%		
2004	(0.5%)	1.4%		
2005	2.6%	0.8%		
2006	(3.5%)	(0.9%)		
2007	(3.8%)	1.3%		
2008	(0.1%)	7.5%		
2009	1.5%	0.9%		
2010	(1.1%)	(0.8%)	(0.4%)	1.9%

	5 WORST YEARS		
	B&H	THE STRATEGY	
1985	(4.7%)	(0.9%)	2006
2007	(3.8%)	(0.8%)	2010
2006	(3.5%)	(0.1%)	1998
1998	(2.3%)	0.8%	2005
1995	(1.9%)	0.9%	2009
Average	**(3.3%)**	**(0.0%)**	

17 Currency Index

	ANNUAL RETURNS		AVG ANNUAL RETURN BY DECADE	
	B&H	THE STRATEGY	B&H	THE STRATEGY
1982	6.8%	3.6%		
1983	4.6%	4.6%		
1984	7.5%	7.5%		
1985	(5.1%)	(1.5%)		
1986	(1.4%)	(0.2%)		
1987	(3.7%)	(3.3%)		
1988	3.2%	1.3%		
1989	4.8%	4.8%		
1990	0.8%	(0.0%)		
1991	5.9%	5.9%	1.9%	1.8%
1992	4.3%	2.6%		
1993	4.7%	4.7%		
1994	5.7%	5.2%		
1995	0.2%	0.6%		
1996	2.6%	2.6%		
1997	10.6%	10.6%		
1998	1.0%	0.6%		
1999	2.6%	2.0%		
2000	6.0%	6.0%		
2001	3.5%	3.5%	4.3%	4.0%
2002	(2.0%)	(0.1%)		
2003	(3.6%)	0.0%		
2004	(0.3%)	(0.4%)		
2005	1.6%	1.1%		
2006	(2.5%)	(1.8%)		
2007	(5.1%)	0.0%		
2008	5.0%	5.1%		
2009	(1.8%)	0.1%		
2010	(2.5%)	(0.8%)	(0.8%)	0.7%

	5 WORST YEARS		
	B&H	THE STRATEGY	
2007	(5.1%)	(3.3%)	1987
1985	(5.1%)	(1.8%)	2006
1987	(3.7%)	(1.5%)	1985
2003	(3.6%)	(0.8%)	2010
2010	(2.5%)	(0.4%)	2004
Average	**(4.0%)**	**(1.5%)**	

APPENDIX C1

COMMODITIES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

	AVERAGE FOR ALL INDIVIDUAL COMMODITIES				
	B&H	THE STRATEGY			
		7 Month	9 Month	11 Month	13 Month
Time in Market	100%	50%	50%	50%	50%
Volatility	24%	17%	17%	17%	17%
Return	2.1%	4.7%	3.8%	3.1%	3.1%
Maximum Drawdown	(66%)	(46%)	(47%)	(49%)	(49%)
Best Year	82%	69%	68%	67%	67%
Worst Year	(40%)	(23%)	(22%)	(22%)	(23%)
Avg Months in Trade	NA	5.8	6.6	7.4	8.6

	46 COMMODITY INDEX				
	B&H	THE STRATEGY			
		7 Month	9 Month	11 Month	13 Month
Time in Market	100%	57%	58%	59%	58%
Volatility	8%	6%	6%	6%	6%
Return	2.5%	4.7%	4.7%	4.5%	4.5%
Maximum Drawdown	(34%)	(12%)	(13%)	(12%)	(14%)
Best Year	27%	27%	26%	27%	26%
Worst Year	(18%)	(6%)	(5%)	(5%)	(5%)
Avg Months in Trade	NA	7.6	7.4	11.9	17.2

APPENDIX C2

COMMODITIES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

	AVG OF ALL COMPONENTS		46 COMMODITY INDEX	
	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	50%	100%	59%
Volatility	24.0%	17.1%	7.9%	6.1%
Return	2.1%	3.1%	2.5%	4.5%
Max Drawdown	(66%)	(49%)	(34%)	(12%)
Best Year	82%	67%	27%	27%
Worst Year	(40%)	(22%)	(18%)	(5%)
Average Months in Trade	NA	7.4	NA	11.9

	Aluminum		Bananas		Barley		Beef		Coal		Cocoa Beans	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	50%	100%	47%	100%	53%	100%	52%	100%	48%	100%	48%
Volatility	20.0%	15.9%	65.0%	41.3%	25.1%	18.4%	13.0%	9.9%	19.3%	15.0%	21.2%	14.9%
Return	1.7%	6.4%	3.0%	(22.4%)	2.3%	4.5%	1.1%	0.6%	3.4%	9.8%	1.2%	3.5%
Max Drawdown	(71%)	(48%)	(70%)	(100%)	(65%)	(33%)	(44%)	(36%)	(66%)	(40%)	(68%)	(32%)
Best Year	72%	61%	34%	33%	47%	47%	36%	36%	83%	83%	55%	51%
Worst Year	(37%)	(14%)	(34%)	(63%)	(43%)	(15%)	(17%)	(17%)	(36%)	(9%)	(40%)	(18%)
Average Months in Trade	NA	7.7	NA	3.2	NA	7.4	NA	6.4	NA	14.2	NA	6.6

	Coffee, Other Mild Arabicas		Coffee, Robusta		Rapeseed Oil		Copper		Cotton		Fishmeal	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	49%	100%	46%	100%	49%	100%	51%	100%	50%	100%	56%
Volatility	28.2%	21.7%	25.2%	18.8%	30.8%	18.5%	22.6%	16.0%	18.8%	13.5%	16.4%	11.9%
Return	2.3%	4.9%	(0.6%)	5.1%	2.4%	1.9%	5.4%	7.6%	1.8%	7.4%	1.2%	5.4%
Max Drawdown	(80%)	(57%)	(88%)	(54%)	(71%)	(79%)	(64%)	(39%)	(68%)	(29%)	(67%)	(29%)
Best Year	109%	109%	107%	107%	63%	56%	125%	108%	119%	119%	64%	56%
Worst Year	(50%)	(21%)	(53%)	(26%)	(41%)	(37%)	(53%)	(22%)	(35%)	(12%)	(35%)	(11%)
Average Months in Trade	NA	5.2	NA	8.4	NA	5.9	NA	6.6	NA	8.1	NA	10.6

	Groundnuts (peanuts)		Hides		Iron Ore		Lamb		Lead		Soft Logs	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	48%	100%	57%	100%	53%	100%	53%	100%	50%	100%	54%
Volatility	25.8%	21.8%	21.5%	13.7%	22.5%	10.2%	14.8%	10.4%	25.1%	19.8%	22.8%	15.4%
Return	(2.2%)	4.2%	1.4%	1.0%	9.1%	2.6%	0.7%	(0.2%)	4.0%	6.6%	2.4%	(4.8%)
Max Drawdown	(79%)	(45%)	(72%)	(40%)	(27%)	(27%)	(47%)	(49%)	(74%)	(37%)	(53%)	(88%)
Best Year	79%	74%	78%	31%	87%	60%	51%	51%	140%	60%	35%	30%
Worst Year	(61%)	(40%)	(48%)	(20%)	(12%)	0%	(30%)	(17%)	(63%)	(13%)	(27%)	(36%)
Average Months in Trade	NA	8.4	NA	7.2	NA	9.6	NA	5.9	NA	7.0	NA	4.3

	Hard Logs		Maize		Nickel		Oil		Olive Oil		Oranges	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	51%	100%	50%	100%	46%	100%	53%	100%	54%	100%	49%
Volatility	22.5%	18.5%	20.1%	16.0%	31.9%	24.8%	29.5%	18.7%	15.2%	11.1%	45.4%	30.6%
Return	3.5%	4.8%	1.8%	3.5%	4.5%	11.6%	2.8%	5.9%	1.0%	2.6%	2.7%	(12.9%)
Max Drawdown	(74%)	(52%)	(63%)	(44%)	(81%)	(55%)	(76%)	(50%)	(59%)	(41%)	(64%)	(99%)
Best Year	102%	102%	56%	56%	155%	130%	140%	94%	45%	45%	91%	42%
Worst Year	(27%)	(36%)	(36%)	(21%)	(62%)	(25%)	(54%)	(30%)	(41%)	(17%)	(29%)	(42%)
Average Months in Trade	NA	8.1	NA	5.7	NA	8.5	NA	8.5	NA	7.4	NA	4.4

	Palm Oil		Swine		Poultry		Rice		Rubber		Fish (salmon)	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	56%	100%	48%	100%	54%	100%	48%	100%	50%	100%	45%
Volatility	28.4%	20.8%	39.3%	25.8%	8.1%	6.8%	23.0%	18.4%	22.4%	16.5%	18.9%	13.1%
Return	2.8%	7.8%	(1.3%)	(3.2%)	2.9%	2.4%	0.4%	2.8%	4.2%	9.9%	(0.4%)	0.1%
Max Drawdown	(79%)	(48%)	(89%)	(76%)	(19%)	(16%)	(70%)	(52%)	(73%)	(43%)	(72%)	(52%)
Best Year	85%	75%	167%	33%	22%	17%	53%	65%	125%	72%	39%	39%
Worst Year	(50%)	(19%)	(66%)	(32%)	(14%)	(9%)	(30%)	(15%)	(50%)	(22%)	(26%)	(20%)
Average Months in Trade	NA	9.5	NA	5.5	NA	6.9	NA	6.5	NA	10.9	NA	6.5

APPENDIX C2 *(Continued)*

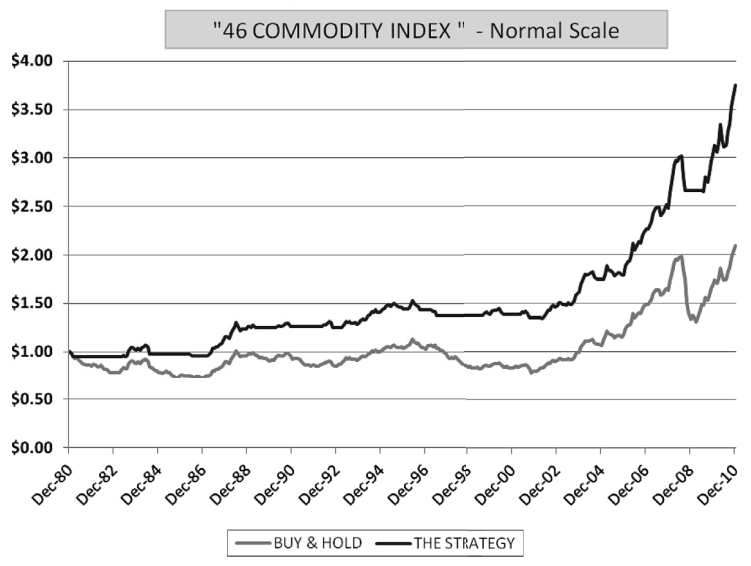
COMMODITIES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

	Hard Sawnwood		Soft Sawnwood		Shrimp		Soybean Meal		Soybean Oil		Soybeans	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	57%	100%	57%	100%	48%	100%	49%	100%	49%	100%	47%
Volatility	20.0%	16.4%	23.0%	14.0%	28.4%	19.4%	21.5%	17.3%	21.8%	17.2%	19.9%	15.4%
Return	4.1%	4.9%	2.9%	(5.0%)	(0.6%)	(6.3%)	1.4%	5.3%	2.7%	6.9%	1.7%	4.9%
Max Drawdown	(53%)	(41%)	(37%)	(83%)	(63%)	(91%)	(56%)	(45%)	(63%)	(38%)	(54%)	(30%)
Best Year	102%	102%	33%	11%	51%	51%	71%	71%	65%	63%	74%	74%
Worst Year	(35%)	(36%)	(33%)	(20%)	(31%)	(41%)	(34%)	(17%)	(34%)	(15%)	(30%)	(17%)
Average Months in Trade	NA	9.2	NA	4.2	NA	3.9	NA	7.5	NA	6.8	NA	6.9

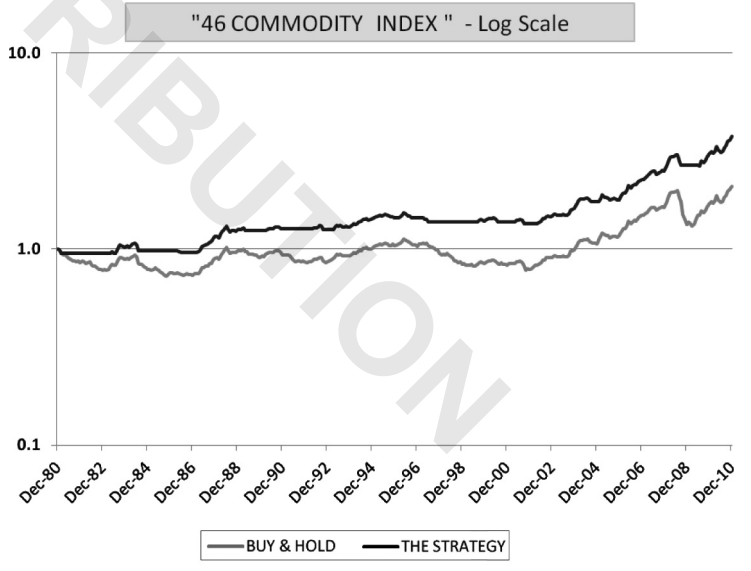
	Sugar		Sugar, U.S. Import Price		Sunflower Oil		Tea		Tin		Uranium	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	48%	100%	53%	100%	45%	100%	51%	100%	48%	100%	47%
Volatility	32.3%	22.6%	10.8%	7.4%	31.3%	21.2%	27.4%	20.8%	19.2%	14.4%	24.6%	16.2%
Return	0.3%	7.4%	0.8%	2.2%	2.8%	6.2%	1.6%	(1.7%)	1.9%	6.7%	2.7%	8.3%
Max Drawdown	(93%)	(52%)	(63%)	(31%)	(64%)	(39%)	(69%)	(74%)	(79%)	(36%)	(75%)	(60%)
Best Year	120%	87%	58%	45%	102%	65%	71%	49%	67%	67%	87%	87%
Worst Year	(55%)	(16%)	(44%)	(4%)	(42%)	(20%)	(49%)	(24%)	(30%)	(20%)	(41%)	(46%)
Average Months in Trade	NA	7.4	NA	6.3	NA	6.5	NA	5.1	NA	9.8	NA	11.0

	Wheat		Wool, Coarse		Wool, Fine		Zinc	
	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY	B&H	THE STRATEGY
Time in Market	100%	44%	100%	48%	100%	49%	100%	51%
Volatility	19.9%	14.9%	16.7%	11.6%	22.7%	14.3%	22.2%	17.0%
Return	1.7%	5.2%	1.7%	5.7%	1.8%	6.6%	3.6%	7.1%
Max Drawdown	(64%)	(37%)	(60%)	(24%)	(73%)	(32%)	(75%)	(38%)
Best Year	80%	61%	83%	83%	89%	89%	141%	141%
Worst Year	(40%)	(14%)	(42%)	(12%)	(39%)	(17%)	(53%)	(29%)
Average Months in Trade	NA	7.0	NA	8.6	NA	8.8	NA	6.5

GROWTH OF $1 INVESTED IN STRATEGY AND IN BUY AND HOLD



GROWTH OF $1 INVESTED IN STRATEGY AND IN BUY AND HOLD



APPENDIX C3

COMMODITIES—11-MONTH MOVING AVERAGE STRATEGY ANNUAL RETURNS

Individual Components

	ANNUAL RETURNS		AVG ANNUAL RETURN BY DECADE	
	B&H	THE STRATEGY	B&H	THE STRATEGY
1981	(11.1%)	(4.7%)		
1982	(8.6%)	(1.5%)		
1983	16.7%	11.7%		
1984	(11.3%)	(5.3%)		
1985	(1.7%)	(1.8%)		
1986	(1.3%)	(2.1%)		
1987	26.2%	18.8%		
1988	9.2%	5.3%		
1989	(5.9%)	(0.0%)		
1990	4.9%	0.5%	1.1%	1.8%
1991	(6.7%)	(5.1%)		
1992	0.3%	(2.3%)		
1993	6.7%	6.4%		
1994	18.2%	13.0%		
1995	5.7%	3.7%		
1996	(0.8%)	(1.5%)		
1997	(3.8%)	(1.3%)		
1998	(13.3%)	(2.7%)		
1999	5.8%	5.3%		
2000	(0.5%)	(0.9%)	0.8%	1.3%
2001	(1.3%)	4.0%		
2002	17.9%	9.7%		
2003	12.7%	8.4%		
2004	10.6%	7.5%		
2005	11.4%	5.2%		
2006	25.3%	18.9%		
2007	17.6%	15.4%		
2008	(13.3%)	2.9%		
2009	32.9%	13.7%		
2010	23.3%	19.6%	13.0%	10.4%

	5 WORST YEARS		
	B&H	THE STRATEGY	
1998	(13.3%)	(5.3%)	1984
2008	(13.3%)	(5.1%)	1991
1984	(11.3%)	(4.7%)	1981
1981	(11.1%)	(2.7%)	1998
1982	(8.6%)	(2.3%)	1992
Average	**(11.5%)**	**(4.0%)**	

46 Commodity Index

	ANNUAL RETURNS		AVG ANNUAL RETURN BY DECADE	
	B&H	THE STRATEGY	B&H	THE STRATEGY
1981	(14.9%)	(5.4%)		
1982	(8.3%)	0.0%		
1983	13.2%	7.9%		
1984	(11.3%)	(4.3%)		
1985	(3.8%)	0.0%		
1986	(3.1%)	(2.0%)		
1987	22.6%	20.5%		
1988	8.9%	8.9%		
1989	(7.4%)	(0.7%)		
1990	2.6%	1.1%	(0.8%)	2.3%
1991	(7.4%)	0.0%		
1992	(0.3%)	(0.7%)		
1993	8.0%	3.7%		
1994	9.6%	9.6%		
1995	2.5%	1.2%		
1996	(0.8%)	(0.1%)		
1997	(8.1%)	(4.7%)		
1998	(12.0%)	0.0%		
1999	1.3%	1.1%		
2000	(2.1%)	(0.5%)	(1.2%)	0.9%
2001	(4.4%)	(2.5%)		
2002	14.7%	9.5%		
2003	9.5%	9.5%		
2004	7.3%	8.1%		
2005	10.2%	2.5%		
2006	26.8%	26.8%		
2007	9.6%	9.6%		
2008	(18.2%)	7.3%		
2009	26.6%	13.8%		
2010	23.9%	23.9%	9.7%	10.5%

	5 WORST YEARS		
	B&H	THE STRATEGY	
2008	(18.2%)	(5.4%)	1981
1981	(14.9%)	(4.7%)	1997
1998	(12.0%)	(4.3%)	1984
1984	(11.3%)	(2.5%)	2001
1982	(8.3%)	(2.0%)	1986
Average	**(12.9%)**	**(3.8%)**	

ENDNOTES

[1]http://moving-averages.technicalanalysis.org.uk.

[2]For periods where an asset class was trading below its moving average, the money was assumed to have been invested in the 90-day T-Bill and returns accrued accordingly at the applicable interest rate available at the time.

[3]IMF. commodities data and statistics can be found at www.imf.org/external/np/res/commod/index.asp.

[4]To avoid replication, we removed from our sample data Brent and Dubai Crude, both of which were found to have a correlation greater than 0.95 with a price index average of Brent, Dubai, and West Texas Intermediary tracked by the IMF.

[5]U.S. Federal Reserve currency data can be found at www.federalreserve.gov/datadownload/Build.aspx?rel=H10.

[6]U.S. Federal Reserve interest rate data can be found at www.federalreserve.gov/econresdata/releases/statisticsdata.htm.

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