The Retirement Advice Centre

200 Day Moving Average Strategy: An Explanation

by David Reed

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INTRODUCTION

At The Retirement Advice Centre **our passion is the science of retirement.**

We continue to explore strategies from leaders of academic research so as to increase the probability of a financially secure retirement…for as long as you live.

The factors that led to closer examination of the 200 Day Moving Average research included:

- Pre and Post Retirees felt very uncomfortable with sharp drops in the value of their retirement savings during and after the Global Financial Crisis (2007-09)
- Post Retirees can be hyper-loss sensitive, for example, a $10 gain is emotionally equal to a $1 loss. This leads to risks of being conservative over the long term, meaning their money may not last a lifetime.
- An aim to potentially reduce the Sequence Risk for retirees in retirement, (ie. the worst returns in the worst order, during early retirement).

In 2013, I met with the author of the white paper 'A quantative approach to tactical asset allocation', Mr Mebane Faber for coffee in Sydney. Mebane explained quite clearly that the strategy is not a 'holy grail' for avoiding market collapses, and his research does show that losses can still occur.

However, his research in both his original paper in 2006, as well as his subsequent 2011 paper on 'Where the Black Swans Hide & The 10 Best Days Myth' highlight that on a historical basis, the strategy has exhibited the ability to reduce (rather than eliminate) volatility when compared to that of a 'buy and hold' strategy. This has been examined further, such as by Theodore Wong (Moving Average: Holy Grail or Fairy Tale, 2009), whom states 'The Moving Average system beats buy-and-hold in both absolute performance and risk-adjusted return'.

What I do know is that it is impossible to predict future performance. This strategy simply may not work in the future like it has in the past. That is the uncertainty of investing in volatile assets.

For those investors that are in the "Retirement Risk Zone" (ie. 5 years either side of Retirement), I believe that the following strategy may be worth consideration.

WHAT IS A MOVING AVERAGE?

A 'moving average' is a trend-line that is based upon historical prices.

For the purposes of this strategy, a simple moving average is used over common asset classes such as the value of the:

- Australian sharemarket (ASX 200 index)
- US sharemarket (Dow Jones Industrial Average index)

Simple Moving Averages are used by technical analysts to evaluate market sentiment and trends.

For instance, a rising 200 day Simple Moving Average (SMA) indicates that the market had continual positive movement over a period and was therefore reflecting an upward trend. A falling SMA may represent a downward trend.

HOW IT WORKS

The process involves:-

1. **Buy Rule**

   Buy into the asset class when the end-of-month price is greater than the 200 day simple moving average

2. **Sell Rule**

   Sell and move into Cash or high quality Fixed Interest assets when the end-of-month price is lower than the 200 day simple moving average.

As an illustration, below is a graph that illustrates the transactions during the period of 2008 to 2009 for the Australian All Ordinaries Index.

A buy is made when the BLUE line (ie. the stock market line) intersects and rises **above** the **BLACK** 200 day historical moving average trend line.

A sell is made when the BLUE stock market line intersects and moves **below** the BLACK line.

The money, as a result of exiting the market (ie. after the sell), is then placed in either the cash bank account, or invested into conservative fixed interest until a new 'buy' signal is triggered in coming months.

IMPLEMENTATION

A large part of this strategy revolves around the ability to implement the strategy in a cost effective manner.

This is why, for investors that implement this strategy, an end of the month assessment limits the maximum number of transactions (ie. buys and sells) to 12 in any one year.

My preference is to examine the moving average on the 1st business day of each month and assess whether a moving average intersection has occurred at the close of business on the last business day of the last month. The objective is to assess monthly so as to minimise the amount of trades per year particularly at times when markets are volatile which can cause investors to move in and out of the market regularly using this strategy. .

Any potential Buy or Sell signal may then be assessed and implemented with the investment in that particular asset class.

THE RESULTS FOR THE US MARKET

In his research, Mebane Faber illustrates that over a 105 year period (from 1900 to 2005) the results of adopting such a strategy in comparison to a buy and hold strategy for the S&P 500 (ie. a proxy for the US market) are as follows:

	S & P 500 (Buy & Hold)	200 Day Moving Average Strategy
Returns (CAGR)	9.75% p.a	10.02% p.a
Risk (Standard Deviation)	19.91% p.a	15.08% p.a
Maximum Drawdown	-83.66%	-44.65%

* Source: Mebane Faber, *A Quantative Approach to Tactical Asset Allocation*, July 2006.

Based upon this long term research, it is apparent that the rates of return are similar, yet volatility (or risk as measured by standard deviation per annum) is lower (for the 200 Day Moving Average Strategy) by more than 4% per annum.

Critics of the strategy indicate, perhaps rightly, that the reason for similar returns is due to the significant market downturns, eg. the Great Depression, the Oil Crisis, etc.

Overall the Buy and Hold strategy is similar in returns to the 200 Day Moving Average Strategy, providing an enhanced return due to limited active trading costs.

In saying this, in my opinion, the most important feature from this research relates to the maximum drawdown. This refers to the worst cumulative loss of value in those assets during those 105 years.

It is apparent that the difference between using the moving average strategy, and the traditional buy and hold philosophy, is a significant 39%.

This is particularly important for retirees. For example, a fall of even 10% of asset value, combined with a pension payment (eg. 5% over a year) means that the portfolio has to rise more than the 15% fall to increase. Hence the drawdown rate of a portfolio is extremely important.

You will note that a buy and hold on the US stockmarket has resulted in an 83.66% drawdown. When you are in retirement and drawing money on your capital, that is quite simply devastating.

Sure, it's almost certain that your portfolio will be diversified into other conservative assets such as bonds, annuities and cash which will offset these numbers. But the growth assets will have fallen in such value, that it may take many many years to recover, possibly not within your life expectancy.

The worst drawdown historically for the 200 Day Moving Average strategy was 44.65%. It is still very significant, and as I mentioned earlier, investing in volatile assets means that there are no certainty of the investment outcomes.

For retirees, if you have implemented a 'safe income floor' with conservative assets, which is our preferred portfolio methodology, then the 'upside growth' assets experiencing a 44.65% drawdown will of course be concerning, but it is likely to have a significantly greater probability of your money lasting a longer timeframe when compared to traditional buy and hold strategies.

Please note that while this strategy has exhibited these historical performance statistics, past results are in no way a prediction of future performance.

RESULTS FOR THE AUSTRALIAN MARKET

Using ASX data, we have analysed this approach for the Australian market over the past 30 years.

The results are somewhat similar to the US data, and the pro's and con's can be clearly shown.

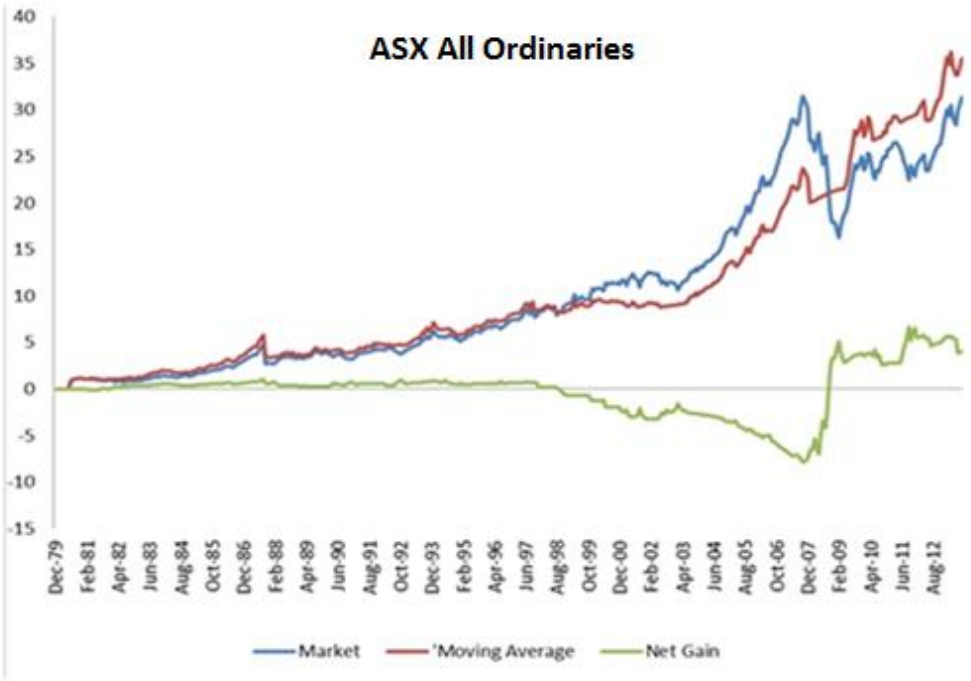
The graph below shows how $1 invested in the Australian stock market (ASX All Ordinaries) would have grown over the past 30 Years (Blue line).

The 200 day moving average line is then overlaid (Red line).

The difference between these two strategies is shown (Green line).

When the green line is above zero it indicates that the strategy is performing better than those who simply buy and hold. Note that this excludes any taxes or costs.

When the green line is below zero it indicates that the strategy is underperforming those who simply buy and hold.



Source: S&P/ASX All Ordinaries Index (Accumulation) January 1980-March 2000 (ASX All Ordinaries Accumulation Index), April 2000 to present (S&P All Ordinaries Index (Accumulation).

This graph provides similar outcomes to the very long term results from the USA.

- Both strategies share similar returns over the long term.
- When the stock market rose dramatically in the late 1990's simply holding the stock market and not doing anything would have generated higher returns. This is seen by the green 'comparison' line being below zero.
- When the stock market fell dramatically in 2007 (GFC), by exiting out of the Australian market during this period, the 200 day moving average strategy enhanced it's return and outperformed the buy-and-hold strategy.

ADVANTAGES & DISADVANTAGES

Historically, it is evident that there has been a number of advantages and disadvantages for investors to implement the 200 Day Moving Average strategy.

We will share a brief list of those pro's and con's below:

Potential Advantages of this Strategy

1. Research from the USA has shown that risk was lowered historically during volatile market periods as investors had sold out of the stockmarket assets and were invested conservatively.

2. The mechanical, quantative nature of the strategy provides a disciplined process to rebalance portfolios, invest new money or potentially manage risks when investing. This can reduce emotionally driven choices.

3. While costs will increase with this type of strategy compared to a Buy and Hold approach, a monthly assessment can assist to reduce transaction costs.

4. Returns historically have shown the strategy to make similar returns to that of a traditional buy-and-hold approach.

Potential Disadvantages of this Strategy

1. In markets that are trending sideways, a 'whipsaw' effect can result that means each month you may be buying into the market, and a month later selling out of it, and so on.

   This can have a negative effect on the portfolio as selling out of each investment will trigger buy or sell costs, and potential tax expenses.

   While our aim is to minimise these expenses by investing only on a monthly basis (ie. buy or sell at a maximum once per month), however it is inevitable that costs are increased through the buying and selling of any stockmarket investments, and any potential taxation considerations.

2. You may miss the Best Days for market returns. Employing the strategy at the end of each month will invariably result in sometimes selling or buying days or even weeks after the high or the low of the market. You may miss higher prices to sell or lower prices to buy. This strategy serves to reduce the risk within the portfolio. It should not be pursued on the basis of increasing returns.

3. The sale of investments will result in cash balances increasing. You may wish to consider the use of an operating bank account, or alternatively, a conservative fixed interest fund. The use of fixed interest funds will potentially enhance returns, however, it may mean that there is a delay in buying back into the stockmarket.

4. This strategy will mean less to those investors who are comfortable with market movements and thus do not feel any benefit from the reduced risk.

5. It is highly likely, which is also shown historically, there will be times that the strategy does not provide returns equal to, or above the traditional strategy of buying and holding your share investments.

CONCLUSION

Inevitably, there are risks associated with this strategy.

You may increase your trading costs by moving in, then out of equity markets over a period of months. This is the risk in trend-less markets.

Or, a fast, sharp fall within a matter of days or a few weeks could still see the portfolio fall fast and sharply in value. If the market is generally rising, and a 'black swan' event occurs with the market falling immediately, then the portfolio is not protected from this.

The 200 day moving average strategy is another tool to be considered when managing risk. For retirees, in the period of 5 years either side of retirement, this may particularly be of interest.

In his paper 'Where the Black Swans Hide and the 10 Best Days myth', Mebane Faber concludes with this summary, for which I believe is worth finishing upon so that you can give due consideration to:-

1. The stockmarket historically has risen about two-thirds of the time.
2. All of the stockmarket return occurs when the market is already up trending.
3. The volatility is much higher when the market is declining.
4. Most of the best and worst days occur when the market is already declining.
5. The reason markets are more volatile when declining is because investors use a different part of their brain making money than when losing money.

GLOSSARY OF TERMS

CAGR

Refers to Compound Average Growth Rate, being the compounding investment returns had the portfolio grown by the same rate every year, over the period analysed.

Standard Deviation

A measure of the volatility of the portfolio, or simply how much the portfolio goes up and down which you could say is a measure of risk. The lower the standard deviation indicates it is less volatile therefore it is said to be less risky.

Maximum Drawdown

A drawdown is the reduction of portfolio value over a period of time. This is normally calculated by the difference between the highest peak value minus the relative lowest trough value.

Simple Moving Average

The addition of the closing price of the asset value for a number of time periods (eg. 200 days). This total value is then divided by the number of time periods (eg. 200).