THE PERTH MINT AUSTRALIA | TREASURY

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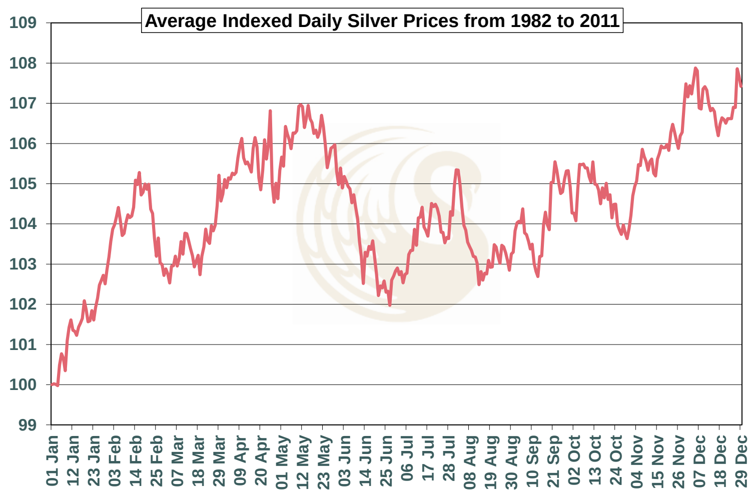
Silver Seasonality

Ed Steer recently featured a chart of silver's seasonality from SeasonalCharts.com. The fact that the chart just shows averages, without any indication of the reliability of those averages, made me cautious. Below I'll investigate seasonality in the silver market and its dependability.

The chart below uses London Fix data from 1982 through to 2011, the time period of the chart in Ed Steer's post. 1982 is not a bad starting point as this excludes silver's dramatic run up and crash which, due to the actions of the Hunts and the regulatory response, is arguably not an example of normal market behaviour.

The method used is to first fill in any blank days with the previous day's prices to get a continuous data series. Then each day's price for each year is indexed so that the 2nd of January equals 100. That way each year can be compared directly with each other, effectively converting each year's dollar prices into percentage movements.

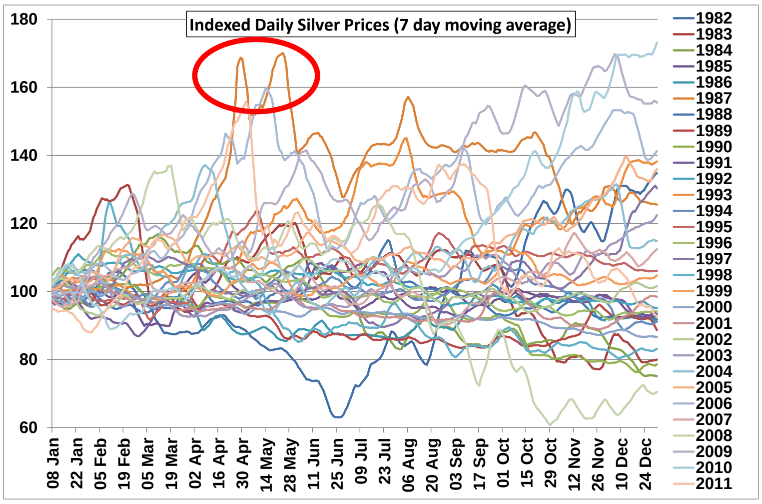
Finally, the each day's indexed price is averaged. For example, find the average of the 14 March 1982, 14 March 1983, etc up to the 14 March 2011. It is worth noting that this approach means we are only working with 30 points of data for each day of the year. This is not a large sample and can mean that the average can be influenced by a one significantly large data point.



From this chart, it would seem that one good strategy would be to sell in April/May and buyback in July. However, the average hides the variability in price trends between years.

As Adam Hamilton notes in this article on gold's seasonality, *"averaging 10 and 90 or 45 and 55 both yield 50, but as a speculator I have much more confidence the tighter second group will have better odds of being relevant to my trades."*

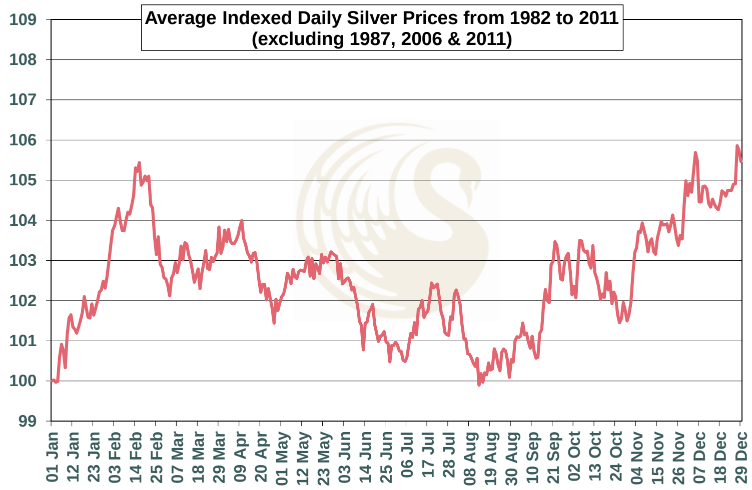
Adam uses standard deviations to work out how confident he is in seasonality charts. This is statistically robust (although he only uses one standard deviation, which is only 68.2% of “confidence”) but another way of looking at variability is charting each year’s indexed prices (see below) that went into calculating the average in the chart on the previous page. I have smoothed the data out using a seven day moving average to make it (slightly) more readable.



I think it should be obvious when looking at this chart that the data underlying the first chart is highly variable, without any clear seasonality or recurring pattern.

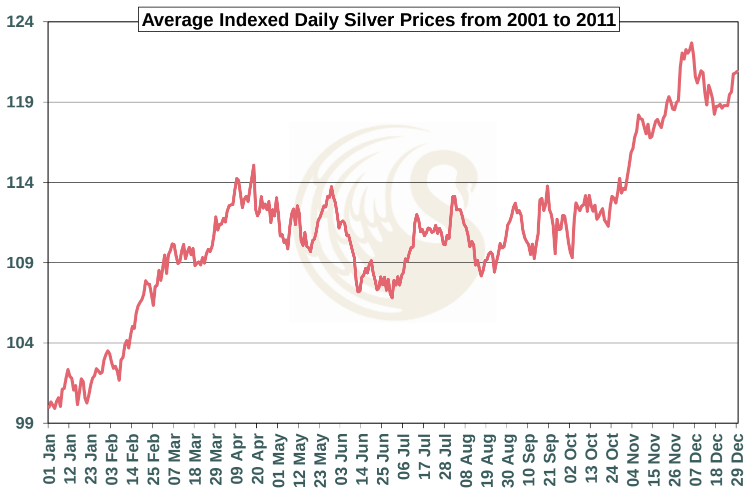
Earlier I mentioned the potential for a small sample to be skewed by significant numbers. Consider the three years 1987, 2006 and 2011 around April/May (circled in red in the chart above). It looks like these three years are probably skewing that “sell in April/May, buy in July” rule by pushing up the daily averages during April and May. So what happens if we take out these three “abnormal” years and recalculate the averages? The chart below is the result.

The removal of just three years out of thirty has not just changed the April and May averages, but completely changed the whole pattern of price movements compared to the original chart. Now it is a case of sell in February, buy in August. If seasonality “rules” are so heavily affected by removal of a few bits of data, it isn’t looking like a reliable method.



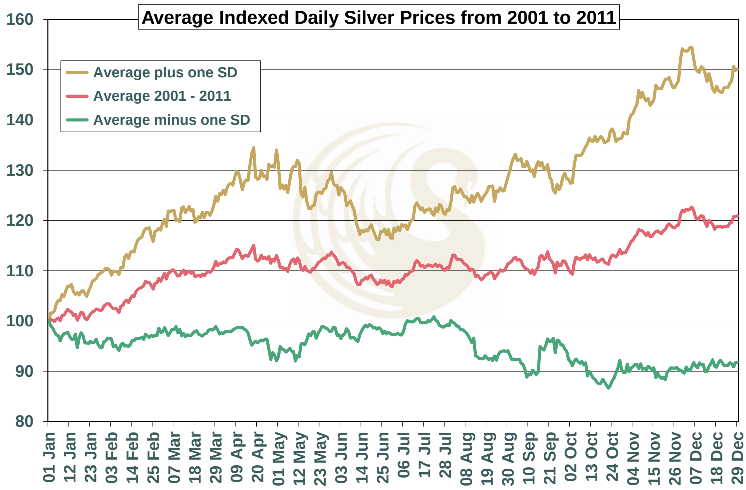
In this article on silver seasonality, Adam Hamilton suggests that using 30 year time frames for seasonal analysis *“encompass bulls and bears alike, and prices behave very differently in bulls and bears”*. He therefore prefers to look at silver’s bull market from 2000 to 2009 (the date of the article) and comes out in favour of some seasonality for silver, particularly in respect of a US “summer doldrum” period. I think he underplays the variability in the data, and thus overplays the confidence in relying on this seasonal indicator, but let us have a look at seasonality just for the recent bull market.

Below is a silver seasonal chart for the time period 2001 (start of silver's bull market in my opinion) through to 2011. This chart is not materially different to Adam's 2000-2009 chart and shows silver trending sideways from April through to October.



Again, the question is: what is the variability or reliability of this average?

To be statistically robust, let's add and subtract one standard deviation (SD) to the average in the chart at right, as Adam has done in his analysis. See below for this chart (the red line is the same data in both charts).



To give an example of how to interpret this chart, consider the 29th of December. The chart says that, on average, silver will end the year at 120, or up 20%. However, the green line says that the average could end up at 91 (or down 9%). The gold line says that the average could also end at 150 (or up 50%).

Since the green and gold lines are one standard deviation away from the average, it means that while this seasonality chart indicates silver will be up 20% by the end of a year on average, there is a 68.2% chance it will be between -9% or +50%. The rest of the 31.8% of the time it might end up further way from the average than -9% or +50%. Does that sound like a very reliable prediction?

Another way of looking at the chart above is that 68.2% of the time the red line could be anywhere between the green and gold lines. No matter what different time periods or combinations (eg 1971-1980 bull and 2000-2011 bull) I tried, I have not been able to come up with a seasonal chart that doesn't have this amount of variability. The conclusion is that silver does not demonstrate any real seasonality.

The reason for this is that silver is a global market in which supply and demand are not driven by seasonal factors. Silver supply is not affected by weather – recycling, for example, is driven by high prices. Silver demand may have some seasonal drivers but being a global market, these are dispersed all through the year:

- Chinese new year;
- Hindu Akshaya Tritiya and Dhanteras in April and November respectively;
- Western Christmas jewellery sales;
- End of tax year selling (and refund cheques), which differs in each country;
- New year dated bullion coin releases – for US Mint this is in January but Perth Mint does this in late Q3 to early Q4.

When you then overlay silver's generally acknowledged higher volatility (compared to gold) on top of the above seasonal factors, it results in a lot of variability around the seasonal average and not one I'd want to base a trading strategy on. Adam also cautions, noting that *"seasonals are merely secondary drivers of prices, tailwinds or headwinds"* and suggests looking *"to technicals and sentiment first, and only then consider whether seasonals are likely to amplify or retard the prevailing short-term trend"* (considering fundamentals also wouldn't go astray!)

So the next time you see a seasonal chart, be weary that it is not just another example of the saying "Lies, damned lies, and statistics."

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