



## **MODULE 4 UNIT 2**

### **Video 1 Part 2 Transcript**

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HANS-JÖRG VON METTENHEIM: So, what you see here in the second row are the results of a simple buy and hold strategy. And what you see in the third row just below are the results of our simple moving average trading strategy. And what we notice is actually quite encouraging. For the buy and hold strategy, we get a sum of returns of 549%. And for our moving average strategy, we get a sum of returns of 620%.

So, this information in itself is quite encouraging. However, it is also a bit useless if we don't check the annualised returns and the annualised standard deviation. So, what we will see here is the buy and hold strategy gives us an annualised return of around 111%. And the moving average strategy gives us an annualised return of 126%. And the corresponding standard deviations are 78% for the buy and hold and only 54% for our simple moving average strategy. And this information, in combination, now is what makes our results actually quite encouraging, because we get a slightly higher annualised return for a markedly lower annualised standard deviation.

And what we can do now is divide annualised return by annualised standard deviation and compute something that we could call the Sharpe ratio. So, you'll remember for the Sharpe ratio, you would have to subtract the risk-free rate. So, essentially whatever that might be, it is very likely close to zero. So, it should influence our results that much. But the upshot of doing that is that for buy and hold, we get a Sharpe ratio of 1.43, as you can see in Cell N2. And for our simple moving average strategy, we get a Sharpe ratio of 2.29. So, indeed, our strategy seems to be working quite nicely.

Sometimes, we can argue that a picture says more than one thousand words. So, let me very quickly show you the results on a graph. So, essentially we have in light blue buy and hold, and in dark blue, we have our strategy. So, as you will see, our strategy has its own share of high volatility. It's not for the faint of the heart, certainly. But we still notice that our simple moving average strategy nicely manages to avoid the drawdowns towards the end of 2018 and also the recent drawdowns that we can witness over the past few months – so, that would be around April, May, and June 2021 – is also dampened.

Also keep in mind that we have a logarithmic axis here, essentially otherwise we wouldn't be able to see anything on the graph. But it is quite encouraging to notice that our strategy, which is very simple, in the end fares pretty well.

So, I hope that this could give you a little bit of insight on how to essentially back-test simple trading strategies, just using the spreadsheet program.

So, of course there are many things that are missing in this introductory example. For example, we didn't consider transaction costs, which might influence our results certainly. Also, we didn't consider any kind of optimisation. As I said in the beginning, we could try to optimise the moving average lookback period. Hopefully not curve-fitting, not overoptimising. And the proper way to do it would actually be to have a walk-forward optimisation, which would mean we optimise on some part of the past, run our strategy for one month, and then step to the next window.

So, all this, of course, can be done and once we are starting to reach that point, it might be essentially advisable to use a proper programming language. So, for example, to do that

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in Python, which might be the language of choice, for doing that. But again, if we are able to express our ideas in a spreadsheet program, we should definitely do that, because this will allow us to catch errors early and to interact with the data. And that is all the point of the development process, often algorithmic trading strategy: to play around with the data and to see what, essentially, might be hidden there. Of course, again, keeping in mind, not to overoptimise, not to curve-fit the data.

And with that being said, I wish you a lot of fun trying out algorithmic trading strategies. Perhaps you can select another cryptocurrency, download ethereum data, and try for yourself, essentially, what kind of results you might obtain.

SPEAKER: If you would like to review any of these sections, please click on the relevant button.