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Bitcoin:
Relative Strength Index

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Relative Strength Index (RSI)

RSI settings for this report: UTC Time. 14 Period. 70 Overbought. 30 Oversold. Close Price.

Technical Analysis (TA) indicators have been long used as some measure of market dynamic by traders. It's common that traders use multiple indicators as tools to assess the best buying and selling opportunity. No single indicator is a silver bullet for trading strategies as market dynamics can change on external factors. With that being said, a deeper analysis on the success rates of specific indicators would be useful for traders when making decisions. In this new series, Copper will look at various indicators and cryptocurrencies and assess the accuracy rates for different time frames. As the series develops and back tests various indicators, we will further marry the results in order to give traders the insights to make decisions based on multiple market indicators together.

Bitcoin markets saw the RSI from the daily chart upwards as oversold for the first time in over a year as a one of the largest selloffs seen in the cryptocurrency gathered pace.

Rarely does the cryptocurrency fall below the threshold into oversold territory signalling a massive buying opportunity. The signal is so strong on traders' radars that the price plunge from $40,000 to $29,800 lasted less than 7 hours before returning back to where it started.
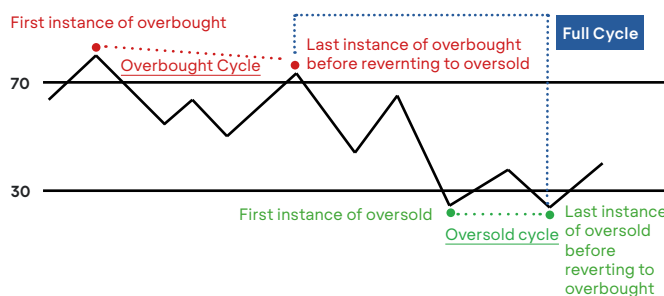
Despite being a huge signal, the oversold metric is certainly not a sure thing. In 2018, the RSI was oversold for over a month. The price of Bitcoin halved during the time the indicator signalled a buying opportunity, until it actually met the its bottom before reverting.

The RSI isn't a promising metric alone as a trading strategy the data shows. Copper back-tested a scenario where traders used the RSI on the daily, and bought at the first instance of markets being oversold, and sold at the first instance of Bitcoin being overbought. This would have resulted on average with 74% less Bitcoin. In USD, there are positive returns. However, these returns are minute compared to a Buy-and-Hold strategy in every trading

Returns	2017-2021	2018-2021	2019-2021	2020-2021
in BTC	-79%	-75%	-63%	-79%
in USD	360%	58%	87%	81%

period scenario. The hourly RSI didn't fare much better either. In fact, the returns were much worse. Again, this is assuming traders bought and sold at each first instance of the RSI indicator being oversold or overbought.

It's evident that first instances of oversold and overbought on the RSI is unlikely to be a useful indicator on its own. It is, however, a strong indication of direction. Historically, both oversold and overbought continue to drive the momentum in the direction it's going. Rarely does a first instance reverse.

The question then becomes, what other information can be seen from price movements with the popular indicator? Can the RSI reveal information about the character on Bitcoin price movements?

Copper broke down the RSI into different cycles. A full cycle whereby markets went from being oversold to overbought (and vice versa), and cycles between the first and last instance of an oversold or overbought RSI (see diagram).

Buy into 'fear-of-missing-out'?

Positive upwards movement for Bitcoin seems to bring in more and more buyers. This is evident by looking at the length of periods that markets remain in the overbought territory.

Semantics aside, by definition prolonged overbought periods will see a rise in price, and vice versa for oversold. But what are the lengths of such periods before fully reverting into the opposite territory of overbought or oversold? And what sort of returns can traders expect?

On the oversold side, only 15% of the time did Bitcoin revert towards being overbought immediately (i.e. closing only once below 30). On the average since 2017, oversold positions bobbled up and down for 66 hours before a clear reversal to being overbought. In the bear market of 2018, it took twice the time.

The data shows that new price highs brings in more buyers that drive momentum further up. In 2021, the hourly RSI showed that on average there was a 16% gain from the point markets began registering as overbought until markets changed course.

Low prices also show a substantial gap between the first instance of oversold market and the last instance. But the gaps are smaller when markets are overbought and last for shorter periods of time.

Statistically, this information could be useful for traders looking at probabilities of market direction based on the historical trading character of the asset.

Markets might close above or below the RSI threshold of being overbought or oversold, but should they begin trading against it immediately (i.e. below 70 or above 30), it's likely that a lower or higher price will register and revisit the thresholds.

Take the latest plunge, for example, that took a whopping 475 hours to complete an oversold cycle (see table). Whilst markets reversed from the first instance, they always closed below the overbought threshold. This is a strong indication that bulls aren't piling in. And the longer markets take to reach the next instance, the higher the percentage difference in price will be from the first time it crossed the threshold.

Historically, coming close to the next RSI threshold but not crossing it is a sign that markets are heading for a larger swing.

| RSI Status (Hourly)	Date	Price
Last Instance of Overbought	03/05/2021	58,792
First Instance of Oversold	04/05/2021	55,357
Last instance of Oversold	23/05/2021	32,562
First Instance of Overbought	24/05/2021	39,650

Average Price % difference in overbought and oversold cycles (Hourly RSI)
*Cycle = Difference from first instance to last instance (see diagram on p2)*
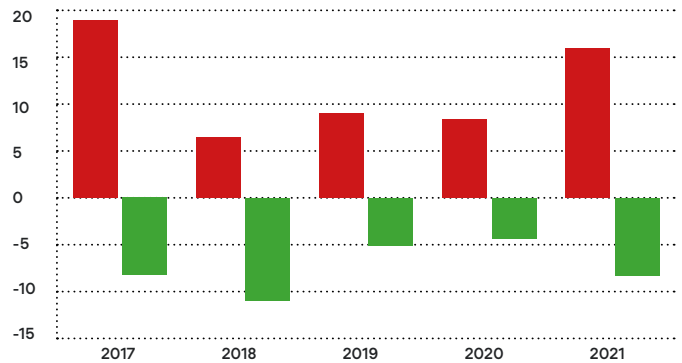
Price % difference in overbought and oversold cycles (Hourly RSI)
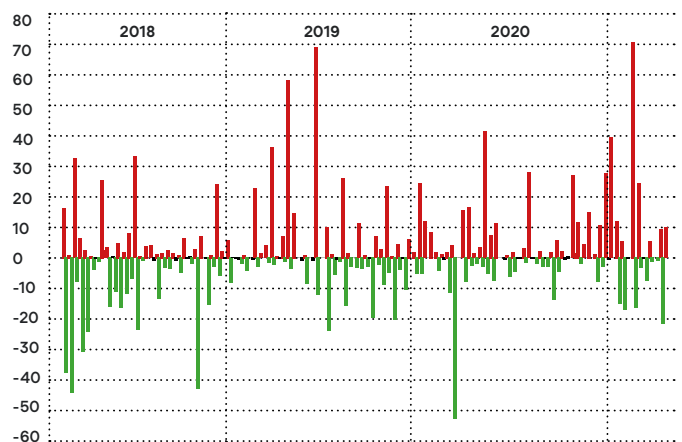
Hourly Oversold RSI: The longer the period between the first oversold instance and the last, the higher the % difference in price between the two points (Data between 2017-To Date)
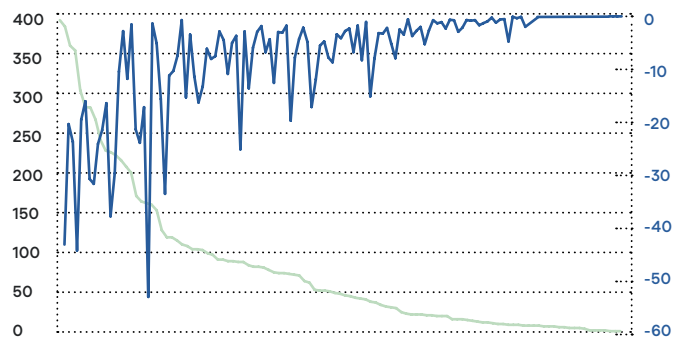
Hourly Overbought RSI: The longer the period between the first overbought instance and the last, the higher the % difference in price between the two points (Data between 2017-To Date)
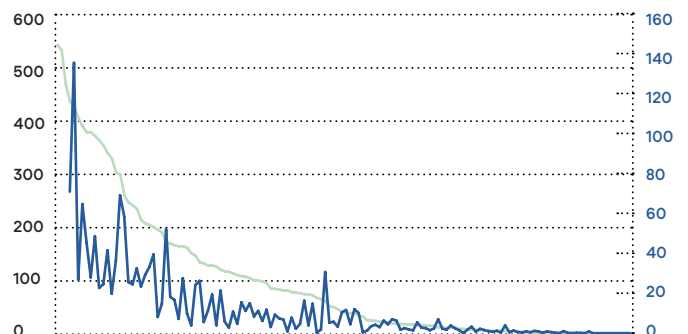
Key Takeaways

The RSI is certainly helpful in indicating price direction when looking at overall time as well as the number of instances the hourly closes above or below the threshold of 70 for overbought and 30 for oversold.

While certainly not a crystal ball for timing the market alone, the data shows that there are probabilistic measures to be taken from historical data.

The latest drop in Bitcoin that saw a price of $29,800 is a great example. The price actually closed at over $36,000. It consequently, as the historical data show, revisited prices below $36,000 a further two times before reverting back into a full cycle.

And, as the data illustrates, such examples are more common than meets the eye.

The information presented in this report is of utmost importance to traders using leverage and those who are also keen on shorting the market. A first instance long or short would see liquidation using a mere 10× more often than not.

In upcoming reports, Copper will delve into other key indicators such as Bollinger Bands, Exponential Moving Averages and MACD. We will further cross-test multiple indicators against each other to find out the most successful hit rates so traders have the best probability of making good entry and exit points.

Number of times markets went into oversold from the first instnace before reverting back to an overbought (Hourly RSI)
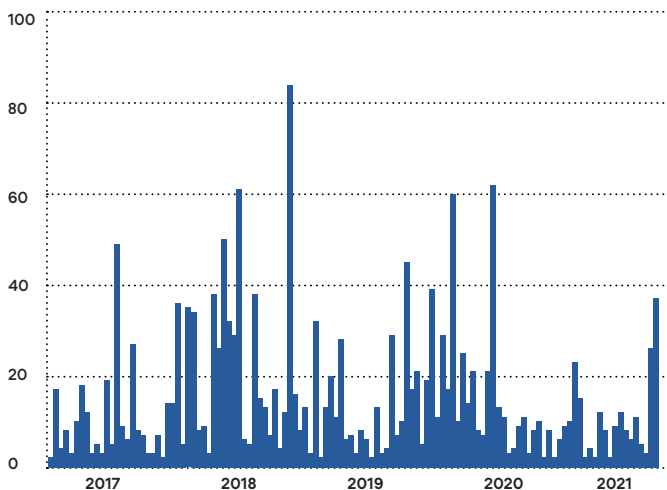
Number of times markets went into overbought from the first instance before reverting back to an oversold (Hourly RSI)
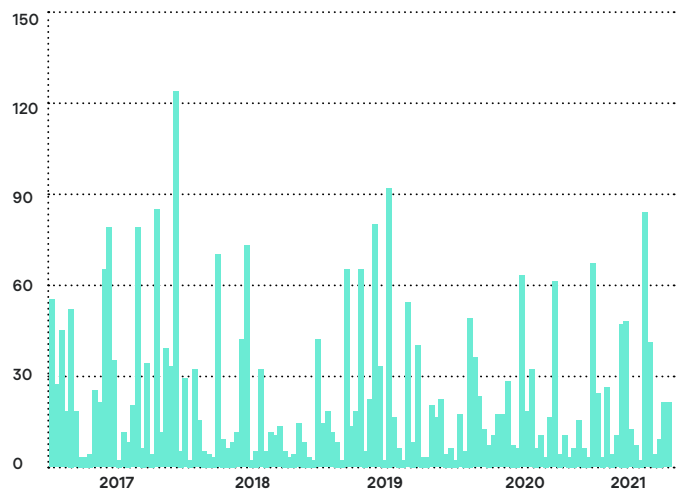
Total Hours of Full Cycles: From Oversold to Overbought (Hourly RSI)

Full Cycle = From last instance of oversold till last instance of overbought
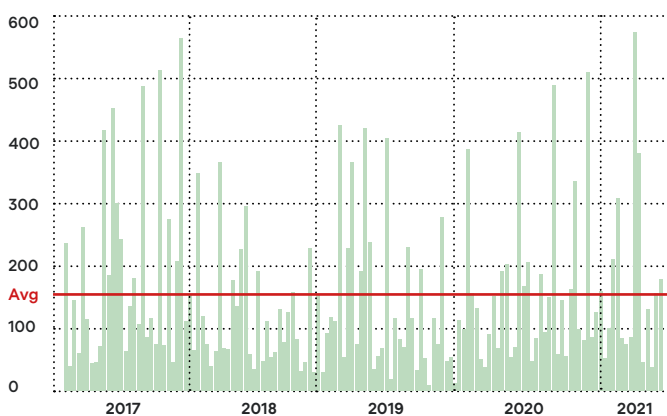
Total Hours of Full Cycles: From Overbought to Oversold (Hourly RSI)
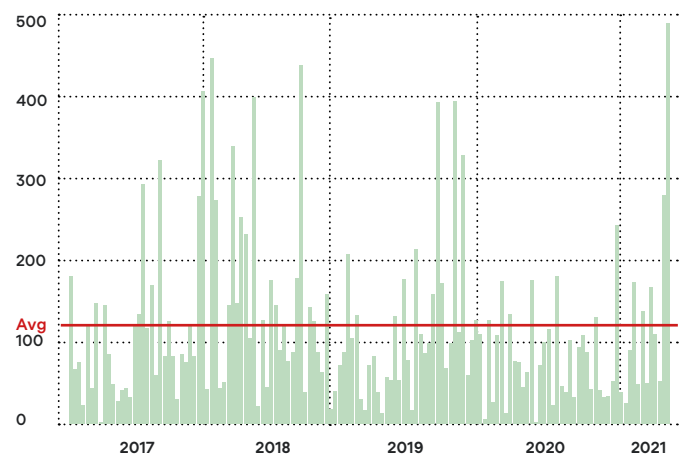
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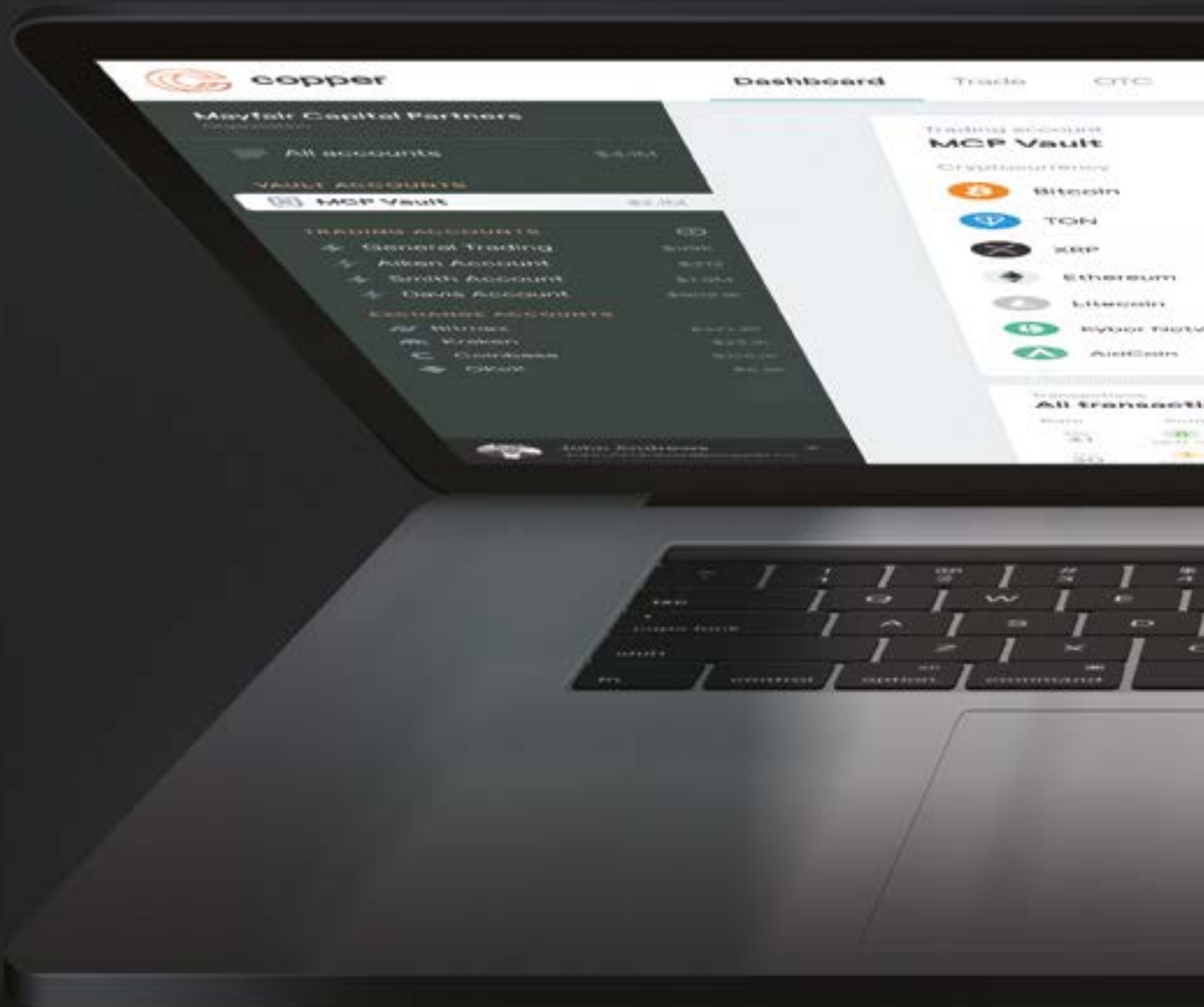
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