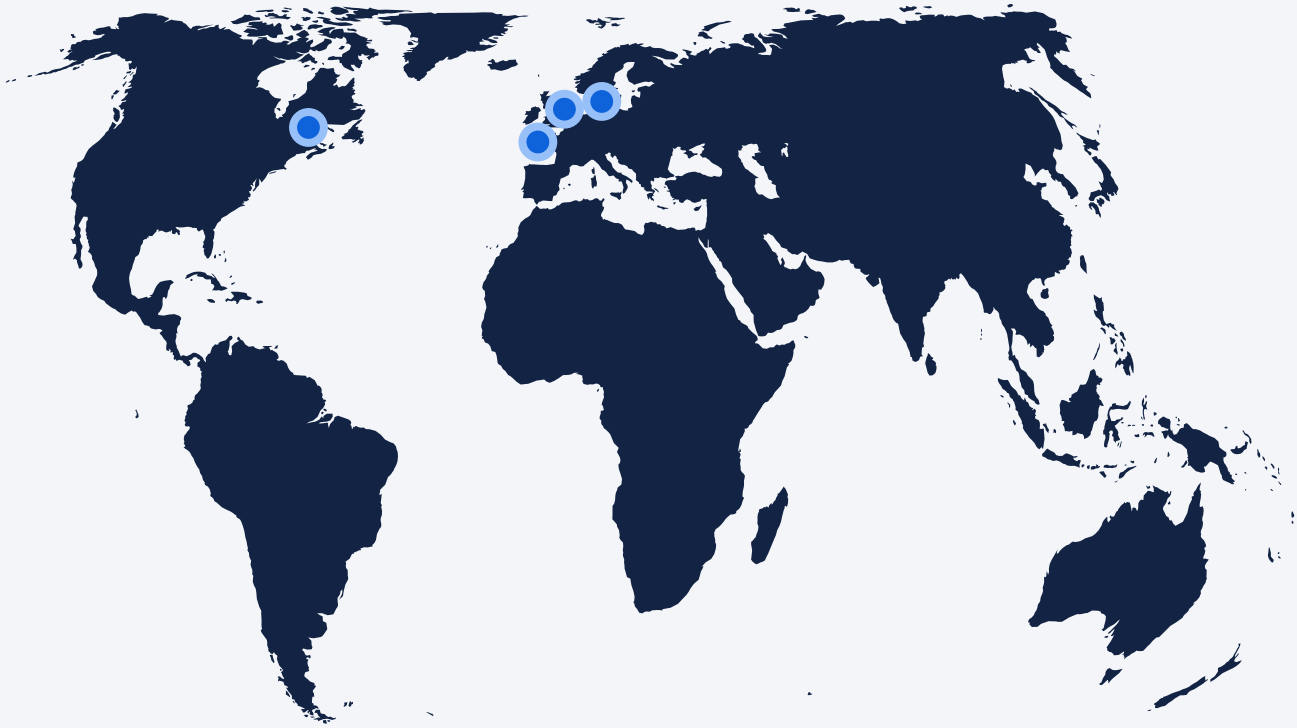
Bitcoin Valuation & Fundamentals

> Part III: Demand

CoinShares®



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The CoinShares Group is a pioneer in digital asset investing and manages assets on behalf of a global investor base, with offices in Jersey, Stockholm, London, and New York.

We launched the world's first regulated bitcoin investment fund in 2014 and offered the world's first bitcoin-based securities on a regulated exchange in 2015.

Our products & services include Europe's largest exchange-traded product (ETP) digital asset platform with approximately $2.9bn of assets under management as of January 2021.

We believe expertise in both traditional and crypto markets is required to take full advantage of the opportunity that digital assets represent.

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PREFACE

We spent a lot of Part I explaining what gives bitcoin value, namely its usefulness as money. Next, we showed how its usefulness as money might shift over time causing demand to fluctuate. In Part II, we showed that, curiously, the supply-side of bitcoin's Supply/Demand equation is fixed, making changes in demand the main determinant of changes in bitcoin price.

The most important points we've made so far have been:

1. Bitcoin was created to function as money
2. Due to the ability of its properties to facilitate its use as money, bitcoin is now competing in the global markets for money
3. In order to value bitcoin at some future time, we must consider its usefulness as money at that time, as it compares to the competition
4. As a competitor in the global market for money, the potential value that could accrue to bitcoin is enormous, but this is an 'end state' analysis, not something that is necessarily useful by itself for shorter term price evaluation
5. The supply schedule of Bitcoin, whilst a very important fixed property, is not alone sufficient to gauge bitcoin's future usefulness as money, let alone value it.

As we laid out in the previous part of this series, bitcoin has a unique supply/demand dynamic among all other goods. No matter how much increased demand there may be, no additional bitcoins can be created. The supply is both fixed and known in advance.

This means that if we want to track the ongoing development of bitcoin's value, we have to look towards the demand side of the equation for clues.

Part III is not about explaining what would cause changes in demand. We've already established that changes in demand are likely to be driven either from improving relational properties, or a change in context — both of which would lead to an increased usefulness of bitcoins as *money*.

Instead, this part is more about looking at whether there are any good ways that we can monitor, and even predict, changes in demand based on related metrics. If any such metrics exist, it would enable us to make reasonable predictions of shorter-term bitcoin price developments based on historical data.

Section statement: Valuing bitcoin on a shorter-term basis than a potential 'end state' requires us to focus on demand and any metrics that could help us understand the way demand fluctuates in an ongoing fashion.

Key takeaway: Valuing bitcoin at its 'end state' is a good starting point, but it does not say anything about any price developments along the pathway to that state. Bitcoin's supply is fixed and known in advance and while an important metric in the larger picture does not alone suffice for valuation. Monitoring ongoing demand is therefore key to understanding how the price of bitcoin is likely to fluctuate in the shorter term.

CHAPTER I > METRICS SIGNALLING SHIFTS IN DEMAND FOR GOLD ALSO SIGNAL SHIFTS IN DEMAND FOR BITCOIN

Gold is seen by many as an enigma. This is because it is often treated as a commodity, and consequently, the same valuation techniques utilising supply and demand models are applied. But unlike other commodities, most gold in existence has never been destroyed or consumed, so as new supply is created it becomes less and less impactful on the price.

This is part of the reason why gold became such a successful store of value in the first place: There is a more or less finite stock where additional supply is limited and costly to produce. This, along with its other beneficial properties, has caused gold to be used as a monetary item, causing it to take on a price premium far in excess of its commodity use value.

Consequently, it behaves and should be valued as a scarce/hard asset rather than a commodity. Bitcoin is very similar. The supply over time is known and has a dwindling relevance as total stock grows. In fact, more than 88% has already been mined. Its slew of other beneficial properties is, similarly to gold, causing it to be used as a monetary item. The similarity in properties and monetary usage leads us to believe that models that successfully track the changes in market demand for gold could also be useful for tracking changes in market demand for bitcoin.

Section statement: Gold behaves like a hard asset whereby changes in its ongoing supply are more or less irrelevant to its price development in the short term. If bitcoin takes on widespread use as digital gold it is likely that models with a successful track record of predicting the price of gold will also have some predictive ability over bitcoin.

Key takeaway: Assets that have large existing stockpiles relative to their ongoing production have a very limited vulnerability to changes in supply. Gold is such an asset and in an increasing fashion, so is bitcoin. Rather than attempting to model the prices of such assets with supply, a more fruitful approach has been to use metrics that correlate more closely with changes in demand.

CHAPTER II > MODELLING CHANGES IN BITCOIN DEMAND USING SUCCESSFUL GOLD PRICE PREDICTORS

As the backdrop of our approach, we've looked at frameworks that have successfully been used to model the price of gold. The key behavioural element they target is users demanding gold as a store of value (SoV) with the assumption that they do so based on changes in the macroeconomic environment that makes stores of value more or less attractive relative to other assets. Models that have used this store SoV approach, have traditionally used a combination of:

- Foreign exchange rate expectations;
- Inflation expectations;
- Expressed Sentiment; and;
- Pricing relative to other stores of value such as US Treasuries.

All of the above metrics contain signals of macroeconomic changes which have traditionally coincided with increased demand for gold as measured through higher prices. As bitcoin takes on increasing levels of usage as a gold-like store of value, we believe a similar approach can be applied for bitcoin price modelling.

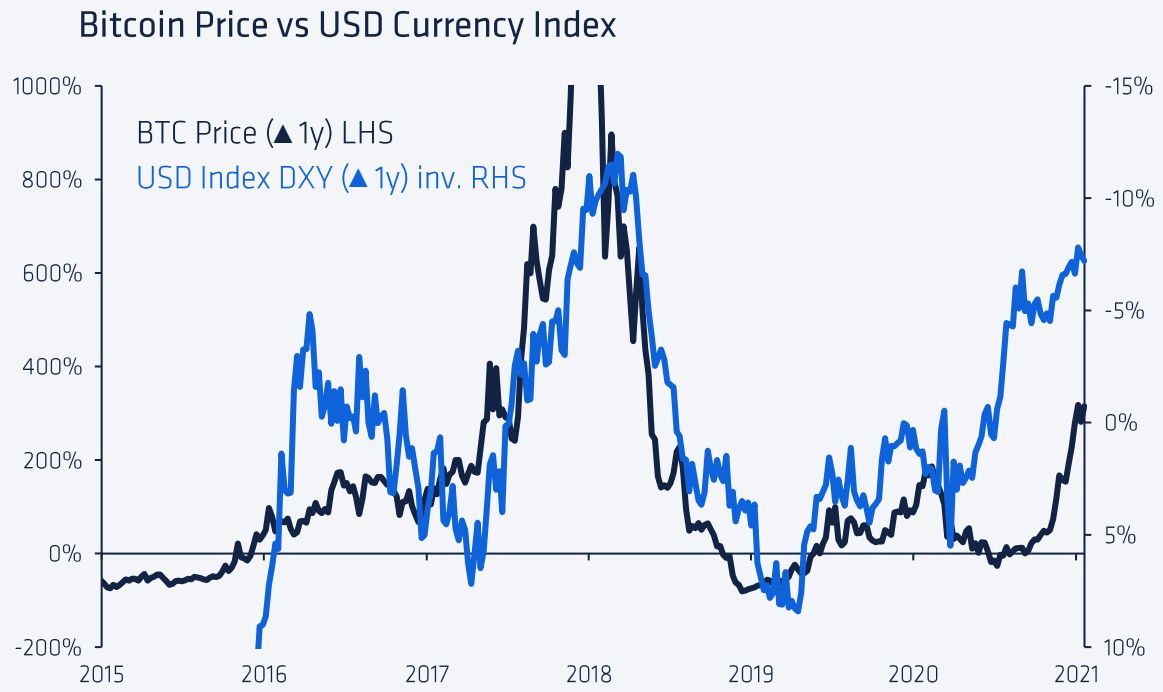
CHAPTER III > THE COINSHARES STORE OF VALUE (SOV) APPROACH TO BITCOIN PRICE MODELLING

In constructing our model we first surveyed various financial instruments and market metrics that would make the most theoretical sense and collected them for testing. We then regressed these metrics against the bitcoin price as far back in time as our data would allow.

Our regression analysis identified 3 components, each reflecting three different potential usage relationships: First, as a fiat currency hedge with bitcoin having an inverse relationship with the US DXY Index; Second, bitcoin having an inverse relationship to a traditional store of value to denote switching from one store of value to another, and; third, being influenced by investor sentiment, in this case tending to move in the opposite direction to the sentiment expressed by CFTC Bitcoin Futures positioning. Taken together, these three signals offered the best predictive ability for Bitcoin prices.

1. Fiat hedge - US DXY Index

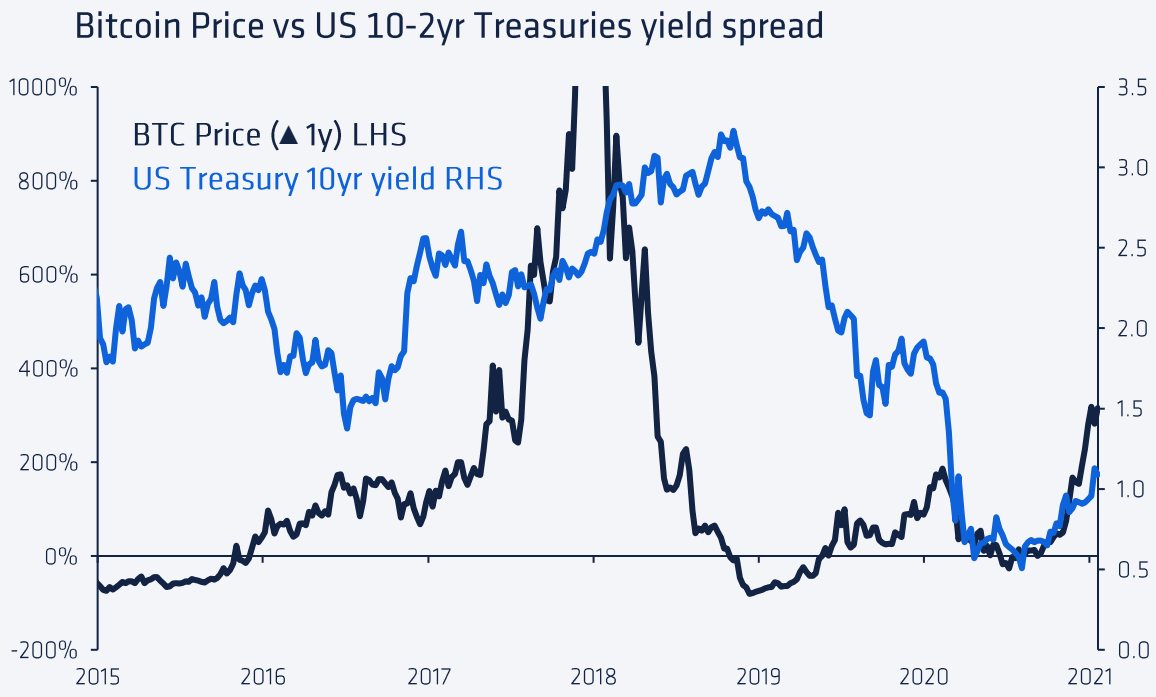
We believe bitcoin is already to some extent being used as a hedge against fiat currency devaluation, so from this point of view it makes sense that our regression analysis include a currency index. The best predictive ability of the model is found by using the USD DXY Index (a measure of the US dollar performance versus its 6 key trading partners' currencies). We believe this inverse relationship with the DXY is likely to remain intact as is the case with other assets where supply cannot be manipulated, such as gold.



Source: Bloomberg, CoinShares, data available as of close 25 January 2021

2. Store of value comparison - US Treasury 10yr yields

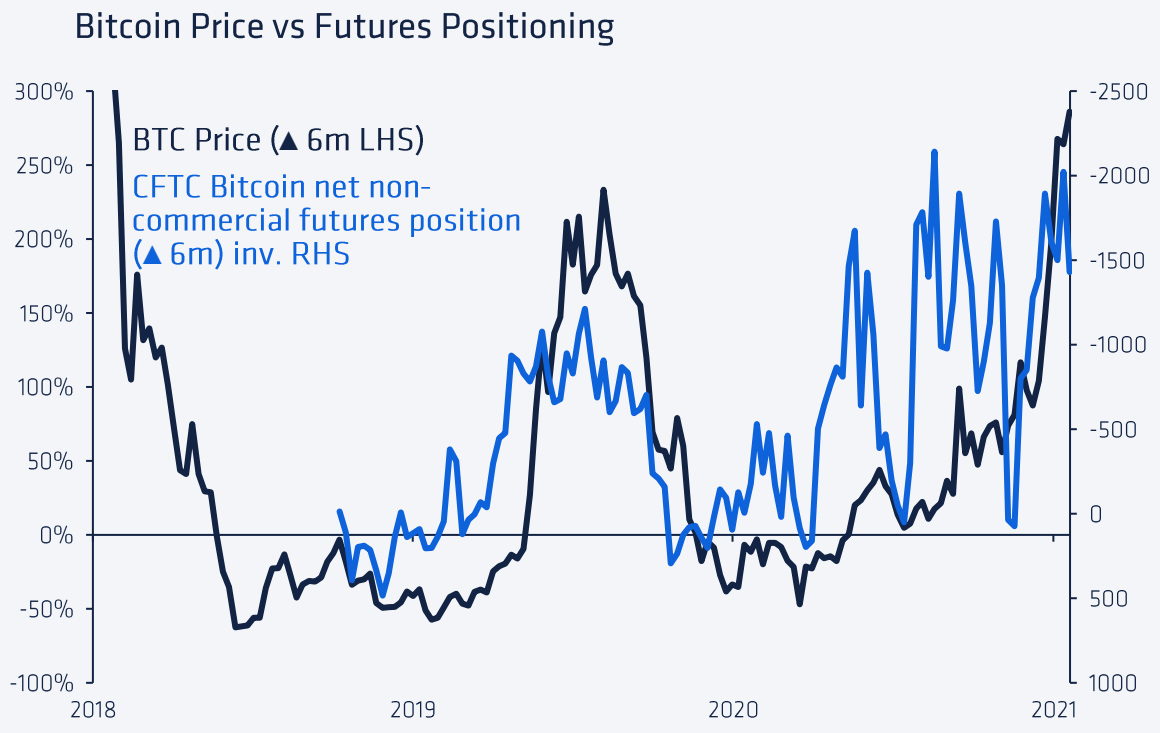
The US Treasury 10-year yield has long been a traditional safe haven and low volatility store of value. When yields rise it signifies investor confidence as there is less demand. The regression highlights a positive relationship between bitcoin and the 10-year yield, implying that bitcoin to some extent has been used as a risk-on asset. Although, this may suggest that lower appetite for US treasuries is more an indication of investor worries over the debasement of the US dollar. After COVID 19 this relationship has improved,



Source: Bloomberg, CoinShares, data available as of close 25 January 2021

3. Sentiment - CFTC futures positioning

The CFTC (Commodities Futures Trading Commission) futures positioning data on bitcoin is a good measure of investor sentiment, especially among larger more sophisticated investors. As with other assets, CFTC positioning data can highlight over-crowded trades, making it a valuable counter-indicator. The chart demonstrates an inverse relationship to bitcoin and futures positioning, similar to gold in that a contrarian view to futures positioning tends to give a better indication of price direction.



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Interestingly, our regression analysis also highlighted factors that the bitcoin price is less sensitive to. These factors included consumer price inflation (however this could increase over time as we detail here), gold sentiment, shorter-dated treasury yields, money supply (M2) and the US budget balance. It did highlight a close relationship to the Nasdaq, but this relationship looks to be rapidly deteriorating and has therefore been excluded.

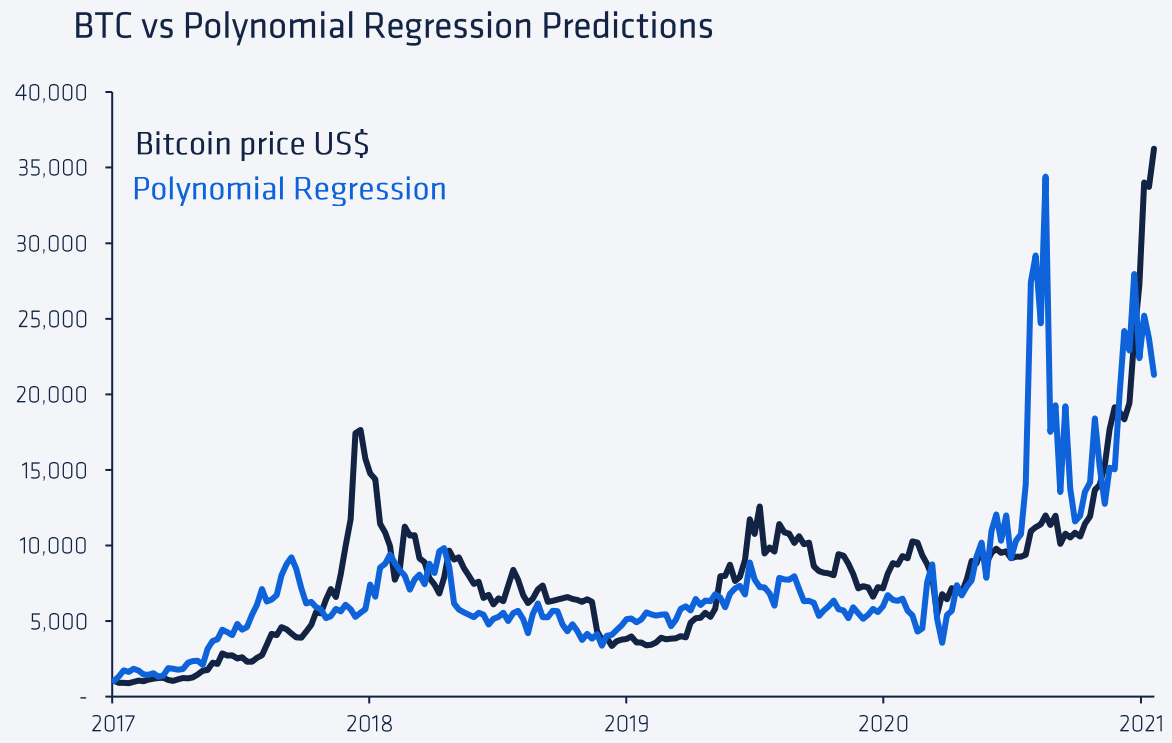
Discussion of Regression validity

A critique of the model is that it only uses 4 years of data. Unfortunately, we are limited to how much CFTC data is available at present, however, we are encouraged that our results still achieve a combined r-squared of 0.8. Throughout our testing of the model it passed the standard alpha and t-statistic assessments while demonstrating very low p-values, highlighting that it is highly unlikely the results are down to pure chance. We also tested for multicollinearity by measuring the VIF (Variance Inflation Factor) which indicated that the three inputs into the model were independent of each other. Taken in combination, the tests give us some confidence in the model's predictive ability. Furthermore, as bitcoin has only recently been progressing towards widespread use as a store of value, regressing any

further back into history could be of limited value as we'd be comparing it to a period of time where its usage and behaviour differed from today's.

Regression validity	R-squared	Multiple-R	P-value	VIF
Overall model	0.61	0.80		
USD Index (DXY) inv.	0.26		0.00	1.16
10-2yr treasuries	0.21		0.00	3.44
CFTC net positions	0.47		0.00	3.49

Source: Bloomberg, CoinShares, data available as of close 26 January 2021



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Results and Predictions

The model has allowed us to create a matrix of scenarios based on our views of future changes in bitcoin sentiment, the 10yr yield and the dollar index (DXY) and how those changes would impact the bitcoin price under the model.

Bitcoin modelled price scenarios using CoinShares SoV

DXY Index change	Treasury 10yr yield				
	-0.1%	0.6%	1.1%	1.6%	2.1%
-10%	90,914	92,585	93,839	95,110	96,397
-5%	55,148	56,162	56,923	57,693	58,475
0%	33,453	34,068	34,529	34,997	35,471
5%	20,293	20,666	20,945	21,229	21,516
10%	12,309	12,536	12,705	12,877	13,052

Source: Bloomberg, CoinShares, data available as of close 26 January 2021

Assuming no change in the US dollar and Treasury yields suggests a price similar to today of US$35,000. The matrix highlights bitcoin's sensitivities, showing how rising treasury yields and a falling US dollar are positive for Bitcoin while the inverse are currently detrimental. It is worth noting that bitcoin prices have a much greater sensitivity to the US dollar than treasury yields. This implies and potentially confirms that bitcoin is a potential hedge against loose monetary policy. Conversely, a hawkish US Federal Reserve and falling yields are likely to be detrimental to bitcoin prices.

Our work alludes to the point that closely watching monetary policy, political sentiment and geopolitics are increasingly relevant in conjunction with the ongoing Bitcoin network developments when gauging how the price of bitcoin is likely to move.

Questions?

Get in touch at research@coinshares.com

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