



"From what we can identify, the only reason today to buy or sell Bitcoin is to make money, which is the very definition of speculation and the very definition of a bubble. In the history of finance that has rarely led to a happy ending."

Tidjane Thiam, CEO of Credit Suisse

"I couldn't care less what Bitcoin trades for, how it trades, why it trades, who trades it. If you're stupid enough to buy, you'll pay the price for it one day."

Jamie Dimon, Chair and CEO of JPMorgan Chase

I've been asked about Bitcoin a lot lately. To be honest, I haven't seen this sort of euphoria since the dot com bubble, or when the Golden Aeroplanes Ponzi scheme swept through Melbourne in the mid 1990s. So I thought it worth spending some time turning my mind to just what some of the implications of Bitcoin might be.

Blockchain

Before looking at Bitcoin it's worth taking a look at blockchain, the technology that underpins Bitcoin and other cryptocurrencies.

The details of all transactions we engage in are currently held by a range of central registries, including banks and registries of land titles, motor vehicles and securities. Each of these registries maintains a central ledger that is the ultimate authority on the validity of each transaction. Blockchain is a means of verifying the authenticity of transactions without the need for reference to these central registries. The details of multiple transactions are stored in digital form in "blocks" of data that are sequentially linked in a "chain". Each party to a transaction (buyer, seller regulator...) has a private digital key that allows them to complete their part of the transaction. Each block has a public key and references the previous block with an algorithm-generated digital signature (a "block hash") so that transactions on this public ledger, maintained across a network of computers, remain immutable.

Blockchain has the potential to reduce the role of intermediaries in a range of transactions. As such it may be a huge threat and/or opportunity for any business engaging in transactions, but particularly banks and registries or exchanges (such as ASX and Computershare).

Bitcoin

Bitcoin was conceived in 2008 by a person (or group) going by the name of Satoshi Nakamoto. It is "an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties

to transact directly with each other without the need for a trusted third party.”¹ It uses blockchain and its transactions are semi-anonymous².

Bitcoins are issued to “miners” as a reward for computing power to generate the block hash, which easily validates each block and the transactions that it contains, but requires an enormous amount of computing effort to calculate it. The rate at which bitcoins are issued to miners halves about every four years and a new bitcoin is currently issued globally about every ten minutes. It currently takes around 6,000 kilowatt hours of power to produce a single bitcoin³. (At 30 cents per kilowatt hour, this translates to A\$1,800, not to mention the expensive computer hardware needed to “mine” bitcoins. Naturally as bitcoins become more expensive/valuable the more miners join this virtual gold rush, so that even more power is needed to mine a single bitcoin.) If Bitcoin ever does become widely accepted as a means of exchange, every single transaction will need to be verified in this manner and the amount of energy consumed in maintaining the currency will be off the scale. Unless this energy dilemma is adequately addressed I see a case for governments intervening to curtail Bitcoin on environmental grounds alone.

Currently 16.7 million bitcoins have been created and there is a hard limit of 21 million bitcoins that can ever be issued. Each bitcoin is divisible to eight decimal places (to a “satoshi” which is one hundred millionth of a bitcoin).

What’s it Worth?

I see a lot of problems in trying to arrive at a rational value for Bitcoin. It generates no cash flow, so it can’t be seen as an asset for investment purposes (where the present value is the sum of all future cash flows, discounted back to today’s dollar value). It has no intrinsic utility such as gold, steel or wheat (which can be used for jewellery, construction or sustenance) and so can not be viewed as a commodity. In a sense it could be seen as a currency, but it is not legal tender mandated by any government (a fiat currency) and really has no more legitimacy as a currency than a Pokemon card.

If Bitcoin is a currency, it is not a very good one yet. To be a good currency it must both be widely accepted as a means of exchange and stable enough to be a store of value. Bitcoin is not widely accepted by retailers. In the early days it was quite popular for buying heroin and weapons on web sites that have now largely been shut down or lurk furtively in the dark corners of the internet. The only time I have ever been offered it as a payment option is from an anonymous emailer attempting to swindle me of US\$295. As Jamie Dimon recently observed, there is a case for using Bitcoin “if you’re a criminal”. Amazon, which accounts for almost half of US online sales and five percent of total US sales, does not accept Bitcoin. Neither does eBay, Wal-Mart, Costco, Home Depot, Tesco, Carrefour, 7-11, Coles or Woolworths⁴. And you can’t pay your taxes in Bitcoin. Ninety six percent of all bitcoins on issue are currently held in just four

¹ Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System* (October 2008)

² Although details of all transactions are publicly recorded on the blockchain and could potentially be deciphered.

³ That’s almost as much electricity as we use in my house each year, and Bitcoin mining currently uses about the same amount of power as Ecuador, a country of 16 million people!

⁴ Expedia does offer it for hotel bookings, though it accepts the payment in US dollars via Coinbase, an online cryptocurrency exchange. The customer essentially uses their bitcoins to buy US dollars, with a hefty commission (on top of the transaction fees), which are then paid to Expedia for the booking. If the booking is cancelled, Expedia issues a US dollar refund, which is used to buy bitcoins, with another hefty commission, which are refunded to the customer. If the value of Bitcoin has risen in the interim, the customer loses out big time. In this case the unit of exchange remains the US dollar and it’s difficult to see why anyone would choose to pay in Bitcoin.

percent of Bitcoin “wallets”, or about 70,000 people if none of those have multiple wallets, which itself seems unlikely. The volatility of Bitcoin’s price also seriously hampers its ability to function as a transactional currency, as its value may swing wildly between a deal being struck and being settled. I think some people are misinterpreting the recent rise in Bitcoin’s price as a sign of its success as a currency, whereas I see in it the seeds of its failure as one. The more it is hoarded in anticipation of a higher price down the track, the less it will be used for transactions, and the less legitimacy it will have as a currency. And does anyone really think Bitcoin will ever become a more universally accepted form of payment than US dollars?

The integrity of Bitcoin’s blockchain is currently maintained through an enormous amount of calculations being carried out by an enormous number of computers, which are motivated to do this by the prospect of being issued a Bitcoin. What will happen to this validation process when this incentive is taken off the table after the full allocation of 21 million Bitcoins have been issued?⁵ At that point Bitcoin miners will only receive the transaction fees from Bitcoin transactions, which could well lead to a rise in fees, which is likely to further undermine Bitcoin’s utility as a mainstream currency. (The typical transaction fee for a Bitcoin transaction is currently around US\$5, already pretty much excluding it for use in micropayments.)

The fundamental threat to Bitcoin as a currency is the threat of regulatory acceptance. Governments like to know who has the money and what they’re spending it on so they can collect taxes to build roads, schools and hospitals. If enough of the economy is operating out of sight, the government is likely to step in and introduce measures to make it more visible or difficult to operate. China has already flagged subjecting cryptocurrencies to “iron fist governance”. Governments have a range of options, from implementing reporting requirements, including identity verification for transactions above a certain size, to simply outlawing the use of the currency.

Could Bitcoin be replaced by any one of a number of competing cryptocurrencies that are emerging, particularly one that might be sanctioned and at least semi-regulated by central banks? Or will people just move on to the next cryptocurrency craze (Ethereum, Dash, Ripple, Litecoin...) and push up the price of these “currencies” at the expense of Bitcoin? In June this year the price of Ethereum crashed from \$319 to ten cents in a matter of minutes as a large sell order triggered a cascading series of stop loss orders. Whilst its price has since recovered, this is an indication of how opaque and volatile these unregulated markets can be.

This is not to say that blockchain – the distributed ledger technology that Bitcoin relies on – will not dramatically change the world we live in. It almost certainly will, but it will almost as certainly require regulators to be an integral part of the validation process of the blockchain. Transactions of all sorts - real estate, banking, trading in securities, currencies, commodities and any other financial instrument - can be handled more efficiently and with less transactional friction than going through the existing intermediaries. But no government is going to sanction such transactions (and these all occur in a highly regulated environment) unless they have a window of visibility on this activity.

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⁵ Or even as the new supply of bitcoins is progressively halved every few years as per the Bitcoin protocol.