

## The BITCO(i)N Risk

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There is increasing global investor and media interest in Bitcoins, the brainchild of Satoshi Nakamoto (pseudonym). This article explores the risk profile of the Bitcoin phenomenon.

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The Bitcoin phenomenon has caught the fancy of investors and media, at a scale that the pseudonymous Satoshi Nakamoto would never have imagined. It is a technological trail-blazer and a marketing marvel. Notwithstanding the interest it has attracted globally, Bitcoin's economic fundamentals are suspect and can potentially burn a lot of investors and stakeholders.

What is a Bitcoin? Its core proposition is that it facilitates anonymous peer-to-peer payments in digital currency. Various terms, such as crypto-currency and virtual currency, are associated with it. The applications of this novelty in the market place have gone well beyond the core proposition.

Not every novelty fits existing frames. But, in the financial world, it is helpful to evaluate products through a frame that is tested and tried. Accordingly, I asked myself – Is Bitcoin a currency, a security, a commodity or a derivative?

### ▪ **Currency**

When the central bank of a country issues currency, it is backed with foreign currency or gold of equivalent value. At least this is what happens in countries that are not banana republics. Such backing of currency by international assets can be confirmed from the central bank's balance sheet, which is brought out at least once a year. It is this backing which gives confidence to the central bank governor to confirm its exchange value.

For example, every bank note (currency note) in India bears the signature of a Reserve Bank of India Governor to confirm a commitment – "I promise to pay the bearer the sum of x Rupees" ('x' being equal to the value of the currency e.g. x=100 for a note of Rs. 100). Does a Bitcoin have such an international asset backing or promise?

### ▪ **Security**

In my *Wealth Engine* (Vision Books, 2012), I proposed "SSELECTIVVELLY-Invest", a framework for classifying investment products including securities. The very first parameter in the framework is 'Source' (Issuer). If you do not know the strength of the source (in this case, the Bitcoin contract structure), how can you gauge the underlying risk? If the underlying risk cannot be understood, then how secure is Bitcoin as a security? If at all Bitcoin is a security, it is a security with no recourse to the issuer; its value is entirely dependent on what someone else is prepared to pay or offer for it.

### ▪ **Commodity**

Your purchase of commodities, whether it is groundnut or gold, is governed by the principle of *caveat emptor* i.e. let the buyer beware. So long as the seller actually delivers the commodity – groundnut or gold in this example – the buyer assumes all the risk relating to its quality, value

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and durability. The Bitcoin buyer is similarly exposed to risks related to its quality, value and durability. Thus, Bitcoin's features are close to that of a commodity.

What is the character of the transaction where a person uses Bitcoins to purchase, say, a song? It is a barter trade – exchange of one commodity (Bitcoin) for another (the song).

You make payments (in cash or through credit card) for purchases on the net using a *payment gateway*; the system that facilitates making payment through Bitcoins can be viewed as a *barter gateway*.

- **Derivative**

In a fundamental sense, derivatives do not have an independent value - they derive their value from an underlying. For instance, a Nifty future contract derives its value from the underlying Nifty (and other factors such as rate of interest). [The Nifty in turn derives its value from its constituent 50 stocks; each Nifty stock derives its value from the issuer's balance sheet, earnings potential and investor confidence in them. People execute derivative trades in exchanges, based on the trade guarantee given by a highly-rated clearing house.]

Like derivatives, Bitcoin does not have a fundamental underlying value i.e. its value is not linked to the earnings or balance sheet or other metric of any issuer. The main underlying from which it derives its value is the entire gamut of illegal trades. Purchase of drugs and pornography are illegal in some countries; kidnapping, murder and terrorism are illegal in any country. Bitcoin facilitates a *barter gateway* to pay for such (legal and) illegal activities without the receipt / payment getting traced back to the parties. Recently, some Israeli banks received a ransom demand that was to be settled in Bitcoins! The more the things that are banned in countries, the greater is likely to be the demand (and so value) of Bitcoins.

What can disrupt this Bitcoin demand? Its translation into regular currency. If exchange of regular currency into Bitcoin or vice versa is banned, then some parties withdraw from the Bitcoin market. The resulting decline in demand can pull down the value of Bitcoins. This was seen recently when China imposed limitations; Bitcoin values crashed as much as 50%.

Let us consider an analogy for the Bitcoin phenomenon. Imagine a situation, where an Indian software major, say Infosys, comes out with an Infocoin scheme. Under the scheme, software developers who solve a computer problem will be paid in Infocoins instead of money. Infosys ensures that the computer problems are structured in a manner that limits the supply of Infocoins, and makes fresh issue of Bitcoins increasingly difficult. Thus, the supply function for Infocoins is progressively limited. Consequently, so long as the demand for Infocoins sustains itself, or grows, its value will keep growing up. This is a no-brainer from the field of economics.

Why should the software developer accept Infocoins from Infosys? If an Infocoin is worth USD500 in the market, and the cost of software developed is less than USD500, say USD400, the developer gets the impression of having booked a profit of USD100 from the transaction. This imaginary profit becomes a real profit if the software developer immediately sells the Infocoin for USD500, or uses it for buying a good or service worth that amount. In Bitcoin terminology, the software developer is a *miner*. Bitcoins are mined by solving computer problems and maintaining the public key infrastructure that is the backbone for the Bitcoin system.

The value of commodities and derivatives (also currency and securities) is established by trades in an exchange; similarly, trades executed on Bitcoin exchanges provide benchmarks for their value. I am sure there are arbitragers out there, exploiting the price difference between multiple exchanges viz. buy them in exchanges where they are cheap, and sell them in exchanges where they are expensive!

Let us contrast a Bitcoin transfer transaction with transfer of money. When you execute a fund transfer through Real Time Gross Settlement (RTGS), money moves instantly from one bank account to another. The transfer does not create any new money or scope for the RTGS system to siphon the money. Suppose, the transferee is an investor, who insists on payment in Bitcoins. The transferor will use real money to buy Bitcoins in an exchange and transfer them to the transferee. Since the transferee is an investor, he will retain the Bitcoins in his electronic wallet for future value encashment. So long as adequate Bitcoins of people remain in electronic wallets, potential issues with their creation will never come out.

In the recent problems with a commodity exchange, problems in the asset backing for the contracts were unravelled when the government shortened the contract cycle. When more people tried to unwind their contracts, money siphoned away through introduction of worthless contracts came to light. When such systemic unwinding hits Bitcoins, their value will plunge. For instance, purchase of a song will require 1 million Bitcoins. That is the expected endgame for Bitcoins. People holding the Bitcoins will not even be able to use it as toilet paper!

The way this whole eco-structure of Bitcoins has been created and market developed for it, is truly innovative. It is a technological trail-blazer and a marketing marvel. But, where does that leave the Bitcoin stakeholders?

- It is not clear what the motivation was, for Nakamoto to launch Bitcoins. If Bitcoin was his idea of pulling a fast one on the world, he is surely having a great laugh. Since he operates with a pseudonym, and has not been traced, Bitcoin holders in the world cannot go to him to get back the value of their holding in real currency!
- The people running the *barter gateway* earn a margin on the value of the transaction. They can book profits by converting the Bitcoin margins into real cash.
- Similarly, *Bitcoin exchanges* earn a commission on the transactions executed on their system. Converting Bitcoin commissions into real cash helps them book profits. Promoters of these exchanges can even earn valuation gains on their investment in the exchanges.
- *Bitcoin miners* (software developers) are committing vast sums of money in server farms, power and utility expenses etc. for their mining operation. Much of the equipment is specific to the Bitcoin operation. It will all come to nought if Bitcoins cease to have value; the Bitcoins they hold at that time will also be a dead loss.
- *Bitcoin investors* use real money to buy Bitcoins. Anyone who holds Bitcoins has a long position in them. Profits are booked only when the person unwinds the Bitcoin position i.e. sells the Bitcoins for real money or uses it for buying goods or services. Until then, they are holding something whose intrinsic worthlessness can unravel anytime.

As in any Ponzi scheme, the Bitcoin seller earns money based on what some other buyer is prepared to pay. A feature of Ponzi schemes is that they suddenly shut down, normally on account of *financial liquidity* issues. Given its unique structure, *market liquidity* issues arising out of a demand shock will be the most likely trigger for a Bitcoin failure. There does not seem to be any reason to expect anything different from Bitcoins. Will the Bitcoin phenomenon be a new chapter in the next edition of "This Time is Different: Eight Centuries of Financial Folly" by Reinhart and Rogoff?