



# Breaking bit

Bitcoin is the poster child of the cryptocurrency world, but it's not alone. *Michael Mainelli* and *Bob McDowell* take a look at the real-world implications of the rise of AltCoins

**If money can be viewed as a technology used to trade debts, cryptocurrencies, such as Bitcoin, are digital technologies for debt exchange that rely on cryptography and decentralised peer-to-peer networking.**

Cryptocurrency technology is open and so has already been cloned and altered – there are now more than 50 identifiable alternative cryptocurrencies – aka AltCoins – including IxCoin, Ripple, LiteCoin, Dogecoin, Primecoin, or Riecoin.

AltCoin technology can manufacture new monies potentially stronger than national fiat currencies. Some see this technology as subversive or bad, some look ahead

to other trust-trade applications, for example transferable votes among citizens or shareholders, or secure international property transfer.

Bitcoin's essential cryptocurrency innovation was a public blockchain, which eliminates the need for a central counterparty to trade debt by having the entire network become the registry of transparent transactions. 'Trust' in a central counterparty changes to 'trust' in the technology. From several possible choices of currency architecture, Bitcoin chose to set a maximum fixed supply of 21 million coins. This fixed supply means that Bitcoin is possibly best compared with mining and extraction of precious metals, particularly gold. Gold has

a fixed earthly supply but is mined according to price and demand.

Imagine Bitcoin as a virtual element.

However, it is not money. Only a community can decide whether to use an element for trading debts. So far, many of the allegations for or against AltCoins focus on what type of community is perceived to be using it to trade debts – a Silk Road of *Breaking Bad* transactions, quixotic libertarians damning profligate governments, new age gold bugs, or hard-pressed traders in a tight credit environment?

New platforms, such as the Ethereum programming language and platform, are making AltCoins ever easier to issue. Newer AltCoins have variable denominations, faster

transaction confirmation, higher security, wider trust validation, or innovative ways of making the money supply match trade velocity. Some AltCoins are targeted at specific communities, such as mathematicians. Some AltCoins attempt to provide 'backing', i.e. guarantees to exchange the cryptocurrency for gold, another commodity, or fiat currency. And AltCoins have launched into orbit: last year, Travelex announced Quids, Quasi Universal Intergalactic Denominations, a space currency.

Many dismiss cryptocurrencies out of hand, looking at the inflated failure of Beenz, online virtual credits, from the dot.com bubble. However, it's easy to forget that in times of economic

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turmoil, reduced trust in banking institutions, and tight credit, alternative currencies flourish. In the USA in the 1930s, several hundred currencies sprang up to fill credit gaps. The 80 year-old Swiss WIR is a government-sanctioned trade currency providing useful credit to a quarter of Swiss businesses counter-cyclically to the Swiss Franc.

Bitcoin may fail, but it is already economically important. The five year old Bitcoin has a market capitalisation today of several billion dollars, albeit fluctuating wildly, about the same market capitalisation as the 200 year-old London Stock Exchange Group. Bitcoin and other AltCoins may fail for any number of reasons, but some AltCoins are likely to succeed.

### Cracking fiat

Fiat – 'let there be' – currency is an artefact created by national or federal governments. Fiat currency consists of tokens that allow us to extinguish tax debts: we trade those tokens freely in a geographic region where we are likely to meet people under the same tax system. Fiat currency's value lies in this ability to cancel tax debts. Governments 'back' their currencies through their monopoly of force on tax payment, creating a semi-coerced community of taxpayers. Governments create and destroy fiat currencies at will through borrowing and taxation. By managing the level of tax debts in the economy, both up and down, governments create credit that facilitates trade and exchange.

The traditional definition of money – a unit of account, a medium of exchange, and a store of value – is all-embracing. It is difficult to think of any form of money that has achieved all three for a significant period of time. To be a stable unit of account means that the money supply matches demand for money, yet also be good for measuring value. To be a medium of exchange means ease of acceptance. To be a store of value means holding relative value to a basket of needs, but those needs change with technology, fashion, or scarcity. Fiat currency is a good medium of exchange within a tax zone, but has traditionally been a variable unit of account that leaks value.

Gold muddles along on all three characteristics. Gold has been an adequate unit of account for millennia, a medium of exchange recognised across borders, and seems to remain a store of value to people, sometimes perplexingly given its relative uselessness. Bitcoin has been a poor unit of account in its short lifetime, a growing medium of exchange, and a poor store of value, so far. The US dollar has been a good unit of account, an enormous medium of exchange, and a poor store of value. Governments are rightly cautious about changes to fiat currency as such changes affect both

the tax system and the state of the economy.

### Building bit

Most governments have been at best neutral or slightly unwelcoming to AltCoins. The States of Alderney, exceptionally among governments, have welcomed the idea of bringing out a physical Bitcoin in the form of a Commemorative Coin, in association with the Royal Mint. China has said that Bitcoin cannot be used for payment "at this time". Others have given contradictory tax signals. Governments struggle with whether to class Bitcoin as a meaningless token, a trade token, a weightless commodity, or a currency.

Classification is important for matters as diverse as corporate and personal taxation, value-added taxation, financial regulation, formulation of monetary policy, and statistics. Current regulatory frameworks can handle AltCoins. It is equally likely that different regulators will make different decisions, as is already happening on value-added and sales tax treatments of AltCoins. More standards on managing AltCoin systems are likely to emerge and help set performance standards in governance, reporting, custody and exchange systems.

Governments are, rightly, concerned with facilitating illegal trade, crime, and tax evasion. Most are also concerned that AltCoins will weaken their fiat currencies. Meanwhile, theorists are divided on whether competition in currencies is good or bad. At one extreme, total proliferation, everyone could issue their own currency or several currencies. At the other extreme, total consolidation, there would be a global currency. Transaction costs and 'backing' become important as currencies proliferate. As the number of currencies shrinks the ability to match tokens to economic activity becomes more important to control wild currency inflation or deflation.

Fiat currencies are closely tied to government taxation. This tie is starkly ►

illustrated by the Euro's problems, which partially stem from trying to incorporate multiple national taxation systems across diverse regional economies within one currency. The United States has equally had difficulties incorporating state taxation systems and a set of diverse regional economies. In a paper for the Cato Institute pushing for more competition in currency and private banknotes, Thomas Hogan states – "For almost a century, the Federal Reserve and central banks around the world have inflated away the values of their currencies without achieving noticeable improvements in economic stability or performance."<sup>1</sup>

By reducing markedly the cost of the technology and transactions, and doing away with the need for a central bank, AltCoin technology moves applications of money towards proliferation. Historically, alternative currencies have little effect on fiat currencies. The Bundesbank believes that alternative currencies may have the potential to harm, but are too small to matter. Smaller regional or local currencies, such as the Chiemgauer or BerkShares, seem to help their local economies without harming the national currency. The Swiss have evaluated their WIR over decades and come to the conclusion that a competing national trade currency is a significant help in counter-balancing the national fiat currency.

### What's a poor government to do?

We don't expect AltCoin technology to take over all monetary activity, nor do we see an end to fiat currencies. We do however think governments need to adjust their views. Some are adjusting their stances, for example Singapore's announcement that it intends to regulate AltCoins. Others are confused, such as the many governmental arms of the USA. We think that shrewd governments could

use AltCoin technology to improve performance. We think governments have special opportunities to join tax systems with AltCoin technology. Here are some ideas:

- **local government, local currency** – local government, down to villages, can issue a local AltCoin currency at very low cost. There is little need, as formerly, for technical management of notes or balances. Traditional arguments favouring a local currency are to create local credit and increase circulation of trade within the locale. If local governments wish to provide 'backing' for such a currency, they can start small, perhaps permitting the payment of parking fines, or tickets to local events. If they wish, they can move to allowing property or other taxes to be paid in the AltCoin.

- **local or national government, natural resource certificates** – resource-rich governments could issue certificates backed by oil, metals, or other items of value, thus rapidly creating credit. This could benefit small jurisdictions and jurisdictions with substantial natural and agricultural resources.

- **local or national government, dominant economic player** – a smaller government able to promise future units of something valuable, e.g. port access, shipping miles, or water, might consider issuing future redeemable certificates using AltCoin technology.

- **national government, national trade currency** – national government can bring out a Swiss WIR equivalent, an economic trade ring, at low cost without changing the tax system.

- **national government, parallel currency** – national government can issue a standalone AltCoin currency on par with national currency. There are a number of technology 'settings' to be discussed, most importantly is there a fixed number of units, a la Bitcoin, or a fluctuating number based on some algorithm. Because

the parallel currency is able to be used for national tax payments, it should supplant a national currency over time. The government involved would save on physical currency operations and central bank management if it decided to close out its traditional currency later. It should also increase confidence in its currency management, having effectively 'outsourced' this to the technology. This approach is likely to be particularly useful for small nations with mediocre currency management records.

- **cities or offshore governments, international transfers** – perhaps cities should have open source blockchains of recorded trades within their boundaries. Governments could start with blockchains for things such as land registry transfers, but could move to offer wider confirmations for secure international transfers, e.g. foreign exchange transactions, stock exchange transfers, art ownership, shipping or aircraft registration. This might be particularly useful as a role for financial centres or offshore centres.

The technology of AltCoins extends beyond money to wider exchange by putting trust in technology over traditional intermediaries, including governments. Quite a leap of faith, but as people use AltCoin technology more, they will question traditional fiat currency more, and in turn the role of government. We believe that governments need to re-examine their monopolies on the issuance of fiat currencies, not with a view to abolition, but with a desire to use this new monetary technology for their own benefit. **BT**

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1. Thomas L Hogan, *Competition in Currency: The Potential for Private Money*, Policy Analysis Number 698, Cato Institute (23 May 2012)