

BitCoin between Scylla and Charybdis

Not just business, not just informatics

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In recent years, besides official services managed by traditional banks, new payment systems (e.g. M-Pesa) and new currencies (e.g. Bitcoin) have emerged in very diverse settings. Bitcoin is based on a particular application of 'blockchain' technology, where two rapidly growing technologies meet: peer to peer networks and cryptography. This architecture encoded into Bitcoin transforms computing power scarcity into authentication capacity. Thus, the blockchain has the powerful feature of enforcing scarcity without needing any guardian, and so avoiding the infinite regress of controlling controllers with more controllers.

Potential applications span a wide range of contexts, wherever keeping account of value is required. So, this technology could be as disruptive as double-entry book-keeping for accounting. Indeed, the blockchain provides an interesting alternative to the system of recordkeeping that has been used since the Renaissance. Blockchain technology could enable currency transactions with third parties to be automatically verified. It could also facilitate the audit and analysis of accounting classifications and measurements by parties external to the reporting entity which would provide much more credible information about the entity's financial position and performance.

Understanding those prospects of Bitcoin cannot solely be a business research endeavour, because technology sets the limits of what is possible and impossible; it cannot be solely an informatics research because human behaviour remains hardly predictable.

So, we present our framework and some research questions we are working on, hoping they attract interest and collaboration from CASL:

1. How are the traditional functions of central banks operationalized (or not) in this decentralized network? How is the blockchain different from other technologies of authentication?
2. How has the blockchain technology been adopted inside and outside the financial system and how has it spread?
3. How could accounting information be encoded in a blockchain? How such information could be secured and accessed using cryptographic methods? How could reporting entities and users of information be incentivised to use such a system?
4. What new applications and markets, impossible with current currencies, become possible? (Micropayments for content, trans-jurisdictional record-keeping, remittances, computing power...)?
5. If the blockchain makes information scarce, how does it create trade value in an information network where data can be copied ad infinitum? Does it provide alternatives to current DRM technologies?
6. If Bitcoin is a peer to peer network, what different control points is it characterized by?
7. How robust is Bitcoin to:
 - a) infrastructural limits such as bandwidth or processing power?
 - b) sabotage?