Denationalisation of money: can quality emerge?

David Hales, Jeff Johnson
The Open University, UK
www.davidhales.com

What is money?

- Not entirely clear what it is or where it came from but has definite functions:
  - Store of value
  - Transmission of value
  - Unit of account
  - Facilitate exchange
- “a medium for the communication of value over space and time”

Quality Money

- Useful to have quality money (eternal coin):
  - Stable (value over time)
  - Universal (acceptable everywhere)
  - Fungible (one unit the same as any other)
  - Fair (does not benefit one group over others)
  - Secure (can't easily be stolen)
  - Convenient (can be moved around easily)

Nation State Money

- Issued by central authorities (central banks)
- additional money loaned into existence by local banks (credit creation)
- Fiat – not backed by any commodity (in past gold was used for example)

The Problem

- Not ideal because:
  - Historically value declines (inflation)
  - Different nations use different currencies
  - Fiscal / monetary policy tangled
  - Currency wars
  - Trust in governments and banks declining

Solution: National World Currency

- Select an existing national currency and make it a world reserve currency (US dollar)
- Problem: National monetary policy may conflict with global liquidity requirements

"The Triffin Dilemma, i.e., the issuing countries of reserve currencies cannot maintain the value of the reserve currencies while providing liquidity to the world, still exists."

(Dr Zhou Xiaochuan, Governor of the People's Bank of China, 23 March 2009)

Solution: Global Currency

- Create a currency based on a "basket" of existing national currencies and / or commodities issued by a supranational body (e.g. IMF SDR's, Bancor concept)
- Problem: Still based on national currencies. Unlikely to be usable by "man in the street".

"The reform should be guided by a grand vision and begin with specific deliverables. It should be a gradual process that yields win-win results for all"

(Dr Zhou Xiaochuan, Governor of the People's Bank of China, 23 March 2009)

Solution: Global Currency

- Create a world central bank issuing it's own currency that everyone uses.
- Problem: What nation will agree to this? Who decides policy? Would this not require world fiscal as well as monetary union? Democracy?

"a new world money… will be issued against the total purchasable output of the community in return for the workers' services to the community. There will be no more reason for going to the City for a loan than for going to the oracle at Delphi for advice about it."

(H. G. Wells, "The New World Order", 1940.)

Solution: Denationalise Money

- Eliminate nation state role in monetary affairs by allowing anyone to issue money and sell it on the market. Choice, competition, Decentralise.
- Problem: Assumes market is efficient. Requires trusted profit driven (corporate) authorities. Monopoly practices (google dollars, facebook credits).

"governments have become wholly inadequate for the task… and have incessantly and everywhere abused their trust to defraud the people" (F. A. Hayek, "The Denationalisation of Money: The Argument Refined", 1990.)

Solution: Demarketise Money

- Rather than trusting corporates create new competing fully decentralised open source (peer-to-peer currencies).
- Problem: Who will administer / create them? Can they be secure? Will people trust them?

"What is needed 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." (Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System", 2008)

P2P Open Source Currency

- Similar to file sharing systems (like BitTorrent)
- Fully decentralized no central trusted authority
- Collectively “owned” and “controlled” by users
- Cryptography provides security and privacy
- Open source code provides transparency
- Large design space of monetary policies possible

Example 1: BitCoin (bitcoin.org)

- Analogous to “gold” – policy:
  - There are a maximum number of bitcoins that can exist 21 million (8 decimal places granularity)
  - Produced through “mining” CPU intensive search increases over time
- All transactions broadcast to all nodes
- If majority of CPU power in network runs protocol cheating is hard
- Mining and potential transaction fees incentivise “good behavior”
- Several exchanges, few traders accept, market CAP = $44m

Bitcoin WATCH

Latest News View All

Mon 2:00	SC Magazine: BitCoin forum hack
Mon 1:30	Present Cynosure: Krugman's Bitcoin Error
Thu 21:00	Latest BitLotto Winner: "Where Did All These Bitcoins Come From?"
Wed 20:45	Michael Suede - Questions For Krugman
Wed 10:30	Bitcoin-Trader - Interview Series Part 3: David Sterry - ExchB
Wed 9:45	Paul Krugman - Golden Cyberfetters [Op-Ed on Bitcoin]

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Economy

Total BTC	7,251,000 BTC
Market Cap based on latest prices	44,075,929 USD or 38,067,750 EUR or 143,473,507 PLN or 29,004,000 GBP
Transactions last 24h	6,685
Transactions avg. per hour	278.54
Bitcoins sent last 24h	1,105,541.27 BTC
Bitcoins sent avg. per hour	46,064.22 BTC

Exchanges

Market	Last	Volume (24h)	Bid	Ask	High	Low
mtgoxUSD	6.2292	164,597.61	6.20	6.20	12.50	3.85
thUSD	6.0786	6,723.39	6.09	6.10	6.89	4.51
mtgoxRUB	133.8124	2,500.00	184.75	189.43	141.08	88.43
btceUSD	6.0000	1,531.83	5.90	6.01	6.66	4.70
bitchangePLN	18.0000	1,314.06	17.60	18.00	18.34	15.70
virtexCAD	6.4990	1,163.21	6.00	6.99	7.10	5.40
britcoinGBP	4.0000	998.03	3.86	3.95	4.26	2.96
mtgoxPLN	19.7867	619.90	19.10	19.87	22.00	14.48
mtgoxEUR	4.5494	589.58	4.55	4.60	5.01	3.30
exchbUSD	6.3000	485.95	6.20	6.34	7.45	4.99
virwoxSLL	1829.0000	448.00	1700.00	1828.00	1830.00	1283.00

Example 2: Ripple (Ripplepay.com)

- Analogous to “bank credit” – policy:
  - Anyone in the system can issue credit
  - But only to trusted friends (social network)
  - Several units of account (incl. bitcoin)
- Security and incentives based on existing trust
- Early stage no full P2P implementation
- No traders or exchanges

Problems…

- No single policy or software implementation will work for all people, time and places
- But given a sufficient ecology of competing systems…
- New systems can emerge, hacked or less useful systems will dissolve
- Hacked systems introduce a new kind of Gresham's law
- Competition between systems can drive cooperation within them: group selection

Problems…

- Each P2P currency is an island (rather like a nation) in which value is trapped
- Requires trusted 3rd parties to provide exchanges to allow for movement of value
- Fully distributed P2P exchanges?
- Some attempt:

  https://github.com/macourtney/Dark-Exchange

Solutions?

- Assuming open source P2P:
  - Healthy ecology of completing currencies
  - Liquid exchanges
- Could we borrow an idea from the Chinese central bank?
- A composite currency based on a basket of popular P2P currencies
- Using open source algorithm to constantly rebalance basket to maintain value

Agent-based models?

- Group selection models may be adapted where:
  - Group = agents holding currency
  - Cooperation = behaviour that maintains value of currency
  - Defection = behaviour that inflates or deflates value (including hacking)
  - Under assumption that agents are boundedly rational copiers of others

A “sparkling” economy

- Even an ecology of constantly forming and bursting bubbles “a sparkling economy”
- Might produce stable value given a sufficiently “cleaver” algorithm
- But no algorithm can know the future for sure
- Could we evolve them in simulation?
- A task for NESS?

Questions?

Some References:

[1] John F. Nash, “Ideal Money”, Southern Economic Journal, 2002, 69 (1). http://www.jstor.org/pss/1061553

[2] H. G. Wells, “The New World Order”, 1940. http://gutenberg.net.au/ebooks04/0400671h.html

[3] People's Bank of China, "Reform the Int. Monetary System", March 2009. http://is.gd/0OhCmS

[4] F. A. Hayek, “The Denationalisation of Money: The Argument Refined”, 1990. http://mises.org/books/denationalisation.pdf

[5] The Economist, Jun 13th 2011. http://www.economist.com/blogs/babbage/2011/06/virtual-currency

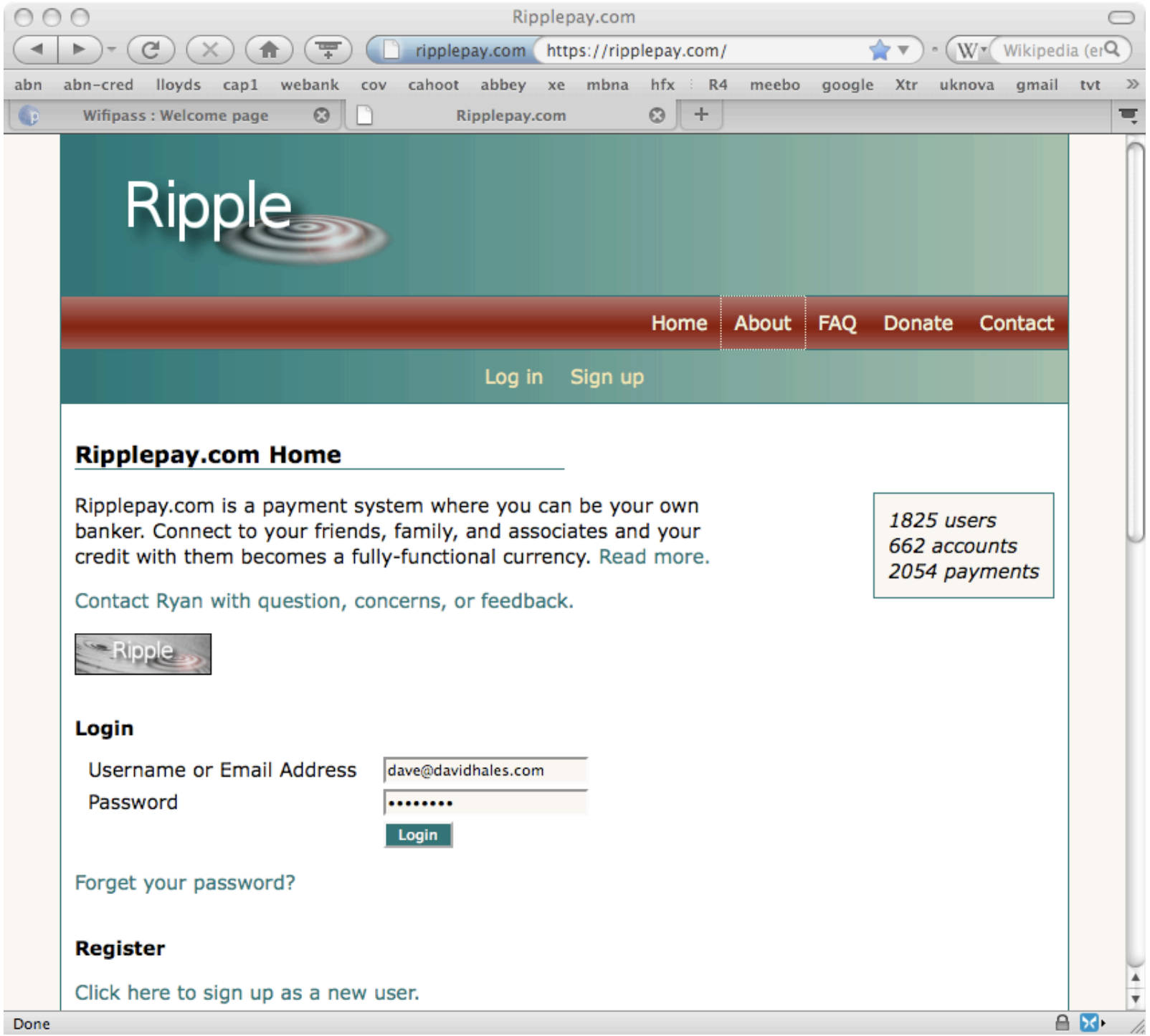
[6] Victor Grishchenko, “Bitcoin?”, May 12th 2011. http://www.pds.ewi.tudelft.nl/~victor/bitcoin.html

[7] Gresham’s Law - http://en.wikipedia.org/wiki/Gresham's_law

Finish

P2P money

- Using a social network of trusted friends
- Each person can apply a credit level to each link in any monetary unit
- Payments between nodes (value transfer) involves the system finding a route of credit between nodes
- Depends on trust and enough back-to-back transfers to balance over time
- Compare to *Hawala* system and other “informal value transfer” IVT, systems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Ripplepay.com is a payment system where you can be your own banker. Connect to your friends, family, and associates and your credit with them becomes a fully-functional currency. Read more.
1825 users
662 accounts
2054 payments
Contact Ryan with question, concerns, or feedback.
Ripple
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Password
Login
Forget your password?
Register
Click here to sign up as a new user.
Done

P2P Money

- Currently know of no widely used deployed system (but *BitCoin* gaining ground)
- Bootstrapping problem - possible way forward:
  - Create a p2p virtual currency in a virtual game world with existing social networks
  - Take detailed measurements and collect data
  - See if it works and produce models
  - If successful grow the currency outside the virtual game

BitCoin

- P2P fully distributed crypto-currency
- Distributed database of all transaction (transparency)
- Various anti-attack mechanisms
- No central control = should be hard to shutdown
- New coins issued in a controlled and distributed way
- Seems to be in a speculative bubble right now