Lindahl

Blockchain – what it is and why it may change everything

British Chamber of Commerce, 2 May 2018

Agenda

- What is the problem that blockchain tries to solve?
- How does blockchain solve the problem?
- Impact and use cases
- Some legal challenges

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Two facts about humans

- We have **bounded rationality**
  - We are rational but have poor memory, limited ability to plan and can only process so much information
- We are **opportunistic**
  - If there is a short term win, we often do not hesitate to cheat, lie and withold information

Consquences for economy and society

- **Transaction costs**
  - Costs to find business partners, negotiate agreements, monitor performance and enforce agreements
- **Institutions** to mitigate transaction costs
  - Formal laws and informal norms
- **Governance structures** to organise economic and other activities
  - Firms
  - Markets
  - Business partnerships
  - Governments
  - Courts

- **Money**
  - Lowers transaction costs immensly by making all goods measurable against a common standard
- **Banks**
  - Lowers transaction costs by acting as middle man between lenders and borrowers
  - Lowers transaction costs by acting as agents of the monetary system

The importance of the *ledger*

- Documents that tracks *transaction history*
  - Corporate accounts
  - Land registers
  - Ship registers
  - Warehouse inventories
- Lowers transaction costs by clarifying
  - what has happened and
  - who owns what
- The property system would not function without ledgers

The problem with the ledger

- Asymetric information: not everyone has access to the ledger

- Opportunism: the ledger can be manipulated

- **Solution:**
  - Monitoring systems of the ledger: audits etc
  - Trusted third parties: courts, authorities, banks
  - Trust

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The *shared* ledger

- A continuously updated *shared and one version of the truth, transparent for all on the blockchain*

- Some components
  - An up-tod-date identical copy of the ledger for everyone
  - Consensus mechanism to agree on what has happened
  - Sets of transaction during a time period gathered in *blocks,* which are hashed
  - Each block tied to the previous block to ensure consisency and avoid manipulation

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Impact on economy and society

- **Transaction costs**
  - Lowered immensly through the transparency and lower need for trust
- **Institutions** to mitigate transaction costs
  - Many laws and informal norms made unncessary
- **Governance structures** to organise economic and other activities
  - Firms: less or no need for firms
  - Markets: more secure, less need of trust
  - Business partnerships: still important
  - Governments: less need of administration and control
  - Courts: less need because of self-enforcing agreements

- **Money**: can be substituted with crypto currencies
- **Banks**:
  - less or no need for middle man between lenders and borrowers
  - Less or no need for agents of the monetary system

Some use cases

- Bitcoin and Etherium

- WeTrade:
  - Owned by 9 banks
  - Blockchain trading platform

- Land Surveying Authority
  - Blockchain for real estate transactions

- Maersk/IBM
  - Blockchain for shipping

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Some legal challenges

- **Control over assets**
  - Who "owns" the blockchain?
  - Who "owns" the data on the blockchain? (data cannot be owned)
- **Legal compliance**
  - The legal system is based on non-shared ledgers
  - Data privacy: challenge with right to be forgotten

- **Contracts**
  - Contracts *about* the blockchain
    - The blockchain cannot solve these contractual problems
    - We would recommend use of *relational contracts*
  - Contracts *on* the blockchain
    - "Smart contracts"
    - Not everything can be described in boolean logic (yes/no)

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