Blockchain: Disruptive Innovation or yet another Gimmick?
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Warning

In this presentation I refer to sources mentioned at the end of the presentation.

The views expressed reflect only my personal opinion as well as the opinion of the mentioned sources.

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Challenges in Capital Markets

- Current limitations of the capital markets based on a multitude of intermediaries and market infrastructures
  - Multiple versions of the Truth (requires consolidation by banks);
  - Vulnerable to Technology Threats (Cyberattacks);
  - Unnecessarily complex;
  - Not equipped for 24h/7d-w/365d-y processing.
Challenges in Capital Markets

Challenges

- Banks too expensive (exorbitant costs due also to regulation, IT legacy systems, etc);
- Banks and other intermediaries under huge pressure to bring down costs;
- Investors enjoying dramatically improved information, want quick access to investments;
Fintech

What is 'Fintech‘

- Fintech portmanteau of financial technology applying to an emerging financial services sector in the 21st century.
- Originally applied to back-end of established consumer and trade financial institutions.
- Now the term includes any technological innovation in the financial sector, in financial literacy and education, retail banking, investment and even crypto-currencies like bitcoin using blockchain technologies.

Read more: Fintech Definition | Investopedia
Fintech: source of innovation

Innovation dawns
Peer-to-peer lending (£bn)

- Other
- Equity crowdfunding
- Invoice trading
- P2P consumer lending
- P2P business lending
- Totals

Sources: Andy Haldane/BoE; Philippon (2014)
‘Has the U.S. Finance Industry Become Less Efficient?; Nesta (2012-14); McKinsey
Blockchain Definition

- A Blockchain is a cryptographic, or encoded, ledger comprising a digital log of transactions shared across a public or private network.

Source McKinsey & Company
Blockchain Definition

A blockchain is “a technology that allows people who don’t know each other to trust a shared record of events”. This shared record, or ledger, is distributed to all participants in a network who use their computers to validate transactions and thus remove the need for a third party to intermediate.
From ancient ledger......

- Ledger have been at the heart of commerce since ancient times
  - Clay tablets
  - Papyrus
  - Paper
  - etc
...to digital distributed ledgers

- An asset database
- Shared across a network of multiple sites, countries, institutions,...
- Participants have access to own copy of the ledger
- Changes are reflected in all copies
- Applies to financial, legal, physical, etc assets
- System of signatures or keys allows for access and to make changes
Why blockchain?

- Algorithms allow transactions to be aggregated in blocks
- Blocks are added to a chain
Who can use Blockchain?

- Governements: collect taxes, deliver benefits, issue passports, etc
- Health systems,
- Banking: payment systems, csd, custodian bank, etc
Current System versus Blockchain

A distributed ledger, right, is a network that records ownership through a shared registry

Oliver Wyman
Current System versus Blockchain
Current System versus Blockchain

Figure 3: Capital markets in 2025

Source: Accenture Research
Blockchain: How does it work

![Diagram of centralized, decentralized, and distributed networks]

- **Centralized** (A)
- **Decentralized** (B)
- **Distributed** (C)
Blockchain: How does it work

The blockchain

- A distributed public digital ledger that maintains, through cryptographic proof, a continuously growing secure list of transactions that is replicated repeatedly.
- A transaction network that potentially can be used by financial institutions and consumers to transact directly.
- Well-suited for applications requiring a rapid, permanent time and date stamp such as:
  - Payments
  - Financial asset transfers
  - Smart contracts
  - Ownership splits and notary services
- A technology that brings substantial benefits in terms of speed, security, transparency, convenience and cost.

Simple Bitcoin example

The decentralization of the transaction system will have an important impact on the way business is conducted throughout many industries.

Source: McKinsey & Company
Blockchain and the Bitcoin

How a bitcoin transaction is processed

1. Payers initiate a bitcoin payment using third-party “wallet” software.

2. This and other pending transactions are broadcast on the global bitcoin network.

3. Every ten minutes or so, specialised computers on this network, known as “miners”, collect a few hundred transactions and combine them in a “block”.

4. Miners process the block, reaching a consensus on what the new “blockchain” should look like.

5. Miners are rewarded with newly minted bitcoin for providing vast amounts of computing power – giving them a stake in the smooth functioning of the currency.

6. Miners disseminate the new blockchain to the entire network, recording the transactions in the latest block.

7. The payee can use his wallet software to see whether the bitcoin has arrived.

Economist.com
Blockchain and the Bitcoin

How Does Bitcoin Work?

Sender

Validates

Receivers

Banks

Private Key

1a3AZddyy355XXa23y

Flow of Bitcoin and Cash

Money Transfer Services

Exchanges

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Blockchain in Capital Markets

- Faster Clearing and Settlement
- Ledger Consolidation
- Consolidated Audit Trail
- Reduction in Systemic Risk (prefunding prior to trading)
- Operational Improvements in the Middle and Back Office
- Account-handling Efficiency
- Redundancy of Book Entry Systems
Blockchain and other Projects

Key issue in the Blockchain applications
Identify counterparties in an unambiguous manner,
Have public freely available Identifier (Open Data)
=> LEI can play a pivotal role
Legal Entity Identifier (LEI)

- The LEI is a unique 20-character alphanumeric code based on the ISO 17442 standard developed by ISO, which is assigned to legal entities that are counterparties to financial transactions. The LEI code itself is neutral, with no embedded intelligence or country codes.
- Actually some 430,000 such LEIs have been delivered worldwide (US only 105,000) to entities mainly active in derivative markets.
Blockchain and other Projects

Four key principles underlie the LEI:

- It is a global standard;
- A single, unique identifier assigned to each legal entity active in financial markets;
- It is supported by high data quality;
- It is a public good, free of charge for all users.

The reporting of LEI and Legal Entity Reference Data is conducted daily by LEI issuing organizations using the Common Data File format.
Reaction of the Market
From scepticism......

2013

JPMorgan Chase CEO denounces bitcoin as ‘terrible,’ predicts its downfall
JPMorgan CEO: We Can Learn From Technologies Like Bitcoin

Jamie Dimon, chairman and president of JPMorgan Chase, says his bank can learn from disruptive payment systems like bitcoin.

Dimon, famously dismissive of the digital currency, made the comments in his annual letter to JPMorgan shareholders, noting:

"You all have read about bitcoin, merchants building their own networks, PayPal and PayPal look-alikes. Payments are a critical business for us — and we are quite good at it. But there is much for us to learn in terms of real-time systems, better encryption techniques and a reduction of costs and ‘pain points’ for customers."
Fintech (and Blockchain) Financing worldwide

Figure 4: Global FinTech Financing Activity

Source: Accenture and CB Insights
Startups are disrupting financial Services by unbundling all of the Bank’s core Offerings
Reaction by the Market  Dec 15-Jan 16

The Global Adoption of Real-Time Retail Payments Systems (RT-RPS)
Reaction by the market Dec 15 – Jan 16

smarter, simpler cross-border payments

a service that will enable fast, transparent and predictable global payments
Blockchain and the Fund Industry

Figure 5: Blockchain distribution will dramatically increase processing speeds in relation to the traditional model.
Blockchain and the Fund Industry
Blockchain and the Banks

- Banks may lose much of their intermediary role to their customers;
- Banks may also win back activities from their suppliers (settlements, clearing, transfer agents, etc);
- Banks will certainly not be the first losers (if there are to be losers)
Bank take the Initiative

More than 20 banks have created a consortium named R3 to create a new, global ledger protocol out of Bitcoin software (Blockchain)

“Over decades, banks and other firms have built systems for themselves. [But] with shared or distributed ledgers, perhaps we can imagine a world where participants share this infrastructure, so rather than everyone running their own systems that have to be reconciled, we [will have] an open platform that multiple firms can connect to.”

Richard Brown Chief Technology Officer R3
Blockchain and the Regulators

- Regulators can slow down the deployment of blockchain and blockchain like technologies;
- Regulators can be very supportive;
- Regulators can climb on the bandwagon and use new technologies for their purposes (ledger);
- Hopefully they will not ignore this rapidly emerging technology.
What does adoption look like?

Figure 4: What does adoption look like?

2015
Exploration & Investment
- Initial capability & use case assessments
- Early adoption likely for internal reconciliation

2016–2017
Early Adoption
- Leading-edge banks see the value of blockchain and begin deployments for asset classes that are bilateral and/or have no central clearing authority
- Regulatory certainty drives adoption for external uses
- Regulatory authorities realize the benefits of blockchain for auditing and compliance, and rule-making begins

2018–2024
Growth
- Banks begin to see the benefits accorded to early adopters and – combined with regulatory guidance and certainty – the network effect takes hold
- New service providers and models emerge
- Deployments go viral across numerous asset classes
- New products and services are created; incumbent processes and services are discarded

2025
Maturity
- Blockchain adoption is considered mainstream and integral to the capital markets ecosystem

Source: Accenture Research
Good News – Fintech could disrupt Finance

Banking is currently inefficient, costly and riddled with conflicts

by Martin Wolf
Source

Source


- **Embracing Disruption – Tapping the Potential of Distribution ledgers to Improve the Post-Trade Landscape, DTCC, January 2016**  

- **Blockchain Technologies: Preparing for Change – High Performance Delivered Accenture 2015**  

- **Distributed Ledger Technology: beyond block chain, A report by the UK Government Chief Scientific Advisor 2016**  
Thank you for your attention