

Cyberlaw Institute

HOW THE BLOCKCHAIN TECHNOLOGY MAY RESHAPE FINANCIAL SERVICES

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WHAT IS THE “BLOCKCHAIN”?

- A blockchain is a “digital, distributed transaction ledger database with identical copies maintained on a network of multiple computer systems controlled by different entities.”
- It records and stores every transaction that occurs in the network
- It’s the technology that underlies bitcoin, the well-known cryptocurrency

HOW THE BLOCKCHAIN WORKS

- When persons transact in a blockchain system, a public record of all transactions is automatically generated
- Computers verify each transaction using sophisticated algorithms to confirm transfer of value and create a historical record of all activity
- Once recorded, a blockchain transaction is almost impossible to change
- Eliminates intermediate third-party transaction verifiers such as auditors, payment processors, legal services, brokerage and the like

THE BLOCKCHAIN AND BITCOIN

- The Bitcoin blockchain is a database containing historical records of all the transactions that ever occurred in the network. It is essentially an electronic ledger, where no actual names are used

GOLDMAN SACHS REPORT ON BLOCKCHAIN, ISSUED DECEMBER 2, 2015

- Authored by Robert Boroujerdi
- Bitcoin may just be the “opening act” for blockchain technology
- “Once considered the underlying pipes for bitcoin, this technology is . . . ushering in a new set of tools to cut costs and challenge the profit pool of the middle man with a promise to make centralised institutions obsolete. This solution promises to not just address consumer opportunities but also those for the more lucrative enterprise.”

IMPLICATIONS OF BLOCKCHAIN OUTSIDE OF BITCOIN, CITED BY GOLDMAN SACHS

- Decentralized nature of the blockchain is its major advantage over existing financial ledger systems
- “Decentralized, cryptography-based solution cuts out the middleman.”
- “It has the potential to redefine transactions and the back office of a multitude of different industries.”

BLOCKCHAINS CAN EXIST WITHOUT BITCOIN

- “Those who wrote off bitcoin may have missed the golden egg—an underlying technology driver aimed at streamlining, potentially, a multitude of businesses.”
- “Put simply, the blockchain can live outside a world of bitcoin.”—

Goldman Sachs Report

CHARACTERISTICS OF A BLOCKCHAIN

- Anyone participating in a blockchain can review the entries in it
- Users can update the blockchain only by consensus of a majority of participants
- Information entered into the blockchain can never be erased; thus it contains an accurate and verifiable record of each and every transaction ever made

VALUABLE ASPECTS OF BLOCKCHAIN'S TECHNOLOGY

- Unchangeable: cannot make changes to blockchain without detection, which reduces opportunity for fraud.
- Transparent: transactions on blockchain visible to all participants, which increases trust.
- Reliable: No single point of failure due to wide circle of participants. If one node in network were to fail, the rest would continue to operate

BROAD POTENTIAL APPLICATIONS

- Since almost any item can be expressed in code and encapsulated or referenced by an entry in the ledger, the blockchain technology can be used in a myriad of different applications

BLOCKCHAIN'S USE IN FINANCIAL SERVICES

- The key is that using blockchain technology, parties can effect a transaction securely without the need for a central authority to certify and clear it
- Thus, no need for clearing by a bank, stock exchange or payment processor

BANKS AND THE BLOCKCHAIN

- FIS (provider of systems used by banks to handle payments) was reported in 2014 as examining whether public ledger like bitcoin's could help move funds securely
- Bankers believe the blockchain technology can cut up to \$20 billion of costs by eliminating "clunky processes" that govern payments and settlements. (Financial Times, October 13, 2015)

BANKS POOL RESOURCES TO EXPLOIT BLOCKCHAIN TECHNOLOGY

- R3 is new global coalition of banks focused on applications of cryptographic technology and distributed ledger-based protocols
- R3 is funded by most of the world's major banks (with notable exception of China)
- Among coalition are Citibank, Bank of America, BNY Mellon, Morgan Stanley, Goldman Sachs, Barclays, JP Morgan, Wells Fargo, BNP Paribas

MICROSOFT NOW OFFERING BLOCKCHAIN TECHNOLOGY TO FINANCIAL INSTITUTIONS

- Partnered with blockchain startup ConsenSys
- Purpose: to provide a “fail fast, fail cheap” model for firms which won’t have to bear the cost of building their own systems
- Others building blockchains with features beyond the original Bitcoin one include Ethereum

SEC COMMISSIONER KARA STEIN SPEAKS ABOUT THE BLOCKCHAIN ON NOVEMBER 09, 2015 AT HARVARD LAW SCHOOL

- “Separate and apart from its use with bitcoin, some have been recently advocating that blockchain technology could revolutionize other areas of finance.”
- “It could be used to overhaul areas like securities clearing and settlements, payment processing by banks, and cumbersome loan transactions.
- “It has the power potentially to increase quality and facilitate trust.”

SEC COMMISSIONER STEIN ADDS:

- “While I am not advocating for the adoption or effectiveness of blockchain technology, it appears to offer potential.”
- “One can imagine a world in which securities lending, repo, and margin financing are all traceable through blockchain’s transparent and open approach in tracking transactions. That could revolutionize regulators’ approach to monitoring systemic risk [in financial markets]”

NASDAQ AND THE BLOCKCHAIN

- NASDAQ OMX Group began testing use of the Blockchain in early 2015 in an effort to transform trading of shares in private companies
- “Utilizing the blockchain is a natural digital evolution for managing physical securities,” said NASDAQ C.E.O. Robert Greifeld, adding that the technology held potential to “benefit not only our clients, but the broader global capital markets.”

NASDAQ ANNOUNCES INITIAL ROSTER OF PRIVATE COMPANY CLIENTS FOR NASDAQ “LINQ” A BLOCKCHAIN-ENABLED PROGRAM

- NASDAQ CEO Robert Greifeld says first participants include Chain.com, ChangeTip, PeerNova, Synack, Tango and Vera
- First demonstration made in Las Vegas at “Money 20/20” event on October 27, 2015
- Greifeld: “Blockchain applied to the private market is innovation built on top of innovation, and carries with it the opportunity to forever alter the future of financial services infrastructure.”

RAMPING UP VENTURE CAPITAL INVESTMENT IN BLOCKCHAIN

- One billion dollars in venture capital flowed into more than 120 blockchain-related startups, with half that amount coming in 2015
- While most of the startups are in the U.S., blockchain-related ventures are operating in every continent except Antarctica. (See Schatsky & Muraskin, *Beyond Bitcoin*, published by Deloitte LLP (Dec. 7, 2015).)

DISRUPTIVE POTENTIAL OF BITCOIN-RELATED TECHNOLOGY

- “Bitcoin-related technologies will disrupt payments markets and other trust-based markets within the next few years and for decades to follow.”
- “US bank fees generate \$250 billion a year and global payments-related revenues exceed \$300 billion a year.”

from Coindesk



Gil Luria
Wedbush Securities

ROLE OF THE BLOCKCHAIN IN TRADING BITCOIN

- To trade bitcoin, a person needs internet access and software program to generate a digital “wallet”
- The trader then can connect to the Bitcoin Network, which memorializes every transaction by means of the blockchain
- Blockchain avoids duplicate bitcoins
- Each digital wallet has both a “public key” and “private key”: transactions traceable to a computer by public key, but ownership of computer remains anonymous

**MICHAEL CASEY and PAUL VIGNA,
Authors of *The Age of Cryptocurrency:
How Bitcoin and Digital Money Are
Challenging the Global Economic Order.***

“Bitcoin is much more than a currency. It is a radically new, decentralized system for managing the way societies exchange value.”

“It is quite simply, one of the most powerful innovations in finance in 500 years.”

BOTTOM LINE?

**“BLOCKCHAIN TECHNOLOGY
WILL CHANGE THE WORLD”**

Everett Rosenfeld on CNBC