Understanding Blockchain Technology and Its Insurance Implications

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In keeping with the non-partisan, non-advocative mission of The Griffith Foundation, I will keep my comments and contributions to today's program unbiased and purely educational.

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Outline for Today's Discussion

Part 1	Technological Advancement: The Building Blocks to the Blockchain	Part 4	Overview of Blockchain in Business
Part 2	The Economics of Cryptocurrency and Blockchain	Part 5	Blockchain in Insurance
Part 3	What Exactly is a Blockchain? What does it do?		

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Part 1

The Building Blocks to the Blockchain

Blockchain Stems From Advances in Technology
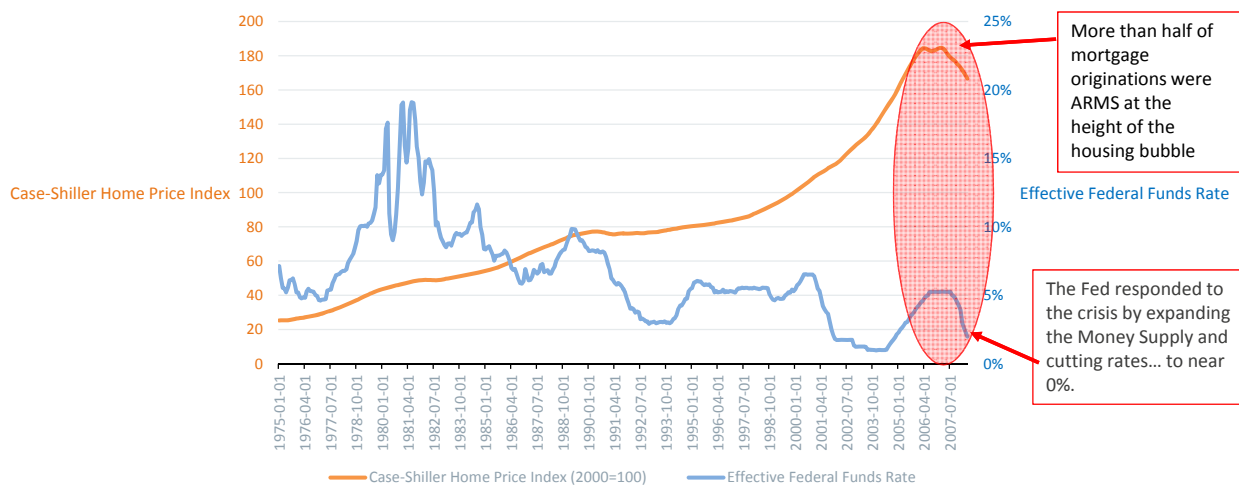
Part 2

The Economic Origins of Cryptocurrency and Birth of the Blockchain

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The Economic Environment During the Formation of Bitcoin

Look Out Below...

More than half of mortgage originations were ARMS at the height of the housing bubble

The Fed responded to the crisis by expanding the Money Supply and cutting rates... to near 0%.

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Bitcoin: The Very First Blockchain

Newsweek
03.14.2014

BITCOIN'S FACE
THE MYSTERY MAN BEHIND THE CRYPTO-CURRENCY

Originator:
Satoshi Nakamoto (pseudonym)

Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto
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www.bitcoin.org

Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

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So, Why Did We Discuss Economic History?

One reason was to point out the economic environment at time of the creation of Bitcoin, but another was to point out it's similarities with...
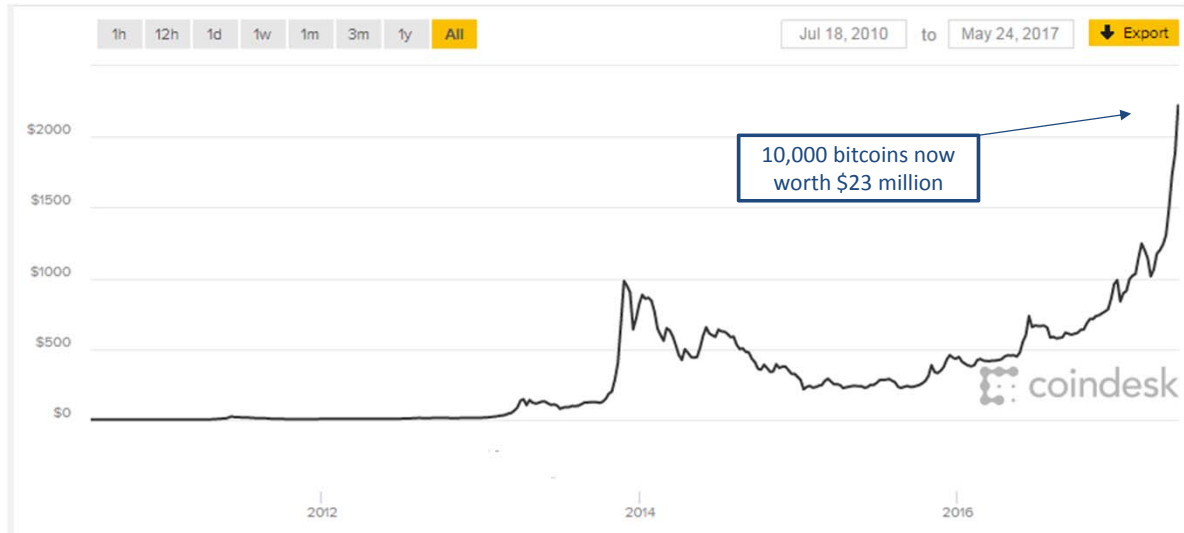

FINE GOLD
999.9
NET WT
1000.0

Gold:
- Scarce
- Mined
- Can Be Used as Money
  - Medium of Exchange
  - Unit of Account
  - Store of Value
- Hedge Against Inflation

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5/29/2017

First Transaction: 10,000 Bitcoins for Two Pizzas

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Part 3

What Exactly is Blockchain? What Does it Do?

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Blockchain Fuses Database with Network and Establishes Trust

Blockchain is a distributed database and shared ledger that maintains a continuously growing list of chronologically added records called blocks. In most blockchains new blocks and the data within (transactions, smart contracts, and so forth) are confirmed and verified through a decentralized consensus process called mining. This verification process removes intermediary validation and establishes trust without the use of a centralized authority
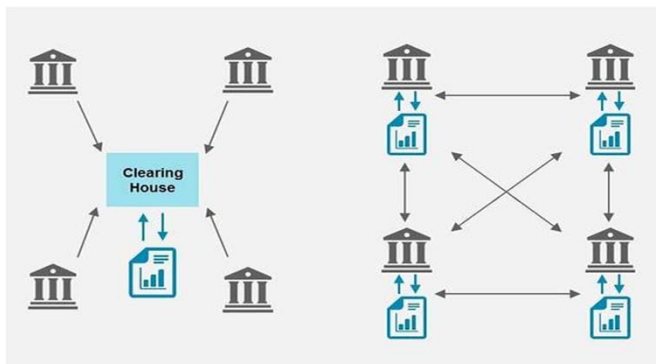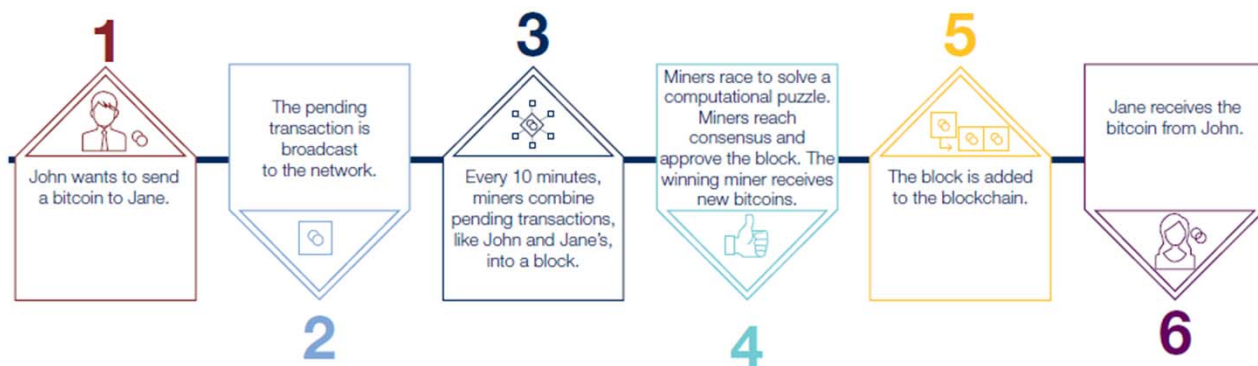

Blockchain:

- Adding anything to ledger is permanent
- <u>Solves double-spending problem</u>
- Establishes trust and eliminates middlemen which:
  - 1) increases security
  - 2) tears down walls
  - 3) speeds up transactions
  - 4) improves privacy

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How the Blockchain Process Works

1 John wants to send a bitcoin to Jane.

2 The pending transaction is broadcast to the network.

3 Every 10 minutes, miners combine pending transactions, like John and Jane's, into a block.

4 Miners race to solve a computational puzzle. Miners reach consensus and approve the block. The winning miner receives new bitcoins.

5 The block is added to the blockchain.

6 Jane receives the bitcoin from John.

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Other Blockchains: Ethereum

Ethereum is a public blockchain-based distributed computing platform, featuring smart contract functionality. It provides a decentralized virtual machine, the Ethereum Virtual Machine (EVM), that can execute peer-to-peer contracts (smart contracts) using a cryptocurrency called Ether.

SMART CONTRACTS:

Agree to contract

Write Contract Code

Place in etherum blockchain

If event occurs, automated payout

Why the Ethereum Blockchain?

Smart contracts
- Blockchain-based contracts, fully self-executing

DAPPS
DAOs
Many technological differences with Bitcoin:
- Shorter block times (Ethereum about 15-17 seconds; Bitcoin about 10 minutes)
- Universal programming language
- Ether likened to "gas"
- ASIC-resistant (huge mining rigs used in Bitcoin)
- Others

- Executed by the platform
- Validated and enforced by platform
- Can't be removed

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Part 4

Overview of Blockchain for Business

Public, Private and Hybrid Chains

Public blockchain: A public blockchain is a platform where anyone on the platform would be able to read or write to the platform. This is a fully decentralized blockchain.

Private blockchain: A private blockchain allows only the owner to have the rights on any changes that have to be done. This could be seen as a similar version to the existing infrastructure wherein the owner (a centralized authority) would have the power to change the rules, revert transactions, etc. based on need.

Hybrid (or consortium) blockchain: A consortium blockchain would be a mix of both the public and private. With a consortium chain the ability to read and write could be extended to a certain number of parties/nodes. This could be used by groups of organization/firms, who get together, work on developing different models by collaborating with each other. Hence, they could gain a blockchain with restricted access, work on their solutions and maintain the intellectual property rights within the consortium.

A Few Non-insurance Use Cases Under Development

1. Automobile Sales   Visa/Docusign: Car Leasing
2. Accounting   Big Four: Triple Entry Accounting
3. Banking   R3 and EntEth: Cross Border Trading
4. Education   Academic Records
5. Energy   Paid Energy Trades
6. Healthcare   IBM and FDA Align to Boost Public Health
7. Internet of Things   Ethereum IoT Registry
8. Mass Media Entertainment   Disney's Dragonchain
9. Social Media   SteemIt: Social Media on Blockchain
10. Supply Chain   Walmart: Supply Chain Management

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How Blockchain Will Change Insurance and Risk Management

What does the blockchain offer?

- Immutability
- Decentralized Consensus
- Security
- Trusted Process
- Smart Contracts
- Other

What could this mean?

- Audit trail
- Disintermediation
- Potential for Self-sovereign Identity
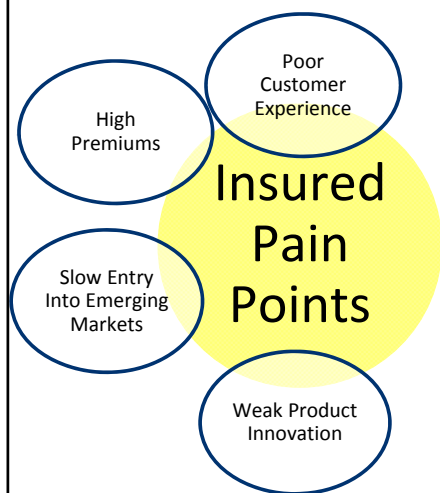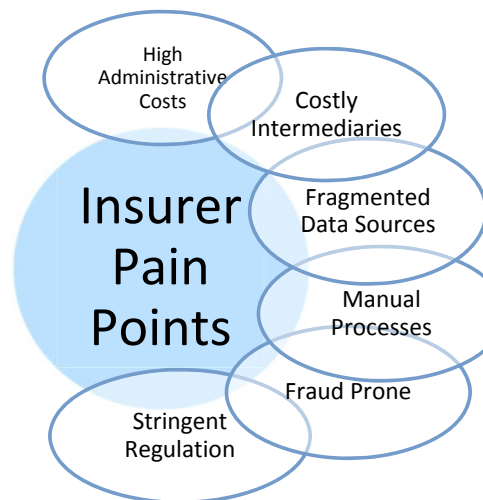- Risk Registries
- Faster Transactions
- Other

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Part 5

Blockchain in Insurance

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Blockchain Can Help With Insurance Pain Points

High Premiums

Poor Customer Experience

Insured Pain Points

Slow Entry Into Emerging Markets

Weak Product Innovation

Common Themes:
- Automation
- Improved 3rd party integration
- More extensive market reach
- Greater efficiency

High Administrative Costs

Costly Intermediaries

Insurer Pain Points

Fragmented Data Sources

Manual Processes

Fraud Prone

Stringent Regulation

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Blockchain Use Cases Across Entire Insurance Value Chain

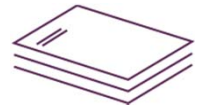| Products, Pricing and Distribution	Underwriting and Risk Management	Policyholder Acquisition and Servicing	Claims Management	Finance, Payments and Accounting	Regulatory and Compliance

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Questions? Comments?

The Institutes' white paper is available for free:
http://www.theinstitutes.org/blockchain

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