Blockchain and Initial Coin Offerings

1st Annual Rotman CPA Ontario Centre for Accounting Innovation Research Conference
Nan Li, University of Toronto
What is a Blockchain?

- The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value-- Blockchain Revolution (2016)

- Distributed digit ledger, store records into blocks and share across a network of computers

- Each block is cryptographically secured and linked to the previous block by containing the hash value of the previous block

- To add a new block to the chain, a node must solve computationally intensive problems ("proof-of-work" or "mining")

- If the node earns the right to add the block to the chain, it will receive coins or tokens native to the blockchain

- If the content of a block is altered (either by owner or hacker), all hash values of this and subsequent blocks will change
Someone requests a transaction.

The requested transaction is broadcast to a P2P network consisting of computers, known as nodes.

Validation

The network of nodes validates the transaction and the user’s status using known algorithms.

A verified transaction can involve cryptocurrency, contracts, records, or other information.

The transaction is complete.

The new block is then added to the existing blockchain, in a way that is permanent and unalterable.

Once verified, the transaction is combined with other transactions to create a new block of data for the ledger.

Cryptocurrency

Has no intrinsic value in that it is not redeemable for another commodity such as gold.

Has no physical form and exists only in the network.

Its supply is not determined by a central bank and the network is completely decentralized.

Source: Blockgeeks
Centralized

Decentralized

Distributed Ledgers

The New Networks

Distributed ledgers can be public or private and vary in their structure and size.

Public blockchains

Require computer processing power to confirm transactions ("mining")

- Users (●) are anonymous
- Each user has a copy of the ledger and partipates in confirming transactions independently
- Users (●) are not anonymous
- Permission is required for users to have a copy of the ledger and participate in confirming transactions
Blockchain Disruption

- **Finance**
  - Banking and Payments

- **Government**
  - Dubai aims to put all government documents on blockchain by 2020

- **Healthcare**
  - Store medical records and share with authorized professionals or patients

- **Legal**
  - Store records on properties

- **Real Estate, Charity, Voting…**
Initial Coin Offerings (ICOs)

- An innovative way for early-stage startups to raise funding
  - Selling newly invented blockchain-based tokens to early adopters and investors

- Advantages
  - Allows entrepreneurs to gauge customer interest at early stage
  - Allows platform adopters and individual investors to participate in startup financing
ICO vs. VC Financing
Global Landscape of ICOs

Monthly ICO number and volume

1) Calculations based on currency exchange rates on end date of ICO. As Ether and Bitcoin exchange rates are highly volatile, actual and current market capitalization of the companies today may differ significantly from figures shown in the table. ICO funding amount until 29.05.2018 considered.

Source: PwC Strategy& analysis
ICO by Industries

Total USD Raised Per Category

Source: ICO Watchlist
## Top 10 ICOs

<table>
<thead>
<tr>
<th>Project</th>
<th>Amount Raised</th>
<th>ICO Dates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EOS</td>
<td>$4.1 billion</td>
<td>6/26/17 - 6/18/18</td>
<td></td>
</tr>
<tr>
<td>Telegram</td>
<td>$1.7 billion</td>
<td>01/18 - 02/18</td>
<td></td>
</tr>
<tr>
<td>Dragon</td>
<td>$320 million</td>
<td>02/15/18 - 03/15/18</td>
<td></td>
</tr>
<tr>
<td>Huobi</td>
<td>$300 million</td>
<td>01/24/18 - 02/28/18</td>
<td></td>
</tr>
<tr>
<td>Hdac</td>
<td>$258 million</td>
<td>11/27/17 - 12/22/17</td>
<td></td>
</tr>
<tr>
<td>Filecoin</td>
<td>$257 million</td>
<td>08/10/17 - 09/10/17</td>
<td></td>
</tr>
<tr>
<td>Tezos</td>
<td>$232 million</td>
<td>07/01/17 - 07/14/17</td>
<td></td>
</tr>
<tr>
<td>Sirin Labs</td>
<td>$158 million</td>
<td>12/16/17 - 12/26/17</td>
<td></td>
</tr>
<tr>
<td>Bancor</td>
<td>$153 million</td>
<td>December 6, 2017</td>
<td></td>
</tr>
<tr>
<td>The DAO</td>
<td>$152 million</td>
<td>05/01/17 - 05/28/17</td>
<td></td>
</tr>
</tbody>
</table>

- EOS: Smart Contracts
- Telegram: Encrypted Messaging & Blockchain Ecosystem
- Dragon: Decentralized Currency for Casinos
- Huobi: Cryptocurrency Exchange
- Hdac: IoT Contract & Payment Platform
- Filecoin: Decentralized Cloud Storage
- Tezos: Self-Amending Distributed Ledger
- Sirin Labs: Open-Source Blockchain Smartphone
- Bancor: Prediction Markets
- The DAO: Decentralized VC
**ICO Examples**

**Women's Coin® - Building a Better World**

Women's Coin® pre-loaded top-up cards will be in local currency. There is no interest to pay, very secure and a great alternative to a bank account or credit card. And you can even buy one as gift.

We want to create a marketplace based on Women's Values. The clothing and footwear market in the UK alone is worth 63.6 billion euros and globally $1.7 trillion, and children wear is showing a 7% increase, and performance sports wear is valued at $78 billion. As women are the key decision makers in purchase of clothing for self, husband, and family then manufacturers and retailer alike will seek to promote the “Gold icon of value” as a form of payment. Fashion Houses will also adopt as a quality standard high-end goods eg $4,000 handbag. Women's Coin Foundation trading arm will itself move into merchandising products carrying. Suppliers of goods and services recognise the purchasing power of the and compete to display the logo as a means of payment. Women's coin will be the catalyst for a connected global market place of value.将成为商标的标志。Women's Coin users creating connecting fiscal power to deliver progress on humanitarian and green issues than any Government policy or regulation.

**It's Time to Decentralize Jesus**

Using the cryptographic breakthrough of the blockchain ledger and anonymous cryptocurrencies, Jesus Coin has been developed as THE currency of God’s Son. Christianity is the largest grouping in the world, with over 2 billion followers, and we deserve our own currency. As predicted by John (Lisa’s dad, the one with the limp) 33:12:

“And there would be a cryptocurrency, and it would be wondrous, and the Lord would say unto thee followers ‘buy thee Jesus Coin at the highest possible bonus structure’.
ICO Examples

The world's first 100% honest Ethereum ICO.

You're going to give some random person on the internet money, and they're going to take it and go buy stuff with it. Probably electronics, to be honest. Maybe even a big-screen television.

Seriously, don't buy these tokens.

Crowdsale Statistics

Ether contributed | Contributions in USD | Tokens issued
---|---|---
310.445 | $86303 | 3965716.097

I had a feeling someone would waste their money.

Enough to buy 71 televisions!

Including 591,000 bonus tokens!
How to Do an ICO?

Step 1: Idea and Team
Step 2: Announcement and Marketing
Step 3: Fund Raising
Step 4: Exchange Listing
ICO Scams

► Centra Tech
  o “world’s first multi-blockchain debit card and smart and insured wallet”
  o spend these cryptocurrencies in real time using a Visa or MasterCard backed “Centra Card.”
  o “join our success and mission while generating a profit.”
  o False partnerships with Visa, Mastercard, The Bancorp
  o Fake cofounder “Michael Edwards”
  o “Centra Token Rewards Program”: 0.8% of total revenue
ICO Regulation

- Misconducts and scams are a major concern (SEC 2018)
  - Many projects only at idea stage
  - Unregulated for most part and severe information asymmetry between project team and investors
  - Most issue a whitepaper as a main information (disclosure) channel

- US: Tokens may or may not be securities (The DAO Report, SEC, July 25, 2017)

- Ban ICOs: China and South Korea

- Promote ICOs: Singapore, Switzerland, and Malta
Research Question

- Do ICO projects contain innovation in blockchain technology or they are just taking advantage of the lax regulatory environment?
  - Develop a rating system of blockchain innovation based on information disclosed in the whitepaper

- Do investors obtain information from voluntary disclosure in white paper, and do they value the innovation in blockchain technology being adapted or developed by ICO issuers?
  - Yes: use information in white paper and value blockchain innovation
  - No: either not value blockchain innovation, or information disclosed in whitepaper not credible
Initial Coin Offerings, Blockchain Technology and White Paper Disclosures

Chen Feng, University of British Columbia
Barry Lu, University of British Columbia
Nan Li, University of Toronto
Franco Wong, University of Toronto
Mingyue Zhang, University of Toronto
Why do we need a rating system?

- Nature of projects
  - Early stage projects
  - No products or service available
  - Traditional measure of technology quality does not apply
- Low entry barriers of issuing ICO
  - No regulation in place
  - Requirement for coding can be very low
  - Large information asymmetry between ICO issuers and investors
A Measure of Technical Level of ICO Projects

- **Factor 1: Blockchain Platform**
  - 1: if the project builds its own blockchain platform with new protocols/algorithms
  - 0: if the project uses an existing blockchain platform or doesn’t mention any details about the platform it is going to use

- **Example:**
  - Dragon Coin: “Our ethereum/ERC20 based platform will host the native DRG; the eco-system will include DGC, a gaming transactional token system.” (0)
  - Filecoin: “Filecoin is a protocol token whose blockchain runs on a novel proof, called Proof-of-Spacetime, where blocks are created by miners that are storing data.” (1)
A Measure of Technical Level of ICO Projects

▶ Factor 2: Token Utility

• 2: if a token is associated with some product/service provided by the company’s blockchain platform

• 1: if a token is associated with some product/service provided by the company but unrelated to the company’s blockchain platform

• 0: don’t need a blockchain (e.g., it is unclear what a token can do or the tokens are sold in order to raise money which can be replaced by more conventional crowdfunding)
A Measure of Technical Level of ICO Projects

Factor 2: Token Utility Example

- Filecoin: “clients spend tokens for storing and retrieving data and miners earn tokens by storing and serving data.” (2)
- Dragon Coin: “exchanged for non-negotiable physical gaming chips at the Dragon Junket or any Dragon affiliated gaming venue.” (1)
- Mondo: tokens are exchangeable for fiat; (0)
- Misscoin: users can “gain revenue from the token’s growing value.” (0)
- Sand Coin: doesn’t mention the use of tokens (0)
- Golem: “designed to ensure flexibility and control over the future evolution of the project”;
Figure 1. Do You Need a Blockchain?

Wust and Gervais (2017) provide the following flow chart and explanations to help determine whether a blockchain is the appropriate technical solution to solve a problem.
A Measure of Technical Level of ICO Projects

- Factor 3: Technical Writing
  - 2: if the white paper contains sufficient technical discussions in the style of an academic paper
  - 1: if the white paper contains limited technical discussions
  - 0: if the white paper contains essentially no technical discussions

- Example:
  - Filecoin: style of an academic paper, precise definitions, system diagrams of its new protocol, descriptions of data structures and algorithms, as well as references (most of which are academic papers) (2)
  - Dragon Coin: system diagram and some discussions on Ethereum and smart contracts; “Courtesy of the Ethereum Foundation” ; “Based on information from CoinDesk” (1)
  - Bankera: no technical discussions; “Most of the technology required for successful operations for Bankera is already developed and will be ready for testing as a minimum viable product prior to the ICO. The core elements of Bankera’s current technology include modules for SWIFT messaging, SEPA payments, payment cards integration, bank’s ledger, Bitcoin, Ethereum, DASH, NEW modules, fraud analytics and more.” (0)
Example: **FileCoin**

► Factor 1: Blockchain platform
  • FileCoin develops a new blockchain protocol to build its own platform

► Factor 2: Token Utility
  • Token of FileCoin can be used to store digital files on some participant’s local storage (in an encrypted form)

► Factor 3: Technical Writing
  • Sufficient technical details: 26 pages protocol setup and proof ([https://filecoin.io/filecoin.pdf](https://filecoin.io/filecoin.pdf))

► Rating=5
Example: HoweyCoin

- **Factor 1: Blockchain platform**
  - No description of blockchain platform used

- **Factor 2: Token Utility**
  - The product described does not need blockchain

- **Factor 3: Technical Writing**
  - No technical writing related to blockchain technology

- Rating=0
## Data

<table>
<thead>
<tr>
<th>Data source</th>
<th>Number of ICOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICOBench.com</td>
<td>1,813</td>
</tr>
<tr>
<td>CoinMarketCap.com</td>
<td>1,596</td>
</tr>
<tr>
<td>Tokendata.io</td>
<td>1,314</td>
</tr>
<tr>
<td>ICOMarks</td>
<td>1,129</td>
</tr>
<tr>
<td>CryptoCompare.com</td>
<td>655</td>
</tr>
<tr>
<td>ICODrops.com</td>
<td>370</td>
</tr>
<tr>
<td>TokenMarket.net</td>
<td>585</td>
</tr>
<tr>
<td><strong>Total ICOs</strong></td>
<td><strong>7,462</strong></td>
</tr>
<tr>
<td><strong>Duplicated ICOs</strong></td>
<td><strong>(3,865)</strong></td>
</tr>
<tr>
<td><strong>Unique ICOs</strong></td>
<td><strong>3,597</strong></td>
</tr>
<tr>
<td><strong>Unique ICOs with a white paper</strong></td>
<td><strong>1,545</strong></td>
</tr>
</tbody>
</table>
### Availability of Key Variables

**Panel C: Availability of key variables**

<table>
<thead>
<tr>
<th>ICOs</th>
<th>Number of ICOs</th>
<th>Total number</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Amount Raised</td>
<td>224</td>
<td>369</td>
</tr>
<tr>
<td>Without Amount Raised</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>With Soft Cap data</td>
<td>62</td>
<td>369</td>
</tr>
<tr>
<td>Without Soft Cap data</td>
<td>307</td>
<td></td>
</tr>
<tr>
<td>With Token Price data</td>
<td>47</td>
<td>369</td>
</tr>
<tr>
<td>Without Token Price data</td>
<td>322</td>
<td></td>
</tr>
</tbody>
</table>
Table 3 (A). Blockchain Platform

Panel A: ICO description based on Blockchain platform (factor 1)

<table>
<thead>
<tr>
<th>Platform</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>51</td>
<td>318</td>
</tr>
<tr>
<td>Mean amount (all)</td>
<td>28,742,952</td>
<td>9,260,348</td>
</tr>
<tr>
<td>Median amount (all)</td>
<td>2,800,000</td>
<td>561,532</td>
</tr>
<tr>
<td>% with amount raised (non-zero)</td>
<td>63%</td>
<td>60%</td>
</tr>
<tr>
<td>Mean amount raised (non-zero)</td>
<td>45,809,080</td>
<td>15,337,452</td>
</tr>
<tr>
<td>Median amount raised (non-zero)</td>
<td>14,919,087</td>
<td>5,272,002</td>
</tr>
<tr>
<td>% with token trading data</td>
<td>73%</td>
<td>3%</td>
</tr>
</tbody>
</table>
Table 3 (B). Token Utility

<table>
<thead>
<tr>
<th></th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>52</td>
<td>211</td>
<td>106</td>
</tr>
<tr>
<td>% with amount raised</td>
<td>79%</td>
<td>62%</td>
<td>50%</td>
</tr>
<tr>
<td>Mean amount raised</td>
<td>35,174,152</td>
<td>18,517,764</td>
<td>10,589,279</td>
</tr>
<tr>
<td>Mean amount raised (all)</td>
<td>27,733,468</td>
<td>11,409,048</td>
<td>5,294,640</td>
</tr>
<tr>
<td>% with token trading data</td>
<td>31%</td>
<td>8%</td>
<td>13%</td>
</tr>
<tr>
<td>Technical writing</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>N</td>
<td>27</td>
<td>94</td>
<td>248</td>
</tr>
<tr>
<td>Mean amount (all)</td>
<td>25,020,202</td>
<td>24,614,092</td>
<td>5,731,497</td>
</tr>
<tr>
<td>Median amount (all)</td>
<td>6,500,000</td>
<td>6,024,811</td>
<td>15,419</td>
</tr>
<tr>
<td>% with amount raised (non-zero)</td>
<td>78%</td>
<td>77%</td>
<td>53%</td>
</tr>
<tr>
<td>Mean amount raised (non-zero)</td>
<td>32,168,832</td>
<td>32,135,064</td>
<td>10,850,467</td>
</tr>
<tr>
<td>Median amount raised (non-zero)</td>
<td>11,000,000</td>
<td>11,637,823</td>
<td>3,502,044</td>
</tr>
<tr>
<td>% with token trading data</td>
<td>33%</td>
<td>14%</td>
<td>10%</td>
</tr>
</tbody>
</table>
Business Related Disclosure

- Token Distribution
- Lock Up (+)
- Vesting Period
- Governance
- Use of Funds
- Risk Disclosure
- Team Members
Findings

- A significant amount of ICOs do not need blockchain technology.

- Blockchain technology is positively related with funding (investors care)

- Lock up period, Team member, Advisor Disclosure is positively related with funding in certain specifications

Implication

- ICO investors rely on the information disclosed in the whitepaper, and therefore regulation on the credibility of the information is important.
Thank You!

For details, please refer to “Initial Coin Offerings, Blockchain Technology, and White Paper Disclosures”

Contacts:
Chen Feng, University of British Columbia, chen.feng@ubc.ca
Nan Li, University of Toronto, nanjulie.li@utoronto.ca
Franco Wong, University of Toronto, fwong@rotman.utoronto.ca