Class 22 Overview

• Readings and Study Questions
• Trade Finance
• Trade Finance Blockchain Technology Efforts
• Shipping and Supply Chain Blockchain Projects
• Final Projects
• Spring Courses
• Conclusions
Class 22 (12/4): Study Questions

• What attributes of trade finance and supply chain management might make this a ripe set of use cases for blockchain applications?

• What lessons might be drawn from the ongoing projects?
Class 22 (12/4): Readings

• ‘Trade Tech – A New Age for Trade and Supply Chain Finance’ World Economic Forum / Bain

• ‘How Banks Are Teaming Up To Bring Blockchain To Trade Finance’ CB Insights

• ‘Hong Kong, Singapore to link up trade finance blockchain platforms’ Reuters

• ‘Business Interest in Blockchain Picks Up While Cryptocurrency Causes Coneriptions’ Wall Street Journal

• ‘De Beers turns to blockchain to guarantee diamond purity’ Reuters
Financing International Trade

Bank Supported – ‘Trade Finance’
• Letter of Credit
• Documentary Collection
• Factoring and Forfaiting
• Import and Export Loans
• Pre-Export Finance
• Supplier Credit
• Supply Chain Finance
Financing International Trade

Commercial Arrangements – ‘Trade Credit’
  • Open Account
  • Cash in Advance
  • Consignment

Export Credit Insurance and Public Guarantees
Trade Financing

Source: International Trade Administration Trade Finance Guide

Courtesy of the International Trade Administration and is in the public domain.
Trade Finance

**Contract**

1. Contract

   Exporter

   Importer

   2. Apply for letter of credit.

   Advising Bank (Exporter's)

   Issuing Bank (Importer's)

   3. Send letter of credit.

   4. Authenticate letter of credit.

**Execution**

5. Shipment

   Exporter

   Importer

   5. Submit documents.

   Advising Bank (Exporter's)

   Issuing Bank (Importer's)


   7. Send documents.

   8. Payment

   9. Payment

   10. Payment

Trade Finance

LETTERS OF CREDIT ARE LOSING SHARE

<table>
<thead>
<tr>
<th>Year</th>
<th>% Share of Global Trade Finance</th>
<th>$ Trillions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td>2000</td>
<td>60</td>
<td>6</td>
</tr>
<tr>
<td>2010</td>
<td>15</td>
<td>15</td>
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<td>2014</td>
<td>19</td>
<td>19</td>
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<td>2015</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>2016</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

WHILE OPEN ACCOUNT SOLUTIONS SURGE

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Value of Global Trade, $ Trillions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primarily cash advance payments</td>
<td>27</td>
</tr>
<tr>
<td>Primary open account solutions</td>
<td>16</td>
</tr>
<tr>
<td>Bank trade financing</td>
<td>16</td>
</tr>
<tr>
<td>Bank trade financing</td>
<td>9</td>
</tr>
<tr>
<td>Traditional trade</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: World Economic Forum / Bain paper
Trade Finance

• Parties:
  • Importers
  • Exporters
  • Banks
  • Shippers
  • Freight Forwarders
  • Customs Agents
  • Document Carriers

• Documents:
Trade Finance - Blockchain Technology?

- Multiple Parties Involved
- Verification is Critical to Work Flows and Economics
- Trade Finance relies on Significant Document Flow
Trade Finance Blockchain Technology Consortia

• Voltron – Corda - Letter of Credits
• Marco Polo – Corda - Receivable and Payment Guarantee Financing
• Batavia – IBM – Monitor Open Transactions
• We.Trade – IBM – Letter of Credits
• HKTFP – Ping An Group – Supply Chain Record Keeping
Trade Finance – Additional Projects

- China – Peoples Bank of China backed trade finance blockchain platform
- Dubai - TradeAssets marketplace for buying and selling trade finance assets
- Hong Kong & Singapore - Global Trade Connectivity Network for Documents
- India – a) Finacle Trade Connect for validation, documents and payment
  b) Trade Receivables e-Discounting linked to RBI Trade Receivable e-Discounting System
- Singapore – National Trade Platform with NTT Data and MUFG Bank proof of concept
- Komgo SA – Ethereum based – ConsenSys plus 15 Banks and trading firms
Shipping and Supply Chain Blockchain Projects

Shipping
• Accenture – With APL, Kuehne & Nagel, and AB InBev
• TradeLens – IBM and Maersk

Supply Chain
• Carrefour – Chickens, Dairy and other food products
• DeBeers - Diamonds
• TrustChain – IBM – Jewelry supply chain
• Walmart – IBM – Food from farm to grocery shelf
• World Bank – Indonesian Palm Oil proof of concept
Final Projects: Assessing Use Cases

• What is the value creation proposition and ‘pain point’ being solved?
• Which transactions and data needs recording?
• Which multiple stakeholders need write and read access to ledgers?
• Which costs of verification or networking can be reduced?
• What are competitors doing to address similar value propositions or markets?
• Why are append only logs and multiple party consensus the best solution?
Final Projects: Assessing Use Cases

• If permissionless applications, why is native token the best solution?
• If so, why permissionless?
• Tradeoffs of scalability, performance, privacy, security, & coordination
• Can traditional database adequately address use case?
• How can broad adoption be realized?
• What is the customer experience vs. current experience and interface?
Spring 2019 Policy Course

- Public Policy & Private Sector (15.S66) Tuesday 5 – 8 pm

- Explores the intersection of public policy and the private sector
- Senior level public policy guests in discussion-based course
- Key economic policy - technology, trade, tax, financial, and competitions policies
- Tentative Guest Speakers - Sheila Bair, Sara Bianchi, Steve Moore, John Podesta, Sharis Pozen, & Miriam Shapiro
- Taught with Simon Johnson
Spring 2019 Blockchain Technology Courses

• Blockchain Lab (15.S68) Tuesday 1 – 2:30 pm
  • Action Learning working on Digital Currency Initiative projects
  • With Simon Johnson, Neha Nerula, Michael Casey

• Emerging Blockchain Havens (15.228 B) H3 Monday 6 – 9 pm
  • Student Led trip to Estonia and Switzerland during Spring break & SIP weeks

• Crypto Finance (15.S04) H4 Tentatively Mon/Wed 10 – 11:30 am
  • With Antoinette Schoar and Leonid Kogan
Class 23 (12/6): Study Questions

• What are the trade-offs of using blockchain technology for identity and access management (IAM)?

• What is self-sovereign identity? How might blockchain self-sovereign or digital identity applications be applicable within the financial sector?

• Will you ask for your MIT diploma digitally or on paper?
Class 23 (12/6): Readings

• ‘Self-sovereign identity: Why blockchain?’ IBM
• ‘Blockchain and Digital Identity – A Good Fit?’ Internet Society
• ‘Can blockchain ease banks’ digital-identity concerns?’ American Banker
• ‘Blockchains and Digital Identity’ Toward Data Science
• ‘Singapore Regulator, Banks Complete KYC Blockchain Prototype’ CCN
• ‘Digital Diploma Debuts at MIT’ MIT News
Conclusions

• Trade Finance plays Significant Role in $17 Trillion Export Markets for Goods

• Trade Finance is multi party and document intensive

• Verification, Networking and Trust key to Trade Finance Economics

• Multiple Consortia and Projects Underway

• Banks, Governments and Shippers mostly Exploring Permissioned Systems

• Blockchain Technology is Likely to be Catalyst for Change in Trade Finance