Financial Sector

Moves, Allocates & Prices Money and Risk

By its very Nature it has Long had Symbiotic Relationship with Technology
Early Fintech - Money

Salt Bars - Ethiopia
Cowrie Shells - Nigeria
Tally Sticks - England
Rai Stones - Yap
Early Fintech - Money

- Cooper Plate - Sweden
- Bronze Yuan - China
- Gold Aureus - Rome
- Jiaozi Promissory Note - China
- 5 Pound Note - England
- Private Bank Note – U.S.
Financial Technology - Ledgers

Proto Cuneiform
Uruk, ca 3000 B.C

Personal Ledger
George Washington
1747

IBM 360
1961
Fiat Currency

• Represented by:
  • Central Bank Notes
  • Central Bank Reserves &
  • Commercial Bank Deposits

• Relies upon System of Ledgers

• Accepted for Taxes

• Legal Tender for All Debts Public & Private

• Very Significant Network Effects from being Unit of Account
Digital & Mobile Payments

1998

1999

2003

2007

Mobile App

Google Wallet

WeChat Pay

Apple Pay
## Global Payments Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>2016</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Card</td>
<td>29%</td>
<td>15%</td>
</tr>
<tr>
<td>eWallet</td>
<td>18%</td>
<td>46%</td>
</tr>
<tr>
<td>Bank Transfer</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>Debit Card</td>
<td>13%</td>
<td>8%</td>
</tr>
<tr>
<td>Cash on Delivery</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>Charge &amp; Deferred Debit Card</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Pre-Paid</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>PostPay</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>PrePay</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: Worldpay Report
Credit Cards

Term ‘Credit Card’
Edward Bellamy’s Science Fiction ‘Looking Backward’ 1887

First Bank Card
Charge-It
First National Bank
Brooklyn, 1946

American Express
First Plastic Card
1959
Financial Sector => Fintech Opportunities

- Relies on Multiple Systems of Ledgers
- Collects Significant Volumes of Data
- Legacy Customer Interface and Processing Systems
- Economic Rents
- Centralized Concentrated Risks
- Infrastructure Systems’ Costs & Counterparty Risks
- Repeated Crises and Instability
- Financial Inclusion
Technologies of our Time Affecting Finance

AI & ML
Biometrics
Chatbots
Open API

AR & VR
Blockchain
Cloud
RPA
Financial Sector => Fintech Opportunities

• Wide Public Acceptance and Adoption of New Tech
• Rapidly Expanding Customer Data

• Financial sector represents: **7 ½ %** of U.S. GDP
• Payment system represents: **½ - 1 %** of Global GDP

• Disrupters, Financial Incumbents, Big Tech Will All Play a Role
Fintech Funding

Source: KPMG Pulse of Finance 2018
## Cap Markets Fintech

### Access to capital
- Crowdfunding platforms
- Start-up exchange venues
- Bond issuance platforms for start-ups and SMEs
- Private listing platforms for SMEs
- Initial coin offering platforms

### Trade execution
- Decentralized trading marketplaces
- Online auction-based marketplaces
- Cryptocurrency exchanges

### Post-trade services
- Distributed ledger technology-based clearing and settlement
- Surveillance and analytics software
- Automated trade reconstruction
- Regulatory compliance solutions (e.g., AML, KYC, compliance risk)

### Data, analytics, and information services
- Algorithmic and quant trading solutions
- Artificial intelligence-powered financial predictions
- Real-time market data platforms
- Nontraditional data aggregation and analytics platforms

### Operations and technology
- Open source technology for digital assets issuance
- End-to-end trading technology
- End-to-end OTC trade confirmations solutions through full process automation
- Robotics and natural-language processing technologies driving operations efficiency
- Cloud computing

*Source: McKinsey Panorama Fintech database*
Artificial Intelligence and Machine Learning

- Ethics and Governance of AI:
  - Biases
  - Openness and Reviewability of Algorithms
  - Ownership of Data
  - Privacy and Self Sovereign Identity

- Communicative AI – Voice Recognition
- Chatbots and Robo-advisors
- Biometric Screening
- Cybersecurity
Blockchain Technology

• Provides Peer to Peer Alternative
• Addresses Verification and Networking Costs
• Use Cases Must Address why vs. Traditional Data Base?

• Financial Sector’s Characteristics, Challenges and Scale Present Opportunities
• Incumbents Largely Looking at Private Permissioned Systems
• Crypto Finance Markets are Rife with Scams, Fraud and Manipulation

• Adoption rests on addressing Technical, Commercial and Policy Challenges
• The Potential, though, to be a Catalyst for Change is Real
Public Policy Framework

• Protecting the Investing and Consuming Public

• Guarding Against Illicit Activity

• Financial Stability
Conclusions

• Finance has long had a Symbiotic Relationship with Technology
• We already Live in a Digital Financial Age
• The Pace of Technology Innovation and Adoption has Accelerated

• Financial Sector Challenges creates Opportunities
• Disrupters, Financial Incumbents and Big Tech will all Compete & Play a Role

• Public Confidence is built upon Living within Public Policy Norms

• Development will Swing and much Hype Masquerades as Fact, but the Potential of Fintech to Provide Services and Bring Change is Real