

Blockchain & Money



Class 12

October 18, 2018

Class 12 Overview

- Readings and Study Questions
- 'A Letter to Jamie Dimon'
- *'Blockchain beyond the hype: What is the strategic business value?'*
- Potential Use Cases
- Assessing Costs and Benefits
- Conclusions

Class 12 (10/18): Study Questions

- What potential benefits – in terms of reducing costs of trust – are there when adopting blockchain technology applications? How might potential use cases be assessed for the trade-offs of decentralized vs. centralized applications?
- What are the potential strategic benefits from blockchain applications? What are the attributes of potential use cases and sectors that might best capture value from such applications? How important are the benefits of censorship resistance to this analysis?
- How can you separate rigorous analysis from mere assertion and hype in the blockchain ecosystem?

Class 12 (10/18): Readings

- *'Geneva Report'* Chapter 2 & 3 (14-30), Chapter 5 (51-55) Casey, Crane, Gensler, Johnson, and Narula
- *'Blockchain beyond the hype: What is the strategic business value?'* McKinsey
- *'A Letter to Jamie Dimon'* Chain
- *'The promise of the blockchain technology'* Economist

'A Letter to Jamie Dimon'

- Crypto Assets:
 - 'New asset class that enable decentralized applications'
 - 'Mechanism to allocate resources to a specific form of organization'
 - 'Incentives entities to share ... services (sic) ... with the network'
- Decentralized Applications:
 - 'New model for creating, financing, and operating software services'
 - 'Without a central operator of those services'
- There are structural trade-offs from the design
- Censorship Resistance key – both Individual or Market

‘Blockchain beyond the hype: ...’ McKinsey

- Blockchain
 - Does not have to disintermediate to generate value
 - Short-term value will be predominantly in reducing cost, particularly for record keeping and verifying functions
 - 3 -5 years away from feasibility at scale – technical challenges and competition paradox
- Capturing Value
 - Be pragmatic and skeptical at a granular level focusing on true pain points
 - Tailor strategy to market position, considering ecosystem & regulatory barriers
- Particularly valuable in low-trust environments
 - Where can't trade directly
 - Which lack intermediary

Financial Sector Potential Use Cases

- **Venture Capital** - Crowdfunding through Initial Coin Offerings – Class 19 & 20
- **Payment Systems** - Cross border, Large interbank, & Retail – Class 13 & 14
- **Loan Issuance & Trade Finance** - Digitizing paper-based processes – Class 22
- **Clearing, Settlement and Processing** – Securities & Derivatives – Class 21
- **Digital IDs and Data Reporting** – Class 23
- **Central Bank Digital Currency & Private Stable Value Tokens** – Class 15 & 16

Non-Financial Potential Applications

- **Supply Chain Management – Class 22**
- **Digital Identity – Class 23**
- **Property & Asset Registries**
- **Device-to-device transactions in the ‘Internet of Things’**
- **Medical records**

Potential Use Cases – McKinsey Reading

Record Keeping

- Static Registry – Land title, Food Origin, Patent
- Identity – Identity Fraud, Civil records, Voting
- Smart Contracts – Insurance, Trading, Music

Transactions

- Dynamic Registry – Fractional investing, Supply Chain
- Payments – Cross-border, Claims
- Other - ICOs

Use Cases: Assessing Costs & Benefits

- **Benefits of blockchain technology?**
 - What problem or 'pain point' is being solved for stakeholders? For a company?
 - What value is being created or captured?
 - What are competitors doing to address similar 'pain points'?
 - Why is blockchain technology the best solution?
- **What are the specifics of the blockchain use case?**
 - Which costs of verification or networking can be reduced?
 - Which transactions need recording?
 - Which stakeholders need write and read access to ledgers?
 - What is the customer interface and how is it better than current interface?

Use Cases: Assessing Costs & Benefits

- **Costs of technical challenges and transition?**
 - What tradeoffs of scalability, performance, privacy & coordination are necessary?
 - Can Permissioned blockchain adequately address use case?
 - How can broad adoption be realized?
- **Are *net* benefits sufficient?**

Key Questions for Companies Designing Blockchains

MIT Sloan Management Review – Fall 2018

WHAT ARE YOU TRYING TO DO?	WHAT VALUE DO YOU WANT TO CAPTURE?	FOR WHOM?
<ul style="list-style-type: none">• Record• Track• Verify• Aggregate	<ul style="list-style-type: none">• Information and knowledge• Attribution and responsibility• Access or permission• Decision rights or votes• Ownership or incentives• Reputation and trust• Contracts• Transactions	<ul style="list-style-type: none">• Customers• Employees• Suppliers• Producers or makers• Creditors or investors• Governments• Citizens

Source: Felin, Teppo, and Karim Lakhani. "What Problems Will You Solve with Blockchain?" *MIT Sloan Management Review*. Fall 2018.

Benefits of Blockchain Technology?

- Verification Costs:
 - Direct Costs
 - Privacy Costs
 - Censorship Risks
 - Settlement and Finality Risks
 - Costs of Trust
 - Economic Rents
- Networking Costs:
 - Tokens Incentive System - Reward, Affinity or Identity
 - Start-up Costs
 - Operating Costs

Why use a Blockchain vs. Traditional Database?



Traditional Databases

Trusted Party Hosts Data

Trusted Party can Create, Read, Update, & Delete (CRUD)

Client Server Architecture

Private Blockchain

Known Participants

Private Write Capability

Append Only Timestamped Log

Publicly Verifiable

No Native Currency

Public Blockchain

Unknown Participants

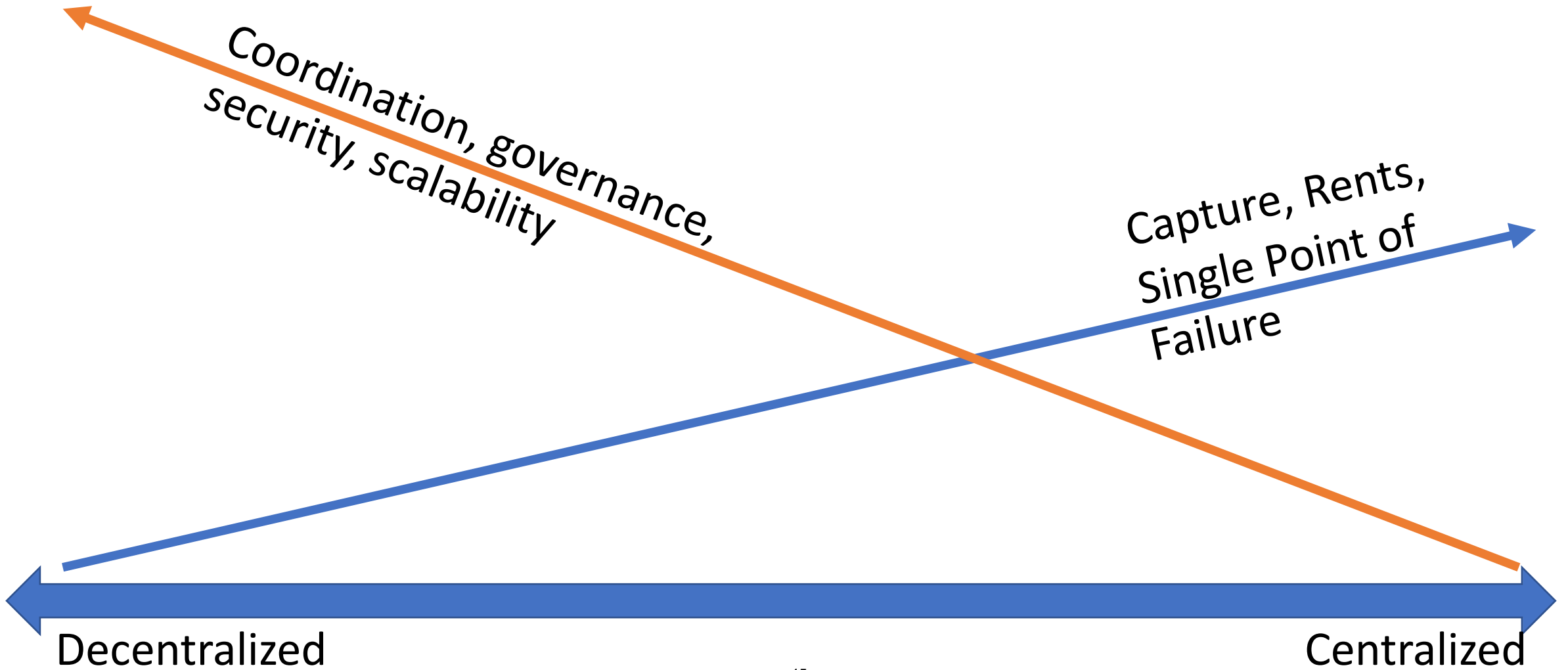
No Central Intermediaries

Public Write Capability

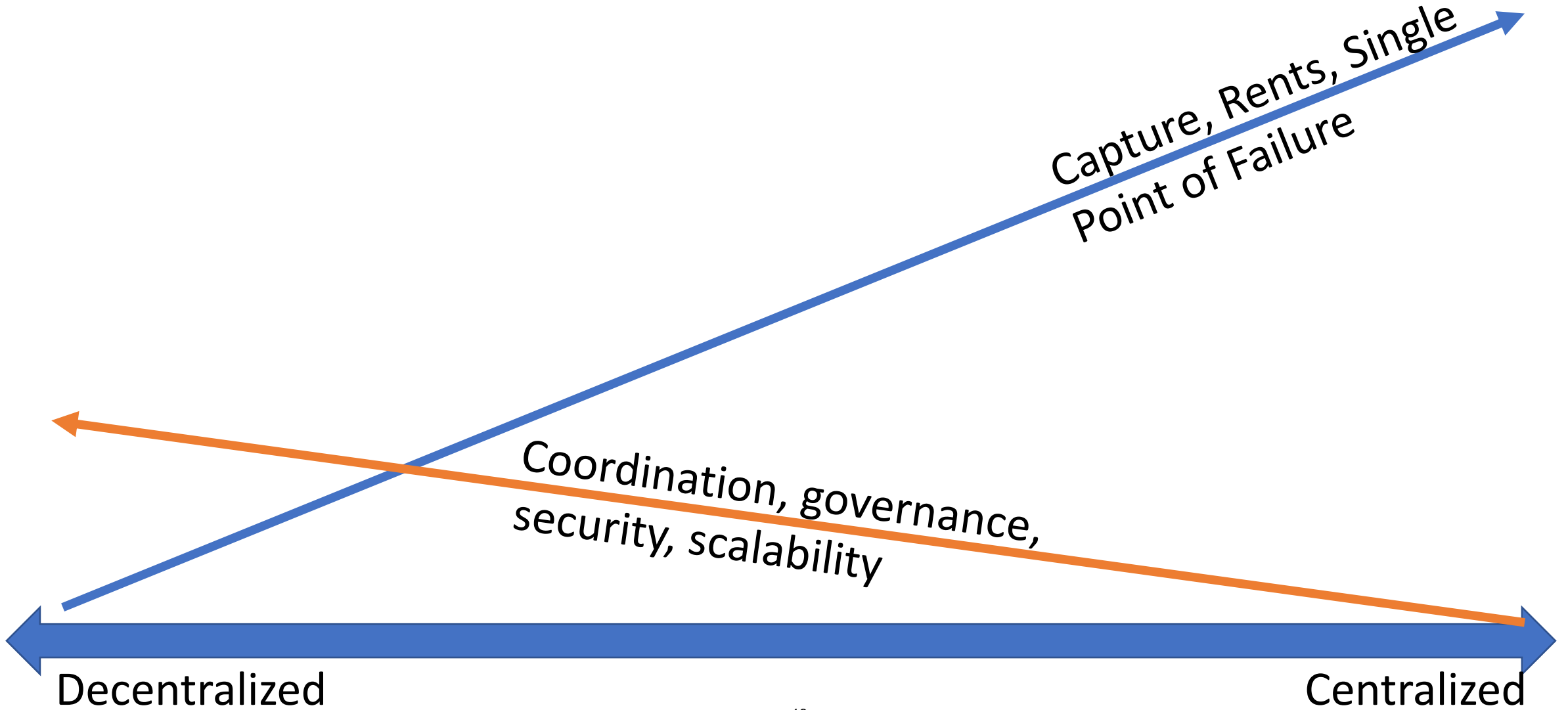
Peer to Peer Transactions

Token Economics

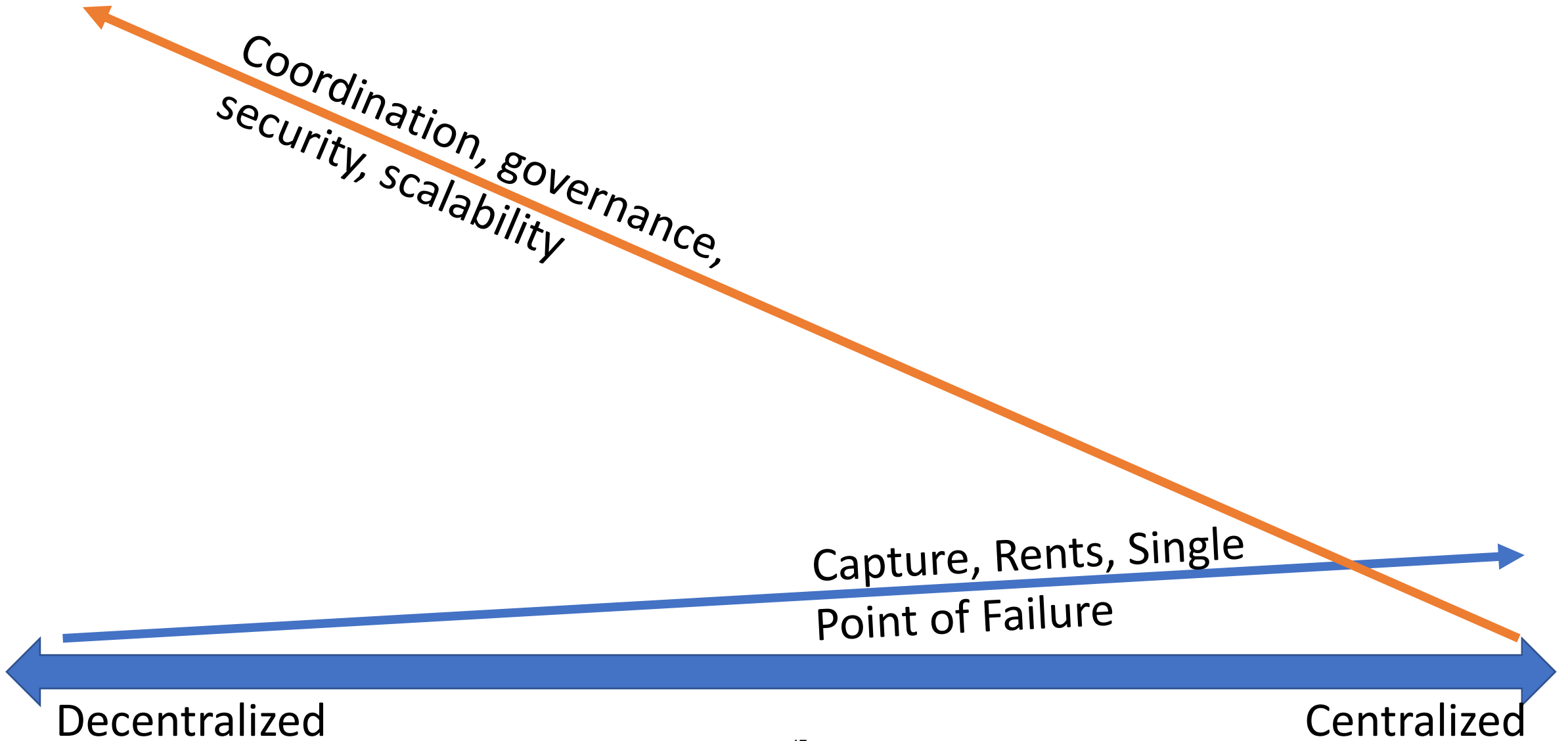
Framework for Comparing Costs & Trade-offs



Framework for Comparing Costs & Trade-offs



Framework for Comparing Costs & Trade-offs



Blockchain and Money – Act 3: Financial Sector Use Cases

- Class 13 & 14 (10/30 & 11/1): Payments
- Class 15 & 16 (11/6 & 8): Central Banks & Commercial Banking
- Class 17 (11/13): Secondary Markets & Crypto-Exchanges
- Class 18 (11/15): A New Approach to Crypto-Exchanges & Payments
- Class 19 (11/20): Primary Markets, ICOs & Venture Capital
- Class 20 (11/27): Primary Markets, ICOs & Venture Capital
- Class 21 (11/29): Post Trade Clearing, Settlement & Processing
- Class 22 (12/4): Trade Finance & Supply Chain
- Class 23 (12/6): Digital ID

Class 13 (10/30): Study Questions

- What are the major trends – mobile apps, digital wallets, open banking, and enhanced methods of bank transfers & authentication - in payment systems today?
- What lessons can be drawn from non-blockchain payment innovations, such as Alipay, WeChat Pay, M-Pesa, India's IMPS, and U.S. mobile payment apps?
- What are the challenges and opportunities in the current cross-border payment system architecture?

Class 13 (10/30): Readings

- *'The Federal Reserve Payment Study:2017 Annual Supplement'* Federal Reserve
- *'Global Payments Report'* Worldpay
- *'The Best Mobile Apps of 2018'* PC World
- *'Why China's Payment Apps Give U.S. Bankers Nightmares'* Bloomberg
- *'M-Pesa: how Kenya revolutionized mobile payments'* N26 Magazine
- *'Cross-border Retail Payments'* (pages 6 -15²⁰, 39) BIS

Conclusions

- Blockchain Technology can address Costs of
 - Verification
 - Networking
- Assessing Potential Use Cases – The Devil is in the Details
- Must Address why use Blockchain vs. Traditional Data Base?
 - Why Public Blockchain vs. Private?
- Permissionless Blockchains need Address why Open to All? Why use Tokens?



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