Crypto Economics

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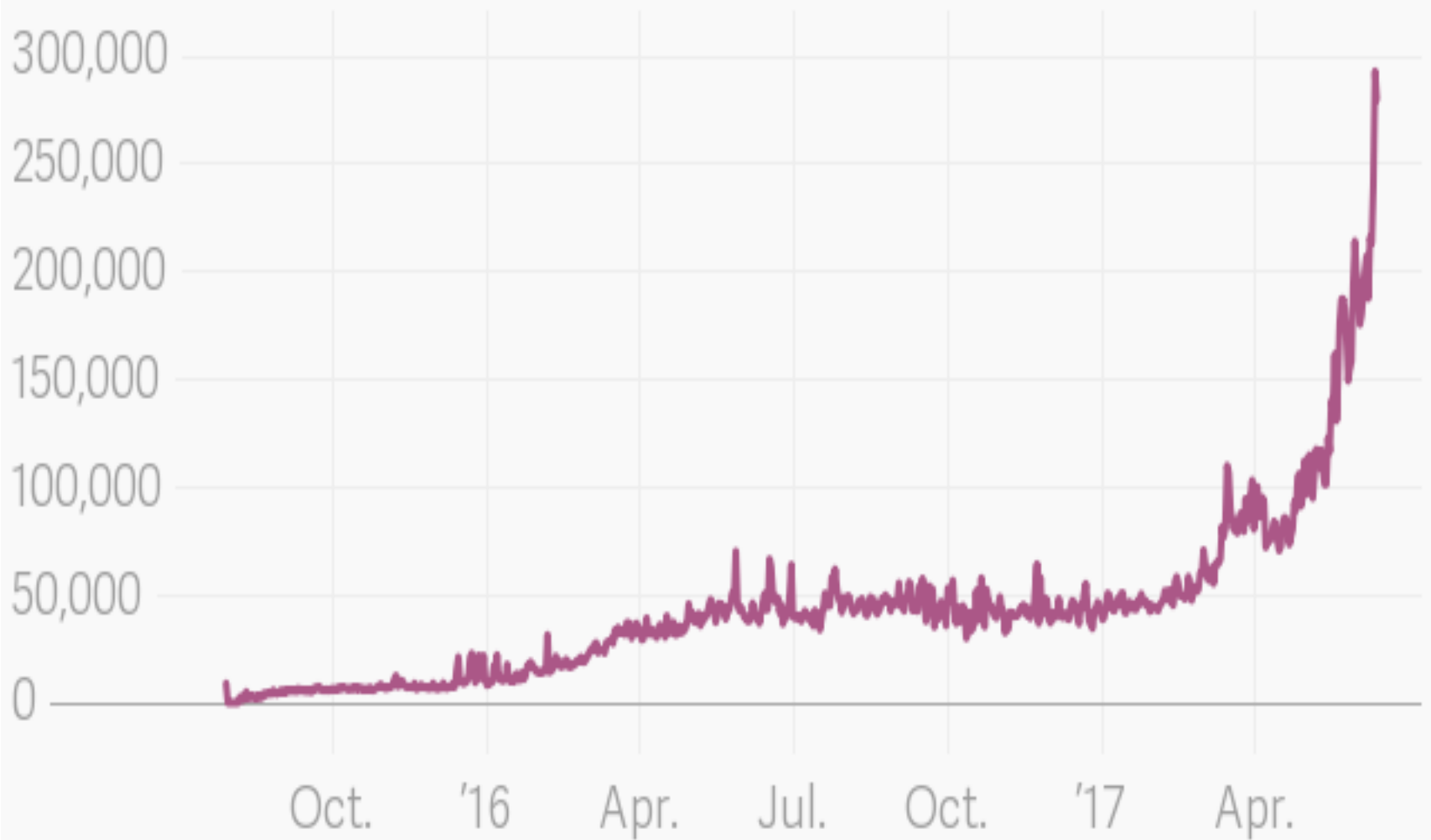
Slides available at: wulfkaal.com

Outline

- Crypto Economics - Basics

- Examples

- Central Banking in Crypto

- Outlook

Number of ethereum transactions

Crypto Economics - Basics

Monetary Policy

- Factors: 1. token supply, 2. token release, 3. maximum issuance of tokens
    - **Maximum token issuance** in combination with **controlled token supply releases** can result in small increases in demand driving token **prices higher**.
- Token Supply Management:
    - **Release mechanisms** for tokens help manage the supply of tokens in circulation.
    - **Escrow accounts** can hold tokens that were not issued in the ICO. Such escrowed tokens may be released for future issuance to finance future projects of the issuer or support operational financing.
- Avoid a token price crash:
    - Token escrow accounts need to provide **usage and access controls** that assure investors that escrowed tokens will not be issued at a discount
    - **Lockup of escrowed tokens** for a specified time period or phased releases.
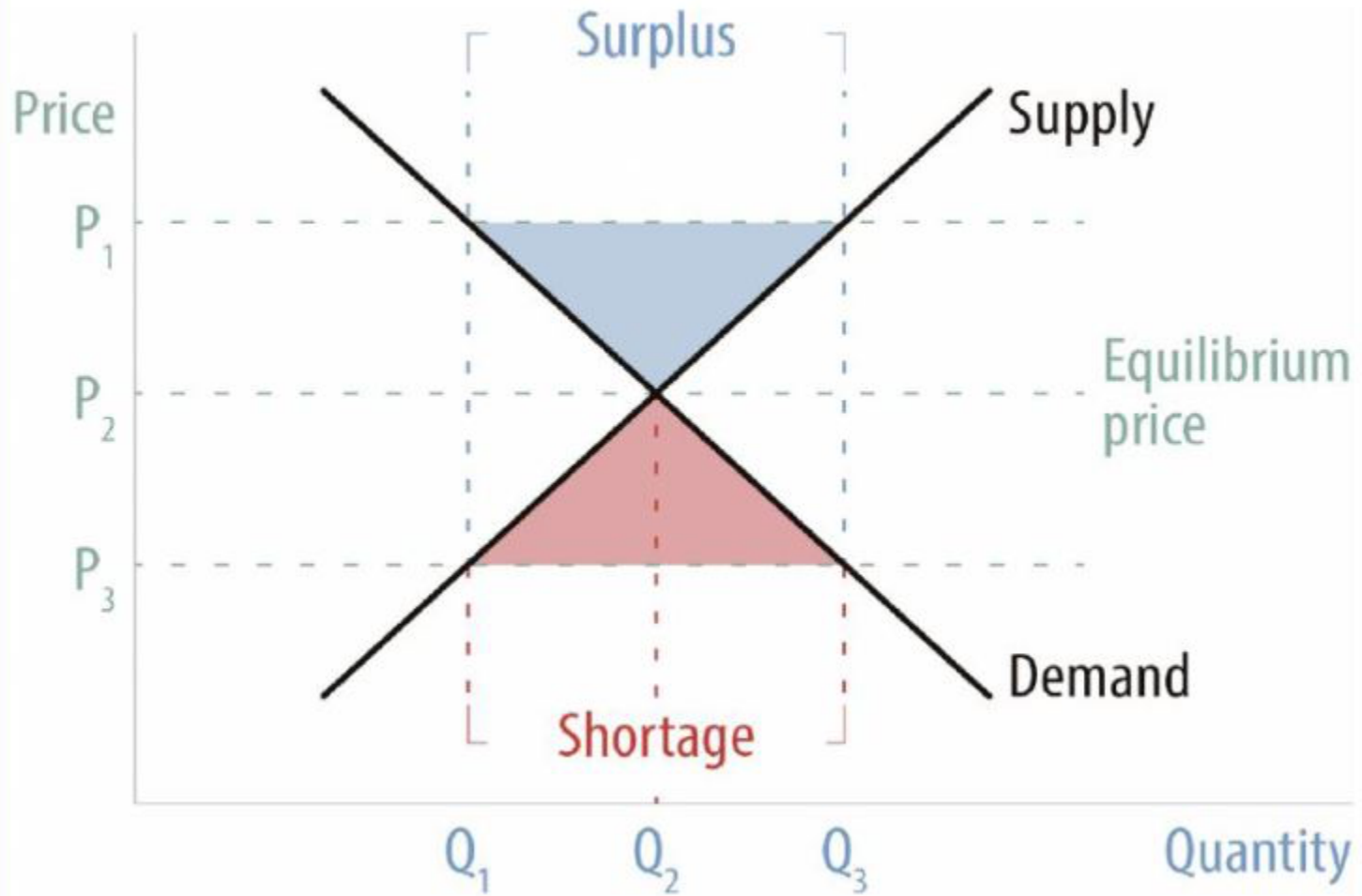
Crypto Economics - Basics

Fiscal Policy

- Several benefits are associated with the quasi fiscal tool of **adjusting commercial benefits of tokens** in crypto economics.
  - Increase in commercial benefits associated with a token **heightens aggregate demand** of the given token supply.
  - Commercial benefits associated with a token issuance can help **offset depreciated supply scarcity**, e.g. the effects of a large issuance / supply of a given token in circulation.
- Commercial benefit adjustment as **quasi fiscal policy to control the flow of tokens in a given issuance through indirect economic incentives**
  - Adjustments in commercial benefits can help **manage operational cost changes** for the issuer and the **external competition** with other token issuers experienced by the issuer, among other factors.
  - Adjusting the commercial benefits associated with a given token issuance **avoids** more drastic monetary policy intervention by way of **emergency sales** or **building token reserves** or a **decrease or increase of token supply in circulation**.

Crypto Supply and Demand

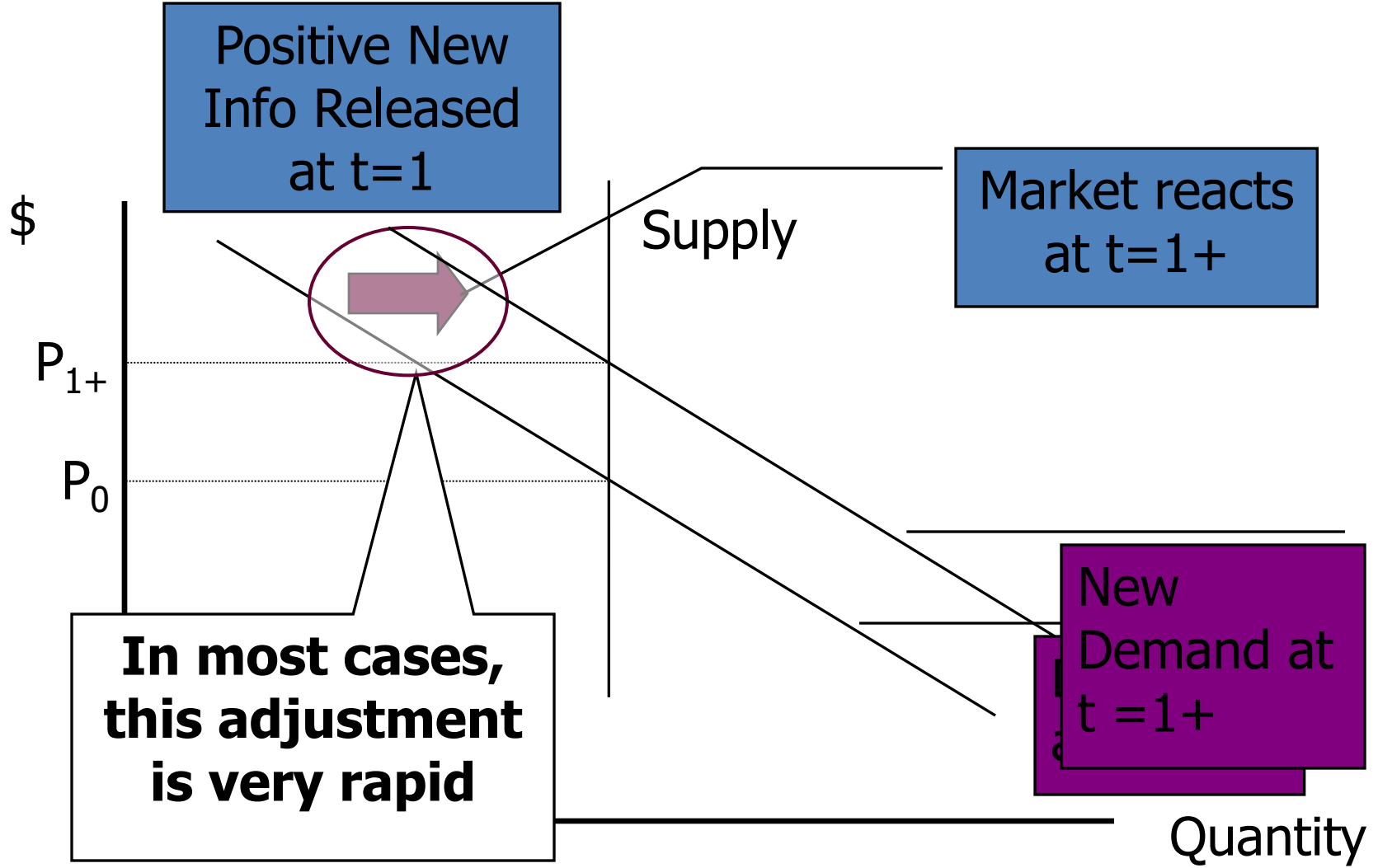Figure 2 – Supply and demand curve

Efficient Capital Markets Hypothesis Applicable?

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Positive New Info Released at t=1

Supply

Market reacts at t=1+

P_{1+}

P_0

In most cases, this adjustment is very rapid

New Demand at t =1+

Quantity

Disclosures?

- ECMH without crypto disclosure framework?
- Main driver without disclosure – use cases
  - Currency market
  - Token use cases – adjusting commercial benefits (quasi fiscal)
- Lack of reliable information - Crypto volatility
- Volatility mitigation

Example: Sweetbridge

Smart contracts[10] enable automated money supply management, implementation of specialized accounting rules, and a variety of pre-programmed behaviors associated with economic tokens. In Sweetbridge's Liquidity Protocol, token cryptoeconomics replaces banking services while providing access to low cost liquidity.

Sweetbridge will create an economy based on two digital tokens, Bridgecoin and Sweetcoin.

Bridgecoin

1. A stable currency

2. Pegged to fiat currency

3. Your key to using the Sweetbridge Fund liquidity application
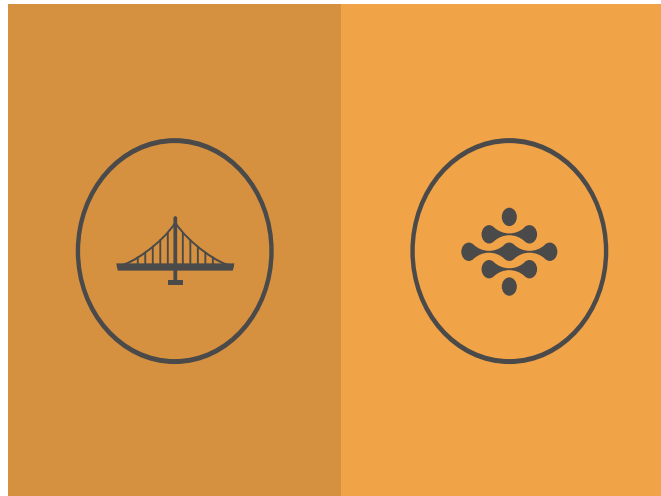
Sweetcoin

1. Enables interest-free borrowing

2. A limited-supply currency

3. Your key to exchanging Bridgecoin for fiat & using the Settlement application at no fee

Crypto Economy as a Supply Chain Optimization

Lack of Liquidity • At any given moment, there are 3.5 trillion euros ($3.9T) tied up in net working capital in supply chains.[5] Liquidity solutions are frequently expensive, tie up borrowing capacity, and are often unavailable to companies that need it most. Working capital optimization is a critical need for supply chain participants.

Inefficient Allocation of Resources •

Only 75% of the $70T in global supply chain assets are utilized at any given time.[6] Factories, warehouses, planes, ships, trains, and trucks are expensive yet there is a surprising amount of excess capacity across the extended network. Companies maintain information silos and asymmetries as a competitive advantage and avoid disclosing their unused capacity. This prevents significant optimizations in supply chains.

> For an average invoice, a company must wait 42 days before receiving payment. Many businesses have millions of dollars tied up in their accounts

Capacity Utilization
seasonally-adjusted
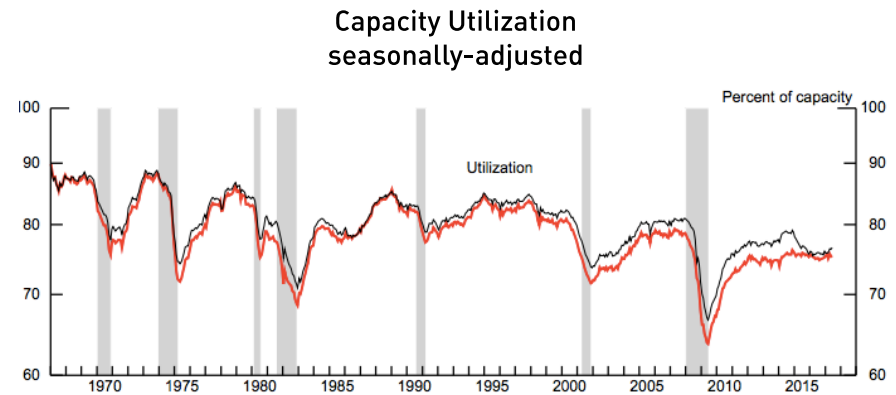
Removing interest payments for collateralized guarantees

At the outset, Sweetbridge envisions a system of collateralized liquidity that appears similar to that of banks. In particular, a party wishing to transact may put up collateral in exchange for liquid currency.

However, a blockchain-based system distinguishes itself through cryptoeconomics. Collateral used to create liquidity is contributed in an automated process based on smart contracts in a cryptocurrency economy. Rather than "renting" money from a bank in exchange for a collateralized guarantee, the network can create and destroy money when collateral is contributed and repaid. This removes the need to pay expensive interest on money received in this fashion. The fees in a blockchain system can be significantly lower than those of traditional banking.

Example: Bancor

- Named after Keynes proposal: Supranational currency as international reserve currencies to avoid smaller nations to be constantly in debt to larger nations

- Bancor as new protocol that allows any token to have reserve tokens

- Conversion of tokens via smart contracts

- Conversion of tokens into other tokens

- Tokens that are hardly ever traded to have a market price and liquidity – otherwise impossible in current exchanges

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Example: Bancor

- **Buy bancor tokens** at any time by sending any one of the reserve currencies to the smart contract which will then automatically issue the user the token based on the reserve ratio

- **To withdraw money**, users send money back to the smart contract thereby destroying that token and pulling out money form the reserve based on the ratio between the token and the reserves

- **Reserves are never drained** out because the Bancor algorithm calculates a constant ratio between the reserves value and the bancor token market capitalization

Central Bank Involvement in Crypto Economics

Figure 10: Nearly half of all DLT start-ups are based in North America

- 2% Latin America
- 4% Africa & Middle East
- 19% Asia Pacific
- 28% Europe
- 47% North America

Hileman, Garrick and Rauchs, Michel, 2017 Global Blockchain Benchmarking Study (September 22, 2017)
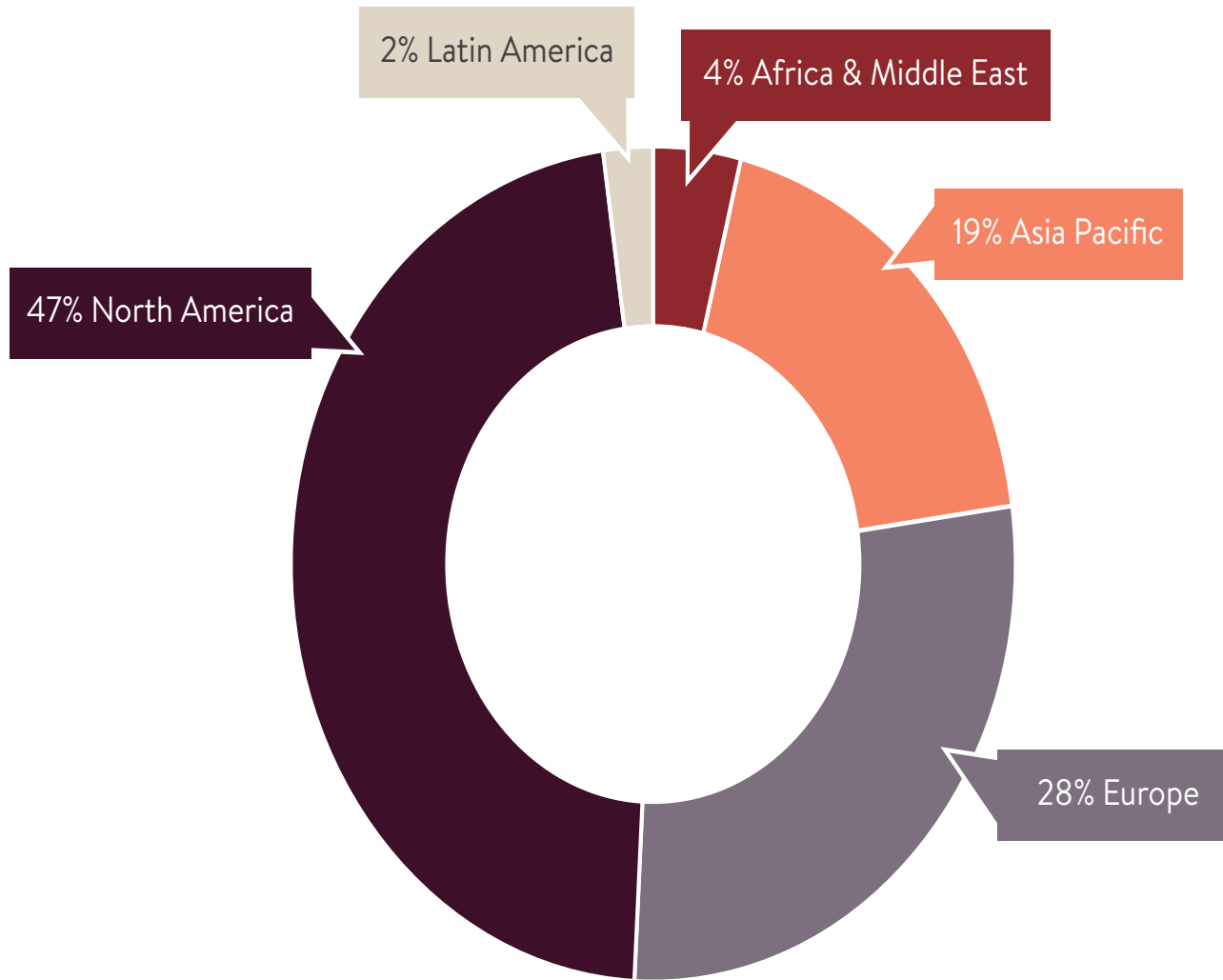
Table 7: Legal risks and an unclear regulatory environment are key inhibitors to broader DLT adoption

Lowest average score ————— Highest average score

1: Strongly agree   **2:** Somewhat agree   **3:** Neither agree nor disagree   **4:** Somewhat disagree   **5:** Strongly disagree
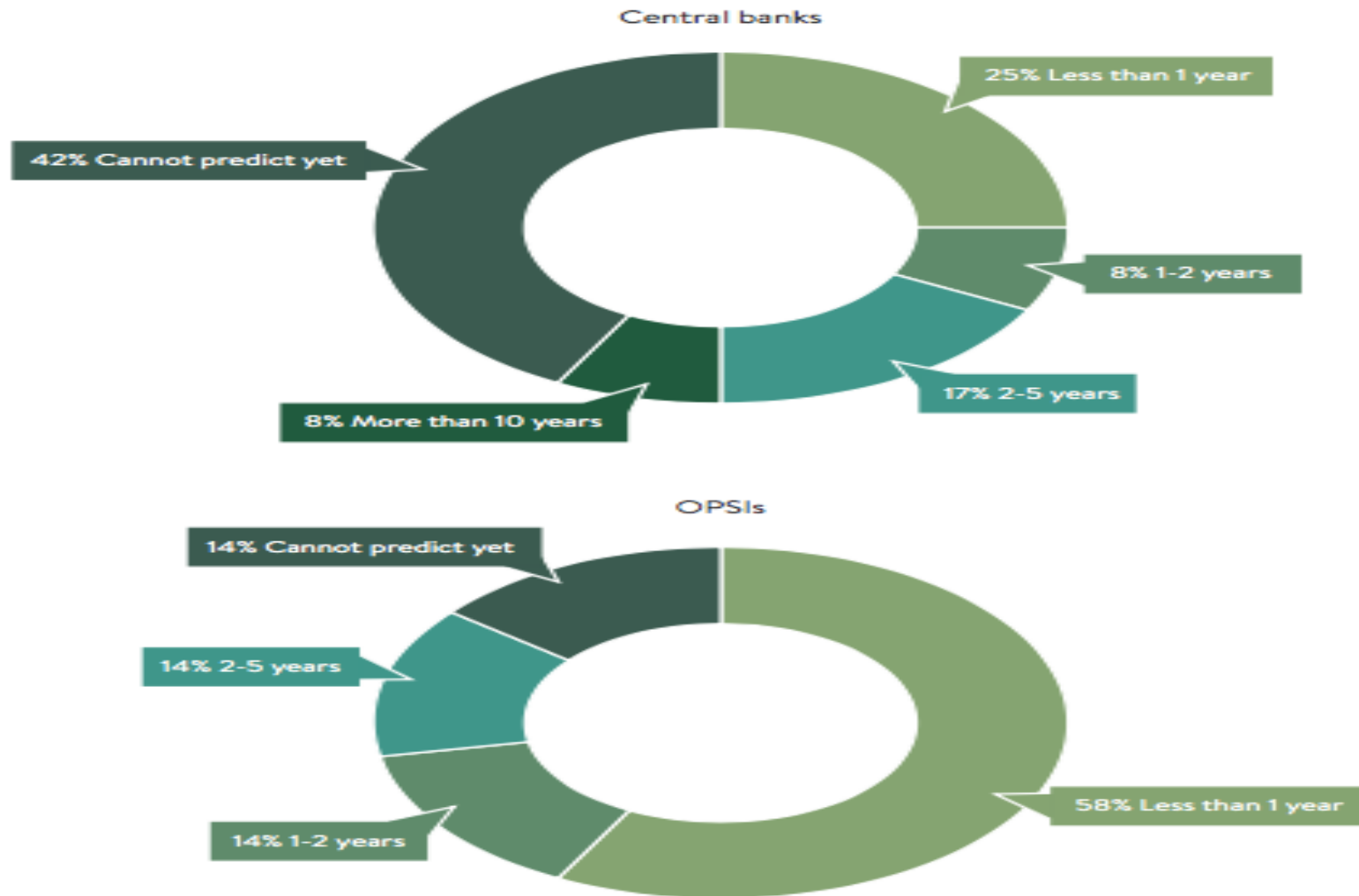
CHALLENGES TO BROAD DLT ADOPTION	WEIGHTED AVERAGE	INFRASTRUCTURE PROVIDERS	APPLICATION DEVELOPERS	OPERATORS
Legal risks/regulatory framework	**1.97**	2.25	1.60	1.64
Confidentiality issues	**2.09**	2.05	2.20	2.10
Reluctance to change established business processes	**2.17**	2.47	2.00	1.73
Immature technology	**2.28**	1.85	3.20	2.64
Difficulty of building business network	**2.44**	2.45	2.20	2.55
Potential issues with data protection laws	**2.60**	2.85	2.80	2.00
Scalability/performance concerns	**2.81**	2.70	2.80	3.00
Reluctance to give up some control	**2.88**	3.05	2.60	2.70
Security concerns	**2.91**	2.95	2.80	2.89
Unknown costs/benefits	**3.08**	3.14	3.60	2.70
Lack of suitable use/business case	**4.00**	4.10	4.00	3.82

Note: The lower the score, the more important the challenge is considered (1: very significant challenge; 5: no challenge at all).

Hileman, Garrick and Rauchs, Michel, 2017 Global Blockchain Benchmarking Study (September 22, 2017

- 57% of central banks are experimenting with Ethereum: 19% are testing a permissioned version of Ethereum; another 19% are experimenting with the public Ethereum network, and yet another 19% are using both

- 63% of central banks and 69% of OPSIs have already been involved in proofs of concept and/or running trials

- Central banks are considerably less certain about future public sector use of DLT: only 43% of central banks believe it will be prominently used, whereas 92% of OPSIs believe DLT will be widely deployed in the public sector

Figure 49: Majority of OPSIs plan to trial DLT this year; central banks are significantly more conservative

Expected time window of first DLT trials at their institution

Central banks

42% Cannot predict yet

25% Less than 1 year

8% 1-2 years

17% 2-5 years

8% More than 10 years

OPSIs

14% Cannot predict yet

14% 2-5 years

14% 1-2 years

58% Less than 1 year

58% of OPSIs plan to actively trial DLT applications this year, compared to only 25% of central banks

Figure 47: Ethereum is more frequently used by central banks than by OPSIs

% of institutions experimenting with the listed protocols

Permissioned platforms/protocols
- Central banks: 63%
- OPSIs: 46%

Ethereum
- Central banks: 38%
- OPSIs: 17%

Permissioned version of Ethereum
- Central banks: 38%
- OPSIs: 8%

Bitcoin
- Central banks: 13%
- OPSIs: 13%

Undisclosed
- Central banks: 13%
- OPSIs: 29%

Other
- Central banks: 13%
- OPSIs: 25%

Legend:
- Central banks
- OPSIs

Hileman, Garrick and Rauchs, Michel, 2017 Global Blockchain Benchmarking Study (September 22, 2017

CENTRAL BANKS

Figure 43: Central banks are investigating a wide range of DLT uses beyond digital currency and payments

% of central banks investigating the listed use cases

- 82% Central bank-issued digital currency
- 55% Payments
- 36% Regulatory compliance
- 23% Ownership records management
- 18% Identity management
- 18% Audit trail
- 14% Personal records management
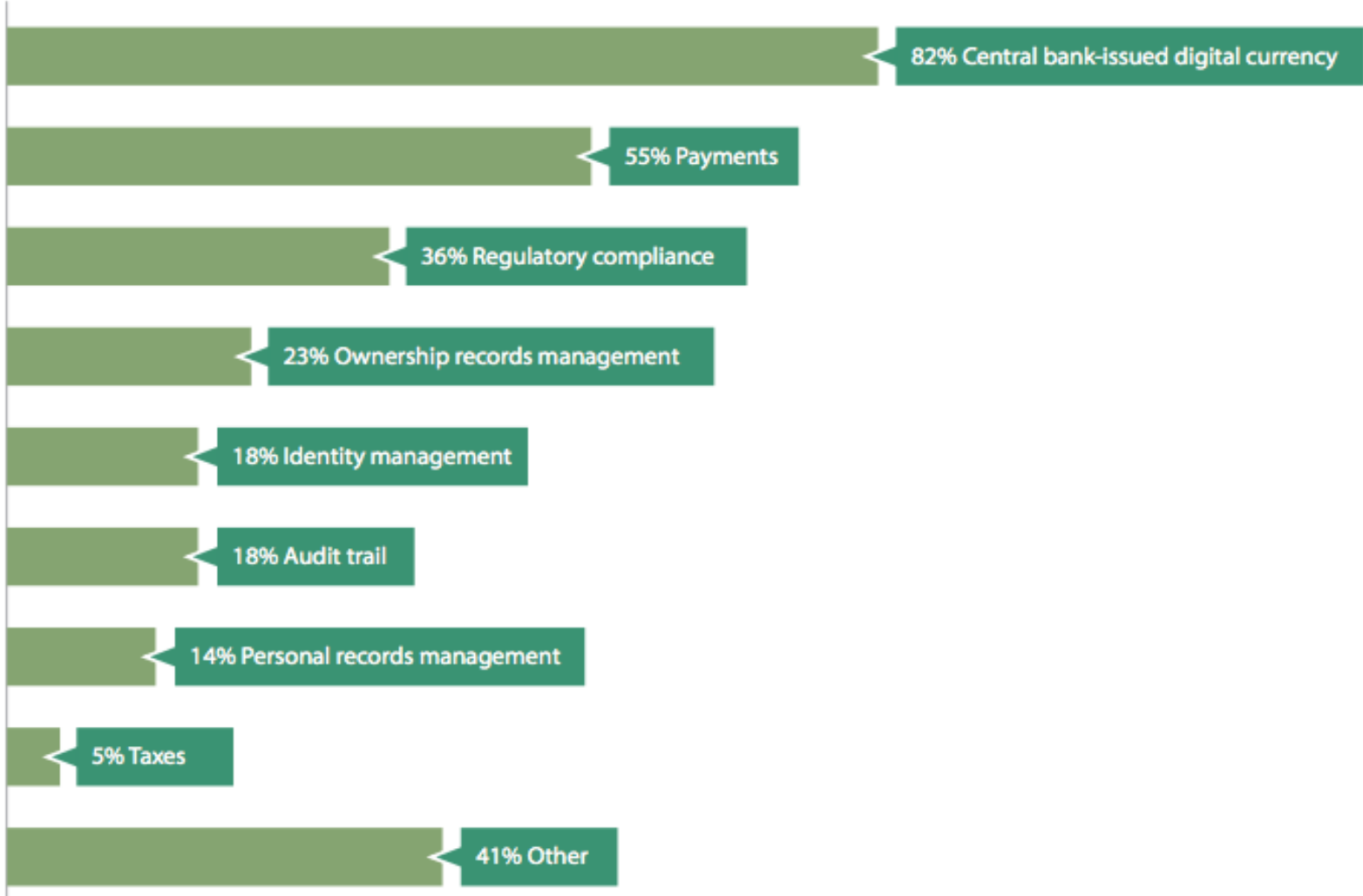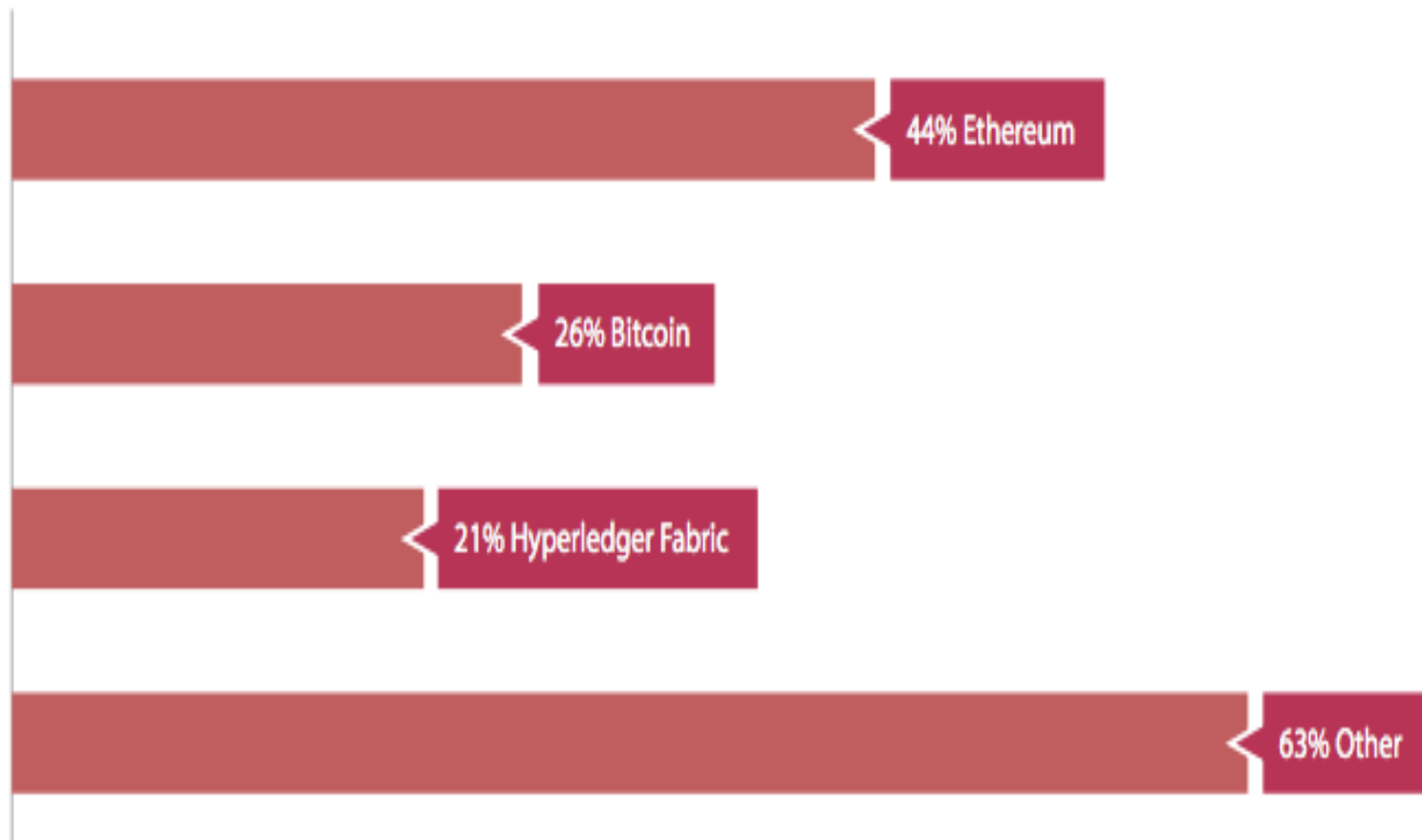- 5% Taxes
- 41% Other

Figure 38: DLT interoperability with Ethereum, Bitcoin and Hyperledger Fabric is most common

Supported protocols / platforms
% of entities compatible with the listed DLT frameworks

44% Ethereum

26% Bitcoin

21% Hyperledger Fabric

63% Other

Takeaways?

- Crypto Economics as an alternative system ?
- Crypto Economics via existing institutions ?

Thank You

Join the Conversation!

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