



UNIVERSITY OF NICOSIA
ΠΑΝΕΠΙΣΤΗΜΙΟ ΛΕΥΚΩΣΙΑΣ

DFIN-511

Introduction to Digital Currencies

Session 9

Digital Currency and Financial Institutions

Objectives of Session 9

- Briefly summarize existing financial services as an introduction
- Explore cryptocurrency financial services as they are at the moment, i.e. exchange centers, merchants and wallets for cryptocurrencies
- Understand the opportunities behind payment as a process with the use of cryptocurrencies

Agenda

- Existing Financial Services: Some Brief Notes
- Early areas of cryptocurrency financial services
 - Exchanges
 - Wallets
 - Merchant Processing
 - Asset Management
- Payments Opportunities?
- The lower levels of Financial Systems and the future
- Conclusions
- Self-Assessment Exercises and Further Reading

Existing Financial Services: Some Brief Notes

What is Financial Services?

Financial Services

Retail /Commercial Banking	Investment Banking	Markets Infrastructure	Asset Management	Insurance
Depository	Investment Banking	Exchanges	Mutual Funds	Life
Lending	Sales & Trading	Custody/Clearing etc.	Mandates	Property & Casualty
Non-Depository Credit Institutions	Underwriting	Stocks	Alternatives	Accident & Health
Domestic Payments	Structured Finance	Commodities	Wealth Management	Specialty
International Payments	Prime Brokerage	Foreign Exchange	Alternatives	Reinsurance
Remittances		Futures & Options		Brokerage

Financial Services are well developed...

Financial Services: Strengths

- Hundreds of years of financial systems development has lead to a very developed and sophisticated field, serving many different needs
- Most consumers in developed countries have a friendly consumer environment:
 - Generally, taxpayer protection for deposits <\$100K or so
 - Generally, consumer protection for misuse or fraudulent use of payment systems
 - Makes use of financial system low-risk for an individual user
- Regulation and taxation is quite clear
- Significant trust in financial institutions
- Costs well hidden from consumer and mutualized. Fraud and customer reward costs (aka airline points) are embedded in merchant processing fees and not directly seen by consumer (instead they enter the cost of products)

..but have significant gaps

Financial Services: Areas for Improvement

- Large number of people still unbanked. 60M in high income OECD countries, 2.5B worldwide
- Mixed performance of payment systems. Certain countries have near real-time payment systems (aka Faster Payments in UK) but the United States lags substantially (ACH payments take 1-3 days)
- Major security and fraud costs: Credit card security model not well suited for the electronic age (equivalent of “private key” on card in basic model). Tens of billions of losses annually mutualized and ultimately paid by the consumer
- Mixed performance on remittances. Some country pairs are very competitive and low cost. Others cost 10-12% of transaction. No viable method for small international remittances
- Cyprus “bail-in” in 2013 was the first bail-in of national systemic banks. A one-time occurrence or an ongoing risk?
- The financial sector in the US, Europe since 2008 has required massive taxpayer support to avoid collapse

Early areas of cryptocurrency financial services

Financial Services: Representative Figures

Financial Services is the most profitable industry in the United States (US Department of Commerce):

- It represents 7.9% of US gross domestic product (\$1.24T)
- It generates between 30-40% of all US industry profits. This likely reflects some level of barriers to entry in the system
- Total Global Assets Under Management: \$63T rising to \$102T by 2020 ([PwC 2020 Asset Management Report](#))
- Currency Trading: \$5.3T per day. (Bank for International Settlements)

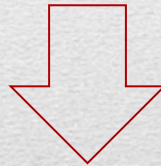


This is why some investors are excited about cryptocurrencies – even a small penetration of financial services is a huge opportunity

Cryptocurrency financial services

Cryptocurrency Industry: Representative Figures

- Total Industry Revenue: Less than \$1B per year, the large majority in mining
- Total value of all cryptocurrencies: < \$10B
- Total Daily Trading Volume in cryptocurrencies is less than \$100M per day



Tiny in traditional terms, but still rather remarkable given that Bitcoin was just a white paper six years ago

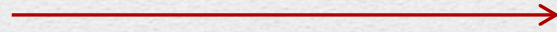
This is due to the open nature of cryptocurrency – in traditional financial services access to “payment rails” is strictly controlled

Cryptocurrency financial services

First wave of cryptocurrency financial services startups focused on four areas:

Cryptocurrency Institutions

Cryptocurrency Exchanges



Existing Equivalent

Global FX Market

Wallets



Depository Accounts
(storage and payments function
only)
Money Transmitters

Merchant Processing Services



Merchant Processing Services

Cryptocurrency Funds



Investment Funds

Foundational services in Bitcoin



- These three technologies are the fundamental building blocks of cryptocurrency financial services.
- Once they exist in a mature format, they will be the backbone of the payments system and will allow higher order applications. All more advanced financial products will benefit from greater underlying liquidity, superior security and better user experiences.
- As such and in aggregate, they will serve as the payments infrastructure for cryptocurrency, taking on the role of the following areas in the traditional sector:
 - Cash | Checks | Debit Cards |
 - Payment/Clearing House Networks |
 - Wire Transfers | International remittances
 - Merchant Processors | Foreign Exchange

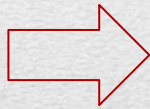
Foundational services in Bitcoin

Wallets

Exchanges

Merchant Tools

(for processing payments)



Key Bitcoin Adoption Metrics

	Quarterly			Last 12 Months	
	Mar-15	Dec-14	Q/Q Δ	Mar-14	Δ
Commerce					
Wallets	8,457,207	7,396,772	14%	4,448,142	2x
Merchants	88,000	82,000	7%	52,704	2x
Merchants' annual revenue (\$bn)	180	180	0%	2	78x
ATMs	374	342	9%	47	8x
Unique bitcoin addresses	203,189	157,377	29%	137,342	1x
Industry					
All-time VC investment (\$m)	\$676	\$447	51%	\$164	4x
Number of VC-backed startups	103	89	16%	47	2x
Media					
Mainstream media mentions	458	580	-10%	2,594	-82%
Technology					
Network hash rate (billion/second)	346,028,956	313,142,289	11%	41,813,922	8x
Github no. of updated repositories	27,857	23,249	20%	9,915	3x
Valuation					
Bitcoin market capitalization (\$bn)	\$3.4	\$4.3	-21%	\$5.3	-36%

Data sources and notes: CoinDesk, [Blockchain.info](#), [BitcoinPulse](#), [Github](#), [Coin ATM Radar](#). Figures are cumulative from start of records, except unique bitcoin addresses and media mentions, which are figures for the quarter ending that month.

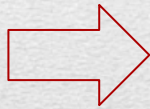
Source: <http://www.coindesk.com/research/state-of-bitcoin-q1-2015/>

Foundational services in Bitcoin

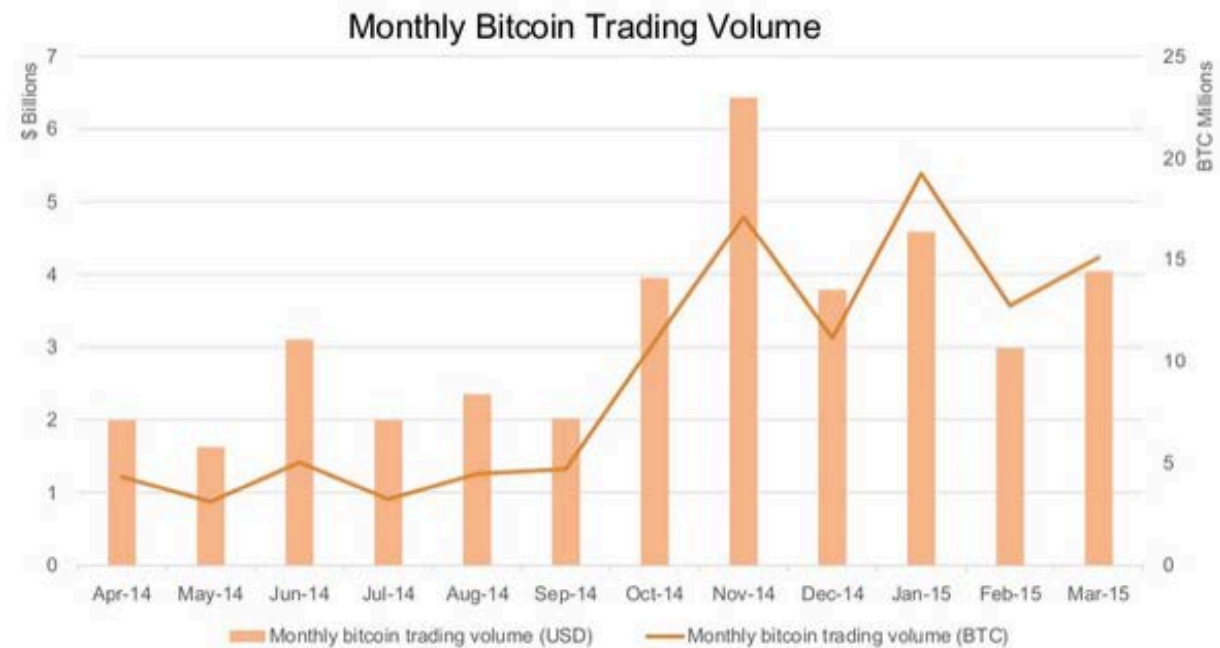
Wallets

Exchanges

Merchant Tools
(for processing payments)



Bitcoin's Price Decline Has Not Stopped Exchange Trading Volume From Trending Up



Data sources: [Blockchain](#), [CoinDesk](#), [Bitcoinity](#)

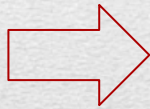
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Foundational services in Bitcoin

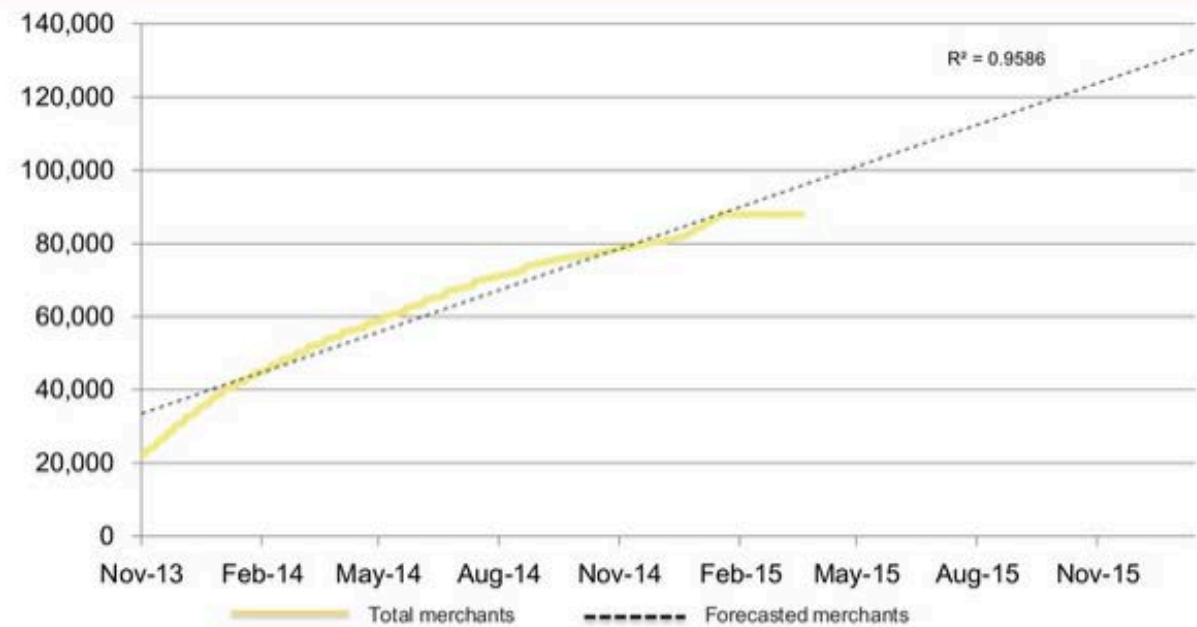
Wallets

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(for processing payments)



Bitcoin-Accepting Merchant Forecast Slashed to Approximately 120,000 by End of 2015



Data sources and notes: Total current merchants based on data from [Coinbase](#) and [BitPay](#). Historical Coinbase data provided by [BitcoinPulse](#). BitPay historical data between new merchant press release announcements of 10,000 (16th Sep 2013), 20,000 (13th Jan 2014) and 30,000 (28th May 2014), respectively, calculated using linear interpolation.

Source: <http://www.coindesk.com/research/state-of-bitcoin-q1-2015/>

Cryptocurrency Exchanges

Representative Firms



Overview

- Cryptocurrency exchanges allow users to buy or sell cryptocurrencies in exchange for one or more sovereign currencies. They are essentially the gateways in/out of the cryptocurrency world from the existing financial system.
- To date, they have had a chequered history, as many of the early exchanges, including Mt. Gox, the long-standing largest crypto-exchange have lost customer funds, either due to technical errors or misuse.
- Exchanges only exist for a handful of currency pairs, primarily USD, EUR and Yuan (though the Chinese exchanges are under extreme regulatory pressure from the Chinese government). Many of the large remittances markets are just beginning to develop exchange services (India, Philippines, Indonesia, etc.). In most other cases, users often use **localbitcoins**, another ad hoc exchange service that connects local demand to local supply.

Cryptocurrency Exchanges: Issues/Areas for Development

- **Liquidity:** There is low liquidity in cryptocurrency markets relative to the traditional foreign exchange markets (approximately 1/5,300 of traditional Forex Trading). This means it is hard to transact institutionally significant amounts of bitcoins. It also makes the markets more subject to manipulation.
- **Security:** Exchanges have been plagued with security breaches / loss of customer funds. Future developments will either model themselves on existing custodial models in traditional exchanges (see reading by Richard Brown), multi signature private key management and/or cryptographic proof of funds.
- **Futures:** There is no well-developed futures market in cryptocurrency, though some firms have made a start. Futures provide the ability to lock in currency rates for future transactions and play an important role in reducing volatility in any asset class.

Cryptocurrency Exchanges: Issues/Areas for Development

- **More currency pairs:** For cryptocurrencies, there are only 2-3 currency pairs that are even marginally liquid – each currency area will need at least 1 liquid exchange for cryptocurrency to reach its potential.
- **Regulatory Environment:** There is still a lack of clarity on exactly what requirements cryptocurrency exchanges need to comply with. New York State has taken steps towards a “Bit License” which we will discuss in the next session.

Cryptocurrency Exchanges: Decentralized or distributed

- Although a number of well-known exchanges have suffered or gone bankrupt recently, a new decentralized and distributed platform named [Coinffeine](#) emerged in November 2014 and is still in development.
- Coinffeine's innovation is that it is designed to work using a mathematical algorithm based on Game Theory, in a fully decentralized P2P manner, thus ensuring anonymity and increased efficiency, and without requiring a trusted third party.
- Coinffeine offers the same experience as a traditional exchange in a fully P2P manner.
- A Spanish bank called Bankinter has been supporting this new exchange.

A fully decentralized exchange has been considered by many in the community as the holy grail of exchanges. Even if a transaction of exchanging bitcoins can be secured against counterparty risk effectively, the main hurdle might still remain: the exchange of fiat currencies for those bitcoins.

Wallets

Representative Firms



Overview

Wallets provide users with a system to hold their cryptocurrency and to make / receive payments with their wallet. These wallets provide features or ease of access that the standard Bitcoin client wallet does not. Wallets are divided into three types, broadly speaking:

- **User Hosted:** These are solutions (like Armory, Electrum and Mycellium) where the users exclusively hold the private keys. That means that the wallet developer cannot access or lose the users' coins or provide information to authorities about account activity. On the other hand, if the user loses his/her password or their wallet is otherwise compromised, there is no recourse and the coins are lost.
- **Web Hosted:** Services like Blockchain.info and GreenAddress provide encrypted wallet hosting on the web. The user takes advantage of their infrastructure to host locally encrypted private keys which the service cannot access. The user still runs a risk of a compromised computer or forgotten password.
- **Fully Hosted:** These are solutions where the wallet provider holds the private key to a wallet. That means they can recover from password losses, but also means the user must trust the wallet provider not to lose the coins or share data with authorities. Multi-signature wallets are an attempt to mitigate the former problem.
- In fact, it is not clear in such a case if a user owns coins or just a claim against the company.

Wallets: Issues/Areas for Development

- **Exchange w/Sovereign Currencies:** Some online wallets offer a linkage back and forth to sovereign currencies without being full-blown exchanges themselves. The user experience of the current implementations of this concept is still quite slow – it may take several days to get started – and could use improvement.
- **Security/Insurance:** Consumers in traditional banking system have earned, over time, significant consumer protections, from FDIC insurance to the ability to not pay for fraudulent charges on credit cards. Certain wallet providers have started offering private insurance to start to replicate this protection, at least partially.
- **AML/KYC:** Many exchange/wallet services are implementing homegrown AML/KYC approaches. In time, one should expect practices in this regard to standardize.

Wallets: Issues/Areas for Development

- **Merchant Acceptance:** To date, while merchant acceptance is skyrocketing in percentage terms, it is still small in absolute numbers. The two largest payment processors (Coinbase and Bitpay) serve more than 75,000 merchants that accept Bitcoin compared to 29M merchants that accept Visa.
- **Tax Reporting:** No wallets yet support the latest tax reporting requirements though that is expected to change rapidly. Payment processors like Bitpay offer a level of accounting system integration to businesses accepting Bitcoin.

Merchant Processors

Representative Firms

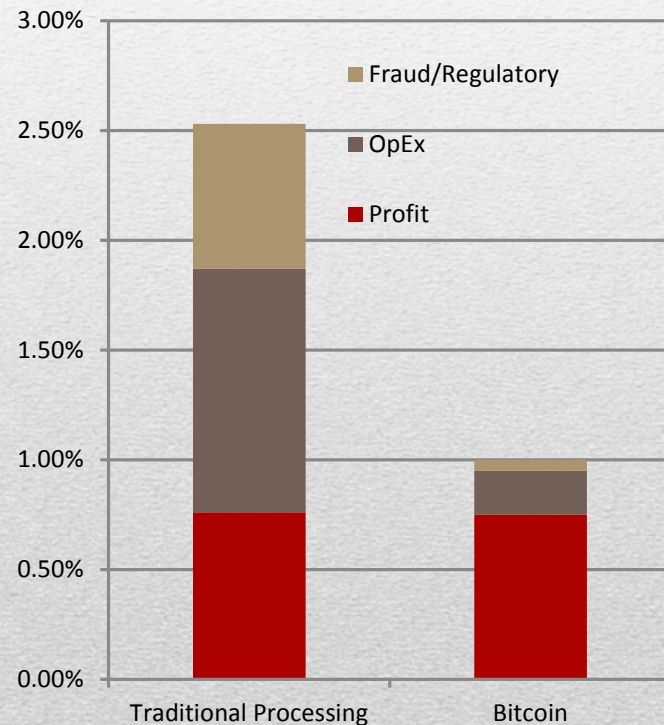


Overview

- Merchant processors provide tools to merchants to accept payments in cryptocurrencies.
- They are almost directly analogous to the current merchant processors (First Pay, WorldPay, Elavon, Authorize.net, Square, etc) for current payment networks (Visa, Mastercard, American Express, Discover).
- These tools typically include integration with the merchant's website and shopping cart and then the option to convert the digital currency back to sovereign currency (with no exchange rate risk to the merchant).
- Current market prices are about 1% in processing fees (as opposed to 2-3% for credit card processing) or a monthly subscription model. These lower costs plus the publicity boost that accepting digital currency entails have been driving merchant adoption. Bitpay has moved [in July '14](#) to provide zero fee transactions to all merchants.
- It is not clear exactly how much transparency there is about FX spreads to the consumer in these firms (a situation with some parallels to spending in foreign currency with a traditional credit card)

Today, Bitcoin merchant processing appears to have a cost advantage

Cost of Transaction Processing (% of Transaction)



Source: Goldman Sachs, "All About Bitcoin" report

- As of now, Bitcoin payment processing has a tremendous cost advantage 0.25% vs 1.77% on cost side.
- Fraud costs should be permanently lower in cryptocurrency as it has better security and is irreversible (no charge backs).
- It remains to be seen if compliance/regulatory costs rise over time.
- Some of the profit margins might be coming from opacity in bitcoin/sovereign currency exchange rates, allowing the merchant processors to arbitrage the consumer. It will be seen if that survives in a more liquid world.

Merchant Processors: Likely Initial Areas For Adoption

- **Online Products:** The major value proposition of digital currency merchant processing to date is lower costs. Online firms, particularly in categories like electronics, have notoriously low margins (< 5%). In that context, saving even 1% in merchant processing fees would have a significant impact on profitability.
 - The best-known example to date has been Overstock.com. It estimates that in 2014 (the first year it accepted Bitcoin), that \$20-\$30M of its \$1B in annual sales will be in Bitcoin. Projections were missed by a wide margin, and Overstock reported about \$3M in Bitcoin sales in 2014.
 - The fact that online products need to be shipped also means that transaction confirmation times are not relevant.
- **Sensitive Products:** Sensitive areas like medical spending (HIV tests, pregnancy tests), pornography, or political speech might be areas where consumers feel more comfortable transacting in cryptocurrency. Consumers might not want these transactions recorded along with the rest of their payment records and banking history.

Merchant Processors: Likely Initial Areas For Adoption

- **High-Risk Vendors:** Consumers concerned about giving access to their credit card/credit line to “risky” vendors can use cryptocurrency that uses a “push” model rather than a “pull” model. In other words, the customers exposure is limited to the amount the customer proactively sends.
- **International Customers:** Many websites turn away customers from higher risk locations due to fear of chargebacks due to fraudulent card use. Given that cryptocurrency is irreversible, merchants can accept customers from any location without fear of fraud chargebacks.

Merchant Processors: Likely Initial Areas For Adoption

- Recently, Sberbank, the largest Russian bank has indicated that it sees potential in Bitcoin's blockchain technology, with regards to replacing the existing funds transfer technology e.g. between banks.
- They noted that, *"The current system where 10,000 banks are used to transfer funds can be replaced by the blockchain"*
- In a similar light, the Estonian Bank LHV has also made further links in the digital currency space, by partnering with Coinfloor, a UK-based Bitcoin Exchange, to handle customers' deposits. LHV have said that, *"For fiat deposits, Coinfloor undertakes a number of measures, including proper due diligence (KYC) on each customer. The company goes to great lengths to make sure all client funds are kept with European banks that understand Bitcoin and Coinfloor's business model"*.

Asset Managers

Representative Firms



Winklevoss ETF

Overview

The cryptocurrency investment trusts or ETFs are vehicles to buy cryptocurrency. Given that anyone can invest in cryptocurrency by buying it directly, these vehicles are more geared towards:

- the convenience of customers who might not want to have to learn how to manage cryptocurrency directly and
- the ease of distribution into traditional investment channels (brokerages, IRA managers and so on)
- Other cryptocurrency “hedge funds” claim that they can earn returns by trading cryptocurrencies (buying and selling them). This would be a direct equivalent to funds that trade in foreign currency and would be something only open to institutional investors.
- This area is only now starting to develop because institutional investors will require larger, more regulated, more secure exchanges in order to be able to trade on them.
- These asset managers are the most straightforward cryptocurrency financial services firms. They are not trying to displace or disrupt any part of the existing system and will fit in naturally among the wide range of other existing investment options

More Financial services in Bitcoin

Forex

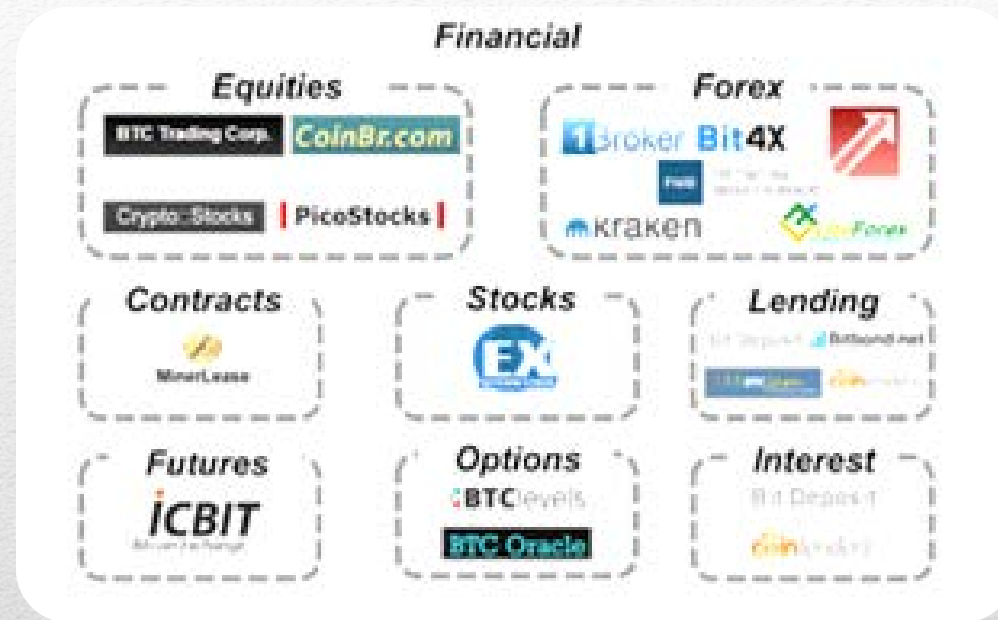
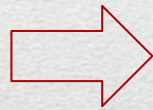
Equities

Lending

Stocks

Contracts

Futures / Options



Most of these services try to emulate highly regulated conventional instruments but take advantage of the legal uncertainty that exists in this (at best) uncertain regulatory environment. New regulatory rulings by relevant authorities may impact the operation of these services significantly.

Source : <http://thefinanser.co.uk/fsclub/2014/07/the-most-irritating-and-most-wonderful-thing-called-bitcoin.html>

More Financial services in Bitcoin

Forex

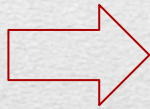
Equities

Lending

Stocks

Contracts

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Overstock.com has recently completed a demo of a decentralized stock market (named “Medici”) which may soon be presented to US-based investors.

According to published reports, Medici may be based on Overstock’s recent purchase of the software built by Pro Securities LLC, a US-based brokerage firm.

Recently, Nasdaq’s OMX Group Inc. has been testing a new use of Bitcoin’s blockchain technology, to transform the trading of shares in private companies. According to Nasdaq Chief Executive Robert Greifeld, *“Utilizing the blockchain is a natural digital evolution for managing physical securities”*.

Nasdaq’s Private Market platform has more than 75 private companies signed up, and it aims to revolutionize the systems that have facilitated the trading of financial assets for decades.

Source : <http://www.coindesk.com/overstock-medici-pro-securities/>

Payments Opportunities

Payments: The Opportunity?

- Estimates of the cost of processing global payments are in the range of \$500 billion per year.
- The market capitalization of firms or operating divisions in payments is probably close to \$1T.
- Wedbush Securities and CoinDesk estimate the market capitalization of standalone firms in payments to be \$458B but that ignores the large payments divisions located inside money center banks and privately held firms (aka First Data, owned by KKR) so the value of this sector is significantly understated.
- Naively, this presents a gigantic opportunity for cryptocurrency based payment systems. However, for them to succeed at scale, they need to solve several distinct items(that would work together in a virtuous cycle if solved):
 - Reduce Bitcoin volatility.
 - Build institutional grade exchanges, wallets and payments processors.
 - Provide clear value to consumers, a task made more difficult given that the key costs of the current system are cleverly mutualized and hidden from consumers.
 - Build trust with consumers and merchants.

Payments: The Opportunity?

It is important to also keep in mind that consumer behavior changes very slowly even in the developed world and basic non-cash transactions (credit cards, cheques, credit transfers, direct debit) have barely penetrated large parts of the world. That might change though with increasing access to the Internet and more options to connect the global market faster.

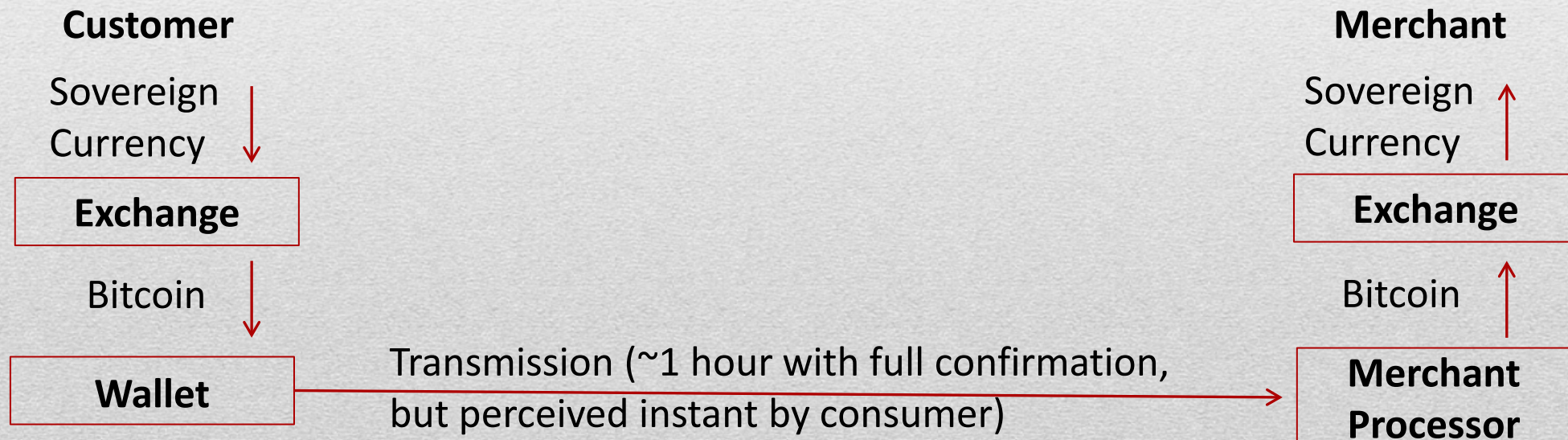
- In 2012, nearly twenty years after launch of consumer internet, only 5.7% of retail transactions in the US were transacted online (US Department of Commerce).

In 2010, the number of cashless transactions of all types per year, per inhabitant was only 5% in China and 6% in India (BIS).

- Even a superb success story for cryptocurrencies would only see them gaining a very small percentage of payments transactions over the next few years. Taking a meaningful share of global transactions will be a shift with a 10 to 20 year timeframe.

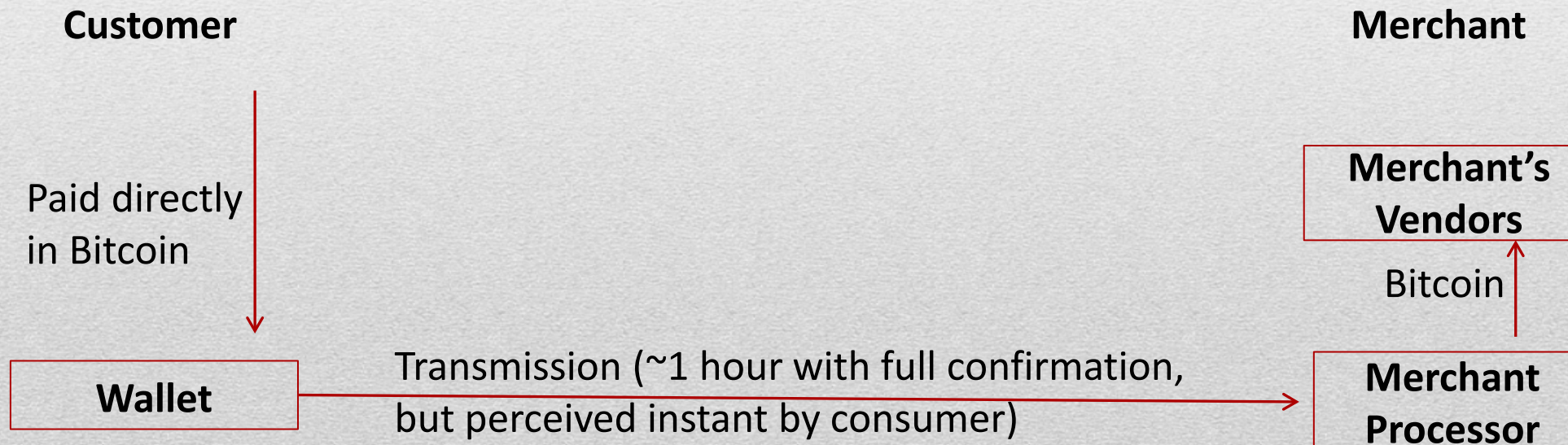
Payments – Consumer Transactions : The Medium Term Outcome?

Today, some, if not all, of the cost savings of cryptocurrency merchant processing are being taken up by the spreads/fees to translate back and forth from sovereign currency. Merchants are receiving most of the savings and might consider rewarding the consumer directly (via lower prices, rewards, etc.) to encourage use.



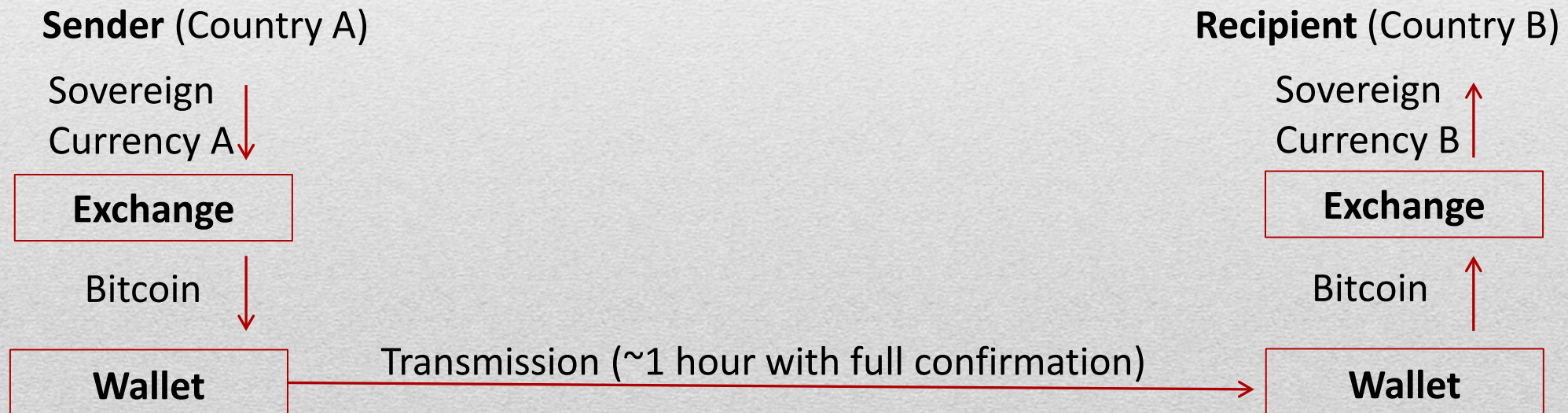
Payments – Consumer Transactions: The Long-Term Outcome?

In a future world where there would be broad merchant acceptance of, say Bitcoin, and sufficient price stability for people to be comfortable holding Bitcoins, payments could then operate in a closed-loop within Bitcoin. This would represent the desired outcome for Bitcoin enthusiasts.



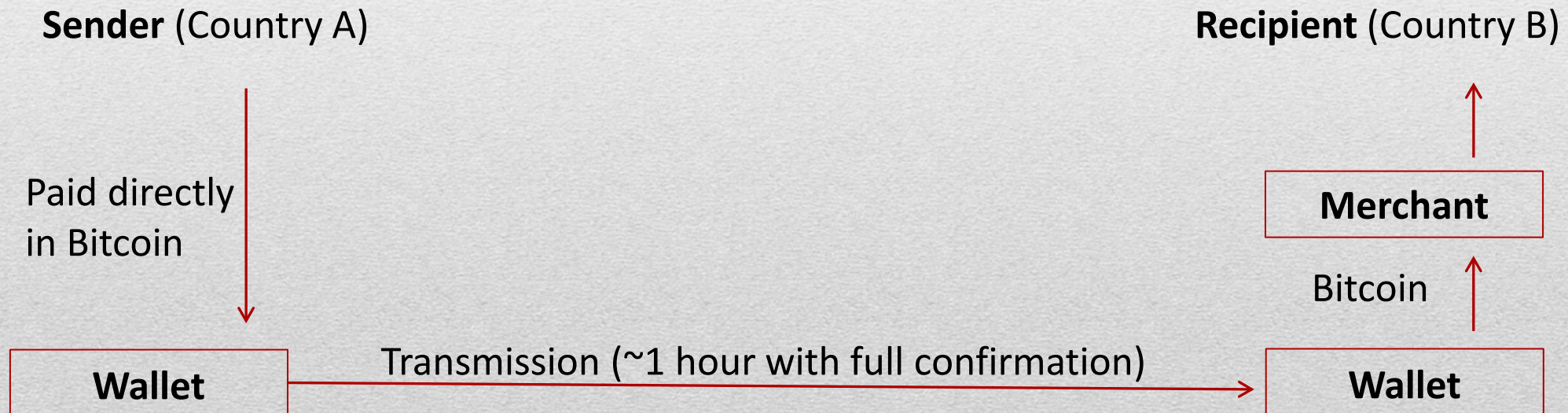
Payments - Remittances: The Medium Term Outcome?

With a fully developed global network of exchanges and easy-to-use wallets, remittances could be done without dedicated remittance providers. Hurdles to overcome will include: (1) Exchange spreads on both sides (the “fees”), (2) other KYC/AML costs, and (3) technological savvy of sender/recipient.



Payments - Remittances: The Long Term Outcome?

In a future world where there would be a broad merchant acceptance of, say Bitcoin, and sufficient price stability for people to be comfortable holding bitcoins, the remittances could happen without exchanges at all. This would represent the desired outcome for Bitcoin enthusiasts.



Existing Financial Services and Cryptocurrency (a preview of DFIN-513)

But wait... there's (far) more ...

We've only scratched the surface of financial systems and the functions they perform in the global economy. Bitcoin and blockchain technology, has perhaps, the potential to transform several of the functions that take place in the infrastructure levels of our financial systems. Examples include:

- These involve how **Settlement** and **Clearing** takes place (How banks and other organizations convey financial information and transfer funds between each other and account holders)
- **Credit Card** and **Debit Card payment systems**, that operate in quite different manners from each other
- **Asset Issuance, Trading, Clearing and Settlement** through which all stocks, bonds and other financial instruments are traded
- **Insurance, Financial Derivatives** and **Prediction markets** which act to stabilize risk in financial activities
- **Auditing, Accounting** and **Financial Controls**, which act as the planning and security mechanisms of financial activity worldwide

These topics are studied in depth in DFIN-513 (Open Financial Systems), a core course of the MSc

Settlement and Clearing

Real Time Gross Settlement systems (RTGS) are the backbone of modern financial systems

- Examples of these systems include Fedwire (in the United States), Target2 (Eurozone) and CHAPS (UK)
- These systems provide real-time settlement for large institutional financial services firms and are the core building blocks upon which all other payment and settlement systems are built
- Bitcoin has many conceptual similarities with RTGS systems, except that access to it is 'open', not restricted to large firms and global. Open and interesting questions include:
 - Will Bitcoin serve as a type of 'open' global RTGS?
 - Will Bitcoin end up being more 'wholesale' vs. consumer retail in its orientation

Payment Systems

- Payment systems like VISA, Mastercard, Paypal (and cash) have been the backbone of consumer and merchant payments for decades. As we saw in slide 26, they use “**pull**” systems to draw funds from an account and channel these instructions through a wide and complex network, in which costs are largely hidden from end consumers, and costs and risks are mutualized through to them.
- While an accepted and normal part of everyday life, it is an extremely complex system. A large array of parties may potentially have access to this information including the merchant, the acquirer, the payment processor, the gateway, the network and all of its employees, contractors and vendors.
- **Push** payments like Bitcoin and MPesa, theoretically are more secure in that:
 - only two parties have access to the payment information, the payment provider and the consumer device
 - only the transaction at hand is at risk (not the whole account)
 - Push payments open up a new set of challenges in that they make consumer end-points (browsers, phones, etc) vulnerable attack vectors
- How Bitcoin might play a role vis-à-vis payments networks is a very intriguing question

Assets

- The basic function of how Real Assets and Financial Assets are traded is split into three functions that operate on different time cycles
 - Trading: Matching bid/ask orders among traders, operates in milliseconds in today's markets
 - Clearing: Everything that has to be done between trade and settlement
 - Order reconciliation
 - Risk/credit management
 - Handling failure states
 - Etc
 - Settlement: Actual transfer of the securities, cash to execute the trading promise. While trades happen in milliseconds, settlement can take up to 3 days for many securities today
- It seems that decentralized, blockchain based solutions have a lot of immediate term potential to explore in clearing and settlement, both from a cost reduction and speed of settlement perspective. Modern securities trading with its high requirements for low latency and fast trading speeds will take quite a bit longer before it is manageable in a decentralized manner

Financial Derivatives, Insurance and others

- Insurance is chiefly, a practice of “pooling” or aggregating risks, while financial derivatives aim to anticipate or foresee the outcome of one event. There are interesting but subtle differences between insurance, derivatives and gambling/speculation
- A further developed Bitcoin could fairly soon play a role in financial derivatives and prediction markets. In a world with a well functioning ‘oracles’ market, it is possible to imagine how Bitcoin could be used to replicate a wide range of:
 - Financial products
 - Prediction products
 - Standardized (insurance-like) derivative products
- Insurance however, with its complex mix of individualized underwriting, claims management, solvency requirements and regulatory oversight will be much harder to replicate in a decentralized manner

Auditing, Accounting and Fin. Controls

- Accounting has been an integral part of how businesses and countries operate globally, how tax systems operate and function, and how financial planning and budgets takes place. Moreover, it additionally provides a system of authority and accountability in financial decision making and corporate governance globally.
- How could an immutable ledger with global, or local, transparency and specific transaction rights help us improve existing systems, accounting standards, taxation and financial planning and controls?
- For a company, could a ledger like this algorithmically provide transparency and internal corporate governance controls and accountability?
- Could such systems scale to work on a government level ? Could tax authorities use such systems to easily account for customer purchases and directly correlate them with business earnings? Would such a structure allow citizens to audit their governments and how would that impact political processes?

Conclusions

Conclusions

- Financial services is an extremely complex, extremely large and extremely profitable industry, protected by significant barriers to entry. It serves the needs of developed world consumers reasonably well, but leaves a large percentage of the population unbanked and imposes significant mutualized losses on customers and taxpayers
- Early investment to date in cryptocurrency-based financial services has focused on “building block” technologies for cryptocurrency like exchanges, wallets and merchant processors.
- This is a logical starting point as this infrastructure is needed for higher-order financial services to emerge. Asset management (aka Bitcoin funds) are also under development but they fit in more comfortably into the existing financial system

Conclusions

- Cryptocurrencies have to trigger a virtuous cycle of market liquidity, consumer acceptance and merchant acceptance in order to reach their full potential as a payments system. Theoretically and at scale, they should represent a more cost-effective and more integrated system. They only reach their full promise however if they can start serving in a closed-loop capacity without constant exchanges with the existing financial system and sovereign currencies.
- Many businesses will need to be rebuilt and duplicated across national borders or currency zones. This means that the overall globalization of financial infrastructure will require significant time and investment.
- In the longer-term, there are interesting questions about how cryptocurrency can make inroads into the existing financial services in areas like RTGS systems, payments, financial instruments and accounting and auditing

Self-Assessment Exercises and Further Reading

Further Reading

CoinDesk: State of Bitcoin Q1 2015

<http://www.coindesk.com/research/state-of-bitcoin-q1-2015/>

All About Bitcoin (Goldman Sachs)

<http://www.scribd.com/doc/212058352/Bit-Coin>

Bitcoin Exchanges Are Much More Centralized Than Traditional Exchanges. We Can Do So Much Better

<http://gendal.wordpress.com/2014/03/02/bitcoin-exchanges-are-more-centralised-than-traditional-exchanges-we-can-do-so-much-better-than-this/>

Why the Payment Card System Works The Way it Does

<http://gendal.wordpress.com/2014/07/05/why-the-payment-card-system-works-the-way-it-does-and-why-bitcoin-isnt-going-to-replace-it-any-time-soon/>

The Fierce Battle For the Soul of Bitcoin

<http://www.wired.com/2014/03/what-is-bitcoin/>

Optional: Innovations in Retail Payments (Bank of International Settlements, Committee on Payments & Settlement Systems) <http://www.bis.org/publ/cpss102.pdf>

Further Reading

PwC - Consumer Intelligence Series Report

“Digital Disruptor - How Bitcoin is Driving Digital Innovation in Entertainment, Media and Communications”

<http://www.pwc.com/us/en/industry/entertainment-media/publications/consumer-intelligence-series/assets/pwc-consumer-intelligence-series-bitcoins-entertainment-media-communications.pdf>

Deloitte Center for financial services Report: “Bitcoin - The new gold rush?”

[http://www.deloitte.com/assets/Dcom-](http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/FSI/us_fsi_BitcointheNewGoldRush_031814.pdf)

[UnitedStates/Local%20Assets/Documents/FSI/us_fsi_BitcointheNewGoldRush_031814.pdf](http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/FSI/us_fsi_BitcointheNewGoldRush_031814.pdf)

Deloitte University Press – “Bitcoin Fact. Fiction. Future.” <http://dupress.com/articles/bitcoin-fact-fiction-future/>

KPMG Press release – “Bitcoin and beyond: what role for Gibraltar’s gaming industry?”

<http://www.kpmg.com/gi/en/issuesandinsights/articlespublications/pressreleases/pages/bitcoin-possibilities.aspx>

Ernst and Young Article – “Bitcoin should not be seen as a currency”

<http://www.theguardian.com/technology/2013/dec/11/ernst-young-warn-bitcoin-payment-problems>

Further Reading

Spanish Bank Backs Decentralised Bitcoin Exchange Coinffeine

<http://www.coindesk.com/spanish-bank-backs-decentralized-bitcoin-exchange-coinffeine/>

Overstock Invests in Broker-Dealer Ahead of Decentralised Stock Market Launch

<http://www.coindesk.com/overstock-medici-pro-securities/>

LHV Bank Partners with Bitcoin Exchange CoinFloor

<http://www.coindesk.com/lhv-bank-partners-with-bitcoin-exchange-coinfloor/>

Sberbank-Backed FinTech Investment Fund Sees Blockchain Potential

<http://www.coindesk.com/sberbank-blockchain-investments>

A Bitcoin Technology Gets Nasdaq Test

<http://www.wsj.com/articles/a-bitcoin-technology-gets-nasdaq-test-1431296886>

Self-Assessment Exercises

Post in the appropriate thread in the forum your opinions on the following:

Pick a sub-sector of the financial services industry of your choosing.

- Take a position pro or con the use of cryptocurrency in that sector.
- In defending your position, please note what you believe the advantages or disadvantages of the existing financial system are vs. a cryptocurrency based system in this sector, and/or if future developments will be necessary to make your concept feasible.

Self-Assessment Exercises

Post in the appropriate thread in the forum your opinions on the following:

Discuss on the characteristics that you perceive as important on each of the following Bitcoin services:

- Bitcoin wallets
- Bitcoin exchanges
- Bitcoin payment processors

- What are their respective weaknesses according to your opinion?

Questions?



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