

# Part 1: Applications: Digital Currencies (Bitcoin, Ethereum, and Ripple)

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# Outline

- Quick review of cryptocurrency and alternative cryptocurrencies
- Snapshot of top market capitalization coins
- Overview of regulated financial products that involve cryptocurrencies
- Future outlook

# Definitions

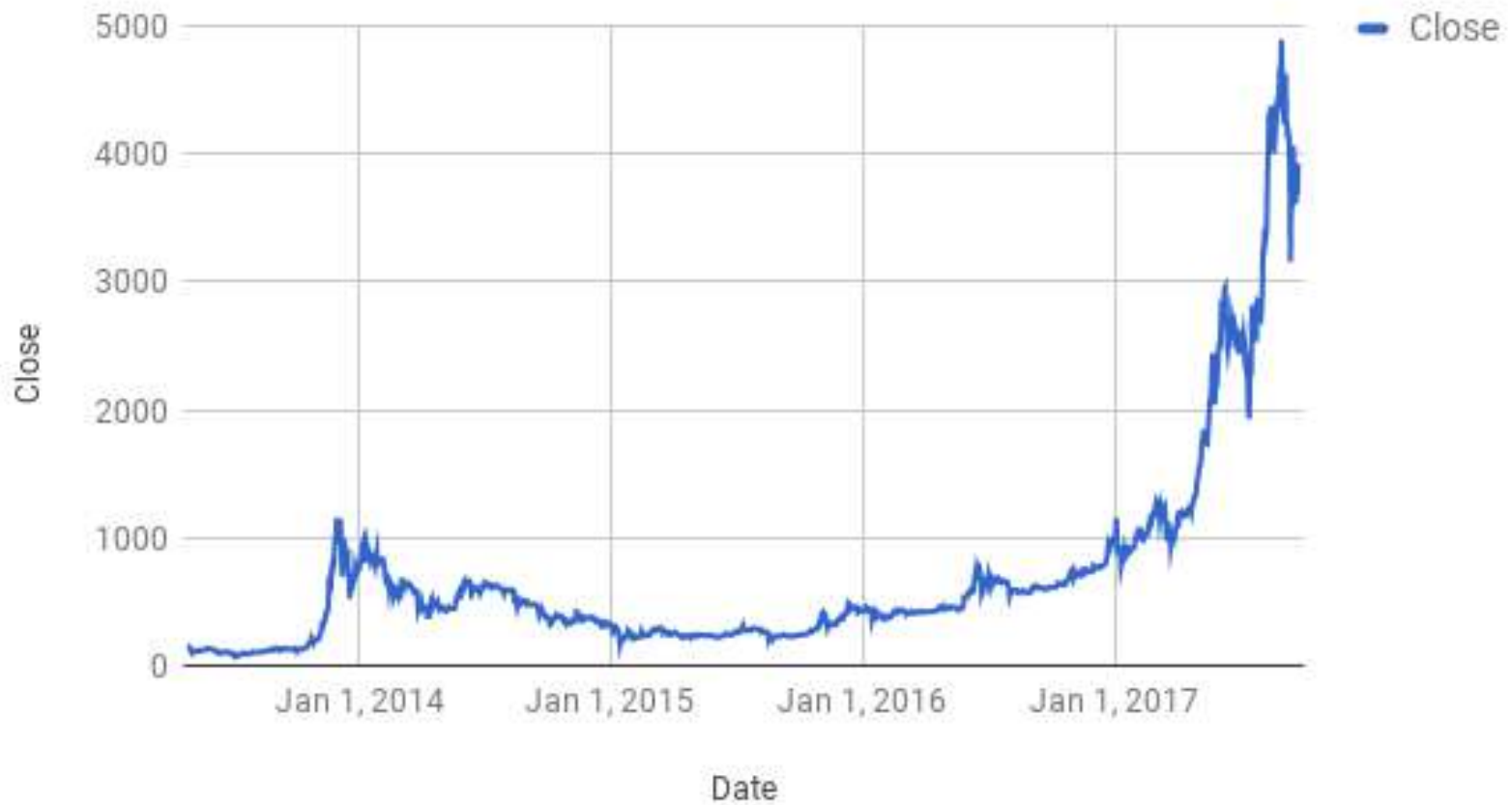
- Cryptocurrency
  - Bitcoin
- Alternative Cryptocurrency
  - Ethereum
  - Bitcoin Cash
  - Ripple
  - Litecoin
  - Dash

# Cryptocurrency

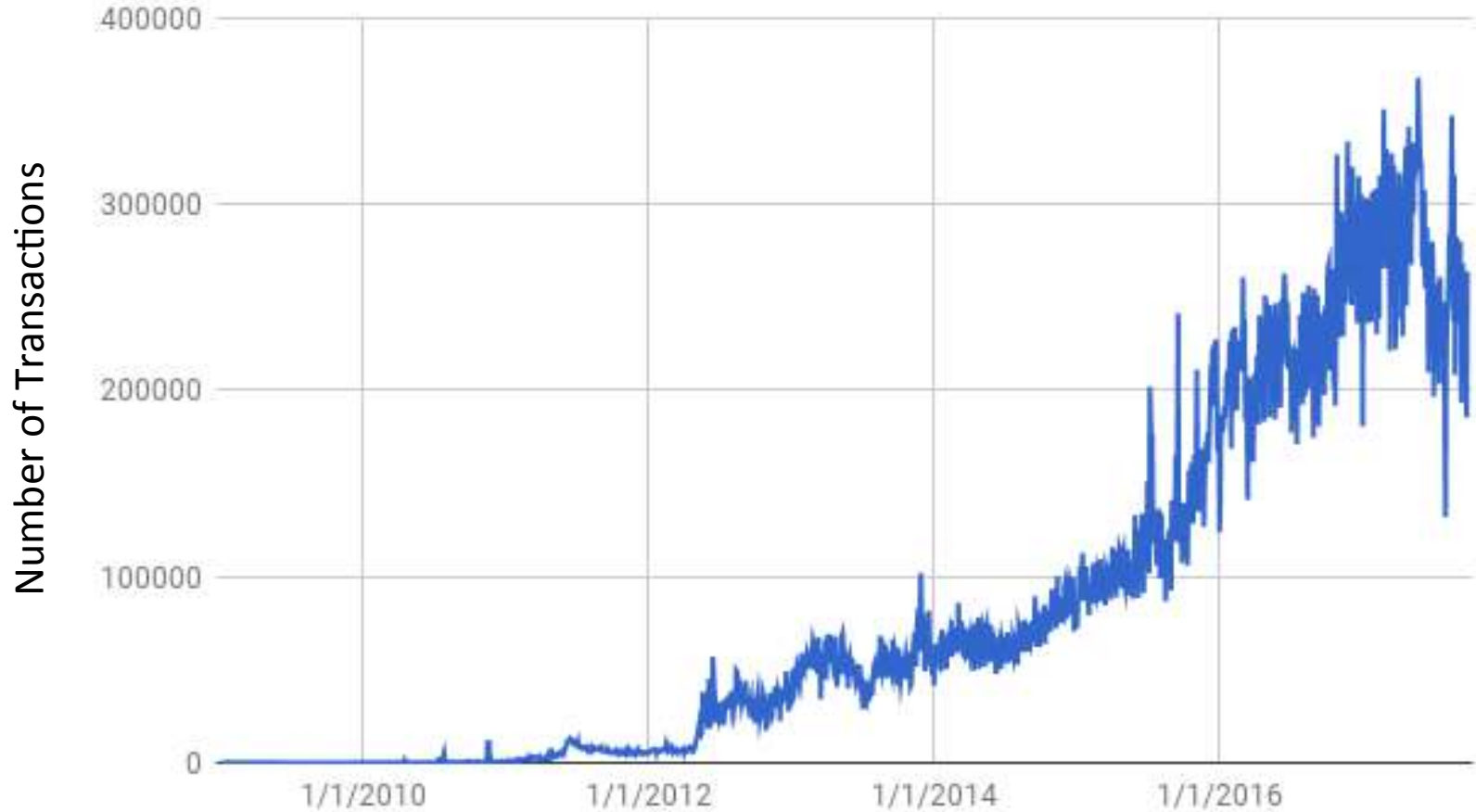
- A cryptocurrency is a digital asset that uses cryptography to secure transactions and to control the creation of additional units of the currency.
- Bitcoin became the first decentralized cryptocurrency in 2009.

# Historical Daily Price of Bitcoin

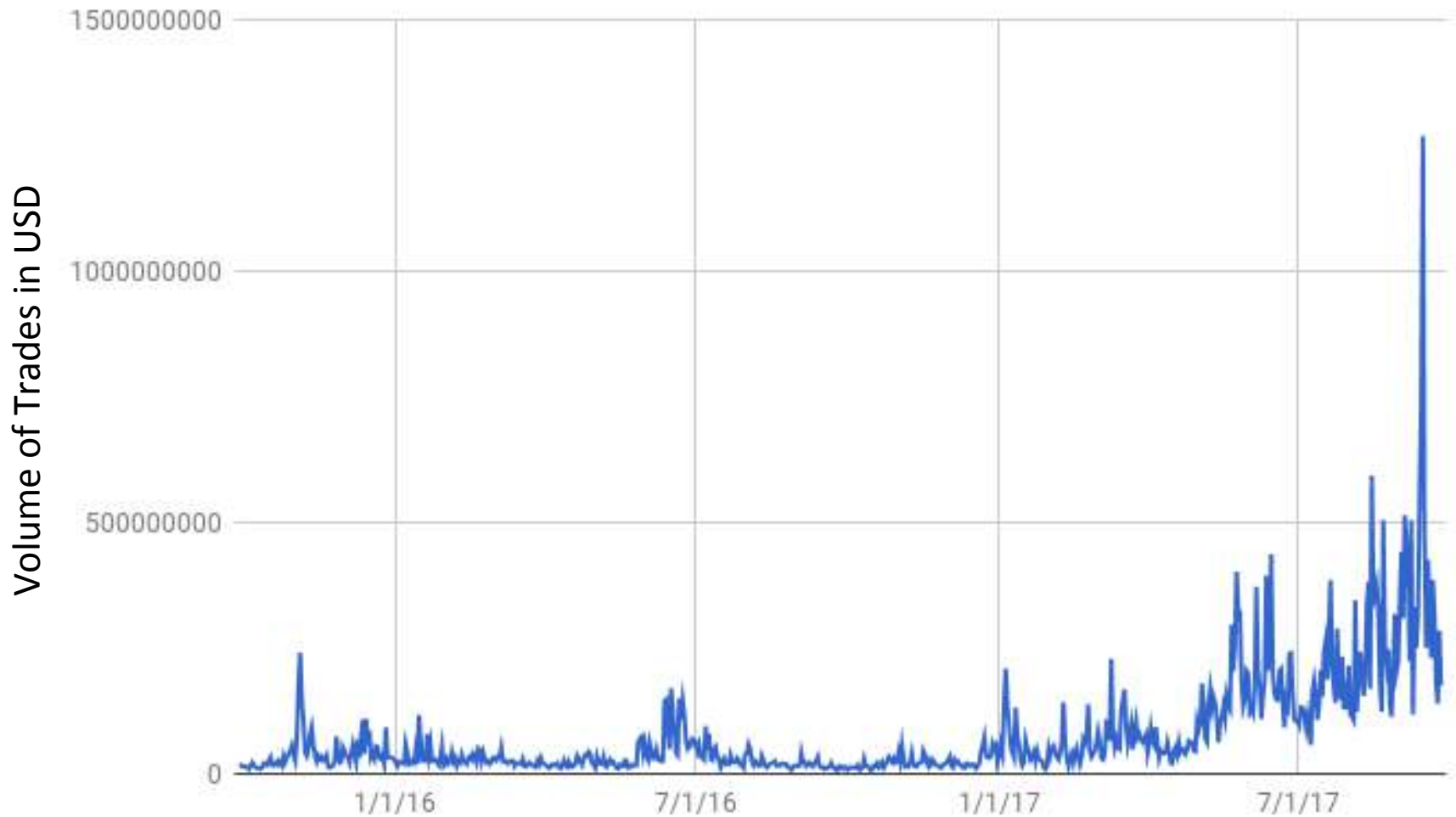
Bitcoin Daily Price in USD



# Number of Daily Transactions on Bitcoin Network



# Daily Global Trade Volume of Bitcoin in USD



# Economic Features of Bitcoin

## Value

1.) Similar to gold, Bitcoin's value does not rely on an underlying legal structure.

2.) Bitcoin does not provide a stream of future payments. Therefore, net present value analysis cannot be used to value bitcoin. Instead, the market price is determined solely by supply and demand.

## Governance

1.) Bitcoin's governance is decentralized and open-source. Nodes located around the world verify transactions and store a copy of the history of the network's transactions.

This decentralized governance model can be contrasted with fiat currency governance by centralized governments and banks that can foist supply shocks on currency holders.

## Applications

Bitcoin's use cases differ from other asset classes.

1.) Bitcoin is the first asset in human history that cannot be confiscated.

2.) Bitcoin is the only medium of exchange that does not allow chargebacks.






3.) Bitcoin is the only medium of exchange that has a transparent order book and record of past transactions.



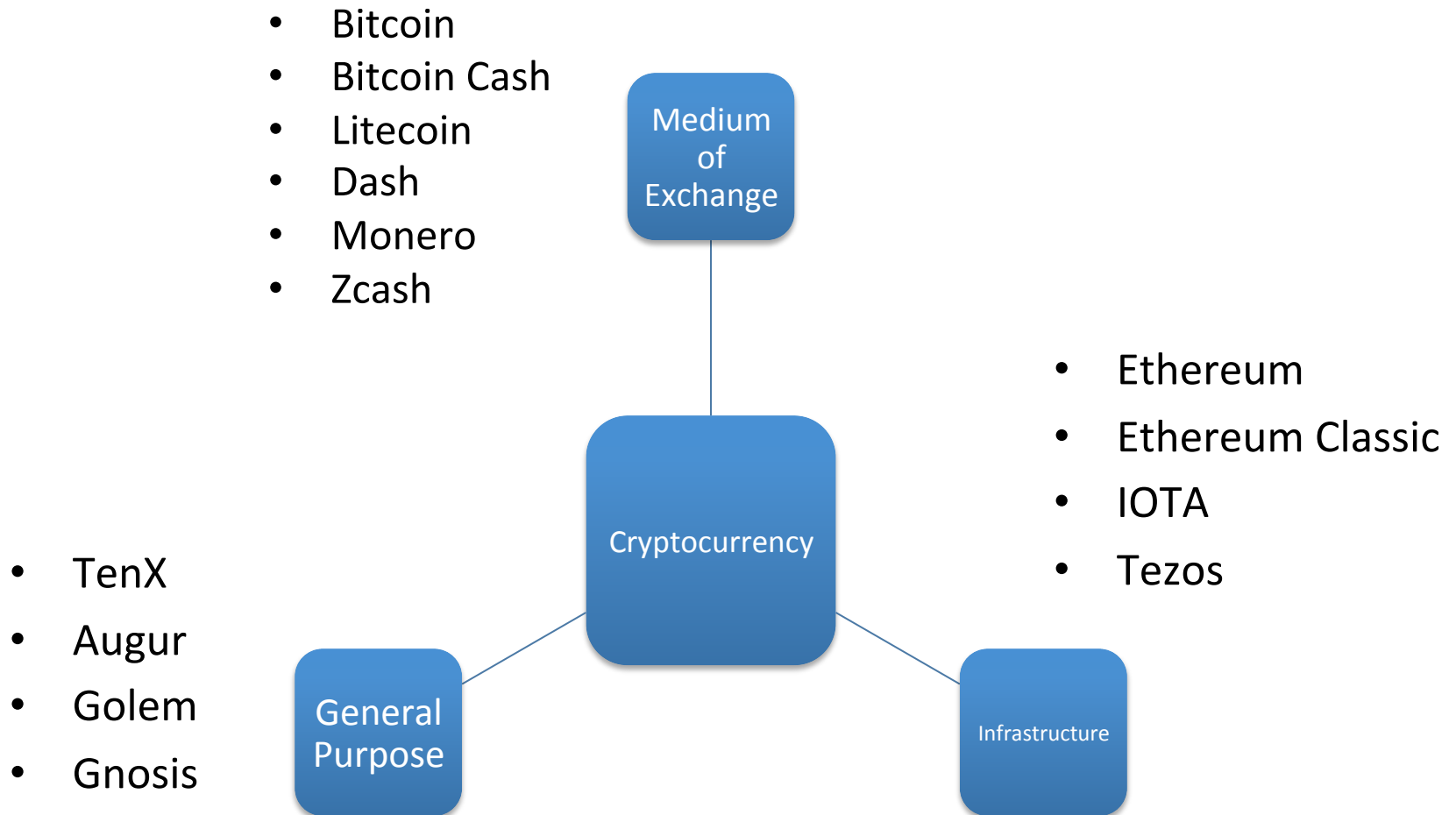
# Alternative Cryptocurrency

- Since then, numerous cryptocurrencies have been created.
- These are frequently called “altcoins” because they are “alternative” coins to Bitcoin.
  - These include:
    - Ethereum
    - Bitcoin Cash
    - Ripple
    - Litecoin
    - Dash

# Market Capitalizations and Trading Volume of Top 5 Cryptocurrencies

#	Name	Market Cap	Price	Circulating Supply	Volume (24h)	% Change (24h)
1	 Bitcoin	\$65,547,217,333	\$3951.49	16,587,975 BTC	\$1,299,250,000	4.79%
2	 Ethereum	\$27,713,377,929	\$292.25	94,826,667 ETH	\$445,303,000	1.86%
3	 Bitcoin Cash	\$7,540,555,811	\$453.77	16,617,463 BCH	\$237,025,000	3.88%
4	 Ripple	\$7,011,401,551	\$0.182856	38,343,841,883 XRP *	\$38,460,600	2.83%
5	 Litecoin	\$2,796,652,806	\$52.66	53,105,607 LTC	\$234,591,000	8.16%

# Not Every Cryptocurrency is Made Equal



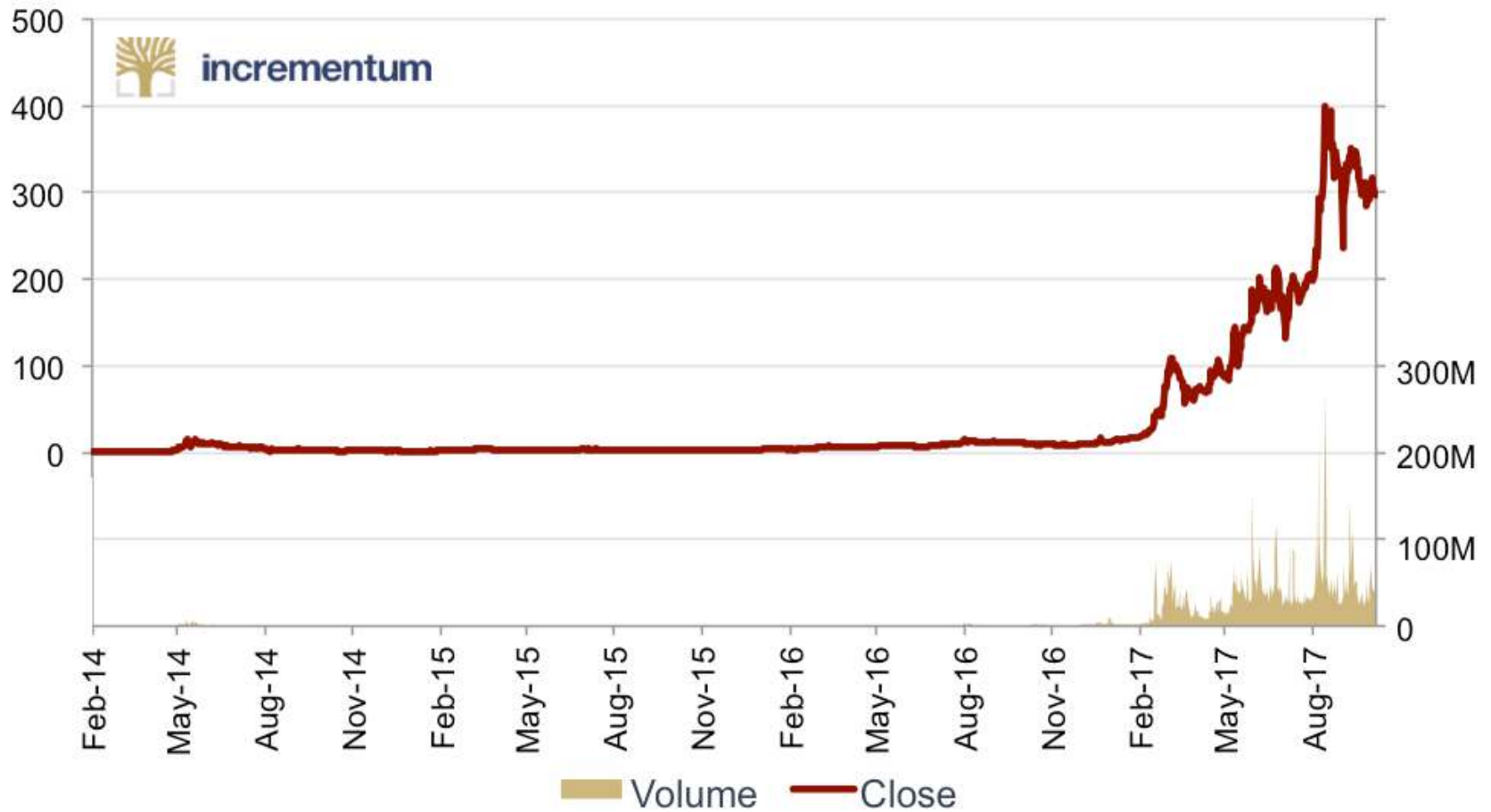
# Ethereum

- Similar to the bitcoin network, thousands of Ethereum nodes around the world maintain the Ethereum network.
- Ethereum is an infrastructure cryptocurrency that enables “smart” contracts –
  - Smart contracts are digital contracts that can automatically execute preprogrammed agreements. The if-then statements are stored decentrally.
  - Smart contracts can be built and operated by anyone.
  - Ethereum smart contracts operate without downtime or censorship. Smart contracts work with the Ethereum network’s native cryptocurrency referred to as ether.

# Ethereum



# Dash



# Dash

- Invented after bitcoin and litecoin, dash focuses on privacy and pseudonymity.
- Prior to being rebranded as dash, this cryptocurrency went by the name darkcoin.
- Dash has a unique governance system based on masternodes.
  - These nodes are used as a form of staking.
  - For example, if somebody wants to go to a conference and talk about Dash they can ask the master nodes for expense reimbursement and the master nodes will vote.
- Dash developed new methods for reducing the traceability of transactions by mixing many transactions together before sending them to the final destination. The process of mixing blurs the identity of the original sender.
- To increase privacy further, dash does not have a publicly available ledger.
- Recently, the developers of dash have made successful efforts to increase merchant acceptance.

# Monero

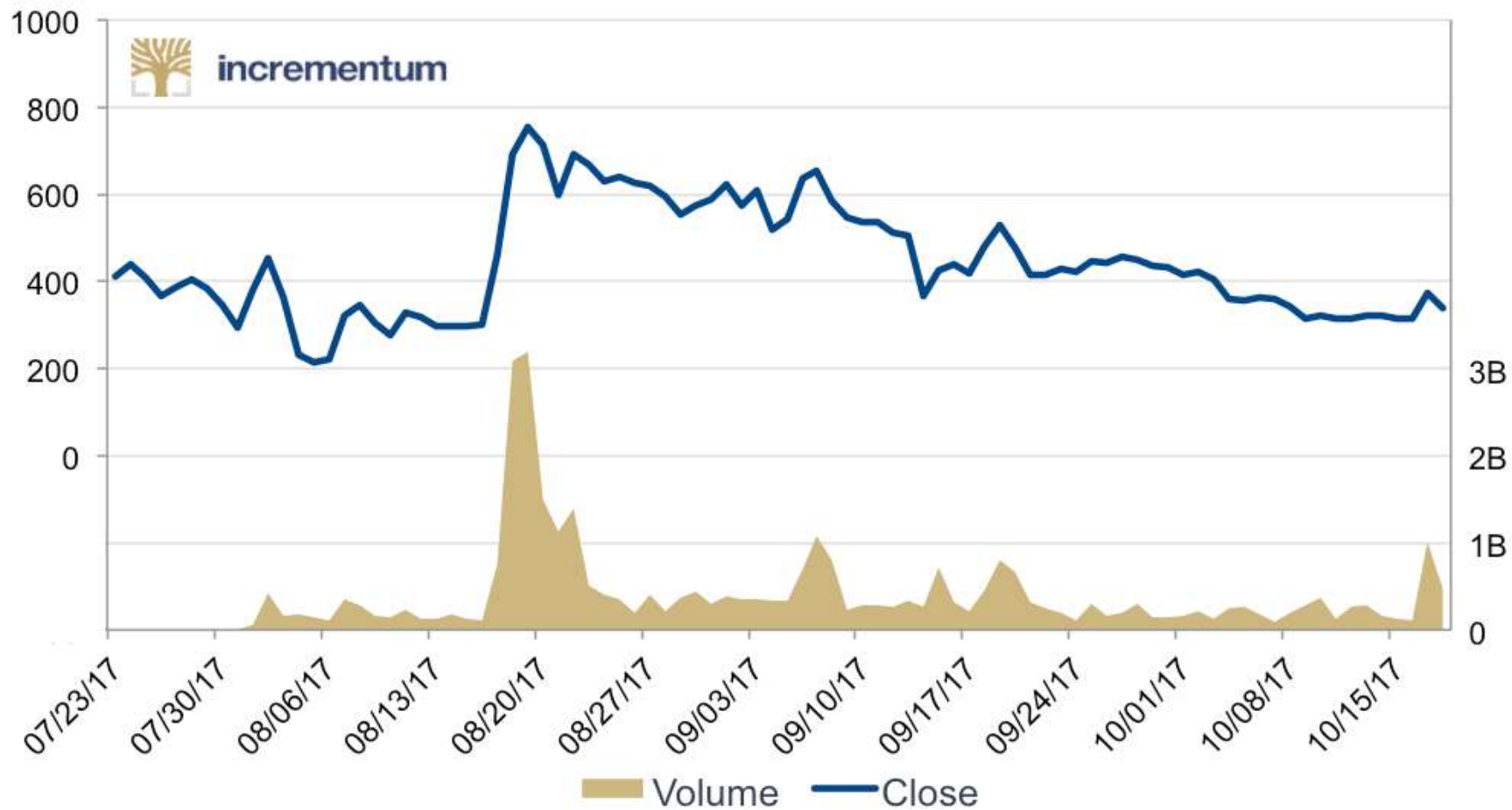
- Like Dash, Monero focuses on privacy. The primary feature is the Ring Confidential Transactions technology called Ring Signatures.
  - Ring Signatures obfuscate who is sending the transaction, the amount that is being sent, and the receiver.
- Relies on Proof-of-Work consensus mechanism.
- Similar privacy features to Z-cash.



# Bitcoin Cash

- Similar to bitcoin, bitcoin cash is a cryptocurrency from the money subclass.
- Bitcoin cash was created on August 1, 2017 during a hard-fork of the original bitcoin cryptocurrency.
- Ticker: BCH
- First fork of a long list of bitcoin forks including Bitcoin Gold.

# Bitcoin Cash



# Ripple

- Ripple is open-source but not public. Used by companies such as UniCredit, UBS and Santander, Ripple has been increasingly adopted by banks and payment networks as settlement infrastructure technology.
- Ripple's native cryptocurrency, XRP, does not require mining.
- Founder's retained 20% of XRP for themselves.
- Not considered to be a real cryptocurrency by many cryptocurrency enthusiasts.

# FAQ

- Each cryptocurrency is an experiment in monetary policy.
- New cryptocurrencies do not impact the supply of old cryptocurrencies.
- Each cryptocurrency has different applications and different risks.
- Some cryptocurrencies are more correlated with traditional assets and other cryptocurrencies.

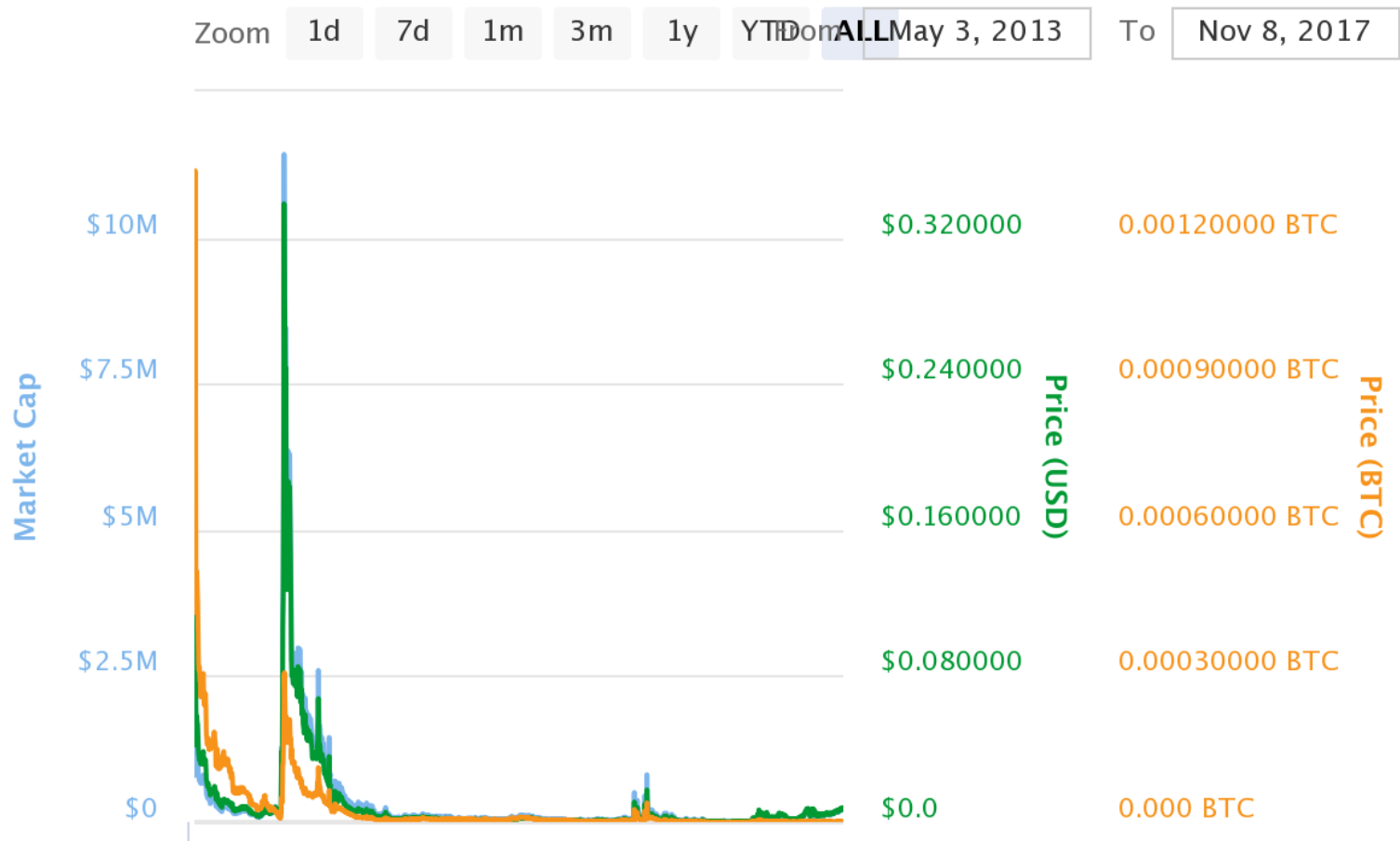
# Cryptocurrencies with Demurrage and/or Unpredictable Supply Shocks

- Demurrage – negative interest or fee for holding
- Unpredictable supply shocks – non-preprogrammed increase or decrease in the supply of the coin

**Not successful as a medium of exchange so far. Successful as a database.**

# Freicoin – a monetary policy that did not attract demand

## Freicoin Charts



# Central Bank Cryptocoins (CBCCs)

- Russia's Central Bank may issue a blockchain-based national currency that is exchangeable for rubles on government-run exchanges. Issuance of crypto-rubles is done by government and blockchain is management by government.
  - This is a proof-of-authority blockchain.
    - This is not a proof-of-work or proof-of-stake blockchain.
  - This is a private blockchain.
    - This is not a public blockchain.
  - This is a centralized blockchain.
    - This is not a decentralized blockchain.
  - This is a blockchain where transactions can be censored.
    - This is not a censorship-resistant blockchain.
  - This is a biased blockchain that has a specific geopolitical agenda.
    - This is not a neutral blockchain.
  - This is a blockchain within Russia.
    - This is not a borderless blockchain.

# Central Bank Cryptocoins (CBCCs)

- CBCCs are slightly more decentralized than fiat but not as decentralized as bitcoin.
  - Private keys may be held by several parties within the government, which can still be hacked. Security is not guaranteed because centralized databases are not Byzantine tolerant. Centralized databases have a single point of failure (SPOF). Even the U.S. NSA gets hacked.
- CBCCs are slightly more transparent than fiat but not as transparent as bitcoin.
  - Some banks may be able to see the ledger or verify transactions but not all transactions will be accessible by the public. Imagine if the U.S. Dept. of Defense transactions were recorded on the bitcoin blockchain.
- CBCCs can reduce the purchasing power of each cryptocurrency unit through demurrage or inflation. This is not possible with Bitcoin.



## To sum up on CBCCs

- Can you define the word blockchain?
- Can you define the word blockchain in such a way that I can't search and replace the word "blockchain" with the word "database?"
- CBCCs are databases that are trying to leverage the hype of bitcoin.
- A lot of people who hold bitcoin do not want a currency that loses purchasing power over time.
- The process of competition produces quality.
  - If central banks have a monopoly on minting money and if government currency has a legal tender monopoly then competition is outlawed.

# Part 2: Applications: Regulated Cryptocurrency Financial Products

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# Cryptocurrencies are being “Financialized”

- First-mover financial intermediaries, lawyers, governments, and start-ups are offering cryptocurrency related products and legislation.
- For example:
  - Credit cards that can be filled with cryptocurrencies.
  - Cryptocurrency automatic teller machines (ATMs).
  - Exchanges are paying interest on “cryptocurrency deposits.”
  - Algorithms or “bots” are being used to cryptocurrencies.
  - Large players can negotiate special pricing with cryptocurrency exchanges and miners.
  - Underwriting services offered by traditional investment banks are being offered by cryptocurrency brokers and law firms.
  - Legal licenses are being granted to a handful of firms.
  - The only thing that doesn’t really exist yet is insurance for all of these products.

# Problem

- Investors that want to gain exposure to cryptocurrencies face four main challenges:
  1. Storing cryptocurrencies is difficult.
    - Most exchanges get hacked.
    - Even cryptographers get hacked.
    - Even accounts with 2FA (two-factor authentication) get hacked.
    - Even the software code gets hacked periodically.
    - No insurance is available.
  2. How to declare cryptocurrency income to tax authorities is vague
    - Sometimes special tax accountants must be hired in order to make proper declarations.
  3. Cryptocurrency investments do not show up in standard account statements.
  4. In case of emergency, how can heirs access cryptocurrency investments?

# Solution

- To solve this problem, banks, hedge funds, and wealth-management firms are creating products that allow investors to gain exposure to cryptocurrency without having to deal with cryptocurrency storage, tax declaration, or inheritance. As a bonus, clients get account balances that fit nicely into their monthly portfolio statement.
- Products include:
  1. Cryptocurrency bank accounts
  2. Cryptocurrency trusts
  3. Cryptocurrency Alternative Investment Funds (AIF)
  4. Cryptocurrency trackers
  5. Cryptocurrency options
  6. Cryptocurrency trading on Swissquote

# 1.) Cryptocurrency Bank Accounts

- Falcon Bank in Zurich launched cryptocurrency bank accounts in July of 2017 for all customers.
- Every Falcon Bank client can buy or sell bitcoin, bitcoin cash, litecoin, and ethereum by calling their banker and placing an order.
- Falcon Bank stores every cryptocurrency on a 100% basis.
  - For example, person A with 2 bitcoin in their account do not need to worry about Falcon defaulting because of a loss of liquidity.

## Biggest Obstacle to Providing Cryptocurrency Bank Accounts

***“The biggest challenges were to develop the processes of handling this new assets class, which fulfill the requirements from our auditor PWC as well as from our regulator FINMA. We had a very close collaboration with PWC while defining those together. FINMA as well was always very approachable throughout process.”***



Ivo Sauter, the Managing Director of Falcon Bank

## 2.) Cryptocurrency Trusts

- Bitcoin Investment Trust (GBTC) in New York was launched in 2013 by Barry Silbert and Grayscale Investments.
- GBTC is an exchange-traded note that is invested 100% in bitcoin.





## Finer Print of the GBTC ETN

- Every share of GBTC is tied to 0.09258535 bitcoin.
  - 0.09258535 bitcoin is worth approximately \$525.
  - GBTC shares have traded at a premium historically .
- GBTC employs a third party company to store the bitcoin for them.
  - The storage company is Xapo. They store the bitcoin in a decommissioned military bunker in Switzerland.
  - Xapo also stores Coinbase's bitcoin.



### 3.) Cryptocurrency Alternative Investment Funds

- Several companies are trying to launch cryptocurrency AIFs including Falcon Bank, Crypto Fund AG in Zug, and Incrementum in Liechtenstein.
- AIF is the fund structure because UCITS (Undertakings for Collective Investment in Transferable Securities) has strict rules regarding counterparties and cash limits.
- AIF still has obstacles.
  - Fund managers should not have direct access to the cryptocurrencies that they are invested in.
  - Therefore, cryptocurrencies must be stored by a custodian, such as a bank.
  - However, finding banks that have the knowledge of how to properly handle cryptocurrencies is difficult.

## 4.) Cryptocurrency Trackers

- Bank Frick in Balzers launched a cryptocurrency tracker in July.
- The tracker is for professional investors and is not marketed publically because the tracker has not received distribution approval from authorities.
- Bank Frick's Cryptocurrency Basket Tracker (CCT) is invested in bitcoin and ethereum primarily.
- Storage of cryptocurrencies is done offline using multi-signature wallets.



## Vontobel Bitcoin Certificate

- Vontobel Bank in Switzerland launched a bitcoin certificate in July of 2016.
- Vontobel invests in the underlying cryptocurrency.
- Vontobel gave every certificate holder a Bitcoin Cash certificate after the Bitcoin hard fork that happened in August of 2017.

***“The certificate is a success: On many days it is the most traded structured product on the Swiss stock exchange. The initially small issue volume of the certificate with a term of two years was quickly increased to CHF 20 million and now increased to CHF 40 million.”***

Neue Zürcher Zeitung, July 2017

## 5.) Cryptocurrency Options

- First U.S. regulated options market LedgerX was launched last week.
- Approved by the Commodity Futures Trading Commission in July of 2017.

***“...we ended up completing swaps and options trades worth over \$1,000,000 USD. Crucially, these trades were cleared through LedgerX, which is the only institutional grade, US federally regulated exchange and clearinghouse for digital currencies. And we are literally just getting started. This is the first platform of its kind where you have a unified way to buy and sell BTC via swaps, and monetize the volatility with options.”***

LedgerX, Oct. 20, 2017

# Options Markets

- Chicago Board Options Exchange (CBOE) announced plans to launch a cash-settled bitcoin futures product by the end of 2017 or during the first quarter of 2018.

***"With regulated futures of a certain asset class like a bitcoin, you do have an opportunity to introduce ETFs and over time we do envision ETFs coming to market."***

Chris Concannon, president of the Chicago Board Options Exchange (CBOE)

- Other companies offering bitcoin derivatives, such as Deribit and the Bitcoin Mercantile Exchange (BitMEX), have garnered significant interest from traders as well.
- Deribit is domiciled in the Netherlands.
- BitMEX is domiciled in Seychelles.

## 6.) Cryptocurrency Trading on Swissquote

- Swissquote launched bitcoin/EUR and bitcoin/USD trading pairs in July of 2017.
- Settlement is instantaneous.
- Customers do not have access to their private key so this is not a cryptocurrency wallet.

### Transaction costs

Transaction amount (EUR or USD)	Fees (%)
5 - 10'000	1%
10'001 - 50'000	0.75%
50'001 - 500'000	0.5%

- No custody fees
- No stamp tax
- No stock exchange tax

# Swissquote Bitcoin Trading

***“Mehrere Millionen werden täglich gehandelt und die Umsätze steigen weiter an.”***

CEO Swissquote Mark Bürki





# Disclaimer

- Cryptocurrencies are an extremely risky investment.
- The decision to invest in cryptocurrencies depends on:
  - The investor's goals
  - The investor's time horizon
  - The investor's risk preference
  - The investor's current portfolio

# Future Outlook

- Many people around the world are working on the “financialization” of bitcoin and other cryptocurrencies.
- 2018 may be the year that large institutional investors take positions in cryptocurrencies.

# Questions?

- Thank you for coming! Please email me at [demelza.hays@uni.li](mailto:demelza.hays@uni.li)