

Asset Management Equity Business

Thematic Insights: Robotics, Security & Safety



Blockchain technology: Opportunities for robotics and security/safety investors?

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"I'm reasonably confident [...] that the blockchain will change a great deal of financial practice and exchange."

Larry Summers, US Former Treasury Secretary

Dear Reader,

The blockchain technology and its currently most prominent example, bitcoins, are one of the most controversial and highly debated topics. Wherever these items appeared, fierce debates have often followed. Early adopters claim that this disruptive technology will remove their dependencies on banks and governments, while others are arguing that this is just a "flash in the pan"¹.

We believe the long term consequences of the blockchain technology are enormous for our society and affects far beyond the traditional payment sector. Blockchain technology offers a solution of recording transactions or any digital interaction in a way that is designed to be secure, transparent, highly resistant to outages, auditable, and efficient. In our opinion this technology offers a realistic chance for disrupting the way how we exchange value over the internet without an intermediary.

In simple words, what is blockchain?

According to the Bank of England, a blockchain is a technology that allows people who do not know each other to trust a shared record of events. It has a peer-to-peer connection and keeps a record of all ownership transactions

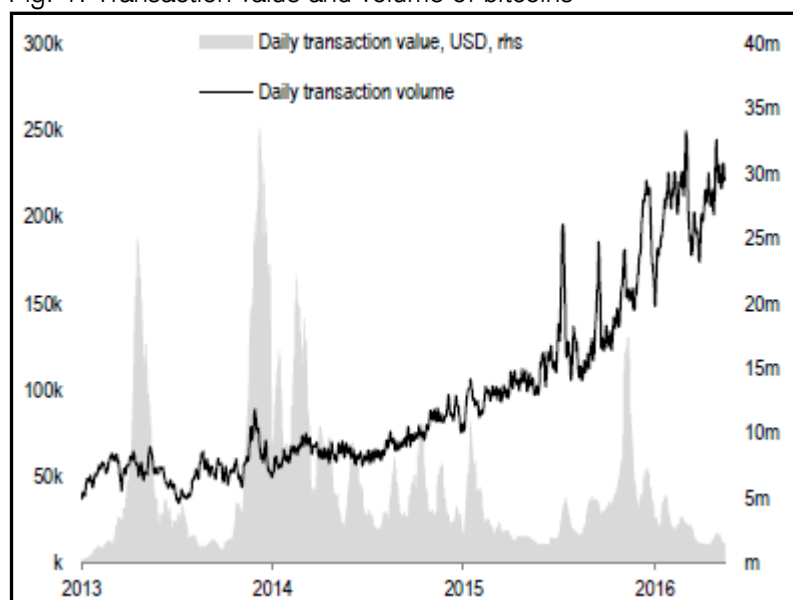
¹ Source: Neue Zürcher Zeitung (2015): Blockchain - das überschätzte Wesen, in: Neue Zürcher Zeitung, 14.10.2015, URL: <http://www.nzz.ch/finanzen/blockchain--das-ueberschaetzte-wesen-1.18628334>, 7.8.2016.

in a shared record (also called decentralized ledgers). These ledgers are distributed to all participants in a network who use their computers to validate the transactions. As a result, there is no need for a trusted third party (e.g. a bank) to intermediate². One product based on the blockchain technology are bitcoins, a popular and controversial cryptocurrency, which serves as a public ledger for bitcoin transactions. Every user is allowed to connect to the network, send new transactions to it and verify each the new transaction³.

The development of the blockchain technology began as a pure peer-to-peer version of electronic cash back in 2008. The aim was to exchange cash without being diverted into the wrong account and to avoid double-spending on the same transaction. To fulfil this concept of a decentralized system, the avoidance of such abuses had to be achieved without recourse to any trusted third party. A database that contains the payment history of every bitcoin in circulation, the blockchain technology provides the proof of who owns what at any given time. This distributed ledger is replicated on thousands of computers around the world and is publicly available⁴.

As mentioned above, Bitcoin remains the most noteworthy system based on the blockchain technology. It has currently a total "market capitalization" of USD 10 billion, a daily volume of around 250'000 individual transactions and peak transaction value of ca. USD 35 million (see Fig. 1)⁵.

Fig. 1: Transaction value and volume of bitcoins



Source: Credit Suisse (2016)

Development of blockchain technologies across industries are accelerating

Understandably, the focus on digital currencies such as bitcoin has created a common misconception that the blockchain technology is relevant only to the financial sector. But it is not only limited to bitcoin, it can be used to secure and validate the exchange of any data. We therefore believe the evidence is growing that such a technology has the ability to disrupt global commerce on a much broader scale by driving the creation of new business models in numerous industries. Horizontal applications are also emerging, including smart contracts that will cut administrative costs or blockchain-based cybersecurity tools that enables the immediate detection of data manipulation and the verification of

the integrity of IT systems. Similar to how the internet is democratizing the exchange of information, we believe blockchain technologies may help democratize the exchange of value. The list below provides a short overview about current concepts, prototypes, and investments in the field of blockchain technologies:

- 30 of the world's largest banks are joining a global consortium working on ways how blockchain technology can be used in financial markets. It represents the first time that banks are collaborating on this technology⁶.
- Stock exchanges are already elaborating ways about how to use blockchain: The NASDAQ is piloting a blockchain-powered private market exchange⁷, the South Korean securities exchange wants to create an

² Source: Bank of England (2015): Blockchain has the potential to change society, URL: <http://blockchain.bankofenglandearlycareers.co.uk/>, 7.8.2016.

³ Source: Harwood, Trevor et. al. (2014): "Blockchains and the Internet of Things", URL: <http://postscapes.com/blockchains-and-the-internet-of-things/#sidechains>, 7.8.2016.

⁴ Source: The Economist (2015): Blockchains: The great chain of being sure about things, in: The Economist, 31.10.2015, URL: <http://www.economist.com/news/briefing/21677228-technology-behind-bitcoin-lets-people-who-do-not-know-or-trust-each-other-build-dependable>, 7.8.2016.

⁵ For a more detailed discussion about the function of the blockchain technology, bitcoins and details about bitcoin mining, among other topics, please read Credit Suisse (2016): Blockchain – The Trust Disruptor, Aug. 3rd 2016.

⁶ Source: Reuters (2015): R3 blockchain group adds 5 banks, brings in technology heavyweights, in: Reuters, Nov. 19th 2015, URL: <http://www.reuters.com/article/global-banks-blockchain-idUSL8N13E36B20151119>, 13.8.2016.

infrastructure based on blockchain technology to strengthen the off-board trading market⁸, and the Australian markets operator ASX Ltd. is positioning itself to become the first stock exchange in the world to use distributed ledger technology for public companies⁹.

- Microsoft and IBM are launching a cloudbased blockchain-as-a-service platforms (BaaS). Their aim is that their enterprise clients can have access to a cloud-based blockchain developer environment and to reduce the considerable back-end legwork for businesses setting up blockchains¹⁰.

Bottleneck: IT Security

According to the Financial Times, it can be said the the blockchain technology has in general been very robust in terms of preventing double spending or in forging of new coins (bitcoin mining). Unfortunately, the same cannot be said about the wider bitcoin economy, where hacking is commonplace. Several high profile breaches occurred, as the following table 1 is showing:

Table 1: Recent prominent thefts from bitcoin exchanges

	Name of the bitcoin exchange	Amount stolen
January 2015	Bitstamp	20'000 bitcoins worth USD 5 million
March 2015	Coinapult	150 bitcoins worth USD 43'000
May 2015	Bitfinex	1'500 bitcoins worth USD 330'000
June 2015	Scrypt.CC	Undisclosed sum stolen
August 2016	Bitfinex	119'756 bitcoins worth USD 70 million

Source: Financial Times (2016)

The true scale of the hacking problem is hard to estimate. Bitcoin community members suggest that there have been up to 60 high-profile hacking incidents since it was created back in 2009. Additionally, many bitcoin exchanges refuse to publish hacking incidents due to fear of losing clients. They only do so if the attacks are too obvious to conceal from the public. For the same reason the bitcoin exchanges also resist a public audit or the sharing of information about the size and scope of their bitcoin reserves. Therefore no one can ever be sure if losses were caused by an external hack or by insufficient risk management¹¹.

Conclusion

In our opinion, the blockchain technology is still in the early stage of its development, but according to experts it has the disruptive potential to transform the global commerce. A widespread commercialization is still a few years off. We expect to see early-stage technical prototypes within the next two years, with limited market adoption in 2 – 5 years and broader acceptance in 5 – 10 years. Clearly, several questions from a regulatory point of view need to be answered first (e.g. money laundering, “know-your-clients”, among others).

⁷ Source: Forbes (2015): Nasdaq selects Bitcoin startup chain to run pilot in private market arm, in: Forbes, June 24th 2015, URL: <http://www.forbes.com/sites/laurashin/2015/06/24/nasdaq-selects-bitcoin-startup-chain-to-run-pilot-in-private-market-arm/#f8ef76e52d76>, 13.8.2016.

⁸ Source: The Korea Times (2016): KRX seeks share trading through blockchain, in: The Korea Times, Feb. 29th 2016, URL: http://www.koreatimes.co.kr/www/news/biz/2016/02/488_199315.html, 14.8.2016.

⁹ Source: Financial Times (2016): Australia is in the vanguard of blockchain's march to market, in: The Financial Times, Feb. 17th 2016, URL: <http://www.ft.com/cms/s/0/b83a0a74-ca8c-11e5-be0b-b7ece4e953a0.html#axzz4HF5ljkEK>, 13.8.2016.

¹⁰ Source: PC Mag (2016): Microsoft and IBM Set Sights on the Next Cloud Frontier: Blockchain-as-a-Service, in: PC Mag, July 21st 2016, URL: <http://uk.pcmag.com/microsoft-office-365-home-premium/83154/feature/microsoft-and-ibm-set-sights-on-the-next-cloud-frontier-bloc>, 17.8.2016.

¹¹ Source: Financial Times (2016): Bitcoin Bitfinex exchange hacked: The unanswered questions, in: The Financial Times, Aug. 4th 2016, URL: <http://www.ft.com/cms/s/0/1ea8baf8-5a11-11e6-8d05-4eaa66292c32.html#axzz4HJOsXDff>, 14.8.2016.

As long-term oriented robotics as well as security & safety investors, we think investing in this theme is an attractive secular growth area. We strongly believe that blockchain technology will not work without adequate IT security features, otherwise the trust in this concept will disappear. Therefore, we are invested for our security & safety as well as robotics investors in leading companies with a special focus on data protection, data analytics and automation as well as payment automation and security.

For further information (such as current fund factsheet, performance or quarterly comments) please click [here](#) (security & safety) or [here](#) (robotics).

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