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Blockchain, Applications and Law in China

By David Pan | Nigel Zhu

1. Blockchain Explained

Undeniably, “blockchain” is such a buzzword that almost everyone heard of and that almost every business claimed to have something to do with it. Sadly, though mostly talked, “blockchain” is least understood. Most people do not understand what blockchain stands for, let alone how it works, and some alleged “applications” of blockchain turn out to be brazen fraud. Make no mistake, blockchain is a genuine and legitimate technology that can change our life, yet it is too complicated for the authors to thoroughly explain the complex algorithms and mechanisms that back up blockchain in this Article. For us legal and business professionals, however, it is necessary to have a general idea of what blockchain is, how it works, and how it is regulated.

What is blockchain? The simplest definition of blockchain is that it is a decentralized digital ledger of transactions that is distributed across millions of computers (each a “node”). However, in contrast to the ordinary storage of a ledger, a blockchain ledger is stored on several thousand computers

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connected to a common network via the Internet. Each such computer contains a complete and identical history of every transaction beginning with the first transactions that were processed into the first “block” on that blockchain¹. Moreover, the concept of “block” may be abstract and intimidating, but such “blocks” are really nothing more than a convenient way to aggregate transactions into larger batches for processing purposes.

Blockchain is by no means a new thing, although at its inception it was not called the “blockchain”, or rather, the “chain of blocks”. The first work on a cryptographically secured chain of blocks was described in 1991 by Stuart Haber and W. Scott Stornetta.² They wanted to implement a system where document timestamps could not be tampered with. In 1992, Bayer, Haber and Stornetta incorporated Merkle trees to the design, which improved its efficiency by allowing several document certificates to be collected into one block. Blockchain was first conceptualized by a person (or a group of people) known as Satoshi Nakamoto in 2008 in his whitepaper about Bitcoin, although Nakamoto did not actually mention the word “blockchain” in the whitepaper. Nakamoto improved the design in an important way using a Hashcash-like method to add blocks to the chain without requiring them to be signed by a trusted party.

How does blockchain work? The technical aspects of the way blockchain works is far too complicated for people without technical background to understand. It is possible, however, to understand how blockchain works without understanding the technical nitty gritty, by comparing a transaction done via blockchain to a transaction done via checks.

Since the most fundamental use of blockchain is to track transfer of virtual currency (such as Bitcoin), let us expand the “ledger” notion mentioned above, and think of a ledger that records the transfer of Bitcoin from the transferor to the transferee. Let us imagine that you need to pay one dollar to your friend, Tom. In the real world (a centralized world), if you pay by check, you and Tom basically have to go through the following steps: 1) write a check; 2) sign the check; 3) Tom receives the check and has the check verified at a financial institute; 4) the financial institute clears the check and Tom receives the money. A blockchain transaction goes through a similar and comparable process. In order to transfer a Bitcoin to Tom, the following steps are necessary: first, you will have to generate the computer code that is necessary to provide all of the information for the transaction (this is analogical to writing a check); second, you will have to input a private key that corresponds to the public address on the blockchain (signing the check); third, you will have to broadcast the transaction so it can be received by the nodes running the blockchain protocol and these nodes can continue to propagate the transaction through out the entire network of nodes (verifying the check); and last, miners bundle up transactions into blocks of aggregated transactions and append each block to the previous block, ensuring all of the nodes have a current immutable history of all transactions on the blockchain (clearing the check). The process may seem far more complicated and lengthier compared to an ordinary transaction, however the entire process can be completed within a second.

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From such illustration of a blockchain transaction, we can see that blockchain works without a centralized trusted party (the financial institute in the real-world example) to authenticate the transaction, and therefore puts our trust into mathematics and computing, which are much less prone to errors. This is indeed the underlying notion of all blockchain applications mentioned below.

2. Applications in China

According to a blockchain whitepaper published by the PRC Ministry of Industry and Information Technology (MIIT) in May 2018, there are currently 456 companies registered in China with blockchain related business as their primary business³, which is more than a tenfold increase from 2015. Furthermore, the applications of blockchain technology have expanded from the financial sector to a variety of industries, covering logistics and supply chain management, IP right protection, electronic evidence deposition, to name just a few.

1) Financial services

China has taken a leading role in utilizing blockchain in financial sector. For example, in asset management, traditionally each party in the process (such as broker, custodian, or the settlement manager) keeps their own records. The use of blockchain can improve efficiencies and decrease errors: the blockchain ledger reduces errors by encrypting the records; moreover, the blockchain ledger simplifies the process by removing intermediaries. In the payments industry, the traditional payment process is error-prone, costly, and open to money laundry. Blockchain solves the above problems, and is already providing solutions with remittance companies such as Alipay that offer end-to-end blockchain powered remittance services.

2) Logistics and supply chain management

Among all industries, logistics is most likely to be transformed by blockchain because the blockchain technology can satisfy its core requirements for traceability and efficiency. Walmart, JD, IBM and Tsinghua University have already formed the Food Safety Alliance to develop blockchain applications for logistics. Take food supply chain as an example, traditional food supply chain has complex and fragmented data sharing systems that are often paper-based and error-prone. Blockchain technology has been applied to supply chain management so that data generated all along the supply chain can be stored and preserved in blockchain. As a result, the authenticity and place of origin of products can be traced in seconds.

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3) Copyright protection

Compared with other intellectual property rights, it is harder to protect copyright because of the obstacles in registration. With the blockchain technology, registration can be consummated by trusted timestamps that each copyrighted product in blockchain having a unique Hash ID. Furthermore, with blockchain technology, the copyright holder, copyright registrar and even Internet courts can all be connected so that court discovery can be made much more straightforward.

4) Electronic evidence deposition

Electronic evidence is hard to obtain and preserve. There have been no uniform criteria for authentication and admission of electronic evidence within the court system. In addition, electronic evidence in its traditional form is vulnerable to alteration and therefore can easily lose its admissibility. Thanks to its immutability, blockchain provides a very convenient way for preserving electronic evidence and verifying the authenticity thereof. The PRC Supreme Court has already issued interpretation rules to admit blockchain evidence (see Chapter 3.3 for details).

Besides all the abovementioned applications, China has also introduced blockchain into other areas such as medical care, Internet of Things, E-government, smart contract, land management and so on.

3. Law in China

Blockchain technology is burgeoning globally, including in China. In this context, some people acclaimed the advent of Lex cryptographica which would be a new societal governance structure based on “rule of code” rather than “rule of law”⁴. Nevertheless, China obviously took a prudential approach in blockchain legislation. China currently does not have any laws and regulations which specifically govern blockchain per se. Instead, China has enacted laws to regulate certain activities conducted using the blockchain technology. Due to its immutability, traceability and transparency, the blockchain technology has been proactively encouraged and promoted by the Chinese government. Since 2016, multiple central government agencies have issued circulars to promote the development and application of blockchain technology, including the State Council, the Ministry of Industry and Information Technology (MIIT), Ministry of Commerce, National Development and Reform Commission, Ministry of Finance and State Intellectual Property Office. Similar policies have also been issued by some provincial governments.

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1) CAC's new regulation on blockchain information services

The Cyberspace Affairs Commission (“CAC”) on January 10, 2019 issued a regulation on blockchain information services (the “Regulation”), which is the first state level regulation that contains the word “blockchain” in its name. Although the Regulation mainly focuses on regulating information services conducted via the blockchain technology, as opposed to blockchain per se, it reflects Beijing’s attention on the technology and its attitude toward tightening the regulation in this area.

The Regulation features the following requirements:

- a) The Regulation considers blockchain information service providers as “nodes” that offer information services to the public;
- b) Blockchain information service providers need to register themselves with CAC;
- c) Blockchain information service providers shall strengthen information security management and establish and refine their policies and mechanisms on user registration, information inspection, emergency response and security protection;
- d) What is worth noting is that, in the draft of the Regulation issued in October 2018, it was provided that Blockchain information service providers in certain restricted areas (news reporting, publishing and education etc.) must obtain relevant licenses from competent government authorities before carrying out the information services. The formal issuance of the Regulation deleted such provisions, however this does not mean that blockchain information service providers in such restricted areas do not need to obtain government approval. The deletion is made only because it is redundant to state such requirements in the Regulation when other laws have specifically provided so;
- e) Blockchain information service providers are not allowed to use the blockchain technology to “produce, duplicate, publish and disseminate” information or content that is prohibited by Chinese laws.

2) Regulations on cryptocurrency

Cryptocurrency, which largely depends on the blockchain technology, has long been the focus of Chinese regulators. As early as in 2013, when blockchain itself was relatively new in China, the People’s Bank of China, MIIT, the Securities Regulatory Commission, the Insurance Regulatory Commission and the Banking Regulatory Commission jointly issued a circular to warn the public of risks associated with Bitcoins. The circular made clear that as a virtual currency Bitcoin is not issued by the monetary authority, and therefore should not be treated equally as the legal tender, and therefore should not be allowed in circulation in the market. The Circular prohibited financial

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institutions from pricing goods and services with Bitcoins, purchasing and selling Bitcoins, or providing clients with other Bitcoin-related services.

With the proliferation of blockchain technology and cryptocurrencies, initial coin offerings (“ICO”) gradually became popular among investors all over the globe, and China is not an exception. However, in September 2017, seven PRC central government agencies jointly issued a circular to ban ICOs in China (the “ICO Rules”). The ICO Rules explicitly stated that ICOs are unapproved and illegal public fund-raising activity, which could potentially constitute crimes such as illegal issuance of currency tokens, illegal issuance of securities, illegal fund raising, financial fraud and pyramid sale. With ICOs being outlawed, many cryptocurrency exchange platforms had to cease their ICO business, or had to transfer their ICO business out of China.

What’s worth noting is that the ICO Rules also impose restrictions on other primary businesses of cryptocurrency trading platforms. According to the ICO Rules, cryptocurrency platforms are prohibited from converting legal tender into cryptocurrencies, or vice versa. They are also prohibited from purchasing or selling cryptocurrencies, setting prices for cryptocurrencies, or providing other related agent services. Government authorities may shut down the websites and mobile applications of platforms that fail to comply, remove the applications from application stores, or even suspend the platform’s business licenses.

3) Admission of blockchain records as court evidence

Right at its inception in China, the blockchain technology has raised intensive argument among scholars and legal practitioners with regard to evidence produced or preserved in blockchain can be admitted in a court proceeding.

Despite the debate, courts have made multiple attempts in this regard. In June 2018, the Internet Court of Hangzhou confirmed in its rulings the admissibility of the plaintiff’s blockchain records of copyright information. In this case, in order to prove that the defendant published relevant copyrighted products on the website it operates, the plaintiff chose to conduct crawling and source code identification of the infringing website via a third-party evidence deposition platform. In addition, the plaintiff archived the screenshots and the source code of the infringing website and derived the archived files’ Hash value and uploaded the Hash value to two blockchains. The court admitted the above digital evidence submitted by the plaintiff, which marked one of the several cases in which the admissibility of blockchain evidence is upheld.

Furthermore, in September 2018, the PRC Supreme Court issued rules on how Internet courts should

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review internet-related legal disputes. Part of the rules specifies that Internet courts shall recognize the legality of blockchain as a method for storing and authenticating digital evidence, provided that parties can prove the legitimacy of the technology being used in the process. This officially affirmed the admissibility of blockchain evidence in court.

Just like any other technology, the blockchain technology is “neutral” in nature and can be used for good or bad. In terms of regulating the blockchain technology, we should embrace this innovative technology, while we shall remain cautious about the risk of the technology falling into “wrong hands”. Guided by this spirit, a proper regulation and supervision by the government will certainly facilitate the long-term growth of the blockchain industries.

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¹ Joseph J. Bambara, Paul R. Allen, *Blockchain: A Practical Guide to Developing Business, Law and Technology Solutions*, McGraw-Hill Education (2018), 15-21

² Narayanan, Arvind; Bonneau, Joseph; Felten, Edward; Miller, Andrew; Goldfeder, Steven (2016), *Bitcoin and cryptocurrency technologies: a comprehensive introduction*, Princeton: Princeton University Press

³ Companies that are merely utilizing blockchain technologies as part of their businesses are excluded from the statistics of the whitepaper. 并不包含仅仅在经营中使用区块链技术的公司。

⁴ Primavera De Filippi, Aaron Wright, *Blockchain and the Law*, Harvard University Press (2018) P 204