

Beyond Technological Revolution: Block Chain, A Cognitive Revolution —A Case Study on Block Chain Development in China

Huang Yuan^{1,a,*}, Guan Bowen^{2,b,*}

¹International Business School, Heilongjiang International University, Harbin, China

²Institute of Atomic & Molecular Physics, Jilin University, Changchun, China

^ahuangyuan@hiu.net.cn, ^bguanbw18@mails.jlu.edu.cn

*Corresponding Author

Abstract: *Imagine one day, you can have safe transactions with anyone without trust them at first, you can put your savings in any bank safely without any trust in that bank, what are going to happen then? Will that definitely change this whole world? This is the ultimate mission of Block Chain development. As a revolutionary technical tool, block chain is sweeping all over the world rapidly. While, fintech attracts more and more attentions among the financial industry, by using AI, block chain, cloud and big data, Fintech affects traditional finance in many ways, no matter in traditional finance module, process, efficiency or service. This paper focuses on the development of block chain in Fintech companies in China, as well as the prediction of its development trend, including favourable conditions and unfavourable conditions. Combined with the empirical case study to analyse the development prospects of block chain in China.*

Keywords: *Block Chain, Fintech Unicorns, Block Chain Development in China*

1. Introduction

Globalisation ^[1] makes people's connection in this world more and more closer, big data makes people's life cross different countries more and more convenient. Together, globalisation and big data shape the world's economy and society. It is well known that, different economic entities emerged based on different continent, they benefit and rely on each other, namely, USA and Canada are leaders in North American part; UK, Germany and Swiss are leaders in European part; Japan, Korean, Singapore and HK, China are leaders in Asian part, as well as Australia is the leader in Oceanian part. According to The Global Financial Centres Index ^[2] from 2010 to the end of 2015, five years the world economy remains stable. The economy environment has little change in every part, New York is still the top leader in North America; London and Zurich are remaining the dominant position in European part; Sydney is always the pioneer of Oceanian part; Tokyo, Singapore, HK, China and Seoul are like 4 dragons in Asian part. However, there goes a proverb "a storm may arise from a clear sky," so it is the same that a country's fortune is as unpredictable as the weather. The world leading economic entities remain stable until the end of 2015. To start with North American part, at the end of 2015, Justin Trudeau overtook the conservative party, won the final election with his inspiring slogan 'Real Change' ^[3] which promised to lead Canada to move forward, and he did. From the end of 2015 till now, Toronto came back to world top 10 financial centres. Canada's financial environment becomes good and with foreign investors and more people putting money into Canada, it is getting bigger and bigger. While to the big brother USA, after Donald Trump won the election in 2016, many world famous financial centres are no longer shown in Top 10 list till now, no matter Washington DC, San Francisco or Chicago. What's more, the interesting thing deserves to mention is that, Canadian economy has not suffered a lot since Donald Trump has been in. However, till now, Donald Trump has not come to visit Canada yet since he won the election ^[4], which is very rare for an American president. And the North American Free Trade Agreement has not been resolved ^[5] and that could be a huge setback for Canada, Mexico and the USA all together, because the 3 countries rely on each other very much. Next step, let's come to the European part, PIIGs Problem in Europe haven't been solved yet, the unemployment rate and economy recession in Portugal, Ireland, Italy, Greece and Spain are still loaded and burdened. In addition, Swiss paid for a heavy price after Swiss National Bank unpegged Swiss francs in 2015, and it affect Swiss stock market definitely. Geneva gradually drop out from world top 10 financial centres, only left Zurich to maintain its economic power.

Moreover, UK citizens vote for leave from the European Union in 2016 and then several policies were issued to protect local British by controlling non-EU people's opportunities to work in UK. Though London still remain the top leader role in world leading financial centres, any effects to the European part's is still an unpredictable challenge. While, in terms of the Oceanian part, the labour cost in Australia is too high, too high to develop manufacture industry, too high to local people to have the desire for receiving higher education. The 3 booming industries in Australia are materials export, investment immigration and education industrialization. After Malcolm Turnbull became the Prime Minister of Australia at the end of 2015, he proposed to expand cooperation with China and make the best use of China-Australia Free Trade Agreement to achieve a win-win situation since the 2 countries have a very good relationship for quite a long time. Since the end of 2016, Sydney came back to world top 10 leading financial centres again. And some experts predict that Australia's economy may continue increasing in 2018. Last but not least, let's focus eyes on eastern world, Asian part. Singapore hold its "stand in the middle" beliefs as its political position, together with its perfect geographical location, Singapore was always leading in logistics, trade and tourist industry in the world economy. That's why the name of Singapore was always listed in top 10 world financial centres. Since the president of Korea Park Geun-hye was exposed to involving in a huge scandal which shocked Korean people and affected Korea's economy severely. From 2016 to now, Seoul was no long on the list of top 10 world financial centres. While, to the contrary, one of the neighbours of Korea-Japan, is always remaining the leading role in world economy due to its good relationship with USA and its incorruptible government. And China, in latest years, making every effort to develop endless energy to contribute to world economy by pushing Beijing and Shanghai becoming the top financial centres on the list.

2. Materials and Methods

2.1 The context of china's economic environment

From 1978 to 2015, through 37 years' fast development, China's GDP constantly growth 9.7% on average per year. In the year of 2010, China leapt to the second-largest economy after overtook its neighbour country Japan. From then on, China has becoming the focus of world attentions. From 2010 to 2012, a new shining name Shanghai which locates in southeast of mainland China appears on the list of world top 10 financial centres, together with the bone-deep regular leader Hong Kong. As time goes on, Beijing, as the capital which locates in the north part of China, didn't fail to meet the whole country's expectations, run into the world top 10 financial centres in the year of 2017. In addition, more and more Chinese companies are listed in the top rankings. In 2017 Fortune Global List, there are 20 Chinese firms on top 100 and 115 Chinese firms on Global 500. China, a country with ancient civilizations which has a long history of more than 5000 years, is becoming more and more stronger in recent years. The booming development of China attracts numerous attentions from every part around the world. The founder of Margaris Advisory Spiros K. Margaris, who is the top 1 of Global Fintech Influencer once said, "The popularity of fintech stems from its ability to solve major frustrations and inefficiencies that clients are having with traditional banking."

2.2 World-wide valuable fintech unicorns

Fintech^[6], as the name suggests, it is a combination of finance and technology. The emergence and development of fintech companies provide people faster, easier, cheaper and better financial services than traditional banks, that's why around the world, most areas are embracing the revolution of fintech. According to the CB Insights Data that were analysed by Accenture which is the top global professional services company. The data^[7] showing that in the year of 2016, there are 27 fintech companies are world-wide valuable. Among the 27 unicorns, most impact are from USA, there are 14 fintech firms on the top list that possess 31 billion US dollars valuation totally, including Oscar, Mozido, Greensky, Avant Credit, Kabbage, etc. The most competitive rival of USA is growing fintech firms from China, based on the figures provided, there are 8 fintech unicorns from China are listed on 2016 world valuable fintech companies, including ANT Financial, LU.com, JD Finance, Qufenqi.com, ZhongAn Insurance, etc. which possess 96.4 billion US dollars in total. Other threat entrants are other 5 fintech firms which locates in the rest of the world, 4 fintech companies are from Europe, namely, one is from Stockholm, Sweden called Klarna, which possesses 2.25 billion US dollars; one is from Amsterdam, Netherlands called Adyen, which possesses 2.3 billion US dollars, two are from London, UK, one is Funding Circle which possesses 1 billion US dollars, the other is TransferWise, which possesses 1.1 billion US dollars. The last one named One97, which is from New Dehli, India, possesses 4.8 billion US dollars. To sum up, In USA,

the 14 leading fintech companies possess 31 billion US dollars in total. In China, the 8 leading fintech companies possess 96.4 billion US dollars in total. In Europe, the 4 leading fintech companies possess 6.65 billion US dollars in total. In India, the one leading fintech company possesses 4.8 billion US dollars totally. In Fintech unicorns, the two leading markets are in payments and lending. Among the top 27 world valuable fintech companies, there are 7 fintech companies are doing payments, which possesses 56.1% of total valuation. And 8 fintech companies are doing lending, which possesses 21.9% of total valuation. And the growing space are big and wide since more and more young people are easily to adopt mobile payments nowadays and merchants are would like to try news ways in dealing with business. By analysing the CB Insights Data which provided by Accenture Company above, the most significant factor is that the 4 largest fintech companies which on the top world-wide list are all from China. Numerous reasons can be reached for this phenomenon, but the universal ones are as follows. On the one hand, China is a big country which has more than 724 million smartphone users, with the Internet coverage in more than 54.3% of the whole country^[8]. According to the Statistical report on the development of China's Internet Network, In China, nearly 514 million smartphone users will frequently shopping online using smart phone, such as shopping on Taobao or Jingdong, etc.; nearly 511 million smartphone users will choose to use mobile payments other than cash payment or card payment, such as using Alipay or Wechat pay, etc.; nearly 295 million smartphone users will order food online very often, no matter on Ele.me or Meituan, etc.; nearly 126 million smartphone users will do internet financial management using phones, etc. On the other hand, with the development of science and education in China, more and more young people would like to accept new things, adopt new ideas, follow new trends. Mobile payment is the most successful case which developed so well in China, especially among students and well-educated seniors. And P2P lending market provide young people more opportunities, it offers young people a chance to do whatever business they want and make a difference for the society.

2.3 The development of block chain

Talking about block chain, one term we have to mention is bitcoin^[9]. Bitcoin was first put forwarded by a brilliant Japanese Satoshi Nakamoto in his thesis Bitcoin: A Peer-to-Peer Electronic Cash System. It is an electronic currency that allows any people who never known each other to establish a reliable ledger. It was designed with different kinds of algorithms, which integrated with the knowledge of mathematics, finance and information technology. While electronic currency is only the tip of the iceberg. When mainstream media are busy predicting the value of electronic currency, cryptographers and engineers are busy developing a set of powerful technology prototypes which was originated from bitcoin, that is called block chain^[10]. In order to create the invisible and untraceable bitcoin, engineers integrate cryptography, game theory, economics and computer science all together, they succeed in creating a new tool to build the decentralization system. The technology used in block chain are derived from the technology used in bitcoin. At an earlier time, it didn't get enough attentions by most people. But now, it arouses all over the world's concentrations. It looks like an unexpected revolution occurs to the world suddenly without giving us enough time to prepare for it. Just like the well-known physicist Edward Witten once critiqued the String Theory, it should be a part of 21 century's physics, but it came across to the 20's century. In other words, at that time, the physics academic world was not ready for the String Theory, but it did appear. So, it is the same with block chain, it should be a part of 22 century's technology, but it come across to us, in the 21's century. Block chain is not a specific software, but a specific design thinking using advanced technology of algorithms and cryptography to create a sharing distributed data base which work as a ledger that can record all the information, so as to improve the transparency, safety and efficiency of each transaction^[11]. There are 2 types of block chain, public chains and private chains. Public chains are those open block chains which can be used by any participant around the world, while private chains are only used for specific participants, not everyone. Broadly speaking, private chains are also divided into 2 branches, consortium chains and private chains. Consortium chains are block chains used among united unions, which belongs to collaborative relations; while private chains in a narrow sense are only distributed record technology used for ledger. Typically, block chain is like a linked list, every block recorded all the transactions information and the cryptographic hash of its previous block. The hash is a professional term belongs to computer science which is widely used in algorithms specifically. The feathers of hash are effective, unchangeable and uncopyable. Thus, each block has the hash of previous block, they extend and stretch a chain, called block chain. The distinguished points of block chain are decentralization^[12] and transparency which will improve the efficiency and guarantee the safety of any transaction.

To explain the operation of block chain in a sequence orders, firstly block chain is a type of data base, which the copy of this data base is kept with several nodes or in different places; secondly, block chain can record transactions between two or among more participants; thirdly, block chain consists of

numerous blocks, each block consists all details and information of every transaction, such as price, contract, buyer, seller, etc.; fourthly, the block chain will identify each transaction valid or not by combining the common transaction information with the unique encryption verifications of related participants, if all the data nodes were written and shown as the same result, then the transaction is valid; lastly, any new transaction details of every person on each block will all be added to the previous block, and together it forms a block chain.

To make it simple, the essence of block chain is a ledger, it combines every block into one chain. And block chain technology is a way that all the people participate in keeping account. It solves the problem of intermediary trust among strangers. Hence, block chain, as an advanced technology combing with information and computer science, the development space of block chain is widely and hugely. Put bitcoin on one side, focus on the concept of internet of things, the potential ability of using block chain in different industries will have a powerful and bright future.

3. Case Study

When it comes to the Big 4 largest Fintech Companies around the world, they are all come from China. Another interesting thing is, the Big 4 are located in an equilibrium way in mainland China. Two are in the north part, two are in the south part. The Big Brother is ANT Financial which founded in 2014 and locates in Hangzhou, it runs Alibaba's Alipay, which possesses 60 billion US dollars valuation and ranked at the top 1 among Fintech companies all over the world. The main products of ANT Financial are Alipay, Ant Fortune, Zhima Credit and Mybank. Among these, Alipay is the most popular trend and payment method in China. It is one of the most convenient way of making a payment, no matter using a smartphone or a computer. It can be used widely, no matter one's shopping on Taobao, or off-line stores, supermarkets, restaurants, taxis, hospitals, paying for bills, repay credit card, collecting money, person to person transactions, personal financial investment or anywhere only if the buyer and the seller have an Alipay account. The prevailing usage of Alipay do affect traditional bank's business in China. Lots of people don't put money in the bank anymore, they transfer money through Alipay to Yu'e Bao which is an online money market fund also belongs to Alibaba, since the interest rate of Alipay is a bit higher than traditional bank's interest rate^[13]. The second one is Lu.com which locates in Shanghai, under the strong supporting with Shanghai government, Lu.com was founded in 2011, which belongs to a member of Ping An Insurance (Group) Company of China, Ltd. Now, Lu.com is a global internet wealth management platform which combines global financial development with information technology innovation. The main services are lending, crowd-funding, stock and financial products. Based on Ping An's strong strength and advanced risk management system, Lu.com provide professional, reliable medium or small enterprises financing and investment services, to help medium or small enterprises realise convenient lower cost enterprise financing and wealth value added. In addition, the management system of Lu.com makes the most use of big data technology, machine learning and intelligent recommendation service. Till now, Lu.com has its registered members more than 30 million people and it possesses 18.5 billion US dollars in total. The third one is JD Finance, which locates in the capital Beijing, possess 7 billion US dollars valuation. JD Finance belongs to JD.com, which is China's biggest self-operated electronic commerce B2C platform. JD Finance provides online financial services to their consumers including fund management, regular financial management, gold management, JD electronic coin, JD co-branded credit card, crowd-funding, insurance, JD pay, stock, etc. It aligns with many influential mass media to promote their products, services and brand building. The most convenient way is, for all customers who shopping online on JD.com, they can use JD co-branded credit card to get credit scores according the amount they purchase on JD.com, or customers can use JD electronic coin which have the equal value as Chinese dollar to save lots of money when shopping on JD.com, or use JD pay to get random discount when they check out. And JD provides an advanced method called JD BaiTiao to attract more customers that people can do shopping first on JD.com without payment, customers can pay in full for JD in the future 1 month, or choose different instalment methods to pay for products when shopping on JD.com. Till now, JD Finance is becoming the competitive rival of ANT Financial. The little brother among the Big Four is called Qufenqi.com, which also located in Beijing and was founded in 2014. It is a financial service platform that have the precise customers segmentation. At the beginning stage of Qufenqi.com, the college students are its target customers. They encourage college students to be an entrepreneur in free time by using their platform called Qudian, any college student can open an online store on Qudian by using their student information to register, according to different credit and educational level, Qufenqi.com will lend students several money to run for an online shop and Qufenqi.com don't charge for commission from student's online shop at the beginning period. Then, at the second stage of Qufenqi.com, they turn target customers to those people who do not own a credit card, by statistics

investigation, there are nearly 50 million people in China who don't own a credit card, so Qufenqi.com are offering consumer finance business now for those people who do not have a credit card. Such as, they provide instalment shopping plan service on their online store, etc. The successful market segmentation lead Qufenqi.com to the top fintech firm, which possesses 5.9 billion US dollars in total valuation. Since China's market are achieving to the peak of fintech development, world-wide leading fintech firms are all looking for the next battlefield. Located in the southeast part of Asia, there is a socialist country, it quite close to the South China Sea, with more than 92 million multinational citizens, it will become the next battlefield of fintech that all world top fintech unicorns are scrambling to occupy the market, it is Vietnam.

In Vietnam, there are more than 30 million smartphone users, and the Internet coverage are nearly 52% of the whole country. It will definitely become the next gold land that tempts all over the world's top fintech firms [14]. In September 2017, Samsung cooperated with the National Payment Corporation of Vietnam, to promote and develop Samsung Pay. Till now, there are already 7 banks in Vietnam to accept Samsung Pay. Recently, ANT Financial have signed a cooperative agreement with NAPAS also, mainly to offer Alipay for Chinese tourists who are planning to travel to Vietnam. By hearing the grapevine, Apple will push Apple pay in Vietnam market in the near future. The chairman of NAPAS Pham Tien Dung supported the development of electronic payment in Vietnam since e-payment will improve the convenience and safety of doing business compared with the traditional payment methods. Thus, Fintech, as a shining and bright industry, first appeared and developed in USA, spread to Europe, further developed in China, and will continue booming in other promising countries including Vietnam. Fintech will certainly be the future trend and will definitely change world-wide consumers behaviour sooner or later.

While, as a revolutionary technical tool, block chain is sweeping all over the world rapidly. Nasdaq, Goldman Sachs, Citibank, Morgan Stanley, United Bank of Switzerland, Hong Kong and Shanghai Banking Corporation Limited, Barclays and other large cross-country financial institutions all focus on it, racing against each other. In terms of the status of block chain development in China, though it starts later than USA at the beginning time, the increasing devotion and huge investment of block chain development by Chinese government are strongly supported. In order to learn from each other and make great progresses, at the early of 2016, ChinaLedger, as a blockchain consortium was founded, which nominated Wanxiang Blockchain Labs as its secretariat, allying with several strong capable members including Juzhen Financials, All in pay, China Banknote Printing and Minting, Shanghai equity exchange, Zhejiang equity exchange, etc. Until the end of 2016, based on incomplete statistics, there are 54 block chain start-up companies in mainland China, specifically, 27 companies are located in Beijing, 10 companies are located in Shanghai, 6 companies are located in Hangzhou, 4 companies are located in Shenzhen, 2 companies are located in Jiangsu Province, 2 companies are located in Jiangxi province, 1 company is located in Guangzhou and 1 company is located in Chongqing. From the figures above, Beijing has the most block chain start-up companies which indicates that, Beijing is not only the political and cultural centre, but also the technological centre of China. Among the 27 block chain companies in Beijing, there are 7 companies get the favour from venture capital. And in Shanghai, though in the competition of 2016, it falls behind Beijing, in the next following year's competition, the energy and power from Shanghai block chain companies cannot be neglected. Among the 10 block chain companies, there are two top leaders in block chain development. One is called Juzhen Financials who got 150 million Chinese Dollar financial funding which break through the record of highest financing funding in Asia. The other is called Wanxiang Blockchain Labs, which is the first non-profit research organization in China that devote to offering support for entrepreneurship, research and applications in industries and aim to explore how block chain technology will contribute to the development of economy and society. While the year of 2017 is the significant year for all Chinese block chain researchers that The People's Bank of China established The Digital Money Institute in Beijing formally, it marked that from then on block chain technology is entering the real application phase. The usage of block chain technology in China are already working in financial fields now. For example, Dianrong has already set up a block chain platform which engaging in lending to middle and small companies, the results indicated that within 6 months, Dianrong has lent 45 million Chinese Dollar to its customers; China Merchants Bank has already applied global cash management such as block chain cross border Chinese dollar trade settlement; Zhejiang Bank has already use block chain moving digital bill of exchange; both JD and Baidu have already put its own platform of asset-backed securitization on line, etc. There are many other fintech firms are currently exploring and experimenting the usage of block chain technology in widely fields, such as in cross-country finance, insurance, supply chain finance, asset-backed securitization, etc. The application of block chain technology was no longer belongs to the future, the time of block chain is coming!

4. Discussion

4.1 Both opportunities and challenges of block chain development

Nowadays, there are 2 leading consortiums around the world ^[15], one is R3CEV, the other is HyperLedger. R3CEV is a consortium within the financial industry, which consists of over 70 global leading financial institutions such as Morgan Stanley, Bank of America, Royal Bank of Canada, HSBC, Commonwealth Bank of Australia, Royal Bank of Scotland, Barclays, etc. to develop the application of block chain in financial world. While HyperLedger is another international consortium that aims to use block chain technology cross different industries, their premium members including Accenture, Airbus, American Express, Baidu, Cisco, Fujitsu, IMB, Intel, J.P.Morgan, etc. There is no doubt that the application of block chain will change people's life in many aspects. It will create more chances for a few new emerging industries, on the other hand, it will threaten the stable position of some traditional services ^[16].

First and foremost, the application of block chain will create a new market that is good for sharing accommodation industry. With the booming development of collaborative consumption, such as Airbnb, HomeAway, etc., many people would like to book accommodation on those websites other than traditional hotel. Since block chain technology can save and integrate customers' online transaction information, using block chain on sharing accommodation industry will keep all the customers' information safely, check messages and payment verifications efficiently and establish mutual trust among different people when booking an accommodation. This will optimize the transaction process, strengthen the quality of record histories, save lots of time for customers and also for accommodation hosts. Thus, to some extent, the application of block chain in this sharing accommodation area will threaten the traditional hotel industry effectively. In addition, the application of block chain will destruct and reconstruct market with an innovative way in smart grid industry. Such as TransActive Grid. By using block chain technology, it offers transaction abilities for decentralized energy market. To explain it specifically, block chain could connect local energy producer with local consumers, for example, if your neighbor who own solar panels, it will make distributed energy trading market possible. It provides people more choices when choosing energy usage other than the single choice. Moreover, block chain will force existing energy market to be more safety and irritate the advanced application of smart grid technology. So, to this point, some public service companies will be severely threatened. Moreover, block chain will optimize the existing market in real estate industry, using block chain to record all the information of real estate properties, it will improve efficiency and reduce risks, on the other hand, people who engaged in property insurance are more easily to get all needed information which will help to liquidate the property rights. What's more, block chain has the capacity of resisting disturbance that will help to reduce the problem of fraud in new emerging real estate market. Thus, it will be a strong impact to those people who are doing traditional real estate and property rights insurance. Furthermore, block chain application will help to save costs ^[17] in financial market. It will shorten the settlement time, or even realize global real-time settlement one day. And it will also reduce energy of checking account, save operation costs and avoid middlemen or agents, because using block chain can save account information and transaction details that will strengthen the quality of data, make transactions more transparent and efficient. It will threaten traditional trading business, especially those business relied on middleman or agent service. Last but not least, the application of block chain can be used in numerous fields, the most cutting-edge application is definitely in fintech companies due to the benefits of disintermediation and cost reduction ^[18]. However, each coin has two side, widely usage of block chain is just like a double-edged sword, it provides both opportunities and challenges.

4.2 Future trend of block chain applications in china's fintech

In China, in the latest years, the development of Fintech is so fast, one of the important reason is, during the development process, the data which related to internet applications and which related to financial platform are both connected and open to each other, objectively, this will benefit the rapid development of fintech. Nowadays, fintech are mainly take an active part within 5 fields which covering 6 ranges ^[19] in China. The 5 fields are traditional financial institutions, internet institutions, new emerging internet finance, communication institutions and infrastructure. And the 6 ranges are covering internet payment, internet lending, crowdfunding, internet fund selling, internet insurance and internet consumption finance. With more and more new fintech entrances are competing in developing block chain usage in China, it has formed a trend in some burning fields of block chain applications and practice, and the typical features ^[20] can be summarised as follows.

To start with, some fintech firms are focusing on using block chain in supply chain tracing. Let's take the traditional supply chain of vaccine in China as an example. Typical way of supply chain operation cannot be controlled by one company, during the process of vaccine supply chain operation, all data information is recorded one by one, from regulator authority to manufacture, then to cold chain in the middle, and then to community hospital and at last to target consumers. If during the whole process, some problems occurred, there would be a huge cost to find out who is to be blamed, who has to responsible for this incident. While, by using block chain technology in supply chain tracing, all data and information are transparent, all staffs during the vaccine supply chain process will record all the details step by step using their own unique encryption verifications. Thus, once problems occurred, it will be easier to investigate and call to account. In addition, the application of block chain in stock transaction is hitting. Some fintech firms are keen to create a transparent stock trading platform now. Due to limited research data and materials are revealed of several non-listed companies, it will cause the information asymmetry between investors and companies, such as some investors would like to invest but cannot find a proper company; other company would like to get the financial funding but cannot find a platform to show its capability; a few Pre-IPO companies plan to leave the market but cannot find a way to turn stock options into cash, etc. Thus, based on numeral demands, many fintech firms are now using block chain to develop transparent platforms for those people who engaged in stock and share transactions, to provide an equal and transparent platform for the people, to help targeted companies to public their data and information, to gain the trust and establish a good relationship with those potential investors, so as to utilize the efficiency of financial funding allocation within the whole society. Moreover, some fintech firms are concentrating on block chain application to asset entrusting management. Considering the institutional collaboration and business process interaction, the proper model of asset entrusting management is using consortium block chains, which needs the mutual cooperation between trustee industry and trustee-manager industry to establish the consortium chains together. On the other hand, in the OTC (Over-the-Counter) market, which freedom in that market is relatively high, it is difficult to achieve a common standard. All participants in OTC market are likely to choose off line complicated processes to make sure a transaction is reliable, so it rises the cost of trustee-manager industry directly. Thus, by using block chain technology to replace the traditional off-line processes, it will help to reduce the labour cost in trustee-manager industry. Last but not least, using block chain technology in capital settlement is still booming. Due to the development of internet technology, the settlement method has achieved great progress, the speed of settlement has realised real time settlement within the same country using the same currency. However, when people do settlement cross a country or to another currency, it is still limited due to several restrictions, the speed of cross-border and cross-currency settlement are not efficient. Thus, more and more fintech firms are eager to improve the efficiency of settlement. By using block chain technology, it will reduce the middle process, save the transaction cost, increase the settlement efficiency, simplify the manual financial service process, etc., not only can improve the safety of global settlement, but also can flatten the global settlement process, so as to make global real-time settlement come true in the near future.

5. Conclusion

Though block chain is a fever that prevailing across China, numerous engineers, researchers, businessmen or even speculators are crazy about it, it still has some uncertainties that no one can guarantee whether it is a bubble or not. A few considerations of block chain applications in China have to be listed. First and foremost, during the discussions about block chain applications, enterprises are most concerned about the cost of block chain applications including the cost of time and the cost of labour, together with several worries about risk management of the application of block chain. So, what is the cost of block chain applications for new entrances? How can companies manage risks when using block chain? What's more, as the essence of block chain are transparent and data sharing ^[21], to some extent, it would become sensitive in many business fields. While building trust and decentralisation by using block chain is a good thing for transactions, but how to protect the business privacy and how to control the operation permission when using block chain are two burning questions that deserve a good solution. Furthermore, imagine if you save a car on the block chain as your personal smart property, one day you lost the "private key", then all the data on block chain won't certify your identity, that car will no longer belong to you, it will become a meaningless thing, and you will never get your personal smart property back. So, the safety of the "private key" is an issue that deserves highly attention. In real business world, all participants cannot use a set of out of order mixed characters as username and password, thus it needs a safe and reliable "private key" method to solve and guarantee the safety problem. Hence, how to guarantee the safety of using block chain? Last but not least, the application of block chain is still out of the scope of the protection by laws. Till now, Chinese government hasn't issue any related laws and

regulations regarding of block chain applications, once incident happened after using block chain application, there will be a long way for companies to seek the protection from legal procedures.

From the discussions above, risk, safety, rights and protection are 4 key considerations of using block chain. While it is just like the two sides of everything in this world. When we enjoy the benefits and priorities of it, at some time, we have to pay for the consequences of falling.

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