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FinTech: Its Characteristics, Problematic Issues, and Potential in Asia

A study of blockchain, the technology behind bitcoin

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It has been a while since the term 'FinTech' has been covered by the media. FinTech, which can be defined as either the integration between information and communications technology (ICT) and finance or a new IT-based type of financial services, has been continuously spreading swiftly across the globe from its origins in Silicon Valley, and even penetrated to various non-financial industries. This report explains what FinTech is and its utilization in Asia.

1. FinTech offers a return to first principles

FinTech is attracting attention as an antithesis to the large-scale, equipment-intensive modern finance. Its characteristic can be summed up as a 'back-to-basics' approach.

One typical example of FinTech is crowdfunding. To illustrate, there is a well-known mechanism where people planning to manufacture new consumer goods (such as clothes and groceries) raise their manufacturing costs online from future purchasers. Though it seems to be a most modern method making use of the current internet culture, the basic idea behind it is actually quite classical. For example, the same mechanism was used for selling custom-made anime and game figures during the times when Tokyo's Akihabara district turned from the town of electric appliances to the anime mecca. It was realized because a large number of makers (the 'electric geeks' who are expert in figure-making with piles) and anime fans concentrated in the same area. In a broad sense, such examples are regarded as built-to-order manufacturing, which has occurred throughout the economic history in places where many people gather.

Another example is bitcoin and the supporting blockchain (distributed ledger) technology. In contrast to crowdfunding which is utilized more for pre-financing or start-up financing, bitcoin has been focused by central

banks and central securities depositories (CSDs).

Then, what is the nature of bitcoin? As defined, it is a 'virtual' currency, which is not officially issued by any state or central bank. This implies that official currencies should not be virtual. But is this the case? For the larger part of the history, currencies had been real objects (such as grain, cloth, gold and silver) with no connection to the states. Japan's paper currency still relied on underlying gold stocks for its value less than 100 years ago, while the U.S. dollar (the international settlement currency) unpegged with gold only less than 50 years ago. We are now used to using unconvertible paper currencies like the dollar and yen, but from a historical point of view, perhaps these deserve to be called virtual currencies as well.

In fact, bitcoin qualifies a currency as well as gold does. Gold's credibility as a currency does not directly come from its shininess, but from the fact that such shininess made its value universally accepted, which enabled its circulation. Although bitcoin is not shiny, it has already been recognized and circulated across the globe. Such fact makes bitcoin as qualified as gold to be a currency.

Another feature of gold is its invariance. This gives it a huge advantage as a currency compared to grain, cloth or silver. For bitcoin, it is just some simple data on a computer network that record transfers from one party to another. Such data originally had a precarious existence and could have disappeared at any time. However, with the advent of distributed ledger technology, the data can no longer be reversed. Therefore, now we could say that bitcoin has the same qualification as a currency with gold.

The nature of bitcoin is that it is a currency that harks back to the era of gold, when there was no necessity for central banks. It could potentially have a huge impact on the existing currency system, and naturally central banks take a great interest in it.

2. The fundamentals of bitcoin technology could be shaken by moves to tackle the issues of confidentiality and governance

It is not clear what each central bank thinks about this distributed ledger technology. They will probably announce their opinions from here on. On the other hand, two organizations have actively commented on this issue: The Society for Worldwide Interbank Financial Telecommunication (SWIFT) and the European Securities and Markets Authority (ESMA).

SWIFT is an organization that provides inter-bank telecommunication and ESMA is the European regulatory authority of securities rather than currencies. The regulations for fund settlements and securities settlements are similar in many ways, and central banks will probably introduce similar rules for virtual currencies. From this point, the views of SWIFT and ESMA are worth paying attention to. Both organizations have released a summary of their opinions on the matter. These reveal what the regulatory authorities in the U.S. and Europe see as problematic issues regarding bitcoin and distributed ledger technology.

The first issue raised by both organizations was the lack of confidentiality. In many countries, including Japan, personal bank account balance is protected as personal information. Corporate account balance is also treated as non-disclosed information and account management institutions are generally obliged with data Protection. In contrast, the core of distributed ledger technology lies in its transparency and irreversibility. As there is no centralized management authority, mutual supervision becomes a prerequisite for such technology. This is why transparency is a necessary fundamental rule of distributed ledger.

This does not mean measures cannot be taken. A variety of distributed ledger technologies are under development and there are some products that boast their ability to provide data privacy through encryption. However, some say encrypted distributed ledger should be regarded as a separate technology with the supporting technology of bitcoin. This is because these technologies cannot take on the credibility built up by bitcoin and it is challenging to put them into use.

ESMA has raised another concern with regard to the possibility of conducting legitimate audit in encryption. The encryption of distributed ledger would entail the encryption of all ledgers throughout the globe. As a result, statuary books that require auditing would be turned into sequences of encrypted characters. In Japan, indecipherable sequences of characters are not recognized as deposit ledgers or transfer books.

Another issue raised by both organizations is the lack of governance. It is understandable that ESMA, a regulatory authority, would press the issue of governance, but to explain the kind of governance that SWIFT, an organization established by private banks, appeals, an explanation of the background behind SWIFT's rise is needed.

The rise of SWIFT can be explained by the shift to standardized formats. In the era of Telex, it was the rookies' job in banks' foreign exchange departments to sort Telex messages received in the early mornings. They had to read the Telex and instantly make a judgment about whether it was an import/export shipment, an L/C, or merely a notification of a documentary bill, and then journalize the messages. The job was quite an annoyance, but this labor was removed instantly with the introduction of the SWIFT system. There was no longer any need to print out telegram messages because the messages were automatically input into the system in the form of data. The standardization of telecommunications became even more important with the release of a G30 recommendation in 1989. This was because automatic checking and delivery-versus-payment transactions recommended by the G30 would have been impossible to realize without SWIFT standards. In order to become a global standard, SWIFT developed a framework for gathering and integrating opinions from financial institutions across the globe. This is probably what SWIFT means by governance.

The opinions of both organizations, put together, requires data protection and governance be introduced to the world of distributed ledger.

ESMA believes that if distributed ledger technology was to be used as an alternative to securities infrastructure, it should fall under current regulations; while SWIFT says the SWIFT Network should be used because data standardization requires integrity checks on telegraphic data.

If either of these opinions is taken on board, distributed ledger technology will probably lose a lot of its advantages of inexpensiveness and convenience. If things continue as they are, distributed ledger technology may well fizzle out without achieving its potential.

3. Different possibilities with the Western World are arising in China

This January, it was reported that the People's Bank of China (PBOC) was looking into developing its own virtual currency. This is because it wants a virtual currency it can regulate, which is not the case with bitcoin. The news raised a lot of questions. A currency becomes a currency if a state says so. We are no longer in the era of the gold standard. So why describe such a currency as 'virtual'? Also, if people use bitcoin because they want to avoid regulation, why would they use a virtual currency that is regulated by a state? Who would use such currency?

However, it is understandable if the PBOC's aim is to create a currency for international settlements. China cannot just invent a currency for international settlements. However, bitcoin has the same qualifications as gold. Perhaps it would be possible to create something like the Special Drawing Rights (SDRs) created by the IMF in 1969. The credibility of SDRs lies in the support of IMF, an international body set up by the U.S. and Europe, but it might still be possible to create a new virtual currency using bitcoin technology just as good as the SDRs. This thinking is very close to the idea proposed by China in 2009, to create an SDR bond market and shift the international currency system from U.S. dollar based to SDR based.

It is also possible for China to use distributed ledger technology in its domestic securities settlement system. For example, the Japan Securities Depository Center (Japan's CSD) only handles the proprietary accounts of directly-participating account management institutions in which sales companies record their own beneficiary rights and customer accounts. The CSD only monitors the balances of account management institutions and customers. On the other hand, in China, the China Central Depository & Clearing Co., Ltd. (China's CSD) prepares accounts for final investors. The main merit of this approach is that it allows the CSD to regularly monitor customer balances, and an attached merit is that it eases the system investments of investment banks, etc. We previously explained to the CCDC the western structure with divided roles of the CSD and account management institutions, but could not get any consent. It seems the Chinese authorities strongly believed that the CCDC should gain a picture of ledgers up to the level of final investors.

At first glance, this way of thinking seems incompatible with distributed ledgers, which treat all ledgers equally, but such equality could just be a

matter of system framework. For example, if the law states that only CSD ledgers are originals, with the ledgers of account management institutions regarded as duplicates (copies), it will be possible to create a system very close to China's existing structure.

However, there is an issue of privacy related to personal data protection laws, etc. Privacy could be ensured by encryption, but there are few examples of this actually happening. There are also governance issues related to the difficulties of auditing, etc. What if users actually prioritized convenience and economic rationality over the protection of personal information? Bitcoin is actually operated based on this premise. If China allowed it with state power, China could construct a convenient securities settlement system. Up until just ten years ago, Japan had a high-income taxpayer disclosure system paired with the third-party reporting system. Even now, the assets of politicians are disclosed as a general rule. It is highly likely that China and other Asian countries will propose next generation post-trade systems that utilize distributed ledger technology.

How about the response of the developed countries of the West? If a highly-efficient post-trade system utilizing distributed ledger technology was shown to have an overwhelming advantage in terms of economic rationality, it would probably be adopted in the West as well. This is because markets develop by competition, so a post-trade system that radically cuts costs would prove very attractive. Furthermore, anonymity could be preserved using fund technologies, etc. Even today, Japan's shareholder registries reveal that most overseas shareholders who account for over 30% of the aggregate market value are global custodians or funds. There is no absolute reason why anonymity cannot be preserved.

4. The technology could also be used in the Japanese market for securities settlements

How should Japan deal with distributed ledger technology?

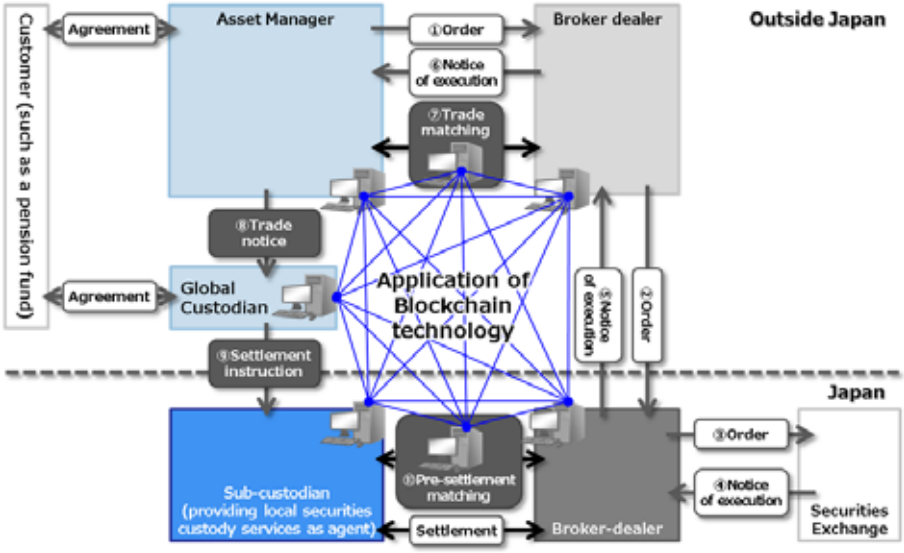
Japan does not have any ambitions or any incentive to create a 'new gold' or 'new SDR' in opposition to the Western World. Thus it seems Japan could discuss using the technology as a virtual currency for account management not involving the yen, dollar or euro, or for tradable prepaid service points. In the end, it shall depend on the cost whether distributed ledger technology or the existing server management system should be used.

On the other hand, the technology holds a lot of potential when it comes to securities settlements. However, it would be difficult to introduce the technology as virtual securities. With overseas investment accounting for over 30% of aggregate investment in Japanese stocks, there is a standard just as strict as the western standards for privacy and governance. Japan's CSD has been totally electronic in the first place, with no reliance on securities. If virtual securities are defined solely as electronic balances, then Japan already has such a system in place.

The emergence of naturally-occurring currencies like bitcoin and gold is very

unlikely when it comes to stocks and other securities. Stocks are expressions of shareholder rights, as set down in corporate law. They only gain significance when they are issued by a company; third parties with no relation to the company cannot simply create value by issuing stocks by themselves. Therefore, if distributed ledger technology is to be adopted, the key question in Japan would be how to make it consistent with transfer laws. Trials have already begun into the development of low-cost and low-risk cross-border securities settlement systems utilizing the blockchain, and implementation could be expected at some point in the future (Fig. 1).

Fig. 1: Flows in new post-trade settlement process for cross-border transactions



Source: Press release "Mizuho bank and Fujitsu Trial Blockchain to Streamline Cross-Border Securities Transaction Settlements" on March 8,2016