HKUST IEMS
INSTITUTE FOR EMERGING MARKET STUDIES

SUMMER 2024 **no.86**

iems.ust.hk

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THOUGHT LEADERSHIP BRIEF

Blockchain Adoption in China's ABS Market: Efficiency and Governance Implications

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KEY POINTS

- Blockchain technology has experienced significant growth alongside the rise of cryptocurrencies.
- However, little empirical examination has been conducted to determine if blockchain truly delivers benefits or introduces new risks.
- Concerns include potential collusion among participants and the exploitation of blockchain's illusory reliability for fraudulent activities.
- ABS refers to asset-backed securities, which are securities backed by a pool of assets like loans.
- We analyze whether blockchain adoption in China's ABS market improves transaction efficiency and transparency while considering potential weak governance and market efficiency in pricing such complexity.
- We found that adopting blockchain significantly reduced ABS yield spreads though the benefits varied and were greater for opaque assets regulated by one of the two major China's regulatory bodies compared to other asset classes and regulators.

ISSUE

Blockchain technology has grown rapidly over the past decade along the rise of crypto assets. There has been a great deal of excitement as well as scepticism regarding the impact of adopting blockchain in business operations, particularly financial services. Although the technology is still far from fulfilling those ambitious goals such as person-to-person payments, the adoption of permissioned blockchain became prevalent in trade finance, clearing and settlement to improve transaction efficiency and transparency. For example, the Australian Securities Exchange collaborated with Digital Asset to develop a blockchain-based post-trade clearing and settlement system. Five leading commercial banks including Hong Kong and Shanghai Banking Corporation and Standard Chartered Bank in Hong Kong SAR also adopted a blockchain platform developed by Ping An Technology to streamline credit loan applications among the participant banks.

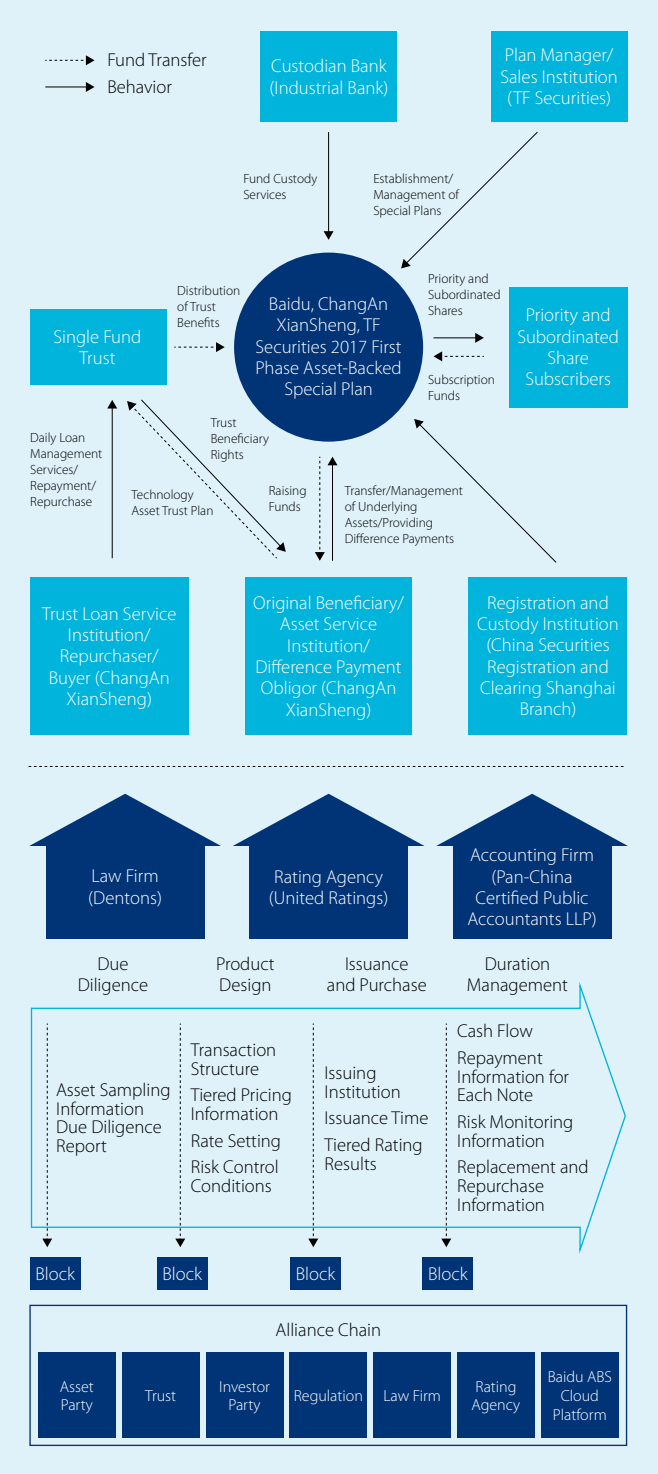
While the adoption of blockchain technology by the financial sector is promising, little has been discussed, let alone empirically examined, whether the novel technology truly delivers the benefits or even ushers in a new risk arising from the potentially overrated sense of security. Indeed, both economics and legal literatures have suggested that permissioned blockchain may be subject to potential collusion among participants and in extreme cases, encourage such behaviour with a better cover than before. For example, accounting professionals worry that potential fraudsters could exploit the illusory reliability of blockchain in terms of data collection and verification to collude with confederate "third" parties.

In this paper, we analyse two sides of the same coin, namely, whether the adoption of blockchain technology improves efficiency and transparency of financial transactions; more importantly, whether the potential weak governance in terms of social interactions among participants generates an illusionary sense of reliability; and finally, if the market is efficient, whether the market can understand such complexity and price it in. Our study builds upon several streams of literature: the narrowly defined ABS literature, the literature on tech adoption in finance, and the literature on sociological view of economic transactions.

ASSESSMENT

We analysed approximately 5,000 asset-based securities, ABS, deals or 14,000 tranches launched between 2015 and mid-2020 in China. In our empirical analysis, we consider only the following four types of ABS product where blockchain technology has been used for a fair comparison of the effect of blockchain adoption: RMBS, auto loan ABS, consumer loan ABS and account receivable ABS. In total, we gathered approximately 5,000 ABS deals with more than 14,000 tranches from WIND. The total market value of those ABS deals exceeds CNY8 trillion. Blockchain-based ABS products account for approximately 5% of all ABS products. See figure 1 for a visual illustration of a blockchain based ABS.

Figure 1. An Illustrative Example of a Blockchain-based ABS



Source: PKU Case, "The Application of Blockchain in Baidu's ABS Business", 2021

Our key dependent or outcome variable is yield spread, expressed as the difference between the coupon rate of one ABS tranche and a benchmark rate, which is the Chinese government bond yield with a similar duration. The smaller the difference, the better the ABS pricing. Since the differences vary drastically across ABS deals, we therefore take a natural log of such percentage differences to minimise the skewness of distribution.

Blockchain

We construct a dummy variable which takes value 1 when an ABS is issued based on blockchain technology, and zero otherwise. We gather qualitative evidence from various sources to determine whether a focal ABS is blockchain-based or not. We first comb the data downloaded from WIND to identify names of the originators and underwriters. We then search key words such as blockchain and ABS among corporate news or annual reports of public firms or banks. We also triangulate our search results with other sources of information such as analyst reports, teaching cases and white papers issued by major technology firms.

Prior shared experience (PSE)

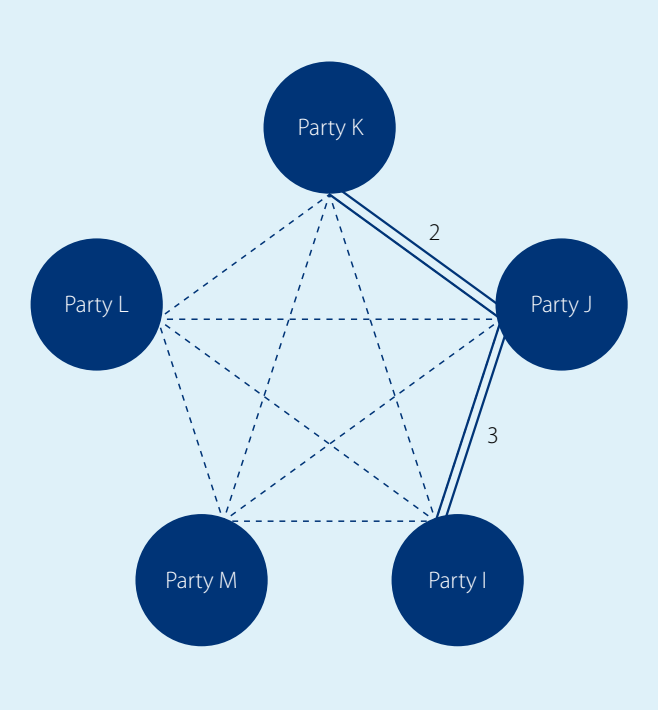
We measure PSE using a relational dyadic network approach. In particular, we consider all possible dyads consisting of two parties among N parties in an ABS deal (eg, issuer, auditor, rating agency, etc), count the number of prior joint transactions for each dyad and calculate the average number of transactions across all dyads, which is the PSE score. Figure 2 provides a visual representation of how we calculate the PSE score.

To address potential endogeneity, we adopt a coarsened exact matching (CEM) approach to filter our sample observations. CEM is a matching method to deal with endogeneity commonly observed in archive-based studies. CEM essentially matches each treatment observation (i.e. a blockchain ABS deal) with one or several comparable control observations (i.e. a non-blockchain ABS deal) on several key visible dimensions such as the total amount of principal. We also separately consider trading in the primary market and that in the secondary market. Like IPO in stock markets, an ABS deal is often traded more actively at issuance or in primary trading.

IMPLICATIONS

Our study finds that overall blockchain adoption significantly improves ABS pricing as the conventional wisdom predicts, as adopting blockchain is indeed associated with a better yield spread for ABS products. Specifically, the yield spread by approximately 25 basis points and that this benefit is heterogeneous across the different underlying asset classes and institutional arrangements but remain relatively the same across primary and secondary trading. This effect is robust to several model specifications. Moreover, the blockchain effect is heterogeneous across different institutional arrangements and asset classes.

Figure 2. An Illustrative Example of PSE Measurement



Notes: Assuming that an ABS deal involves five parties (ie *I, J, K, L* and *M*), we have 10 dyads or links. In this example the dyad ***I-J*** has three prior transactions, the dyad ***J-K*** two prior transactions and the other dyads zero prior transactions. Then, the PSE score, a measure of familiarity for this group of parties, is (3+2)/10=0.5.

It is also worth noting that the blockchain adoption effect also varied depending on whether the deals were under the purview of the CBRC or CSRC, two major financial regulatory agencies in China that oversee different segments of the financial industry.

Specifically, the effect becomes more valuable under CSRC regulation for those opaque assets, another prediction compatible with information asymmetry arguments. Interestingly, social embeddedness or familiarity among key parties involved with an ABS deal plays a subtle role: when combined with blockchain adoption, the same familiarity becomes more beneficial to less opaque ABS deals which are subject to CBRC regulation but more costly to more opaque deals under CSRC regulation. This dual effect of social embeddedness and exactly how key parties negotiate and coordinate on issuing and pricing blockchain-based ABS suggests that market participants may view the combination of technology adoption and its social environment holistically instead of viewing the technology as universally beneficial. This subtle effect is worth more academic examination and attention from policy makers, especially regulators who are in charge of designing market regulations.

This paper is supported by the HKUST IEMS Research Grants.

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