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Blockchain: Coming to a CMBS Near You

By Jason A. Nagi

Written language was first used for one thing—a ledger. The oldest samples of writing discovered are from the City of Uruk in ancient Sumer and involved lists of items.¹ And the first use of encryption dates back nearly 4,000 years, used by an Egyptian scribe.² These tools are now so commonplace they are not even deemed technology. But they revolutionized the way humans interacted, allowing for planning, simplifying trade and improving our lives in the process. **Blockchain – an amplification of both of these now mundane, but formerly revolutionary tools – has the potential for simplifying and improving trade and the transfer of, and access to, data.**

Not long ago, in a joint project with various industry groups, Deloitte stated: “The global financial system is betting on blockchain technology to revolutionize many aspects of its business, and we believe that securitization, and in particular the securitization of mortgage backed loans is one of the areas in the capital markets that could most benefit from such transformation.”³ Although at first glance the underlying technology behind Bitcoin and mortgaged backed securities have little in common, blockchain technology has the potential to revolutionize securitizations because it permits value and information to be securely stored simultaneously, in multiple locations, and transferred without the use of an intermediary.

By diminishing the need for an intermediary, reducing the risk of data being compromised and making the process more efficient, Blockchain technology holds tremendous potential for securitizations. For example, if all borrower information was securely on a blockchain, every securitization participant would be allowed access at the pre-securitization stage, accelerating the bond issuance process. Blockchain technology could allow parties to have simultaneous access to a digital record that is maintained in a decentralized location in a standardized format that cannot be altered.

¹ Ira Spar, *The Origins of Writing*, Heilbrunn Timeline of Art History, The Metropolitan Museum of Art, (October 2004). http://www.metmuseum.org/toah/hd/wrtg/hd_wrtg.htm.

² Nicholas G. McDonald, *Past Present, and Future Methods of Cryptography and Data Encryption: A Research Review*. <http://www.eng.utah.edu/~nmcdonal/Tutorials/EncryptionResearchReview.pdf>.

³ Deloitte, *Applying blockchain in securitization: opportunities for reinvention*, Structured Finance Industry Group and Chamber of Digital Commerce (Feb. 27, 2017) (hereafter the Deloitte Report), available at: http://www.sfindustry.org/images/uploads/pdfs/4468418_SFIFG_Blockchain_Report_FINAL.pdf

Blockchain Technology

Blockchain technology allows a secure, immutable audit trail that is time-stamped and can be viewed, but not changed by servicers, bondholders and other authorized participants in Commercial Mortgage Backed Securities (CMBS). This would reduce the delays that result from incremental data review and input. The transparent nature of blockchain technology could also produce more accurate pricing for the CMBS market, particularly in light of the different data points needed to analyze divergent property types such as multifamily, shopping malls or hotels, the differing income metrics, and the different debt service coverage ratios used in valuing the collateral underlying the bonds.

Blockchain technology's security is based on public key encryption to create a public-facing, anonymous address that can receive information with a matching private key, to which only the specific addressee has access. The private key acts as a digital signature permitting the addressee to open the information, preventing a malicious user from opening and/or manipulating information sent to another's public address. The use of encryption also allows some access to certain data while allowing the other party to remain anonymous to some but not all users. In the context of a securitization, this type of cryptography could allow for the privacy of certain borrower data while providing access to private data where appropriate.

Smart Contracts

The potential transformative qualities of blockchain for CMBS will be enhanced through the use of smart contracts. A smart contract is an automated contract that does not require human involvement in order for a transaction to be executed. It has been described as "a set of promises, specified in digital form, including protocols within which the parties perform on these promises."⁴ A simpler way of looking at a smart contract is as a "if, then" equation; if X condition is met then Y result is executed. The computer program self-executes when the agreed upon conditions are met. The outcome is recorded on the blockchain, which creates an immutable audit trail of all transactions.

⁴ Nick Szabo, *Smart Contracts: Building Blocks for Digital Markets* (1996).

Once participants agree to terms, conditions and outcomes, the smart contract is coded and recorded on a distributed ledger. The coding of the smart contract typically contains references to external data sources that the smart contract needs in order to function, commonly referred to as an "oracle." Once a smart contract is recorded, it cannot be modified without the participating parties' permission. This last characteristic ensures that a smart contract will always produce the desired outcome when agreed-upon conditions are met; it also makes contracts difficult to modify if circumstances change, forbearance is warranted, or a programming error is found.

In the context of securitized loans, smart contracts are likely to be most helpful if written for the pre- and post-issuance phases, relating to underwriting, servicing and information available to bondholders. For example, an oracle would be set up to provide notice of loan payments for each loan in a securitized pool. If no payment is logged for a loan after the payment deadline, the delinquency would be noted on the blockchain. The default would be reported to all participants, or alternatively be reported only to participants with access to that level of information—a layering referred to as "permissioned access."⁵ Permissioned access could also be used to give regulators access to information.

Blockchain Securitized Loans

One reason that blockchain is an exciting opportunity for the CMBS market is its potential to simplify what can be a cumbersome process. For example: (1) loans in the same securitizations have different contractual terms; (2) borrower credit profiles vary; (3) data is recorded in different formats; (4) data resides on different computer systems; and (5) original loan documents may be stored in different physical locations. And the variety of data points in CMBS loans highlights the benefits of blockchain, which facilitate tracking of varied cash flow metrics. This includes rental rates for multifamily properties versus average daily rates for hotels, which affect debt service coverage ratios in the underlying loan documents.

Today's securitization process involves review by a number of participants: (1) broker-dealers; (2) issuers; (3) accountants; (4) attorneys; (5) rating agencies; (6) valuation and analysis software providers; and (7) paying agencies. Blockchain technology will

⁵ See MONAX, *Explainer: Permissioned Blockchains*, https://monax.io/explainers/permissioned_blockchains/



make it possible to have a digital representation of the underlying loan, copies of all origination documents, loan documents, and payment history—a process called tokenization⁶—recorded on the blockchain for the securitization. Each party could then use smart contracts to process and analyze the data. Should a loan default, all stakeholders, including the borrower, could be notified automatically and simultaneously via the blockchain. In addition to being used to automatically notify all participants when a loan is in default for anything from payment defaults to a failure to comply with lockbox agreements, smart contracts can make payments to bondholders and servicers alike based on the waterfall provisions set forth in a pooling and servicing agreement.

Another important potential benefit of blockchain technology is that tokenized loans could streamline data reconciliation issues that can result from program or system incompatibility between loan servicers. System incompatibility is most likely to occur when a loan transfers to special servicing or when a new loan servicer is designated by a controlling holder. Ironically, the immutability and permanent audit trail of blockchain technology, the very characteristics that make the technology so appealing, could also hamper the securitization process by limiting the ability of servicers to reallocate payments. This can occur at various points in the history of a CMBS loan. Since such events are most common during the negotiation of payoffs in pending litigation of defaulted loans, these components of the transactions are less likely to appear on a blockchain or otherwise arise.

Any deployment of blockchain technology for securitized loans will more than likely involve the use of a private blockchain run by a service provider selected by one or more participants. This is in contrast to the Bitcoin blockchain which is a public blockchain that anyone can join. A private blockchain could allow for greater flexibility to deal with alteration of loan histories based on an instruction from a special servicer concerning reallocation of payments. Alternatively, because such reallocation of data often comes at the point of a payoff, the payoff would remove the defaulted loan from the pool, and therefore, a special servicer override may be unnecessary.

With so many different data points, CMBS loans are ripe for blockchain application. Having all this information automatically updated and available to all participants would drastically improve efficiency in all mortgage backed loans. The potential benefits of using blockchain technology for securitizations, include: (1) a single, consistent source of information for all participants on the blockchain; (2) better valuation and price discovery; (3) improved speed and certainty; and (4) improved data security. These advantages could lower risks in the securitization market as a whole and lead to greater investor interest. This could result in improved prices, volume, and spreads. With better and more transparent information, regulatory compliance could also be simplified and market failures could become less likely.

Conclusion

Nine years after its invention, the cost savings, transparency, immutability, and security of blockchain technology cannot be denied. These features make adoption of blockchain technology for securitized loans likely. While the use of blockchain technology and smart contracts in securitizations will take time to implement, the technologies are coming to the CMBS market and will be transformative. Look for blockchain technology to come to a securitized loan near you in the very near future.

Any company that is planning to use blockchain technology or smart contracts in securitizations should proceed with caution. It is important that you engage experienced counsel to assist you in navigating the regulatory requirements that may apply to blockchain technology and smart contracts. For more information about this update, or if you have any questions about Polsinelli's FinTech and Regulation Practice, please contact Jason A. Nagi or Richard Levin.

⁶ Addison Cameron- Huff, *How Tokenization Is Putting Real-World Assets on Blockchains*, NASDAQ (March 30, 2017, 02:58:50 PM EDT), available at: <http://www.nasdaq.com/article/how-tokenization-is-putting-real-world-assets-on-blockchains-cm767952>.





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