

Morningstar FAQ

Is Blockchain the Missing Link for Structured Finance?

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Author:

Beth Forbes | Senior Vice President | beth.forbes@morningstar.com | +1 267 960-6016

Morningstar Perspective

It seems you can't attend an industry conference or read the financial news without coming across a discussion of blockchain. Because interest in blockchain is high, Morningstar Credit Ratings, LLC often gets questions from investors and clients wanting to understand how the technology will directly affect the structured finance industry. In response, we are addressing some of the most frequently asked questions.

Most people are at least familiar with blockchain as it relates to cryptocurrency, but what characteristics are most important to understand for the application of blockchain technology to structured finance?

A blockchain is a decentralized ledger that securely records transactions and data. Because the information stored on the blockchain is distributed, every participant in the network (subject to permissions) simultaneously gains access to and validates the data. This is an important characteristic because it eliminates the need for a separate, third-party reconciliation. The blockchain contains the single "golden copy" that is time stamped and unchangeable.

Smart contracts are another critical aspect of blockchain. They are processes stored on the blockchain that automatically apply business rules and logic to execute tasks. Participants determine what conditions must be met for a transaction to be valid and code them into smart contracts, allowing for consistent and transparent outcomes and absolute certainty of execution.

How have you seen blockchain used in the capital markets so far?

One of the most significant first movers has been the Depository Trust & Clearing Corporation, which is moving its credit derivatives processing onto the blockchain, allowing participants access to a single platform for a real-time accounting of trades. According to *Forbes*, DTCC will shift records for about 50,000 accounts with \$10 trillion worth of credit derivatives to the company's platform, using Axoni's AxCore technology.

Another development was J.P. Morgan's introduction of JPM Coin in February of this year. JPM Coin, a digital token that represents the U.S. dollar, allows the firm's institutional clients to make instantaneous transfers of currency via blockchain. Once transferred between accounts, the coins are immediately redeemed for U.S. dollars, which reduces settlement times and counterparty risk.

These are just two examples that show blockchain's potential to increase transparency and certainty of execution, while reducing redundancy and friction.

What aspects of blockchain have the most potential to disrupt the industry?

We don't expect blockchain solutions to immediately render existing systems obsolete. Rather, we anticipate blockchain will be integrated into the infrastructure over time. Nevertheless, as blockchain becomes more widely adopted, we think the transparency, cost reduction, and auditability will disrupt the structured finance industry.

Transparency: As it stands today, multiple copies of the same data points have become housed in disparate systems within and across companies. Systems aren't integrated, and it is costly and inefficient to reconcile transactions. Because data on the blockchain is standardized and all permissioned parties have access to it via the distributed ledger, a perfect copy of a transaction's entire history is available at any time. Using blockchain, a participant can validate data points, confirm counterparty attributes, and execute a transaction via smart contracts without the need for separate third-party reconciliations.

Cost Reduction: Relying less on intermediaries and decreased redundancy will inevitably lead to cost savings. However, we believe a more interesting result will be the ability for bankers to create bespoke securities. Because transactions are structured directly on the blockchain, smart contracts will automatically and autonomously direct the movement of cash flows to investors, resulting in less manual intervention to structure, service, and act as a trustee for a transaction. As a result, bankers can then create microtransactions that meet clients' exact investment criteria without needing to achieve the economies of scale required today. For instance, it is possible to securitize cash flows from a single asset or a specific group of assets.

Auditability: Blockchain data is often described as trustless, meaning that because there is a single source of true data that cannot be changed, there is no need to rely on trust or independent verification to check its validity. The permanent, immutable nature of records stored on the blockchain is its central characteristic. With fewer manual processes to verify, and instant availability of trustless data, the time and expense for an audit will inevitably decrease. Nevertheless, auditors will need to increase their scope and expertise to confirm the validity of the smart contracts underlying the transactions to make sure that they are performing as expected.

What role do you see credit rating agencies playing?

Rating agencies will continue to provide independent credit opinions but will increasingly provide them in a manner that interacts directly with the technological infrastructure used to issue digital securities. In a sense, rating agencies will play the role of a risk oracle, using technology to act as a trusted third-party provider of credit opinions and information on a digital protocol, pointing directly to specific digital assets.

Benefiting from the increased transparency of verified data, rating agencies can employ more efficient and streamlined processes. For instance, an agency can use smart contracts to view performance and cash flow data in real time and independently run them through its model when certain triggers are met. The updated analysis could be fed back onto the blockchain to communicate ratings.

Ratings analysts will be able to spend less time independently reconciling and verifying data (either through third-party due-diligence providers or using their own resources) and focus more on high-value analytical work and fully automated internal controls, allowing

for more nimble responsiveness to market participants. In addition, agencies and investors can interact in new ways, with rating agencies providing analytical models on the chain that offer independent analysis outside of ratings.

What are some key risks to widespread adoption of blockchain in structured finance?

The biggest obstacles, in our opinion, are legal and regulatory uncertainty. Blockchain is a complex technology and has been largely untested in structured finance, let alone within the legal system. For instance, one of blockchain's most fundamental attributes, its immutability, could also serve as a legal stumbling block. Because a transaction on the blockchain cannot be removed or changed after the fact, an enforceable legal mechanism needs to be in place in the event a court decides to reverse or change a transaction.

Auditing and testing smart contracts to ensure they are operating properly will require merging legal, financial, and technical expertise that most firms don't yet have. Participants will also need to understand what to do when someone discovers an error once a transaction is complete. No industry standard for change management and few legal precedents exist yet. For instance, what happens if a smart contract's code behaves inconsistently with the plain English written version of the same process? Which contract supersedes the other? Court systems will ultimately need to address such issues as they arise. In the meantime, will market participants be willing to take on the risk?

Finally, collaboration and interoperability among systems will be challenging because there is no single blockchain standard and many platforms are being developed concurrently. Systems will need to be compatible, with users agreeing on standards for decision making and auditing.

How do these challenges relate specifically to rating agencies?

Because smart contracts will control most of the ways digital securities and cash flows behave, rating agencies will need to develop new areas of expertise. They will need to understand the integrity of the technology underpinning smart contracts, which may be written in various programming languages by a diverse group of industry participants, to know if they are likely to function exactly as represented. In addition, there is tremendous legal ambiguity surrounding the application of blockchain to structured finance. Outside resources, such as smart contract auditing and opinions from legal counsel, will be

necessary. Rating agency analysts will need to understand enough about these matters to make informed judgments about the likelihood of timely repayment of principal and interest.

Has Morningstar received inquiries about collaborating on blockchain initiatives?

Yes, we've spoken with eight or nine companies that are interested in using blockchain for their debt. The companies we've heard from have several different business models. Some are looking to originate assets to securitize on a blockchain. Others want to facilitate a debt issuance, whether by using their own protocol or using whatever protocol works for the transaction. One company was a software developer that sells its products to financial institutions that want to issue debt on a blockchain.

What does Morningstar find to be most promising about blockchain for rating agencies and for the securitization markets overall?

One promise of blockchain is its creation of programmable money and securities. As a rating agency, we are excited about using blockchain technology to create programmable information sharing to accompany securities. This can help ensure that accurate ratings are displayed immediately across different users' systems, as well as grant permissions to view a rating for a private securitization deal when certain conditions are met.

The cost-efficiency of blockchain technology will likely allow securitizations to be more profitable. However, we feel the real promise these efficiencies create is the potential to better democratize capital markets. With less scale needed to make transitions economically feasible, smaller financial institutions and regional financial institutions will be able to participate more in the capital markets.

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To reprint, translate, or use the data or information other than as provided herein, contact Vanessa Sussman (+1 646 560-4541) or by email to: vanessa.sussman@morningstar.com.