

Opinion

Blockchain Meets Bonds: How Crypto Can Solve Long-Standing Issues in Capital Markets

It's a new era for debt instruments and smart money, Arca's Anthony Bufinsky writes.

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In the 1988 movie "**Die Hard**," a New York City police officer travels to Los Angeles to reunite with his estranged wife at her company's holiday party. As the party is underway, terrorists seize control of the building and take everyone hostage. The intruders were on a mission to steal \$640 million in **bearer bonds**, which, unlike registered bonds, carried no serial number or registration records and are untraceable with no record of ownership. If they had been successful, the law would have presumed the person in possession of the bond (the bearer) was the rightful owner.

**Anthony Bufinsky is the head of growth at Arca Labs.**

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But with the advent of blockchain, a "Die Hard" heist would be fruitless. Smart bonds – digital bonds stored on a distributed ledger – are an emerging application of the technology wherein each bond has a unique digital signature that verifies ownership and eliminates the need for physical certificates. Blockchain ensures all transactions are recorded and stored permanently, making it difficult for anyone to steal or alter the bond's value without detection.

Smart bonds can transform the life cycle of debt instruments and have the potential to disrupt debt capital markets. This digitalization of bonds may enhance process efficiencies and liquidity, reduce costs, simplify and democratize capital raising for issuers, and create a broader investable landscape. For over three centuries, bonds were issued as paper certificates. However, as the volume of trading grew, companies became inundated with paperwork. In 1973, the [Depository Trust Company](#) (DTC) was created to address the mounting paperwork and security issues. Paper certificates were vulnerable to loss, tax evasion, money laundering and theft such as a real-life bearer bond heist. During the London [City bonds robbery](#) of 1990, thieves stole 291.9 million British pounds (equivalent to 848.8 million pounds today), highlighting the risks associated with physical bearer bonds. As a result, the use of physical bearer bonds declined in favor of electronic records. Then in 1995, the Securities and Exchange Commission (SEC) released [paperless rules](#), ending the era of paper securities and introducing the [Depository Trust & Clearing Corporation](#) (DTCC), a central depository for the custody of all securities. This change ushered in faster middle and back office processes and greater protections in the securities market.

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***The digitalization of financial instruments is leading to significant innovations in capital markets operations.***

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While paper certificates carried a [five-day](#) settlement time, this new system required at least two days in the settlement of bond transactions. Although electronic processes increased efficiencies and reduced human error, extended settlement timelines exacerbated the [liquidity disaster](#) faced by banks during the 2008 financial crisis. After Lehman Brothers filed for bankruptcy, the payments to counterparties that had traded with them were delayed. Recently, the SEC [proposed a reduction](#) of settlement time to one day, but this is a temporary bandage. Capital market participants want accurate and complete information and expedited settlement; blockchain technology can make it possible, and the emergence of smart bonds is a step in this direction.



# Digitalization: Disrupting debt capital markets

The key function of smart bonds is the digitalization of debt instrument covenants into smart contracts. Smart bonds are self-executing bond contracts that use blockchain technology to automate the various stages of a bond's life cycle and execute specific actions based on predetermined conditions without manual intervention. This straight-through processing (STP) is built into the DNA of smart bonds. It optimizes debt securities issuance, trading, clearing, settlement and interest payments, reducing the time and resources required to execute transactions. Smart bonds can also significantly reduce the need for intermediaries, such as banks, brokers, and clearinghouses. By eliminating intermediaries, the fees associated with their services are also eliminated. This reduces the overall cost of managing bonds.

- **Issuance and trading:** After a bond's issue price is established, the agreed-upon details (such as issuer, maturity date, coupon rate, issue price and face value) can be coded into a smart contract and stored on a blockchain. This ensures authenticity, provenance and transparency. The lead manager or underwriter allocates smart bond tokens to investors. Payment is automatically deducted from investors' accounts, immediately and simultaneously settling the transaction for all investors across all time zones. Blockchain enables a tokenization platform – a decentralized and secure trading environment that connects issuers with investors and allows transactions without intermediaries like brokers or dealers. Smart contracts automate the transfer of ownership and update the bondholder registry, ensuring accuracy and reducing the risk of errors.
- **Clearing and settlement:** Traditionally, bonds are settled during banking hours. Additionally, the settlement period can take up to five days in primary markets and two days in secondary. This latency period exposes market participants to potential price swings. Conversely, smart contracts can automatically trigger clearing and settlement processes as long as both parties have agreed to the contract terms and the necessary conditions have been met. This instant settlement reduces the time required to complete these tasks and the likelihood of a price change between the time of trade and settlement. While smart bond settlement is not limited by banking hours, it may still be subject to certain trading platform or exchange rules.
- **Interest payments and maturity:** Smart contracts can automate interest payments by releasing funds to bondholders on specified payment dates. Eliminating the need for a central counterparty reduces counterparty risk; at the bond's maturity, the principal amount can also be automatically returned to the bondholder, ensuring timely payments and reducing the risk of default.

Due to high-profile attacks on cryptocurrency exchanges, there is a perceived risk that smart bonds may be vulnerable to hacks and other security breaches. However, unlike cryptocurrencies, smart bonds are not bearer assets. Instead, ownership of smart bonds is automatically registered on the blockchain. Therefore, fraudulent transfers of smart bonds can be invalidated. Depending on the regulatory requirements, ownership of smart bonds may be recorded with transfer agents, too. Transfer agents help safeguard customer assets by facilitating the freezing, cancellation or replacement of tokens in the unlikely event of a mistake or malicious attack. However, this decreases the component of decentralization.

**See also: [TradFi Banks Team Up to Create Digital Bonds Trading Platform on Blockchain](#) | Finance**

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The digitalization of financial instruments is leading to significant innovations in capital markets operations. Still, all the possible benefits of smart bonds cannot be leveraged because regulations are based on authorized parties' electronic entries in private ledgers. While legal challenges could hinder smart bond adoption in the short term, as the infrastructure evolves and more organizations and municipalities adopt the technology established, we expect to see greater innovation and growth.

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