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The Wall Street banks bullish on blockchain

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While Wells Fargo and Bank of America executives **have appeared gloomy** on blockchain technology in recent weeks, many other large Wall Street banks are forging ahead.

Take Northern Trust, which launched its first blockchain three years ago.

"I'm as bullish as I was when I started and so is the organization," said Justin Chapman, global head of market advocacy and innovation research at Northern Trust. He is hardly alone. JPMorgan Chase and State Street, among others, remain committed to the technology, with each pursuing different projects related to it.

Following is a look at what these banks are up to and their progress to date.

Northern Trust advances to smart contracts

Northern Trust **began building its first distributed ledger**, a book of record for private equity deals, three years ago. It lets the parties to a deal share information, documents, and a single source of truth. Last year, the bank **added auditing capabilities to the ledger**.

The most recent upgrade to this ledger is support for smart contracts. Smart contracts, which are sometimes referred to as distributed applications, or dapps, make blockchain technology far more useful than a shared database. They're pieces of code that run on a blockchain and automatically enforce clauses in a legal contract. They allow actions to be executed among many parties automatically. **Some consider smart contracts the future of finance and a software replacement for traditional players such as banks.**

A private equity fund and its terms and conditions are all defined at the outset. Actions related to the fund can all be set in code.

"If I'm looking for redemption, if I'm looking for a distribution, if I'm looking for a call or to raise capital for a certain activity, I can identify what I can and can't do based upon the legal agreement," Chapman said. "That can all be automated and fully auditable through the life of that transaction."

Law firms are working to build libraries of codified legal terms, which they can link together to create standard contracts for standard asset classes. Once law firms on both sides have reviewed and approved the terms and clauses of a smart contract, there's an immutable record of that work.

"It starts to create a lot of transparency and allows you to create auditability of those legal contracts," Chapman said.

Any type of transaction that requires someone to commit to a set of terms could be executed through a smart contract, he said. Smart contracts can save lawyers from repetitive, boilerplate work and enable them to focus on work that adds value, Chapman argues.

Northern Trust was also involved in the World Bank's issuance of a bond on a distributed ledger last August. It works with market exchanges around the world on their blockchain projects.

"We have lots of activity going on in this space," Chapman said. "Where there is a significant market push, we will certainly be investing time to look at the value of each of those initiatives, and some of those we'll certainly be backing."

Blockchain technology and smart contracts can provide efficiencies, liquidity, governance, trust and transparency for issuers and end investors, Chapman said. It's an evolution that will take time, but is inevitable, in his view.

"It's hard to shift large groups of institutions or clients onto new technology," Chapman noted. "To get the technology deployed, delivered and actually into a live production to meet regulatory requirements and to get people to use it is not the easiest thing. We know that the old infrastructures the banks are using have come to end of life cycle and the distributed ledger technology is a small part of an architecture that needs to change."

State Street seeks efficiency

Nathaniel Rand, managing director of the office of architecture at State Street, sees blockchain technology as a way to move data more efficiently from clients' systems to the bank's.

"Many times that information is received through very arcane delivery mechanisms such as fax," he said. "And when the information is received, there's a monumental effort to drive consensus across the various books of record and synchronize books of record and services our organization provides for institutional clients."

A distributed ledger could help distribute information throughout the company, and smart contracts could drive other efficiencies with automation. Some projects in the bank are moving from testing into production.

"To drive emerging technology into a heavily regulated financial environment is very challenging," Rand said. "That's why it's taken time to provide relevancy and insight and validation around some of the benefits of this technology. Every day we're working through the gauntlet of compliance and information security, audit and all these controls that exist in our organization."

There are also education and cultural challenges, he said.

"Every time you introduce this technology to someone new, there's a massive amount of education you need to lay down so they understand the technology and how it applies to the business," he said. "And there's a cultural component. If somebody doesn't want to see their business change or is scared of change, you have to overcome that challenge."

JPMorgan Chase refines Quorum; BNY Mellon hires blockchain head
JPMorgan Chase recently partnered with Microsoft in an effort to encourage more companies to use Quorum, the Ethereum-based blockchain the bank built five years ago. Through its Azure Blockchain Service, Microsoft will help set up and monitor Quorum nodes and provide analytics for them.

The bank is hoping to build a network effect, where many banks build applications on Quorum that all interoperate with one another. JPM Coin, the stablecoin tied to the U.S. dollar that the bank is developing to enable cross-border payments over a

blockchain, is one of the applications the bank is building on Quorum. The bank is currently going through internal compliance, legal and regulatory checks on the project.

"We are quite aggressively pursuing blockchain technology," said Umar Farooq, global head of blockchain at JPMorgan. "Though it's hard to predict timing, we believe it's quite transformational for many parts of our business."

On Thursday, BNY Mellon said it hired Subhankar Sinha as head of blockchain. He will develop partnerships with startups, accelerators, incubators and business partners to drive enterprise innovation and build ecosystems for all BNY Mellon blockchain initiatives. Sinha formerly founded PwC's blockchain consulting practice in the U.S. The bank has been working with Bakkt to set up geographically distributed private key storage. At the Synchronize conference, Lucien Foster, head of digital partnerships at BNY Mellon, said clients have been asking the bank for crypto services like custody and asset servicing.

"We have taken a thoughtfully cautious approach because custody in the digital asset space is quite different than custody in more traditional areas," he said. "As the technology and products evolve, we'll see regulations evolve. We're going to be focusing on that, and maintaining a link to the AML/KYC world. It's critical for us as a custodian bank to have that connection between fiat and digital world."

Fidelity builds a crypto trading desk; DTCC testing trade information blockchain

Fidelity Investments began offering a Bitcoin custody service earlier this year and is expected to offer digital asset trading services to institutional customers within a few weeks.

"We started years ago doing research on blockchain," Tom Jessop, head of corporate business development at Fidelity Investments and president of Fidelity Digital Assets, said at the recent Synchronize conference. "We want to provide institutional brokerage in this space. We're focusing currently on the most liquid digital assets, which is where most of our institutional demand is. We're starting to think about custody of other types of assets, issued in tokenized form."

The Depository Trust Clearing Corp., which handles clearing and settlement of securities, was one of the first organizations on Wall Street to embrace blockchain technology.

Its survival was at stake: One of the key promises of distributed ledger technology is that it can eliminate middlemen as parties settle trades among one another directly. The DTCC is the middleman of Wall Street. The DTCC decided to build its own blockchain, get its bank members to use it and retain its place in the order. (However, there are banks that settle derivatives contracts on a blockchain and go around the DTCC.)

Lately the DTCC has been de-emphasizing its blockchain work and promoting its adoption of APIs.

"The potential of DLT is undeniable, but the question remains whether its enormous power to transform financial services will ever be fully harnessed," Michael Bodson, president and chief executive of the DTCC, said in a recent speech. "Personally, I have confidence in the technology, but our own experience with it reinforces that it's going to take time and patience, and much more hard work and practice."
The DTCC has been shifting its Trade Information Warehouse from a mainframe system to a new set of technology that includes a distributed ledger.

"We completed coding in the fall, we're doing a lot of internal testing on operationaliizing and productionizing the ecosystem, making sure it handles all requirements at scale and performance," said Robert Palatnick, chief technology architect at the DTCC. "We've learned a lot. We've written code in Solidity," a language used to write smart contracts. "We're figuring out where things can be on chain and off-chain."

Palatnick has been leading some open source blockchain projects for the Hyperledger community. In a performance test in the fall, Palatnick and a team were able to settle over 100 million equities trades per day on a Hyperledger running in Amazon's cloud. "We probably could have scaled it up higher, but every time we would run a test, I would get a bill from Amazon," he said. "So at some point, you have to say, enough."

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