



Where is my blockchain bond?

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The emergence and development of FinTech in the capital markets demonstrates how innovation happens at the edges, where knowledge disciplines which were once separate suddenly connect. A prime example is blockchain¹, a specific application of distributed ledger technology (DLT). Its potential for application to capital markets could drive an unprecedented level of knowledge sharing and collaborative thought leadership between technology, financial markets and legal experts. This article gives an example of the need for this collaboration by describing one fundamentally novel legal issue that emerges in the use of blockchain in the capital markets which cannot be solved by technology alone.

Blockchain, and distributed ledger technology, can be seen as a method of recording information. It provides auditability, resilience and trust through the record being *immutable* (new entries can be added to previous ones which cannot be changed or erased), *distributed* (the record is held in more than one place by more than one person) and *synchronised* (the record is validated by agreement between the distributed versions, which is established through consensus mechanisms). The detail is more complicated, and there are other potential enhancements like smart contracts and tokens, but this simplified explanation is a good starting point for considering blockchain's use in capital markets.

Capital markets practice requires many records of information, such as records of holdings of financial instruments, payment details and terms of contracts. Currently, this is often conducted by trusted parties using a centralised form of record-keeping. Blockchain provides an alternative to centralised record-keeping and establishes reliability in a different way - through its distributed nature rather than trust in a single safe entity. This distribution is fundamental to using blockchain to establish records which are auditable, resilient and can be trusted. And it is through this distribution that the novel legal issue arises.

Records of financial instruments in the capital markets are usually held through intermediaries such as custodians and clearing systems. The tracing of a person's entitlement to a financial instrument through these arrangements can be complex both practically and legally but it is facilitated by the existence of a hierarchy of intermediaries. For example, an issuer of a bond may undertake to pay the amounts due to the person recorded on the register of bondholders, the registrar may record that a clearing system is the holder of the bond on that register, that clearing system may record that it holds those bonds for a custodian and that custodian may record that it holds that interest in bonds for the ultimate beneficial bond holder. There is a cascading series of interests, where one entity's entitlement is constituted by it being recorded by the intermediary one higher in the chain.

1. See also ["An introductory Q&A on blockchain technology"](#) by Alexander Westphal, ICMA (published in the [ICMA Quarterly Report, Fourth Quarter 2015](#))

Legally, this arrangement has been useful because it enables a solution for a very complex problem: *where* is someone's entitlement in the bonds located if the registrar, clearing system, custodian and bond holder are all in different countries with different laws? This is important to working out which laws apply to matters such as taking security, effectiveness of transfers and insolvency. These are areas of law which look at financial instruments as property, and not just as contracts between parties. The solution which has emerged, and is now widely used, is to treat someone's rights as being located in the place where the intermediary that actually records *their* interest is (called the Place of the Relevant InterMediary Approach or PRIMA). Over the years this approach has been supported by agreements between countries and the enactment of local laws and it has brought valuable clarity where previously there was confusion.

This is complicated by the use of blockchain. By its very nature, blockchain involves keeping distributed records which could be maintained in more than one country at the same time. Also, the validity of the record is established by the consensus between the different versions, so there is no hierarchy naturally established between them. One does not need to count more than any other. For example, if a bondholder's interest in bonds is being recorded by its custodian in a distributed ledger maintained by it and its related entities in multiple countries, where is that interest located and which law applies? In other words, how do you work out the place of the intermediary when there is more than one intermediary in more than one place?

Unlike many legal issues related to blockchain in capital markets, this is genuinely novel because it arises from the distinctive feature of blockchain and its fundamental difference with centralised record-keeping: the distribution of the ledger. It is not a theoretical issue, and it has very real consequences for those holding, granting and taking interests in valuable instruments using practices which are common in today's markets.

It is not a problem without a solution. Importantly, these solutions are not based in technology, as the issue emerges from the fundamental feature of the technology. Such solutions need to be founded in a

broader context, in capital markets practice and law. For example, there are methods of constructing the legal architecture which supports a particular use of blockchain which can manage the issue effectively. The use of the blockchain's legal architecture will be important until the sort of cross-border consistency of local laws which supports PRIMA develops.

Finding solutions for new issues is often part of developing new technology and it should not dissuade using it to better solve problems and improve customer experience. Instead, it is hoped that this brief description shows how financial markets expertise and experience is needed to complement technological understanding and skill to achieve the efficient and effective use of this transformative technology in capital markets.

DLT in capital markets

A listing of new FinTech applications in bond markets, most of which are based on distributed ledger technology, is available on ICMA's dedicated [FinTech webpage](#). Over the last two years, there has been a growing number of announcements, proofs of concept and live transactions involving DLT across the lifecycle of securities. Over 20 examples, taken from public sources, illustrate how DLT could be applied for the issuance and trading of bonds, repo and collateral management as well as asset management.