

BLOCKCHAIN SERIES NO. 1: BLOCKCHAIN AND SHIPPING

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WELCOME TO THE FIRST IN A SERIES OF WFW BRIEFINGS, EXPLORING BLOCKCHAIN TECHNOLOGY AND ITS EFFECTIVENESS ACROSS KEY INDUSTRIES. THIS FIRST BRIEFING LOOKS AT THE IMPACT OF BLOCKCHAIN ON THE SHIPPING SECTOR.

What is blockchain technology?

Blockchain is a new “distributed ledger technology” which enables information and transactions to be managed collectively across an entire network using a chain of blocks of data. Initially brought to people’s attention as the technology behind the popular cryptocurrency Bitcoin, blockchain, as a secured, decentralised and encrypted public ledger, is now being explored by various industries as a means of revolutionising the way trades, transactions and payments are performed.

The impact of blockchain technology across the banking industry is already substantial and promises long-term benefits. The standout advantages include the speed, efficiency and reduced costs it brings to transactions and payment settlement systems. In addition, it serves to reduce counterparty risk resulting from a more autonomous and transparent process.

The development of the technology is still in its infancy and there will undoubtedly be obstacles that lie ahead. In particular, there are likely to be issues concerning upfront costs in developing and adopting the technology as well as reconciling it with existing legacy systems. There may also be cybersecurity and regulatory concerns for governments and corporations when handling sensitive data, as a fundamental feature of blockchain technology is that it is designed to be accessible to all those who have transacted on a ledger.

The shipping industry

In many ways, the shipping industry remains rather traditional, with a number of the processes involved being time-consuming and document-intensive and the use of paper documents still prevalent – to name a few, memoranda of agreements for ship sale and purchases, charterparty agreements for ship employment, bills of lading, port documents, letters of credit and other documents for the carriage of cargo. The fact that these arrangements, at times, involve an extensive chain of parties only increases the risk of human error and very occasionally, fraud.

How can the shipping industry benefit from blockchain technology?

The initial push into the industry has seen large operators collaborating with technology companies to gauge how blockchain technology can help them in the future. For example, Maersk has teamed up with IBM to set up a company to disseminate blockchain technology throughout the shipping industry by, for example, tracking freight and replacing all paperwork with digital records, in the hope that it will create considerable benefits for all stakeholders along the supply chain.

MOL and Sumitomo Mitsui Banking Corporation are also collaborating with IBM and together they are trialling cross-border trading to see whether or not operations can be more efficient when blockchain encryption technology is adopted.

The expectation is that blockchain technology will create a platform not anchored down by endless paperwork and complex transactions but instead fully digitalised thus enabling more fluid freight movement and reduced costs and resource waste. According to Tradewinds, in excess of US\$4bn worth of goods are shipped yearly and the costs incurred by the documentation attributed to such goods is in the region of US\$800m; it is this substantial cost that the blockchain ecosystem aims to erode. The potential savings will ultimately have to be weighed up against the potential risks in any digitalised system in relation to fraud or hacking.

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Smart contracts

A smart contract is, essentially, a digital computer protocol that is intended to facilitate, verify, execute and/or enforce the negotiation or performance of an agreement, such as the transfer of digital currencies or assets, when certain predefined conditions are met (i.e. if X does Y, then execute Z). To date, smart contracts have been used primarily in association with cryptocurrencies, the most prominent example being the Ethereum blockchain platform.

The principal benefit of smart contracts comes from the increased speed, efficiency and trust that the contract will be executed exactly as agreed. In addition, such contracts can reduce certain transaction costs associated with contracting, since blockchain technology cuts out middlemen.

In the shipping industry, ING and Société Générale are collaborating to develop a blockchain-based platform for the management of physical energy commodities trading.

By moving away from traditional and cumbersome paper contracts and operations, to secure smart contracts and authenticated transfers of electronic documents, the aim is to cut administrative and operational risks for all participants in the supply chain, including shipowners, charterers and shipbrokers.

The potential use of smart contracts in shipping and other industries gives rise to certain legal questions, including as to (i) how smart contracts are executed, (ii) whether they are legally binding contracts, (iii) their enforceability and (iv) what dispute resolution mechanisms are most appropriate. These questions are beyond the scope of this Briefing and will be considered in more detail later in the series.

For now, it is worth noting that, whilst many kinds of contractual clauses can be made partially or fully self-executing, self-enforcing or both, the benefit and quality of a smart contract will ultimately depend on the extent to which contractual clauses can (or can be made to) have these characteristics.

Payment mechanisms, for example, could easily be automated and made to be self-executing under a smart contract. On the other hand, complex commercial contracts can contain a number of provisions where a degree of human judgment is needed to determine if certain conditions have been met (for example, if thresholds as to “material adverse change”, “best endeavours” and “reasonable endeavours” have been satisfied) or to determine the best course of action following a breach or default. In the context of ship management and chartering, for example, whether or not standard-form maritime contract clauses such as those contained in BIMCO’s ship management (SHIPMAN), sale and purchase (SALEFORM) and chartering (including SUPPLYTIME) documents can be converted into code remains to be seen. Such provisions may not be easily encodable, demonstrating that full automation has limitations in certain contexts.

Perhaps the answer lies in some form of “hybrid” smart contract whereby certain (more mechanical) provisions and obligations are encoded and other provisions and obligations that require some form of human judgment are written into natural language, with both parts operating together as a single contract. This will be considered in more detail later in the series.

Smart Bills of Lading The bill of lading evidences the contract of carriage between the carrier and the shipper and that the shipper has received the goods in the prescribed condition. Traditionally, the bill of lading is a paper document and it constitutes a document of title for the goods. Physical possession confers the right to receive the goods. That being said, electronic (or “smart”) bills of lading have already been implemented successfully. For example, Israeli container shipping line Zim recently transported a shipment of containers from China to Canada using an electronic substitute to the traditional bill of lading. In addition, Blockfreight, a provider of blockchain-powered logistics, offers the supply chain an advanced automated global ledger complemented with digital security and customer authentication and which is populated with chains of custody data bespoke to each individual freight container. This seeks to give stakeholders complete visibility of their shipments from collection all the way through to delivery and reduces overheads drastically. It will be interesting to see if other shipping lines follow suit. Widespread adoption of smart bills of lading has the potential to replace the traditional paper bill of lading in the future.

ELECTRONIC (OR "SMART") BILLS OF LADING HAVE ALREADY BEEN IMPLEMENTED SUCCESSFULLY

Data repositories or asset registries?

One additional area in which blockchain technology could be used is in the establishment and maintenance of a decentralised asset registry, for example in relation to container boxes. Ultimately, the extent to which blockchain technology is adopted will, in part, depend on the intention for which it is to be used.

Blockchain technology has the potential to act as a “data repository”, whether by individual companies or industry bodies. The Global Shared Container Platform (“GSCP”), a blockchain-based platform, seeks to allow participants in the container shipping industry, whether they be container lines, ports or terminals, to keep real-time track of all containers and to manage various types of container-handling transactions.

Such data repositories are, of course, not a new phenomenon. Bureau International de Containers (“BIC”) is an international registration authority for container owner codes which are used to mark freight containers in international trade. BIC has, since 2016, been operating its BoxTech Global Container Database to provide container owners and users a platform for the exchange of container fleet information. Whilst, to date, this has been a centralised platform run by BIC itself, BIC is currently working with third parties to design a blockchain-based option for the BoxTech container register.

If, however, the technology is to be used as a more formal portal for recognition and registration of rights (whether ownership rights or mortgage rights) with the force of law, it would seem to us that, for such a registry to have any legitimacy, it would need to exist alongside an international convention or treaty (for example, the Cape Town Convention) – blockchain would facilitate the running of the registry itself but the convention or treaty would give the registrations legal effect.

BIC is proposing to expand its BoxTech platform to allow the capture of mortgage information (in a secured area) and to allow for the platform to be utilised in the completion of financing transactions. While this may provide evidential benefits to industry participants, in allowing them to check if a lien exists on a particular container, this would seem to fall short of having any legal effect as regards recognition and enforcement of rights. Having said that, including mortgage information in such a platform does seem to us to be a useful tool for the industry in any event.

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Summary

Whilst blockchain technology has not played a part in the ship finance landscape as yet, and the legal issues surrounding it remain untested, investment in it (and related technology-driven developments such as “big data”) by shipping companies, financial institutions and their customers is undeniable so we should remain cognizant of it and continue to monitor any further developments in this area closely.

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