

## **Blockchain or the end of third-party intermediaries?**

Is the arrival of *blockchain* technology causing a revolution in the area of finance, and in the economy as a whole? Given what is at stake and the objectives, major transformations, repercussions and array of fields of application to which the technology can be applied, this question is worthy of discussion.

What is *blockchain* technology and what are its objectives? *Blockchain* can be traced back to October 2008, when the virtual currency, *Bitcoin*, was created. In brief, Bitcoin is a system that puts "money" into circulation and allows transactions and transfers of ownership to take place autonomously, that is, without a central authority or a third-party intermediary. In this sense, bitcoin provides the first illustration of *blockchain*. The latter is a technology for storing and transmitting information in a transparent and decentralised way. It is a secure database, safe from destruction, falsification or modification, which brings together all the transactions made by its users since its creation. In concrete terms, *blockchain* consists of a transparent, shared and permanent database which can additionally be programmed to execute certain transactions autonomously. Adopted by financial markets, *blockchain* allows holders of securities to trade instantly and securely using digital signatures and without the need for a third-party financial intermediary. The expectation is to achieve greater transaction fluidity and speed, increased security, improved transparency and reduced transaction costs.

This last aspect, reducing transaction costs, is fundamental. For example, while some companies have centralised registers to record all their activities and transactions, this is not the case for most; such records are kept at a more decentralised level (department, section, unit, etc.). There are, therefore, very important differences between the databases. For companies, such registers are essential for preparing company balance sheets and studying performance but also for defining future strategies and objectives. However, reconciling transactions from multiple databases is expensive in terms of time, not to mention the risk of errors. So, while a transaction on the stock market can be made instantly and without a third-party intermediary, this is not the case for the title ownership transfer to which the transaction relates. This transfer of ownership, that is to say the transactional settlement, indeed requires time. However, in order to proceed with the transfer, it also requires third-party intervention to ensure the availability of titles. *Blockchain* overcomes these issues of time and third-party intermediaries because when a transaction takes place, it is simultaneously recorded on all relevant databases straight away. Transaction notifications are carried out at the same time as they are being processed; therefore, the presence of third-party intermediaries to verify and carry out the title ownership transfer is no longer necessary. The payment is made immediately and safely, and the authenticity and uniqueness of transactions guaranteed.

Finance is undoubtedly the area of choice for *blockchain* technology. To date, only a few experiments have taken place, notably on the Nasdaq for unlisted companies, the Australian Stock Exchange and by a consortium of some forty of the world's largest banks. Despite only being in the early stages of development, the system is likely to develop on a large scale. During the last crowdfunding annual meeting, Emmanuel Macron made special mention of *blockchain* experimentation for crowdfunding. If its success is as planned, the system's scope could potentially be extended, especially in Paris. The Paris stock market could thus take the opportunity to turn a corner with regards to technology and

reconnect with the top of the world pyramid. Even better, by taking a technical lead, it is likely to attract the confidence of investors who, as a result, could favour Paris for their operations.

Finance, however, is not the only scope for *blockchain*, far from it. The applications for such a system are indeed numerous. In the field of insurance, such technology would automate contracts without the need for a third-party intermediary and even facilitate reporting activities. Similarly, it would reduce the duration of transactions in the real estate sector, authenticate purchases and make property deeds, land registers and all real estate activities more transparent. In the field of energy, *blockchain* would allow private individuals to sell clean energy produced via solar panels directly to another individual without going through a third-party intermediary. One can also think of a multitude of other fields in which blockchain technology could be beneficial; for example, healthcare, telecommunications, transport, online voting, etc.

One domain in which blockchain is creating a number of debates and expectations is that of the climate. Using *blockchain* technology, the idea is to build a database to record greenhouse gas emissions produced by factories. All emissions would thus be recorded and updated continuously in a transparent manner and with no risk of falsification. This would make it possible to ensure company compliance with climate commitments. By pushing the analysis further, such recordings would be able to structure a market on the basis of tokens representing the tonnes of CO<sub>2</sub> emitted, to be emitted or sequestered. These tokens would have an exchange value, a kind of "carbon currency," and each issuer would have an individual emissions account. The system would then be programmed so that the sum of the accounts was equal to the emission ceiling set by international climate agreements. The carbon currency would be an incentive to reduce CO<sub>2</sub> emissions and, in this sense, *blockchain* would play a leading role in sustainable development and the fight against climate change.

Even if the range of possibilities seems unlimited and the security guarantee of *blockchain* technology constantly in the foreground, the risks, limits and challenges must obviously not be ignored. In addition to the risk associated with hackers, *blockchain* requires an evolution of practices and mentalities, since it amounts to abandoning a long tradition of centralised management in favour of a decentralised system devoid of any supervisory authority. As a result, *blockchain's* adoption will be gradual, all the more so as its implementation will have to face many obstacles, including on an organisational, technological and institutional level. In the field of finance, if *blockchain* creates trust through multiple exchange opportunities between millions of individuals, and if it is able to simplify the banking and financial architecture, it thus questions the fate of clearing houses and financial intermediaries and the benefits they can bring. The answer to such a question, together with other social, financial and legal challenges, will have to be decided by the supervisory authorities so that the *blockchain* experience can achieve its potential without undermining the already weakened stability of the global financial system and, beyond that, the economic system as a whole.

All these elements testify to current events and the many questions and challenges posed by *blockchain*. This session aims to discuss all these aspects by presenting the issues and objectives of *blockchain*, its multiple applications and the possibilities offered by such a technology as well as the inherent risks and adaptations necessary for its adoption.