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"The evolution of power of Blockchain: a central banker's balancing act"

Speech by Klaas Knot at the EBF Conference The Evolution of Power,

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In his speech at the EBF Conference The Evolution of Power, Klaas Knot shares the current thinking of De Nederlandsche Bank on blockchain and distributed ledger technology solutions, highlighting both the opportunities and the risks. Innovations like distributed ledger technology have potential in the financial system where there are some interesting and promising business. Yet, more widespread trading of cryptos may lead to reputational risks for financial institutions, and affect confidence.

Introduction

The title of this conference, 'Evolution of power', puts me in a somewhat awkward position. I am after all the president of a central bank. And the core concept of power in a blockchain is decentralization. Bitcoin, for instance, was created as a peer-to-peer network. So there would be no need for a central authority. In the words of Satoshi Nakamoto, the pseudonym of its founding father: "The problem [with a central authority solution], is that the fate of the entire money system depends on the company running the mint". In this case, the mint is run by the institution that issues currency, in other words, the central bank. So, blockchain's evolution of power is a development away from a regulatory authority, away from the central bank.

You can understand that central bankers like myself are by nature skeptical about such a development. Focusing on risks, as we typically do, we ask critical questions: What are the flaws in the current system? What efficiencies do new technologies such as blockchain bring to the table? How should we cope with possible risks stemming from blockchain?

The Dutch central bank keeps a close eye on developments in this field. And yes, we have been depicted in the media as being critical towards these innovations. But that's not the full story. Innovations like distributed ledger technology have potential, also in the financial system. So today I want to share with you our current thinking on blockchain and DLT solutions, highlighting both the opportunities, and the risks. I will start with the opportunities blockchain could bring and its application in financial services. I will then turn to cryptos and their risks. Here, I will also touch on the regulatory response. Oh, and by the way, when you hear me say DLT, I mean distributed ledger technology… I'll use the words DLT and blockchain interchangeably, not focusing too much on technical specifications. After all, if you want to dive into technicalities, then you should have gone to the parallel session by Microsoft…

Potential for innovation through blockchain

Let's start with the good news. There are plenty of opportunities that new DLT technologies, such as blockchain, could bring in the not-so-distant future.

More and more businesses today are testing DLT in different contexts. Diamond registration is an often-used example. And DLT may also offer benefits for the international trade like the coffee trade, in terms of traceability, logistics and supply chains. Increasingly, we see business cases popping up where blockchain could improve processes.

In the financial system, blockchain is also making advances, albeit much slower. The sector's strict requirements on efficiency and integrity may partly explain this. But as the technology advances, it could have a considerable impact on the financial system too. Blockchain could change securities depository and settlement systems. Some of these financial market infrastructures have already announced their intention to embrace DLT. The Australian Securities Exchange claims it will replace its clearing and settlement systems with a DLT-based solution.

Focusing on development aid, our international colleagues at the World Bank in Washington see great potential for blockchain in emerging markets. And Her Royal Highness Queen Máxima, as the Special Advocate for Inclusive Finance at the United Nations, has underlined the possible benefits of new technologies such as blockchain for financial inclusion. And rightly so. In low-income countries, the financial infrastructure is often shallow. In these situations, DLT could greatly increase efficiency. Emerging markets also stand to benefit by lower remittance costs and higher financial inclusion for currently unbanked populations. The World Bank has recently made headlines by issuing a bond to international investors, completely based on blockchain technology.

Large Dutch banks have also performed several experiments with blockchain technology, aimed at improving their payments systems and customer service. For instance, by supporting international trade and trade finance.

Central bank experiments and blockchain in financial services

So there are some interesting and promising business cases for blockchain. But challenges remain. These technologies will require substantial further development and testing before we see their more widespread use in the financial system. Central banks around the world are experimenting with DLT. They are seeking to identify the potential for its use in their payment systems, and the impact it will have on the financial system at large. Let me give you a few examples of these experiments:

- Under the name Project Jasper, the Bank of Canada has studied the use of DLT technology for various applications, including the clearing and settlement of high-value interbank payments.

- The ECB and Bank of Japan have set up Project Stella, currently in its second phase. They are exploring how DLT could be used in financial markets for the settlement of financial transactions, such as post-trade delivery of securities.

- We have also carried out experiments with blockchain technologies at the Dutch central bank. Over the past three years, we have developed and evaluated four prototypes under project Dukaton. Our aim was to gather knowledge and assess the usefulness of the technology in improving payments and securities transactions. We continue to invest in deepening our understanding of this

technology, and in conducting experiments. We believe blockchain technology is interesting and promising.

All these experiments by central banks – and there are many more – have led to a better understanding of DLT. This has helped us estimate the potential impact on our financial systems. The main conclusion is that while it is a promising technology with certain benefits, there are still considerable hurdles to overcome before it can be widely used in the financial system. Let's look at some of the main findings:

First, an interesting property of blockchain is that the software itself provides built-in resilience. Many central banks have concluded that blockchain could make payment systems safer, in terms of better resilience to cyberattacks and other disruptions. The network is less reliant on a central party, avoiding a single point of failure. Also, a consensus model would be better equipped to identify possible malicious insiders. An open question is still how to deliver on the resilience, while also improving functionality and efficiency.

Secondly, DLT could also reduce settlement risks, as it offers an alternative method for delivery versus payment. Transactions can be settled within seconds, with full anonymity and confidentiality. Settlement risk is one of the major issues in post-trading financial systems: the risk that one party in a transaction fails to deliver on its end of the deal. Currently, settlement risk is mitigated by central counterparties. They administer and guarantee the delivery of securities by the seller on the one hand, and receipt of the selling price in cash on the other hand. Settlement in seconds, without the risk of the other party not delivering in time, could be a promising future. An often mentioned downside of using DLT in this context is settlement finality, which depending on how the blockchain is configured, cannot always be fully guaranteed.

A third potential benefit is that blockchains can be designed so that the central bank or supervisor can see details of all transactions. This allows for regulatory supervision and oversight, which is needed for maintaining the high standards of integrity in the financial system.

Finally, one of the greatest obstacles to using blockchain in the financial system is its efficiency. Banks and other firms process millions of transactions daily. But this is a major challenge for decentralized systems like DLT. Energy efficiency is still a problem too: there are estimates that the bitcoin mining network uses a a similar amount of energy as the whole of Ireland. Public blockchains that make use of other consensus models could more efficient. Also, a privately permissioned system, would greatly diminish energy consumption. But it seems very unlikely that blockchain will be able to process as many transactions as current systems do, at least not any time soon.

Undoubtedly, some of the benefits of blockchain will only materialize when the technology has been developed further. When the system as a whole is more mature. There should be more real-life examples to test the resilience of blockchain applications. Certain financial firms have already taken the first steps. Central banks are experimenting with blockchain and are open to further advancements, while keeping a close eye on the possible risks. For the moment however, we can only conclude that blockchain hasn't led to any groundbreaking changes in the payments ecosystem. From a financial system perspective, the 'evolution of power' has not yet occurred.

On cryptos and their risks

Blockchain's most visible impact on the financial landscape has been the rapid rise of cryptos. This is a topic that deserves more attention. Let me first clarify that we, as the central banking community, tend not to use the term 'cryptocurrencies'. The word 'currency' implies money. Our understanding

of money is something completely different. It is based on the three functions of money – as a means of payment, store of value, and unit of account. Even bitcoin, the most widely-recognised crypto, doesn't fulfill these functions. It's difficult to pay with it in a store, its value is undermined by its volatility, and it has no use as a unit of account. As it doesn't meet these three criteria, we prefer to use the term crypto-asset or simply, crypto.

Cryptos could represent opportunities as well. For instance in the financing of small and medium-sized companies. A lot of people invest in cryptos, and they have been designed to improve cross-border payments.

You'll notice that now I'm talking about cryptos, I will shift the focus from the opportunities, to the risks. Cryptos are a development that demands the vigilance of regulators and supervisors. So far, they have not developed into the deeply rooted and widespread payment systems some might have hoped for. To date, cryptos have a modest financial footprint compared to the rest of the financial system.

The lack of widespread use is partly caused by an issue that keeps haunting cryptos. Some consider this issue to be inherent to their design. And that is their potential use for money laundering and other illicit activities. A system built around circumventing central oversight is bound to attract certain types of people. The anonymity that cryptos guarantee is both a help and a hindrance to their development.

Another reason why current cryptos are generally an unsuitable replacement for our trusted currency and payment systems, is their volatility. It makes them unattractive as a unit of account or store of value.

As there is no supervisor, you hold cryptos at your own risk, and your investment is not guaranteed like it is at a bank. Failures or hacks of crypto wallets have already led to significant losses for consumers. Also, many initial coin offerings fail as they cannot generate an asset that keeps its value, even for a couple of days, leaving investors behind with a useless and worthless token.

Last but certainly not least, cryptos and the underlying technology are still far less efficient than our current payment systems, as I explained earlier.

So the use of cryptos is still limited. But if impediments can be overcome, we might see their more widespread use. Let's look at this scenario from a central banking perspective, as we at the Dutch central bank are ultimately responsible for the good functioning of the financial system. Such a development could have implications for financial stability. The Financial Stability Board will soon publish a report highlighting the risks. I am honoured to chair the committee that drafted the report, so let me share some of our main findings.

Firstly, more widespread trading of cryptos may lead to reputational risks for financial institutions, and affect confidence.

Secondly, we see possible risks arising from direct or indirect exposures of financial institutions. Banks' exposure to cryptos is currently very low or non-existent, as they are often prohibited from crypto investment. However, at some stage, financial institutions may still acquire direct holdings in crypto providers or provide credit to these firms.

We also see risks that could arise if cryptos become widely used in payments and settlement. Widespread adoption of cryptos in payment systems may limit authorities' ability to enforce laws and regulations in parts of the financial system.

And finally, we see possible risks from market capitalisation and wealth effects. Crypto-asset markets could become more important in particular jurisdictions if market capitalisation grows significantly larger and ownership spreads. This could then have an impact on the real economy via wealth effects.

Regulatory response

We are still far from such a scenario, where cryptos have major implications for financial stability. But we central bankers now have a framework for monitoring these potential risks.

And while cryptos do not currently present risks for financial stability, we're still keeping an eye on them. We do so based on concerns for the integrity of the financial system as a whole, and for investor and consumer protection. That is also why different jurisdictions have taken measures to cope with the growing risks of cryptos. Examples include anti money-laundering guidelines, regulatory requirements for the financial sector, and measures to improve investor and consumer protection. The international regulatory community should formulate an appropriate response to these risks. A coherent anti money laundering framework for cryptos, as announced by the Financial Action Task Force, is certainly a step in the right direction.

Given the international character of cryptos, a global or European approach is needed. But that will take time. Meanwhile, we at the Dutch central bank are assessing the possibility, together with the Authority for the Financial Markets, of a proportional supervisory framework for cryptos. As it would be impossible to regulate the whole crypto universe, our current thinking is that regulation and supervision should first focus on the intersection of the crypto ecosystem with the regular financial system. After all, the main rationale for our supervision, underpinned by our legal mandate, is to safeguard the integrity and resilience of the financial system. The exchanges where cryptos are bought and sold are where the 'new' and the 'old' financial systems overlap, and where we will focus our supervisory efforts.

Conclusion

You still have a full schedule ahead, and I'd like to have some time at the end for questions, so now I'll conclude. I have tried to highlight some possible benefits of DLT and blockchain for the financial system. The technology is nascent, yet there are several interesting use cases that signify its potential. Central banks are keeping a close eye on new developments, and many of them are experimenting themselves.

They also do this to assess and monitor risks stemming from new technologies. We should be especially vigilant about developments in cryptos. While they, too, could represent opportunities, there are considerable risks both for individual investors and in time, possibly the financial system at large. An appropriate regulatory response should be formulated, commensurate with these risks.

Central banks and regulators need to find the right balance between seizing the benefits of technological innovation on one hand, and coping with possible new risks on the other.

For us, blockchain's evolution in the financial system is ultimately a balancing act.