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SHORT COMMUNICATION

Discussion on: "Programmable money: next generation blockchain based conditional payments" by Ingo Weber and Mark Staples

Joerg Osterrieder[1]

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The authors Ingo Weber and Mark Staples discuss programmable money in the context of conditional payments using blockchain. Their remarkable and innovative paper describes both the concepts and the practical implementation of a new kind of programmable money.

The novelty is that programmed policies are attached to the money itself and not the accounts involved in the payment process. To achieve their goals, they need both the concepts of smart contracts and digital assets. For this purpose, they make use of the blockchain, which is able to deal with those concepts.

Their prototype environment shows how such kind of programmable money can be implemented. Their paper analyses the required blockchain architecture, the challenges of the relevant software engineering as well as the outcome, the blockchain-based programmable money.

Of course, conditional payments are well known, from debits, cheques, credit default swap payments and many other financial products. What is new, are the conditions that are directly attached to the money itself, as well as the programmable part, i.e. some kind of self-executing code, that updates, monitors and executes the conditions of the payments.

Once we have made this step towards programmable money, many opportunities arise. Notably, we can go from a pure means of money exchange to a value-based form of payments tied to well-defined ethical or social norms.

However, we want to point out that this can also carry new and additional risks. The easily programmable money can be tied to rules imposed by governments, reward good behaviour and punish opposing opinions. While money is inclusive to everyone today, with conditional payments, one has the freedom to even exclude specific individuals from participating in the economy, as can already be observed in several countries globally.

✉ Joerg Osterrieder
joerg.osterrieder@utwente.nl

[1] The High-Tech Business and Entrepreneurship Group, Faculty of Behavioural, Management and Social Sciences, University of Twente, Enschede, The Netherlands

As with all digital currencies, blockchains and smart contracts, the concept here also has several risks and challenges inherent in its setup. However, we emphasize some of the main risks, as also indicated in this paper:

1. The embedded conditionality can make this money illiquid and non-fungible.
2. The anonymity built into a decentralized system also opens up the path for illegal activities.
3. Scalability and performance issues are still widespread, as with all techniques built on blockchains.
4. Programmable money is non-fungible, and one cannot increase its supply, as can be done in today's money system with commercial bank money.

The paper concludes with open research questions and an outlook. We want to point out and extend some of those open questions. Related questions are regularly asked in the context of digital money and central bank digital currencies as well.

1. Do we need programmable central bank money?
2. What are the detailed benefits of using digital currencies with a smart contract included?
3. Do we need central bank digital currencies on a permissioned network, where central banks also set the standards for smart contracts?
4. Will we solve the open issues of processing times and scalability?
5. Can we extend those concepts from programmable money for individuals to machine-to-machine payments?

To summarize, we see the great potential that programmable money can have, and we are very grateful to the authors to have conducted this industry experiment and for sharing the outcomes in their paper.

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