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Synzeris: Synthetic zero rate
instrument as new stability
enhancing instruments for
(digital) monetary regime changes

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Synzeris – Synthetic zero rate instruments

New stability enhancing instruments for (digital) monetary regime changes and debt restructuring programs

Executive summary

The wider-spread arrival of virtual money brings us new financial-monetary concepts. The fact that virtual money is digital by nature, means that money and its behaviour can be programmed, for instance in the context of scarcity, money creation or smart contracts. Also completely new money types with new risk and return characteristics can be introduced.

Greater monetary diversity can help to improve system stability as the new money types provide more functionalities to the financial-monetary ecosystem. At the same time, new money types can also disrupt existing systems.

Synthetic zero rate instruments – in short ‘synzeris’ – can enhance system stability for (digital) monetary regime changes as well as debt restructuring programs.

Synzeris can provide temporary synthetic plugs in banks’ balance sheets and can subsequently maintain the system liquid, avoiding contagion effects while monetary regimes may change. As a result, regime changes can take place in an orderly, controlled manner. After the regime change, the synthetic instruments can be nullified – as they are synthetic by nature - effectively not causing any permanent impact.

Background to disruptive scenarios of virtual currencies

For illustration purposes, we discuss a disruptive scenario that the introduction of a new hypothetical virtual currency could bring. In this scenario, we introduce a new ‘virtual full reserve token currency’.

Creating a virtual full reserve token currency

When we take money out of an ATM, some remarkable money transformations take place. ‘Money in the bank’, that was previously held in digital form, as a claim on assets from the bank’s balance sheet, changes into a (physical) value token, without credit-, interest-, liquidity- or market risk.

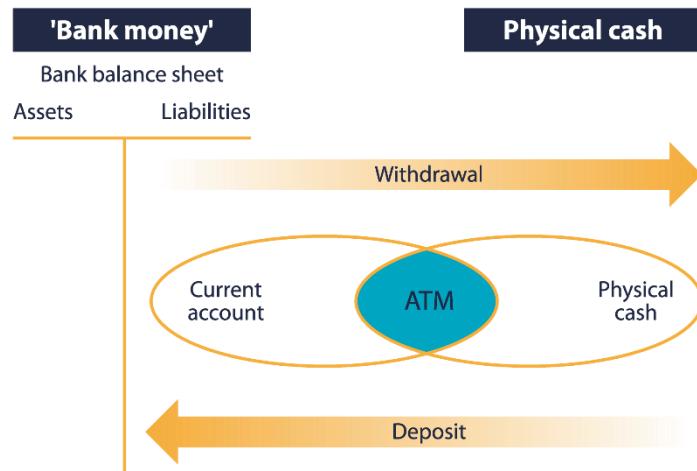


Exhibit 1. Money transformations between fiat-currency and physical cash

At the same time, the transformation results in the money's loss of interest rate returns. Also, the physical cash is relatively difficult or expensive to transfer in many transaction contexts and the risk of theft is likely to be considerably higher than the alternative of having 'money in the bank'. Finally, physical cash may be less subject to regulatory oversight and control.

A substantial part of these downsides can be mitigated by changing the physical cash into virtual token cash. Such secondary transformation can for instance take place, by using a token vault.

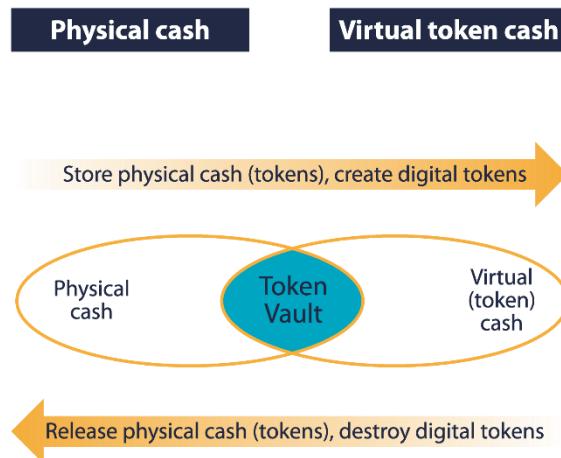


Exhibit 2. Money transformations between physical cash and virtual token cash

In the case of 'token vault transformations', the physical cash is stored into a vault. Upon storage, virtual tokens, denominated as another virtual currency, are being created or issued and they are brought into circulation. The two subsequent transformations would effectively change the fiat currency into a full reserve currency, in case the monetary base that the physical cash in the vault

provides, is not leveraged with credit growth in the alternative virtual currency's denomination.

The total virtual cash token amount in circulation could grow by more physical cash conversions. Still, the total relative value of physical cash (tokens) and virtual cash tokens remains the same, as the relative value of virtual cash token that is brought into circulation equals the relative value of the physical cash that is taken out of circulation. At least, this is true for physical cash that is changed into virtual cash tokens. This may not be true for the exchange of virtual tokens back into physical cash.

Virtual token currencies do not (tend to) remunerate interest. On the other hand, the token pool is not subject to token amount growth in the way the fiat-currency money supply grows, for instance through credit growth or by inflation dynamics. In other words, assuming money supply growth being positive over time in fiat-currency regimes, the same does not hold true for full reserve currency regimes.

As the scarcity of full reserve currency increases versus fractional reserve currency over time, so may the value of full reserve currency appreciate versus fractional reserve currency. The reverse exchange of (more scarce) virtual tokens back into (less scarce) physical tokens, would come at a real value loss, potentially preventing virtual cash token holders to change back into physical fiat-currency. If this would become a self-fulfilling prophecy, real value appreciation may actually – to an extent – compensate for the loss in foregone interest returns. Also, the value of the (older) virtual tokens may become decoupled from the (older) underlying physical cash tokens.

Case study

In 1609, the Bank of Amsterdam was founded. The Bank was established to restore trust in the monetary system that existed in and around the city. There was great doubt about the value of the many currencies of trading partners that were in circulation. Debased and clipped coins were common.

The Bank of Amsterdam was founded with a monopoly to mint and exchange gold and silver bullion. It took in gold and silver, weighted the intrinsic value and issued paper that was backed by undebased and unclipped coins. Moreover, the Bank did not provide credit (also because equity and equity markets saw the light of day in 1602), effectively making the bank a full reserve bank, until the late 18th century, when it illegally -against its mandate- started to provide credit, amongst other for trade wars. This ended both its full reserve status as well as its importance on the global scene, as it rapidly lost balance sheet, strength and influence.

Amongst others, van Nieuwkerk (2005) and van Winden (2000) point out that inflation during the 1650 – 1750 period averaged around 0 percent (the CPI remained fairly flat over the entire period). The bank withstood asset bubbles, such as the infamous tulip bubble in 1637 and bank runs in the 1660s and 1670s. At the same time, the Dutch florin appreciated vis-à-vis other non-full reserve currencies, which benefited the Dutch as a preferred trading nation, contributing to its 'Golden Age'.

Introducing instability

What is more relevant for financial-monetary stability however, is the potential for one-way physical cash flows out of the (existing) fractional reserve system into virtual full reserve currency tokens. The chances for such scenarios to occur become particularly probable in contexts of low or negative interest rates and higher credit- or systemic risks.

We currently do not see such dynamics take place with virtual coins as the bitcoin, ether or ripple, apply different monetary dynamics than the token vault scenario. Moreover, real time clearing and settlement, scalability and legitimacy of current virtual currency transactions remain hurdles to wide-scale adoption and deployment of such systems. As a result, they cannot make a significant dent into the current stability of the system.

Recent distributed ledger initiatives however, address both real time clearing and settlement issues and scalability (with real-time transaction processing capacity reaching well over a million transactions per second). Also initiatives that include regulators, monetary- and fiscal authorities in real-time transaction contexts (i.e. smart contracts) start to demonstrate that peer-to-peer networks potentially can reach higher assurance, legal and compliancy levels than existing practices.

What is particularly relevant, is that virtual currency prototypes are being developed that are programmed in such a way that they may only appear in smart contracts that do not allow negative balances or interest (the smart contracts settle directly, not allowing for residual liabilities and risks beyond the context of the smart contract).

Should economic agents have the choice between 'digital bank money', 'physical cash' or 'virtual token coins out of a vault token, with full reserve status that can be maintained by immutable code', their choices would center around the following positive characteristics:

	'Bank money'	Physical cash	Virtual token cash ¹
Positively perceived characteristics			
- low risk (credit, liquidity, interest, market)		X	X
- returns interest	X		
- no money stock growth (real value appreciation)			X
- ease of (digital) transferability	X		X
- regulation and control	X		?

Exhibit 3. Scenario example of economic agents' money type preferences

It may be clear that the likelihood for digital bank cash to be converted into virtual token cash, backed by physical cash particularly emerges during times of stress and negative or low interest rates. These cash outflows themselves could trigger further outflows, as the outflows put a stress on systemic funding.

Introducing synzeris

We basically can summarise the scenario as described above as two financial monetary systems that compete for the same pool of funding.



Exhibit 4. Fractional reserve systems can be seen as dualistic regimes and full reserve systems with equity-only finance as non-dualistic regimes

By definition, the dualistic regime requires that the funding side of liabilities and equities equals the assets side. Any outflow of funding, especially when brought out of circulation, will put strain on the system. Moreover, if such funding would be placed in the non-dualistic financial sector, it would create further incentives for remaining funding in the dualistic sector to move out.

This could lead to systemic funding erosion with a potential system collapse as a result.

A unique scenario for parties to maintain their wealth, would be to consider a regime change altogether, from dualistic to non-dualistic.

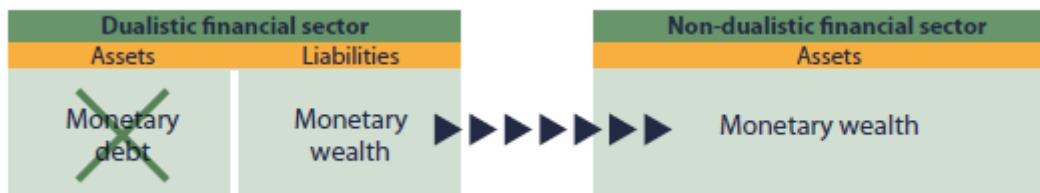


Exhibit 5. Complete systemic debt restructuring while maintaining monetary wealth

At first glance, such a scenario would seem highly unlikely, as everyone would have to 'jump together' in sync in order to make the change.

However, with the use of synzeris, a gradual and controlled regime shift could be facilitated.

Suppose, a bank could not attract sufficient funding means. If it could prop its balance sheet with synthetic zero rate instruments, that it could sell synthetically to its central bank or monetary authority, the bank basically indicates that it is no longer funded by traditional means, while with the new means, it remains funded and can provide liquidity.

The moment the central bank synthetically buys the synzeris from the bank, it can order the bank to stop charging interest on both sides of the bank's balance sheet, while prohibiting the bank to lengthen its balance sheet.

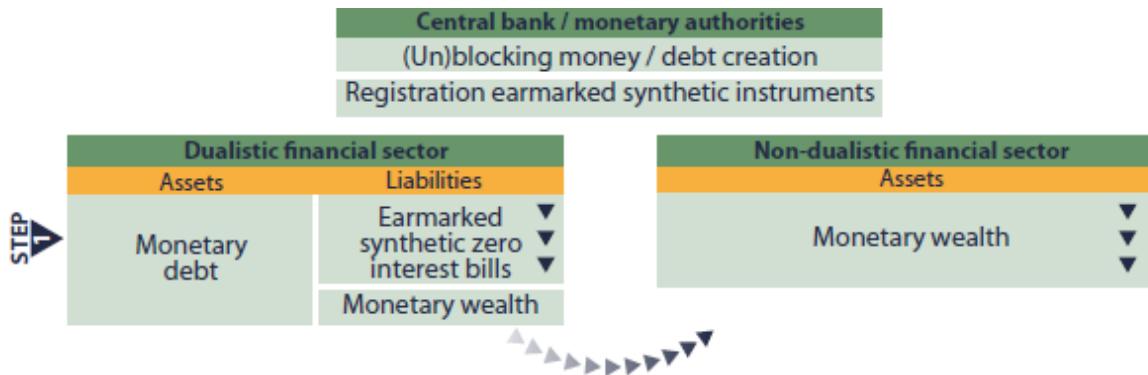


Exhibit 6. The use of synthetic zero rate instruments (synzeris) to maintain banks afloat in times of stress.

Obviously, if the bank would be able to fund itself without the use of synzeris, it then could nullify the synzeris with the central bank or monetary authorities and resume operations as before.

If not, and with zero interest rates on deposits, such could even be very likely, the system can remain liquid and use a certain time frame, perhaps even 3, 5, 7 or 10 years to shift from its dualistic status to its non-dualistic status.



Exhibit 7. After the regime change, both debt positions and synzeris are nullified

Further research on how to create and structure synzeris as well as policy actions and event triggers will be required to validate practical use and deployment of synzeris as new monetary policy instruments. Nonetheless, the author wishes to share these preliminary lines of thoughts to stimulate debate and the development of new policy tools.

Sources and references

Nieuwkerk, M. van, *Dutch Golden Glory. The financial power of the Netherlands through the ages* (Haarlem, 2005 / 2006)

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