

## Yves Mersch: Digital Base Money - an assessment from the European Central Bank's perspective

Speech by Mr Yves Mersch, Member of the Executive Board of the European Central Bank, at the Farewell ceremony for Mr Pentti Hakkarainen, Deputy Governor of the Bank of Finland (Suomen Pankki), Helsinki, 16 January 2017.

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We are living in digital times. The internet and portable online devices have radically transformed the way we use and exchange information, and the way we exchange money. Money has been digitalised in many ways and we can now, for instance, transfer bank deposits electronically and pay with e-money.

Today I will focus on one type of digital money – Central Bank Digital Currency, or Digital Base Money (DBM). This is money that is characterised by two features: (1) like banknotes in circulation, DBM is a claim on the central bank; (2) in contrast to banknotes, it is digital.

Of course, DBM already exists. Commercial banks and some other types of institution hold digital claims on central banks in the form of deposits. But there has been more recent discussion about whether central banks should provide DBM to a wider range of counterparties, allowing non-banks, including households, to hold accounts at the central bank. The People's Bank of China, the Bank of England and Sveriges Riksbank have published on this topic or have indicated that they are conducting some work on it.

I see two main reasons why this discussion on DBM has been started.

First, electronic payments have become increasingly popular. There are already a number of electronic payment methods provided by the financial industry, such as credit, debit and pre-paid cards. But these methods are based on commercial bank money and people may prefer to hold claims on the central bank to avoid the risk that the commercial bank defaults. From this perspective, an increasing demand for DBM could emerge.

Second, some technological developments may now render the introduction of DBM much easier and potentially less expensive than ten years ago. This includes Distributed Ledger Technology, or DLT, a variant of which is used for Bitcoin.

These are good reasons to start a discussion on DBM and for research to understand better the options available for DBM and their implications for central banks in fulfilling their mandates. In some European countries, for instance in Sweden and Denmark, electronic payments have started crowding out the use of cash. This may give the discussion an additional drive. In the euro area, however, we do not see a trend away from cash. By contrast, in recent years the growth in demand for banknotes in the euro area has by far exceeded that of economic output.

For the ECB, the discussion is therefore mainly an analytical one. The ECB would in particular have to understand the impact – positive or negative – of DBM on our primary objective of price stability before considering introducing it. Moreover, any value judgement on DBM needs to be assessed against a number of high-level principles, namely (1) technological safety, (2) efficiency, (3) technological neutrality, and (4) freedom of choice for users of means of payments.

Today, I would like to outline some of the various options for designing, issuing and managing DBM, and discuss some of their potential consequences. This will not be an exhaustive list, but it can give first insights into the complexity of the issue at hand.

## Account-based versus value-based Digital Base Money

Let me start with a primarily legal dimension, which is the distinction between account-based and value-based DBM. Current DBM in the form of commercial bank deposits at the central bank is account based. A transfer of DBM from one bank to another reaches finality when the funds are debited from the account of the payer and credited to the account of the payee. The central bank is directly involved, as it registers the transfer.

Cash is different: it is value based and accounts are not involved. A transfer of cash is final when the payer hands the cash over to the payee. The central bank does not register transfers of cash, only the initial issuance and the final return.

DBM held by non-banks could either be account-based – in this case, the central bank would open an account for every interested non-bank – or it would be value-based like cash. In this case, interested non-banks would need to be equipped with electronic wallets for holding and using DBM. A transfer of DBM would require that the funds be debited from the payer's electronic wallet and credited to the payee's device without the involvement of the central bank.

Whether DBM is account based or value based might matter for several reasons. Let me mention two. First, value-based and account-based DBM may require very different types of technology with specific safety features and costs. DLT may be fit for both, but in different ways. Second, anonymity towards the central bank can be achieved only with value-based DBM. These factors may influence the demand for DBM by non-banks and whether DBM would be used more to substitute cash or bank deposits.

### Options for providing DBM

With that distinction in mind, let me now turn to the way DBM could be provided to non-banks.

A straightforward approach would be to **allow non-banks to convert commercial bank deposits into DBM at a rate of 1 to 1**. As cash can always be paid into a bank account, this would of course also allow non-banks to convert cash into DBM.

It may be argued that with such an approach bank runs could unfold more easily and faster. Non-banks could react to bad news about a certain bank by quickly switching their deposits into default-free DBM – there would be no need to keep the cash under the mattress. This would counteract important regulatory efforts to reduce excess volatility in the movement of funds between types of investment

Yet it is already easy to switch deposits from a bank hit by bad news to another commercial bank that is perceived as safe, so I don't see an additional risk of bank runs in the event of an idiosyncratic banking event. The situation would be different in a systemic banking crisis, though. If depositors perceived the entire commercial banking sector as fragile, a sector-wide run might be made more likely and severe by DBM, negatively impacting the efficiency of financial markets.

Depending on how attractive DBM is for non-banks, a more gradual substitution of commercial bank deposits by DBM is of course possible too. This could have different effects on commercial banks. For example, commercial banks with excess central bank reserves could reduce their excess reserves when they experience a DBM-induced deposit outflow. This could increase their profitability in the current situation, as deposits bear a higher interest rate than excess reserves.

But banks without excess central bank reserves might need to replace deposits by central bank credit. They would need to provide more collateral to the central bank. And the interest rate to be paid on central bank credit may, at least in normal times, be higher than the average rate on customer deposits. The profitability of these banks might suffer. A consequence could be higher interest rates on bank loans. These effects may require an adjustment of central bank policy

rates and could make monetary policy more difficult until a new steady state is reached.

More restrictive approaches to providing DBM may also be considered. For example, the central bank could provide DBM to non-banks exclusively in the context of asset purchases. That would mean that, to obtain DBM, non-banks would need to sell certain assets to the central bank. They would not be able to convert commercial bank deposits or cash into DBM directly.

With this more restrictive approach, the central bank would keep the amount of DBM under its full control. It would decide how much assets it would buy. Bank runs or gradual outflows of deposits from commercial banks would not be induced.

However, this approach would create some difficult policy decisions for central banks. Which assets should be purchased, how much and at which prices? If the demand for DBM was high relative to the amount of DBM the central bank would like to provide, two different prices for eligible assets could emerge: a market price in trades between two market participants; and a price below the market price when the same assets are sold to the central bank against DBM. As a consequence, DBM would be worth more than cash and commercial bank deposits. DBM would truly be a currency on its own. The central bank would be the issuer of two different currencies, an outcome that does not seem to be in line with fundamental ECB principles.

If the central bank wanted to avoid such a situation, it would either need to increase the amount of DBM it provides or make DBM less attractive, for example by lowering the remuneration of DBM. I will come to this later.

Given these challenges, the more straightforward approach which would allow non-banks to convert bank deposits directly into DBM at a rate of 1 to 1 may therefore appear more attractive, provided that non-banks mainly substitute cash rather than bank deposits with DBM. As long as DBM mainly replaces cash, negative side effects of DBM might be unlikely. In this context, consideration could be given to making DBM as cash-like as possible, at least initially, until more experience is gained.

## **Remuneration of DBM**

This brings us to the next important question: how should the central bank remunerate DBM held by non-banks?

For the euro area, one option could be to remunerate DBM at the same rate as excess central bank reserves held by commercial banks, i.e. at the rate on the deposit facility. This would mean applying a policy rate directly to funds held by non-banks. This could potentially strengthen the transmission of monetary policy rate decisions to the economy.

The deposit facility rate is currently  $-0.4\%$ . At this interest rate, demand for DBM may be low. But in normal times, when it is positive, remunerating DBM at the deposit facility rate may be risky. It could make it too attractive to convert commercial bank deposits into DBM. As I argued a few minutes ago, this could have negative side effects.

An alternative option would then be to remunerate DBM at a rate of  $0\%$ . This is the rate at which cash (i.e. banknotes and coins) is de facto “remunerated”. With a rate of  $0\%$ , non-banks are unlikely to convert commercial bank deposits or cash into DBM if their motive is only to obtain a better remuneration. Even in times of negative central bank rates, retail bank customers rarely receive a negative remuneration on commercial bank deposits.

Even so, a  $0\%$  interest rate on DBM held by non-banks is not without policy risks. If banks have large amounts of excess central bank reserves remunerated at a negative rate, they could try to find ways of replacing their excess reserves by DBM, such as by setting up a non-bank subsidiary. This may counteract monetary policy.

If the central bank considered this risk important, it could combine the two approaches I have mentioned so far. It could remunerate DBM held by non-banks at a rate of 0%, if the deposit facility rate is positive. And if it is negative, we could remunerate at the deposit facility rate. This may, however, entail strong movements out of DBM when the deposit facility rate turns negative.

Moreover, there is a risk that a negative remuneration of claims of non-banks on the central bank would substantially undermine the confidence in the central bank.

## **Technology for DBM**

Finally, let me mention the technological dimension of DBM. I said that one reason why the discussion on DBM for non-banks has started is that we now have technologies that could make it easier to issue DBM. This includes, in particular, Distributed Ledger Technology (DLT). DLT carries great potential, but is it already advanced enough to be applied by central banks? Reputation is crucial for central banks. We cannot afford mistakes in the technologies we employ. Before the central bank can start providing DBM to non-banks, we need to be sure not only that DBM is unlikely to have negative economic side-effects, but also that the relevant systems are operationally efficient and safe.

But we should not be dogmatic, either. If a more efficient, but absolutely safe, technology for central banking operations can be found, introducing it could reduce costs for both the central bank and users, and therefore for society as a whole.

## **Conclusions**

Let me conclude.

There are many ways to design DBM for non-banks. The different options have potential impacts – both positive and negative – that need to be studied and considered carefully. Only when the best way of designing DBM has been identified, can a decision be made as to whether DBM of non-banks should be introduced at all. The most important question for the ECB is whether introducing a DBM would affect our ability to honour our mandate. The impact may be negative if non-banks replace commercial bank deposits with DBM to a significant extent. More generally, any materialisation of DBM would have to be assessed against four principles: (1) technological safety, (2) efficiency, (3) technological neutrality, and (4) freedom of choice for users of means of payments.

As there has been some speculation about a possible intention of central banks to abolish cash, please let me stress one aspect relating to the principle of freedom of choice: if DBM for non-banks were introduced, it would exist alongside cash for the foreseeable future. It would merely be an additional option for non-banks to hold funds. In particular, those who are sceptical about digital devices would naturally continue to use cash.

Even where efficiency gains are possible when people substitute some of the cash for DBM, this would still require that the technology used for DBM be operationally reliable and secure against attacks. Technological feasibility and cost considerations alone will not change our mandate.

Thank you!