New currencies for Switzerland?

The challenges of a digital franc and private stablecoins for Swiss banks

June 2021
Discussion paper of the SBA
DISCUSSION PAPER OF THE SBA

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The call in the White Paper of the former Libra Association (today Diem Association) in 2019 was loud and clear: a modern, digital economy needs modern, digital means of payment and investment. The concrete suggestion of private, purely digital "stablecoins" shook up politicians and authorities worldwide. The use of digital money is convenient, fast and inexpensive, opening new possibilities in the economy, and will therefore increase sharply in the future.

This paper aims to contribute to an informed discussion and the formation of public opinion from a banking perspective. The discussion paper tracks the international development in the area of digital money, presents the opportunities and challenges of diverse models for the Swiss banking center and poses critical questions on the correct positioning of relevant levers.

Overview

- Digital money, in particular digital central bank money (so-called Central Bank Digital Currency, CBDC) offers a potentially significant, social and economic added value. The question is therefore not whether, but only when and in what form it will be introduced and widely used.

- It cannot be ruled out that the dividing lines between modern means of payment will increasingly run more between markets (or "ecosystems") than between nation states in the future. This development could challenge national currency regimes and the monetary sovereignty of states. However, central banks must be able to fulfill their mandate effectively even in a world with new kinds of digital money.

- Central banks, banks and technology companies worldwide are working on the design of digital forms of money. The advanced work at the eRMB in China, Diem’s new project in the USA, the consultation on the e-euro or the introduction of digital currency in the Bahamas, which has already taken place, illustrate this trend. Since money represents the foundation of the banking sector, it must address the issue swiftly and in detail.

- The Swiss center of the BIS Innovation Hub, the SNB and SIX have successfully completed a feasibility study on the integration of tokenized assets and central bank money. The use of so-called wholesale tokens, which would be implemented between financial market participants, could increase efficiency in the area of trading, settlement and management of securities.

- Currently, there are still many outstanding questions regarding the design of digital money. Depending on the design, there are potentially disruptive consequences and it could fundamentally change banks’ business models or even the nature of central banks.
In view of the numerous strategic, economic, technological and legal challenges, the authorities and the financial industry are well advised to ensure optimal framework conditions in the monetary field within Switzerland.

The introduction of digital currencies and design questions regarding payment methods and infrastructure represent strategic business and political challenges on which public authorities and business must take a productive position. An informed discussion on the design and implementation of digital currencies is essential. It is time for the general public to consider these issues and drive the opinion-forming process.

**A short story about digital money**

So-called cryptocurrencies such as Bitcoin, Ethereum and others are based on the Distributed Ledger Technology (DLT) and have attracted a great deal of public attention for years. But work on digital central bank money (CBDC) only picked up significant pace across the board with the publication of the White Paper by Libra/Diem in 2019. With Libra/Diem, private digital money that is stable against a reference currency (a so-called "stablecoin") was within reach for the first time. (cf. Box 1: Forms of money). It should greatly simplify access to financial services globally due to DLT and enable cross-border payment transactions instantaneously, inexpensively and with no interface issues with other payment systems.

This development comes at the very time the use of cash is plummeting by comparison with electronic payments. For example, in Sweden only 6% of all transactions are processed in cash ([Sveriges Riksbank, 2019](https://www.riksbank.se/en)). In Switzerland the proportion declined rapidly from 47.7% (2019) to 31.7% (2021) ([Swiss Payment Monitor, 2021](https://www.swisspaymentmonitor.ch/)). This ever-increasing demand for electronic payments compelled the Swedish Riksbank and other central banks years ago to investigate the consequences digital central bank money would have for all aspects of the monetary system, and whether it could simplify the systematic, transparent implementation of monetary policy. The conclusion: A CBDC could greatly amplify the potential of monetary policy.

In addition, there are many other advantages of digital money. Currently, transnational or multi-currency transactions are expensive, inconvenient and tedious. The demand for modern alternatives is especially high and urgent in the export sector as well as for private individuals¹. In emerging and developing countries, digital currencies theoretically also permit financial inclusion to be enhanced, thus promoting prosperity. Finally, digital money enables novel tokenized assets to be processed and, as a currency itself, it also represents an investment opportunity.

¹ The G20 has made the improvement of cross-border payments a priority under the Saudi presidency in 2020. The Financial Stability Board (FSB) is implementing a roadmap for faster, cheaper, more transparent and inclusive cross-border payments.

"Currently, transnational or multi-currency transactions are expensive, inconvenient and tedious. The demand for modern alternatives is especially high and urgent ..."
Yet the demands on private and sovereign digital money go further. Companies and private individuals in the "digital economy" sector are working on business models in the areas of the Internet of Things (IoT), Machine-to-Machine (M2M) or the trading of digital assets which require programmable digital money on the payment side. By means of smart contracts\(^2\), devices could be connected to a DLT, whereby services would be paid automatically on a pay-per-use-basis between two robots on fulfillment of the contract, for example. The availability of trustworthy, programmable digital money constitutes a precondition for the future competitiveness of an economy.

The programmability of digital payment methods can also be implemented for compliance purposes. For example, their use can be barred for certain purposes, thus preventing the financing of terrorism, money laundering, corruption or fraud. Business loans could be programmed in such a way that they could only be used for the company’s intended investment purpose but not for expensive cars or luxury watches. Similarly, payment for a real estate purchase could be released automatically as soon as the change of ownership has been registered in the (digital) land register.

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**Forms of money**

**Money** as a general term can take various forms and is used synonymously with **means of payment**. A currency, on the other hand, is always a unit of account that is characterized by the fact that it is used as the officially recognized, legal and common method of payment in one or more countries. The Swiss franc is the national currency of Switzerland since it is anchored in legislation and as a general rule, is used for the payment of goods and services. Within a state currency, the government as well as private, supervised institutions (such as banks) can create money through their role as lenders.

Following the taxonomy of the SNB (Jordan, 2019), different forms of **digital token money**, **digital money for short**, can be distinguished in addition to government cash, SNB book money for financial market participants and book money issued privately by financial intermediaries. Digital money differs from the book money of banks or credit/debit cards by various characteristics such as the underlying technology, programmability, regulation of access or its issuers.

In principle, **a state digital currency** should be distinguished from **private digital money**.

**State digital currency**

Digital money issued by a central bank is referred to as a **digital central bank currency (CBDC, Central Bank Digital Currency)**. There are basically two areas of application for such a currency. Either the central bank grants the general public access to the CBDC (so-called **Retail CBDC**), or it only makes it available – as today the demand deposits on SNB current accounts – to commercial banks and other financial market participants (so-called **Wholesale CBDC**).

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\(^2\) Smart contracts indicate contracts that are mapped by computer protocols, which may make the physical location of contracts redundant.
As with bank deposits today, the issuance of a digital franc by the state is not absolutely necessary. Here it is also possible for regulated commercial banks to issue digital money for the general public in the form of a stablecoin denominated in francs. Against the franc, this stablecoin would retain its value as is the case with DCHF from Sygnum, for example. A further example of a privately issued state digital currency is the recently announced Diem USD stablecoin issued by Silvergate.

Private digital money

In principle, state authorities have no sovereignty over private digital currencies that are legitimized by their acceptance within a circle of users, thus facilitating their use. However, they can regulate such currencies. Private payment methods include cryptocurrencies and stablecoins.

Cryptocurrencies, such as Bitcoin, are based on technologies such as DLT/blockchain, and their money supply is based on numerical procedures. For this reason, they are generally not secured and have no intrinsic value.

Stablecoins, on the other hand, are based on intrinsically valuable assets such as individual currencies, a currency basket or commodities (e.g. precious metals). They can be stabilized accordingly through the active or automated control of the underlying assets, therefore resulting in much less fluctuation in value against official currencies than cryptocurrencies.

The restricted fungibility of programmable designer money with today's currencies is only one aspect of the still underdeveloped public discussion on the practicality of diverse forms of money. Overall, a realization has crystallized that programmable digital money can be expected to disentangle the traditional functions of money (store of value, means of exchange and accounting unit). This may intensify "the competition" for using a currency for a particular purpose or undermine the role of banks as financial intermediaries.

Concerns regarding purely private payment solutions...

The increasing transformation of business procedures in industry with the use of blockchain, as well as changed customer behavior are leading to increasing demand for digital payment and store of value solutions. The possibility of linking customer preferences and payment patterns offers wide-ranging, potential applications for privately issued tokens for business models in the field of the data economy. Against this background, issuers will aim to rebundle payment functions with traditionally separate functions, such as social network services, in order to position their currency.

In this way, private issuers of stablecoins will mutate to natural monopolists in a ecosystem of companies, thanks to network effects. These ecosystems can be further expanded with the possession and application of large data volumes. Market power is accompanied by (i) competition policy concerns, (ii) increased systemic risks, e.g., from speculative attacks, and (iii) the restriction of the sovereign remit of monetary policy authorities.
Aside from such concentration risks, there are whole range of concerns regarding aspects of data protection and the personal privacy of consumers. Only a few consumers and investors are likely to fully understand the risks of novel private digital money today. Doubts relate to the traditional need for security, such as protection against fraud.

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Furthermore, international issuers of private stablecoins are emerging, whose place of jurisdiction and law to which they are subject are often unclear. For example, they have the possibility to collect and store customer data on a large scale. The cross-border coordination and monitoring of guidelines on notification, consent, protection, deletion and transfer of personal data have been challenging, however. It is often not possible today to guarantee adequate consumer protection, and the regulatory principles that apply to private, non-regulated issuers of digital money still have to be drafted.

... are leading to a mindset change at central banks

The White Paper on the private stablecoin Libra/Diem was a catalyst for global work on digital central bank currencies. These had previously enjoyed a largely academic niche existence and were viewed with skepticism by official bodies. From mid-2018 onward, the authorities realized increasingly that the introduction of CBDCs would not necessarily have negative side effects for commercial banks and thereby jeopardize financial stability. (cf. Fig. 1).
In the October 2020 fundamental report published by the Bank for International Settlements (BIS) and seven large central banks, a "do no harm" premise was formulated as a kind of "Hippocratic Oath" for the issuance of CBDCs. At the same time, new forms of money offered by central banks were not to undermine their mandate to maintain stability. These should not replace, but rather supplement, today's central bank money and exist in a payment environment where privately issued forms of money can also be used. The central banks further undertook to support innovation and pursue efficiency gains.

Currently, about 80% of central banks surveyed by the BIS are working on an aspect of CBDC, be it research, design or pilot testing. In 2020, the Bahamas became the first nation worldwide to officially launch the "Sand Dollar" as its retail CBDC. Further countries are planning a retail CBDC as an alternative to cash.

Specifically, China and Sweden are already making good progress and conducting test runs. Under China’s Digital Currency/Electronic Payment (DC/EP) project, pilot tests are taking place in some cities, and in the first quarter of 2021, the first business-to-business transaction was processed via the so-called e-RMB. In Sweden, the decision to launch the e-krona is expected as early as 2022. The ECB is also working on the configuration of a digital euro and conducted a consultation at the beginning of the year. However, the introduction of the digital euro is not expected before 2025.

Activity around the wholesale CBDC is also high. The Bank of Thailand is already at an advanced stage with its Inthanon project. Together with the Hong Kong Monetary Authority, it plans to introduce a multi-CBDC platform that could process multi-currency transactions much more quickly and cost-effectively. Singapore is also about to launch a wholesale CBDC. Currently, it is only waiting for a decision from the authorities to implement the project ("Ubin").
Switzerland is also taking action.

Switzerland is among the countries exploring the possibilities of a wholesale CBDC. As part of "Project Helvetia", the SNB, SIX and the BIS Innovation Hub (BIH) reported in December 2020 on two successfully conducted feasibility studies on the settlement of tokenized assets in central bank money on a distributed ledger. In June 2021, SNB, Banque de France and BIH announced an experiment in the settlement of cross-border transactions that they are conducting jointly with a private-sector consortium. Working on a wholesale CBDC illustrates SNB’s view that the private sector itself is capable of developing specific solutions for customer payments (Maechler, 2021)

In December 2019, the Federal Council released a report on digital payment methods that examines the possibilities, opportunities and risks of launching a crypto franc (e-franc). It concluded at the time, as had SNB, that an e-franc would not currently bring any additional benefits for the general public, but would pose risks for monetary policy and financial stability. However, a wholesale CBDC could potentially help increase efficiency in trading, settlement, and securities management.

Common to all initiatives is the need to design a CBDC in such a way that the potential of digital currencies can be realized in a wealth-enhancing way without jeopardizing proven, trust-building elements in today's financial system or destabilizing the banking system. Risks and dangers can in fact be greatly reduced by design decisions and regulatory measures. In narrowing down the options, a state must first determine what goals it wants to achieve by issuing a CBDC.

**Project Helvetia**

As part of "Project Helvetia", SNB successfully conducted two feasibility studies together with SIX and the BIS Innovation Hub in 2020. On the one hand, the functional and legal possibilities of issuing a wholesale CBDC for the interbank market were examined (PoC1). On the other, the existing payment system was linked to a DLT platform to process tokenized assets (PoC2).

The parties involved evaluated and compared both use cases. SNB, SIX and BIS Innovation Hub are continuing Project Helvetia in 2021. The goal is to ensure that the benefits of a DLT solution exceed its costs.

**Increase in efficiency in interbank market with a wholesale CBDC**

The potential characteristics of a digital franc determine its intended use and risks at one and the same time. With a digital wholesale franc, for example, improvements could be realized in interbank market settlements, delivery-versus-payment (DvP) systems in securities trading, and cross-border and multi-currency payments.

Technologically, such a system would be more efficient and faster than the current one. However, since today’s system already works very efficiently and instant payment will be introduced in 2024 with SIC5, the effective advantages of a wholesale CBDC should be very carefully clarified with regard to need and necessity. Looking at the safety of and confidence in a wholesale CBDC, the gain lies in the elimination of
credit and liquidity risks in settlement. For this reason, financial stability could be strengthened without necessarily changing SNB’s fundamental remit in the financial system or the two-tier banking system.

The introduction of a new system today therefore focuses essentially on the infrastructure. It would have to be interoperable with foreign currencies from the start and involve many commercial banks as well as various central banks. Harmonization between various jurisdictions should be pursued. Public-private international collaborations such as the Fnality\textsuperscript{3} initiative are ideal for this purpose. Further questions remain to be clarified, such as who should pay for the investments in a CBDC-compatible infrastructure or whether a wholesale CBDC should be programmed to give SNB the ability to charge tailored, flexible interest rates.

No fundamental upheaval in the functions of individual market participants is likely to occur with the introduction of a wholesale CBDC. However, the targeted efficiency gains would also go hand-in-hand with revenue losses. These could, however, in turn be offset by efficiency gains in digital asset classes and by lower capital requirements due to the reduction in counterparty risk. It is possible nonetheless that the availability of digital wholesale currencies will increase the complexity of liquidity management (cf. BIS, 2020a).

For the general public, even if they were to remain excluded from the direct use of digital currency, the variety of offers and price structure might evolve to their benefit.

**Retail CBDC maintains monetary policy sovereignty**

The demand of the general public for digital, programmable money, however, would remain unsatisfied after the introduction of a wholesale CBDC. Given the rapid developments in digital currencies, it is conceivable that economies in countries without local digital currencies for the general public could switch to alternative platform-dominated payment methods (Brunnermeier et al., 2020). Only state retail digital money could guarantee that public money remains a country’s unit of account. For this reason, retail CBDCs are now the focus of most central bank work (BIS, 2020b). In this respect, the design of a currency that is intended to be merely an anonymous digital surrogate for cash is fundamentally different from that of a programmable, IoT-enabled means of payment that is intended to replace private digital money.

Strengthening monetary sovereignty is a key impetus for the introduction of a retail CBDC. This can serve as a defense mechanism against “digital dollarization,” the heavy penetration of an economy by pan-national stablecoins or foreign retail CBDCs. Such a penetration could cause monetary policy transmission channels via the money supply and via base rates to no longer perform so well. A retail CBDC also secures the central bank’s role as “lender of last resort” in addition to the profits from creating money (seigniorage). This would be challenged if the central bank is not the issuer of the currency in which the debt has accumulated.

Digital central bank money for the general public also forms an emergency infrastructure for bank funds. A retail CBDC could, however, expand central banks’ options in undesirable ways, for instance by favoring the enforcement of even lower negative interest rates or the efficient disbursement of helicopter money.

Banks also benefit from the advantages of a programmable, digital currency. Customers will be more innovatively and economically empowered; digital assets will become highly popular more quickly and relevant regulatory issues such as compliance by design can be addressed sooner. Trading in digital asset classes and digital currencies also opens up the opportunity for new business models and follow-up

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\textsuperscript{3} As part of the Fnality USC Project, token money is issued in order to carry out the settlement of tokenized transactions.
business for banks. Innovative crypto services or e-wallets could provide an opportunity for additional revenue streams in the area of secure value storage. These advantages are derived from the functionalities of digital currency, but do not require the central bank to act as an issuer.

Major challenges for banks

However, digital forms of money also harbor risks for the financial system. For example, the widespread use of a private stablecoin could not only undermine the effectiveness of monetary policy, but also reduce banks to a mere provider role or even displace them altogether. It is no coincidence that there was not a single bank involved in the original Libra consortium, yet Diem is now collaborating with a regulated bank for the issuance of a USD stablecoin Diem.

Similar risks also exist with the retail CBDC, depending on the design. The combination of the security of a currency with the convenience of deposits is extremely attractive for the user. When an anonymously designed retail CBDC serves as an equivalent supplement to cash (token-based CBDC), offers additional functions and has unlimited availability for private individuals and companies, it threatens to displace the bank deposits. A bank run from current bank deposits to CBDC balances poses a risk to financial stability. Particular forms of a retail CBDC can accelerate the disintermediation of the financial system to an unintended extent or exacerbate the danger of bank runs.

If the general public were by and large to prefer a digital central bank franc to bank deposits, banks’ intermediation capacity could be challenged. In this case, the refinancing source for favorable credits might dry up for the banks, which would have corresponding macroeconomic consequences, especially in turbulent times. Seigniorage would be lost, as a result, and customer migration would lead to the loss of follow-up business. In addition, the margins on payment transactions as well as on interchange fees would shrink.

SNB’s balance sheet would be further extended with the additional customer deposits, leading to further debates on the structure of the assets side. One hotly debated issue in the Academy in this case is the direct transfer of deposits by the central bank to commercial banks for traditional lending.

Further doubts pertain to trustworthiness towards any foreign issuer of a dominant digital currency, such as a foreign central bank. In principle, it would be possible to track the use of money and exclude groups of people from using it, provided it is programmable. Such information and the possibility of exclusion could, for example, be abused in the form of political pressure on a country. In this year's ECB consultation on the digital euro, the protection of personal privacy was specified as the most important requirement in payments.

A decision on the introduction of a CBDC and its design thus goes far beyond monetary and economic policy considerations and is ultimately a strategic challenge for the state. For example, cyber risks would have to be assessed in advance and prevented if possible. Deliberate design decisions and good regulation, however, can mitigate many risks of retail CBDCs.

“The combination of the security of a currency with the convenience of deposits is extremely attractive for the user.”

4 Account-based retail CBDCs must be differentiated from token-based retail CBDCs. In this case, the general public receives a deposit account with SNB or a bank – while maintaining the two-tier system.
Stablecoin from banks as solution?

Numerous risks could be contained by the issuance of a stablecoin by government-supervised Swiss entities such as financial institutions. Two years ago, the Chairman of SNB's Governing Board, Thomas Jordan, had already expressed the view that only the regulatory and competitive framework conditions need to be the same for different providers of book and token money. In any case, the market will ultimately decide which forms of money households and companies prefer. This statement implies that, given appropriate customer needs, a franc-denominated stablecoin could also be issued privately by regulated institutions.\(^5\)

One example is Sygnum's DCHF, a digital token that is pegged 1:1 to the Swiss franc and fully backed by francs. In the U.S., the Diem Association is working with the Fed-regulated Silvergate Bank on issuing a USD stablecoin. A currency-based stablecoin that is not issued by a supervised institution is likely to always face a certain trust problem, as also shown by the discussions about Tether. In the long run, this is likely to be a disadvantage for general distribution to a wide audience.

It is evident that not only the central bank which shapes the design primarily to ensure the effectiveness of monetary policy and financial stability, is required to step up to the mark, but also policymakers and the business community. For a digital currency to be able to serve P2P payments by name, the AML/CFT framework which today is based on the pillar of financial institutions, would have to be revised. A public consensus is also needed on whether monitoring payment flows is desirable and, if so, to what extent.

Safeguarding financial stability is key

It is vital that a digital franc does not undermine the robustness of the financial system. In order to ensure that the banks' deposit base is not destabilized, the aim should be to retain the two-tier banking system. The division of tasks between the banks and SNB has proven its worth. Any impairment of banks' refinancing and liquidity planning could have negative effects on lending. Such effects would have to be taken into account in the design of a CBDC.

In order to maintain financial stability, the general public should not have direct, unrestricted access to an account at SNB should a CBDC be issued (cf. Fig. 2). Banks should have access to the central CBDC infrastructure, but in turn continue to provide access for private customers via accounts and wallets.

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\(^5\) Privately issued stablecoins for the general public based on a currency are occasionally described by the term "scriptural money."

\(^6\) Anti-Money Laundering/Combating the Financing of Terrorism.
Safeguarding financial stability and effective monetary policy also requires that a retail CBDC be designed as a means of payment and its use as a savings or investment vehicle should not be encouraged. This could be guaranteed by capping holdings of a CBDC. However, it must be ensured that if an account is capped or a token has limited availability, the fungibility between cash and CBDC is not lost. It is quite conceivable that, due to a quantity cap and technological superiority, a digital central bank franc would trade with a premium over cash, which would be problematic.

Non-implementation must be examined

Due to the smooth financial and payment system in Switzerland, the pressure to take immediate action appears to be lower for SNB than for other central banks (cf. Swiss Payment Monitor, 2021). However, in a future world where the use of programmable digital money is commonplace, economic players will not refrain from using it just because SNB does not offer a CBDC. Nevertheless, in addition to an in-depth analysis of various design forms of a CBDC, the option of “doing nothing” should also be carefully examined. At first glance, this appears to be beneficial for Switzerland in terms of minimizing risks for the banks.

However, inactivity also harbors new risks. It can be presumed that in the absence of a modern means of payment, the digitization of the economy and business models would proceed more slowly and thus compromise Switzerland’s competitiveness. Outdated legacy systems for payment transactions could not
be efficiently and fully adapted to the new circumstances of the global digital economy. Interoperability with foreign digital markets would be a challenge.

One possible consequence is that individuals in Switzerland will turn to platforms using foreign digital currencies or digital money for their payment transactions. The associated systemic and monetary policy risks due to the loss of currency sovereignty cannot be fully assessed at present. Therefore, research in this area must be intensified. Any conclusion that the status quo is the least risky option seems premature and shortsighted.

**It is essential to shape public opinion.**

Even if the introduction of a CBDC in Switzerland is not imminent, such forms of money will undoubtedly gain in importance. Several countries, for various reasons, have already made considerable progress in their conception and implementation. For Switzerland, the introduction of a major digital currency abroad or on large platforms could have implications for the domestic financial system. Money concerns all of us.

The introduction of digital currencies and design questions regarding payment methods and infrastructure represent strategic business as well as political challenges on which public authorities and business must take a productive position. An informed discussion on the design and implementation of digital currencies is essential. It is time for the general public to consider these issues and drive the opinion-forming process.