



National Bank
of Ukraine

Report on the results of the conference

#CBDCinUA2020



CENTRAL BANK DIGITAL CURRENCIES:
New Opportunities for Payments

Kyiv 2020

On 21 February 2020, jointly with USAID Financial Sector Transformation Project, the International Finance Corporation (IFC), Canada-IMF Technical Assistance Project and with the World Bank participation, the National Bank of Ukraine (NBU) held in Kyiv the [International Conference: Central Bank Digital Currencies: New Payment Opportunities](#).

The NBU initiated a gathering of representatives from fifteen central banks of Canada, Sweden, Japan, the South African Republic, Uruguay, Finland, Lithuania, Poland, Belarus, Germany, Turkey, and others. Together with central bankers, representatives of international organizations, financial market (banks and fintech), researchers, Ukrainian and foreign experts joined the discussion on the possibility of introducing central bank digital currency (CBDCs). Overall, about 350 persons attended the event.

The Conference received positive feedback from both the attendees and the media.

Yakiv Smolii, NBU Governor, [gave an opening speech at the Conference](#) and stressed the prerequisites of getting central banks on board, reminded on the global trends in researching CBDCs and presented a pilot project on the NBU issuing own central bank digital currency.

The Governor noted that the use of cash has been declining in many countries, including Ukraine. Thanks to FinTech, there are increasingly more ways to make electronic payments without using payment cards and banking services. Also, regulators do not leave unnoticed the second wave of cryptoassets, the appearance of stablecoins. In these circumstances, central banks have to look for ways to retain their leadership in the payment system in order to ensure that the public has access to central bank money and at the same time to develop innovations in the financial sector. According to the Bank for International Settlements (BIS), 80% of surveyed central banks¹ are developing various projects on issuing digital currency.

The Governor noted that the NBU is being proactive and implemented a pilot project in 2018 that researched the key aspects of CBDC circulation:

- by testing the underlying technology behind the e-hryvnia. As part of that test, the regulator analyzed how distributed ledgers performed in terms of facilitating the issuance and circulation of digital currency
- by setting up a temporary methodological framework for the e-hryvnia that included provisional rules and regulations
- by building a temporary accounting model for the operation of digital currency

¹ The Bank for International Settlements (BIS) survey covers 66 central banks of the countries accounting for 90% of the world economy and 75% of the world population. Christian Barontini and Henry Holden (2019): Proceeding with caution – a survey on central bank digital currency. BIS Papers No 101. <https://www.bis.org/publ/bppdf/bispap101.pdf>.

- by conducting studies on a number of topics, from the possible impact on macroeconomic stability to the legal aspects of the e-hryvnia's issuance and circulation.

Yakiv Smolii noted that the NBU is looking into the chance of issuing the e-hryvnia and will be ready to return to this matter, the regulator is convinced that issuing a digital currency will not interfere with the pursuit of NBU's mandate as a central bank, which is to ensure price and financial stability.

At the Conference **leading experts of the World Bank and the International Monetary Fund gave keynote presentations on global vision of CBDCs.**

The first to give his [presentation](#) was **Harish Natarajan**, the Lead Financial Sector Specialist on Payments and Market Infrastructures in the Finance, Competitiveness and Innovation Global Practice at the World Bank. The speaker highlighted the following issues:

- the general concept of CBDC
- retrospect and future trend of the global use of cash
- demand for CBDC and factors fostering the use of digital currency
- risks and possible effect of CBDC on the financial inclusion.

Harish Natarajan considered reasons for central banks' interest in CBDC in the view of CBDC models and opportunities. Motivation of central banks for introducing CBDC can differ, in particular, CBDC may be considered a settlement asset for decentralization of financial infrastructure, a universal payment instrument in a noncash economy, a means for micropayments for the Internet of Things (IoT), instrument for cross-border payments, as well as an additional instrument of monetary policy.

Depending on the CBDC type (according to retail or interbank settlements) the connection between the level of development and reasons for researching CBDC was reviewed. Thus, developing countries pay special attention to increasing financial inclusion and improving effectiveness of internal payments. At the same time developed countries focus mainly on the security level of payments.

Regarding the riskiness of CBDC, according to the speaker, the risk level of CBDC for interbank settlements is much lower, than for retail payments of individuals. The presentation defined main CBDC risks, namely, the role of banks, impact on the financial stability, risk associated with user identification and combating money laundering, and global impact of the monetary policy.

When analyzing CBDC effectiveness, including as an instrument for improving financial inclusion, special attention should be paid to alternative innovation trends. such as fast payments, open banking instruments, and remote identification methods.

The second keynote speaker was **Tanai Khiaonarong**, Senior Financial Sector Expert in the Monetary and Capital Markets Department of the IMF and member of the G7 stablecoins task force. In his presentation, Mr Khiaonarong pointed out the following issues:

- the use of cash in different countries: current status and future trends
- reasons for demand for CBDC
- special features of stablecoins ecosystem.

Roman Hartinger, Head of Unit for Innovative Projects of the National Bank of Ukraine, [in his presentation](#) showed the overall NBU vision of CBDC and the findings of the pilot project for issuing e-hryvnia.

The speaker transformed the Money Flower diagram² devised by the Bank for International Settlements into a CBDC Flower, where combination of such CBDC features as accessibility, identifiability and ability to generate profit provide various options for CBDC use. At present, the most popular are CBDC as cash equivalent and CBDC for interbank settlements.

The NBU moved beyond theoretical research and conducted a pilot project on issuing own digital currency, e-hryvnia. E-hryvnia is the digital equivalent of cash, that should be exchanged without limitations into cash or noncash hryvnia at the rate 1:1.

As part of the pilot project based on a blockchain platform, the NBU issued a limited amount of e-hryvnias into circulation. Transactions involving e-hryvnias were tested by the working group consisting of NBU staff, volunteer companies, and World Bank representatives, who provided advice to the NBU as part of technical assistance.

The research has not only given us practical experience, but also raised new questions for the NBU. How will this instrument affect the payment market ecosystem? Will there be sufficient demand for e-hryvnias from users, vendors, and market participants? What technology should we use? What level of anonymity should transactions involving e-hryvnias have? At present, other central banks have no sure answers to these questions.

Key conclusions of the pilot project:

- the e-hryvnia could be an alternative to existing means of, and instruments for, retail payments, such as cash, payment instructions, payment cards, and e-money
 - since the pilot project had a limited in scale, it could not fully assess the appeal and the potential number of Ukrainian users of this instrument
 - e-hryvnia may be viewed as destructive technology, since potentially it can greatly change the ecosystem of the Ukrainian payment market
 - while launching the e-hryvnia on the Ukrainian payment market, the central bank should also consider the possibility of introducing other innovative payment instruments, such as instantaneous payments and new open banking instruments
 - the launch of the e-hryvnia requires a great deal of investment, and time both to update payment infrastructure and to encourage users with set payment habits to use the new instrument

² Morten Bech and Rodney Garratt (2017): Central bank cryptocurrencies. BIS Quarterly Review.

- blockchain (DLT) technology could be used as a platform through which e-hryvnias will be issued and on which they will circulate. However, the main advantages of this technology will not be available in the centralized (single-level) model.

At the Conference the NBU jointly with Distributed Lab used a [game to demonstrate emulation of e-hryvnia operations](#). Conference attendees could enter a blockchain e-hryvnia wallet created especially for the occasion and test individual operations with e-hryvnia. E-hryvnia could be transferred from one wallet to another, goods were paid for and the wallet balance was replenished with e-hryvnia for giving answers to questionnaire (see Table). Overall, 230 persons took part in the survey using e-hryvnia wallet at the Conference. Answers are summarized in the Annex.

Questions on e-hryvnia in the wallet questionnaire

| No. | Questions | Options |
|-----|--|---|
| 1 | Do you consider e-hryvnia to be a real alternative to: | <input type="checkbox"/> Cash <input type="checkbox"/> Payment cards <input type="checkbox"/> <input type="checkbox"/> Electronic money |
| 2 | What impact could e-hryvnia have on the level of financial inclusion? | <input type="checkbox"/> Strong <input type="checkbox"/> Average <input type="checkbox"/> Mild |
| 3 | Should e-hryvnia be exclusively issued by the central bank or by market participants? | <input type="checkbox"/> Central bank <input type="checkbox"/> Participants |
| 4 | Should e-hryvnia be an identified or anonymous instrument? | <input type="checkbox"/> Identified <input type="checkbox"/> <input type="checkbox"/> Anonymous |
| 5 | Is your bank (or company) ready to invest in creation of e-hryvnia payment infrastructure and its promotion? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 6 | Should transactions using e-hryvnia be free of charge for customers? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

| | | |
|---|--|---|
| 7 | What could encourage customers to use e-hryvnia: | <input type="checkbox"/> Low tariffs <input type="checkbox"/> Fast settlements <input type="checkbox"/> Security and safety |
| 8 | Should e-hryvnia be based on blockchain technology or not? | <input type="checkbox"/> Blockchain <input type="checkbox"/> Conventional databases |
| 9 | Can e-hryvnia be a profit-generating instrument (an alternative to bank deposits)? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Charles M. Kahn, Professor of Finance, University of Illinois, who is an expert on payment systems and provides regular consulting to central banks, pointed out in [his presentation](#) the potential reasons for introducing CBDC, such as spiking innovations in retail payments, cash replacement, improvement of the monetary policy at zero-lower-bound, financial inclusion, and simplifying wholesale interbank transactions.

It should be noted that proprietary cryptocurrencies became a major challenge and driver for devising own cryptocurrency, those were the bitcoin and even more so Libra stablecoin announced by Facebook.

The central bankers also presented their experience in implementing CBDC pilot projects.

The central banks of **Sweden** and **Uruguay** as part of pilot project [e-Krona](#) and [e-Peso](#) also research central bank digital currency as an equivalent to cash for retail payments of individuals. It should be noted that the payment infrastructure of these countries is quite different, as well as the purposes the relevant central bank digital currency is meant to serve. In Sweden, the rate of noncash settlement is on the highest in the world, and digital currency is an effort of the central bank to issue proprietary digital currency considering a sharp decline in demand for cash. Regarding Uruguay, digital currency is an instrument for noncash payments that can become a cheap alternative to conventional payment instruments.

Representatives from the central banks from **Canada** and **the South African Republic** are implementing pilot projects on issuing central bank digital currency for interbank settlements called [Jasper](#) and [Khokha](#). The central banks used these projects to test the distributed ledger technology for interbank payments, including cross-border payments.

Two panel discussions were held at the Conference.

At the first panel discussion the central bank **representatives from Canada, Japan, Finland, the Netherlands, and Lithuania, along with the moderator, Mihnea Constantinescu, research unit manager at the NBU, [talked about prospects and possibilities for CBDCs](#)**. In particular, panelists shared their opinion on types of CBDCs, potential benefits of CBDCs in contrast to other payment instruments (including prepaid cards issued by central banks), and connection of CBDCs with existing proprietary payment solutions. The experts discussed the following issues:

- key mandate of central banks is ensuring financial stability. Thus, CBDC as any new instrument should be resilient to crises
- CBDC impact on financial inclusion was conveyed in the following bullet points: central bank's readiness to make financial decisions and products directly to users, costs of financial services to users and possible central bank instruments to effect costs
 - feasibility of creating a global financial asset for settlements was covered in the following bullet points: global compatibility of payment systems, technical capacities assuring compatibility (including by integrating RTGS of central banks)
 - innovations in banks' business models: distributed ledger technology (DTL) as the potential driver of conventional banking, including for payments.

The second panel discussion moderated by Anastasiya Shevchenko, an independent fintech-expert [hosted practitioners of the Ukrainian financial market](#). The panelists were **Oiha Vasylieva, Deputy Director of the Payment Systems and Innovations Department of the National Bank of Ukraine**, representatives of **PrivatBank JSCB (Dmytro Donets), UkrSibbank JSC (Nataliia Savchuk), Kyivstar mobile service operator (Serhii Koptik), UaPay fintech company (Dmytro Zarakhovych), and AttikLab developer of blockchain solutions (Serhii Vasylichuk)**.

Experts focused on designing a possible business model for issuing e-hryvnia, in particular the following bullet points were suggested:

- product development, i.e. determining the potential consumer and target audience, stand-out points in contrast to existing instruments and connection to such instruments, potential impact on financial inclusion and the rate of noncash settlements
 - role of fintech companies and banks in issuing and circulation of e-hryvnia
 - impact of costs on both consumers and service providers (banks or fintech companies in case of two-level model)
 - potential needs of market players and customers that CBDC can meet.

The second part of the Conference was a technological session for the private companies to present their vision of possible technical architecture for implementing CBDC, in particular DLT.

Representatives of companies [Accenture](#), [Distributed Lab](#), [Soramitsu](#) and [Tezos Foundation](#) presented how DLT can improve the effectiveness of CBDC systems through such features as cryptographic security, scaling, mobility, accessibility, programming and integration options. One of the speakers notes additional benefits of DLT for CBDC being electronic identification and signature, integrated control of the transaction history and transparent audit.

Also, importance of the single terms and definitions for different areas. In particular, CBDC models, where digital currency is recognized on balance on CBDC accounts (account based) or as tokens (token based) differs from the operational point of view, however is almost identical in terms of DLT.

Sergii Kholod, NBU Deputy Governor, gave a closing speech stressing the importance of cooperation and consolidation of effort of the regulator with the business community and the payment market in order to continue discovering the possibilities of introducing CBDC.

Findings of e-hryvnia wallet survey

Voting results

Vote

Do you find e-hryvnia to be a real alternative to:



Vote

What impact could e-hryvnia have on the level of financial inclusion?



Vote

Should e-hryvnia be exclusively issued by central bank or by market participants?



Vote

Should e-hryvnia be an identified or anonymous instrument?



Vote

Is your bank (or company) ready to invest in creation (adaptation) of e-hryvnia payment infrastructure and its promotion?



Vote

Should transactions using e-hryvnia be free of charge for customers?



Vote

What could encourage customers to use e-hryvnia:



Vote

How e-hryvnia should be technologically implemented?



Vote

Can e-hryvnia be a profit-generating instrument (an alternative to bank deposits)?

