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DIGITALNE VALUTE CENTRALNIH BANAKA

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„Novac može stvoriti svako; problem je navesti druge da ga prihvate"
- Hajman Filip Minski

Rezime

Digitalne valute centralnih banaka predstavljaju digitalni izazov za međunarodni monetarni i finansijski sistem. Od razvoja kripto valuta, poput bitkoina, savremeni svet se suočio sa mogućnošću digitalne tehnološke transformacije i obezbeđenja digitalnog oblika plaćanja za privredu i stanovništvo. Pored toga, najavom digitalne valuta koja bi imala globalni domet, poput Libre koju bi izdavala društvena mreža Facebook, pokrenuta su pitanja o pravnim i regulatornim zaštitnim merama, finansijskoj stabilnosti i ulozi digitalne valute u društvu. Sve je to uticalo da vodeće centralne banka prepoznaju potrebu sprovođenja detaljne analize o mogućnostima izdavanja digitalne valute centralne banke, koja bi bila dopuna gotovinskom i bezgotovinskom obliku plaćanja. Te analize podrazumevaju sagledavanje prednosti i nedostataka te valute, određivanje njenog dizajna i tehnološkog rešenja, kao i neophodna regulatorna prilagođavanja. U narednom periodu bićemo svedoci tehnološke transformacije u poslovanju centralnih banaka, koje, kao i do sada, treba da brinu o očuvanju cenovne i finansijske stabilnosti kao njenih glavnih ciljeva, ali i da odgovore na nove izazove digitalnog poslovanja.

Ključne reči: digitalna valuta centralne banke; digitalni oblici plaćanja; tehnološke inovacije; monetarni suverenitet

JEL klasifikacija: E42, O33

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Uvod

Tehnološke inovacije u domenu digitalnih oblika plaćanja su nova realnost savremenog sveta. Pored već razvijenog tržišta digitalnih valuta, poput bitkoina, polako se javljaju i inicijative centralnih banaka za razvojem digitalnih valuta centralnih banaka. Te valute bi bile pod kontrolom centralne banke koja bi bila njen emitent, čime bi se stvorio dodatni oblik plaćanja, pored gotovinskog i bezgotovinskog oblika plaćanja. Digitalizacija platnog sistema je postala naročito bitna tokom pandemije virusa korona, koja je tokom 2020, ali i u 2021. godini, značila primenu mera zatvaranja ekonomija radi ograničenja kontakata i suzbijanja širenja virusa. Upravo je to zatvaranje ekonomija uticalo na pojačani napor centralnih banaka da još aktivnije rade na razvoju svojih digitalnih valuta. U toku tog razvoja neophodno je uspostaviti tehnologiju koja će pratiti idejna rešenja digitalnih valuta centralnih banaka, razmotriti sve prednosti i nedostatke tih valuta, pravne aspekte izdavanja, ali i uticaj na finansijsku stabilnost i monetarni suverenitet. Cilj ovog rada je sagledavanje mogućnosti izdavanja digitalnih valuta Evropske centralne banke, Sistema federalnih rezervi, Banke Engleske i Banke Rusije, kao predstavnika vodećih globalnih centralnih banaka po pitanju tehnoloških inovacija u domenu digitalnih valuta. U radu će biti predstavljena regulativa digitalnih valuta u Srbiju, dok ćemo u zaključku sumirati rezultate ovog rada.

Pregled literature

Pandemija virusa korona je uticala na poverenje ljudi u valute nekih zemalja i ukazala je na potrebu postojanja alternative koja ima dobre performanse u okruženju beskontaktnih plaćanja i zatvaranja ekonomija kako bi se izbegla kriza likvidnosti. Navedeno utiče da zemlje deluju proaktivno u prihvatanju digitalizacije i ubrzavanju interesa centralnih banaka ka istraživanju digitalnih valuta centralnih banaka (Kuo Chuen Leea i saradnici, 2021). Prvu sveobuhvatnu definiciju digitalne valute centralne banke objavila je Banka za međunarodna poravnanja u izveštaju publikovanom u martu 2018. god., gde je navela da digitalna valuta centralne banke predstavlja „pasivu centralne banke denominovana u postojećoj obračunskoj jedinici, koja služi i kao sredstvo razmene i kao skladište vrednosti“ (BIS, 2018, 3). Adrian i Mancini-Griffoli (2019) ukazuju da neophodnost da se napravi razlika između digitalne valute centralne valute i sintetičke digitalne valute centralne koja po njima predstavlja digitalnu verziju gotovine, gde se centralne banke u nekim zemljama udružuju sa pružaocima usluga elektronskog novca (eng. e-money) kako bi efikasno obezbedile digitalnu valutu centralne banke. U oktobru 2020. god. objavljen je zajednički izveštaj na kojem su sarađivale Banka Kanade, Evropska centralna banka, Banka Japana, Centralna banka Švedske, Švajcarska nacionalna banka, Banka Engleske, Sistem federalnih rezervi i Banka za međunarodna poravnanja u kojem su analizirani temeljni principi i suštinska obeležja digitalne valute centralne banke. Izveštaj ukazuje na izazove izdavanja digitalne valute centralne banke (kontinuirani pristup novcu centralne banke, otpornost, povećane mogućnosti plaćanja, podsticanje finansijske inkluzije), ali i potencijalne rizike po finansijsku stabilnost (smanjenje posredničke uloge banaka, kao i mogućnost ugrožavanja monetarnog suvereniteta) (BISa).

Barontini i Holden (2019) su krajem 2018. god. sproveli istraživanje da li centralne banke rade na razvoju digitalne valute centralne banke i ako rade na kojoj vrsti digitalne valute rade i koliko je to obiman posao. U istraživanju su učestvovale 63 centralne banke, od kojih se 41 nalazi u zemljama tržišta u razvoju, a 22 u razvijenim zemljama. Oko 70% ispitanika je tada odgovorilo da trenutno radi (ili će uskoro započeti) rad na razvoju digitalne valute centralne banke. Isto istraživanje su krajem

2019. god. sproveli Boar i saradnici (2020) na uzorku od 66 centralnih banaka i rezultati tog istraživanja su pokazali da 80% ispitanih centralnih banaka je na neki način uključena u razvoj digitalne valute centralne banke, što je porast u odnosu na prethodno prikazano istraživanje.

Bossu i saradnici (2020) ističu pravne aspekte izdavanja digitalne valute centralne banke i ukazuju na značaj monetarnog zakona (eng. monetary law) koji predstavlja zakonski i regulatorni okvir koji daje pravne osnove za korišćenje monetarne vrednosti u društvu, ekonomiji i pravnom sistemu. Osnovni princip ovog zakona predviđa potrebu da se za suverenu državu odredi i uspostavi valutni sistem. Shirai (2019) ukazuje na potrebu izdavanja digitalne valute centralne banke jer tokom vremena se smanjuje nivo gotovine u opticaju, ali i neke ekonomije, posebno zemlje u razvoju žele da smanje troškove štampanja i upravljanja gotovinom i promovišu bezgotovinske instrumente. U svojoj analizi Bordo i Levin (2017) su ukazali na potrebne karakteristike dobro dizajnirane digitalne valute centralne banke: (1) da bude sredstvo razmene bez dodatnih troškova; (2) da obezbedi očuvanje vrednosti; (3) da olakša postepeno zastarevanje papirnog novca kako bi digitalna valuta centralna banke bila dostupna široj javnosti i (4) monetarna politika treba da obezbedi cenovnu stabilnost kako bi i vrednost digitalne valute centralne banke bila stabilna. Engert i Fung (2017) ističu motive da centralna banka izda digitalnu valutu i ukazuju da bi to uradila radi obezbeđenja adekvatnog nivoa novca u opticaju i radi čuvanja prihoda od senioraže, potom da snizi donju granicu kamatnih stopa i pruži podršku primeni nekonvencionalne monetarne politike, poboljšanju finansijske stabilnosti, povećanju konkurentnosti u oblicima plaćanja, promovisanju finansijske inkluzije i sprečavanju kriminalnih aktivnosti. Mancini-Griffoli i saradnici (2018) ukazuju na dve koristi koje nudi izdavanje digitalne centralne banke. Prva se odnosi na tražnju i to u kojoj meri digitalna valuta centralne banke može da zadovolji potrebu krajnjih korisnika za novcem, a druga se bazira na ponudi u smislu da centralne banke izdavanjem digitalne valute može potpunije da ostvari cilj monetarne politike i da prevaziđe određene tržišne neuspehe.

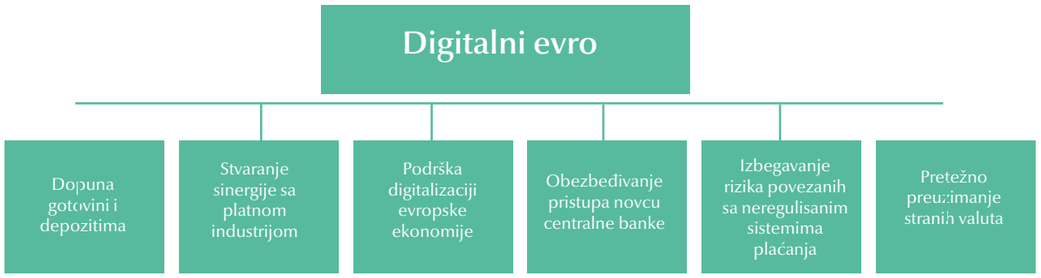
Pored potencijalnog eliminisanja gotovine, digitalna valuta centralne banke daje mogućnost da njeni korisnici direktno drže tu valutu na računu otvorenom kod centralne banke (Fernández-Villaverde i saradnici, 2020). S druge strane, Chiu i saradnici (2019) razvili su model sa nesavršenom konkurencijom na tržištu depozita i analizirali su da li bi uvođenje digitalne valute centralne banke dovelo do smanjenja posredničke uloge banaka. Njihov zaključak je da uvođenje digitalne valute centralne banke ne mora nužno da dovede do smanjenja posredničke uloge banaka i da bi uvođenje te valute moglo da promoviše bankarsko posredovanje. Khiaonarong i Humphrey (2019) smatraju da bi za digitalni oblik novca, kako bi bio uspešan, neophodno da postoji podsticaj da se prihvati. Za krajnje korisnike podsticaj je pogodnost da ne moraju da idu do bankomata ili banaka kako bi podigli gotovinu.

Razvoj digitalnog evra od strane Evropske centralne banke

Digitalizacija je prisutna u svakom aspektu života svakog od nas i utiče na transformaciju sistema plaćanja. Digitalni evro bi predstavljao brz, jednostavan i siguran instrument za svakodnevna plaćanja. Na taj način podržala bi se digitalizacija evropske ekonomije i podstakle dalje inovacije u sistemu plaćanja u maloprodaji. U oktobru 2020. god. Evropska centralna banka (eng. European Central Bank - ECB) je najavila mogućnost izdavanja digitalnog evra. Uvođenje digitalnog evra garantovaće da svi građani zone evra ostvare pristup jednostavnom i univerzalno prihvaćenom, sigurnom i pouzdanom načinu plaćanja. Digitalni evro će biti evro – kao papirni i kovani novac samo u digitalnoj

formi. Izdavanje digitalnog evra biće povereno Evrosistemu (ECB i nacionalnim centralnim bankama) i biće dostupan svim građanima i kompanijama. Time digitalni evro neće zameniti gotovinu, već će predstavljati njenu dopunu i omogućiće dodatni izbor u pogledu plaćanja, čime će doprineti finansijskog inkluziji (Grafikon 1). Digitalni evro bi predstavljao kombinaciju efikasnog instrumenta digitalnog plaćanja zajedno sa sigurnošću novca koji izdaje centralna banka. Time bi se pomoglo da se prevaziđu situacije u kojima građani više ne žele posedovanje gotovine i izbegla bi se zavisnost od digitalnih sredstava plaćanja koja se izdaju i kontrolišu izvan zone evra (na primer bitkoin i druge kriptovalute), što bi moglo da utiče na ugrožavanje finansijske stabilnosti i monetarnog suvereniteta. Očuvanje privatnosti bi predstavljalo ključni prioritet pri izdavanju digitalnog evra, kako bi se očuvalo poverenje u digitalna plaćanja. Za sada ECB nije postavila rok za uvođenje digitalnog evra, ali aktivno radi na razvoju koncepta, sprovođenju praktičnog eksperimenta i osluškivanju mišljenja široke javnosti. ECB bi i u slučaju emitovanja digitalnog evra bila garant sigurnosti i stabilnosti, kako za gotovinu, tako i za digitalnu formu novca. Time bi digitalni evro predstavljao digitalni simbol napretka i integracije Evrope (ECB).

Grafikon 1: *Razlozi za izdavanje digitalnog evra*



Izvor: ECBa – Evropska centralna banka, Report on a digital euro, Pristupljeno: 1.7.2021. https://www.ecb.europa.eu/euro/html/digitaleuro-report.en.html

U oktobru 2020. god. ECB je objavila „Izveštaj o digitalnom evru" u kojem su predstavljeni sledeći aspekti potencijalnog izdavanja digitalne valute zone evra (ECBb):

• **Razlozi za izdavanje digitalnog evra** – podrška digitalizacije evropske ekonomije i strateška nezavisnost Evropske Unije; digitalni evro bi predstavljao odgovor na značajan pad uloge gotovine kao sredstva plaćanja; razmatranje potencijala da se rasprostranjeno koristi strana digitalna valuta centralnih banaka ili privatnih digitalnih plaćanja u zoni evra; digitalni evro bi mogao da postane novi transmisioni kanal monetarne politike; smanjenje rizika za kontinuirano pružanje platnih usluga; da se poveća međunarodna uloga evra i da se pruži podrška smanjenju ukupnih troškova, naročito sa aspekta ekološkog pristupa monetarnom i platnom sistemu.

• **Potencijalni efekti izdavanja digitalnog evra** – dizajniranje digitalnog evra treba da izbegne potencijalne neželjene posledice njegovog izdavanja na monetarnu politiku i finansijsku stabilnost i potrebno je izbegnuti da prekomerna upotreba digitalnog evra dovede do situacije gde bi se desio rizik od iznenadne promene nivoa bankarskih depozita u korist digitalnog evra. Pored toga, neophodno je uspostaviti uslove za njegovo funkcionisanje van zone evra i brinuti o sprečavanju sajber napada.

• **Pravna razmatranja** – od izbora konkretnog načina izdavanja digitalnog evra zavisiće pravni osnovi, jer primarni zakoni Evropski Unije ne isključuju mogućnost izdavanja digitalnog evra kao legalnog sredstva plaćanja. Tu se pre svega misli na član 127 Konsolidovane verzije o funkcionisanju Evropske Unije (eng. Consolidated Version of the Treaty on the Functioning of the European Union), koji se odnosi na funkcionisanje monetarne politike evropskog sistema centralnih banaka i na član 20 Statusa evropskog sistema centralnih banka i Evropske centralne banke (eng. Statute of the European System of Central Banks and of the European Central Bank), koji definiše ostale instrumente monetarne kontrole.

• **Funkcionalni dizajn digitalnog evra** – u pogledu dizajna digitalnog evra izveštaj je identifikovao dva koja ispunjavaju neophodne karakteristike, a to su van mreže (eng. offline) i na mreži (eng. online). Oba navedena dizajna za izdavanje digitalnog evra su kompatibilni jedni sa drugim i mogu se istovremeno primeniti.

• **Tehnički i organizacioni pristupi uslugama digitalnog evra** - infrastruktura za pružanje digitalnog eura može biti centralizovana (gde bi sve transakcije bile evidentirane od strane centralne banke) ili decentralizovana (gde bi evidentiranje transakcija bilo povereno posrednicima i/ili pod nadzorom posrednika). Bez obzira na izabrani pristup, infrastruktura za pružanje usluga korišćenja digitalnog evra bi trebala da bude pod kontrolom centralne banke.

U periodu od 12. oktobra 2020. god. do 12. januara 2021. god. ECB je sprovela javne konsultacije u kojima su prikupljeni stavovi o prednostima i izazovima izdavanja digitalnog evra i o njegovom mogućem dizajnu na uzorku od 8.221 ispitanika, koji su dali odgovor na osamnaest pitanja (ECBc). U aprilu 2021. godine ECB je objavila Izveštaj Eurosistema o javnim konsultacijama o digitalnom evru (eng. Eurosystem report on the public consultation on a digital euro) u kojem se 94% učesnika izjasnilo kao građani, a 6% kao profesionalni. I jedni i drugi su saglasni da izdavanje digitalnog evra treba da bude integrisano u postojeći bankarski i platni sistem i smatraju da je pitanje privatnosti transakcija korišćenjem digitalne valute od ključnog značaja, kao i sprečavanje ilegalnih aktivnosti. Većina ispitanika je spremna da podrži izdavanje digitalnog evra, posebno na to da se digitalni evro ne bi koristio ni za ukidanje gotovine ni za snižavanje kamatnih stopa u ekonomijama zone evra (ECBd).

Razvoj digitalnog dolara od strane Sistema federalnih rezervi

Tehnološke inovacije daju mogućnost da se o novcu misli na nove načine. U tom pogledu Sistem federalnih rezervi (eng. Federal Reserve System - FED) ima ulogu da promoviše siguran, pristupačan i efikasan platni sistem u Sjedinjenim Američkim Državama, ali je istovremeno uključen u kontinuirano eksperimentisanje i istraživanje najnovijih tehnologija plaćanja. U avgustu 2020. god. FED je ukazao na značaj istraživanja i probnog testiranja koje je započeo kako bi se razumele mogućnosti i rizici povezani sa izdavanjem digitalnih valuta centralnih banaka. Kao i druge centralne banke i FED će proceniti mogućnosti i izazove izdavanja digitalne valute (to jest digitalnog dolara), načine primene te valute kao dodatak gotovini i drugim opcijama plaćanja. U okviru FED-a postoji Tehnološka laboratorija (eng. Technology Lab - TechLab) koja razvija probno testiranje i eksperimentisanje relevantnih tehnologija za izdavanje digitalne valute, ali i razvija druge inovacije u sistemu plaćanja. Tehnološka laboratorija predstavlja multidisciplinarni tim koji obuhvata zaposlene koji poseduju ekspertizu u oblastima platnog prometa, ekonomije, prava, informacionoj tehnologiji i računarstvu. Pored toga, FED u Bostonu više godina unazad aktivno sarađuje sa Institutom Tehnologije u Masačusetsu kako bi razvili hipotetičku digitalnu valutu čije izdavanje je vezano za centralnu banku. Glavni cilj ovog istraživanja jeste da se proceni bezbednost i efikasnost sistema digitalnih valuta centralnih banaka.

Osnovni fokus projekta jeste razvijanje kapaciteta i relevantnih tehnologija, umesto da služi za razvoj prototipa digitalne valute koju bi FED potencijalno mogao da izdaje ili da rešava brojna politička pitanja vezana sa potencijalno izdavanje digitalne valute. Pored toga, FED aktivno sarađuje sa drugim centralnim bankama i međunarodnim organizacijama kako bi unapredila nivo saznanja o digitalnim valutama drugih centralnih banaka (FED).

Lael Brainard, članica Odbora guvernera FED-a u avgustu 2020. god. izjavila je da digitalne valute, uključujući i digitalne valute centralnih banaka, predstavljaju prednost, ali da sa sobom nose i rizike vezane sa privatnost, mogućnost korišćenja za nezakonite aktivnosti i potencijalnu pretnju za finansijsku stabilnost. Uvođenjem bitkoina, kao i naknadnom pojavom stablecoin-a, tj. digitalne valute čija vrednost je vezana za fiat novac, kao i najavom izdavanja digitalne valute koja bi imala globalni domet, poput Libre koju bi izdavala društvena mreža Facebook, pokrenuta su pitanja o pravnim i regulatornim zaštitnim merama, finansijskoj stabilnosti i ulozi digitalne valute u društvu. Sve prethodno pobrojano uticalo je da se aktivno krene u testiranje i razvoj digitalnih valuta centralnih banaka, kako bi se održala nacionalna valuta kao sidro nacionalnih platnih sistema (FEDa). Radi dalje saradnje po pitanju inovacija i tehnoloških promena u pogledu razvoja digitalnih valuta centralni banaka FED je ostvario inicijativu sa Innovation Hub-om Banke za međunarodna poravnanja i ta saradnja je rezultirala otvaranjem centra za inovacije u okviru FED-a u Njujorku. Innovation Hub Banke za međunarodna poravnanja osnovan je 2019. sa ciljem identifikovanja i daljeg razvoja finansijske tehnologije koja je od značaja za funkcionisanje centralnih banaka, ali i radi poboljšanja funkcionisanja finansijskog sistema i ostvarivanja kontakata između stručnjaka centralnih banaka zaduženih za inovacije (BISb).

Analizom uporedivosti između mehanizama plaćanja centralne banke bavili su se Wong i Maniff (2020) i za poređenje izabrali su sledećih sedam kategorija: dostupnost, anonimnost, neophodni instrumenti izdavaoca, nezavisnost, operativna efikasnost, programiranje i dostupnost usluge (Tabela 1). Njihova analiza je pokazala da digitalne valute centralnih banaka imaju bolje rezultate od gotovine i platnog sistema RTGS (to jest sistema izvršavanja naloga za prenos u realnom vremenu po bruto principu) u pogledu programiranja, ali i u pogledu operativne efikasnosti. Sa druge strane, digitalne valute centralnih banaka imaju lošije rezultate u poređenju sa gotovinom u pogledu anonimnosti i nezavisnosti.

Tabela 1: *Poređenje mehanizama plaćanja centralne banke*

Mehanizmi plaćanja	Dostupnost	Anonimnost	Neophodni instrumenti izdavaoca	Nezavistnost	Operativna efikasnost	Programiranje	Dostupnost usluge
Cash	5	5	5	5	1	1	5
Central bank digital currency	4.9	4	5	4	3	3	5
RTGS	4.7	1	1	1	4	3	4.99
RTGS+	4.75	1	1	3	4	4	4.99

Napomena: Ocena 5 je najviša, dok je ocena 1 najniža

Izvor: Wong P. and Maniff J. L. (2020). Comparing Means of Payment: What Role for a Central Bank Digital Currency?. FEDS Notes, Pristupljeno: 3.7.2021. https://www.federalreserve.gov/econres/notes/feds-notes/comparing-means-of-payment-what-role-for-a-central-bank-digital-currency-20200813.htm#fig1

Randal K. Quarles, potpredsednik za nadzor Saveta guvernera FED-a od 2017. god., ukazao je na argumente onih koji podržavaju izdavanje digitalne valute centralne banke i argumente koji se protive izdavanju. U prilog izdavanja digitalne valute centralnih banaka gospodin Quarles navodi da bi FED trebalo da razvije digitalnu valutu centralne banke kako bi odbranio dolar od pretnji koje bi predstavljale strane digitalne valute centralnih banaka, s jedne strane, kao i zbog kontinuiranog širenja privatnih digitalnih valuta, s druge strane. Protivnici izdavanja digitalne valute centralne banke ukazuju na rizike po strukturu bankarskog sektora, koji se trenutno oslanja na depozite kao izvore kreditne aktivnosti stanovništva i privrede, potom digitalna valuta centralne banka može predstavljati privlačnu metu za sajber napade i druge bezbednosne pretnje, kao i da bi izdavanje te valute bio skup i komplikovan proces za FED (FEDb).

Predsednik FED-a Jerome H. Powell je u maju 2021. god. ukazao da još uvek nije doneta odluka da li će Sjedinjene Američke Države izdati digitalnu valutu centralne banke. Ipak, imajući globalni značaj dolara neophodno je FED zadrži punu posvećenost razvoju digitalne valute centralne banke, boljem razumevanju neophodne tehnologije za njen razvoj i njene potencijale (FEDc). Cheng, Lawson i Wong (2021) smatraju da za Sjedinjene Američke Države, bez obzira na to koji su specifični ciljevi izdavanja digitalne valute centralne banke, oni bi trebali biti u skladu sa dugoročnim ciljevima FED-a, kao što su sigurnost i efikasnost nacionalnog platnog sistema, kao i monetarna i finansijska stabilnost.

Razvoj digitalne rublje Banke Rusije

Udeo bezgotovinskih plaćanja raste poslednjih godina, što je posebno postalo važno u vreme pandemije virusa korona. Digitalna rublja može postati novo i pogodno dodatno sredstvo plaćanja kako za kupce, tako i za prodavce, uključujući udaljene, retko naseljene i teško dostupne teritorije sa ograničenim pristupom finansijskoj infrastrukturi. Digitalna rublja će pomoći u širenju pokrivenosti fizičkih lica finansijskim uslugama čineći ih pristupačnijim, što će poboljšati kvalitet života ljudi. Domaća digitalna valuta takođe će ublažiti rizik od preraspodele sredstava u strane digitalne valute, doprinoseći tako makroekonomskoj i finansijskoj stabilnosti.

Banka Rusije (eng. Bank of Russia – BoR) je u oktobru 2020. god. objavila konsultativni dokument o mogućnostima izdavanja digitalne rublje, što je u skladu sa opredeljenjem drugih centralnih banaka da započnu emitovanje digitalnih valuta centralnih banaka. Digitalna rublja predstavlja digitalnu formu nacionalne valute Rusije koja će biti emitovana zajedno sa trenutno postojećim oblicima novca (to jest gotovinska i bezgotovinska rublja). Pojedinci će moći da svoje digitalne rublje drže u svom elektronskom novčaniku i da ih koriste pomoću mobilnog telefona ili drugih uređaja i to kada budu imali pristup internetu ili bez pristupa internetu, to jest kada budu bili na mreži ili van mreže. U slučaju da ne postoji mreža, postojaće mogućnost da se rezerviše određen iznos digitalne rublje u elektronski novčanik, kao što se to radi sa gotovinom kada ne postoji mogućnost bezgotovinskog plaćanja. Kada postoji mreža transakcije će biti izvršene na sličan način kao i kod bezgotovinskog plaćanja. U zavisnosti od svojih potreba stanovništvo i privreda će imati mogućnost da vrše konverziju svog novca između različitih formi – na primer digitalne rublje da konvertuju u gotovinu ili da ih deponuju na svoj račun u banci, a važi i obrnuto. Da bi se navedena konverzija izvršila, potreban je razvoj specijalne tehnologije koja će omogućiti upotrebu digitalne valute van mreže (eng. offline usage). Time će digitalna rublja imati mogućnosti da kombinuje koristi gotovine i bezgotovinskog novca. Vrhunska tehnologija koja će biti korišćena za razvoj digitalne rublje pomoći će smanjenju troškova plaćanja, povećati finansijsku uključenost i podstaći dalje unapređenje tehnologija plaćanja.

U razvoju digitalne rublje BoR će razmotriti sve ove aspekte, zajedno sa primenom beskompromisnih zahteva informacione sigurnosti (BoR).

Tabela 2: *Faze u razvoju digitalne rublje*

1. Objava konsultativnog dokumenta
2. Sprovođenje javnih konsultacija
3. Razvoj koncepta digitalne rublje
4. Razvoj platforme digitalne rublje
5. Sprovođenje probnog projekta digitalne rublje sa ograničenim brojem učesnika
6. Analiza rezultata probnog projekta
7. Donošenje odluke o izvodljivosti i fazama lansiranja digitalne rublje

Napomena: Vremenski okviri za sve faze biće utvrđeni naknadno i uzimaće u obzir rezultate javnih konsultacija

Izvor: BoRa - Centralna banka Rusije, Konsultativni dokument „A Digital Rouble", strana 11, Pristupljeno: 30.6.2021. https://www.cbr.ru/StaticHtml/File/113008/Consultation_Paper_201013_eng.pdf

Uvođenje digitalne rublje zahtevaće reviziju, pre svega, Građanskog zakonika Ruske Federacije (eng. Civil Code of the Russian Federation), s obzirom na uključivanje digitalne rublje u spisak predmeta građanskopravnih prava, uspostavljanje mogućnosti plaćanja korišćenjem digitalne rublje i uključivanje digitalne rublje u opšte propise o poravnanjima, kao i Saveznog zakona o Centralnoj banci Ruske Federacije - Banka Rusije (eng. Federal Law On the Central Bank of the Russian Federation - the Bank of Russia) u vezi s proširivanjem funkcija BoR i definisanjem pitanja emisije i cirkulacije digitalne rublje (BoRa).

U svom konsultativnom dokumentu BoR ističe da će svi ekonomski agenti imati pristup digitalnoj rublji, uključujući pojedince, privredu, učesnike na finansijskim tržištima i vladu. Kao i gotovina i bezgotovinska plaćanja i digitalna rublja imaće tri funkcije novca i to sredstvo plaćanja, meru vrednosti i sredstvo očuvanja vrednosti. Sve tri funkcije ruske rublje biće apsolutno jednake: kako se jedna gotovinska rublja izjednačava sa jednom bezgotovinskom rubljom, tako će se jedna digitalna rublja uvek izjednačiti sa svakom od njih. Pri tome, BoR navodi da digitalna valuta neće zameniti gotovinu ili bezgotovinska plaćanja, već će predstavljati dodatni oblik novca pored uobičajenih oblika novca. Takođe, precizira se da digitalna rublja nije kripto valuta, jer kripto valute nemaju jedinstvenu instituciju koja će ih emitovati, za njih ne postoji garantovanje prava potrošača, njihova vrednost je podložna značajnoj fluktuaciji, mnoge zemlje ne prihvataju kripto valute kao sredstvo za plaćanje roba i usluga i ne postoji jedinstvena institucija koja će obezbediti njihovu sigurnost. Sa druge strane

za digitalnu rublju odgovara BoR koja će je implementirati upotrebom digitalne tehnologije. Suštinski gledano digitalna rublja predstavlja fiat novac čiju stabilnost obezbeđuje država koju predstavlja centralna banka (BoRb).

U aprilu 2021. god. BoR objavila je koncept digitalne valute koji se zasniva na povratnim informacijama dobijenim od ispitanika i učesnika na tržištu nakon rasprave o konsultativnom dokumentu o digitalnoj rublji iz oktobra 2020. godine. BoR je za implementaciju digitalne rublje izabrala dvostepeni maloprodajni model (eng. two-tier retail model) koji podrazumeva da je BoR istovremeno izdavalac digitalne rublje i operater platforme digitalne rublje. Kako bi digitalna rublja funkcionisala u praksi neophodno je da finansijske institucije otvore elektronske novčanike za svoje klijente i obavljaju operacije preko tih novčanika na platformi digitalne rublje. Stanovništvo i privreda moći će da pristupe svojim digitalnim rubljama preko bilo koje banke u kojoj imaju otvoren račun i digitalni novčanik. BoR je izabrala dvostepeni maloprodajni model jer su istraživanja drugih regulatora i pilot testovi digitalnih valuta centralne banke pokazali da je dvostepeni maloprodajni model najpoželjniji u pogledu inovacija i stabilnosti na finansijskom tržištu (BoRc). U pogledu roka emitovanja digitalne valute guvernerka BoR Elvira Nabiullina je u oktobru 2020. god. izjavila da će centralna banka prvo primeniti pilot (probni) projekat za ograničen broj učesnika preko kojeg će sagledati sve prednosti i nedostatke digitalne rublje i najavila je da bi to moglo da se desi do kraja ove godine. Gospođa Nabiullina je rekla da ukoliko se BoR odluči da uvede digitalnu rublju da će njeno uvođenje biti postepeno i da je predviđeno da digitalna valuta ima jedinstveni kod, kao što gotov novac ima serijske oznake. Upravo će jedinstveni kod učiniti da digitalna valuta obezbedi transparentnost njihovih transakcija, uz očuvanje poverenja i privatnosti (BoRd).

Razvoj digitalne funte Banke Engleske

U martu 2020. god. Banka Engleske (eng. Bank of England - BoE) je objavila Dokument u kojem je razmatrala uvođenje digitalne valute centralne banke u kojem je analizirala mogućnosti, izazove i dizajn izdavanja digitalne valute (BoE). U tom dokumentu se navode četiri koraka za potencijalno uvođenje digitalne valute centralne banke (BoEa):

1) Razumevanje mogućnosti i izazova pri izdavanju digitalne valute centralne banke – potrebno je jasno razumevanje mogućnosti koje izdavanje digitalne valute centralne banke nosi sa sobom, ali i izazova sa kojima je potrebno da se centralna banka izbori.

2) Potrebno je da se razmotre opšti ciljevi koje bi svaki dizajn izdavanja digitalne valute centralne banke trebalo da ispuni – opšti ciljevi bi trebalo da budu usaglašeni sa ciljem i mandatom BoE, imajući u vidu ciljeve i drugih politika, pored monetarne. Polazeći od cilja BoE da održi monetarnu i finansijsku stabilnost neophodno je da se ispuni da dizajn digitalne valute bude pouzdan i otporan, brz i efikasan i da bude otvoren za inovacije i konkurenciju.

3) Dizajn digitalne valute centralne banke – potrebno je da se ispune dva elementa: a) za samu digitalnu valutu centralne banke (to jest pristup novom obliku novca od strane centralne banke) i b) infrastruktura digitalne valute centralne banke koja treba da omogući prenos i plaćanja pomoću te valute. U tom pogledu potrebno je analizirati tri principa kada je u pitanju dizajn digitalne valute centralne banke:

- **Podela odgovornosti** u izdavanju digitalne valute centralne banke. Odgovornost i funkcije pri

izdavanju digitalne valute centralne banke mogu se podeliti između javnog sektora (na primer između centralne banke i ostalih institucija) i privatnog sektora (na primer finansijske institucije, pružaoci usluga platnog prometa i tehnološke firme). Podela odgovornosti pri izdavanju digitalne valute bi uticala i na to da li je digitalna valuta centralne banke otvorena za konkurenciju, otporna i dizajnirana na bazi komparativne prednosti privatnog i javnog sektora;

• **Funkcionalni dizajn** odnosi se na osiguranje da funkcija plaćanja digitalnom valutom centralne banke obezbedi jasnu korist i dobrobit za njene korisnike. To se odnosi na vrste plaćanja koje se mogu ostvariti korišćenjem ove valute, ali i razmatranjem o proširenju funkcionalnosti digitalne valute centralne banke ukoliko bi se potrebe za plaćanjem promenile u budućnosti. Donete odluke u pogledu dizajna bi imale poseban uticaj na to da li je digitalna valuta centralne banke prilagođena korisnicima, da li je dostupna široj javnosti, kao i na nivo privatnosti pri izvršenju transakcija;

• **Ekonomski dizajn** se odnosi na aspekte kao što su pristup (ko sve može da ima pristup korišćenju digitalne valute centralne banke), naknade (da li je potrebno da digitalna valuta centralne banke nosi kamatu?) i konvertibilnost (da li digitalna valuta centralne banke može biti u potpunosti konvertibilna za druge oblike novca koje izdaje centralna banka i za bankarske depozite). U zavisnosti od izbora direktno se utiče na mogućnost da centralna banka ostvari svoj cilj održavanja monetarne i finansijske stabilnosti, kao i na uticaj koji bi digitalna valuta centralne banke imala na druge oblike plaćanja i na platne sisteme, kao i na funkcionisanje bankarskog sistema.

4) **Tehnologija** – potrebno je proceniti koja bi tehnologija mogla da ispuni dizajn i zahtev funkcionalnosti imajući u vidu karakteristike svakog modela izdavanja digitalne valute centralne banke. Potrebno je razmotriti i o tehnološkim kompromisima koju su prisutni između različitih principa dizajna ove valute. Od izbora tehnologije zavisi u kojoj meri bi digitalna valuta centralne banke mogla da bude otporna, sigurna, brza, efikasna i dostupna.

U junu 2021. god. BoE je objavila mišljenje javnosti o Dokumentu u kojem je razmatrala uvođenje digitalne valute centralne banke iz marta 2020. god. Ispitanici su ukazali da bi BoE trebalo da pažljivo analizira digitalnu valutu centralne banke. U tom pogledu BoE planira da produbi svoje istraživanje digitalne valute centralne banke kroz pokretanje tri inicijative. Prva se odnosi na uspostavljanje zajedničke radne grupe sa Ministarstvom finansija, kako bi se obezbedio koordinirani pristup istraživanja pitanja od javnog značaja oko digitalne valute centralne banke od strane predstavnika vlasti Ujedinjenog Kraljevstva. Druga inicijativa se odnosi na uspostavljanje foruma digitalne valute centralne banke koji će obuhvatiti zainteresovane strane akademske zajednice i predstavnika društva po pitanju analize izazova dizajniranja, primene i upravljanja ovom valutom. I treća inicijativa se odnosi na formiranje tehnološkog foruma digitalne valute centralne banke kako bi se obezbedilo da BoE u potpunosti razume stanje vrhunske tehnologije kada bude razmatrala tehnološka rešenja izdavanja digitalne valute centralne banke (BoEb). U saopštenju od 7. juna 2021. god. BoE je objavila da još uvek nije donela odluku o izdavanju digitalne valute centralne banke, ali da će buduća odluka biti doneta na bazi detaljnog razmatranja o tome kako digitalna valuta centralne banke može da utiče na ciljeve BoE, kao i ciljeve Vlade (BoEc).

Regulacija digitalne valute u Srbiji

Narodna banka Srbije je nekoliko puta, kao što je to učinila u oktobru 2014. god. (NBS) i maju 2016. god. (NBS), javno upozoravala da digitalne valute nisu zakonsko sredstvo plaćanja u Srbiji. Prema članu

53. Zakona o Narodnoj banci Srbije, dinar je zakonsko sredstvo plaćanja Republike Srbije i Narodna banka Srbije ima ekskluzivno pravo da emituje novčanice i kovani novac u Republici Srbiji. Zakon o sprečavanju pranja novca i finansiranja terorizma, u članu 3. definiše pojam virtuelne valute kao „digitalni zapis vrednosti koje nisu izdate i čiju vrednost ne garantuje centralna banka, niti drugi organ javne vlasti, a koji nisu nužno vezani sa zakonsko sredstvo plaćanja i nemaju pravni status novca ili valute, ali ih prihvataju fizička ili pravna lica kao sredstvo razmene i mogu se kupiti, prodati, razmeniti, preneti i čuvati elektronskim putem". To ukazuje da Narodna banka Srbije nadgleda sprovođenje ovog zakona nad licima koja se bave pružanjem usluga povezanih sa virtuelnim valutama (Martin, 2020).

U decembru 2020. godine, sa primenom od 30. juna 2021. godine, u Srbiji je stupio na snagu Zakon o digitalnoj imovini. Usvajanje ovog zakona predstavlja značajan trenutak u razvoju savremenog srpskog zakonodavstva i Zakon o digitalnoj imovini je prvi zakon u Republici Srbiji koji reguliše sferu digitalnog poslovanja i trgovine digitalnom imovinom. Glavna novina je uvođenje virtuelne valute i digitalnih tokena kao važećeg sredstva razmene između fizičkih i/ili pravnih lica, kao i legalizacija rudarenja digitalne imovine. Sa pravne tačke gledišta, najvažnije je da je transakcijama sa digitalnom imovinom sada zagarantovana pravna zaštita, kako regulatorna, tako i sudska. Nadzorni organi zakona su Narodna banka Srbije i Komisija za hartije od vrednosti. Narodna banka Srbije je odgovorna za pitanja koja se odnose na donošenje odluka u upravnim postupcima, donošenje podzakonskih akata, nadzor nad obavljanjem delatnosti i ostvarivanje drugih prava i obaveza nadzornog tela u delu koji se odnosi na virtuelne valute kao vrstu digitalne imovine. Komisija je odgovorna za pitanja iz ovog zakona koja se odnose na donošenje odluka u upravnom postupku, donošenje podzakonskih akata, nadzor nad obavljanjem delatnosti i vršenje drugih prava i obaveza nadzornog tela u delu koji se odnosi na digitalne tokene kao vrstu digitalne imovine, kao i u delu koji se odnosi na digitalnu imovinu koja ima karakteristike finansijskih instrumenata. Član 15. Zakona o digitalnoj imovini precizno definiše da Republika Srbija, Narodna banka Srbije, Komisija i drugi nadležni organi i organi javne vlasti ne garantuju vrednost digitalne imovine i nisu odgovorni za eventualne pretrpljene štete i gubitke od strane korisnika i drugih imaoca digitalne imovine i/ili pružaoca usluga povezanih sa digitalnom imovinom i/ili treće strane pretrpe u vezi sa obavljanjem transakcija s digitalnom imovinom. Početkom jula 2021. god. Narodna banka Srbije je objavila saopštenje da nije izdala nijedno odobrenje za beli papir koji se objavljuje pri izdavanju virtuelnih valuta kao vrste digitalne imovine, kao i da Narodnoj banci Srbije nije do tada podnet nijedan zahtev za davanje takvog odobrenja, a sve u cilju demantovanja navoda medija da je izdata prva srpska virtuelna valuta (NBSb).

Za sada Narodna banka Srbije nije izdala saopštenje o mogućem izdavanju digitalne valute centralne banke. Ipak, stupanjem na snagu Zakona o digitalnoj imovini, Republika Srbija je stvorila prvi okvir regulacije digitalne imovine, čime je stvorila pravnu sigurnost za korisnike digitalne imovine i sve potencijalne investitore. Istovremeno ovaj zakon daje mogućnost da se dalje razvija domaće tržište kapitala koristeći digitalnu tehnologiju, uz jačanje pravnog okvira za borbu protiv finansiranja terorizma, pranja novca i potencijalnih zloupotreba na tržištu digitalne imovine.

Zaključak

Razvoj digitalne tehnologije i bezgotovinskih sredstava plaćanja uticali su da vodeće centralne banke započnu razvoj digitalne valute centralne banke, što predstavlja izazove za savremeni monetarni i finansijski sistem. Takvoj transformaciji u poslovanju doprineo je ubrzan razvoj digitalnih valuta, gde je najpoznatija bitkoin, ali i najava o mogućem uvođenju digitalne valute koja bi imala globalni domet,

poput Libre koju bi izdavala društvena mreža Facebook. Dodatni podsticaj centralnim bankama da razvijaju svoje digitalne valute dala je pandemija virusa korona, koja je uvela socijalnu distancu radi sprečavanja širenja virusa, kao i preporuka da se što više koriste bezgotovinski oblici plaćanja.

U radu je analiziran proces razvoja digitalnih valuta centralnih banaka od strane najznačajnijih centralnih banaka, koje su još uvek u probnoj fazi testiranja digitalne valute centralne banke, analizi prednosti i nedostataka, poželjnog tehnološkog dizajna i neophodnih pravnih prilagođavanja. Evropska centralna banka je u oktobru 2020. god. najavila mogućnost izdavanja digitalnog evra i njegovim uvođenjem garantovaće se da svi građani zone evra ostvare pristup jednostavnom i univerzalno prihvaćenom, sigurnom i pouzdanom načinu plaćanja. Izdavanje digitalnog evra biće povereno Evrosistemu i biće dostupan svim građanima i kompanijama. Za sada Evropska centralna banka nije postavila rok za uvođenje digitalnog evra, ali aktivno radi na razvoju koncepta, sprovođenju praktičnog eksperimenta i osluškivanju mišljenja široke javnosti. Evropska centralna banka bi i u slučaju emitovanja digitalnog evra bila garant sigurnosti i stabilnosti, kako za gotovinu, tako i za digitalnu formu novca. Time bi digitalni evro predstavljao digitalni simbol napretka i integracije Evrope. Sistem federalnih rezervi su u avgustu 2020. god. ukazali na značaj istraživanja i probnog testiranja kako bi se razumele mogućnosti i rizici povezani sa izdavanjem digitalnih valuta centralnih banaka. Kao i druge centralne banke i Sistem federalnih rezervi će proceniti mogućnosti i izazove izdavanja digitalne valute (to jest digitalnog dolara), načine primene te valute kao dodatak gotovini i drugim opcijama plaćanja. Predsednik Sistem federalnih rezervi Jerome H. Powell je u maju 2021. god. ukazao da još uvek nije doneta odluka da li će Sjedinjene Američke Države izdati digitalnu valutu centralne banke. Ipak, imajući globalni značaj dolara neophodno je da Sistem federalnih rezervi zadrži punu posvećenost razvoju digitalne valute centralne banke, boljem razumevanju neophodne tehnologije za njen razvoj i njene potencijale.

U oktobru 2020. god. Banka Rusije je objavila konsultativni dokument o mogućnostima izdavanja digitalne rublje, koja bi predstavljala digitalnu formu nacionalne valute Rusije koja će biti emitovana zajedno sa trenutno postojećim oblicima novca. U pogledu roka emitovanja digitalne valute guvernerka Banke Rusije Elvira Nabiullina je u oktobru 2020. god. izjavila da će centralna banka prvo primeniti pilot (probni) projekat za ograničen broj učesnika preko kojeg će sagledati sve prednosti i nedostatke digitalne rublje i najavila je da bi to moglo da se desi do kraja ove godine. Banka Engleske je u martu 2020. god. objavila Dokument u kojem je razmatrala uvođenje digitalne valute centralne banke u kojem je analizirala mogućnosti, izazove i dizajn izdavanja digitalne valute, dok je u junu 2021. god. objavila da još uvek nije donela odluku o izdavanju digitalne valute centralne banke, ali da će buduća odluka biti doneta na bazi detaljnog razmatranja o tome kako digitalna valuta centralne banke može da utiče na ciljeve Banke Engleske, kao i ciljeve Vlade.

Narodna banka Srbije, za sada, nije izdala saopštenje o mogućem izdavanju digitalne valute centralne banke. Ipak, stupanjem na snagu Zakona o digitalnoj imovini, Republika Srbija je stvorila regulatorni okvir za digitalnu imovinu, i to ne samo da pruža jasan pravni okvir i pravnu sigurnost za investitore i korisnike digitalne imovine, već i šalje signal svetu da Srbija postaje zemlja fintech-a. Glavna novina ovog zakona je uvođenje virtuelne valute i digitalnih tokena kao važećeg sredstva razmene između fizičkih i/ili pravnih lica, kao i legalizacija rudarenja digitalne imovine.

U narednom periodu možemo očekivati objavu daljih rezultata pilot projekata u izdavanju digitalne valute centralne banke, a potom i prvu emisiju tih valuta. Time bi se pomerile granice u digitalizaciji plaćanja, uz neophodnost očuvanja cenovne i finansijske stabilnosti. Sve to će imati uticaj i na

transformaciju do sada znanog monetarnog i finansijskog sistema i na prisustvo novih oblika plaćanja za građane i privredu. Za krajnje korisnike biće prihvatljiva ona digitalna valuta centralne banke koja će biti dostupna, otporna, sigurna, brza i efikasna i koja će zaštiti privatnost izvršenja transakcija. Dalji razvoj digitalne valute centralne banke predstavlja izazov za centralne banke, koje će time postati deo savremenog digitalnog tržišta kroz razvoj ove inspirativne oblasti bankarskog poslovanja.

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CENTRAL BANK DIGITAL CURRENCIES

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"Everyone can create money; the problem is to get it accepted"
-Hyman Philip Minsky

Summary

Central bank digital currencies are a digital challenge to the international monetary and financial system. Since the development of cryptocurrency, such as bitcoin, the modern world has faced the possibility of digital technological transformation and providing a digital form of payment for the economy and the household. In addition, the announcement of a digital currency that would have a global reach, such as the Libre issued by the social network Facebook, raised questions about legal and regulatory safeguards, financial stability, and the role of the digital currency in society. All this influenced the leading central banks to recognize the need to conduct a detailed analysis of the possibilities of issuing digital currency of the central bank, which would be a supplement to the cash and non-cash form of payment. These analyzes include considering the advantages and disadvantages of that currency, determining its design and technological solution, as well as the necessary regulatory adjustments. In the coming period, we will witness a technological transformation in the operations of central banks, which, as before, should take care of preserving price and financial stability as its main goals, but also respond to new challenges of digital business.

Keywords: central bank's digital currency; digital forms of payment; technological innovations; monetary sovereignty

JEL classification: E42, O33

***The views expressed in this paper are those of the author and do not necessarily represent the official view of the National Bank of Serbia.**

Introduction

Technological innovations in the aspect of digital forms of payment are a new reality of the modern world. In addition to the already developed digital currency market, such as bitcoin, central bank initiatives for the development of central bank digital currencies are slowly emerging. These currencies would be under the control of the central bank, which would be its issuer, which would create an additional form of payment, in addition to cash and non-cash forms of payment. The digitalization of the payment system became especially important during the coronavirus pandemic, which during 2020 and 2021, led to the application of measures to close economies in order to limit contacts and suppress the spread of the virus. It was this closing of economies that influenced the intensified effort of central banks to work even more actively on the development of their digital currencies. During this development, it is necessary to establish technology that will follow the conceptual solutions of digital currencies of central banks, consider all the advantages and disadvantages of these currencies, legal aspects of issuance, but also the impact on financial stability and monetary sovereignty. The aim of this paper is to consider the possibility of issuing digital currencies of the European Central Bank, the Federal Reserve System, the Bank of England, and the Bank of Russia, as representatives of leading global central banks in terms of technological innovation in the field of digital currencies. The paper will present the regulation of digital currencies in Serbia, while the conclusion will summarize the results of this paper.

Literature Review

The coronavirus pandemic has affected the people's confidence in the currencies of some countries and stressed the need to have an alternative that has a good performance in an environment of contactless payment and closing the economy to avoid a liquidity crisis. The aforementioned influences countries to act proactively in the acceptance of digitization and accelerates the interest for central banks to study central banks' digital currency (Kuo Lee Chuen et al. 2021). The first comprehensive definition of the central bank's digital currency was published by the Bank for International Settlements in a report published in March 2018, stating that the central bank's digital currency is a "central bank liability denominated in an existing unit of account, serving as both a medium and a store of value" (BIS, 2018, 3). Adrian and Mancini-Griffoli (2019) point out that the need to distinguish between the central bank's digital currency and the synthetic central bank's digital currency, which according to them is a digital version of cash where central banks in some countries associate with electronic money providers to effectively secure the central bank's digital currency. In October 2020, a joint report was published in which the Bank of Canada, the European Central Bank, the Bank of Japan, the Central Bank of Sweden, the Swiss National Bank, the Bank of England, the Federal Reserve System and the Bank for International Settlements cooperated, analyzing the basic principles and essential features of central bank's digital currency. The report points to the challenges of issuing digital currency by the central bank (continuous access to central bank money, resilience, increased payment opportunities, encouraging financial inclusion), but also potential risks to financial stability (reducing the intermediary role of banks and jeopardizing monetary sovereignty) (BISa).

At the end of 2018, Barontini and Holden (2019) conducted research on whether central banks are working on the development of the central bank's digital currency and, if they are working on one, what type of digital currency they are working on and how extensive the work is. The survey involved 63 central banks, 41 of which are located in developing market countries and 22 in developed countries.

About 70% of respondents then answered that they are currently working (or will soon start) working on the development of the central bank's digital currency. The same survey was conducted at the end of 2019 by Boar et al. (2020) on a sample of 66 central banks and the results of that survey showed that 80% of the surveyed central banks are in some way involved in the development of the central bank's digital currency, which is an increase over the previously presented research.

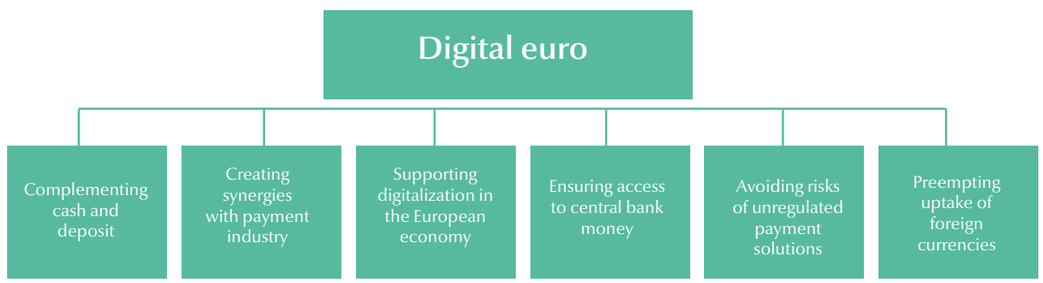
Bossu et al. (2020) emphasize the legal aspects of issuing central bank's digital currency and point out the importance of monetary law, which is the legal and regulatory framework that provides the legal basis for the use of monetary value in society, economy, and the legal system. The basic principle of this law envisages the need to determine and establish a currency system for a sovereign state. Shirai (2019) points to the need to issue a central bank's digital currency because over time the level of cash in circulation decreases, but some economies, especially developing countries, want to reduce printing and cash management costs and promote non-cash instruments. In their analysis, Bordo and Levin (2017) pointed out the necessary characteristics of a well-designed central bank's digital currency: (1) to be a medium of exchange without additional costs; (2) to ensure the preservation of values; (3) to facilitate the gradual obsolescence of paper money so that the central bank's digital currency is available to the general public; and (4) monetary policy should ensure price stability so that the value of the central bank's digital currency is also stable. Engert and Fung (2017) point out the motives for the central bank to issue digital currency and indicate that it would do so in order to ensure an adequate level of money in circulation and to preserve seniority income, then to reduce the lower boundary of interest rates and support the implementation of unconventional monetary policy, improving financial stability, increasing competitiveness in forms of payment, promoting financial inclusion and preventing criminal activities. Mancini-Griffoli et al. (2018) point to two benefits offered by issuing a digital central bank. The first refers to the demand and the extent to which the central bank's digital currency can meet the needs of end users for money, and the second is based on supply, in the sense that central banks, by issuing digital currency, can more fully achieve monetary policy goals and overcome certain market failures.

In addition to the potential elimination of cash, the central bank's digital currency provides the possibility for its users to directly hold that currency in an account opened with the central bank (Fernández-Villaverde et al. 2020). On the other hand, Chiu et al. (2019) developed a model with imperfect competition in the deposit market and analyzed whether the introduction of a central bank's digital currency would lead to a reduction in the intermediary role of banks. Their conclusion is that the introduction of a central bank's digital currency does not necessarily lead to a reduction in the intermediary role of banks and that the introduction of that currency could promote banking intermediation. Khiaonarong and Humphrey (2019) believe that, in order for a digital form of money to be successful, there would be an incentive to accept. For end users, the incentive is the convenience of not having to go to ATMs or banks to withdraw cash.

Digital Euro Development by the European Central Bank

Digitization is present in every aspect of the lives of each of us and affects the transformation of the payment system. The digital euro would be a fast, simple, and secure instrument for everyday payments. In that way, the digitalization of the European economy would be supported and further innovations in the retail payment system would be encouraged. In October 2020, the European Central Bank (ECB) announced the possibility of issuing a digital euro. The introduction of the digital euro will guarantee that all citizens of the euro zone have access to a simple and universally accepted, secure and reliable method of payment. The digital euro will be the same euro - like paper and coin money only in digital form. The issuance of the digital euro will be entrusted to the Eurosystem (ECB and national central banks) and will be available to all citizens and companies. Thus, the digital euro will not replace cash, but will complement it and provide additional choices in terms of payments, thus contributing to financial inclusion (Graph 1). The digital euro would be a combination of the efficiency of the digital payment instrument together with the security of money issued by the central bank. This would help overcome situations where citizens no longer want to own cash and avoid dependence on digital means of payment issued and controlled outside the euro area (for example bitcoin and other cryptocurrencies), which could jeopardize financial stability and monetary sovereignty. Preserving privacy would be a key priority in issuing the digital euro, in order to preserve confidence in digital payments. So far, the ECB has not set a deadline for the introduction of the digital euro, but is actively working on developing the concept, conducting a practical experiment and listening to the opinions of the general public. Even in the case of digital euro issuance, the ECB would be a guarantor of security and stability, both for cash and for the digital form of money. Thus, the digital euro would be a digital symbol of Europe's progress and integration (ECB).

Graph 1: *Reasons for Issuing the Digital Euro*



Source: ECBa - European Central Bank, Report on a digital euro, Accessed: 1.7.2021 https://www.ecb.europa.eu/euro/html/digitaleuro-report.en.html

In October 2020, the ECB published the "Report on a Digital Euro", which presented the following aspects of the potential issuance of the digital currency of the euro area (ECBb):

• **reasons for issuing the digital euro** - support for the digitalisation of the European economy and the strategic independence of the European Union; the digital euro would be a response to the significant decline in the role of cash as a means of payment; consideration of the potential for widespread use of foreign digital currency by central banks or private digital payments in the euro area; the digital euro could become a new transmission channel for monetary policy; risk reduction for continuous provision of payment services; to increase the international role of the euro and to support the reduction of total costs, especially from the aspect of ecological approach to the monetary and payment system.

• **potential effects of the digital euro issuance** - the design of the digital euro should avoid the potential unintended consequences of its issuance on monetary policy, and it is necessary to avoid that excessive use of the digital euro leads to a situation where there would be a risk of a sudden change in the level of bank deposits in favor of the digital euro. In addition, it is necessary to establish conditions for its functioning outside the euro zone and take care to prevent cyber-attacks.

• **legal considerations** - the legal basis will depend on the source of the specific way of issuing the digital euro, because the primary laws of the European Union do not exclude the possibility of issuing the digital euro as the legal tender. This primarily refers to Article 127 of the Consolidated Version of the Treaty on the Functioning of the European Union, which refers to the functioning of the monetary policy of the European System of Central Banks, and Article 20 of the Statute of the European System of Central Banks and the European Central Bank defines other instruments of monetary control.

• **functional design of the digital euro** - in terms of the design of the digital euro, the report identified two that meet the necessary characteristics, namely offline and online. Both of these designs for the issuance of the digital euro are compatible with each other and can be applied simultaneously.

• **technical and organizational approaches to digital euro services** - the infrastructure for providing digital euro can be centralized (where all transactions would be recorded by the central bank) or decentralized (where the recording of transactions would be entrusted to intermediaries and/or under the supervision of intermediaries. Regardless of the approach chosen, the infrastructure for the provision of digital euro services should be under the control of the central bank.

Between 12 October 2020 and 12 January 2021, the ECB conducted a public consultation to gather views on the benefits and challenges of issuing the digital euro and its possible design on a sample of 8,221 respondents, who answered eighteen questions (ECBc). In April 2021, the ECB published the Eurosystem report on the public consultation on a digital euro, in which 94% of participants declared themselves as citizens and 6% as professionals. Both agreed that the issue of digital euro should be integrated into the existing banking and payments system and consider that the issue of privacy of transactions using digital currency is crucial, as well as preventing illegal activities. The majority of respondents are ready to support the issuance of the digital euro, especially considering that the digital euro would not be used either to abolish cash or to lower interest rates in euro area economies (ECBd).

Development of the Digital Dollar by the Federal Reserve System

Technological innovations provide an opportunity to think about money in new ways. In this regard, the Federal Reserve System (Fed) has a role in promoting a secure, affordable, and efficient payment system in the United States, but at the same time is involved in continuous experimentation and research into the latest payment technologies. In August 2020, the Fed pointed out the importance of research and pilot testing, and that it had begun to understand the opportunities and risks associated with issuing central bank's digital currency. Like other central banks, the Fed will assess the opportunities and challenges of issuing a digital currency (i.e., the digital dollar), and ways to apply that currency in addition to cash, and other payment options. Within the Fed, there is a Technology Lab (TechLab) that develops pilot testing and experimentation of relevant technologies for issuing digital currency, but also develops other innovations in the payment system. The technology laboratory is a multidisciplinary team that includes employees who have expertise in the fields of payment operations, economics, law, information technology and computing. In addition, the Fed in Boston has been actively collaborating with the Massachusetts Institute of Technology for several years to develop a hypothetical digital currency whose issuance is tied to the central bank. The main goal of this research is to assess the security and efficiency of central bank's digital currency systems. The main focus of the project is to develop capacity and relevant technologies, instead of serving to develop a digital currency prototype that the Fed could potentially issue or address a number of policies related to the potential issuance of digital currency. In addition, the Fed actively cooperates with other central banks and international organizations to improve the level of knowledge about the digital currencies of other central banks (FED).

Lael Brainard, member of the Board of Governors of the Fed in August 2020, said that digital currencies, including central bank's digital currency, represent an advantage, but also carry risks associated with privacy, the possibility of using illegal activities and potential threat to financial stability. With the introduction of bitcoin, as well as the subsequent appearance of stablecoin, i.e., digital currencies whose value is linked to fiat money, as well as the announcement of the issuance of a digital currency that would have a global reach, such as the Libre issued by the social network Facebook, raised questions about legal and regulatory safeguards, financial stability and the role of digital currency in society. All of the above has influenced the active testing and development of central bank digital currencies, in order to maintain the national currency as an anchor of national payment systems (FEDa). For further cooperation on innovation and technological change in the development of digital currencies, the Fed has taken the initiative with the Innovation Hub of the Bank for International Settlements and this cooperation has resulted in the opening of an innovation center within the Fed in New York. Innovation Hub of the Bank for International Settlements was established in 2019 with the aim of identifying and further developing financial technology that is important for the functioning of central banks, but also to improve the functioning of the financial system and establish contacts between central bank experts in charge of innovation (BISb).

Wong and Maniff (2020) analyzed the comparability between central bank payment mechanisms and chose the following seven categories for comparison: availability, anonymity, bearer instrument, independence, operational efficiency, programmability, and service availability (Table 1). Their analysis showed that the digital currencies of central banks have better results than the cash and payment system RTGS (i.e., real-time gross settlement) in terms of programmability, but also in terms of operational efficiency. On the other hand, digital currencies of central banks have poorer results compared to cash, in terms of anonymity and independence.

Table 1: *Comparison of Central Bank Payment Mechanisms*

Payment mechanism	Accesibility	Anonymity	Bearer instru-ment	Independence	Operational Efficiency	Programma-bility	Service avaliability
Cash	5	5	5	5	1	1	5
Central bank digital currency	4.9	4	5	4	3	3	5
RTGS	4.7	1	1	1	4	3	4.99
RTGS+	4.75	1	1	3	4	4	4.99

Note: Grade 5 is the highest while grade 1 is the lowest.

Source: Wong P. and Maniff J. L. (2020). Comparing Means of Payment: What Role for a Central bank's digital currency ?. FEDS Notes, Accessed: 3.7.2021 https://www.federalreserve.gov/econres/notes/feds-notes/comparing-means-of-payment-what-role-for-a-central-bank-digital-currency-20200813.htm#fig1

Randal K. Quarles, vice chair for supervision of the Fed Board of Governors since 2017, pointed to the arguments of those who support the issuance of central bank's digital currency and the arguments against issuing it. In support of the issuance of central bank's digital currency, Mr. Quarles states that the Fed should develop central bank's digital currency to defend the dollar from threats posed by foreign digital currencies of central banks, on the one hand, and the continued spread of private digital currencies. Opponents of issuing central bank's digital currency point to risks in the structure of the banking sector, which currently relies on deposits as sources of lending to households and the economy. The central bank's digital currency can, thus, be an attractive target for cyber-attacks and other security threats that currency was an expensive and complicated process for the Fed (FEDb).

Fed President Jerome H. Powell indicated in May 2021 that a decision had not yet been made on whether the United States would issue the central bank's digital currency. Nevertheless, given the global significance of the dollar, it is necessary for the Fed to maintain its full commitment to the development of the central bank's digital currency, a better understanding of the technology necessary for its development and its potential (FEDc). Cheng, Lawson, and Wong (2021) argue that for the United States, no matter what the specific targets for central bank's digital currency issuance are, they should be consistent with the Fed's long-term goals, such as the security and efficiency of the national payment system, as well as monetary and financial stability.

The Development of the Digital Ruble of the Bank of Russia

The share of non-cash payments has been growing in recent years, which has become especially important during the coronavirus pandemic. Digital ruble can become a new and convenient additional means of payment for both buyers and sellers, including remote, sparsely populated, and hard-to-reach areas with limited access to financial infrastructure. Digital ruble will help expand private individuals' coverage with financial services by making them more affordable, which will improve people's quality of life. The domestic digital currency will also mitigate the risk of reallocation of funds to foreign digital currencies, thus contributing to macroeconomic and financial stability.

In October 2020, the Bank of Russia – BoR published a consultative document on the possibilities of issuing digital rubles, which is in line with the determination of other central banks to start issuing digital currencies of central banks. The digital ruble is a digital form of the national currency of Russia that will be issued together with the currently existing forms of money (that is, cash and non-cash rubles). Individuals will be able to keep their digital ruble in their electronic wallet and use it with a mobile phone or other devices when they have access to the Internet or without Internet access, that is, when they are online or offline. In case there is no network, there will be a possibility to reserve a certain amount of digital ruble in an electronic wallet, as is done with cash when there is no possibility of non-cash payment. When there is a network, transactions will be performed in a similar way as for non-cash payments. Depending on their needs, the household and the corporates will have the opportunity to convert their money between different forms - for example, to convert digital rubles into cash or to deposit them in their bank account, and vice versa. In order to perform this conversion, it is necessary to develop special technology that will enable offline usage. This will allow the digital ruble to combine the benefits of cash and non-cash money. Cutting edge technology that will be used to develop digital ruble will help reduce payment costs, increase financial involvement and encourage further advancement of payment technologies. In developing the digital ruble, the BoR will consider all of these aspects, along with the application of uncompromising information security requirements (BoR).

Table 2: *Stages in the Development of Digital Ruble*

1. Publication of a consultation paper
2. Conducting public consultations
3. Developing a digital ruble concept
4. Developing a digital ruble platform
5. Piloting digital rouble amid a limited number of participants
6. Analysing pilot results
7. Making a decision of feasibility and stages of digital ruble launch

Note: Timeframes for all stages will be determined later and will take into account public consulation results

Source: BoRa – Bank of Russia, A Digital Ruble. Consultation paper, page 11, Accessed: 30.6.2021, https://www.cbr.ru/StaticHtml/File/113008/Consultation_Paper_201013_eng.pdf

The introduction of digital rubles will require a revision, first of all, of the Civil Code of the Russian Federation with regard to the inclusion of digital rubles in the list of civil law cases, the establishment of payment options using digital rubles and the inclusion of digital rubles in general settlement regulations, as well as the Federal Law on the Central Bank of the Russian Federation - Bank of Russia in connection with the expansion of the BoR's function and defining the issue of emissions and circulation of digital rubles (BoRa).

In its consultation paper, the BoR points out that all economic agents will have access to the digital ruble, including individuals, the economy, financial market participants and the government. Like cash and non-cash payments, the digital ruble will have three functions of money, namely the means of payment, the measure of value and the store of value. All three functions of the Russian ruble will be absolutely equal: as one cash ruble is equated with one non-cash ruble, so one digital ruble will always be equated with each of them. In doing so, the BoR states that the digital currency will not replace cash or non-cash payments, but will be an added form of money in addition to the usual forms of money. Also, it is specified that the digital ruble is not a cryptocurrency, because cryptocurrencies do not have a single institution that will issue them, there is no guarantee of consumer rights, their value is subject to significant fluctuation, many countries do not accept cryptocurrencies as a means of paying for goods and services. and there is no single institution to ensure their safety. On the other hand, digital ruble is the responsibility of the BoR, which will implement it using digital technology. In essence, the digital ruble is fiat money whose stability is ensured by the state represented by the central bank (BoRb).

In April 2021, the BoR published the concept of digital currency, which is based on feedback received from respondents and market participants after the discussion on the consultative document on digital ruble from October 2020. BoR has chosen a two-tier retail model for the implementation of the digital ruble, which means that BoR is both a digital ruble issuer and a digital ruble platform operator. In order for digital ruble to function in practice, it is necessary for financial institutions to open electronic wallets for their clients and perform operations through those wallets on the digital ruble platform. household and corporates will be able to access their digital rubles through any bank in which they have an open account and a digital wallet. BoR chose the two-tier retail model because research by other regulators and pilot tests of central bank digital currencies have shown that the two-tier retail model is the most desirable in terms of innovation and financial market stability (BoRc). Regarding the deadline for issuing digital currency, BoR Governor Elvira Nabiullina said in October 2020 that the central bank would first implement a pilot (trial) project for a limited number of participants, through which it would see all the advantages and disadvantages of the digital ruble and announced that it could happen by the end of this year. Ms. Nabiullina said that if the BoR decides to introduce the digital ruble, its introduction will be gradual and that it is envisaged that the digital currency has a unique code, just as cash has serial markings. It is the unique code that will make digital currency ensure the transparency of their transactions, while preserving trust and privacy (BoRd).

The Development of the Digital Pound of the Bank of England

In March 2020, the Bank of England - BoE published a Document discussing the introduction of a digital currency by the central bank in which it analyzed the possibilities, challenges and design of issuing digital currency (BoE). The document outlines four steps for the potential introduction of a digital central bank currency (BoEa):

1) Understanding the possibilities and challenges in issuing digital currency of the central bank - it is necessary to clearly understand the possibilities that issuing digital currency of the central bank brings with it, but also the challenges that the central bank needs to deal with.

2) It is necessary to consider the general objectives that each digital bank digital currency issuance design should meet - the general aims should be in line with the BoE objective and mandate, bearing in mind policy objectives other than monetary. Starting from the BoE's goal of maintaining monetary and financial stability, it is essential to ensure that the digital currency design is reliable and resilient, fast and efficient, and open to innovation and competition.

3) Design of the digital currency of the central bank - it is necessary to meet two elements: a) for the digital currency of the central bank itself (i.e., access to a new form of money by the central bank) and b) infrastructure of the central bank's digital currency using that currency. In this regard, it is necessary to analyze three principles when it comes to the design of the digital currency of the central bank:

• Division of responsibilities in issuing the digital currency by the central bank. Responsibilities and functions in issuing the central bank's digital currency can be divided between the public sector (for example among the central bank and other institutions) and the private sector (for example financial institutions, payment service providers and technology companies). The division of responsibilities in issuing that the digital currency would also affect whether the central bank's digital currency is open to competition, resilient and designed based on the comparative advantage of the private and public sectors.

• Functional design refers to ensuring that the central bank's digital currency payment function provides clear benefits and utilities to its customers. This refers to the types of payments that can be made using this currency, but also by considering expanding the functionality of the digital currency of the central bank if payment needs change in the future. The decisions made would have a particular impact on whether the central bank's digital currency is user-friendly, available to the general public, and as well as the level of privacy in the execution of transaction.

• Economic design refers to aspects such as access (who can have access to the use of the central bank's digital currency), fees (does the central bank's digital currency need to bear interest?) and convertibility (whether the digital currency of the central bank can be fully convertible for other forms of money issued by the central bank and for bank deposits). Depending on the choice, it directly affects the possibility for the central bank to achieve its goal of maintaining monetary and financial stability, as well as the impact that the digital currency of the central bank would have on other forms of payments and payment systems, as well as on the functioning of the banking system.

4) Technology - it is necessary to assess which technology could meet the design and functionality requirements, having in mind the characteristics of each model of issuing central bank's digital currency. It is also necessary to consider the technological trade-offs that are present between the different design principles of this currency. The choice of technology determines the extent to which the central bank's digital currency could be resilient, secure,

fast, efficient and accessible.

In June 2021, the BoE issued a public opinion on a document discussing the introduction of the central bank's digital currency from March 2020. Respondents indicated that the BoE should carefully analyze the central bank's digital currency. In this regard, the BoE plans to deepen its research into the central bank's digital currency by launching three initiatives. The first concerns the establishment of a joint working group with the Ministry of Finance to ensure a coordinated approach to research on issues of public importance around the central bank's digital currency by representatives of the United Kingdom authorities. The second initiative relates to the establishment of a forum of the digital currency of the central bank that includes stakeholders of the academic community and representatives of society in terms of analyzing the challenges of designing, implementing and managing this currency. The third initiative also concerns the establishment of a central bank's digital currency technology forum to ensure that the BoE fully understands the state-of-the-art technology when considering technological solutions for issuing digital central bank currency (BoEb). In a statement dated 7 June 2021, the BoE announced that it had not yet made a decision on issuing the central bank's digital currency, but that a future decision would be made based on a detailed consideration of how the central bank's digital currency could affect the BoE objectives, as well as the objectives of the Government (BoEc).

Regulation of Digital Currency in Serbia

On several occasions, such as in October 2014 (NBS) and in May 2016 (NBSa), the National Bank of Serbia made public warnings that digital currencies are not legal tender in Serbia. According to Article 53 of the Law on the National Bank of Serbia the dinar is the legal tender of the Republic of Serbia and the National Bank of Serbia has the exclusive right to issue banknotes and coins in the Republic of Serbia. Law on the Prevention of Money Laundering and Financing of Terrorism, in Article 3 defines the term virtual currency as "digital records of values not issued and whose value is not guaranteed by the central bank or other public authorities, which are not necessarily linked to a legal tender and do not have the legal status of money or currency, but are accepted by natural or legal persons as a means of exchange and may be bought, sold, exchanged, transferred and stored electronically". This indicates that the National Bank of Serbia supervises the implementation of this law over persons engaged in the provision of services related to virtual currencies (Martin, 2020).

In December 2020, with implementation starting as of 30 June 2021, Law on Digital Asset in Serbia came into force. The adoption of this law represents a significant moment in the development of modern Serbian legislation and the Law on Digital Asset is the first law in the Republic of Serbia that regulates the sphere of digital business and trade in digital assets. The main novelty is the introduction of virtual currency and digital tokens as a valid means of exchange between individuals and/or legal entities, as well as the legalization of digital asset mining. From a legal point of view, the most important thing is that transactions with digital assets are now guaranteed legal protection, both regulatory and judicial. The supervisory bodies of the law are the National Bank of Serbia and the Securities Commission. The National Bank of Serbia is responsible for issues related to decision-making in administrative procedures, adoption of bylaws, supervision over the performance of activities and realization of other rights and obligations of the supervisory body in the part related to

virtual currencies as a type of digital asset. The Commission is responsible for issues referred to in this Law related to decision-making in administrative proceedings, adoption of bylaws, supervision over the performance of activities and exercise of other rights and obligations of the supervisory body in the part related to digital tokens as a type of digital asset, as well as in the part related to digital assets that have the characteristics of financial instruments. Article 15 of the Law on Digital Assets precisely defines that the Republic of Serbia, the National Bank of Serbia, the Commission and other competent authorities and public authorities do not guarantee the value of digital assets and are not responsible for any possible damages and losses suffered by users and other digital asset owners and/or digital asset-related service providers and/or third parties, in connection with the conduct of digital asset transactions. In early July 2021, the National Bank of Serbia issued a statement that it had not issued any approval for white paper issued when issuing virtual currencies as a type of digital asset, and that no request for such approval had been submitted to the National Bank of Serbia until then in order to deny the media's allegations that the first Serbian virtual currency was issued (NBSb).

For now, the National Bank of Serbia has not issued a statement on the possible issuance of central bank's digital currency. However, with the entry into force of the Law on Digital Assets, the Republic of Serbia has created the first framework for the regulation of digital assets, which has created legal security for users of digital asset and all potential investors. At the same time, this law provides an opportunity to further develop the domestic capital market using digital technology, while strengthening the legal framework to combat terrorist financing, money laundering and potential abuses in the digital asset market.

Conclusion

The development of digital technology and non-cash means of payment have influenced the leading central banks to start developing the central bank's digital currency, which creates challenges for the modern monetary and financial system. Such a transformation in business was contributed to by the accelerated development of digital currencies, the best-known being bitcoin, but also by the announcement of the possible introduction of a digital currency that would have a global reach, such as Libre, which would be emitted by the social network Facebook. An additional incentive for central banks to develop their digital currencies was given by the corona virus pandemic, which introduced a social distance to prevent the spread of the virus, as well as a recommendation to use non-cash forms of payment as much as possible.

The paper analyzes the process of developing a central bank's digital currency by the most important central banks, which are still in the trial phase of testing the central bank's digital currency, analysis of advantages and disadvantages, desirable technological design and necessary legal adjustments. In October 2020, the European Central Bank announced the possibility of issuing a digital euro, and its introduction will guarantee that all citizens of the euro zone have access to a simple and universally accepted, secure and reliable method of payment. The issuance of the digital euro will be entrusted to the Eurosystem and will be available to all citizens and companies. For now, the European Central Bank has not set a deadline for the introduction of the digital euro, but is actively working on developing the concept, conducting a practical experiment, and listening to the opinions of the general public. The European Central Bank would be a guarantor of security and stability, both for cash and for the digital form of money, even in the case of digital euro issuance. Thus, the digital euro would be a digital symbol of Europe's progress and integration. In August 2020, the Federal Reserve System pointed

out the importance of research and pilot testing in order to understand the possibilities and risks associated with the issuance of central bank's digital currency. Like other central banks, the Federal Reserve System will assess the opportunities and challenges of issuing digital currency (i.e., digital dollar), ways to apply that currency in addition to cash, and other payment options. Federal Reserve System President Jerome H. Powell indicated in May 2021 that no decision had yet been made on whether the United States would issue the central bank's digital currency. However, given the global significance of the dollar, it is necessary for the Federal Reserve System to maintain full commitment to the development of the central bank's digital currency, a better understanding of the technology necessary for its development and its potential.

In October 2020, the Bank of Russia published a consultative document on the possibilities of issuing digital ruble, which would represent the digital form of the national currency of Russia, which will be issued together with the currently existing forms of money. Regarding the deadline for issuing digital currency, the Governor of the Bank of Russia Elvira Nabiullina stated in October 2020 that the central bank will first implement a pilot (trial) project for a limited number of participants through which it will see all the advantages and disadvantages of digital ruble and announced that it could happen by the end of this year. In March 2020, the Bank of England published a document discussing the introduction of central bank's digital currency, which analyzed the possibilities, challenges and design of digital currency issuance, while in June 2021 it was announced that it had not yet made a decision to issue digital currency, but that a future decision will be made on the basis of a detailed consideration of how the central bank's digital currency may affect the objectives of the Bank of England as well as the objectives of the Government.

For now, the National Bank of Serbia has not issued a statement on the possible issuance of the central bank's digital currency. However, with the entry into force of the Law on Digital Assets, the Republic of Serbia has created a regulatory framework for digital assets, not only providing a clear legal framework and legal certainty for investors and users of digital assets, but also sending a signal to the world that Serbia is becoming a fintech country. The main novelty of this law is the introduction of virtual currency and digital tokens as a valid means of exchange between individuals and/or legal entities, as well as the legalization of digital asset mining.

In the coming period, we can expect the publication of further results of pilot projects in the issuance of central bank's digital currency, and then the first issue of these currencies. This would push the boundaries in the digitalization of payments, with the need to preserve price and financial stability. All this will have an impact on the transformation of the hitherto known monetary and financial system and on the presence of new forms of payment for citizens and the economy. For end users, the central bank's digital currency that will be accessible, resilient, secure, fast and efficient and that will protect the privacy of transactions will be acceptable. Further development of the central bank's digital currency is a challenge for central banks, which will thus become part of the modern digital market through the development of this inspiring area of banking.

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