Pregledni članak

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IMPLIKACIJE PRIMENE DOLARIZACIJE ZA MAKROEKONOMSKU STABILNOST

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Cilj ovog rada je prezentovanje troškova i koristi primene dolarizacije. Najčešći razlozi prihvatanja, u potpunosti ili delimično, strane valute su prisustvo visoke i volatilne stope inflacije, zatim, značajna volatilnost deviznog kursa, kao i narušeno poverenje u sopstvenu valutu. Isto tako, visoko dolarizovane zemlje najčešće imaju niži stepen razvoja finansijskog tržišta. Dolarizacija doprinosi sniženju troškova transakcija u međunarodnoj trgovini i postizanju cenovne i finansijske stabilnosti, jer je uvozna inflacija niža od domaće. S druge strane, prisustvo pune dolarizacije označava gubitak senioraže kao prihoda od štampanja novca monetarnih vlasti, ali i ograničenost primene funkcije zajmodavca u poslednjoj instanci. Rezultati analize ukazuju da je kod dolarizovanih zemalja došlo do sniženja stope inflacije i do uspostavljanja makroekonomske stabilnosti, kao i do prisustva finansijske integracije. Analiza je, takođe, pokazala da gubitak prihoda od senioraže, mereno kao učešće u bruto domaćem proizvodu, nije zanemarljivo, dok se funkcija zajmodavca u poslednjoj instanci može nadoknaditi kroz formiranje stabilizacionih fondova i sklapanje ugovora sa finansijskim institucijama.

Ključne reči: dolarizacija, uloga zajmodavca u poslednjoj instanci, senioraža, integracija finansijskih tržišta

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UVOD

Dolarizacija se može definisati kao zvanična ili nezvanična upotreba strane valute u transakcijama jedne zemlje. Najčešće se kao razlog primene dolarizacije navodi veće poverenje u stranu valutu u poređenju sa domaćom. Time se direktno utiče na ograničeno dejstvo monetarne politike kroz veći

uticaj transmisije kanala deviznog kursa u poređenju sa kanalom kamatnih stopa, koji bi trebalo da ima dominantan uticaj u režimu ciljanja inflacije kod onih centralnih banaka koje su se opredelile da targetiraju inflaciju kao monetarnu strategiju. Istovremeno inostrane kamatne stope, poput Euribor-a i Libor-a, imaju veći uticaj na cenu troškova zaduživanja u poređenju sa kamatnim stopama koje se odnose na trošak zaduživanja u domaćoj valuti.

Cilj rada je da predstavi troškove i koristi primene dolarizacije. Prednosti primene dolarizacije jesu

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smanjenje transakcionih troškova u trgovinskoj razmeni, prisustvo uvozne inflacije koja je najčešće niža od domaće inflacije, ali i odsustvo volatilnosti deviznog kursa usled prihvatanja strane valute kao sopstvene. S druge strane, treba ukazati na nedostatke primene dolarizacije poput senioraže, koja u osnovi predstavlja prihod centralne banke od štampanja novca, ali i nemogućnost primene funkcije zajmodavca u poslednjoj instanci.

Predmet istraživanja u ovom radu su dolarizovane zemlje i implikacije koje dolarizacija, puna ili delimična, ima za funkcionisanje ekonomija tih zemalja. Najčešći razlozi za primenu dolarizacije jesu prisustvo dugoročne nestabilnosti na makroekonomskom nivou, koja se reflektuje kroz visoku i nestabilnu stopu inflacije, značajnu volatilnost deviznog kursa, ali i odsustvo poverenja u domaću valutu. U takvim okolnostima, strana valuta preuzima primat i koristi se kao sredstvo plaćanja, jedinica mere, ali je prisutna i veća štednja u stranoj valuti u poređenju sa domaćom.

U ovom istraživanju biće korišćene induktivna i deduktivna metoda, metoda analize i sinteze, metoda klasifikacije i metoda komparacije. Navedene metode biće korišćene kako bi se napravila komparacija zemalja koje primenjuju dolarizaciju, uvideli razlozi za primenu strane valute kao domaće, i stekao uvid u efekte prihvatanja strane valute (niža inflacija, odsustvo volatilnosti deviznog kursa usled primene pune dolarizacije). Ovakav pristup analize je osnova da se sagledaju zemlje različitog nivoa ekonomske i finansijske razvijenosti, čime se postiže mogućnost davanja preporuka domaćim monetarnim vlastima o primeni mera kako bi se u Republici Srbiji (RS) povećao stepen dinarizacije.

Hipoteza od koje se polazi u analizi jeste:

H: Postoji visoka međuzavisnost kretanja stepena dolarizacije (u slučaju Republike Srbije, evroizacije) i stope inflacije, kao indeksa potrošačkih cena na međugodišnjoj osnovi.

Ove varijable su izabrane jer visok stepen dolarizacije treba da bude povezan sa sniženjem stope inflacije, zbog prisustva uvozne inflacije koja je najčešće niža u

poređenju sa domaćom stopom inflacije. Za testiranje ove hipoteze, korišćen je koeficijent korelacije i obračun baziran na podacima za RS.

Monetarne vlasti trebaju da budu svesne da je proces vraćanja poverenja u domaću valutu dug, imajući u vidu da su koreni dolarizacije duboki. Svako nastojanje da se snizi stepen dolarizacije treba da bude praćeno održavanjem finansijske i cenovne stabilnosti, a da primenjene mere dedolarizacije budu dugoročno održive i prilagođene karakteristikama domaće ekonomije (faza ekonomskog i finansijskog razvoja, stepen razvijenosti finansijskog tržišta, režim deviznog kursa i slično). Rešavanje problema dolarizacije treba da bude održivo, zbog čega u njegovo rešavanje treba da budu uključeni nosioci monetarne i fiskalne politike, ali i predstavnici nefinansijskog sektora. Time bi se dobila sveobuhvatna strategija, bazirana na mikro i makroprudencijalnim merama.

Rad je struktuiran na sledeći način. U prvom delu, prezentirani su pojam i vrste dolarizacije, a potom načini merenja dolarizacije, njene prednosti i nedostaci, gde je fokus analize na prikazu uloge zajmodavca u poslednjoj instanci, senioraži i stabilnosti i integraciji finansijskog tržišta. Takođe, u ovom radu razmatraju se evroizacija u RS i strategija dinarizacije koja je doneta kako bi se promovisala veća upotreba dinara u ekonomiji. U Zaključku su sumirani glavni rezultati analize, ukazano je na ključne doprinose rada i date preporuke za dalja istraživanja ove aktuelne teme. Isto tako, izložene su preporuke monetarnim vlastima u RS, kako bi se povećao stepen dinarizacije.

POJAM I VRSTE DOLARIZACIJE

Dolarizacija (*dollarisation*) predstavlja uvođenje u domaću ekonomiju dolara ili neke druge strane valute, koja funkcioniše paralelno sa domaćom valutom, ili umesto nje. U Tabeli 1, prikazan je istorijski razvoj primene dolarizacije.

Literatura nudi mogućnost sagledavanja većeg broja definicija pojma dolarizacije, što ukazuje da je

Tabela 1 Istorijski pregled primene dolarizacije

Zemlja	Period primene dolarizacije	Zemlja	Period primene dolarizacije
Američka Samoa	?-trenutno	Dominikana	1938-1951
Albanija*	1912-1925	Dominikanska Republika*	1899-1947
Andora*	?-trenutno	Ekvador*	2000-trenutno
Angola	1938-1951	Egipat*	1856-1898
Bahrein	1920-1965	El Salvador	2001-trenutno
Butan*	1968-1974	Gambija	1800-1969
Bocvana*	1950-1976	Gana	1902-1913
Brunei*	1945-1951	Gibraltar	1896-1913
Kameron	1910-1916	Grenada	1888-1927
Kajmanska ostrva	?-1972	Honduras*	1838-1951
Kuba*	1902-1934	Indonezija	1912-1950
Kipar	1880-1914	Irak	1974-1807
Kuvajt	1942-1961	Izrael	1917-1932
Lihteštajn*	?-trenutno	Jordan	1917-1927
Libija	1912-1943	Kenija	1896-1898
Malta	1903-1939	Nigerija	1891-1913
Monako*	1865-trenutno	Peru	1887-1914
Crna Gora	1999-trenutno	Katar	1949-1966
Maroko	1897-1907	Tunis*	1873-1904
San Marino*	1800-1969	Uganda	1906-1920
Saudijska Arabija*	1897-trenutno	Ujedinjeni Arapski Emirati*	1946-1973
Singapur	1918-1952	Vatikan*	1929-trenutno
Švajcarska	1840-1849	Vijetnam	1862-1876
	1921-1974		

Napomena: Znak (*) označava zemlje koje su bile nezavisne u nekim ili u svim epizodama dolarizacije i znak (?) označava da autor u navedenom radu nije naveo početak primene dolarizacije u navedenim zemljama

Izvor: Schuler, 2005, 121-123

istraživački potencijal ove materije značajan. Veći broj definicija dolarizacije ukazuje na postojanje različitih javnih oblika ove strategije u različitim zemljama.

Dolarizacija, prema S. Heysen-u (2005), može da se posmatra kao puna ili zvanična i kao parcijalna dolarizacija. Puna ili zvanična dolarizacije (*full or official dollarization*), predstavlja situaciju kada je stranu valutu, najčešće dolar, zemlja prihvatila kao glavno sredstvo plaćanja (*legal tender*). Delimična ili *de facto* dolarizacija se dešava u zemlji koja zadržava svoju lokalnu valutu u opticaju, ali, istovremeno, daje mogućnost da se plaćanja i transakcije obavljaju slobodno u dolarima.

A. Ize i A. A. Powell (2004), u svojoj analizi su napravili razliku između četiri vrste dolarizacije. Prva vrsta je tzv. dolarizacija makroekonomskog hedžinga (*macroeconomic hedging dollarization*), koja predstavlja

sposobnost investitora da ograniči izloženost svog portfolija prema volatilnosti inflacije i deviznog kursa, pri čemu je taj portfolio, istovremeno, uložen u stranu i domaću valutu. Druga vrsta je dolarizacija tržišne nesavršenosti (*market imperfections dollarization*) i ova vrsta dolarizacije se javlja kada je manje efikasna regulacija domaćeg deviznog tržišta, usled čega je posredovanje domaće valute skuplje nego strane. Treća vrsta je *default* dolarizacija, koja se dešava u situaciji kada postoji velika verovatnoća da imalac prihoda (poput zarade) neće obezbediti plaćanje svojih obaveza i ova vrsta dolarizacije je zastupljena kada je veća dominacija posredovanja strane u odnosu na domaću valutu. Četvrta vrsta je dolarizacija moralnog hazarda (*moral hazard dollarization*), koja je prisutna u situaciji kada postoji mogućnost da zajmoprimac ne izvrši plaćanje svojih obaveza, što, posledično, može dovesti do toga da se isti obrazac ponašanja prenese

na banku. Ukoliko su deponenti zaštićeni primenom šeme osiguranja depozita, sklapanje ugovora u dolarima daje mogućnost bankama i njihovim zajmoprimcima da zabeleže niže stope pri zaduženju ukoliko ne dođe do devalvacije domaće valute.

Prema L. I. Jácome-u i A. Lönnberg-u (2010), postoji nekoliko preduslova, koje je potrebno ispuniti, kako bi došlo do primene pune ili zvanične dolarizacije. U pitanju su sledeći preduslovi:

- prudentan finansijski sistem i jaka finansijska supervizija, kako bi se smanjila verovatnoća bankarske krize u slučaju kada ne postoji, ili je smanjeno dejstvo funkcije zajmodavca u poslednjoj instanci;
- uređene javne finansije, koje pružaju dovoljno poverenja tržišnim učesnicima da će se primeniti mere fisklane politike; i
- uređeno tržište rada, koje će biti apsorber eksternih šokova i ostvariti makroekonomsku prilagođenost.

Potrebno je napraviti razliku između tri vrste dolarizacije:

- dolarizacija plaćanja (*payments dollarization*), koja se dešava u slučaju kada se dolar ili neka druga strana valuta pretežno upotrebljavaju kao sredstvo plaćanja;
- finansijska dolarizacija (*financial dollarization*) se javlja u situaciji kada rezidenti svoju finansijsku aktivu drže u dolarima ili u nekoj drugoj stranoj valuti; i
- realna dolarizacija (*real dollarization*), koja je prisutna kada su domaće cene i/ili zarade denominovane u dolarima ili nekoj drugoj stranoj valuti.

Koncept dolarizacije po G. Ortiz-u (1983) se povezuje sa pojmom valutne supstitucije (*currency substitution*). U tom smislu, monetarna politika biće neefikasna u onoj zemlji gde je strana valuta dobra zamena za domaću valutu. Važna posledica ovog stava je da će zamenljivost između domaće i strane valute

da se poveća u periodu kada dođe do porasta fluktuacije deviznog kursa i, na bazi toga, da se desi porast valutnog rizika. Prema K. Forbes-u, V. Sebastian-u, C. Mapingure-u, M. Charity-u, M. Kumbirai-u, C. Felistus-u i M. Rumbidzai-u (2013), pored valutne supstitucije, pojam dolarizacije se vezuje i za supstituciju aktive (*asset substitution*). Ž. Bogetić (2000) skreće pažnju da je neophodno napraviti distinkciju između valutne supstitucije, koja predstavlja primarnu upotrebu strane valute i deviznih depozita kao sredstva plaćanja, i supstitucije aktive koja podrazumeva primarno korišćenje strane valute u funkciji očuvanja vrednosti (*store of value*). S druge strane, K. Schuler (2005) smatra da je dolarizacija još jedan oblik fiksnog deviznog kursa (*fixed exchange rate*). Dolarizacija se koristi kako bi označila široku upotrebu strane valute kao sredstva plaćanja ili jedinicu mere.

Treba napraviti razliku između tri oblika dolarizacije, koje, obuhvataju nezvaničnu, poluzvaničnu, i zvaničnu dolarizaciju (Makochekanwa, 2010). Puna ili zvanična dolarizacija se javlja u situaciji kada konkretna zemlja počne da koristi stranu valutu kao sredstvo plaćanja i da posledično smanjuje korišćenje domaće valute. U takvom valutnom sistemu, prema Ž. Bogetiću (2000), ne postoji valutni rizik i nema rizika od valutne krize. Postoje varijacije u primeni pune ili zvanične dolarizacije, koje se nazivaju poluzvanična dolarizacija (*semi-official dollarization*), ili bimonetarni sistem (*bimonetary system*). Bimonetarni sistem se dešava u situaciji kada se strana valuta (ili strane valute) upotrebljava kao sredstvo plaćanja i ima dominantnu ulogu u valutnoj strukturi bankarskih depozita, ali ima sekundarnu ulogu prema domaćoj valuti, koja se primarno koristi za transakcije kao što su isplate zarada, poreza i svakodnevnih transakcija, poput transportnih usluga i slično. Zemlje koje koriste poluzvaničnu dolarizaciju imaju svoju centralnu banku ili monetarne vlasti koje će sprovesti sopstvenu monetarnu politiku. Nezvanična dolarizacija se dešava u slučaju kada rezidenti date zemlje drže veliki deo svoje aktive u stranoj valuti, iako strana valuta nije zvanično sredstvo plaćanja prema monetarnoj ili finansijskoj regulativi te zemlje. Upotreba dolara (ili druge strane valute), u ovom slučaju, primenivaće se, u velikoj meri u privatnim

transakcijama kao jedinica mere, sredstvo razmene i mera vrednosti. Ž. Bogetić (2000) ističe da koncept nezvanične dolarizacije može da ima nekoliko oblika:

- posedovanje deviznih depozita u domaćim bankama;
- posedovanje deviznih depozita u stranim bankama;
- držanje obveznica denominiranih u stranoj valuti ili druge nenovčane aktive, i
- držanje deviza, bez obzira da li se poseduju na legalan ili nelegalan način.

Shodno definisanim različitim pojavnim oblicima dolarizacije, biće prikazani načini merenja stepena dolarizacije. Dok se dolarizacija, najjednostavnije, može definisati kao veća zastupljenost strane valute u odnosu na domaću, stvarni nivo dolarizacije nije moguće egzaktno identifikovati. Način merenja zavisi od raspoloživih podataka, ali i pojavnog oblika dolarizacije u konkretnoj zemlji.

NAČINI MERENJA STEPENA DOLARIZACIJE

Kako postoji veliki broj definicija dolarizacije, tako i veliki broj studija na različiti način meri stepen dolarizacije. Najčešće se stepen dolarizacije meri kroz dolarizaciju depozita (*deposit dollarization*), koja se računa kada se u odnos stavi iznos deviznih depozita prema novčanoj masi ili prema ukupnom nivou depozita. Centralna banka, najčešće, objavljuje i poseduje podatke o deviznim depozitima, kao i monetarnim agregatima. Za razliku od monetarnih agregata, koji se publikuju u domaćoj valuti, devizni depoziti su iskazani u različitim stranim valutama i upotrebom odgovarajućih međuvalutnih odnosa mogu se preračunati u domaću valutu. Ovaj preračun deviznih depozita iz originalne strane valute u domaću valutu može da dovede do velike oscilacije vrednosti koeficijenta dolarizacije depozita, naročito ukoliko dođe do značajne depresijacije domaće valute. N. Mwase i F. Kumah (2015), iz tog razloga predlažu

da se stepen dolarizacije meri u realnom izrazu, time što će se koristiti tzv. prilagođeni devizni depozit, koji se upotrebom odgovarajućih međuvalutnih odnosa preračunava u depozit u domaćoj valuti.

A. Ize i E. L. Yeyati (2003), s druge strane, drugačije definišu indikator realne dolarizacije, koji predstavlja nivo u kojem su cene i zarade iskazane u stranoj valuti i ovaj indikator iskazuje u kojoj meri efekat koeficijenta prenosa deviznog kursa (*pass-through coefficient of exchange rate*) ima na kretanje cena. M. Garcia-Escribano i S. Sosa (2011), kod određivanja depozitne (kreditne) dolarizacije, koriste racio između deviznih depozita (kredita) prema ukupnim depozitima (kreditima) po tekućem deviznom kursu, umesto da ove varijable iskazuju po konstantnom deviznom kursu.

Nakon definisane dolarizacije depozita, neophodno je objasniti pokazatelj dolarizacije kredita (*loan dollarization*). L. Cattao i M. Terrones (2000) ukazuju da je neophodno, istovremeno, posmatrati i dolarizaciju depozita i kredita, kako bi se sagledala valutna i ročna usklađenost pozicija bilansa banke, ali i drugih privrednih subjekata kod kojih je zastupljena valutna i ročna neusklađenost generisanja prihoda i plaćanja rashoda. Naglašava se da stepen dolarizacije depozita i kredita zavisi od međusobne veze bankarskih troškova, strukture tržišta kredita i makroekonomskih šokova.

C. Reinhart, K. Rogoff i M. Savastano (2003) su razvili sledeće pokazatelje dolarizacije:

- Kompozitni indeks dolarizacije za svaku zemlju u uzorku. Uzorak koji su analizirali je podeljen na kraću i dužu seriju podataka. Kraća serija obuhvata 90 zemalja sa godišnjim opservacijama u kreiranju kompozitnog dolarskog indeksa u periodu 1996-2001. Duža serija podataka se bazira na analizi 48 zemalja sa godišnjim opservacijama u kreiranju kompozitnog dolarskog indeksa, u periodu 1980-2011.
- Svaka analizirana zemlja je grupisana u neku od četiri kategorije, u zavisnosti od tipa dolarizacije kojoj pripada. Navedeni autori su kompozitni indeks dolarizacije definisali kao učešće javnog

duga u bruto domaćem proizvodu, zatim kao učešće ukupnih bankarskih deviznih depozita u nekom od monetarnih agregata, i kao učešće vladinog duga koji je denominiran u stranoj valuti u ukupnom dugu vlade. Sve tri navedene komponente sačinjavaju kompozitni indeks koji uzima vrednost od 0 do 10. Ovako izračunat kompozitni indeks daje mogućnost merenja stepena dolarizacije za svaku analiziranu zemlju iz uzorka i ima vrednost od 0 do 30.

Na bazi sledeća dva kriterijuma, definisan je tip dolarizacije:

- stepen domaće dolarizacije, i
- nivo deviznog zaduženja od strane privatnog sektora.

Domaća dolarizacija je u ovoj analizi definisana kao učešće deviznog duga vlade u ukupnom javnom dugu. Na bazi ovog učešća, analizirane zemlje su podeljene na dve grupe: zemlje sa učešćem ispod 10% i zemlje čije je učešće preko 10%. Kod pokazatelja deviznog zaduženja privatnog sektora, analizirane zemlje su podeljene na dve grupe: zemlje kojima je devizni dug privatnog sektora najmanje 10%, od ukupnog javnog duga, i zemlje kojima je to učešće ispod 10%. Ova dva kriterijuma omogućavaju da se dolarizovane zemlje podele u četiri kategorije ili četiri tipa dolarizacije, kao što je prikazano u Tabeli 2. Zemlje u kojima je sličan nivo dolarizacije iz domaćih i inostranih izvora (iznad 10%), klasifikovane su kao Tip 1; zemlje u kojima je dolarizacije pretežno inostranog izvora su klasifikovane kao Tip 2; zemlje u kojima je izvor dolarizacije pretežno domaćeg izvora su klasifikovane

kao Tip 3; i zemlje u kojima je dolarizacija na niskom nivou (tj. ispod 10%) i po osnovu domaće i inostrane dolarizacije su klasifikovane u Tip 4.

Prednost ovog pristupa u merenju stepena dolarizacije, jeste mogućnost da se za svaku analiziranu zemlju izmeri nivo domaće i inostrane dolarizacije. Takođe, prednosti ovog proračuna su jednostavnost izračunavanja kvantitativnih pokazatelja i lakoća njihovog razumevanja.

KORISTI I TROŠKOVI PRIMENE DOLARIZACIJE

Uloga zajmodavca u poslednjoj instanci

Ukoliko se zemlja odrekne upotrebe nacionalne valute, istovremeno se gubi i mogućnost vođenja samostalne monetarne politike, tj. u tom slučaju javlja se rizik da zajednička monetarna politika (u slučaju monetarne unije), ili strana monetarna politika (u slučaju dolarizacije), neće odgovarati interesima posmatrane zemlje u datom trenutku (Stanisic, 2012). Primenom koncepta pune dolarizacije, eliminiše se rizik od volatilnosti deviznog kursa i naglih devalvacija i apresijacija domaće valute u odnosu na stranu valutu. Koncept pune dolarizacije označava eliminaciju funkcije zajmodavca u poslednjoj instanci (*lender-of-last-resort*), čime centralna banka gubi mogućnost reagovanja na poremećaje u domaćem i međunarodnom finansijskom sistemu, kroz pružanje kratkoročne likvidnosti finansijskom sistemu.

Tabela 2 Tipovi dolarizacije

	Učešće deviznog duga privatnog sektora u ukupnom javnom dugu je 10% ili više	Učešće deviznog duga privatnog sektora u ukupnom javnom dugu je manje od 10%
Učešće deviznog duga vlade u javnom dugu je 10% ili više	Tip 1	Tip 2
Učešće deviznog duga vlade u javnom dugu je ispod 10%	Tip 3	Tip 4

Izvor: Reinhart, Rogoff & Savastano, 2003, 9

G. Calvo (2002) ističe da je greška povezati funkciju zajmodavca u poslednjoj instanci sa sposobnošću centralne banke da emituje novac. Naglašava se da postoje alternativni načini preko kojih centralna banka može da obezbedi likvidnost. Tu se, pre svega, misli da, na primer, centralna banka i ministarstvo finansija mogu da: stvore stabilizacioni fond (*stabilization fund*), ili da ugovore kreditne linije sa privatnim bankama.

A. Berg i E. Borensztein (2000) ističu potrebu da se napravi distinkcija između uloge centralne banke da poslovnim bankama obezbedi kratkoročnu likvidnost od njene uloge da bude krajnji garant stabilnosti finansijskog i platnog prometa u slučaju bankarske krize. Dolarizacija ne bi trebalo da, u velikoj meri, onemogući sposobnost monetarnih vlasti da obezbede kratkoročnu likvidnost celokupnom bankarskom sistemu, ili pojedinim bankama koje imaju probleme u poslovanju. Ove odluke su na raspolaganju ako centralna banka unapred obezbedi potrebna sredstva pomoći, ili sa međunarodnim finansijskim organizacijama zaključi kreditne linije. Zemlja koja primenjuje punu dolarizaciju može da ima problem sa naglim povlačenjem depozita, kao i sposobnost da garantuje potpunu operativnost platnog sistema. Odgovarajuća reakcija centralne banke na povlačenje bankarskih depozita u dolarizovanoj ekonomiji zavisi od uzroka tog povlačenja. Ukoliko povlačenje podrazumeva da se depoziti prebacuju iz jedne banke u drugu, odgovarajuća akcija monetarnih vlasti bi mogla da bude povlačenje likvidnosti od jačih banaka i obezbeđivanje likvidnosti slabijim institucijama. Međutim, ukoliko do povlačenja depozita dođe na nivou celog bankarskog sistema, monetarne vlasti bi trebalo da imaju priličan iznos likvidnih sredstava. U tom slučaju, neophodno je da postoji šema osiguranja depozita, koja bi značila određeni stepen sigurnosti za deponente. U dolarizovanoj ekonomiji manje je verovatno da do povlačenja depozita dođe, jer je celokupna bankarska aktiva denominirana u dolarima (ili izražena u nekoj drugoj valuti osim dolara) i da je time postignuta valutna usklađenost pozicija bilansa banaka. Posledično, time se umanjuje opasnost od oslabljene uloge zajmodavca u poslednjoj instanci (Berg & Borensztein, 2000).

U situaciji kada se smanji poverenje u bankarski i sveukupni finansijski sistem, povlačenje depozita može da bude značajno po iznosima povučenih sredstava i time se direktno ugrožava likvidnost celokupnog sistema. U slučaju da centralna banka ima mogućnost da primeni funkciju zajmodavca u poslednjoj instanci ova kriza likvidnosti se može izbeći. Prema S. Broda-u i E. L. Yeyati-u (2002), samo postojanje funkcije zajmodavca u poslednjoj instanci pruža mogućnost da se obezbedi elastična ponuda rezervi koje mogu preventivno delovati u sprečavanju krize likvidnosti. Ističe se značaj preventivne uloge postojanja šeme osiguranja depozita. U analizi funkcije zajmodavca, u poslednjoj instanci, treba uzeti i nivo stresa, odnosno, nestabilnosti u bankarskom sistemu. Prema C. Garcia-de-Andoain, F. Heider, M. Hoerova i S. Manganelli (2016), stepen stabilnosti bankarskog sistema direktno utiče na nivo sredstava koje su banke spremne da pozajme na međubankarskom tržištu, kao i nivo tražnje za sredstvima centralne banke. Potencijalni zajmodavci, u slučaju nestabilnosti, mogu da budu manje voljni da pruže likvidnost ili zbog rizika ugovorne strane (*counterparty risk*), ili zbog toga što žele da likvidnost zadrže za sebe iz razloga predostrožnosti.

O. Jeanne i C. Wyplosz (2001) ulogu zajmodavca u poslednjoj instanci posmatraju na dva načina: kao mogućnost sprečavanja bankarske krize, u slučaju značajnog odliva depozita, i kao način sprečavanja valutne krize. Ponudili su dva aranžmana kako bi se sprečio nastanak krize likvidnosti: prvi, da centralna banka primenom funkcije zajmodavca u poslednjoj instanci na međunarodnom nivou obezbedi likvidnost na međunarodnom finansijskom tržištu, i drugi, da se putem primene funkcije zajmodavca u poslednjoj instanci povрати sigurnost i poverenje u domaći finansijski sistem. Oba predložena aranžmana podrazumevaju promenu finansijske arhitekture na globalnom nivou: prvi aranžman preporučuje osnivanje globalne centralne banke, koja će emitovati međunarodnu valutu, dok bi drugi aranžman mogao da funkcioniše kao međunarodni bankarski fond koji bi vršio nadzor i superviziju domaćeg bankarskog sistema.

Naravno, treba ukazati i na druge mere koje su na raspolaganju centralnoj banci kako bi se izborila sa povlačenjem depozita, poput višeg nivoa obavezne rezerve, poboljšanja sistema nadzora i kontrole poslovanja banaka i spremnim setom mera za očuvanje i poboljšanje finansijske stabilnosti. Naravno, pobrojane mere ne treba izolovano da se primenjuju na punu dolarizovanu ekonomiju, već i one koje imaju manji stepen dolarizacije.

Senioraža

Senioraža (*seigniorage*), u osnovi, predstavlja prihod centralne banke na bazi štampanja novca. Prema M. J. M. Neumann-u (1992), postoje tri koncepta senioraže:

- oportunitetni trošak senioraže (*opportunity cost seigniorage*),
- monetarna senioraža (*monetary seigniorage*), i
- produžena monetarna senioraža (*extended monetary seigniorage*).

Oportunitetni trošak senioraže posmatra senioražu kao ukupan oportunitetni trošak imaoća novca. Ovaj pristup polazi od pitanja koji bi dodatni realni dohodak pojedinci zaradili ukoliko bi posedovali aktivu na bazi koje bi ostvarili kamatu umesto posedovanja novca koji ne generiše kamatu. Realni oportunitetni trošak senioraže se izračunava na bazi sledećeg proračuna:

$$s_o = rB/P$$

gde je:

r - nominalna stopa prinosa na drugu aktivu osim novca,

B - ukupan iznos novca koji pojedinac poseduje, i

P - nivo potrošačkih cena, meren indeksom potrošačkih cena.

Prikazani koncept definisanja senioraže je adekvatan sa aspekta teorijske analize. Analitička prednost ovog pristupa je ta što vrednost senioraže računa na bazi vrednosti koje funkcije novca imaju za pojedince koji taj novac poseduju. Istovremeno, ovaj koncept ne identifikuje senioražu sa kamatnim prihodom

koji bi pojedinci mogli da ostvare ukoliko bi umesto posedovanja novca imali neku drugu aktivu koja bi generisala neki oblik prihoda. Kako bi ovaj koncept bio prilagođen za empirijske analize, N. J. Neumann (1992) ukazuje na mogućnost da se umesto korišćenja nominalne stope prinosa na drugu aktivu osim novca koristi stopa prinosa, pri čemu predlaže da to može biti prosečan prinos na vladine obveznice ili stopa prinosa akcija. U zavisnosti od izabrane stope prinosa, razlikovaće se nivo senioraže. Treba ukazati i na to da ovaj koncept merenja senioraže u sebi sadrži konceptualni problem. Oportunitetni trošak senioraže nije jednak stvarnom prihodu monetarnih vlasti od štampanja novca, budući da struktura portfolija koju poseduju monetarne vlasti, u značajnoj meri, se razlikuje od strukture aktive koju poseduju pojedinci. Posledično, oportunitetni trošak senioraže ne obezbeđuje meru prihoda za monetarne vlasti na bazi kreiranja novca.

Koncept monetarne senioraže se definiše kao odnos neto promene novčane mase i nivoa potrošačkih cena:

$$sM^* = AB/P$$

gde je:

AB - neto promena novčane mase, i

P - nivo potrošačkih cena, meren indeksom potrošačkih cena.

Monetarna senioraža polazi od merenja vrednosti transakcija nemonetarne aktive koju imaoći novca koriste za trgovinu kako bi došli do željenog porasta nivoa novčane mase (AB). Ovaj pristup u merenju senioraže je jasan model sa aspekta teorijske analize i do neophodnih podataka za njegov obračun je jednostavno doći. Međutim, sam koncept monetarne senioraže ne obezbeđuje potpuni obračun vrednosti prihoda koji monetarne vlasti ostvaruju od štampanja novca. Dve komponentne čine ukupan prihod od senioraže. Prva komponenta predstavlja realnu vrednost nemonetarne aktive, koju centralna banka generiše u zamenu za porast novčane mase. Ova komponenta se meri tradicionalnim konceptom monetarne senioraže. Druga komponenta prihoda od senioraže je zarada od kamate koju centralna banka

ostvaruje na bazi posedovanja nevladinog duga (*nongovernment debt*), tj. duga koji se odnosi na domaće i strane dužnike. Centralna banka povremeno može da realizuje kapitalne dobitke (gubitke) prodajom aktive na tržištu po višoj (nižoj) ceni od cene koju je platila za datu aktivu.

Proširena monetarna senioraža se računa na sledeći način:

$$sM = sM^* + (dD + fF + GR)/P$$

gde je:

sM^* - monetarna senioraža,

dD - kamata na dug koji drže domaći dužnici,

fF - kamata na dug koji drže strani dužnici,

GR - kapitalni dobitak (gubitak), i

P - nivo potrošačkih cena, meren indeksom potrošačkih cena.

S. Fischer (1982) pravi razliku između aktivne i pasivne senioraže. Aktivna senioraža se odnosi na zemlje koje imaju visoku stopu inflacije, dok je pasivna senioraža zastupljena u brzo rastućim zemljama. U slučaju pasivne senioraže ovaj prihod se realizuje time što je emitovanje novca povezano sa visokim nivoom privrednog rasta, ukoliko u isto vreme inflacija nije visoka.

Realan prihod od senioraže može se izračunati na sledeći način (Mankiw, 1987):

$$\dot{M}/P = \dot{M}/M * M/P = (\pi + g)kY$$

gde je:

$\pi = \dot{P}/P$ - stopa inflacije,

$g = \dot{Y}/Y$ - stopa rasta autputa (autor ne precizira koji *output* je u pitanju), i

k - konstanta.

G. N. Mankiw (1987) objašnjava teoriju optimalne senioraže (*theory of optimal seigniorage*), time što su stopa porasta novčane mase, inflacije i nominalne

kamatne stope određene na bazi potrebnih prihoda koje vlada jedne zemlje treba da realizuje. Teoriju optimalne senioraže testira shodno tome da li je tokom vremena viša poreska stopa povezana sa višom stopom inflacije i višom nominalnom kamatnom stopom. Navedeno testiranje sprovedeno je na osnovu podataka za SAD, za period 1951-1985, gde je za aproksimaciju nominalne kamatne stope uzeta tromesečna stopa prinosa na zapise trezora (*three-month Treasury bill rate*), dok su za prosečnu poresku stopu korišćeni prihodi vlade, kao procenat bruto nacionalnog proizvoda (*Gross national product* - GNP). Bruto nacionalni proizvod se u SAD koristio za određivanje ukupne ekonomske aktivnosti do 1991, od kada je u upotrebi termin bruto domaći proizvod. Sprovedena analiza je pokazala da je u navedenom periodu porast federalnih poreskih prihoda od 1% prouzrokovao porast nominalne kamatne stope od 1,43%. Pokazano je da je uticaj rasta federalnih prihoda, a time i poreskih stopa, na nominalnu kamatnu stopu pozitivan i značajan. J. H. Haslag (1998) je, koristeći podatke u periodu 1965-1994, izračunao da su prihodi od senioraže, mereni kao odnos prihoda od senioraže i bruto nacionalnog proizvoda, za privredu SAD-a, u proseku iznosili oko 2%, dok je učešće prihoda od poreza u bruto nacionalnom proizvodu 22%. Time je pokazano da za privredu SAD učešće prihoda od senioraže u bruto nacionalnom proizvodu nije zanemarljivo.

STABILNOST I INTEGRACIJA FINANSIJSKIH TRŽIŠTA

Kada se govori o dolarizaciji, fokus analize treba usmeriti i ka stabilnosti i integraciji finansijskih tržišta. R. Rennhack i M. Nozaki (2006), kao i I. Asel (2010), pokazali su da su, početkom 2000-tih, ekonomije u tranziciji, usled opšte makroekonomske nestabilnosti, započele u većoj meri da umesto domaće koriste stranu valutu. Analizom finansijske dolarizacije ukazano je da je u zemljama koje su prihvatile stranu valutu došlo do značajnog smanjenja stope inflacije. U analiziranim zemljama Afrike (Angola, Gana, Nigerija, Južna Afrika i Zambija), prosečna stopa inflacije u periodu 1995-1999, je

smanjena sa 127% na 37,6%, u periodu 2000-2003. U azijskim zemljama (Indonezija, Laos, Koreja, Filipini, Tajland i Vijetnam) inflacija je smanjena sa 11,2% na 4,4%, respektivno, a u zemljama Latinske Amerike (Argentina, Bolivija, Brazil, Čile, Kolumbija, Kostarika, Dominikanska Republika, Ekvador, El Salvador, Gvatemala, Honduras, Meksiko, Nikaragva, Paragvaj, Peru, Ugurvaj i Venecuela) sa 14,8% na 9,3%, respektivno, i u zemljama u tranziciji sa 44,1% na 10,4%, respektivno. Nivo finansijske dolarizacije od 2001. je smanjen u nekim zemljama Latinske Amerike. Argentina je, na primer, uticala da njeni rezidenti svoje devizne depozite konvertuju u pezoz, čime je u značajnom meri snizila stepen dolarizacije. Bolivija, Peru i Urugvaj su iskusili skromno smanjenje učešća deviznih depozita u ukupnom depozitima, dok je u Paragvaju prilično smanjen stepen finansijske dolarizacije.

Kada je reč o smanjenju inflacije usled rasta finansijske dolarizacije, racionalna je odluka rezidenata da svoje depozite konvertuju iz nacionalne valute u stranu kako bi se zaštitili od rizika mogućeg daljeg porasta inflacije i gubitka vrednosti tih depozita. A. Ize i E. Yeyati (2003), ukazali su na značaj relativne volatilnosti inflacije u određivanju stepena finansijske dolarizacije. Naime, rezidenti više preferiraju da drže devizne depozite, naročito ako postoji veliki rizik od razvoja visoke stope inflacije. Ukoliko su stopa inflacije i devizni kurs volatilniji, rezidenti drže veći deo svog portfolija u stranoj valuti i sagledavaju volatilnost inflacije u kontekstu promene realnog deviznog kursa. U ovoj situaciji, realna vrednost imovine koja je izražena u stranoj valuti, a merena je putem domaće kupovne moći (*domestic purchasing power*), pokazuje veći nivo stabilnosti u odnosu na situaciju da je imovina izražena u domaćoj valuti. Ukoliko je, s druge strane, prisutna stabilnost domaće stope inflacije i realnog deviznog kursa, to će uticati da rezidenti smatraju aktivu u domaćoj valuti kao bolji čuvar vrednosti. A. Ize i E. Parrado (2002) ukazuju da realna i finansijska dolarizacija imaju tendenciju porasta usled rasta volatilnosti domaće inflacije (što dalje utiče na volatilnost zarada i stope prinosa na investicije u domaćoj valuti), ali i da beleže pad usled rasta volatilnosti deviznog kursa (što povećava volatilnost indeksiranih zarada u dolaru ili

stope prinosa).

Kada je reč o nivou dolarizacije, potrebno je ukazati i na kredibilitet monetarne politike i jačinu rada institucija (Jakšić, 2013; Jakšić & Jakšić, 2013). Institucije koje su slabe mogu da ugroze kredibilitet rada monetarnih vlasti, jer rezidenti u toj situaciji imaju strah da će vlada, svojim odlukama, da ugrozi vrednost njihove finansijske aktive time što će u zemlji doći do visoke inflacije. A. De la Torre i S. Schmukler (2004) ističu da slabe institucije mogu da povećaju neizvesnost oko doslednosti primene ugovora i da time daju podstrek rezidentima da prevremeno razoroče svoje depozite ili da takve transakcije izvrše u zemljama koje imaju sigurniji pravni sistem. Za analizu uspeha rada institucija, može da posluži studija Svetske banke za 215 zemalja u okviru projekta globalni indikatori upravljanja (*The Worldwide Governance Indicators - WGI project*), za period 1996-2014. Predmet analize su šest dimenzija koje mere nivo globalnog indikatora upravljanja za svaku zemlju i to: odgovornost; politička stabilnost i odsustvo nasilja; efikasnost vlade; kvalitet regulatornih tela; vladavina zakona; i kontrola korupcije.

Prethodno navedene studije ukazuju da je finansijska dolarizacija racionalan odgovor na neizvesnost oko nivoa stope inflacije. Finansijska dolarizacija će biti na visokom nivou u zemljama koje imaju nestabilnu i visoku domaću inflaciju i u kojima institucije mogu da ugroze poverenje vezano za buduće kretanje stope inflacije. L. Chițu (2012) se bavi analizom uticaja nezvanične dolarizacije na veliku svetsku finansijsku krizu u periodu 2007-2009, na primeru zemalja u razvoju. Ova studija je pokazala da je dolarizacije kredita bila dobar pokazatelj koji je mogao da predvidi sniženje realne stope bruto domaćeg proizvoda između 2007. i 2009, na uzorku od oko 60 zemalja u razvoju. U proseku, procenjuje se da je pad realnog bruto domaćeg proizvoda iznosio oko 0,84% u onim ekonomijama kod kojih je nivo kreditne dolarizacije bio viši od 10%.

Kada je reč o integraciji finansijskih tržišta, M. Brown, R. De Haas i V. Sokolov (2013), na primeru Ruske Federacije, nivo integracije i stabilnosti finansijskih tržišta, u okviru postojanja finansijske dolarizacije, mere kroz tri indikatora: učešće domaćih banaka u ukupnom broju banaka u zemlji; učešće filijala domaćih banaka u ukupnom broju filijala celokupnog bankarskog sektora; i učešće strane pasive domaćih banaka u ukupnoj pasivi bankarskog sektora. Na ovaj način, utvrđuje se u kojoj meri je domaći bankarski sektor integrisan sa ostatkom finansijskog sektora. Daljom analizom, ova studija nastoji da otkrije da li uticaj domaće inflacije na finansijsku dolarizaciju zavisi od toga da li je bankarski sektor integrisan u ukupan finansijski sektor ili ne, kao i u kojoj meri ta integracija postoji. Ukoliko je bankarski sektor manje integrisan u ukupan finansijski sektor, banke ne mogu da alociraju svoja devizna sredstva na eksterna tržišta ili na međunarodna tržišta kapitala. Ovo znači da ukoliko banka želi da neutrališe valutnu neusklađenost pozicija svog bilansa stanja da je potrebno da depozite u domaćoj valuti iskoristi za plasmane u domaćoj valuti. Dodatna prednost finansijske integracije, kada je reč o punoj dolarizaciji, jeste sniženje troškova zaduženja. Upotreba američkog dolara eliminiše rizik od devalvacije u zoni domaće valute i trebalo bi da snizi nivo kamatnih stopa pri zaduženju.

Druge studije, međutim, ukazuju da bi integracija finansijskih tržišta trebalo da se desi pre dolarizacije. Tako, na primer, V. Bencivenga, E. Huybens i B. D. Smith (2001) su pokazali da dolarizacija ima različit uticaj, što zavisi od stepena integracije finansijskih tržišta dve ekonomije. Pokazano je da dolarizacija ima svoje benefite kada su tržišta dobro integrisana, a ta korisnost zavisi od stepena dolarizacije. U suprotnom, dolarizacija može biti izvor nestabilnosti u ekonomiji.

EVROIZACIJA U REPUBLICI SRBIJI

U literaturi, dolarizacija je termin koji se koristi češće od termina evroizacija, jer je izraženije vezivanje za dolar nego za evro. Zbog toga smo u prethodnim delovima rada koristili termin dolarizacija, dok

ćemo u slučaju RS koristiti termin evroizacija. Samo kroz veću zastupljenost dinara i bolju valutnu i ročnu usklađenost izvora i plasmana bankarskog i nebankarskog sektora, snizio bi se nivo valutnog rizika, što bi vodilo unapređenju finansijske stabilnosti i porastu efikasnosti monetarne politike.

Finansijski sektor u RS je visoko evroizovan kako na strani depozita, tako i na strani kredita. Prema podacima Izveštaja o dinarizaciji finansijskog sistema Srbija iz decembra 2018, na kraju četvrtog kvartala 2018. učešće ukupnih plasmana sektora privrede i stanovništva u ukupnim plasmanima u dinarima iznosi 33% i ovaj pokazatelj je povećan za 0,2% u odnosu na prethodni kvartal (National bank of Serbia, 2018a). Učešće dinarskih depozita u ukupnim depozitima sektora privrede i stanovništva na kraju četvrtog kvartala 2018, iznosi 32,2% i beleži porast od 1,2% u odnosu na kraj prethodnog kvartala. Dinarska štednja stanovništva (rezidenata i nerezidenata) položena kod banaka u Republici Srbiji na kraju decembra 2018. iznosi 61,1 mlrd dinara i zabeležila je porast za 4,6 mlrd dinara u odnosu na kraj septembra. Učešće dinarske štednje u ukupnoj štednji na kraju 2018, iznosi 4,9% (na kraju septembra 4,7%) i predstavlja najviši nivo dosadašnjeg učešća.

Za testiranje početne hipotezu, korišćena je korelaciona analiza, na osnovu podataka za period 2011-2018, za koji se raspolaze podacima o kretanju stepena evroizacije. Korišćeni podaci za analizu su stopa inflacije u RS, merena kao indeks potrošačkih cena, i međugodišnja stopa inflacija u decembru svake od posmatranih godina. Za merenje stepena evroizacije u RS korišćena su dva pokazatelja: učešće deviznih plasmana u ukupnim plasmanima privredi i stanovništvu, i učešće deviznih depozita u ukupnim depozitima privredi i stanovništvu. Za oba pokazatelja stepena evroizacije korišćena je njihova vrednost u decembru svake analizirane godine.

Primenom korelacione analize, sa ciljem utvrđivanja postojanja kvantitativnog slaganje između prethodno navedenih pokazatelja, konstatovan je stepen slaganja. U slučaju da se posmatraju dve varijable reč je o prosto korelaciji, a ako je reč o više varijabli onda o višestrukoj korelaciji. Zadatak proste linearne korelacije jeste da

pokaže da između varijacija dve pojave postoji prosta pravolinijska veza. Koeficijent korelacije predstavlja pokazatelj stepena kvantitativnog slaganja između promenljivih. Koeficijent proste linearne korelacije se u osnovnom skupu označava sa ρ , a u uzorku sa r i može uzeti vrednosti samo u intervalu od -1 do 1, tj. $-1 \leq \rho \leq 1$ i $-1 \leq r \leq 1$.

Na bazi podataka iz Tabele 3, možemo da zaključimo da postoji niska korelacija između kretanja stope inflacije i učešća deviznih plasmana u ukupnim plasmanima privrede i stanovništvu i iznosi 0,38. S druge strane, stepen korelacije između stope inflacije i učešća deviznih depozita privrede i stanovništva u ukupnim depozitima je visok i iznosi 0,72. Ovaj rezultat se može objasniti činjenicom da je veća zastupljenost deviznih depozita u poređenju sa deviznim plasmanima u ukupnim depozitima/plasmanima privrede i stanovništva. Na bazi prikazanih rezultata analize, postavljena hipoteza je delimično potvrđena i zaključuje se da postoji visoka međuzavisnost između stope inflacije i evroizacije, merena kao učešće deviznih depozita u ukupnim depozitima privrede i stanovništva, dok je ta međuzavisnost niska ukoliko se za evroizaciju koristi pokazatelj učešće deviznih plasmana u ukupnim plasmanima privrede i stanovništva.

U okruženju koje karakteriše visoka evroizacija, Narodna banka Srbije sprečava preteranu kratkoročnu

volatilnost deviznog kursa time što interveniše na deviznom tržištu, imajući u vidu da fluktuacija deviznog kursa dinara utiče na sposobnost dužnika da otplaćuje devizne obaveze. U isto vreme, inflacija je u okviru targeta, finansijski sistem u celini je stabilan kao i devizni kurs, dok je referentna kamatna stopa na najnižem nivou od kada je započela primena strategije targetiranja inflacija (trenutno na nivou od 3%), što je dovelo do značajnog pada stope na dinarske kredite i porast tražnje za dinarskim kreditima.

Imajući u vidu da je od uvođenja strategije dinarizacije, u 2012, održana makroekonomska stabilnost i ojačana finansijska stabilnost, u decembru 2018, između Vlade Republike Srbije i Narodne banke Srbije potpisan je novi Memorandum o strategiji dinarizacije (National bank of Serbia, 2018b). Novim Memorandumom, sagledani su dosadašnji rezultati primene strategije dinarizacije i predložene su nove mere kako bi se povećala upotreba dinara u finansijskom sistemu RS, koje se odnose na podsticanje banaka da više koriste izvore sredstava u domaćoj valuti kako bi se povećala kreditna aktivnost u dinarima, potom rad na daljem razvoju tržišta dinarskih hartija od vrednosti, kao i dalja promocija instrumenata zaštite od deviznog rizika (instrumenti hedžinga poput forvarda, opcija, svopova).

Tabela 3 Korelacija stope inflacije i evroizacije u Republici Srbiji

Godina	Indeks potrošačkih cena u decembru posmatrane godine (u %)	Učešće deviznih plasmana u ukupnim plasmanima privredi i stanovništvu (u %)	Učešće deviznih depozita u ukupnim depozitima privredi i stanovništvu (u %)
2011.	7,00	70,70	78,50
2012.	11,90	72,00	80,70
2013.	2,20	73,20	76,70
2014.	1,70	68,80	75,40
2015.	1,50	71,40	72,80
2016.	1,60	68,80	71,20
2017.	3,00	67,00	69,20
2018.	2,00	67,00	67,80
Koeficijent korelacije		0,38	0,72

ZAKLJUČAK

Dolarizacija se najčešće dešava u zemljama koje su u dužem periodu izložene visokoj stopi inflacije, volatilnom deviznom kursu, kao i smanjenom poverenju u domaću valutu. U takvim okolnostima, dolazi do prihvatanja strane valute, u potpunosti ili delimično, koja se koristi kao sredstvo plaćanja, jedinica mere i štednje. Pored toga, zastupljeno je iskazivanje plata i cena u stranoj valuti, ali i aktive veće vrednosti poput stanova, kuća i automobila.

Ključni doprinos ovog rada je prikaz glavnih troškova i koristi primene dolarizacije. To se ogleda kroz sniženje stope inflacije, jer je prisutna uvozna inflacija koja je niža u poređenju sa stopom u domaćim okvirima. Sniženjem stope inflacije postiže se cenovna i finansijska stabilnost, što je važan preduslov za rast i razvoj jedne ekonomije. Pored toga, dolarizacija doprinosi integraciji finansijskih tržišta i sniženju troškova transakcija u trgovinskoj razmeni. S druge strane, treba ukazati da u slučaju pune dolarizacije dolazi do gubitka senioraže, koja se u opštem slučaju može definisati kao prihod monetarnih vlasti koji se stiče štampanjem novca. Isto tako, postoji mogućnost gubitka primene funkcije zajmodavca u poslednjoj instanci, čime se ograničava mogućnost centralne banke da obezbedi likvidnost u kratkom roku. Međutim, treba ukazati na druge načine obezbeđivanja likvidnosti bankarskom i celom finansijskom sektoru kroz stvaranje stabilizacionih fondova, ali i zaključenje kreditnih linija sa međunarodnim finansijskim organizacijama.

Korišćenjem koeficijenta korelacije između međugodišnje stope inflacije, merene kao indeks potrošačkih cena, i pokazatelja evroizacije u RS, pokazano je postojanje visoke korelacije između stope inflacije i evroizacije, merene kao učešće deviznih depozita u ukupnim depozitima privrede i stanovništva (0,72), dok je ta međuzavisnost niska ukoliko se za evroizaciju koristi pokazatelj učešće deviznih plasmana u ukupnim plasmanima privrede i stanovništva (0,38). Time je, delimično, potvrđena početna hipoteza, što se može objasniti da je u RS veći stepen evroizacije na strani depozita nego na strani plasmana.

Rad sadrži i kratak osvrt na trenutno stanje primene strategije dinarizacije u RS, čiji je cilj veća upotreba dinara u njenom finansijskom sistemu. Kroz veću zastupljenost dinarskih izvora i plasmana snizio bi se devizni rizik, koji se često materijalizuje kroz visok stepen problematičnih kredita na bazi preliivanja deviznog rizika u kreditni rizik. Kako bi se to sprečilo, potrebno je da monetarne vlasti, zajedno sa predstavnicima fiskalne politike, nastave da rade na sniženju stepena evroizacije u RS i da aktivno promovišu dinarsku štednju, dinarske kredite i ulaganje u dinarske hartije od vrednosti. Da bi se vratilo poverenje u nacionalnu valutu, potrebno je da se održi postignuta makroekonomska stabilnost merena kroz nisku, stabilnu i predvidivu inflaciju, da se zadrži relativna stabilnost deviznog kursa dinara u odnosu na evro i da se promoviše dinarska štednja koja ima povoljniji poreski tretman u odnosu na deviznu. Proces vraćanja poverenja u domaću valutu nije lak niti kratkog roka jer su uzoci prisustva evroizacije u RS duboko ukorenjeni.

Kako je tema dolarizacije, odnosno evroizacije, aktuelna i prisutna u većem broju zemalja, ne samo u našem okruženju, nego i na globalnom nivou, time se otvara mogućnost dalje analize ove problematike. Analiza može biti usmerena ka prikazu uzroka dolarizacije i razloga zbog kojih su visoko dolarizovane zemlje prihvatile stranu valutu kao sopstvenu, potom ka prikazu mera u borbi ka sniženju stepena dolarizacije (tržišne, regulatorne), ali i održivosti rezultata tih mera u srednjem i dugom roku. Kada je reč o domaćim okvirima, nastavak istraživanja može biti usmeren ka predstavljanju efikasnosti dosadašnjih mera od strane Narodne banke Srbije i Vlade Republike Srbije, prikazu trenutnog stanja stepena dinarizacije po različitim pokazateljima (dinarizacija depozita, dinarizacija kredita, dinarska štednje) i predstavljanju budućih mera.

Visok stepen dolarizacije utiče na smanjenje efikasnosti monetarne i fiskalne politike, a time i na ukupne efekte koje ekonomska politika ima na makroekonomsku i finansijsku stabilnost, naročito u slučaju kada je izražena volatilnost domaće valute. Zemlje koje imaju visok nivo dolarizacije imaju i

visok prenosni efekat deviznog kursa na inflaciju, odnosno, dolazi da se depresijacija domaće valute brže prelije na kretanje stope inflacije. U takvim okolnostima, otežana je uloga monetarnih vlasti da postignu i očuvaju cenovnu i finansijsku stabilnost. Iz tog razloga, predstavnici monetarnih vlasti su svesni da zajedničkim naporom sa predstavnicima fiskalne politike i nefinansijskim sektorom treba da reše visok nivo dolarizacije, a da predloženo rešenje bude dugoročno održivo i efikasno. To rešenje treba da bude prilagođeno svakoj zemlji ponaosob i da bude u skladu sa karakteristikama same ekonomije.

REFERENCE

- Asel, I. (2010). Financial sector development and dollarization in the economies of Central Asia. *Global Development Network Regional Research Competition Grant No. RRC IX-69*, 1-34.
- Bencivenga, V., Huybens, E., & Smith, B. D. (2001). Dollarization and the integration of international capital markets: A contribution to the theory of optimal currency areas. *Journal of Money, Credit and Banking*, 33(2), 548-589. doi:10.2307/2673916
- Berg, A., & Borensztein, E. (2000). The pros and cons of full dollarization. *IMF Working Paper*, WP/00/50, 1-33.
- Bogetić, Ž. (2000). Official dollarization: Current experiences and issues. *Cato Journal*, 20(2), 179-213.
- Broda, C., & Yeyati, E. L. (2002). Dollarization and the Lender of Last Resort. *MIT Press*, 1-55.
- Brown, M., De Haas, R., & Sokolov, V. (2013). Regional inflation and financial dollarization. *EBRD, Working Paper No. 163*, 1-22.
- Calvo, G. (2002). On dollarization. *The Economics of Transition and Institutional Change*, 10(2), 1-18. 393-403. doi.org/10.1111/1468-0351.00117
- Catao, L., & Terrones, M. (2016). Financial de-dollarization: A global perspective and the peruvian experience. *IMF Working Paper*, WP/16/97, 1-25.
- Chițu, L. (2012). Was unofficial dollarisation/euroisation an amplifier of the 'Great Recession' of 2007-09 in emerging economies? *ECB, Working paper series No 1473*, 1-45.
- De la Torre, A., & Schmukler, S. (2004). Coping with risk through mismatches: Domestic and international financial contracts for emerging economies. *World Bank Policy Research, Working Paper No. 3212*, 1-41.
- Fischer, S. (1982). Seigniorage and the case for a national money. *Journal of Political Economy*, 90(2), 295-313. doi.org/10.1086/261057
- Forbes, K., Sebastian, V., Mapingure, C., Charity, M., Kumbirai, M., Felistus, C., & Rumbidzai, M. (2013). Employee perceptions of dollarisation and the hospitality industry performance. *Australian Journal of Business and Management Research*, 2(10), 31-37.
- Garcia-de-Andoain, C., Heider, F., Hoerova, M., & Manganelli, S. (2016). Lending-of-last-resort is as lending-of-last-resort does: Central bank liquidity provision and interbank market functioning in the euro area. *ECB Working Paper Series*, No 1886, 1-62.
- Garcia-Escribano, M., & Sosa, S. (2011). What is driving financial de-dollarization in Latin America? *IMF Working Paper*, WP/11/10, 1-23.
- Haslag, J. H. (1998). Seigniorage revenue and monetary policy. Federal Reserve Bank of Dallas, *Economic Review*, 10-20.
- Heysen, S. (2005). Dollarization. *Finance & Development*, 44-45.
- Ize, A., & Parrado, E. (2002). Dollarization, monetary policy and the pass-through. *IMF Working Paper*, WP/02/188, 1-34.
- Ize, A., & Powell, A. (2004). Prudential Responses to De Facto Dollarization. *IMF Working Paper*, WP/04/66, 1-42.
- Ize, A., & Yeyati, E. L. (2003). Financial dollarization. *Journal of International Economics*, 59(2), 323-347. doi.org/10.1016/S0022-1996(02)00017-X
- Jácome, L. I., & Lönnberg, Å. (2010). Implementing official dollarization. *IMF Working Paper*, WP/10/106, 1-32.
- Jakšić, M. (2013). Makroekonomija i realni svet. *Ekonomске ideje i praksa*, 8, 25-34.
- Jakšić, M., & Jakšić, M. (2013). Political macroeconomy: The case of Serbia. *Economics & Economy*, 1(2), 77-90.
- Jeanne, O., & Wyplosz, C. (2001). The international lender of last resort: How large is large enough? *IMF Working Paper*, WP/01/76, 1-38.

- Makocheanwa, A. (2010). Zimbabwe's currency crisis: Which currency to adopt in the aftermath of the multi-currency regime? Munich Personal RePEc Archive, *MPRA Paper No. 22463*, 1-38.
- Mankiw, G. N. (1987). The optimal collection of seigniorage: Theory and evidence. *NBER, Working Paper No. 2270*, 1-27.
- Mwase, N., & Kumah, F. (2015). Revisiting the concept of dollarization: The global financial crisis and dollarization in low-income countries. *IMF Working Paper, WP/15/12*, 1-30.
- National bank of Serbia. (2018a). *Report On Dinarisation Of The Serbian Financial System*. Retrieved March 21, 2019, from http://www.nbs.rs/static/nbs_site/gen/english/90/dinarizacija/din_09_18.pdf
- National bank of Serbia. (2018b). *Memorandum on the Dinarisation Strategy*. Retrieved March 21, 2019, from http://www.nbs.rs/static/nbs_site/gen/english/90/dinarizacija/din_12_18.pdf
- Neumann, M. J. M. (1992). Seigniorage in the United States: How much does the U.S. government make from money production? Federal Reserve bank of St. Louis, *Review Journal*, March 1, 29-40.
- Ortiz, G. (1983). Dollarization in Mexico: Causes and Consequences. *Financial Policies and the World Capital Market: The Problem of Latin American Countries*, 71-106.
- Reinhart, C., Rogoff, K., & Savastano, M. (2003). Addicted to dollars. *NBER Working Paper 10015*, 1-67.
- Rennhack, R., & Nozaki, M. (2006). Financial Dollarization in Latin America. *IMF Working Paper, WP/06/7*, 1-36.
- Schuler, K. (2005). Some theory and history of dollarization. *Cato Journal*, 25(1), 115-125.
- Stanisic, N. (2012). Effects of international monetary integration on inflation, economic growth and current account. *Economic Horizons*, 14(1), 3-13. doi:10.5937/ekonhor12010035

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IMPLICATIONS OF THE APPLICATION OF DOLLARIZATION FOR MACROECONOMIC STABILITY

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The aim of this paper is to present the costs and benefits of applying dollarization. The most common reason for accepting, in whole or in part, a foreign currency is the presence of a high and volatile inflation rate, which is followed by the significant volatility of the exchange rate, as well as a distorted confidence in its own currency. Likewise, highly dollarized countries most often characterized by a lower level of the development of the financial market. Dollarization contributes to lowering the costs of transactions in international trade and to achieving the price and financial stability, as import inflation is lower than domestic. On the other hand, the presence of full dollarization means a loss of seigniorage as the monetary authorities' revenue from the printing of money, as well as the limitation of the implementation of the lender's function in the last instance. The results of the analysis indicate that, in the dollarized countries, there was a decrease in the inflation rate, macroeconomic stability was established, and financial integration was present as well. The analysis also showed that the loss of income from seigniorage, measured as a share in the gross domestic product, is not negligible, while the lender's function in the latter instance can be compensated through the formation of stabilization funds and the conclusion of contracts with financial institutions.

Keywords: dollarization, lender of last resort, seigniorage, integration of financial markets

JEL Classification: E42, E44, E58

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INTRODUCTION

Dollarization can be defined as the official or unofficial use of a foreign currency in a country's transactions. Most often, higher trust in a foreign currency in comparison with the domestic currency is mentioned as the reason for the application of dollarization.

This has a direct impact on the limited effect of the monetary policy through a greater influence of the transmission of the exchange rate channel compared to the interest rate channel, which should have a dominant influence in the inflation targeting regime in those central banks that have chosen to target inflation as a monetary strategy. At the same time, foreign interest rates, such as Euribor and Libor, have a greater impact on the cost of borrowing compared to interest rates related to borrowing costs in domestic currency.

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The aim of the paper is to present the costs and benefits of the application of dollarization. Benefits from the application of dollarization are a reduction in transaction costs in trade exchange, the presence of import inflation, which is usually lower than domestic inflation, as well as the absence of the volatility of the exchange rate due to the acceptance of a foreign currency as its own. On the other hand, it should be noted that there are shortcomings in the use of dollarization, such as seigniorage, which basically represents the central bank's income from printing money, as well as the impossibility of applying the lender of last resort function last resort.

Dollarized countries and the implications that dollarization, either full or partial, has on the functioning of the economies of these countries are the subject matter of the research study done in this paper. The most common reasons for the application of dollarization are the presence of long-term instability

at the macroeconomic level, which is reflected through a high and unstable inflation rate, then a significant exchange-rate volatility, as well as a lack of confidence in the domestic currency. In such circumstances, a foreign currency takes over the primacy and is used as a means of payment, a unit of measure, but there are also higher foreign currency savings compared to savings in the domestic currency.

The following both inductive and deductive research methods are used in this paper: the analysis and synthesis methods, the classification method, and the comparison methods. These methods are used in order to conduct a comparability analysis and make comparisons between the different countries applying dollarization, and also in order to understand the reasons for using a foreign currency as the domestic one, and gain an insight into the results after accepting a foreign currency (lower inflation, the absence of the volatility of the exchange rate due to the

Table 1 Historical overview of the application of dollarization

Country	Period	Country	Period
American Samoa	?-currently	Dominica	1938-1951
Albania*	1912-1925	Dominican Republic*	1899-1947
Andorra*	?-currently	Ecuador*	2000-currently
Angola	1938-1951	Egypt*	1856-1898
Bahrain	1920-1965	El Salvador	2001-currently
Bhutan*	1968-1974	Gambia	1800-1969
Botswana*	1950-1976		1902-1913
Brunei*	1945-1951	Ghana	1896-1913
Cameroon	1910-1916	Gibraltar	1888-1927
Cayman Island	?-1972	Grenada	1838-1951
Cuba*	1902-1934	Honduras*	1912-1950
Cyprus	1880-1914	Indonesia	1974-1807
Kuwait	1942-1961	Iraq	1917-1932
Liechtenstein*	?-currently/Israel		1917-1927
Libya	1912-1943	Jordan	1917-1927
Malta	1903-1939	Kenya	1896-1898
Monaco*	1865-currently	Nigeria	1891-1913
Montenegro	1999-currently	Peru	1887-1914
Marocco	1897-1907	Qatar	1949-1966
	1800-1969	Tunisia*	1873-1904
San Marino*	1897-currently	Uganda	1906-1920
Saudi Arabia*	1918-1952	United Arab Emirates*	1946-1973
Singapore	1840-1849	Vatican City*	1929-currently
Switzerland	1921-1974	Vietnam	1862-1876

Note: The asterisk (*) indicates the countries that were independent in some or in all of the dollarization episodes, and the question mark (?) indicates that the author did not specify the beginning of the dollarization in the specified countries.

Source: Schuler, 2005, 121-123

application of full dollarization). Such an analytical approach constitutes a good basis for observing the countries of the varying levels of economic and financial development, which allows a possibility of giving recommendations to the domestic monetary authorities regarding the continued application of measures in order to increase the level of dinarization in the Republic of Serbia (RS).

The hypothesis we proceed from in the analysis is

- H: There is high interdependence between the dollarization scope (in the case of the Republic of Serbia, the euroization) and the inflation rate, measured as the index of consumer prices on a year-on-year basis.

These variables were selected because a high degree of dollarization should be linked to the lowering of the inflation rate due to the presence of import inflation, which is usually lower in comparison with the domestic inflation rate. In order to test this hypothesis, a correlation coefficient is used, and the calculation is based on data in RS.

Monetary authorities should be aware of the fact that the process of restoring confidence in the domestic currency is long, bearing in mind the fact that the roots of dollarization are deep. Any attempt to reduce the level of dollarization should be accompanied by the maintenance of financial and price stability, and applied deduction measures are long-term sustainable and adapted to the characteristics of the domestic economy (economic and financial development phases, the degree of the development of the financial market, the exchange-rate regime, etc.). Solving the dollarization problem should be permanent and sustainable, and monetary and fiscal policy holders, including the representatives of the non-financial sector, should be included in finding a solution to it. This would provide a comprehensive strategy based on micro- and macroprudential measures.

The paper is structured as follows: in the first part, the concept and the types of dollarization are presented, which is followed by the presentation of the dollarization measuring method and the advantages and disadvantages of the application of dollarization,

the focus of the analysis being on the role of the lender of last resort, seigniorage and the stability and integration of the financial market. In this paper, euroization in RS is also given an account of, and the dinarization strategy implemented in order to promote a higher use of the dinar in the economy is demonstrated. In conclusion, the main results of the analysis carried out in this paper is summarized, the key contributions of the research study are pointed out, and recommendations are given for further research into this highly empirical topic. In conclusions, the recommendations are given to the monetary authorities in RS how to increase the level of dinarization.

DOLLARIZATION DEFINITION AND TYPES

Dollarization is the introduction of the dollar or some other foreign currency into the domestic economy, such a currency operating in parallel with or instead of the domestic currency. Table 1 shows the selected historical episodes of the application of dollarization.

The literature offers a possibility of analyzing a large number of the definitions of the concept of dollarization, which indicates that the research potential of this topic is really important. A large number of the definitions of dollarization points to the existence of different forms of this strategy in different countries. This part of the paper is focused on the presentation of the dollarization forms and their definition.

According to S. Heysen (2005), dollarization can be viewed as either full, i.e. official dollarization, or as partial dollarization. Full, i.e. official dollarization exists in a situation when a foreign currency, usually the dollar, is accepted in a country as a legal tender. Partial or *de facto* dollarization exists in the country that keeps its local currency in circulation, simultaneously enabling payments and transactions making freely in dollars.

A. Ize and A. A. Powell (2004) made a distinction between the four types of dollarization in their analysis. The first type is the so-called macroeconomic

hedging dollarization, which is the ability of investors to limit the exposure of their portfolio to the volatility of inflation and the exchange rate, where portfolio is simultaneously invested in a foreign and the domestic currencies. The second type is the market imperfections dollarization, which occurs when there is a less efficient regulation of the domestic foreign-exchange market, which makes the possession of the domestic currency more expensive than the possession of foreign currencies. The third type is default dollarization, which occurs in a situation where there is a high likelihood that the holder of income (such as earnings) will not ensure the payment of its obligations, and this dollarization type is existent in a situation when there is the dominant ownership of a foreign currency relative to the domestic one. The fourth type is moral hazard dollarization, which is present in a situation where there is a possibility that the lender will not pay its obligations, which may consequently lead to the same behavior pattern being transferred to the bank. If depositors are protected by the application of a deposit insurance scheme, the conclusion of a contract in dollars provides banks and their borrowers with a possibility of recording lower borrowing rates if there is no devaluation of the domestic currency.

According to L. I. Jácome and A. Lönnberg (2010), there are several prerequisites that need to be met in order to apply full, i.e. official dollarization. These prerequisites are as follows:

- a prudent financial system and strong financial supervision in order to reduce the likelihood of reporting a banking crisis in the event it does not exist or the effect of the lender of last resort function last resort is diminished;
- regulating the public finance that give sufficient confidence to market participants that the fiscal policy measures will be applied; and
- a regulated labor market, which will be an absorber of external shocks and which will achieve a macroeconomic adjustment.

It is very important to distinguish between the three types of dollarization:

- payment dollarization, which occurs when the dollar or another foreign currency is predominantly used as a means of payment;
- financial dollarization, which happens in a situation when residents hold their financial assets in dollars or in some other foreign currency; and
- real dollarization, which exists when domestic prices and/or earnings are denominated in dollars or some other foreign currency.

According to G. Ortiz (1983), the dollarization concept is very frequently linked to the currency substitution concept. The said author opines that a monetary policy will be inefficient in the country where a foreign currency is a good substitute for the domestic currency. That substitutability between the domestic currency and a foreign currency will increase in the period of a rise in the exchange-rate fluctuation, and an increase in the currency risk based on that, too, is a very important consequence arising from this view. According to K. Forbes, V. Sebastian, C. Mapingure, M. Charity, M. Kumbirai, C. Felistus and M. Rumbidzai (2013), in addition to currency substitution, the notion of dollarization is also associated with the substitution of assets. Ž. Bogetić (2000) draws our attention to the fact that it is necessary a distinction between currency substitution, which, according to him, implies the primary use of a foreign currency and foreign currency deposits as a means of payment, on the one hand, and the substitution of assets, which involves the primary use of a foreign currency in the function of storing value, on the other, should be made. On the other hand, K. Schuler (2005) considers that dollarization is another form of the fixed exchange rate. According to this author, dollarization is used to indicate the wide use of a foreign currency as a means of payment or a unit of measure.

A distinction should be made between the three forms of dollarization, which include unofficial, semi-official and official dollarization (Makocheke, 2010). Full, i.e. official dollarization arises in a situation where a particular country begins to use a foreign currency as a means of payment and consequently reduces the use of the domestic currency. According to Ž. Bogetić (2000), there is no currency risk in such

a currency system, nor is there any risk of a currency crisis, either. There are variations in the application of full, i.e. official dollarization, which are called semi-official dollarization or the bi-monetary system. The bi-monetary system occurs when a foreign currency (or foreign currencies) is (are) used as a means of payment and has (have) a dominant role in the currency structure of bank deposits, but has a secondary role in comparison with the domestic currency that is primarily used for transactions, such as salaries and taxes, and daily transactions, such as transport services. The countries that apply semi-official dollarization have their own central bank or monetary authorities that implement their own monetary policy. Unofficial dollarization occurs when the residents of a given country hold a large part of their assets in a foreign currency, even though the foreign currency is not an official payment instrument according to the monetary or financial regulations of that country. In this case, the dollar (or the euro, or yet another foreign currency) will be used largely in private transactions as the unit of measure, the means of exchange and the measure of value. Ž. Bogetić (2000) points out the fact that the concept of unofficial dollarization may take several forms, namely:

- the possession of foreign-currency deposits in domestic banks;
- the possession of foreign-currency deposits in foreign banks;
- the holding of bonds denominated in a foreign currency or other non-monetary assets; and

- the holding of a foreign currency regardless of whether the same is held in a legal or illegal manner.

Once the different forms of dollarization have been defined, the manners of measuring the dollarization degree in the remainder of this paper will be presented. While in the simplest manner dollarization can be defined as a greater share (full or partial) of a foreign currency in relation to the domestic currency, the identification of the actual dollarization level is not easy. Certainly, the method of measurement depends on the available data, as well as on the form of dollarization in a particular country.

DOLLARIZATION LEVEL MEASURING

Since there are a large number of dollarization definitions, numerous studies also differently measure the degree of dollarization. The most common degree of dollarization is measured through deposit dollarization, which is accounted as the amount of foreign-currency deposits against the money supply or the total deposit level. The central bank most often publishes and keeps records of data on foreign-currency deposits, as well as monetary aggregates. In contrast to monetary aggregates published in a local currency, foreign-currency deposits are expressed in various foreign currencies, and by applying corresponding inter-currency relations, they can be converted into the national currency. This conversion of foreign-currency deposits from the original foreign

Table 2 The types of dollarization

	The share of foreign currency debt of the private sector in the total public debt is 10% or more	The share of foreign currency debt of the private sector in the total public debt is less than 10%
The share of foreign currency government debt in public debt is 10% or more	Type 1	Type 2
The share of foreign currency government debt in public debt is below 10%	Type 3	Type 4

Source: Reinhart, Rogoff & Savastano, 2003, 9

currency into the domestic currency may lead to a large oscillation of the value of deposit dollarization, especially if there is a significant depreciation of the domestic currency. For this reason, the authors like N. Mwase and F. Kumah (2015) suggest that the level of dollarization should be measured in real terms by using the so-called custom foreign-currency deposit, which is converted into a deposit in the domestic currency by using appropriate inter-currency relationships.

On the other hand, the authors like A. Ize and E. L. Yeyati (2003) differently define the indicator of real dollarization, which represents the level at which prices and wages are denominated in foreign currencies, and this indicator shows the pass-through effect of the exchange rate. This analytical approach is also present in the paper by M. Garcia-Escribano and S. Sosa (2011), who use the ratio between foreign-currency deposits (loans) and the total deposits (loans) at the current exchange rate instead of displaying these variables at a constant foreign-exchange rate.

After defining deposit dollarization, it is necessary to explain loan dollarization. The authors like L. Cattao and M. Terrones (2000) point out the fact that it is imperative to simultaneously observe the dollarization of both deposits and loans so as to concurrently analyze the currency and maturity structure of the balance sheet positions of the bank, as well as of other economic entities with a currency and maturity mismatch between generating revenue and payments of expenditures. According to these authors, the degree of the dollarization of deposits and loans depends on the interconnection between banking costs, the credit market structure, and macroeconomic shocks.

On the other hand, C. Reinhart, K. Rogoff and M. Savastano (2003) developed the following dollarization indicators:

- The composite dollarization index for each country in the sample that was analyzed. The analyzed sample is divided into a shorter and a longer series of data. The short series includes 90 countries with annual observations in creating the composite dollar index in the period 1996-2001.

The longer series of data is based on the analysis of 48 countries with annual observations in creating the composite dollar index in the period 1980-2011.

- Each analyzed country is grouped into one of the four categories, depending on the type of dollarization it belongs to. The above-mentioned authors defined the composite index of dollarization as a share of the public debt in the gross domestic product, then as a share of the total bank foreign-currency deposits in some monetary aggregates, and as a share of the government debt denominated in a foreign currency in the total debt of the government. All of the three aforementioned components constitute the composite index that takes a value ranging from 0 to 10. The calculated composite index gives us a possibility of measuring the degree of dollarization for each analyzed country from the sample, and has a value ranging from 0 to 30.

Based on the following two criteria, the type of dollarization is defined by:

- the level of domestic dollarization, and
- by the level of a foreign-currency borrowing by the private sector.

In this analysis, domestic dollarization is defined as the participation of the government's foreign-currency debt in the total public debt. Based on this participation, the analyzed countries are divided into two groups: those with a participation below 10%, and those whose participation exceeds 10%. The indicators of the foreign-currency indebtedness of the private sector are divided into two groups: those with a participation below 10%, and those whose participation exceeds 10%. These two criteria allow the dollarized countries to be divided into four categories, i.e. four types of dollarization, as shown in Table 2. The countries with a similar level of dollarization from both domestic and foreign sources (above 10%) are classified as Type 1; the countries in which dollarization is predominated by foreign sources are classified as Type 2; the countries where the source of dollarization is predominantly a domestic source are classified as Type 3; finally, the countries where dollarization is low (i.e. below 10%)

and based on domestic and foreign dollarization are classified into Type 4.

According to the above-mentioned authors, the advantages of this approach in measuring the degree of dollarization reflect in the ability to measure the level of domestic and foreign dollarization for each analyzed country. The benefits of this approach are also the easiness of calculating these quantitative indicators and the legerity of their understanding.

BENEFITS AND COSTS OF THE APPLICATION OF DOLLARIZATION

Lender of Last Resort

If a country renounces the use of the national currency, it also simultaneously renounces a possibility of pursuing an independent monetary policy, i.e. there is a risk in this case that a common monetary policy (in the case of a monetary union) or a foreign monetary policy (in the case of dollarization) will not correspond to the interests of the observed country at a given moment (Stanisic, 2012). The full dollarization concept eliminates the risk of the volatility of a foreign-currency exchange rate and a rapid devaluation and appreciation of the domestic currency against a foreign currency. The full dollarization convention signifies the elimination of the lender of last resort function last resort, whereby the central bank loses the ability to react to disruptions in the domestic and international financial systems by providing short-term liquidity to the financial system.

G. Calvo (2002) points out the fact that it is a mistake to link the lender of last resort function last resort to the capability of the central bank to issue money. According to this author, there are alternative ways through which a central bank can provide liquidity. First of all, it is for example thought that the central bank and the ministry of finance can: create a stabilization fund, or make contracts for credit lines with private banks.

On the other hand, A. Berg and E. Borensztein (2000) emphasize the need to make a distinction between the role of the central bank to provide short-term liquidity to commercial banks from its role as the ultimate guarantor of the stability of financial and payment transactions in the event of a banking crisis. Dollarization should not greatly impede the ability of the monetary authorities to provide short-term liquidity to the entire banking system or to individual banks faced with business problems. These decisions are available if the central bank pre-secures necessary assistance funds or concludes credit lines with international financial organizations. The country that applies full dollarization may have a problem with a rapid withdrawal of deposits, as well as the ability to guarantee the full operability of the payment system. The appropriate reaction of the central bank to the withdrawal of bank deposits in a dollarized economy depends on the cause for this withdrawal. If a withdrawal implies a transfer of a deposit from one bank to another, the withdrawal of liquidity from banks with stronger liquidity and the provision of liquidity to weaker institutions could be the appropriate action of the monetary authorities. However, if a withdrawal of deposits arises at the level of the entire banking system, the monetary authorities should have a fair amount of liquid assets. In this case, there is a need for a deposit insurance scheme, which would mean a certain degree of security for depositors. In their further analysis, the above-mentioned authors point out the fact that, in a dollarized economy, it is less likely that a withdrawal of deposits is due to the fact that all banking assets are denominated in dollars (or expressed in some other currency other than the dollar) and that the currency match of the balance sheet positions has been reached by the banks. Consequently, the risk of a weakened role of the lender of last resort function last resort is diminished.

In a situation where confidence in the banking system and in the overall financial system is reduced, a withdrawal of deposits may be significant in terms of amounts, which directly threatens the liquidity of the entire system. In the event that the central bank has the ability to exercise the lender of last resort function last resort, this liquidity crisis can be

avoided. According to C. Broda and E. L. Yeyati (2002), the very existence of the lender of last resort function gives an opportunity to provide an elastic supply of reserves that can preventively act in impeding a liquidity crisis. In addition, these authors emphasize the importance of the preventive role of the existence of a deposit insurance scheme. In analyzing the lender of last resort function last resort, the level of stress or instability in the banking system should be taken into account. According to C. Garcia-de-Andoain, F. Heider, M. Hoerova and S. Manganelli (2016), the degree of the stability of the banking system directly affects the level of the funds banks are willing to borrow on the interbank market, as well as the level of demand for the central bank's funds. In the case of instability, potential lenders may be less willing to provide liquidity, either because of the counterparty risk or because they want to keep liquidity for themselves for precautionary purposes.

The authors like O. Jeanne and C. Wyplosz (2001) consider the role of the lender of last resort in two ways: as a possibility of preventing a banking crisis, in the case of a significant outflow of deposits, on the one hand, and as a way of preventing a currency crisis, on the other. These authors offered two arrangements in order to prevent the emergence of a liquidity crisis: the one implying that by using the lender of last resort function last resort at an international level the central bank ensures liquidity on the international financial market, and the other implying restoring the security of and confidence in the domestic financial system through the implementation of the lender in the last instance. Both proposed arrangements entail a change in the financial architecture on a global scale: the first arrangement recommends the establishment of a global central bank, which will be able to issue an international currency, whereas the second arrangement could function as an international banking fund that would supervise the domestic banking system.

Of course, the other measures available to the central bank in order for it to deal with the withdrawal of deposits, such as a higher level of reserves requirements, improvements in the system of supervision and control of banks' operations and a ready set of measures for the preservation and improvement of financial stability, should be pointed

out. Of course, the listed measures should not only be isolated in order to apply to a fully-dollarized economy, but also to those at a lower dollarization level.

Seigniorage

Seigniorage is essentially an income of the central bank generated from printing money. According to M. J. M. Neumann (1992), there are three concepts of seigniorage: opportunity-cost seigniorage, monetary seigniorage, and extended monetary seigniorage. The opportunity cost of seigniorage observes seigniorage as an overall opportunity cost of the money holder. This approach stems from the question that additional real income would be generated for individuals if they had assets on the basis that would earn interest, instead of holding money that does not generate interest. The real opportunity cost of the seigniorage is calculated on the basis of the following calculation:

$$s_o = rB/P$$

where:

r - the nominal rate of return on other assets other than money,

B - the total amount of the money an individual owns, and

P - the level of consumer prices measured by the consumer price index.

The presented concept of defining seigniorage is adequate from the aspect of theoretical analysis. The analytical advantage of this approach is that the value of seigniorage is calculated based on the values that money functions have for the individuals who own it. At the same time, this concept does not identify a seigniorage with the interest income that such individuals could achieve if they had some other assets that would generate some form of income instead of having money. In order for this concept to be adapted for the purpose of an empirical analysis, M. J. M. Neumann (1992) points to the possibility of using the yield rate instead of using the nominal rate of return to other assets other than money,

simultaneously suggesting in his paper that this may be an average yield on government bonds or the rate of return on shares. Depending on the selected rate of yield, the level of seigniorage will be different. It should be noted that this concept of measuring seigniorage contains in itself a conceptual problem because the opportunity cost of the seigniorage is not equal to the real income of the monetary authorities from the printing of money because the structure of the portfolio owned by such monetary authorities significantly differs from the structure of the assets held by individuals, and consequently the opportunity cost of seigniorage does not provide a measure of revenue for the monetary authorities on the basis of money creation.

The concept of monetary seigniorage is defined as the ratio of the net change in money and the consumer price levels:

$$sM^* = AB/P$$

where:

AB - the net change in money supply, and

P - the level of consumer prices, measured by the consumer price index.

Monetary seigniorage in the definition of seigniorage starts from the measurement of the value of the transactions of the non-monetary assets used by money holders to trade in order to achieve the desired increase in the money supply level (AB). This approach to measuring seigniorage is a clear model from the aspect of theoretical analysis and the data necessary for his calculation are easy to collect. However, the very concept of monetary seigniorage does not provide a complete calculation of the value of the revenues which the monetary authorities derive from printing money. The two components constitute the total income from seigniorage. The first component is the real value of the non-monetary assets that the central bank generates in exchange for an increase in money supply. This component is measured by the traditional concept of monetary seigniorage, which has previously been defined. The second component of income from seigniorage is the interest earned by the central bank on the basis of the

possession of a non-government debt, i.e. the debt relating to domestic and foreign debtors. The central bank may occasionally realize capital gains (losses) by selling assets on the market at a higher (lower) price than the price it paid for the given asset.

Expanded monetary seigniorage is calculated in the following manner:

$$sM = sM^* + (dD + fF + GR) / P$$

where:

sM^* - monetary seigniorage,

dD - interest on the debt held by domestic debtors,

fF - interest on the debt held by foreign debtors,

GR - a capital gain (loss), and

P - the level of the consumer prices measured by the consumer price index.

S. Fischer (1982) distinguishes between active and passive seigniorage. Active seigniorage refers to the countries that have a high inflation rate, whereas passive seigniorage is present in fast-growing countries. In the case of passive seigniorage, this revenue is realized by the fact that money issuing is associated with a high level of economic growth, without any simultaneous occurrence of a high inflation rate.

According to G. N. Mankiw (1987), actual revenue seigniorage can be calculated as follows:

$$\dot{M}/P = \dot{M}/M * M/P = (\pi + g)kY$$

where:

$\pi = \dot{P}/P$ inflation rate,

$g = \dot{Y}/Y$ rate of output growth (the author does not specify which output is being analyzed), and

k - the constant.

G. N. Mankiw (1987) explains the theory of optimal seigniorage by the fact that the rate of an increase in money supply, inflation and nominal interest rates are

determined on the basis of the required revenues that the government of one country needs to realize. The theory of optimal seigniorage tries to test whether a higher tax rate is associated with a higher inflation rate and a higher nominal interest rate over time. The author carried out the above-mentioned testing on the data in the United States in the period 1951-1985, in which the three-month Treasury Bill Rate was taken so as to approximate the nominal interest rate, whereas when the average tax rate is concerned, government revenues were used as a percentage of the gross national product (GNP). The gross national product in the USA was used to determine the total economic activity until 1991, when the gross domestic product started being used. The conducted analysis showed that, in the mentioned period, the increase in the federal tax revenues of 1% had caused an increase in the nominal interest rate of 1.43%. The author thus showed that the influence of the growth of federal revenues, hence the tax rates, was positive and significant at the nominal interest rate. J. H. Haslag (1998) used data in the period 1965-1994 and calculated that, in the US economy, income from seigniorage measured as the ratio of earnings from seigniorage and the gross national product averaged about 2%, while income from taxes had a share of 22% in the gross national product. Thus, this author demonstrated that, when the US economy is concerned, the share of income from seniors in the gross national product is not negligible.

STABILITY AND INTEGRATION OF FINANCIAL MARKETS

When dollarization as a phenomenon in which a country accepts another currency as its own is concerned, it is necessary that analysis should be focused on the stability and integration of financial markets. In their work, R. Rennhack and M. Nozaki (2006), as well as I. Asel (2010), showed that, at the beginning of the 2000s, transition economies began to use more foreign exchange instead of the domestic currency due to general macroeconomic instability. The authors analyzed financial dollarization and

pointed out the fact that there had been a significant reduction in the inflation rate in the countries that had accepted a foreign currency. In the analyzed African countries (Angola, Ghana, Nigeria, South Africa, and Zambia), the average inflation rate in the period 1995-1999 decreased from 127% to 37.6% in the period 2000-2003; in the analyzed Asian countries (Indonesia, Laos, Korea, The Philippines, Thailand, and Vietnam), the average inflation rate decreased from 11.2% to 4.4%, respectively; in Latin American countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru, Uruguay, and Venezuela), it decreased from 14.8% to 9.3%, respectively, whereas in the transition countries, that rate decreased from 44.1% to 10.4%, respectively. Since the year 2001, the level of financial dollarization has been reduced in some Latin American countries. For example, Argentina has affected its residents to convert their foreign currency deposits into pesos, which significantly lowered the level of dollarization. Bolivia, Peru and Uruguay have experienced a modest decrease in the share of foreign currency deposits in the total deposits, while the level of financial dollarization in Paraguay has been considerably reduced.

When inflation reduction due to the growth of financial dollarization is in question, further analysis should indicate the fact that the rational decision made by residents will be to have their deposits converted from the national currency to a foreign currency in order to protect their assets from the risks of a possible further inflation growth and loss of the value of these deposits. This analytical approach was applied by A. Ize and E. L. Yeyati (2003), who pointed to the importance of relative volatility in inflation in determining the degree of financial dollarization. The authors point out the fact that residents prefer to hold foreign-currency deposits especially if there is a high risk of developing a high inflation rate. If the inflation rate and the exchange rate are more volatile, residents hold the bulk of their foreign-currency portfolio and perceive the volatility of inflation in the context of a change in the real exchange rate. In this situation, the real value of foreign-currency-denominated assets

measured by domestic purchasing power shows a higher level of stability than in a situation in which a property is expressed in the domestic currency. If, on the other hand, the domestic inflation rate and the real exchange rate are stable, it will affect residents to consider domestic-currency assets as a better value guard. A. Ize and E. Parrado (2002) indicate that real and financial dollarization tend to increase due to the growth of the volatility of domestic inflation (which further affects the volatility of earnings and the rate of return on investments in the domestic currency), but they also decrease due to the growth of the foreign-exchange rate volatility (which increases the volatility of earnings indexed in the dollar, or the rate of return).

When speaking about the level of dollarization, it is necessary to point out the credibility of the monetary policy and the strength of institutions' operations (Jakšić, 2013; Jakšić & Jakšić, 2013). The institutions that are weak may just endanger the credibility of the work done by the monetary authorities because in this situation residents fear that the government, by their decisions, will endanger the value of their financial assets by implementing high inflation rates in the country. A. De la Torre and S. Schmukler (2004) point out the fact that weak institutions can increase uncertainty about the consistency of the application of a contract, thus encouraging residents to prematurely disclose their deposits or carry out such transactions in the countries that have a more secure legal system. In order to analyze the success of the work, institutions may use the World Bank's analysis for 215 countries in the framework of the Worldwide Governance Indicators (WGI) Project for the period 1996-2014. The subject matter of the analysis is the six dimensions that measure the level of global management indicators for each country, namely: the voice and accountability; political stability and the absence of violence; the government effectiveness; the quality of the regulatory bodies; the rule of law; and control of corruption.

Previous studies indicate that financial dollarization is a rational response to uncertainty about the level of the inflation rate. Financial dollarization will be at a high level in the countries with unstable and

high domestic inflation, in which institutions may also endanger confidence in the future movement of inflation. L. Chițu (2012) dealt with the analysis of the impact of unofficial dollarization on the major global financial crisis in the period 2007-2009 on the example of developing countries. The study showed that loan dollarization was a good indicator that could have predicted a reduction in the real gross domestic product (GDP) between 2007 and 2009, on a sample of about 60 developing countries. On average, it is estimated that the fall in the real GDP amounted to about 0.84 p.p. in those economies where the level of loan dollarization was higher than 10 p.p.

When speaking about the integration of financial markets on the example of the Russian Federation, the level of the integration and stability of financial markets within the framework of the existing financial dollarization, M. Brown, R. De Haas and V. Sokolov (2013) measure it by applying the following three indicators: the participation of domestic banks in the total number of banks in the country; the participation of the branches of domestic banks in the total number of the branches of the entire banking sector; and the participation of the foreign liabilities of domestic banks in the total liabilities of the banking sector. In this manner, the authors try to measure the extent to which the domestic banking sector is integrated with the rest of the financial sector. In a further analysis, this study seeks to find out whether the impact of domestic inflation on financial dollarization depends on whether the banking sector is integrated into the overall financial sector or not, and to what extent this integration is existent. If the banking sector is less integrated into the overall financial sector, banks cannot allocate their foreign assets to external markets or to international capital markets. This means that if a bank wants to neutralize the currency mismatch of its balance sheet position, it must necessarily use domestic-currency deposits for domestic-currency placements. When full dollarization is in question, reducing costs of borrowing is an additional advantage to financial integration. The use of the US dollar eliminates the risk of devaluation in the domestic currency zone, and should lower the level of interest rates on borrowing.

Table 3 The correlation of the inflation rate and euroization in Serbia

Year	Consumer price index in December of the observed year (in%)	Share of foreign currency placements in total placements of corporate and household (in%)	The share of foreign currency deposits in total corporate and household deposits (in%)
2011	7.00	70.70	78.50
2012	11.90	72.00	80.70
2013	2.20	73.20	76.70
2014	1.70	68.80	75.40
2015	1.50	71.40	72.80
2016	1.60	68.80	71.20
2017	3.00	67.00	69.20
2018	2.00	67.00	67.80
Koeficijent korelacije		0.38	0.72

Source: Author

Other studies, however, suggest that the integration of financial markets should take place before dollarization. For example, V. Bencivenga, E. Huybens and B. D. Smith (2001) have shown that dollarization has a different impact, which depends on the degree of the integration of the financial markets of the two economies. These authors have shown that dollarization has its benefits when markets are well-integrated, and this utility depends on the degree of dollarization. Otherwise, dollarization can be a source of instability in an economy.

EUROIZATION IN THE REPUBLIC OF SERBIA

In the literature, dollarization is the term more frequently used than the term euroization because pegs to the dollar are more widespread than pegs to the euro. This is why the term dollarization was used in the previous parts of this paper, whereas in the case of RS, the term euroization will be used. Only through a greater share of the dinar and the improved currency and the maturity match of the sources and the placements of the banking and non-banking sector could the level of currency risk be decreased, which would lead to the improvement of financial stability and an increase in the efficiency of the monetary policy.

The Serbian financial sector is euroized, with the high levels of both deposit and credit euroization. According to the data presented in the Report on the Dinarization of the Serbian Financial System from December 2018, at the end of the fourth quarter of the year 2018, the participation of the total receivables of the corporate and household sectors in the total receivables in dinars amounted to 33%, and this indicator increased by 0.2% compared to the previous quarter (National bank of Serbia, 2018a). The share of the dinar deposits in the total deposits of the corporate and household sectors at the end of the fourth quarter of the year 2018 was 32.2%, which was an increase by 1.2% compared to the end of the previous quarter. The dinar savings of households (residents and non-residents) deposited with banks in RS amounted to RSD 61.1 billion at the end of December 2018, which was an increase by RSD 4.6 billion compared to the end of September. The share of the dinar savings in the total savings amounted to 4.9% (at the end of September, they were 4.7%) at the end of 2018, which has been the highest level of participation so far.

In order to either accept or reject the initial hypothesis, correlation analysis will be applied on the data from the period between the years 2011 and 2018. The data contained in the Report on the Dinarization of the Serbian Financial System have been available since 2011. The data to be used for the purpose of the analysis is the inflation rate in RS measured

as the consumer price index, whereas the annual inflation rate in December in each of the observed years will be taken for the purpose of this analysis. In order to measure the degree of euroization in RS, two indicators will be used: the participation of foreign-exchange placements in the total placements to the corporate and household sectors, and a share of the foreign-currency deposits in the total deposits to the corporate and household sectors. For both indicators of the degree of euroization, their value as of December in each analyzed year will be used.

A correlation analysis is applied in order to determine whether there is a quantitative agreement between the above indicators or not, and if there is one, to what degree such agreement is. In the case of the two variables, simple correlation is in question, and in the case of multiple variables, there is multiple correlation. The simple linear correlation problem is to show that there is a simple straight-line relationship between the two variations. The correlation coefficient represents an indicator of the degree of the quantitative relationship between the variables. The coefficient of simple linear correlation is denoted by ρ in the population of the data, and in the sample with r , it can take values only in the interval from -1 to 1, i.e. $-1 \leq \rho \leq 1$ and $-1 \leq r \leq 1$.

Based on the data presented in Table 3, it is possible to conclude that there is a low correlation between the movement of the inflation rate and the participation of foreign-exchange placements in the total placements of the corporate and household sectors, which is 0.38. On the other hand, the degree of the correlation between the inflation rate and the share of the foreign-currency deposits of the corporate and household sectors in the total deposits is high, amounting to 0.72. This result can be explained by the fact that there is a higher prevalence of foreign currency deposits in comparison with foreign-currency placements in the total deposits/placements of the corporate and household sectors. On the basis of the presented results of the analysis, the hypothesis that there is a high interdependence between the rate of inflation and euroization measured as a share of foreign-currency deposits in the total deposits of the corporate and household sectors, whereas this interdependence

is low if the indicator used for euroization is a share of foreign-currency placements in the total placements of the corporate and household sectors, can partially be accepted.

In an environment characterized by a high euroization level, the National Bank of Serbia prevents the excessive short-term volatility of the exchange rate by intervening on the foreign-exchange market, bearing in mind the effects of the dinar exchange rate fluctuations on debtors' ability to repay their foreign-exchange liabilities. At the same time, inflation is within the target tolerance band, the financial system as a whole is stable, as well as the dinar exchange rate is, while the key policy rate is at its lowest level since inflation targeting was introduced (3% at this moment), leading to a stronger decrease in dinar lending rates and an increase in demand for dinar loans.

Bearing in mind the fact that macroeconomic stability and enhanced financial stability had been maintained since the introduction of the strategy of dinarization in 2012, a new Memorandum on the Strategy of Dinarization was signed between the Government and the National Bank of Serbia in December 2018 (National bank of Serbia, 2018b). The new Memorandum examined the results of the implementation of the dinarization strategy so far and proposed new measures so as to increase the use of the dinar in the financial system of RS, which is related to encouraging banks to use more funds in the domestic currency in order to increase the lending activity in dinars, working on a further development of the dinar securities market, as well as a further promotion of instruments for protection against foreign-currency risk (hedging instruments such as forwards, options, swaps).

CONCLUSION

Dollarization most frequently occurs in the countries exposed to a high inflation rate, a volatile exchange rate, and a reduced confidence in the domestic currency over a longer period of time. In such

circumstances, the acceptance of a foreign currency, either in whole or in part, implies that the foreign currency is used as a means of payment, a unit of measurement and savings. In addition to the said, wages and prices, as well as assets of greater value, such as apartments, houses and cars, are expressed in the foreign currency.

The overview of the main costs and benefits of applying dollarization is the key contribution of this paper. This is reflected in the lowering of the inflation rate, as import inflation is present, which is lower in comparison with the rate within the domestic frameworks. By lowering the inflation rate, the price and financial stability are achieved, which is an important prerequisite for the growth and development of an economy. In addition, dollarization contributes to the integration of financial markets and a reduction in transaction costs in trade. On the other hand, it should be noted that in the event of full dollarization, there is a loss of seigniorage, which in general can be defined as the monetary authority's revenue generated from printing money. Likewise, there is a possibility of losing the implementation of the lender of last resort function last resort, which limits the central bank's ability to provide liquidity in the short run. However, the other ways of securing liquidity to the banking sector and the entire financial sector should be highlighted through the creation of stabilization funds, as well as the conclusion of credit lines with international financial organizations.

By using the correlation coefficient between the year-on-year basis inflation rate measured as the consumer price index and the indicators of euroization in RS, that there is a high correlation between the rate of inflation and euroization measured as a share of foreign-currency deposits in the total deposits of the corporate and household sectors (0.72) has been proven. This interdependence is low if a share of foreign-currency placements in the total placements of the corporate and household sectors (0.38) is used. This means that the initial hypothesis is partially accepted, which can be explained by the fact that, in RS, there is a higher degree of euroization on the deposits side than on the placements side.

The paper also provides a brief overview of the current situation in the implementation of the dinarization strategy in RS, whose goal is to increase the use of the dinar in Serbia's financial system. Foreign-exchange risk, which is often materialized through a high level of non-performing loans based on foreign-exchange risk spreading to credit risk, will be reduced through a greater representation of dinar sources and placements. In order to prevent this, it is necessary for the monetary authorities, together with the representatives of the fiscal policy, to work in order to reduce the level of euroization in Serbia and to actively promote dinar savings, dinar loans and investments in dinar securities. In order to restore confidence in the national currency, it is necessary to maintain the achieved macroeconomic stability measured through low, stable and predictable inflation, maintain the relative stability of the foreign-exchange rate of the dinar against the euro, and promote dinar savings, which have a more favorable tax treatment in relation to savings in a foreign currency. The process of restoring confidence in the domestic currency is not an easy task to do, nor is it possible to do in a short time, because euroization in RS is deeply rooted.

As the topic of dollarization or euroization is actual and present in many countries not only inside our region, but also globally, this fact opens a possibility of the further analysis of this issue. The analysis may be aimed at showing the causes of dollarization and the reasons why highly dollarized countries have accepted a foreign currency as their own, measures in a struggle to reduce the level of dollarization (market, regulatory), as well as the sustainability of the results of these measures in the medium and long run. When the domestic frameworks are concerned, further analysis could be aimed at presenting the efficiency of the measures having been taken by the National Bank of Serbia and the Government of the Republic of Serbia so far, presenting the current situation regarding the level of dinarization by various indicators (the dinarization of deposits, the dinarization of loans, savings in dinars), and offering future measures.

A high degree of dollarization affects the efficiency of the monetary and fiscal policies, thus influencing the overall effects of economic policies on macroeconomic and financial stability, especially when the volatility of the domestic currency is expressed. The countries with a high level of dollarization also have a high passthrough effect of the exchange rate on inflation, i.e. the depreciation of the domestic currency is assumed to be spilling faster on the inflation rate. In such circumstances, the role of the monetary authorities is hampered to achieve and preserve the price and financial stability. For this reason, the representatives of the monetary authorities are aware of the fact that joint efforts with the representatives of the fiscal policy and the non-financial sector should resolve the high level of dollarization, and that the proposed solution is sustainable and efficient in the long run. This solution should be customized to each country individually and should be in line with the characteristics of the economy itself.

REFERENCES

- Asel, I. (2010). Financial sector development and dollarization in the economies of Central Asia. *Global Development Network Regional Research Competition Grant No. RRC IX-69*, 1-34.
- Bencivenga, V., Huybens, E., & Smith, B. D. (2001). Dollarization and the integration of international capital markets: A contribution to the theory of optimal currency areas. *Journal of Money, Credit and Banking*, 33(2), 548-589. doi:10.2307/2673916
- Berg, A., & Borensztein, E. (2000). The pros and cons of full dollarization. *IMF Working Paper*, WP/00/50, 1-33.
- Bogetić, Ž. (2000). Official dollarization: Current experiences and issues. *Cato Journal*, 20(2), 179-213.
- Broda, C., & Yeyati, E. L. (2002). Dollarization and the Lender of Last Resort. *MIT Press*, 1-55.
- Brown, M., De Haas, R., & Sokolov, V. (2013). Regional inflation and financial dollarization. *EBRD, Working Paper No. 163*, 1-22.
- Calvo, G. (2002). On dollarization. *The Economics of Transition and Institutional Change*, 10(2), 1-18. 393-403. doi.org/10.1111/1468-0351.00117
- Catao, L., & Terrones, M. (2016). Financial de-dollarization: A global perspective and the peruvian experience. *IMF Working Paper*, WP/16/97, 1-25.
- Chițu, L. (2012). Was unofficial dollarisation/euroisation an amplifier of the 'Great Recession' of 2007-09 in emerging economies? *ECB, Working paper series No 1473*, 1-45.
- De la Torre, A., & Schmukler, S. (2004). Coping with risk through mismatches: Domestic and international financial contracts for emerging economies. *World Bank Policy Research, Working Paper No. 3212*, 1-41.
- Fischer, S. (1982). Seigniorage and the case for a national money. *Journal of Political Economy*, 90(2), 295-313. doi.org/10.1086/261057
- Forbes, K., Sebastian, V., Mapingure, C., Charity, M., Kumbirai, M., Felistus, C., & Rumbidzai, M. (2013). Employee perceptions of dollarisation and the hospitality industry performance. *Australian Journal of Business and Management Research*, 2(10), 31-37.
- Garcia-de-Andoain, C., Heider, F., Hoerova, M., & Manganelli, S. (2016). Lending-of-last-resort is as lending-of-last-resort does: Central bank liquidity provision and interbank market functioning in the euro area. *ECB Working Paper Series*, No 1886, 1-62.
- Garcia-Escribano, M., & Sosa, S. (2011). What is driving financial de-dollarization in Latin America? *IMF Working Paper*, WP/11/10, 1-23.
- Haslag, J. H. (1998). Seigniorage revenue and monetary policy. *Federal Reserve Bank of Dallas, Economic Review*, 10-20.
- Heysen, S. (2005). Dollarization. *Finance & Development*, 44-45.
- Ize, A., & Parrado, E. (2002). Dollarization, monetary policy and the pass-through. *IMF Working Paper*, WP/02/188, 1-34.
- Ize, A., & Powell, A. (2004). Prudential Responses to De Facto Dollarization. *IMF Working Paper*, WP/04/66, 1-42.
- Ize, A., & Yeyati, E. L. (2003). Financial dollarization. *Journal of International Economics*, 59(2), 323-347. doi.org/10.1016/S0022-1996(02)00017-X
- Jácome, L. I., & Lönnberg, Å. (2010). Implementing official dollarization. *IMF Working Paper*, WP/10/106, 1-32.

- Jakšić, M. (2013). Makroekonomija i realni svet. *Ekonomске ideje i praksa*, 8, 25-34.
- Jakšić, M., & Jakšić, M. (2013). Political macroeconomy: The case of Serbia. *Economics & Economy*, 1(2), 77-90.
- Jeanne, O., & Wyplosz, C. (2001). The international lender of last resort: How large is large enough? *IMF Working Paper*, WP/01/76, 1-38.
- Makochekeanwa, A. (2010). Zimbabwe's currency crisis: Which currency to adopt in the aftermath of the multi-currency regime? Munich Personal RePEc Archive, MPRA Paper No. 22463, 1-38.
- Mankiw, G. N. (1987). The optimal collection of seigniorage: Theory and evidence. *NBER, Working Paper No. 2270*, 1-27.
- Mwase, N., & Kumah, F. (2015). Revisiting the concept of dollarization: The global financial crisis and dollarization in low-income countries. *IMF Working Paper*, WP/15/12, 1-30.
- National bank of Serbia. (2018a). *Report On Dinarisation Of The Serbian Financial System*. Retrieved March 21, 2019, from http://www.nbs.rs/static/nbs_site/gen/english/90/dinarizacija/din_09_18.pdf
- National bank of Serbia. (2018b). *Memorandum on the Dinarisation Strategy*. Retrieved March 21, 2019, from http://www.nbs.rs/static/nbs_site/gen/english/90/dinarizacija/din_12_18.pdf
- Neumann, M. J. M. (1992). Seigniorage in the United States: How much does the U.S. government make from money production? Federal Reserve bank of St. Louis, *Review Journal*, March 1, 29-40.
- Ortiz, G. (1983). Dollarization in Mexico: Causes and Consequences. *Financial Policies and the World Capital Market: The Problem of Latin American Countries*, 71-106.
- Reinhart, C., Rogoff, K., & Savastano, M. (2003). Addicted to dollars. *NBER Working Paper 10015*, 1-67.
- Rennhack, R., & Nozaki, M. (2006). Financial Dollarization in Latin America. *IMF Working Paper*, WP/06/7, 1-36.
- Schuler, K. (2005). Some theory and history of dollarization. *Cato Journal*, 25(1), 115-125.
- Stanisic, N. (2012). Effects of international monetary integration on inflation, economic growth and current account. *Economic Horizons*, 14(1), 3-13. doi:10.5937/ekonhor1201003S

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