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UTICAJ STRUKTURE KAPITALA NA PROFITABILNOST BANAKA U FEDERACIJI BOSNE I HERCEGOVINE

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Rezime

Istraživanja relacije strukture izvora finansiranja i vrednosti kompanije brojna su na razvijenim tržištima i za nefinansijske kompanije. Međutim, na tržištima zemalja u razvoju, a posebno u bankarskom sektoru, spektar istraživanja znatno je uži. U ovom radu smo istražili postojanje, smer i intenzitet relacije strukture kapitala i profitabilnosti banaka u Federaciji BiH. Kao uzorak je poslužila cela populacija banaka u Federaciji BiH, u periodu 2009-2018. godine. Kao nezavisne varijable, parametre strukture izvora finansiranja, odabrali smo odnos duga i imovine, te odnos duga i kapitala, a kao zavisne varijable, pokazatelje vrednosti banke, uzeli smo mere profitabilnosti, odnosno ROA, ROE i neto profitnu maržu. Pored varijabli koje opisuju strukturu kapitala, čija veza je ishodišno tema ovog rada, kao kontrolne varijable upotrijebili smo i dodatne varijable specifične za banke, a koje opisuju bančinu likvidnost, izloženost kreditnom riziku, upravljanje operativnim troškovima, veličinu, te tržišno učešće. Uticaj makroekonomskog okruženja promatran je kroz ocenu inflacije i bruto nacionalnog dohotka per capita, koji ukazuju na smer ekonomskog ciklusa za određenu godinu. Rezultati istraživanja svjedoče o slaboj vezi strukture izvora finansiranja i prinosa na imovinu, odnosno o negativnoj vezi finansijske poluge sa prinosom na kapital. Ovakav ishod, najprije relativizira značaj Modigliani-Millerovog stava o irelevantnosti strukture kapitala, a potom postavlja pitanje i o validnosti tradicionalne teorije. Uspostava i upravljanje strukturom kapitala lokalnih banaka, tako se jedino može objasniti teorijom postupka slaganja.

Ključne reči: struktura kapitala; finansijska poluga; profitabilnost banaka; tradicionalna teorija; Modigliani-Millerov stav; teorija postupka slaganja

JEL klasifikacija: G21, G32

Uvod

Odluka o finansiranju jedna je od tri osnovne odluke finansijskog menadžmenta (pored odluke o investiranju, te odluke o upravljanju imovinom), svih kompanija, pa tako i finansijskih institucija. Kako se struktura izvora finansiranja, u načelu, sastoji od duga i kapitala, te kako se dug smatra jeftinijim izvorom finansiranja (radi manjeg nivoa pridruženog rizika), to je pitanje korištenja finansijske poluge (zapravo, nivoa duga u strukturi izvora finansiranja), pitanje koje zaokuplja pažnju kako akademske, tako i profesionalne zajednice, već više od pola vijeka. I dok se akademsko interesovanje fokusira na relaciju omjera finansijske poluge i vrijednosti kompanije, interes finansijskih menadžera usmjeren je na smanjenje troška finansiranja, te tako povećanje profitabilnosti kompanije kojom upravljaju (naposlijetku, ipak, i povećanje vrijednosti kompanije).

Bez obzira na podijeljena mišljenja akademske zajednice u vezi relacije finansijske poluge i vrijednosti kompanije (brojna su istraživanja koja pokazuju pozitivnu vezu, kao što postoje i radovi koji negiraju takvu relaciju), ponašanje finansijskih menadžera kompanija širom svijeta uglavnom je bazirano na ideji da optimalnim korištenjem finansijske poluge mogu uvećati vrijednost kompanije. Međutim, istraživanja bazirana na bankarskom tržištu i bankama znatno su rjeđa, posebno na tržištima tranzicijskih zemalja. Cilj ovog rada upravo je testiranje relacije između strukture izvora finansiranja i profitabilnosti (jednog od osnovnih mjerila vrijednosti) banaka u Federaciji Bosne i Hercegovine.

Teoretske osnove

Razmatranje relacije strukture izvora finansiranja (kapitala, u širem smislu) i vrijednosti kompanije za rezultat ima više različitih pogleda, koji se ipak mogu kategorisati u četiri teoretska pravca:

- Modigliani-Millerova teorija,
- Tradicionalna teorija,
- Agencijski modeli (Teorija izbora), te
- Teorija asimetričnih informacija.

Franco Modigliani i Merton Miller su još 1958. godine postavili kamen temeljac modernim pogledima na strukturu kapitala, postavivši tezu da struktura kapitala uopšte ne utiče na percepciju vrijednosti i vrijednost kompanije. Pod pretpostavkom savršene konkurencije, na vrijednost kompanije utiču samo gotovinski tokovi i visina poslovnog rizika koji kompanija preuzima, dok nivo zaduženosti nije varijabla relevantna za procjenu i određivanje vrijednosti kompanije. Vrijednost zadužene kompanije prije oporezivanja jednaka je vrijednosti nezadužene kompanije, u uslovima savršenog tržišta. Naknadno, autori ipak razmatraju okolnosti u kojem postoji oporezivanje dobiti, te dokazuju da, nakon oporezivanja, postoji razlika između kompanije sa finansijskom polugom i bez poluge (Ross et al, 2013).

Modigliani-Millerova teorija izazvala je akademsku polemiku i iznjedrila nekoliko novih pogleda na problem. Tradicionalna teorija optimalnu strukturu kapitala definiše kao jednakost minimalnog troška finansiranja kompanije i ponderisanog prosječnog troška kapitala i tvrdi da postoji optimalna struktura kapitala (Brealey et al, 2011). Pri malim nivoima duga, rizik kreditora ostaje konstantan, dok

rizik dioničara raste, no ipak, ukupni trošak kapitala je nizak. Nakon određenog nivoa zaduženosti, počinje rasti rizik i kreditora i dioničara. Kreditori svoj rizik ugrađuju u cijenu koštanja duga, a dioničari zahtijevaju veću stopu povrata na kapital. Prema tradicionalnoj teoriji, posao menadžera jeste naći nivo zaduženosti koji minimizira ponderisani prosječni trošak kapitala, a istovremeno maksimizira vrijednost kompanije.

Teorija izbora uvodi dvije nove varijable od kojih zavisi struktura kapitala, a to su agencijski troškovi i troškovi bankrota. Prema ovoj teoriji, optimalna struktura kapitala postoji i ona se nalazi u jednakosti koristi i troškova duga. Koristi duga mogu biti umanjeni iznos poreza i smanjenje agencijskih troškova, a iz zaduživanja mogu proizaći troškovi bankrota i agencijski troškovi. Zaključak teorije izbora jeste da finansijska poluga ima pozitivnu vezu s vjerovatnoćom finansijskih stresova koje kompanija može doživjeti, vrijednošću kompanije, nivoom regulisanosti, gotovinskim tokovima, likvidacijskom vrijednošću, nivoom u kojem je kompanija mogući objekt preuzimanja (take-overa) i važnosti reputacije menadžmenta. Negativnu vezu finansijska poluga ima s mogućnostima daljeg razvoja, pokrićem kamata, troškom analize perspektive kompanije i vjerovatnoćom reorganizacije koja nastupa nakon što kompanija doživi finansijski stres (Brealey et al, 2011).

Modeli zasnovani na asimetričnim informacijama zasnivaju se na ideji postojanja asimetričnih informacija između različitih interesnih grupa: menadžera, dioničara, kreditora. U okviru modela ističu se dva teoretska pravca: teorija signalizacije i teorija postupka slaganja (redoslijeda „pakovanja“). Teorija signalizacije polazi od pretpostavke da se menadžeri zadužuju kada ulažu u profitabilnu investiciju, kako ne bi morali dijeliti zaradu s dioničarima. Stoga, javnost smatra da je povećanje finansijske poluge signal očekivane dobre profitabilnosti (Harris, 1991). Teorija postupka slaganja pretpostavlja da postoji redoslijed po kojemu menadžeri izabiru izvor finansiranja. Investicijski projekt će najprije finansirati iz ostvarenog profita, zatim niskorizičnim dužničkim instrumentima, konvertbilnim obveznicama i na kraju običnim dionicama (Vidučić et al, 2018).

Pregled literature

Odluka o finansiranju jedna je od tri osnovne odluke finansijskog menadžmenta (pored odluke o Svaki od kratko opisanih teoretskih pristupa problemu optimalne strukture izvora finansiranja potaknuo je brojne autore na istraživanja, u svrhu potvrđivanja, odnosno opovrgavanja teoretskih koncepata. Istraživanja zasnovana na praksi kompanija razvijenih tržišta razmjerno su brojna, dok je situacija na tranzicijskim (izranjajućim i rubnim) tržištima drugačija. U nastavku ćemo predstaviti neke od radova koje tretiraju relaciju strukture izvora finansiranja i vrijednosti kompanija i banaka (po bilo kojem mjerilu), relevantne za naše istraživanje, kako po korištenoj istraživačkoj metodologiji, tako i prema kriteriju relativne uporedivosti okruženja.

Kada je riječ o razvijenim tržištima, najprije je potrebno istaknuti istraživanje koje je Berger (1995) proveo na američkom bankarskom tržištu. Kao uzorak su poslužili izvještaji svih osiguranih komercijalnih banaka, za period 1983-1989. godine, uključno i trogodišnji lag period za podatke o omjeru kapitala prema imovini (CAR) i povrata na kapital (ROE). Autor prvo utvrđuje kauzalnost relacije između CAR i ROE (Granger-ovim testom), a potom ispituje smjer relacije. Nasuprot očekivanom negativnom znaku, koji je konzistentan i sa teoretskim postavkama, rezultati istraživanja su pokazali pozitivan smjer između udjela kapitala u imovini i prinosa na kapital. U regresijskom modelu koji je korišten upotrijebljene su i brojne kontrolne varijable, poput HH indeksa koncetracije, udjela banke

u ukupnim depozitima, stope rasta depozita, kao i omjera rizikom ponderisane aktive, loših kredita i otpisanih kredita prema ukupnoj imovini banke.

Cooper i drugi (2003) istražuju mogućnost predviđanja prinosa banaka na uzorku od 213 javno trgovanih bankarskih holding grupacija, za period od juna 1986. do decembra 1999.godine. Fokus ovog istraživanja nije usmjeren isključivo na ispitivanje relacije strukture izvora finansiranja i profitabilnosti, nego je spektar nezavisnih varijabli znatno širi i uključuje kretanje: omjera kredita i imovine, omjera rezervi za kredite i kredita, omjera nekamatonosnih i kamatnih prihoda, omjera neiskorištenih odobranih kredita, kreditnih pisama, kamatnih swap-ova i ukupnih kredita, kao i (za nas relevantnog) omjera knjigovodstvene vrijednosti kapitala i ukupne vrijednosti imovine. Zavisnu varijablu predstavlja procentulna promjena tromjesečne zarade po dionici. Istraživanje je usmjereno ispitivanju relacije fundamentalnih pokazatelja poslovne performanse banaka i tržišne performanse njenih dionica. Rezultati istraživanja pokazali su da kretanje nekamatonosnih prihoda, rezervisanja po kreditima, zarade, izdatih kreditnih pisama, te finansijske poluge (omjera kapitala i imovine) imaju prediktorsku moć zarade po dionici. Za testiranje relacija ponovo je upotrijebljen regresijski (ovaj put panelni) model.

Problemom relacije finansijske strukture (ali i znatno šire, obilježja finansijskog sistema) i profitabilnosti banaka, bave se Demirguc-Kunt i Huizinga. Autori regresijskim modelom testiraju relaciju tri grupe nezavisnih varijabli sa pokazateljima profitabilnosti banaka (neto marža i omjer profita prije poreza i imovine). Nezavisne varijable dijele na: karakteristične za banku (omjer kapitala i imovine, omjer kredita i imovine, omjer nekamatonosnih prihoda i imovine, omjer depozita i imovine, te omjer operativnih troškova i imovine), makroekonomske indikatore (BDP po stanovniku, stopa rasta, stopa inflacije, porezna stopa), te indikatore finansijskog sistema (omjer imovine depozitnih banaka i BDP-a, omjer imovine centralne banke i BDP-a, omjer kredita privatnom sektoru i BDP-a, omjer berzanske kapitalizacije i BDP-a, omjer ukupne vrijednosti trgovanih dionica i BDP-a, omjer kapitalizacije i imovine banaka, omjer vrijednosti trgovanih dionica i kredita privatnom sektoru, proizvod vrijednosti trgovanih dionica i prosječnih operativnih troškova banaka, te složeni pokazatelj strukture bankarskog sektora-prosječna vrijednost omjera kapitalizacije i imovine banaka, prometa na berzi i kredita i proizvoda prometa i operativnih troškova). Istraživanje je napravljeno na podacima banaka iz 44 zemlje (razvijene, zemlje u razvoju i nerazvijene zemlje), za period 1990.-1997. Rezultati ukazuju da banke imaju više profitne stope i veće marže u manje razvijenim finansijskim sistemima, unatoč skupim resursima i operativnoj neefikasnosti. Sa razvojem finansijskog sistema, pojačava se efikasnost banaka, ali i konkurencija među njima, te stoga opadaju pokazatelji profitabilnosti.

Kada je riječ o tržištima tranzicijskih zemalja, istraživanja koja imaju za predmet relaciju strukture izvora finansiranja i profitabilnosti znatno su zastupljenija za privredne kompanije, nego za banke. Na primjer, Gupta i drugi (2011) testiraju vezu između nivoa duga u izvorima finansiranja indijskih kompanija i povrata na investicije (ROI), povrata na kapital (ROE), povrata na udio (RET), odnosa zarade prije poreza i prodaje (EBIT/S) i omjera operativnog prihoda i prodaje (OPR/S). Khan (2012), na uzorku kompanija sa Pakistanske berze, testira vezu ROA, ROE, bruto profitna marža (GPM) i Tobin Q-a, kao zavisnih varijabli, te odnosa kratkoročnog i ukupnog duga (STDTA), odnosa dugoročnog i ukupnog duga (LTDTA), te odnosa ukupnog duga i imovine (TDTA), kao nezavisnih varijabli, reprezenata strukture izvora finansiranja. Adekunle i Sunday (2010) istraživali su efekt strukture kapitala na finansijski učinak kompanija u Nigeriji, gdje je nezavisna varijabla, struktura kapitala mjerena omjerom duga i imovine, a zavisna koeficijentima ROA i ROE. Na Nigerijskoj berzi je fundirano i istraživanje Luper i Isaac (2012), u kojem su kao nezavisne varijable i mjere strukture kapitala korišteni odnos kratkoročnog duga i

ukupne imovine (STDTA), dugoročnog duga i ukupne imovine (LTDTA), te odnos duga i kapitala (TDE), a kao zavisne varijable i pokazatelji učinka povrat na aktivu ROA i profitna marža (PM). Ebaid (2009) je ispitivao vezu između strukture kapitala i učinka nefinansijskih kompanija s Egipatske berze. Poslovni učinak mjerio je računovodstvenim pokazateljima ROA, ROE i bruto profitnom maržom (GPM), a finansijsku polugu mjerio je odnosom kratkoročnog duga i ukupne imovine (STD), dugoročnog duga i ukupne imovine (LTD), te odnosom ukupnog duga i ukupne imovine (TTD). Abu Rub (2012) istražuje efekt strukture kapitala na performanse kompanija na osnovu podataka s Palestinske berze (PSE) za period 2007.-2010. god., koristeći linearnu multiplu regresijsku analizu. Učinak je zavisna varijabla mjerena i računovodstvenim i tržišnim pokazateljima. ROA i ROE su korišteni kao računovodstveni pokazatelji, a Tobinov Q, EPS i odnos tržišne i knjigovodstvene vrijednosti kapitala (MBVR) kao tržišni pokazatelji učinka kompanije. Struktura kapitala je nezavisna varijabla predstavljena odnosom kratkoročnog duga i ukupne imovine (SDTA), dugoročnog duga i ukupne imovine (LDTA), ukupnog duga i ukupne imovine (TDTA), ukupnog duga i ukupnog kapitala (TDTQ).

Pomenuta istraživanja donose različite rezultate veze između strukture kapitala i poslovnog učinka kompanija. Pojedina su istraživanja pokazivala pozitivnu vezu (Gupta i drugi), negativnu vezu (Adekunle i Sunday, Luper i Isaac), ili pak odsustvo veze ili mješovite učinke (Ebaid, Abu Rub, Khan).

Radovi vezani za istraživanje relacije strukture izvora finansiranja i učinaka banaka na tranzicijskim tržištima, nešto su manje zastupljeni. Ipak, istaknućemo nekoliko. Autori Siddiqui i Shoaib (2011) su istraživali teoriju agencijskih troškova u bankarskom sektoru Pakistana koristeći panel podatke od 22 banke u periodu od 2002.-2009. godine. Koristili su efikasnost banke kao zavisnu varijablu, a kao nezavisne varijable su korištene: finansijska poluga, zarada, rizik, veličina, investicije i krediti. Efikasnost banke je mjerena koeficijentom ROE i Tobinovim Q, koji su korišteni kao proxy varijable za mjerenje efikasnosti zarade i tržišne vrijednosti. Rezultati studije su pokazali da se profitabilnost banke signifikantno povećava s porastom poluge. Tokom posmatranog perioda signifikantnu ulogu je imala i veličina banke u efikasnosti zarade i tržišnoj vrijednosti. Na kraju, autori su sugerirali bankama, da bi, u svrhu poboljšanja efikasnosti i kvaliteta menadžmenta, trebali razdvojiti vlasništvo od upravljanja. Također su uočili potrebu za prelaskom s potrošačkog bankarstva na kreditiranje realnog sektora i umjesto kratkoročne zarade od kreditiranja kupovina kuća i auta, staviti fokus na dugoročnije investicije.

Uticaj strukture vlasništva, na poslovni učinak komercijalnih banaka u Etiopiji istraživali su autori Kapur i Gualu (2012). Učinak su mjerili analitičkim mjerama kao što su profitabilnost, kvalitet aktive, efikasnost, likvidnost i upravljanje kapitalom, dok su pod strukturom vlasništva posmatrali državni naspram privatnog kapitala, a ne korištenje finansijske poluge. Objekt istraživanja je 8 komercijalnih banaka, od kojih je 6 privatnih, a 2 banke su u državnom vlasništvu, i njihova performansa u periodu 2001-2008. godine. Kao pokazatelji profitabilnosti razmatrani su povrat na aktivu (ROA), neto kamatna marža (NII), povrat na kapital (ROE), te nekamatni prihod. Efikasnost su mjerili udjelom nekamatnih rashoda u prosječnom iznosu imovine, udjelom opštih rashoda u aktivi, udjelom troškova zaposlenika u aktivi i udjelom opštih troškova u prihodima. Za pokazatelje kvaliteta aktive ocjenjivani su: rezervacije za nenaplative kredite, rezervacije za ukupne kredite, rezervacije za ukupnu aktivu i iznos nenaplativih kredita (NPL). Likvidnost je mjerena sljedećim pokazateljima: udio kredita u depozitima, udio likvidne aktive u ukupnoj aktivi, te udio likvidne aktive u depozitima. Adekvatnost kapitala mjerena je udjelom kapitala u kreditima, udjelom kapitala u aktivi, udjelom kapitala u neto kreditima i udjelom kapitala u depozitima. Autori su na osnovu studije zaključili da, gledajući profitabilnost, kvalitet aktive i adekvatnost kapitala, privatne banke imaju bolji poslovni učinak od

državnih. No, u upravljanju troškovima prednjače banke u državnom vlasništvu, dok u području upravljanja likvidnošću nema značajnih razlika između privatnih i državnih komercijalnih banaka.

Autor Yaregal (2011) radio je studiju s istom temom i opsegom istraživanja kao i Kappur i Gualu, za period 2005.-2010. godine, s tim da je ovaj autor dobio znatno drugačije rezultate. Studija je pokazala da državne banke imaju bolje performanse u profitabilnosti, likvidnosti i efikasnosti, dok privatne banke ostvaruju bolju adekvatnost kapitala i brži rast.

Studiju veze između strukture kapitala i performanse banaka registrovanih na berzi Gane proveli su autori Awunyo-Vitor i Badu (2011). Koristili su kvalitatini i kvantitativni pristup, te panel regresijskom analizom obradili kvalitativne podatke. Zavisna varijabla – performansa banaka mjeren je ROA i ROE, te Tobinovim Q, a nezavisna varijabla - struktura kapitala, iskazana je udjelom duga u kapitalu. Rezultati studije su pokazali statistički signifikantnu negativnu vezu između strukture kapitala i poslovnog učinka, na osnovu kojih autor zaključuju da banke na tržištu Gane imaju visoku polugu, koja se u većem dijelu sastoji od kratkoročnog duga, što ne ide u korist profitabilnosti.

Za finansijsko tržište Jugoistočne Evrope, posebno su aktuelni radovi Athanasoglou i drugi. U radu Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability (Athanasoglou i drugi, 2005), autori koristeći linearni regresijski model na populaciji grčkih banaka u periodu 1985.-2001. nastoje identifikovati determinante profitabilnosti, i to iz tri odvojene grupe: determinante spedifične za banke (omjer kapitala i imovine-EA, omjer rezervacija za kredite i kredita-PL, omjer prihoda i broja zaposlenih-PR, omjer operativnih troškova i imovine-EXP, veličinu banke-S i S2), bankarsku industriju (tip vlasništva banke-zatvoreno-Op ili javno-Om, HHI indeks koncentracija), te makroekonomske determinante (stopa inflacije-CPI ili IR, stadij ekonomskog ciklusa-CO). Kao pokazatelje profitabilnosti koriste ROA i ROE. Rezultati istraživanja ukazuju da je kapital važna determinanta profita, te da povećana izloženost riziku umanjuje profitnu stopu. Također, produktivnost rada ima pozitivni i signifikantnu relaciju sa prinosom. Operativni troškovi imaju negativan uticaj na prinos, dok veličina banke nije signifikantna determinanta. Kada je riječ o makroekonomskim varijablama, utvrđena je signifikanta relacija inflacije i stadija ekonomskog ciklusa, uz naznaku asimetričnosti, obzirom da je pozitivna relacija ekonomskog ciklusa sa prinosom utvrđena samo u fazama nadprosječnog prinosa.

U radu Determinants of Bank Profitability in the South Eastern European Region (Athanasoglou i drugi, 2006), autori primjenjuju sličan metodološki okvir, ali na znatno širem uzorku. Ovaj put istraživanje je bazirano na nebalansiranom uzorku od 71 do 132 banke (različit broj banaka u posmatranim godinama), za period 1998.-2002. godine, i to iz sedam zemalja Jugoistočne Evrope (Albanija, Bosna i Hercegovina, Bugarska, Hrvatska, Sjeverna Makedonija, Rumunija i Srbija). Kao zavisne varijable ponovo su odabrani ROA i ROE, a nezavisne varijable autori, kao i u prethodnom istraživanju, dijele u tri skupine: specifične za pojedinačne banke (omjer kredita i imovine-LA, rezervi za kredite i kredita-LLP, omjer kapitala i imovine-EA, omjer operativnih troškova i imovine-OEA, te veličinu banke-S i S2, porijeklo vlasništva-Dfo i tržišni udio-MS), determinante bankarske industrije (EBRD indeks reforme bankarskog sistema i HHI indeks koncentracije), te makroekonomske varijable (postotak inflacije-INF i realni dohodak po stanovniku-RGC). Podaci su priređeni u panel, a relacije se testiraju u LS modelu sa fiksnim i slučajnim učincima. Rezultati ukazuju na pozitivnu relaciju LA, EA, S, MS, HHI, INF, RGC sa ROA, negativnu relaciju LLP, OEA, S2 sa ROA, te mješovitu relaciju Dfo po posmatranim zemljama. Sa ROE je zabilježena pozitivna relacija varijabli LA, EA, S, S2, MS, HHI, INF i RGC, negativna veza varijabli LLP i OEA, dok je znak relacije varijable Dfo ponovo različit, ovisno o zemlji u kojoj banke

imaju sjedište.

Istraživanja ovog problema na lokalnom bankarskom tržištu nismo pronašli. Mada su autori Kadić (2017) i Milisav (2018) radili svojevrsne analize strukture kapitala banaka u FBiH, one se većinom odnose na uticaj banaka sa većinskim stranim kapitalom na profitabilnost i efikasnost bankarskog sektora. Prema našem saznanju, do momenta pisanja ovog rada nije ispitivana veza između strukture kapitala i profitabilnosti komercijalnih banaka u Federaciji BiH.

Razmatrane empirijske studije donose različite rezultate veze između strukture kapitala i poslovnog učinka, kako kompanija, tako i banaka. Ipak, istraživanja su korisna u metodološkom smislu. Pokazali smo da autori za mjerenje strukture kapitala koriste udio kratkoročnog duga u ukupnoj imovini (STD), udio dugoročnog duga u ukupnoj imovini (LTD), udio ukupnog duga u ukupnoj imovini (TDA) i udio duga u ukupnom kapitalu (TDTQ), dok za mjerenje poslovnog učinka koriste zaradu po dionici (EPS), povrat na imovinu (ROA), povrat na kapital (ROE), Tobinov Q, bruto profitnu maržu (GPM) i odnos tržišne vrijednosti i knjigovodstvene vrijednosti kapitala.

Metodologija istraživanja

Na tržištu Federacije BiH posluje 15 komercijalnih banaka, što je brojka koja je konstantna od 2016. godine. Od tog broja, 14 banaka je u većinskom privatnom vlasništvu, a samo jedna banka je u državnom vlasništvu. U strukturi vlasništva privatnih banaka dominira strano vlasništvo (10 banaka), sa austrijskim, turskim i hrvatskim kapitalom, na čelu. Istraživanje je rađeno na kompletnoj populaciji, u desetogodišnjem periodu 2009.-2018. godine.

Kada je riječ o poslovnim performansama industrije, možemo istaknuti da u 2009. i 2010. godini, koje su prve dvije godine obuhvaćene istraživanjem, profitabilnost mjerena ROA, ROE i neto profitnom maržom je stabilna, ali razmjerno niska, i to: 0,44%, 2,17% i 7,18% u 2009. godini respektivno, te 0,41%, 2,22% i 11,01% u 2010. godini respektivno. Koeficijenti profitabilnosti u ovim godinama odražavaju posljedice krize iz 2008. godine. Već 2011. godine primjetan je porast profitabilnosti, što se osobito vidi kroz neto profitnu maržu koja je porasla za 3,46 pp u odnosu na prethodnu godinu. Glavni pokretači rasta profitabilnosti u 2011. godini jesu rast neto kamatnog prihoda, te smanjenje troškova rizika u vidu ispravki vrijednosti, kao posljedica usporavanja kvarenja kvalitete portfelja kredita.

Trend rasta profitabilnosti koji započinje u 2011. godini ostaje do kraja posmatranog perioda. U posljednoj, 2018. godini, u odnosu na početak perioda, profitabilnost banaka predstavljena kroz koeficijente ROA, ROE i NPM se povećala za 117%, 210% i 214% respektivno. Generalno, može se zaključiti da je bankarski sektor u Federaciji BiH procvjetao u periodu od 2009. do 2018. godine, unatoč velikoj gubitaškoj prtljazi bankarskog sektora, te dodatnom udarcu, prelijevanju globalne ekonomske krize na tržište FBiH.

Svrha ovog istraživanja jeste ispitati vezu između strukture kapitala i profitabilnosti komercijalnih banaka u Federaciji BiH. Kao nezavisne varijable, tj. reprezenti strukture kapitala, odabrani su:

- omjer ukupnih obaveza prema ukupnoj aktivi (u daljem tekstu koeficijent OA),

- omjer ukupnih obaveza prema ukupnom kapitalu (u daljem tekstu koeficijent OK).

Kao zavisne varijable modela, odnosno reprezenti profitabilnosti, odabrani su:

- povrat na aktivu, odnosno omjer neto dobiti prema ukupnoj aktivi (u daljem tekstu koeficijent ROA),

- povrat na kapital, odnosno omjer neto dobiti i ukupnog kapitala (u daljem tekstu koeficijent ROE),

- neto profitna marža, odnosno udio neto dobiti u ukupnom prihodu (u daljem tekstu NPM).

Pored nezavisnih varijabli koje opisuju strukturu kapitala i čija veza s profitabilnošću banaka je primarni fokus ovoga istraživanja, dodane su i sljedeće varijable specifične za banke, koje imaju kontrolnu ulogu u modelu:

- likvidnost, mjerena omjerom kredita i aktive (u daljem tekstu koeficijent KA),

- kreditni rizik, mjeren omjerom rezervisanja za kreditne gubitke prema kreditima (u daljem tekstu koeficijent RKGK).,

- upravljanje operativnim troškovima, mjereno udjelom operativnih troškova u iznosu aktive (u daljem tekstu koeficijent OTA),

- veličina, mjerena logaritmom iznosa ukupne imovine banke (u daljem tekstu logV),

- tržišno učešće, mjereno udjelom aktive banaka u ukupnoj aktivi za posmatranu godinu (u daljem tekstu TU).

Nezanemarivuticajnaprofitabilnostbanakaimajuimakroekonomskiuslovi,tesmjermakroekonomskog ciklusa. Iz tog razloga su u modelu posmatrane i sljedeće markoekonomske varijable:

- inflacija, mjerena prosječnom godišnjom stopom rasta indeksa potrošačkih cijena (u daljem tekstu INF),

- ekonomska aktivnost, mjerena bruto nacionalnim dohotkom per capita (u daljem tekstu BNDpc).

Za varijablu veličine i ekonomske aktivnosti posmatrani su logaritmirani iznosi kako bi se ujednačile varijacije među veličinama aktive različitih banaka, te kako bi deskriptivna analiza statističkih serija podataka bila efikasnija. Istraživanje se u potpunosti oslanja na sekundarne podatke i to na javno dostupne finansijske izvještaje. Za period 2009.-2013. korišten je službeni dokument Agencije za bankarstvo FBiH, pod nazivom Skraćeni izvještaj vanjskih revizora o finansijskim iskazima banaka u Federaciji Bosne i Hercegovine. Obzirom da je zaključno sa 2013. godinom prestalo izdavanje skraćenog izvještaja vanjskih revizora, finansijski izvještaji za period 2014.-2018. su prikupljeni sa web stranice Sarajevske berze.

Za specifikaciju modela korišten je regresijski model po sljedećoj formuli:

$$Y_{it} = a + \Sigma^{J}_{j=1} b_j X^{j}_{it} + \Sigma^{M}_{m=1} b_m X^{m}_{it} + \varepsilon_{it}, \qquad (1)$$

gdje je:

Y_{it} – zavisna varijabla za banku i u godini t (ROA, ROE, NPM),

a – odsječak na y-osi,

$\Sigma^{J}_{j=1} b_j X^{j}_{it}$ – nezavisne varijable j specifične za banku za banku i u godini t (OA, OK, KA, RKGK, OTA, logV, TU),

$\Sigma^{M}_{m=1} b_m X^{m}_{it}$ – nezavisne makroekonomske varijable m za banku i u godini t (INF, BND_{pc})

ε_{it} – greška modela, slučajna varijabla koja daje stohastički karakter modelu.

Podaci su priređeni u panel, sa dimenzijama godina posmatranog perioda, odnosno banaka iz uzorka. Nakon deskriptivne statistike, napravljena je analiza korelacije, radi utvrđivanja postojanja, signifikantnosti i intenziteta veze među nezavisnim i zavisnim varijablama. Relacija strukture kapitala i profitabilnosti banaka testirana je primjenom regresijske analize modelom fiksnih efekata (Least-Squares Dummy Variable Regression – LSDV Regression) i modelom slučajnih efekata (Random Effects Model – REM), nakon čega je Hausmanovim testom ocijenjeno koji je model prikladniji. Kao preduslov primjene modela, provedeni su svi predviđeni testovi (test normalnosti, multikolinearnosti, autokorelacije, te test heteroskedastičnosti).

Rezultati istraživanja

Kako bismo sagledali opšte statističke osobine uzorka (veličina, minimum i maksimum, homogenost i rang), najprije predstavljamo rezultate deskriptivne statističke analize:

Tabela 1: Mjere srednje vrijednosti i varijacije (deskriptivna statistika)

Varijabla	N	Minimum	Maksimum	Sredina	St.devijacija
ROA	165	0	0,019212	0,0063259	0,0058264
ROE	165	0	0,1481511	0,0404842	0,0387715
NPM	165	0	0,4090981	0,1315073	0,1163357
OA	165	0,3478953	0,9499514	0,8307712	0,0837217
OK	165	1,2671994	18,980588	6,1733379	3,0896395
logV	165	4,7339512	6,7760019	5,7525849	0,4944672
KA	165	0,0651834	0,9370046	0,6336301	0,1652893
RKGK	165	0	0,160224	0,0177104	0,0274435
OTA	165	0,0043172	0,0965474	0,0355415	0,0147759
TU	165	0,0035802	0,28488	0,0606061	0,072457
INF	165	-0,011	0,037	0,0070061	0,0157079
logBNDpc	165	3,861719	3,978155	3,899965	0,0368263

Izvor: izračuna autora

Predstavljene vrijednosti govore o skromnoj profitabilnosti banaka u posmatranom periodu. Naime, prosječna vrijednost neto profitne marže je 13,15%, dok su prosječne vrijednosti prinosa na imovinu i prinosa na kapital 0,63% i 4,05%, što je znatno ispod prosjeka evropskog finansijskog tržišta u istom periodu (izvor: European Banking Federation – www.ebf.eu). Iz relativno malih vrijednosti standardne devijacije istih pokazatelja, možemo zaključiti da je poslovna performansa posmatranih banaka uravnotežena. Omjer obaveza prema imovini prosječno je 83,08%, odnosno omjer obaveza prema kapitalu 6,17 puta, uz nešto veću heterogenost, mjereno standardnom devijacijom.

Preduslov ispitivanju uticaja strukture kapitala na profitabilnost banaka jeste postojanje, intenzitet i predznak relacije među nezavisnim i zavisnim varijablama, što smo ispitali korelacijskom analizom. U narednoj tabeli predstavljena je matrica vrijednosti Pearsonovog koeficijenta korelacije, među svim varijablama (*-signifikantno na nivou 5%, **-signifikantno na nivou 1%):

Tabela 2: Matrica Pearsonovih koeficijenata korelacije

	OA	OK	ROA	ROE	NPM	logV	KA	RKGK	OTA	TU	INF	logBNDpc
OA	1											
OK	.793**	1										
ROA	-.188*	-.280**	1									
ROE	.124	-.022	.901**	1								
NPM	-.109	-.207**	.959**	.909**	1							
logV	.511**	.421**	.262**	.556**	.325**	1						
KA	.382**	.176*	-.078	.104	-.025	.243**	1					
RKGK	-.134	-.076	-.128	-.185*	-.218**	.009	.016	1				
OTA	-.239**	-.267**	-.291**	-.362**	-.419**	-.432**	-.093	.185*	1			
TU	.277**	.224**	.399**	.573**	.393**	.851**	.037	.141	-.284**	1		
INF	-.112	-.075	-.039	-.044	-.051	-.043	.036	.211**	.021	.000	1	
logBNDpc	.228**	.170*	.246**	.318**	.359**	.270**	-.008	-.446**	-.399**	.047	-.166*	1

Izvor: izračuna autora

Rezultati korelacijske analize ukazuju da ROA ima negativnu vezu sa nezavisnim varijablama OA, OK, KA, RKGK, OTA i INF, a ima pozitivnu vezu s logV, TU, logBNDpc. ROE ima pozitivnu vezu s OA, logV, KA, TU, logBNDpc, a negativnu s OK, RKGK, OTA i INF. NPM ima negativnu vezu s OA, OK, KA, RKGK, OTA, INF, dok s logV, TU i logBNDpc, ima pozitivnu vezu. Navedeni smjerovi korelacije bi značili da profitabilnost uzorka banaka u FBiH, mjerena povratom na aktivu, raste s padom udjela

duga u finansiranju aktive, s padom izloženosti kreditnom riziku, operativnih troškova i inflacije, te rastom likvidnosti odnosno padom udjela kredita u aktivi. Također, povrat na aktivu raste s porastom veličine banke, tržišnog učešća i ekonomske aktivnosti. Povrat na kapital raste s porastom udjela duga u finansiranju aktive, veličine banke, porastom udjela kredita u aktivi, tržišnog učešća, te ekonomske aktivnosti, a opada s porastom odnosa duga i kapitala, kreditnog rizika, operativnih troškova i inflacije, što na prvu daje dvosmislen zaključak o relaciji ROE i varijabli strukture kapitala. Neto profitna marža opada s porastom udjela duga u finansiranju aktive, porastom omjera duga i kapitala, te s porastom udjela kredita u ukupnoj imovini, kreditnog rizika, operativnih troškova i inflacije, dok raste s porastom veličine banke, tržišnog učešća i ekonomske aktivnosti.

Na kraju, relaciju strukture izvora finansiranja i profitabilnosti banaka testirali smo regresijskim modelom fiksnih i slučajnih efekata, prema ranije predstavljenoj formuli. Hausmanovim testom ocijenili smo koji model bolje opisuje vezu između predmetnih varijabli, čiji su rezultati prikazani u tabeli 3.

Tabela 3: Rezultat Hausmanovog testa specifikacije

Model		**Rezultat Hausmanovog testa**
Zavisna varijabla	**Nezavisna varijabla koja opisuje kapital**	**Prob>chi2**
ROA	OA	0,7157
ROA	OK	0,0011
ROE	OA	0,7278
ROE	OK	0,0143
NPM	OA	0,9995
NPM	OK	0,0047

Izvor: izračuna autora

Rezultat testa ukazuje da je za primjer relacije omjera duga i imovine sa mjerama profitabilnosti banaka prikladniji model slučajnih efekata ($p>0,05$), dok je za testiranje relacije omjera kapitala i imovine prikladniji model fiksnih efekata ($p<0,05$).

U tabeli 4 predstavljeni su rezultati regresijske analize veze između strukture kapitala i profitabilnosti mjerene povratom na aktivu – ROA, procjenjeno kroz dva modela. Zavisna varijabla u oba modela je ROA, dok su nezavisne varijable u prvom modelu omjer duga i imovine (OA) kao varijabla koja opisuje strukturu kapitala i ostale varijable specifične za banku, te makroekonomske varijable, a u drugom modelu odnos duga i kapitala (OK) kao varijabla koja opisuje strukturu kapitala, i ostale varijable specifične za banku, te makroekonomske varijable.

Tabela 4: Struktura kapitala i profitabilnost iskazana povratom na aktivu ROA

Estimacija RE modelom (ROA_OA)

	Coef.	Std. Err.	z	P>|z|
OA	-0,02	0,0055851	-3,95	0
logV	0,00	0,00	-0,42	0,678
KA	0,00	0,00	1,59	0,112
RKGK	0,0005122	0,0130274	0,04	0,969
OTA	-0,0139369	0,029585	-0,47	0,638
TU	0,0292845	0,0192568	1,52	0,128
INF	-0,0104385	0,0177655	-0,59	0,557
logBNDpc	0,0477477	0,0115084	4,15	0
_cons	-0,1584619	0,0399668	-3,96	0
Wald test	46,32			
R^2	0,3559			
No of obs	165			

Estimacija FE modelom (ROA_OK)

	Coef.	Std. Err.	t	P>|t|
OK	0,00	0,0001496	-3,87	0
logV	0,00	0,00	0,65	0,518
KA	0,00	0,00	1,19	0,236
RKGK	0,00912	0,0126585	0,72	0,472
OTA	-0,0180483	0,0333579	-0,54	0,589
TU	-0,0281125	0,0303232	-0,93	0,356
INF	-0,0085205	0,0166598	-0,51	0,61
logBNDpc	0,0371742	0,0128296	2,9	0,004
_cons	-0,1506506	0,0396783	-3,8	0
F test	6,77			
R^2	0,0266			
No of obs	165			

Izvor: izračuna autora

Već na prvi pogled, po negativnom predznaku koeficijenata u prvom modelu, te neutralan koeficijent u drugom modelu, može se zaključiti da struktura kapitala ima slab uticaj na profitabilnost banaka u FBiH, mjerenoj povratom na aktivu. Veličina aktive banke, te omjer kredita i aktive, kao kontrolne varijable, nemaju jasnu vezu s profitabilnošću banaka mjerene povratom na aktivu u oba modela. Od preostalih kontrolnih varijabli, na profitabilnost u oba modela negativno utiču operativni troškovi, te inflacija, dok su rezultati za uticaj tržišnog učešća na profitabilnost dvosmisleni. Bruto nacionalni dohodak per capita ima pozitivan uticaj na profitabilnost banaka u FBiH. Uticaj varijable kreditnog rizika je zanemariv.

U prvom modelu, koeficijent varijable omjera duga i imovine (OA) iznosi -0,02 s p vrijednošću 0,000, što indicira da povećanje udjela duga u imovini za 1% dovodi do smanjenja profitabilnosti mjerene povratom na aktivu za 2%, uz statističku značajnost na nivou 1%. U drugom modelu, koeficijent varijable odnos duga i kapitala (OK) iznosi -0,00 uz p vrijednost 0,000, što indicira da je utjecaj

strukture kapitala mjerene omjerom duga i kapitala neutralan na profitabilnost mjerenu povratom na aktivu.

Od preostalih kontrolnih varijabli, najveći uticaj na profitabilnost mjerenu povratom na aktivu imaju varijabla ekonomskog ciklusa, tržišno učešće i upravljanje operativnim troškovima. Povećanje bruto nacionalnog dohotka per capita za 1% dovodi do povećanja profitabilnosti mjerene povratom na aktivu za 4,77% u prvom modelu, te za 3,71% u drugom modelu. Povećanje tržišnog učešća za 1% dovodi do povećanja profitabilnosti mjerene povratom na aktivu za 2,92% u prvom modelu, te za 2,81% u drugom modelu. Povećanje udjela operativnih troškova u aktivi za 1% dovodi do smanjenja profitabilnosti mjerene povratom na aktivu za 1,39% u prvom modelu, te za 1,80% u drugom modelu.

Nadalje, koeficijent determinacije R2 za prvi model iznosi 0,3559, dok za drugi model iznosi 0,0266, što znači da je varijabilnost povrata na aktivu objašnjena 35,59% i 2,66% varijablama korištenim u prvom i drugom modelu.

Tabela 5 prikazuje rezultate regresijske analize veze između strukture kapitala i profitabilnosti mjerene povratom na kapital – ROE, ponovo kroz dva modela. Zavisna varijabla u oba modela je ROE, dok su

Tabela 5: Struktura kapitala i profitabilnost iskazana povratom na kapital ROE

Estimacija RE modelom (ROE_OA)

	Coef.	Std. Err.	z	P>|z|
OA	-0,10	0,0353075	-2,75	0,006
logV	0,01	0,02	0,74	0,461
KA	0,03	0,02	1,99	0,047
RKGK	-0,0758315	0,0835231	-0,91	0,364
OTA	0,0825705	0,1858656	0,44	0,657
TU	0,1708826	0,1144611	1,49	0,135
INF	-0,0029067	0,1146738	-0,03	0,98
logBNDpc	0,301668	0,0727027	4,15	0
_cons	-1,165319	0,2556029	-4,56	0
Wald test	63,94			
R^2	0,4401			
No of obs	165			

Estimacija FE modelom (ROE_OK)

	Coef.	Std. Err.	t	P>|t|
OK	0,00	0,0009488	-2,92	0,004
logV	0,04	0,03	1,31	0,191
KA	0,03	0,02	1,82	0,071
RKGK	-0,0130529	0,080291	-0,16	0,871
OTA	0,0164192	0,2115853	0,08	0,938
TU	-0,2903439	0,1923366	-1,51	0,133
INF	-0,0011192	0,1056713	-0,01	0,992
logBNDpc	0,2562459	0,0813768	3,15	0,002
_cons	-1,147472	0,2516744	-4,56	0
F test	8,27			
R^2	0,0057			
No of obs	165			

Izvor: izračuna autora

nezavisne varijable u prvom modelu omjer duga i imovine (OA) kao varijabla koja opisuje strukturu kapitala i ostale varijable specifične za banku, te makroekonomske varijable, a u drugom modelu odnos duga i kapitala (OK) kao varijabla koja opisuje strukturu kapitala, i ostale varijable specifične za banku, te makroekonomske varijable.

Po negativnom predznaku koeficijenata u prvom modelu, te neutralan koeficijent u drugom modelu, može se zaključiti da struktura kapitala mjerena omjerom obaveza u odnosu na aktivu ima negativan uticaj na profitabilnost banaka u FBiH, mjerenoj povratom na kapital. Veličina aktive banke, omjer kredita i aktive, upravljanje operativnim troškovima, te bruto nacionalni dohodak per capita imaju pozitivnu vezu s profitabilnošću banaka mjerene povratom na kapital u oba modela. Negativnu vezu ima varijabla kreditnog rizika i inflacija, dok tržišno učešće ima različit predznak koeficijenta u dva modela.

U prvom modelu, koeficijent varijable omjera duga i imovine (OA) iznosi -0,10 s p – vrijednošću 0,006, što indicira da povećanje duga prema imovini za 1% dovodi do smanjenja profitabilnosti mjerene povratom na kapital za 10% uz statističku značajnost na nivou 1%. U drugom modelu, koeficijent varijable odnos duga i kapitala (OK) iznosi 0,00 uz p – vrijednost 0,004, što indicira da povećanje finansiranja dugom u odnosu na kapital nema uticaj na profitabilnost banaka u FBiH, uz statističku značajnost na nivou 1%.

Od preostalih kontrolnih varijabli, najveći uticaj na profitabilnost mjerenu povratom na kapital imaju varijabla ekonomskog ciklusa, tržišno učešće, upravljanje operativnim troškovima i kreditni rizik. Povećanje bruto nacionalnog dohotka per capita za 1% dovodi do povećanja profitabilnosti mjerene povratom na kapital za 3,01% u prvom modelu, te za 2,56% u drugom modelu. Povećanje tržišnog učešća za 1% dovodi do povećanja profitabilnosti mjerene povratom na kapital za 1,71% u prvom modelu, te za 2,90% u drugom modelu. Povećanje udjela operativnih troškova u aktivi za 1% dovodi do smanjenja profitabilnosti mjerene povratom na kapital za 8,25% u prvom modelu, te za 1,64% u drugom modelu.

Koeficijent determinacije R2 za prvi model iznosi 0,4401, dok za drugi model iznosi 0,0057, što znači da je varijabilnost povrata na kapital objašnjena 44% i 0,57% varijablama korištenim u prvom i drugom modelu.

Naposljetku, tabela 6 donosi rezultate regresijske analize relacije strukture kapitala i profitabilnosti mjerene neto profitnom maržom – NPM, kroz dva ranije objašnjena modela. Zavisna varijabla u oba modela je NPM, dok su nezavisne varijable omjer duga i imovine (OA) kao varijabla koja opisuje strukturu kapitala i ostale varijable specifične za banku, te makroekonomske varijable, prvom modelu, a u drugom su to odnos duga i kapitala (OK) kao varijabla koja opisuje strukturu kapitala, i ostale varijable specifične za banku, te makroekonomske varijable.

Tabela 6: Struktura kapitala i profitabilnost iskazana povratom na kapital ROE

Estimacija RE modelom (NPM_OA)				
	Coef.	Std. Err.	z	P>|z|
OA	-0,44	0,1115482	-3,97	0
logV	-0,04	0,05	-0,71	0,479
KA	0,09	0,05	1,82	0,069
RKGK	-0,2529283	0,2699306	-0,94	0,349
OTA	-1,186878	0,5824963	-2,04	0,042
TU	0,7575806	0,3300018	2,3	0,022
INF	-0,1203507	0,3752372	-0,32	0,748
logBNDpc	1,127895	0,2305959	4,89	0
_cons	-3,744105	0,8240382	-4,54	0
Wald test	80,3			
R^2	0,4433			
No of obs	165			

Estimacija FE modelom (NPM_OK)				
	Coef.	Std. Err.	t	P>|t|
OK	-0,01	0,0031914	-3,41	0,001
logV	0,06	0,09	0,69	0,489
KA	0,07	0,06	1,25	0,215
RKGK	0,0130541	0,2700536	0,05	0,962
OTA	-0,8454435	0,7116532	-1,19	0,237
TU	-0,3630822	0,6469116	-0,56	0,576
INF	-0,0700308	0,3554185	-0,2	0,844
logBNDpc	0,9452761	0,2737056	3,45	0,001
_cons	-3,841913	0,8464902	-4,54	0
F test	8,81			
R^2	0,2072			
No of obs	165			

Izvor: izračuna autora

Obzirom na negativne predznake koeficijenata u oba modela, možemo zaključiti da struktura kapitala negativno utiče na profitabilnost banaka u FBiH, mjerenoj neto profitnom maržom. Veličina aktive banke, tržišno učešće, te varijabla kreditnog rizika, kao kontrolne varijable, imaju opречan rezultat smjera veze u dva modela. Operativni troškovi i inflacija imaju negativan uticaj na profitabilnost, dok bruto nacionalni dohodak pc i omjer kredita i aktive imaju pozitivan uticaj na profitabilnost.

U prvom modelu, koeficijent varijable omjera duga i imovine (OA) iznosi -0,44 s p – vrijednošću 0,00, što indicira da povećanje ovog omjera za 1% dovodi do smanjenja profitabilnosti mjerene neto profitnom maržom za 44%, uz statističku značajnost na nivou 1%. U drugom modelu, koeficijent varijable odnosa duga i kapitala (OK) iznosi -0,01 uz p – vrijednost 0,001, što indicira da povećanje odnosa duga i kapitala za 1% smanjuje profitabilnost mjerenu neto profitnom maržom za 1% uz statističku značajnost na nivou 1%.

Od preostalih kontrolnih varijabli, najveći uticaj na profitabilnost mjerenu neto profitnom maržom imaju varijabla ekonomskog ciklusa, inflacija, upravljanje operativnim troškovima i kreditni rizik. Povećanje bruto nacionalnog dohotka per capita za 1% dovodi do povećanja profitabilnosti mjerene

neto profitnom maržom za 112% u prvom modelu, te za 94% u drugom modelu. Povećanje inflacije za 1% dovodi do smanjenja profitabilnosti mjerene neto profitnom maržom za 12% u prvom modelu, te za 7% u drugom modelu. Povećanje udjela operativnih troškova u aktivi za 1% dovodi do smanjenja profitabilnosti mjerene neto profitnom maržom za 118,68% u prvom modelu, te za 84% u drugom modelu. Varijable tržišnog učešća i kreditnog rizika imaju različit smjer veze u modelima.

Koeficijent determinacije R2 za prvi model iznosi 0,4433 dok za drugi model iznosi 0,2072, što znači da je varijabilnost neto profitne marže objašnjena 44% i 21% varijablama korištenim u prvom i drugom modelu.

Zaključak

Rezultati istraživanja, u prvom redu, dovode u pitanje upotrebljivost prinosa na imovinu, kao zavisne varijable. Naime, struktura kapitala ima slab uticaj na profitabilnost mjerenu pokazateljem ROA, dok veličina banke i omjer kredita i imovine nemaju jasnu vezu sa ROA. Finansijska poluga, sa druge strane, ima jasnu negativnu vezu sa ROE. Veličina banke, omjer kredita i imovine, te upravljanje operativnim troškovima, kao endogeni parametri poslovne performanse banke imaju pozitivnu vezu sa profitabilnošću. Izloženost kreditnom riziku negativno je povezana sa prinosom na kapital. Egzogene varijable ekonomskog sistema, poput inflacije i dohotka imaju, očekivano, negativnu, odnosno pozitivnu vezu sa pokazateljima profitabilnosti. Sličan uticaj nezavisnih varijabli na profitabilnst ilustruje i neto profitna marža, kao zavisna varijabla modela.

Ovakvi rezultati, ako se fokusiramo na ROE, kao pokazatelj profitabilnosti, najprije relativiziraju primjenjivost Modigliani-Miller-ove teorije strukture kapitala, koja govori o irelevantnosti strukture kapitala za vrijednost kompanije. Rezultati testiranja najbliže odgovaraju teoriji postupka slaganja, u okviru teoretskih pravca asimetričnih informacija. Prema teoriji postupka slaganja, kompanije se najprije finansiraju internim sredstvima, iz generisanog i zadržanog profita, zatim iz različitih pozicija kapitala. Tek kad iscrpe sva sredstva koja se generišu unutar kompanije, posežu za dugom. Stoga, kako opada profitabilnost banke, očekuje se da raste finansijska poluga. Ova teorija je primjenjiva na imperfektna tržišta u razvoju, kojima kolaju asimetrične informacije.

Ipak, negativna veza između povećanja duga i povrata na kapital ne mora nužno biti rezultat direktne povezanosti. Na povrat na kapital može uticati operativna efikasnost i efikasnost same upotrebe imovine, pa bi negativna veza između poluge i povrata na kapital mogla imati i sljedeću putanju: povećanje duga ima negativan uticaj na operativnu i efikasnost upotrebe imovine. Smanjujući efikasnost, smanjuje se i profitabilnost, odnosno povrat na kapital. Pad efikasnosti s porastom udjela duga u finansiranju može imati svoje ishodište u relaciji vlasnik (dioničar) – agent (menadžer), jer vlasnik ne može u potpunosti kontrolisati i predvidjeti operativnu efikasnost i efikasnost korištenja imovine. Osim toga, ako menadžeri teže da smanje izloženost riziku koja dolazi s povećanjem duga, mogu propustiti dobre plasmane, što se može odraziti i na povrat na kapital.

Nadalje, rezultati ukazuju da profitabilnost banaka raste kako raste nivo finansiranja aktive internim izvorima, odnosno dobiti i kapitalom. Negativna veza između poluge i neto profitne marže ukazuje na to da pasiva banaka u FBiH u velikoj mjeri zavisi od depozitne osnove, što je jedina opcija za banku koja posluje na tržištu, na kojem je tržište duga i kapitala još u povojima. U vrijeme negativne kamatne stope, finansiranje depozitima nije skupo, ali u uslovima više kamatne stope efikasniji bi bio pristup finansiranju na domaćem finansijskom tržištu. Finansiranje lokalnih banaka na međunarodnom

finansijskom tržištu, pored upitnog i otežanog pristupa, nedostatka upućenosti i iskustva, visokih troškova, uvijek sadrži u sebi komponentu rizika zemlje, što dodatno poskupljuje sredstva.

Za razliku od finansijske poluge, veličina banke ima značajno pozitivnu vezu s profitabilnošću, mjerenom sa sva tri parametra. Postoji više mogućih razloga za ovakav rezultat. Jedan od njih je ekonomija obima koju banka postiže svojim rastom, dok joj pri tome fiksni troškovi ostaju isti ili imaju manju stopu rasta od rasta prihoda. Drugi razlog je da se rastom banke povećava kapacitet zaduživanja, a smanjuje trošak bankrota. Povjerioci više vjeruju velikim bankama za koje se pretpostavlja da imaju manju volatilnost zarade i dobre performanse. Povjerioci će prije dati kredit velikim bankama zbog uvjerenja da su "too big to fail", čak i u uslovima malog i nerazvijenog tržišta, sa skromnim kapacitetima osiguranja depozita. Ovaj nalaz upućuje na tradicionalnu teoriju strukture kapitala, koja upravo ukazuje da veličina kompanije ima pozitivan uticaj na profitabilnost, zbog ekonomije obima i pozitivne percepcije dioničara i drugih interesnih grupa.

Banke u Federaciji Bosne i Hercegovine posluju uz visoku finansijsku polugu i relativni nisku profitabilnost. Odluka o finansiranju, čini se, nije u domenu aktivnog finansijskog menadžmenta, nego se radi, zapravo o pasivnoj rezultanti okolnosti, shodno postavkama teorije postupka slaganja. Stepen zaduženosti najprije je određen depozitnom funkcijom banaka, te finansiranjem kapitalom u skladu sa regulatornim zahtjevima. Prinos na kapital, u takvim okolnostima je rezultanta, prije nego ishodište finansijskog menadžmenta.

Sa druge strane, nerazvijenost domaćeg, te limitiran pristup međunarodnim finansijskim tržištima, objektivno ograničavaju menadžment banaka u optimizaciji strukture kapitala i pronalasku adekvatnog nivoa finansijske poluga, koji bi bio u funkciji maksimizacije vrijednosti banaka. Izvor profitabilnosti lokalnih banaka, stoga se može tražiti u veličini, ekonomiji obima, te operativnoj efikasnosti i efikasnosti upotrebe imovine, prije nego u finansijskoj poluzi.

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IMPACT OF CAPITAL STRUCTURE ON BANK PROFITABILITY IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

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Summary

Research of the relationship between the structure of sources of financing and the value of the company are numerous in developed markets and for non-financial companies. However, in the markets of developing countries, and especially in the banking sector, the range of research is much narrower. In this paper, we investigate the existence, direction and intensity of the relationship between capital structure and profitability of banks in the Federation of B&H. The entire population of banks in the Federation of B&H, in the period from 2009-2018, served as a sample. As independent variables, parameters of the structure of financing sources, we chose the debt-to-assets ratio, and debt-to-equity ratio, and as dependent variables, bank value indicators, we took profitability measures, i.e., ROA, ROE, and the net profit margin. In addition to the variables that describe the capital structure, the relationship of which is the topic of this paper, as control variables we used additional variables specific to banks, which describe the bank's liquidity, credit risk exposure, operating cost management, size, and market share. The impact of the macroeconomic environment is observed through the assessment of inflation and gross national income per capita, which indicate the direction of the economic cycle for a given year. The results of the research testify to the weak connection between the structure of sources of financing and return on assets, i.e., the negative connection between financial leverage and return on capital. This outcome first relativizes the significance of Modigliani-Miller's position on the irrelevance of capital structure, and then raises the question of the validity of traditional theory. The establishment and management of the capital structure of local banks can only be explained by the pecking order theory.

Keywords: capital structure; financial leverage; bank profitability; traditional theory; Modigliani-Miller position; pecking order theory

JEL classification: G21, G32

Introduction

The financing decision is one of the three basic decisions of financial management of all companies, including financial institutions (in addition to the investment decision and the asset management decision). As the structure of financing sources, in principle, consists of debt and capital, and as debt is considered a cheaper source of financing (due to lower levels of associated risk), the question of utilization of leverage (actually, debt levels in the structure of funding sources) has occupied the attention of both the academic and professional communities for more than half a century. While academic interest focuses on the relationship between leverage and company value, the interest of financial managers is focused on reducing the cost of financing, and thus increasing the profitability of the company they manage (and ultimately, increasing the value of the company).

Despite the divided opinions of the academic community regarding the relationship between financial leverage and company value (there are numerous studies that show a positive relationship, as well as papers that deny such a relationship), the behavior of financial managers around the world is mainly based on the idea that the optimal use of financial leverage can increase company value. However, research based on the banking market and banks is much rarer, especially in the markets of transition countries. The aim of this paper is to test the relationship between the structure of funding sources and profitability (one of the basic measures of value) of banks in the Federation of Bosnia and Herzegovina.

Theoretical Background

The study of the relationship between the structure of sources of financing (capital, in a broader sense) and the value of the company results in several different views, which can still be categorized in four theoretical directions:

- Modigliani-Miller theory,

- Traditional theory,

- Agency models (Choice theory), and

- Theory of asymmetric information.

Back in 1958, Franco Modigliani and Merton Miller laid the foundation for modern views on capital structure, arguing that capital structure does not affect the perception of value and value of the company at all. Under the assumption of perfect competition, the value of the company is affected only by cash flows and the amount of business risk that the company undertakes, while the level of indebtedness is not a variable relevant for assessing and determining the value of the company. The value of an indebted company before tax is equal to the value of an indebted company, in conditions of a perfect market. Subsequently, however, the authors consider the circumstances in which there is a taxation of profits, and prove that, after taxation, there is a difference between a company with financial leverage and without leverage (Ross et al, 2013).

Modigliani-Miller's theory provoked academic controversy and gave rise to several new views on the problem. Traditional theory defines an optimal capital structure as the equality of the minimum cost of financing a company and the weighted average cost of capital and argues that there is an optimal capital structure (Brealey et al, 2011). At low debt levels, lender risk remains constant while

shareholder risk increases, yet the total cost of capital is low. After a certain level of indebtedness, the risk of both creditors and shareholders begins to grow. Lenders incorporate their risk into the cost of debt, and shareholders demand a higher rate of return on capital. According to traditional theory, the job of a manager is to find a level of indebtedness that minimizes the weighted average cost of capital while maximizing the value of the company.

The Choice theory introduces two new variables on which the capital structure depends, namely agency costs and bankruptcy costs. According to this theory, an optimal capital structure exists, and it lies in the equality of benefits and costs of debt. The benefits of debt can be a reduced tax amount and a reduction in agency costs, while borrowing can result in bankruptcy and agency costs. The conclusion of the theory is that financial leverage has a positive relationship with the probability of financial stress that a company may experience, the value of the company, the level of regulation, cash flows, liquidation value, the level at which the company is a possible object of take-over and the reputation of management. The financial leverage has a negative relationship with the possibilities of further development, interest coverage, the cost of analyzing the company's perspective and the probability of reorganization that occurs after the company experiences financial stress (Brealey et al, 2011).

Models based on asymmetric information are based on the idea of the existence of asymmetric information between different stakeholders: managers, shareholders, creditors. Within the model, two theoretical directions stand out: signaling theory and packing order theory. Signaling theory starts from the assumption that managers borrow when they invest in a profitable investment, so that they do not have to share earnings with shareholders. Therefore, the public believes that the increase in leverage is a signal of expected good profitability (Harris, 1991). Pecking order theory assumes that there is an order in which managers choose the source of funding. The investment project will be financed first from the accumulated profit, then by low-risk debt instruments, convertible bonds and finally by common shares (Vidučić et al, 2018).

Literature Review

Each of the briefly described theoretical approaches to the problem of the optimal structure of funding sources has encouraged many authors to research, in order to confirm or refute theoretical concepts. Research based on the practice of companies in developed markets are relatively numerous, while the situation in transition (emerging and marginal) markets is different. We will present some of the papers that treat the relationship between the structure of funding sources and the value of companies and banks, relevant to our research, both in terms of relative comparability of the environment and the research methodology used.

When it comes to developed markets, it is first necessary to highlight the research conducted by Berger (1995) on the American banking market. All insured commercial banks served as a sample. The observed period was 1983-1989, including a three-year lag, for data on capital to assets (CAR) and return on equity (ROE). The author first determines the causality of the relation between CAR and ROE (Granger test), and then examines the direction of the relation. Contrary to the expected negative sign, which is consistent with the theoretical assumptions, the research results showed a positive direction between the share of capital in assets and return on capital. The regression model also used a number of control variables, such as the HH concentration index, the bank's share in total

deposits, deposit growth rates, and the ratio of risk-weighted assets, bad loans and written-off loans to total bank assets.

Cooper et al. (2003) investigate the possibility of predicting bank returns on a sample of 213 publicly traded banking holding groups, for the period from June 1986 to December 1999. The focus of this research is not exclusively on examining the relationship between the structure of sources of financing and profitability, but the range of independent variables is much wider and included trends of: loan-to-asset ratio, loan-to-loan ratio, non-interest-bearing interest ratio, credit letters, interest rate swaps and total loans, as well as (relevant to us) the ratio of the book value of capital and the total value of assets. The dependent variable is the percentage change in quarterly earnings per share. The research is aimed at examining the relationship between fundamental indicators of banks' business performance and the market performance of its shares. The results of the research showed that the movement of non-interest income, loan provisions, earnings, letters of credit issued, and financial leverage (capital to assets ratio) have the predictor power of earnings per share. A regression (this time a panel) model was again used to test the relations.

Demirguc-Kunt and Huizinga deal with the problem of the relationship between the financial structure (but also much more broadly, the characteristics of the financial system) and the profitability of banks. The authors use a regression model to test the relationship of three groups of independent variables with indicators of bank profitability (net margin and profit ratio before taxes and assets). Independent variables are divided into: bank-specific (capital to assets ratio, loan to assets ratio, non-interest income to assets ratio, deposit to assets ratio, and operating costs to assets ratio), macroeconomic indicators (GDP per capita, growth rate, inflation rate, tax rate), and financial system indicators (asset ratio of deposit banks and GDP, asset ratio of central bank and GDP, ratio of loans to private sector and GDP, ratio of stock market capitalization and GDP, ratio of total value of traded shares and GDP, the ratio of capitalization and assets of banks, the ratio of the value of traded shares and loans to the private sector, the product of the value of traded shares and average operating costs of banks, and a complex indicator of the banking sector structure-average value of capitalization and assets and product turnover and operating costs). The survey was conducted on data from banks from 44 countries (developed, developing countries and underdeveloped countries), for the period 1990-1997. The results indicate that banks have higher profit rates and higher margins in less developed financial systems, despite expensive resources and operational inefficiencies. With the development of the financial system, the efficiency of banks increases, but also the competition between them, and therefore the profitability indicators decrease.

When it comes to the markets of transition countries, research that deals with the relationship between the structure of sources of financing and profitability is significantly more common for companies than for banks. For example, Gupta et al. (2011) test the relationship between the level of debt in Indian companies' sources of financing and return on investment (ROI), return on equity (ROE), return on share (RET), earnings before taxes and sales (EBIT/S) and the ratio of operating income to sales (OPR/S). Khan (2012), on a sample of companies from the Pakistani Stock Exchange, tests the relationship between ROA, ROE, gross profit margin (GPM) and Tobin Q, as dependent variables, and the ratio of short-term to total debt (STDTA), long-term to total debt (LTDTA), and the ratio of total debt to assets (TDTA), as independent variables, representing the structure of financing sources. Adekunle and Sunday (2010) investigated the effect of capital structure on the financial performance of companies in Nigeria, where an independent variable, the capital structure is measured by the debt-to-asset ratio, and dependent with ROA and ROE ratios. The Nigerian Stock Exchange served

as basis to the Luper and Isaac survey (2012) as well. The authors used the ratio of short-term debt to total assets (STDTA), long-term debt to total assets (LTDTA), and the debt-to-equity ratio (TDE), as independent variables, and as dependent variables and performance indicators return on assets (ROA) and profit margin (PM). Ebaid (2009) examined the relationship between capital structure and the performance of non-financial companies on the Egyptian stock exchange. The author measured business performance with accounting indicators ROA, ROE, and gross profit margin (GPM), and financial leverage was measured by the ratio of short-term debt to total assets (STD), long-term debt and total assets (LTD), and the ratio of total debt to total assets (TTD). Abu Rub (2012) investigates the effect of capital structure on company performance based on data from the Palestinian Stock Exchange (PSE) for the period 2007-2010, using a linear multiple regression analysis. Performance is a dependent variable measured by both accounting and market indicators. ROA and ROE were used as accounting indicators, and Tobin Q, EPS, and the ratio of market to book value of capital (MBVR) as market indicators of company performance. The capital structure is an independent variable represented by the ratio of short-term debt to total assets (SDTA), long-term debt and total assets (LDTA), total debt and total assets (TDTA), total debt and total capital (TDTQ).

The mentioned research brings different results on the connection between the capital structure and the business performance of the companies. Some studies have shown a positive relationship (Gupta et al.), a negative relationship (Adekunle and Sunday, Luper and Isaac), or the absence of a relationship or mixed effects (Ebaid, Abu Rub, Khan).

Papers related to the research of the relationship between the structure of sources of financing and the performance of banks are somewhat less represented. However, we will point out a few. Authors Siddiqui and Shoaib (2011) investigated the theory of agency costs in the banking sector of Pakistan using panel data from 22 banks in the period 2002-2009. They used the efficiency of the bank as a dependent variable, and as independent variables they used: financial leverage, earnings, risk, size, investments and loans. The bank's efficiency was measured by the ROE coefficient and Tobin's Q, which were used as proxy variables to measure earnings efficiency and market value. The results of the study showed that the bank's profitability increases significantly with the increase in leverage. During the observed period, the size of the bank also played a significant role in the efficiency in earnings generation and market value. Finally, the authors suggested to banks that, in order to improve the efficiency and quality of management, they should separate ownership from management. They also noted the need to move from consumer banking to real sector lending and instead of short-term earnings from lending home and car purchases, focus on longer-term investments.

The impact of ownership structure, on the business performance of commercial banks in Ethiopia, was investigated by the authors Kapur and Gualu (2012). They measured the performance by analytical measures such as profitability, asset quality, efficiency, liquidity and capital management, while under the ownership structure they viewed the state versus private capital, rather than the use of leverage. The object of the research were 8 commercial banks, 6 of which were private, while 2 banks were state-owned, and their performance in the period 2001-2008. The return on assets (ROA), net interest margin (NII), return on equity (ROE), and non-interest income were considered as indicators of profitability. Efficiency was measured by the share of non-interest expenses in the average amount of assets, the share of general expenses in assets, the share of employee costs in assets and the share of general expenses in revenues. The following variables were used as asset quality indicators: reservations for non-performing loans, reservations for total loans, reservations for total assets and the amount of non-performing loans (NPLs). Liquidity was measured by the following

indicators: the share of loans in deposits, the share of liquid assets in total assets, and the share of liquid assets in deposits. Capital adequacy was measured by the share of capital in loans, the share of capital in assets, the share of capital in net loans and the share of capital in deposits. Based on the study, looking at profitability, asset quality and capital adequacy, the authors concluded that private banks have a better business performance than state-owned banks. However, in the management of costs, state-owned banks are in the lead, while in liquidity management there are no significant differences between private and state-owned commercial banks.

Author Yaregal (2011) conducted a study with the same topic and scope of research as Kappur and Gualu, for the period 2005-2010, gaining significantly different results. The study showed that state-owned banks perform better in profitability, liquidity and efficiency, while private banks achieve better capital adequacy and faster growth.

A study of the relationship between capital structure and performance of banks listed on the Ghana Stock Exchange was conducted by the authors Awunyo-Vitor and Badu (2011). They used a qualitative and quantitative approach and processed qualitative data by panel regression analysis. The dependent variable - bank performance was measured by ROA and ROE, and Tobin's Q, and the independent variable - capital structure, was expressed by the share of debt in capital. The results of the study showed a statistically significant negative relationship between capital structure and business performance, based on which the author concluded that banks in the Ghanaian market had high leverage, which consisted mainly of short-term debt, not adding to profitability.

For the financial market of Southeast Europe, the works of Athanasoglou and others are especially relevant. In the paper "Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability" (Athanasoglou et al., 2005), the authors used a linear regression model on a number of Greek banks in the period 1985-2001, seeking to identify determinants of profitability, from three separate groups: determinants specific to banks (ratio of capital and assets-EA, ratio of provisions for loans and credits-PL, ratio of income and number of employees-PR, ratio of operating costs and assets-EXP, bank size-S and S2), banking industry (bank ownership type - closed-Op or public-Om, HHI concentration index), and macroeconomic determinants (inflation rate-CPI or IR, economic cycle stage-CO). They use ROA and ROE as indicators of profitability. The results of the research indicate that capital is an important determinant of profit, and that increased risk exposure reduces the profit rate. Also, labor productivity has a positive and significant relationship with yield. Operating costs have a negative impact on yield, while bank size is not a significant determinant. When it comes to macroeconomic variables, a significant relation of inflation and stages of the economic cycle was determined, with an indication of asymmetry, since the positive relation of the economic cycle with the yield was determined only in the phases of above-average yield.

In the paper "Determinants of Bank Profitability in the Southeastern European Region" (Athanasoglou et al., 2006), the authors apply a similar methodological framework, but on a much broader sample. This time the research is based on an unbalanced sample of 71 to 132 banks (different number of banks in the observed years), for the period 1998-2002, from seven countries of Southeast Europe (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, North Macedonia, Romania, and Serbia). The ROA and ROE were again selected as dependent variables, and the authors divided the independent variables, as in the previous research, into three groups: specific for individual banks (loan-to-assets ratio-LA, loan-to-loan reserves-LLP, capital-to-assets ratio- EA, the ratio of operating costs and assets-OEA, and the size of the bank-S and S2, origin of ownership-Dfo and market share-MS), determinants of the banking

industry (EBRD banking system reform index and HHI concentration index), and macroeconomic variables (inflation rate-INF and real per capita income-RGC). The data were prepared in a panel, and the relations were tested in the LS model with fixed and random effects. The results indicate a positive relation LA, EA, S, MS, HHI, INF, RGC with ROA, a negative relation LLP, OEA, S2 with ROA, and a mixed relation Dfo by observed countries. With ROE, a positive relation of the variables LA, EA, S, S2, MS, HHI, INF and RGC was recorded, a negative relation of the variables LLP and OEA, while the sign of the relation of the variable Dfo is again different, depending on the country where the banks are based.

We have not found research on this problem in the local banking market. Although the authors Kadić (2017) and Milisav (2018) conducted a kind of analysis of the capital structure of banks in the FB&H, they mostly relate to the impact of banks with majority foreign capital on the profitability and efficiency of the banking sector. To our knowledge, at the time of writing this paper, the relationship between capital structure and profitability of commercial banks in the Federation of B&H has not been examined.

The considered empirical studies bring different results of the connection between the capital structure and the business performance of both companies and banks. Nevertheless, research is useful in methodological terms. We have shown that the authors use the share of short-term debt in total assets (STD), the share of long-term debt in total assets (LTD), the share of total debt in total assets (TDA) and the share of debt in total capital (TDTQ) to measure capital structure. As performance measurement they use earnings per share (EPS), return on assets (ROA), return on equity (ROE), Tobin Q, gross profit margin (GPM) and the ratio of market value to book value of capital.

Research Methodology

There are 15 commercial banks operating on the market of the Federation of B&H, which is a number that has been constant since 2016. Of that number, 14 banks are majorly privately owned, and only one bank is state-owned. The ownership structure of private banks is dominated by foreign ownership (10 banks), with Austrian, Turkish and Croatian capital at the helm. The research was done on the complete population, in the ten-year period of 2009-2018.

When it comes to the business performance of the industry, we can point out that in 2009 and 2010, which are the first two years covered by the survey, profitability measured by ROA, ROE and net profit margin is stable but relatively low, namely: 0.44%, 2.17% and 7.18% in 2009, respectively, and 0.41%, 2.22% and 11.01% in 2010, respectively. Profitability ratios in these years reflect the consequences of the 2008 crisis. Already in 2011, there was a noticeable increase in profitability, which is especially evident through the net profit margin, which increased by 3.46 pp compared to the previous year. The main drivers of profitability growth in 2011 are the growth of net interest income and the reduction of risk costs in the form of value adjustments, as a result of the slowdown in the deterioration of the quality of the loan portfolio.

The trend of profitability growth started in 2011 and remained until the end of the observed period. In the last year, 2018, compared to the beginning of the period, the profitability of banks represented by the coefficients ROA, ROE and NPM increased by 117%, 210% and 214% respectively. In general, it can be concluded that the banking sector in the Federation of B&H flourished in the period from 2009 to 2018, despite the large loss-making baggage of the banking sector, and an additional blow,

the spillover of the global economic crisis on the FB&H market.

The purpose of this research is to examine the relationship between capital structure and profitability of commercial banks in the Federation of B&H. The following were selected as independent variables, i.e., representatives of the capital structure:

- ratio of total liabilities to total assets (hereinafter OA coefficient),

- ratio of total liabilities to total capital (hereinafter coefficient OK).

The following were selected as dependent model variables, i.e. profitability representatives:

- return on assets, i.e., the ratio of net profit to total assets (hereinafter ROA coefficient),

- return on capital, i.e., the ratio of net profit to total capital (hereinafter ROE ratio),

- net profit margin, i.e., the share of net profit in total revenue (hereinafter NPM).

In addition to the independent variables that describe the capital structure and whose relationship to bank profitability is the primary focus of this research, the following bank-specific variables were added, which have a controlling role in the model:

- liquidity, measured by the ratio of loans and assets (hereinafter KA ratio)

- credit risk, measured by the ratio of provisions for credit losses to loans (hereinafter RKGK ratio)

- management of operating costs, measured by the share of operating costs in the amount of assets (hereinafter OTA coefficient)

- size, measured by the logarithm of the total assets of the bank (hereinafter logV)

- market share, measured by the share of banks' assets in total assets for the observed year (hereinafter TU)

Macroeconomic conditions and the direction of the macroeconomic cycle also have a significant impact on banks' profitability. For this reason, the following economic variables were also observed in the model:

- inflation, measured by the average annual growth rate of the consumer price index (hereinafter INF)

- economic activity, measured by gross national income per capita (hereinafter BNDpc)

For the variable size and economic activity, logarithmic amounts were observed in order to equalize the variations among the asset sizes of different banks, and in order to make the descriptive analysis of statistical data series more efficient.

The research relies entirely on secondary data and on publicly available financial statements. For the period 2009-2013, the official document of the FB&H Banking Agency, entitled Abbreviated Report of External Auditors on Financial Statements of Banks in the Federation of Bosnia and Herzegovina, was used. Considering that the issuance of the abbreviated report of external auditors ceased at the end of 2013, the financial statements for the period 2014-2018 were collected from the website of the Sarajevo Stock Exchange.

A regression model according to the following formula was used to specify the model:

$$Y_{it} = a + \Sigma^{J}_{j=1} b_j X^{j}_{it} + \Sigma^{M}_{m=1} b_m X^{m}_{it} + \varepsilon_{it}, \qquad (1)$$

where:

Y_{it} – dependent variable for the bank and in year t (ROA, ROE, NPM),

a – section on the y-axis,

$\Sigma^{J}_{j=1} b_j X^{j}_{it}$ – independent variables j specific for bank i in year t (OA, OK, KA, RKGK, OTA, logV, TU)

$\Sigma^{M}_{m=1} b_m X^{m}_{it}$ – independent macroeconomic variables m for the bank and in year t (INF, BND_{pc})

ε_{it} – model error, a random variable that gives a stochastic character to the model.

The data were prepared in a panel, with the dimensions of the years of the observed period and the banks from the sample. After descriptive statistics, a correlation analysis was performed to determine the existence, significance, and intensity of the relationship between independent and dependent variables. The relationship between the capital structure and profitability of banks was tested by applying regression analysis with the model of fixed effects (Least-Squares Dummy Variable Regression - LSDV Regression) and the model of random effects (Random Effects Model - REM), after which the Hausman test evaluated which model was more suitable. As a prerequisite for the application of the model, all predicted tests were performed (test of normality, multicollinearity, autocorrelation, and heteroskedasticity test).

Research Results

In order to consider the general statistical features of the sample (size, minimum and maximum, homogeneity and rank), we first present the results of descriptive statistical analysis:

Table 1: Measures of Mean Value and Variation (descriptive statistics)

Variable	N	Minimum	Maximum	Mean	St.deviation
ROA	165	0	0.019212	0.0063259	0.0058264
ROE	165	0	0.1481511	0.0404842	0.0387715
NPM	165	0	0.4090981	0.1315073	0.1163357
OA	165	0.3478953	0.9499514	0.8307712	0.0837217
OK	165	1.2671994	18.980588	6.1733379	3.0896395
logV	165	4.7339512	6.7760019	5.7525849	0.4944672
KA	165	0.0651834	0.9370046	0.6336301	0.1652893
RKGK	165	0	0.160224	0.0177104	0.0274435
OTA	165	0.0043172	0.0965474	0.0355415	0.0147759
TU	165	0.0035802	0.28488	0.0606061	0.072457
INF	165	-0.011	0.037	0.0070061	0.0157079
logBNDpc	165	3.861719	3.978155	3.899965	0.0368263

Source: authors' calculations

The presented values indicate the modest profitability of banks in the observed period. Namely, the average value of the net profit margin is 13.15%, while the average values of return on assets and return on capital are 0.63% and 4.05%, which is significantly below the average of the European financial market in the same period (source: European Banking Federation - www.ebf.eu). From the relatively small values of the standard deviation of the same indicators, we can conclude that the business performance of the observed banks is balanced. The ratio of liabilities to assets averaged 83.08%, i.e., the ratio of liabilities to equity was 6.17 times, with slightly greater heterogeneity, measured by standard deviation.

A prerequisite for examining the impact of capital structure on bank profitability is the existence, intensity and sign of the relationship between independent and dependent variables, which we examined by correlation analysis. The following table presents the matrix of Pearson correlation coefficient values, among all variables (* -significant at the level of 5%, ** - significant at the level of 1%):

Table 2: Matrix of Pearson Correlation Coefficients

	OA	OK	ROA	ROE	NPM	logV	KA	RKGK	OTA	TU	INF	logBNDpc
OA	1											
OK	.793**	1										
ROA	-.188*	-.280**	1									
ROE	.124	-.022	.901**	1								
NPM	-.109	-.207**	.959**	.909**	1							
logV	.511**	.421**	.262**	.556**	.325**	1						
KA	.382**	.176*	-.078	.104	-.025	.243**	1					
RKGK	-.134	-.076	-.128	-.185*	-.218**	.009	.016	1				
OTA	-.239**	-.267**	-.291**	-.362**	-.419**	-.432**	-.093	.185*	1			
TU	.277**	.224**	.399**	.573**	.393**	.851**	.037	.141	-.284**	1		
INF	-.112	-.075	-.039	-.044	-.051	-.043	.036	.211**	.021	.000	1	
logBNDpc	.228**	.170*	.246**	.318**	.359**	.270**	-.008	-.446**	-.399**	.047	-.166*	1

Source: authors' calculations

The results of the correlation analysis indicate that ROA has a negative relationship with the independent variables OA, OK, KA, RKGK, OTA and INF, and has a positive relationship with logV, TU, logBNDpc. ROE has a positive relationship with OA, logV, KA, TU, logBNDpc, and a negative relationship with OK, RKGK, OTA and INF. NPM has a negative relationship with OA, OK, KA, RKGK, OTA, INF, while with logV, TU and logBNDpc, it has a positive relationship. These correlations would mean that the profitability of the sample of banks in the FB&H, measured by return on assets, increases

with declining share of debt in asset financing, declining exposure to credit risk, operating costs and inflation, and increasing liquidity or declining share of loans in assets. Also, return on assets increases with increasing bank size, market share and economic activity. Return on equity increases with an increase in the share of debt in asset financing, bank size, an increase in the share of loans in assets, market share, and economic activity, and decreases with an increase in debt-to-equity ratio, credit risk, operating costs and inflation, which at first gives an ambiguous conclusion about the relation of ROE and the variables of capital structure. Net profit margin decreases with increasing share of debt in asset financing, increasing debt-to-equity ratio, and with increasing share of loans in total assets, credit risk, operating costs and inflation, while increasing with increasing bank size, market share and economic activity.

Finally, the relationship between the structure of funding sources and the profitability of banks was tested by a regression model of fixed and random effects, according to the previously presented formula. We used the Hausman test to evaluate which model better describes the relationship between the subject variables, the results of which are shown in Table 3.

Table 3: Result of the Hausman Specification Test

Model		Hausman test result
Dependent variable	Independent variable representing capital	Prob>chi2
ROA	OA	0.7157
ROA	OK	0.0011
ROE	OA	0.7278
ROE	OK	0.0143
NPM	OA	0.9995
NPM	OK	0.0047

Source: authors' calculations

The test result indicates that the random effects model ($p > 0.05$) is more suitable for the relationship of the debt-to-assets ratio and bank profitability measures, while the fixed-effects model ($p < 0.05$) model is more suitable for testing the relationship of capital-to-assets ratio and performance indicators. Table 4 presents the results of the regression analysis of the relationship between capital structure and profitability measured by return on assets - ROA, estimated through two models. The dependent variable in both models is ROA, while the independent variables in the first model are the debt-to-asset ratio (OA) as a variable describing the capital structure and other bank-specific variables, as well as macroeconomic variables, and in the second model the debt-to-equity ratio (OK) as a variable describing the capital structure, and other bank-specific variables, as well as macroeconomic variables.

Table 4: Capital Structure and Profitability Expressed in Return on Assets

RE model estimation (ROA_OA)

	Coef.	Std. Err.	z	P>|z|
OA	-0.02	0.0055851	-3.95	0
logV	0.00	0.00	-0.42	0.678
KA	0.00	0.00	1.59	0.112
RKGK	0.0005122	0.0130274	0.04	0.969
OTA	-0.0139369	0.029585	-0.47	0.638
TU	0.0292845	0.0192568	1.52	0.128
INF	-0.0104385	0.0177655	-0.59	0.557
logBNDpc	0.0477477	0.0115084	4.15	0
_cons	-0.1584619	0.0399668	-3.96	0
Wald test	46.32			
R^2	0.3559			
No of obs	165			

FE model estimation (ROA_OK)

	Coef.	Std. Err.	t	P>|t|
OK	0.00	0.0001496	-3.87	0
logV	0.00	0.00	0.65	0.518
KA	0.00	0.00	1.19	0.236
RKGK	0.00912	0.0126585	0.72	0.472
OTA	-0.0180483	0.0333579	-0.54	0.589
TU	-0.0281125	0.0303232	-0.93	0.356
INF	-0.0085205	0.0166598	-0.51	0.61
logBNDpc	0.0371742	0.0128296	2.9	0.004
_cons	-0.1506506	0.0396783	-3.8	0
F test	6.77			
R^2	0.0266			
No of obs	165			

Source: authors' calculations

At first glance, according to the negative sign of the coefficients in the first model, and the neutral coefficient in the second model, it can be concluded that the capital structure has a weak impact on the profitability of banks in FB&H, measured by return on assets. The size of a bank's assets, and the ratio of loans to assets, as control variables, have no clear link with banks' profitability measured by return on assets in both models. Of the remaining control variables, profitability in both models is negatively affected by operating costs and inflation, while the results for the impact of market share on profitability are ambiguous. Gross national income per capita has a positive impact on the profitability of banks in the FB&H. The impact of the credit risk variable is negligible.

In the first model, the ratio of the debt-to-assets ratio (OA) is -0.02 with a p value of 0.000, which indicates that an increase in the share of debt in assets by 1% leads to a decrease in profitability measured by return on assets by 2%, with statistical significance at 1%. In the second model, the coefficient of the debt-to-equity (OK) variable is -0.00 with a p value of 0.000, indicating that the impact of the capital structure measured by the debt-to-equity ratio is neutral on profitability measured by return on assets.

Of the remaining control variables, economic cycle variables, market share, and operating cost management have the greatest impact on profitability measured by return on assets. An increase in gross national income per capita by 1% leads to an increase in profitability measured by return on assets by 4.77% in the first model, and by 3.71% in the second model. An increase in market share by 1% leads to an increase in profitability measured by return on assets by 2.92% in the first model, and by 2.81% in the second model. An increase in the share of operating expenses in assets by 1% leads to a decrease in profitability measured by return on assets by 1.39% in the first model, and by 1.80% in the second model.

Furthermore, the coefficient of determination R2 for the first model is 0.3559, while for the second model it is 0.0266, which means that the variability of return on assets is explained by 35.59% and 2.66% by the variables used in the first and second models.

Table 5 shows the results of the regression analysis of the relationship between capital structure and profitability measured by return on capital - ROE, again through two models.

Table 5: Capital Structure and Profitability Expressed in Return on Equity

RE model estimation (ROE_OA)

	Coef.	Std. Err.	z	P>|z|
OA	-0.10	0.0353075	-2.75	0.006
logV	0.01	0.02	0.74	0.461
KA	0.03	0.02	1.99	0.047
RKGK	-0.0758315	0.0835231	-0.91	0.364
OTA	0.0825705	0.1858656	0.44	0.657
TU	0.1708826	0.1144611	1.49	0.135
INF	-0.0029067	0.1146738	-0.03	0.98
logBNDpc	0.301668	0.0727027	4.15	0
_cons	-1.165319	0.2556029	-4.56	0
Wald test	63.94			
R^2	0.4401			
No of obs	165			

FE model estimation (ROE_OK)

	Coef.	Std. Err.	t	P>|t|
OK	0.00	0.0009488	-2.92	0.004
logV	0.04	0.03	1.31	0.191
KA	0.03	0.02	1.82	0.071
RKGK	-0.0130529	0.080291	-0.16	0.871
OTA	0.0164192	0.2115853	0.08	0.938
TU	-0.2903439	0.1923366	-1.51	0.133
INF	-0.0011192	0.1056713	-0.01	0.992
logBNDpc	0.2562459	0.0813768	3.15	0.002
_cons	-1.147472	0.2516744	-4.56	0
F test	8.27			
R^2	0.0057			
No of obs	165			

Source: authors' calculations

The dependent variable in both models is ROE, while the independent variables in the first model are the debt-to-assets ratio (OA) as a variable describing the capital structure and other bank-specific variables, as well as macroeconomic variables, and in the second model the debt-to-equity ratio (OK) as a variable describing the capital structure, and other bank-specific variables, as well as macroeconomic variables.

According to the negative sign of the coefficients in the first model, and the neutral coefficient in the second model, it can be concluded that the capital structure measured by the ratio of liabilities to assets has a negative impact on bank profitability in FB&H, measured by return on capital. The size of the bank's assets, the loan-to-assets ratio, operating cost management, and gross national income per capita have a positive relationship with banks' profitability measured by return on capital in both models. The variable of credit risk and inflation has a negative relationship, while market share has a different sign of the coefficient in the two models.

In the first model, the debt-to-asset ratio (OA) ratio is -0.10 with a p value of 0.006, indicating that a 1% increase in debt to assets leads to a 10% decrease in return on equity with statistical significance at level of 1%. In the second model, the coefficient of the variable debt-to-equity (OK) ratio is 0.00 with a p value of 0.004, which indicates that the increase in debt-to-equity financing has no impact on the profitability of banks in FB&H, with a statistical significance of 1%.

Of the remaining control variables, economic cycle variables, market share, operating cost management and credit risk have the greatest impact on profitability measured by return on equity. An increase in gross national income per capita by 1% leads to an increase in profitability measured by return on capital by 3.01% in the first model, and by 2.56% in the second model. An increase in market share by 1% leads to an increase in profitability measured by return on equity by 1.71% in the first model, and by 2.90% in the second model. An increase in the share of operating expenses in assets by 1% leads to a decrease in profitability measured by return on equity by 8.25% in the first model, and by 1.64% in the second model.

The coefficient of determination R2 for the first model is 0.4401, while for the second model it is 0.0057, which means that the variability of return on equity is explained by 44% and 0.57% by the variables used in the first and second models.

Finally, Table 6 presents the results of a regression analysis of the relationship between capital structure and profitability measured by net profit margin - NPM, through two previously explained models. The dependent variable in both models is NPM, while the independent variables are the debt-to-assets ratio (OA) as a variable describing the capital structure and other bank-specific variables, as well as macroeconomic variables, in the first model, and in the second they are debt-to-equity (OK) as a variable describing the capital structure, and other bank-specific variables, as well as macroeconomic variables.

Table 6: Capital Structure and Profitability Expressed in Net Profit Margin NPM

RE model estimation (NPM_OA)

	Coef.	Std. Err.	z	P>|z|
OA	-0.44	0.1115482	-3.97	0
logV	-0.04	0.05	-0.71	0.479
KA	0.09	0.05	1.82	0.069
RKGK	-0.2529283	0.2699306	-0.94	0.349
OTA	-1.186878	0.5824963	-2.04	0.042
TU	0.7575806	0.3300018	2.3	0.022
INF	-0.1203507	0.3752372	-0.32	0.748
logBNDpc	1.127895	0.2305959	4.89	0
_cons	-3.744105	0.8240382	-4.54	0
Wald test	80.3			
R^2	0.4433			
No of obs	165			

FE model estimation (NPM_OK)

	Coef.	Std. Err.	t	P>|t|
OK	-0.01	0.0031914	-3.41	0.001
logV	0.06	0.09	0.69	0.489
KA	0.07	0.06	1.25	0.215
RKGK	0.0130541	0.2700536	0.05	0.962
OTA	-0.8454435	0.7116532	-1.19	0.237
TU	-0.3630822	0.6469116	-0.56	0.576
INF	-0.0700308	0.3554185	-0.2	0.844
logBNDpc	0.9452761	0.2737056	3.45	0.001
_cons	-3.841913	0.8464902	-4.54	0
F test	8.81			
R^2	0.2072			
No of obs	165			

Source: authors' calculations

Given the negative signs of the coefficients in both models, we can conclude that the capital structure negatively affects the profitability of banks in the FB&H, measured by net profit margin. The size of the bank's assets, market share, and the credit risk variable, as control variables, have the opposite result of the direction of the relationship in the two models. Operating costs and inflation have a negative impact on profitability, while gross national income pc and the loan-to-assets ratio have a positive impact on profitability.

In the first model, the coefficient of the debt-to-assets ratio (OA) is -0.44 with a p value of 0.00, which indicates that an increase in this ratio by 1% leads to a decrease in profitability measured by net profit margin by 44%, with statistical significance at level of 1%. In the second model, the debt-to-equity ratio (OK) ratio is -0.01 with a p value of 0.001, indicating that a 1% increase in the debt-to-equity ratio reduces profitability measured by net profit margin by 1% with statistical significance at the level of 1%.

Of the remaining control variables, economic cycle variables, inflation, operating cost management and credit risk have the greatest impact on profitability measured by net profit margin. An increase in gross national income per capita by 1% leads to an increase in profitability measured by net profit

margin by 112% in the first model, and by 94% in the second model. An increase in inflation by 1% leads to a decrease in profitability measured by net profit margin by 12% in the first model, and by 7% in the second model. An increase in the share of operating expenses in assets by 1% leads to a decrease in profitability measured by net profit margin by 118.68% in the first model, and by 84% in the second model. The variables of market share and credit risk have different direction of relationship in the models.

The coefficient of determination R2 for the first model is 0.4433 while for the second model it is 0.2072, which means that the variability of the net profit margin is explained by 44% and 21% by the variables used in the first and second models.

Conclusions

The results of the research firstly call into question the usability of the return on assets, as dependent variables. Namely, the capital structure has a weak impact on profitability measured by the ROA indicator, while the size of the bank and the loan-to-asset ratio do not have a clear relationship with ROA. Leverage, on the other hand, has a clear negative link to ROE. The size of the bank, the ratio of loans and assets, and the management of operating costs, as endogenous parameters of the bank's business performance have a positive relationship with profitability. Exposure to credit risk is negatively related to return on capital. Exogenous variables of the economic system, such as inflation and income, have, as expected, a negative or positive relationship with profitability indicators. A similar impact of independent variables on profitability is illustrated by the net profit margin, as a dependent model variable.

This result, if we focus on ROE as a measure of profitability, first relativizes the applicability of Modigliani-Miller's theory of capital structure, which speaks to the irrelevance of capital structure to company value. The results of the regression analysis on the relationship between capital structure and profitability are most closely described by the pecking order theory, within the theoretical directions of asymmetric information. According to the pecking order theory, companies are first financed by internal funds – generated and retained profits, then from various capital positions. Only when all the funds generated within the company are exhausted, management reach for debt. Therefore, as the bank's profitability declines, financial leverage is expected to grow. This theory is applicable to imperfect emerging markets, which are characterized by asymmetric information flow.

However, the negative link between debt increase and returns on capital is not necessarily the result of a direct link. The return on capital can be affected by the operational efficiency and the efficiency of the use of assets, so the negative relationship between leverage and return on capital could have the following path: the increase in debt has a negative impact on the operational and efficiency of the use of assets. By reducing efficiency, profitability, i.e., return on capital, also decreases. The decline in efficiency with the increase in the share of debt in financing may have its origin in the relationship owner (shareholder) - agent (manager), because the owner cannot fully control and predict the operational efficiency and efficiency of use of assets. In addition, if managers tend to reduce the risk exposure that comes with increasing debt, they may miss good placements, which can be reflected in return on equity.

Furthermore, the results indicate that the profitability of banks increases as the level of financing by internal sources, i.e., profit and capital, increases. The negative relationship between leverage and net profit margin indicates that the liabilities of banks in the FB&H largely depend on the deposit base, which is the only option for a bank operating in a market where the debt and capital market is still in its infancy. At a time of negative interest rates, financing with deposits is not expensive, but in conditions of higher interest rates, access to financing on the domestic financial market would be more efficient. Financing of local banks in the international financial market, in addition to questionable and difficult access, lack of knowledge and experience, high costs, always contains a component of country risk, which further increases the cost of funds.

Unlike financial leverage, the size of a bank has a significantly positive relationship with profitability, measured by all three parameters. There are several possible reasons for this result. One of them is the economies of scale that the bank achieves through its growth, while its fixed costs remain the same or have a lower growth rate than revenue growth. Another reason is that the growth of the bank increases the capacity of borrowing and reduces the cost of bankruptcy. Creditors trust larger banks that are supposed to have lower earnings volatility and good performance. Creditors are more likely to lend to large banks because they believe they are "too big to fail", even in a small and underdeveloped market, with modest deposit insurance capacity. This finding points to the traditional theory of capital structure, which just indicates that the size of the company has a positive impact on profitability, due to economies of scale and positive perception of shareholders and other stakeholders.

Banks in the Federation of Bosnia and Herzegovina operate with high financial leverage and relatively low profitability. The financing decision, it seems, is not in the domain of active financial management, but it is, in fact, a passive result of the circumstances, in accordance with the settings of the pecking order theory. The level of indebtedness is first determined by the deposit function of banks, then by the capital financing in accordance with regulatory requirements. The return on capital, in such circumstances, is the resultant, rather than the achievement of financial management.

On the other hand, the underdevelopment of the domestic, and limited access to international financial markets, objectively limit the management of banks in optimizing the capital structure and finding an adequate level of financial leverage, which would be in the function of maximizing the value of banks. The source of profitability of local banks, therefore, can be sought in size, economies of scale, and operational efficiency and efficiency of asset use, rather than in financial leverage.