JEL category: H63, F34, E62, G12, O51
DOI: https://doi.org/10.46672/aet.10.2.5

PREGLEDNI RAD SCIENTIFIC REVIEW

Acta Economica Et Turistica

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ODRŽIVOST AMERIČKOG DRŽAVNOG DUGA NA TEMELJU KRUGMANOVE TEORIJE VIŠKA DUGA

SUSTAINABILITY OF US NATIONAL DEBT BASED ON KRUGMAN'S THEORY OF DEBT OVERHANG

SAŽETAK: Rad se bavi problemom porasta američkog državnog duga, koji je u 2023. godini dosegao zabrinjavajuće razine, čime se probio u prvi plan javnog narativa. Fokus akademskog ekonomskog narativa na problematiku duga uglavnom se spominje u kontekstu republikanskih i demokratskih ekonomskih ideja. Rad ciljano dokazuje da je glavni čimbenik održivosti duga percepcija koju banke i vjerovnici imaju o dugu. Nadalje, rad hipotetizira da se održivost duga oslanja na održivost količine duga, kamate duga, ali i njegove vrijednosti na sekundarnom tržištu. Takva održivost dokazuje se kroz prizmu Krugmanove teorije viška duga, a temelji se na stvarnim podatcima zadnja dva tromjesečja 2023. godine. Rad empirijski dokazuje da se SAD nalazi u stanju viška duga bez nesigurnosti što se tiče količine duga i postojeće kamate. Prema Krugmanovoj teorijskoj ideji Lafferove krivulje duga, također se zaključuje da se SAD sa svojim dugom ne nalazi na regresivnom dijelu grafikona. Zaključuje se da je prema trenutačnim kretanjima SAD sposoban privući novu likvidnost za otplatu prijašnjih vjerovničkih potraživanja. Na temelju postojećih podataka za 2023., rad kreira hipotetske vrijednosti

ABSTRACT: The paper addresses the issue of increasing the U.S. national debt, which reached alarming levels in 2023, pushing it to the forefront of the public narrative. The focus of the academic economic narrative around debt issues is generally discussed within the context of Republican and Democratic economic ideologies. This paper specifically argues that the main factor in debt sustainability lies in how it is perceived by banks and creditors. Furthermore, the paper hypothesizes that debt sustainability depends on the amount of debt, its interest rate, and its value in the secondary market. Superiority of such factors is demonstrated through the theory of Krugman's debt overhang, based on actual data from the last two quarters of 2023. The paper empirically shows that the U.S. is currently in a state of debt overhang without uncertainty regarding the debt amount and existing interest rates. According to Krugman's theoretical concept of the Debt Laffer Curve, it is also concluded that the U.S. debt is not on the regressive side of the graph. The paper concludes that, based on current trends, the U.S. are capable of attracting new liquidity to service previous claims. Based on existing 2023 data, the

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za prva dva tromjesečja 2024. te empirijski dokazuje koje bi razine porasta duga i kamate – ali i pada cijene duga – dovele SAD do stanja viška duga s nesigurnošću, što je također temeljeno na Krugmanovoj teoriji viška duga. Na kraju se zaključuje da je američki dug prema trenutačnim kretanjima u stanju viška bez nesigurnosti, ali se prikazuju i negativne posljedice koje bi zahvatile cjelokupnu američku i svjetsku ekonomiju u slučaju da SAD prijeđe u stanje viška duga s nesigurnošću.

KLJUČNE RIJEČI: dug SAD-a, Paul Krugman, teorija viška duga, Lafferova krivulja duga, održivost vanjskog duga

paper generates hypothetical values for the first two quarters of 2024 and empirically demonstrates what levels of increases in debt and interest rate (and debt price decline) can be expected to push the U.S. into a state of debt overhang with uncertainty. In the end, the paper concludes that, given current trends, U.S. debt is in a state of overhang without uncertainty, but it also presents the negative consequences that would affect both the U.S. and global economies if the U.S. entered a state of debt overhang with uncertainty even for a brief period.

KEY WORDS: U.S. debt, Paul Krugman, Theory of Debt Overhang, Debt Laffer Curve, External Debt Sustainability

POVIJEST AMERIČKOG DRŽAVNOG DUGA

Tema državnih dugova bila je sveprisutna tijekom 80-ih i 90-ih godina prošloga stoljeća, ali se stabilizacijom problematike nije pojavljivala u javnom narativu sve do 2023. godine. Ovoga puta u fokusu nisu bile zemlje Latinske Amerike i Istočne Europe (Krugman, 1990), već samo financijsko središte – SAD. Budući da su obveznice američkog duga *sui generis* za većinu svjetskog poslovanja vrijednosnim papirima, padom njihove vrijednosti u korist rasta kamate došlo bi do ukupnog pada svjetskog tržišta.

Prvi znatni skok udjela duga u BDP-u u povijesti SAD-a dogodio se u 1946., kada je udio porastao na 101 % (The White House, 2023). Laffer (2022) uzrok ovoga kretanja nalazi u socijalnim mjerama Rooseveltovog *New Deala*, ali i u teretu ratne mobilizacije. U poslijeratnom razdoblju došlo je do smanjivanja poreznih stopa pa je inicijativa prema tržišnim projektima rasla, smanjujući potrebu za novim zaduživanjem države (Laffer, 2022). Ovakav trend manifestirao se u činjenici da je od 1950. do 1975. dug koji je držala javnost padao sa 78,6 % BDP-a na 24,6 % BDP-a, tj. s 53 % na

HISTORY OF THE US NATIONAL DEBT

The subject of state debts was ubiquitous during the 1980s and 1990s, but since this issue got stabilized, it was not present in the public narrative anymore, until 2023. This time, the focus was not on the countries of Latin America and Eastern Europe (Krugman, 1990), but only on the financial center – the United States. Since U.S. debt bonds are *sui generis* for most of the world's securities business, a decline in their value in favor of rising interest rates would lead to an overall decline in the world market.

The first significant jump in the debt-to-GDP ratio in the U.S. history occurred in 1946, when the ratio rose to 101% (The White House, 2023). Laffer (2022) finds the cause of this development in the social measures of Roosevelt's *New Deal*, but also in the burden of war mobilization. During the post-war period, there was a decrease in tax rates, so the initiative towards market projects grew, reducing the need for new government borrowing (Laffer, 2022). This trend manifested itself in the fact that from 1950 to 1975, debt held by the public fell from 78.6% of GDP to 24.6% of GDP, i.e. from 53% to 17% of market value

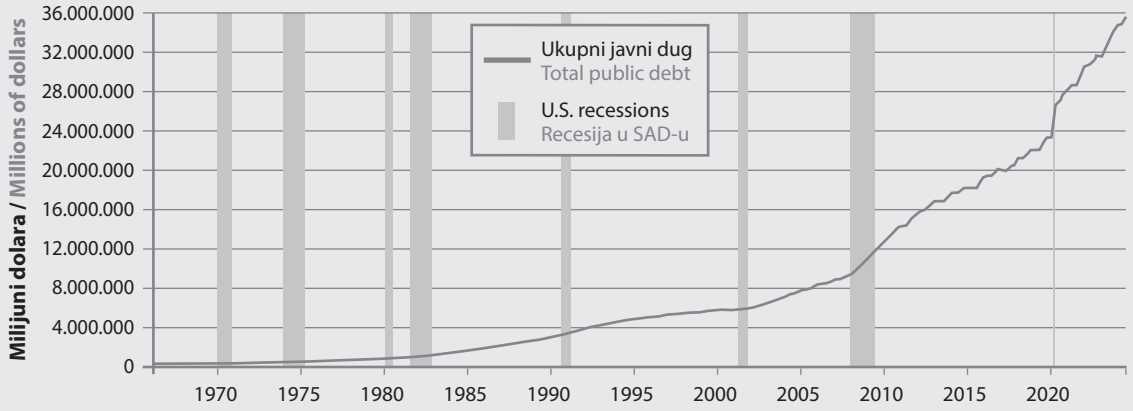
17 % tržišne vrijednosti (The White House, 2023). Trend padanja javnog duga nastavio se od 1993. do 2001., kada je ukupna vrijednost duga u odnosu na tržišnu vrijednost pala s 26 % na 17 % (The White House, 2023). *Dot-com* recesija i Zaljevski rat preokrenuli su takav trend, a Busheva administracija nastavila je s poreznim olakšicama pa je 2001. najavljeno smanjivanje kapitalnih, osobnih, federalnih poreza i poreza na nekretnine. Laffer (2022) navodi da smanjivanje poreza nije dovelo do jačanja ekonomije, jer je bila najavljena godišnja parcijalna provedba smanjivanja poreznih stopa, što je odgodilo sve investicije na zadnju godinu, tj. godinu najniže stope. Zapravo je u prvim godinama reforme usporen ekonomski rast, a time i fiskalni prinos, dok je ukupna državna potrošnja rasla. Takav je trend predviđao rast američkog duga za 8 milijardi američkih dolara. Konačan udarac donijela je velika financijska kriza 2008. godine. Njezine posljedice bile su znatne: došlo je do pada tržišta vrijednosnica i nastajanja kreditnog stiska usred deflacijskih pritisaka. Konkretna manifestacija vidjela se na indeksu S&P 500, koji je bilježio pad od 17 %, što je smanjilo vrijednost kućne štednje za 2,4 milijarde američkih dolara (Cardin, 2023). Koliko su deflacijski pritisci bili jaki nakon ovakvih kriza vidljivo je kroz podatak da je kamata desetogodišnje obveznice 90-ih godina iznosila u prosjeku 7 %, a 2010. godine ta je vrijednost iznosila 2 % (Dynan, 2023).

Prema kejnzijanskoj teoriji, država je intervenirala u tržište kako bi olakšala deflacijske pritiske, a manifestacija te ideje postignuta je dogovorom republikanaca i predsjednika Obame oko povećanja limita na ukupni dug. Limit je povećan u tri navrata, u ukupnoj vrijednosti od 2,1 milijarde američkih dolara. Time je ukupan broj povećanja limita duga od 2001. dosegao 20 (Cardin, 2023). Udio duga u BDP-u skočio je s 35,2 % u 2007. na 79,4 % u 2019. godini, ali sama dužnička kriza nije se manifestirala sve do 2020., kada se pojavljuje kao posljedica COVID krize (Cardin, 2023). Ovo kretanje vidljivo je na Grafikonu 1.

(The White House, 2023). The downward trend in public debt continued from 1993 to 2001, when the total value of debt in relation to market value fell from 26% to 17% (The White House, 2023). The *dot-com* recession and the Gulf War reversed this trend, and the Bush administration continued with tax relieves, so in 2001 reductions in capital, personal, federal and real estate taxes were announced. Laffer (2022) states that the tax reduction did not lead to the strengthening of the economy, because the annual partial implementation of tax rate reduction was announced, which postponed all investments to the last year, i.e. the year of the lowest rate. In fact, economic growth, and thus fiscal yield, slowed down in the first years of the reform, while total government expenditure grew. Such a trend anticipated U.S. debt growth of US $8 billion. The final blow was struck by the great financial crisis of 2008. The consequences of that crisis were substantial: there was a decline in the securities market and the emergence of a credit crunch amid deflationary pressures. The specific manifestation was seen on the S&P 500 index, which was down by 17%, which reduced the value of home savings by US $2.4 billion (Cardin, 2023). How strong the deflationary pressures were after such crises is evident through the fact that the interest rate of a ten-year bond in the 1990s was on average 7%, and in 2010 this value was 2% (Dynan, 2023).

According to Keynesian theory, the state intervened in the market to ease deflationary pressures, and the manifestation of this idea was achieved by the agreement of Republicans and President Obama to increase the limit on total debt. The limit was increased on three occasions, with a total value of US $2.1 billion. This brings the total number of debt limit increases since 2001 to 20 (Cardin, 2023). The debt-to-GDP ratio jumped from 35.2% in 2007 to 79.4% in 2019, but the debt crisis itself did not manifest itself until 2020, when it emerged as a result of the COVID crisis (Cardin, 2023). This development is visible in Graph 1.

GRAFIKON 1. KRETANJE AMERIČKOG DUGA TIJEKOM GODINA[1]
GRAPH 1. DEVELOPMENT OF U.S. DEBT OVER THE YEARS[1]



Država je na COVID krizu reagirala donošenjem *Act and the American Rescue Plan*, u sklopu kojega je davala sredstva nezaposlenima, jačala proces oporavka srednje industrije i jačala zdravstveni sustav prema procesu prilagodbe. Udio duga u BDP-u porastao je na 132 % u drugom tromjesečju 2020. godine.[2] Vrijednost gornje granice duga povećana je na 28,400 milijardi dolara početkom 2021., a već u listopadu taj je broj povećan na 28,800 milijardi dolara. U prosincu je vrijednost ponovno revidirana na 31,380 milijardi dolara (Cardin, 2023). Nagli skok udjela duga u BDP-u smanjio se nakon krize, ali se predviđa da će do 2033. iznositi 109 % (Dynan, 2023).

Sama kriza dovela je do skoka inflacije s 1,3 % na 7,2 % u sljedećoj godini (Dynan, 2023). Takvi inflacijski pritisci, uz istodobnu restriktivnu monetarnu politiku, doveli su do jačeg tereta državnog duga. Jača inflacija podrazumijevala je da središnje banke provode restriktivnu monetarnu politiku pa je ukupna raspoloživa svjetska likvidnost bila dostupna po većoj kamati. Države su simultano povlačile prevelike količine likvidnosti, do razine koja je dovela do inhibicije

The state responded to the COVID crisis by adopting the *Act and the American Rescue Plan*, within which it provided funds to the unemployed, fostered the recovery process of the middle market and strengthened the health system according to the adjustment process. The debt-to-GDP ratio rose to 132% in the second quarter of 2020.[2] The value of the debt ceiling increased to $28,400 billion at the beginning of 2021, and as early as in October this number increased to $28,800 billion. In December, the value was revised to $31,380 billion (Cardin, 2023). The sharp jump in the debt-to-GDP ratio decreased after the crisis, but is projected to be 109% by 2033 (Dynan, 2023).

The crisis itself led to a jump in inflation from 1.3% to 7.2% in the following year (Dynan, 2023). Such inflationary pressures, coupled with a simultaneous restrictive monetary policy, have led to a stronger burden of the government debt. Stronger inflation meant that central banks implemented a restrictive monetary policy, so the total available world liquidity was available at a higher interest rate. States were simultaneously withdrawing excessive amounts of liquidity, to the

poduzetničkih i građanskih kreditnih potraživanja. Zapravo, velika potražnja za raspoloživom, padajućom svjetskom likvidnošću pri rastućoj kamati dovodi do dodatnog jačanja inicijalnih kamata, što otežava ekonomski napredak i jača teret duga (Howell, 2020).

STANJE AMERIČKOG DRŽAVNOG DUGA

Janet Yellen, ministrica financija (engl. *Secretary of the Treasury*), uputila je početkom lipnja 2023. upozorenje američkom Kongresu da postoji realan rizik od bankrota (The White House, 2023). Razlog leži u tome što se američko Ministarstvo financija u trenutku porasta udjela duga u BDP-u prema njegovom limitu opredjeljuje za prestanak isplate zbog mogućih oscilacija vrijednosti već izdanog duga. U danom trenutku ukupni dug iznosio je 31,400 milijardi dolara, od čega je 24,610 milijardi potraživala javnost, a 6,850 milijardi međunarodni investitori (Cardin, 2023). Udio duga u BDP-u porastao je na 98 %, a do 2053. godine predviđa se njegov porast na 180 % BDP-a (Dynan, 2023). Dani podatci prikazuju kretanja u slučaju nastavljanja trenutačnog trenda. U trenutku pisanja članka, ukupni dug iznosi 34 bilijuna,[3] a kamata duga u 2022. iznosila je 534 milijarde dolara (The White House, 2023).

Opisani porast duga doveo je do fokusa na njegovu problematiku. Većina autora, poput Kearney i Parduea (2023), ali i službene analize MMF-a (Walker, 2023) problematiku vežu uz napetosti unutarnje politike.

Naime, republikanska i demokratska stranka predložile su različite planove za rješavanje problema duga. Republikanski zakonodavni prijedlog *Limit*, *Save*, *Grow Act* ili *Default on America Act* predlagao je smanjenje fiskalne potrošnje prema kretanjima iz 2022. (Cardin, 2023), koja bi bila fiksni faktor korišten za budžete nadolazećih godina. Predloženo je i ograničenje porasta duga na 1 %, povlačenje nekorištenih COVID potpora, poništavanje antiinflacijskog

level that led to the inhibition of entrepreneurial and civil credit claims. In fact, high demand for available, declining global liquidity at rising interest rates leads to further increase of initial interest rates, which hampers economic progress and strengthens the debt burden (Howell, 2020).

U.S. GOVERNMENT DEBT BALANCE

In early June 2023 Janet Yellen, the Secretary of the Treasury, issued a warning to the U.S. Congress about a real risk of bankruptcy (The White House, 2023). The reason lies in the fact that the U.S. Department of the Treasury, at the time of the increase in the debt-to-GDP ratio according to its limit, opts for the termination of payment due to possible fluctuations in the value of the debt already issued. At that moment, the total debt amounted to $31,400 billion, of which $24,610 billion was claimed by the public and $6,850 billion by international investors (Cardin, 2023). The debt-to-GDP ratio rose to 98% and is projected to rise to 180% of GDP by 2053 (Dynan, 2023). The data provided shows the development in the event of a continuation of the current trend. At the time of writing, the total debt was $34 trillion,[3] and the debt interest was $534 billion in 2022 (The White House, 2023).

The described increase in debt led to a focus on its issues. Most authors, such as Kearney and Pardue (2023), as well as the official analysis of the IMF (Walker, 2023), associate this issue with domestic policy tensions.

Namely, the Republican and Democratic parties have proposed different plans to solve the debt problem. The Republican legislative proposal *Limit*, *Save*, *Grow Act* or *Default on America Act* proposed a reduction in fiscal spending according to the 2022 trends (Cardin, 2023), which would be a fixed factor used for the budgets of the future years. It was also proposed to limit the debt increase to 1%, withdraw unused COVID subsidies, annul the Biden administration's

plana Bidenove administracije, reforma burze rada u smjeru poticanja zapošljavanja umjesto dodjeljivanja potpora, odbacivanje plana smanjivanja duga studentima, odbacivanje reforme širenja porezne uprave te temeljenje rasta budućeg duga na fiskalnim prihodima (Cardin, 2023). Republikanci se zapravo oslanjaju na ekonomiju ponude (engl. *supply-side economics*), koja se temelji na ideji da ekonomsku inicijativu smanjuju upravo porezi. Takav trend prikazuju formulom:

$I = 1 - t$

gdje je:

I – stopa inicijative
t – porezna stopa

Demokratska stranka plan oporavka našla je u inflacijskom planu predsjednika Bidena, a njegov je *sui generis* bila ideja smanjivanja duga na temelju većih fiskalnih prinosa, prikupljenih od najbogatijih slojeva i korporacija. Prva reforma uključivala bi 25 % marginalnog progresivnog poreza za 0,01 % najbogatijih, jačanje poreznog nadzora, povlačenje poreznih reformi predsjednika Trumpa, vraćanje najviše stope marginalnog poreza na 39 %, podizanje korporativnog poreza na 28 % i međunarodnog korporativnog poreza na 21 %, reforma sustava zdravstvenog osiguranja, uklanjanje poreznih subvencija za naftnu proizvodnju te uvođenje poreza na kriptovalute (Cardin, 2023). Vođena kejnzijanskom idejom, demokratska stranka uzda se u ideje redistribucije bogatstva i državne intervencije radi održavanja zaposlenosti. Ideja je da te dvije mjere jačaju kvantitativan rast srednje klase, koja pokreće ekonomski kotač. Kada se dosegne ciljana točka ravnoteže, država smanjuje intervencije i stope poreza, a ojačana srednja klasa daje više fiskalnih sredstava, koja namiruju cijenu državne intervencije i učinkovito otplaćuju dug države (Keynes, 1987).

Iako je narativ unutarnje politike bitan, rad hipotezira da je *sui generis* održivosti duga lociran u percepciji vjerovnika. Cilj ekonomske politike u vezi održavanja stabilnosti državnog duga trebao

anti-inflation plan, reform the labor exchange and encourage employment instead of granting subsidies, reject the students' debt reduction plan, reject the tax administration expansion reform and base future debt growth on fiscal revenues (Cardin, 2023). Republicans actually rely on supply-side economics, which is based on the idea that the economic initiative is reduced by taxes. They present such a trend with the formula:

$I = 1 - t$

where:

I – stopa inicijative
t – porezna stopa

The Democratic Party found the recovery plan in President Biden's inflation plan, and his *sui generis* was the idea of reducing debt based on higher fiscal yields, collected from the wealthiest social layers and corporations. The first reform would include a 25% marginal progressive tax for 0.01% of the richest, strengthening fiscal supervision, withdrawing President Trump's tax reforms, restoring the highest marginal tax rate to 39%, raising the corporate tax to 28% and the international corporate tax to 21%, reforming the health insurance system, removing tax subsidies on oil production, and introducing a cryptocurrency tax (Cardin, 2023). Driven by the Keynesian idea, the Democratic Party relies on ideas of wealth redistribution and state intervention to maintain employment. The idea is that these two measures strengthen the quantitative growth of the middle class, which drives the economic wheel. When the target point of equilibrium is reached, the state reduces interventions and tax rates, and the strengthened middle class provides more fiscal resources, which settle the price of state intervention and effectively repay the state's debt (Keynes, 1987).

Although the narrative of internal politics is essential, the paper hypothesizes that the *sui generis* of debt sustainability is to be found in the perception of creditors. The objective of the

bi biti održavanje dostupnosti likvidnosti za održavanje trenutačnog duga, ali uz oprez da ne dođe do prekida tijeka likvidnosti. Takva teorija može se pratiti kroz agregatnu razinu duga, marginalnu razinu kamate duga, ali i vrijednosti duga na sekundarnom tržištu. Prijeđe li jedna od navedenih vrijednosti u regresivni smjer, dotok kapitala vjerovnika je prekinut, a država se nalazi pred bankrotom (Krugman, 1988). Kretanja te tri varijable zapravo zauzimaju poziciju *prior tempore*, *potior iure*, tj. unutarnja politička previranja podređena su im kada je u pitanju održivost financiranja i rasta duga. Takvu teorijsku pretpostavku detaljno je objasnio Paul Krugman, umirovljeni profesor ekonomije na MIT-u i Sveučilištu Princeton. Krugman je tematiku razradio tijekom rada za Bijelu kuću u vrijeme Reaganove administracije. Kao što je vidljivo iz Grafikona 1, Reaganova je administarcija bila prva nakon Drugog svjetskog rata koja se suočila s porastom tereta duga. Za svoj doprinos u polju međunarodne ekonomije Krugman je 2008. dobio Nobelovu nagradu za ekonomiju (Nobel Prize, 2008).

KRUGMANOVA TEORIJA VIŠKA DUGA

Prema ekonomskoj teoriji, država s prevelikim dugom koji nije u stanju naplatiti ima opciju bankrota ili vraćanja kroz povećanje novčane mase. U realnosti, države teže simultanom zaduženju i daljnjoj otplati. Krugman (1988) iznosi teoriju naslijeđenog duga (engl. *inherited debt*), koji se veže uz države koje svoj dug mogu servisirati jedino uz nove posudbe. Takav stadij zove se višak duga bez nesigurnosti, koji Krugman (1988) opisuje: „... pretpostavka nesolventnosti [zemlje] ne sprječava banke da posuđuju novu likvidnost radi svojeg interesa".[4] Međutim, ovakav stav može se promijeniti ako dođe do prelaska u višak duga s nesigurnošću na temelju prevelikog duga, regresivne kamate duga i prelaska državnog duga na desnu stranu Lafferove krivulje duga. Empirijskim vrijednostima prikazuje se gdje se

economic policy regarding the maintenance of government debt stability should be to maintain the availability of liquidity which is maintaining the current debt, but with caution to avoid interruption of the liquidity flow. Such a theory can be traced through the aggregate debt level, the marginal level of debt interest, but also the value of debt in the secondary market. If one of these values goes into a regressive direction, the inflow of creditors' capital is interrupted, and the state is facing bankruptcy (Krugman, 1988). The developments of these three variables actually take the position of *prior tempore*, *potior iure* i.e. internal political turmoil is subordinated to them when it comes to the sustainability of financing and debt growth. Such a theoretical assumption was explained in detail by Paul Krugman, a retired professor of economics at MIT and Princeton University. Krugman elaborated the subject while working for the White House during the Reagan administration. As can be seen from Graph 1, the Reagan administration was the first since World War II to face a rising debt burden. Krugman was awarded the Nobel Prize in Economics in 2008 for his contribution to the field of international economics (Nobel Prize, 2008).

KRUGMAN'S THEORY OF DEBT OVERHANG

According to economic theory, a state with too much debt, that it is unable to collect, has the option of bankruptcy or repayment through an increase in money supply. In reality, states strive for simultaneous borrowing and further repayment. Krugman (1988) presents the theory of inherited debt, which is related to the states that can service their debt only with new borrowings. Such a stage is called debt overhang without uncertainty, which Krugman (1988) describes as follows: "... the presumption of insolvency [of a state] does not prevent banks from lending new liquidity for their own interest".[4] However, this attitude may change if there is a transition to debt overhang with uncertainty based on excessive debt, regressive debt interest and the transition of government debt to

SAD nalazi s obzirom na sva tri čimbenika te pri kojim bi uvjetima i vrijednostima došlo do prelaska u višak duga s nesigurnošću.

Zadržavanje unutar viška duga bez nesigurnosti na temelju visine duga

Država, poput tvrtke, raspoređuje svoje prihode s primarnom željom da što manje daje vjerovnicima, dok vjerovnici razmišljaju *vice versa*. U trenutku kada su državni izvori manji od potraživanja vjerovnika dolazi do situacije viška duga (*debt overhang*). Država tada povećava svoj dug da bi namirila trenutačna potraživanja vjerovnika (Krugman, 1988). Matematički, vrijednost x_2 označava količinu sredstava za otplatu duga sljedeći mjesec, a x_1 sredstva dostupna za otplatu u trenutačnom mjesecu. Ako su $x_1 + x_2$, dostupni resursi za otplatu sljedeće dvije rate, zajedno manji od potraživanja vjerovnika D, država ne može izmiriti trenutačni dug. U tom trenutku država treba podizati nove kredite u vrijednosti $D - x_1$. Vjerovnici će odobravati takve kredite uz kamatu i ako vjeruju da će njihova potraživanja u budućnosti biti namirena (Krugman, 1988). Matematički takva teza glasi:

$$(1 + i)\,(D - x_1) < x_2$$

to jest:

$$\frac{x_1 + x_2}{(1 + i)} > D$$

Ako u formulu uvrstimo podatke iz Tablice 1 zajedno s kamatom i od 3,11 %,[5] za zadnje tromjesečje 2023., dobivamo:

$$\frac{4{,}76 + 4{,}86}{1 + 3{,}1\ \%} > 2{,}001$$

to jest da je:

$$2{,}39 > 2{,}001$$

SAD zapravo nije u stanju servisirati svoj dug, ali može posuđivati likvidnost u vrijednosti $D - x_1$, budući da vjerovnici vjeruju u naplatu svojih

the right side of the Debt Laffer Curve. Empirical values show where the USA stand with regard to all three factors and under which conditions and values it would be possible to switch to debt overhang with uncertainty.

Retention within debt overhang without uncertainty based on the amount of debt

The state, like a company, distributes its income with the primary desire to give as little as possible to creditors, while creditors think *vice versa*. At a time when state sources are lower than creditors' claims, there is a situation of debt overhang. The state then increases its debt to settle the current claims of creditors (Krugman, 1988). Mathematically, x_2 value indicates the amount of next month's debt repayment funds, and x_1 are funds available for repayment in the current month. If $x_1 + x_2$ being the resources available to repay the next two instalments, taken together, are less than the creditor claims D, the state cannot settle the current debt. At that point, the state should take out new loans in value $D - x_1$. Creditors will grant such loans with interest i, if they believe that their claims will be settled in the future (Krugman, 1988). Mathematically, such a thesis reads as follows:

$$(1 + i)\,(D - x_1) < x_2$$

i.e.

$$\frac{x_1 + x_2}{(1 + i)} > D$$

If we include in the formula the data from Table 1 together with an interest rate i of 3.11%,[5] for the last quarter of 2023, we get:

$$\frac{4.76 + 4.86}{1 + 3.1\ \%} > 2.001$$

that is, it is:

$$2.39 > 2.001$$

The U.S. are not actually able to service their debt, but they can borrow liquidity in value $D - x_1$,

TABLICA 1. KRETANJA FISKALNIH PRINOSA I DUGOVA SAD-A U ZADNJA DVA TROMJESEČJA 2023.
TABLE 1. DEVELOPMENTS IN U.S. FISCAL YIELDS AND DEBT IN THE LAST TWO QUARTERS OF 2023

KATEGORIJE / CATEGORIES	Q3 (2023) U MLRD. $ Q3 (2023) IN BILLION $	Q4 (2023) U MLRD. $ Q4 (2023) IN BILLION $
Dug (potraživanja, zajedno čine *D*)[6] Debt (receivables, together make up *D*)[6]	0,981	1,02
Sredstva za otplatu (x_1 i x_2)[7] Repayment funds (x_1 and x_2)[7]	4,76	4,86
Ukupna potrošnja[8] / Total Spend[8]	6,4	6,465
Nominalna razlika, tj. posudba uz kamatu *i* Nominal difference, i.e. borrowing with interest *i*	2,62	2,625

potraživanja. Vjerovnici u drugom razdoblju dobivaju vrijednost x_2, ali u realnoj naplati dobivaju vrijednost $\frac{x_2}{(1+i)}$ (Krugman, 1988). Vrijednost takve naplate u drugom razdoblju manja je od nove likvidnosti dane za isto razdoblje. Empirijski:

$$\frac{4{,}86}{1 + 3{,}1\ \%} < 2{,}625$$

to jest:

$1{,}18 < 2{,}625$

SAD se zapravo nalazi u području viška duga bez nesigurnosti. U trenutačnim uvjetima nepotpuna naplata je moguća, ali nije sigurna. SAD je sposoban privući novu likvidnost za otplatu starih potraživanja, jer vjerovnici očekuju da će inflacija smanjiti teret nominalnih potraživanja prema SAD-u pa će otplata nove likvidnosti predstavljati manji teret. Tako bi vjerovnici osigurali punu naplatu koja se navodi u nominalnom potraživanju njihovih bilanci. Iako je kamata duga nominalno zaključana i podložna inflaciji, naplatom 100 dolara duga u smanjenoj vrijednosti dolara ne dolazi do promjene bilance vjerovnika. Zato je profit dobiven na temelju ranijih potraživanja veći nego u slučaju dopuštanja bankrota pa je dostupnost nove likvidnosti u interesu banaka (Krugman, 1988). Upravo je održivost unutar

since creditors believe in the collection of their claims. Creditors receive value x_2 in the second period but in real collection they receive value $\frac{x_2}{(1+i)}$ (Krugman, 1988). The value of such collection in the second period is less than the new liquidity given for the same period. Empirically:

$$\frac{4.86}{1 + 3.1\ \%} < 2.625$$

i.e.

$1.18 < 2.625$

The U.S. are actually in a state of debt overhang without uncertainty. Under current conditions, incomplete collection is possible, but not certain. The U.S. are capable of attracting new liquidity to repay old claims, as creditors expect inflation to reduce the burden of nominal claims against the U.S., so repayment of new liquidity will be less of a burden. Thus, the creditors would ensure the full collection stated in the nominal claim of their balance sheets. Although the interest on the debt is nominally locked-in and subject to inflation, the collection of $100 of debt in the reduced value of the dollar does not result in a change in the creditors' balance sheet. Therefore, the profit obtained on the basis of earlier receivables is higher than in the case of allowing bankruptcy, so the availability of

viška duga bez nesigurnosti glavni čimbenik buduće otplate i održivosti američkog duga. Zadržavanje unutar toga stadija omogućuje dostupnost nove likvidnosti za otplatu starih potraživanja pa bi trebalo biti primarni fokus vanjske ekonomske politike. Takvi uvjeti odgovaraju vjerovnicima i SAD-u pa treba težiti njihovom održavanju. Da bi se taj cilj postigao, SAD treba težiti tome da ukupni dug ne poraste do vrijednosti izražene formulom:

$$\frac{x_1 + x_2}{(1 + i)} < D$$

U trenutku pisanja članka nisu dostupni podatci za prva dva tromjesečja 2024., ali možemo uzeti hipotetske vrijednosti na temelju kretanja varijabli predstavljenih tromjesečja 2023. godine Q3 i Q4. Ako sve varijable nastave rasti u skladu s kretanjima zadnja dva tromjesečja 2023., dobivamo podatke prikazane u Tablici 2. Pretpostavimo da se kamata neće povećavati, već će ostati jednaka kao u prijašnjem razdoblju.

Iz toga slijedi:

$$\frac{4{,}96 + 5{,}06}{1 + 3{,}1\ \%} > 2{,}16$$

to jest:

$2{,}44 > 2{,}16$

new liquidity is in the interest of banks (Krugman, 1988). It is sustainability within debt overhang without uncertainty that is the main factor in the future repayment and sustainability of the U.S. debt. Keeping the debt within this stage allows the availability of new liquidity to repay old claims, so it should be the primary focus of foreign economic policy. Such conditions are convenient to creditors and the United States, so their maintenance should be pursued. In order to achieve this goal, the U.S. should strive to ensure that the total debt does not rise to the value expressed by the formula:

$$\frac{x_1 + x_2}{(1 + i)} < D$$

At the time of writing, data for the first two quarters of 2024 are not available yet, but we can take hypothetical values based on the development of variables presented in Q3 and Q4 of 2023. If all variables continue to grow in line with the trends of the last two quarters of 2023, we get the data shown in Table 2. Let us assume that the interest will not increase, but will remain the same as in the previous period.

From this follows:

$$\frac{4.96 + 5.06}{1 + 3.1\ \%} > 2.16$$

TABLICA 2. HIPOTETSKA KRETANJA AMERIČKOG DUGA ZA PRVA DVA TROMJESEČJA 2024.[9]
TABLE 2. HYPOTHETICAL U.S. DEBT DEVELOPMENTS FOR THE FIRST TWO QUARTERS OF 2024[9]

KATEGORIJE / CATEGORIES	Q1 (2024) U MLRD. $ / Q1 (2024) IN BILLION $	Q2 (2024) U MLRD. $ / Q2 (2024) IN BILLION $
Dug (potraživanja, zajedno čine *D*) / Debt (receivables, together make up *D*)	1,06	1,1
Sredstva za otplatu (x_1 i x_2) / Repayment funds (x_1 and x_2)	4,96	5,06
Ukupna potrošnja / Total Spend	6,53	6,60
Nominalna razlika, tj. posudba uz kamatu *i* / Nominal difference, i.e. borrowing with interest *i*	2,63	2,64

Prema trenutačnom trendu rasta, SAD se u prva dva tromjesečja 2024. može zadržati u stanju viška duga bez nesigurnosti. Da bismo saznali koja je marginalna točka prelaska u višak duga s nesigurnošću, dane podatke ponovno uvrštavamo u formulu:

$$\frac{4{,}96 + 5{,}06}{1 + 3{,}1\ \%} > x$$

to jest:

$x \leq 2{,}44$

Kada bi potraživanja banaka za početna dva tromjesečja 2024. godine prešla na razinu iznad 2,44 milijarde američkih dolara, SAD bi prešao u stanje viška duga s nesigurnošću. To znači da SAD ne bi mogao privući nove kredite pa bi vjerovnici s SAD-om morali postići dogovor o oprostu dijela duga, oprostu dijela kamate ili novom roku naplate. Samim dolaskom do toga stadija došlo bi do svih negativnih posljedica opisanih u poglavlju o rizicima bankrota i državnih dugovanja, zbog čega je važno da dug za spomenuto razdoblje iznosi $x \leq 2{,}44$.

Negativne posljedice dogovora o rekonstrukciji duga moraju se zaobilaziti i na temelju marginalne razine kamate i vrijednosti duga na sekundarnom tržištu.

Zadržavanje unutar viška duga bez nesigurnosti na temelju visine kamate

Sui generis bankarskog razmišljanja jest održavanje profita i cijene vrijednosnica. Oba parametra kreću se suprotno od bankarske izloženosti dugovnim potraživanjima. Primjerice, prosječna izloženost banke zaduženim zemljama 1986. godine iznosila je 130 % knjigovodstvene vrijednosti. Banke s visokom izloženošću imale su omjer cijene i dobiti 6,6, za razliku od banaka koje nisu bile izložene, s omjerom od 10,3 (Sachs, Huizinga, 1987). Tržište je zapravo procijenilo da je pragmatičnije investirati kapital prema bankama bez potraživanja dugovanja, budući da je dugoročna sigurnost

i.e.

$2.44 > 2.16$

According to the current growth trend, the U.S. can stay in the state of debt overhang without uncertainty in the first two quarters of 2024. To find out what the marginal point of transition to debt overhang with uncertainty is, we will include the given data in the formula again:

$$\frac{4{,}96 + 5{,}06}{1 + 3{,}1\ \%} > x$$

i.e.

$x \leq 2.44$

If banks' claims for the first two quarters of 2024 were to move to levels above US $2.44 billion, the US would move to a state of overhang debt with uncertainty. This means that the US would not be able to attract new loans, so creditors would have to reach an agreement with the U.S. on partial debt forgiveness, partial interest forgiveness or a new collection deadline. By reaching this stage, there would be all the negative consequences described in the chapter on risks of bankruptcy and government debts, which is why it is important that the debt for the mentioned period amounts to $x \leq 2.44$.

The negative consequences of the debt restructuring agreement must also be circumvented based on the marginal level of interest and the value of debt on the secondary market.

Retention within debt overhang without uncertainty based on the amount of debt

The *sui generis* of bank thinking is the maintenance of profits and the price of securities. Both parameters are the opposite of the banking exposure to debt claims. For example, the average exposure of a bank to indebted countries in 1986 was 130% of the carrying amount. Banks with high exposure had a price to profit ratio of 6.6, as opposed to the banks that were not exposed, with a ratio of 10.3 (Sachs, Huizinga, 1987). The market has actually

njihovih vrijednosnica veća. Bankarski odnos prema kreditiranju državnog duga SAD-a počiva na istoj ideji te će vjerovnici SAD-u nuditi novu likvidnost do najveće razine isplativosti, tj. do prelaska u višak duga s nesigurnošću.

Budući da je u višku duga bez nesigurnosti država solventna, ali nelikvidna, ona može posuđivati novac za otplatu prijašnjih kredita, tj. *defanzivno posuđivati* prema formuli $L = D - x_1$. Ako r kod takvih kredita predstavlja kamatu defanzivnog posuđivanja, dobivamo da je najveća moguća kamata koju SAD može ponuditi i dalje omogućavajući bankama posuđivanje likvidnosti (x_G):

$$L\,(1 + r) = x_G$$

Iz toga slijedi da je x_G, kroz prizmu vjerovnika, 10,78 % i 10,82 %.[10] Vrijednosti iznad navedenih regresivne su i SAD ih neće moći platiti pa bi se od tada nalazio u stanju viška duga s nesigurnošću. Banke ne bi imale razloga posuđivati ako bi kamata duga skočila iznad tih vrijednosti. Ako negativni parametar buduće otplate označimo s $1 - p$, dobivamo da će banke posuđivati likvidnost SAD-u sve dok za kamatu vrijedi:

$$\frac{p\,x_G + (1 - p)\,x_B}{1 + i} > D - x_1$$

Dokle god je kamata ispod izračunatih vrijednosti, SAD će imati pristup vjerovničkom defanzivnom kreditiranju. Čim kamata skoči iznad 10,78 % i 10,82 %, SAD prelazi u višak duga s nesigurnošću i neće moći dobivati novu likvidnost za otplatu naslijeđenog duga.

Potencijalna opasnost leži u činjenici da svaki porast $L\,(1 + r)$ pri davanju novih kredita pomiče stanje prema negativnom faktoru x_B. Ekonomska teorija ovakva kretanja tumači kroz ideju da banke znaju da porast duga smanjuje mogućnost naplate pa na taj trend reagiraju povećanom kamatom (Krugman, 1988). Pojednostavljeno, svaki novi kredit x_2 pomiče vrijednost x_G prema x_B (Sachs, 1990).

Pored kamate defanzivnih kredita, ulogu igra i opća, tj. tržišna kamata duga koja se nominalno

estimated that it is more pragmatic to invest capital towards banks without debt claims, since the long-term security of their securities is higher. The bank attitude towards U.S. government debt lending is based on the same idea and creditors will offer new liquidity to the U.S. up to the highest level of profitability, i.e. until the transition to debt overhang with uncertainty.

Since in debt overhang without uncertainty, the state is solvent but illiquid, it can borrow money to repay previous loans, i.e. *borrow defensively* according to the formula $L = D - x_1$. If r in such loans represents interest on defensive lending, it can be concluded that the highest possible interest that the U.S. can offer is still allowing banks to borrow liquidity (x_G):

$$L\,(1 + r) = x_G$$

It follows that x_G, through the prism of creditors, is 10.78% and 10.82%.[10] The values above are regressive and the U.S. will not be able to pay them, so from then on they would be in a state of debt overhang with uncertainty. Banks would have no reason to lend if the interest on the debt soared above these values. If we mark the negative parameter of the future repayment with $1 - p$, we get that the banks will lend liquidity to the U.S. as long as the interest is:

$$\frac{p\,x_G + (1 - p)\,x_B}{1 + i} > D - x_1$$

As long as the interest is below the calculated values, the U.S. will have access to creditor defensive lending. As soon as the interest rises above 10.78% and 10.82%, the U.S. goes into debt overhang with uncertainty and will not be able to obtain new liquidity to repay the inherited debt.

The potential danger lies in the fact that any increase in $L\,(1 + r)$ when granting new loans, shifts the balance towards a negative factor x_B. Economic theory interprets such trends through the idea that banks know that the increase in debt reduces the possibility of collection, so they

isplaćuje. Uvrstimo li vrijednosti iz Tablice 1 u formulu:

$$\frac{x_1 + x_2}{(1 + i)} > D$$

dobivamo da je najveća marginalna tržišna kamata za održavanje u stanju viška duga bez nesigurnosti:

$$\frac{4{,}76 + 4{,}86}{1 + x} > 2{,}001$$

to jest da je:

$x < 3{,}8\ \%$

Uvrstimo sada vrijednosti iz Tablice 2, da bismo mogli odrediti maksimalnu kamatnu stopu pri kojoj će SAD u promatranom razdoblju biti sposoban privući novu likvidnost. Iz toga slijedi:

$$\frac{4{,}96 + 5{,}06}{1 + x} > 2{,}16$$

to jest:

$x < 3{,}63$

Svakim defanzivnim kreditom i njegovom kamatnom stopom zapravo se smanjuje marginalna tržišna stopa kamate koju SAD može podnijeti. Svaka kamatna stopa iznad 3,63 % (tj. 3,8 % za prethodno razdoblje) regresivna je i dovodi SAD do stanja viška duga s nesigurnošću. Na kraju možemo zaključiti da se SAD, prema faktoru kamate, nalazi u stanju viška duga bez nesigurnosti, budući da je trenutačna kamata od 3,1 % manja od marginalne vrijednosti 3,63 %.

Problem stanja viška duga s nesigurnošću i kamate jest taj da će banka radije dati x_2 ili x_3 kredit nego smanjivati postojeću kamatu za ranija potraživanja (Krugman, 1988). Vjerovnici slijede ovakav trend jer se nadaju da će država u jednom trenutku preokrenuti stanje ekonomije pa će vrijednost prošlih potraživanja donijeti veće prinose. Zbog toga vjerovnici rade pritisak za oporavak ekonomskog stanja država koje prijeđu u stanje viška duga s nesigurnošću. Tada država *prima facie* react to this trend with increased interest rates (Krugman, 1988). Simply put, each new loan x_2 shifts the value x_G towards x_B (Sachs, 1990).

In addition to the interest on defensive loans, what also counts, is the general, i.e. market interest on debt, which is paid in nominal terms. If we include the values from Table 1 in the formula:

$$\frac{x_1 + x_2}{(1 + i)} > D$$

we conclude that the largest marginal market interest to maintain the state of debt overhang without uncertainty is:

$$\frac{4.76 + 4.86}{1 + x} > 2.001$$

that is:

$x < 3.8\%$

Let us now include the values from Table 2, so that we can determine the maximum interest rate at which the USA will be able to attract new liquidity in the monitored period. From this follows:

$$\frac{4.96 + 5.6}{1 + x} > 2.16$$

i.e.

$x < 3.63$

Each defensive loan and its interest rate actually reduce the marginal market interest rate that the U.S. can pay. Any interest rate above 3.63% (i.e. 3.8% for the previous period) is regressive and leads the U.S. to a state of debt overhang with uncertainty. Finally, we can conclude that the USA, according to the interest factor, is in a state of debt overhang without uncertainty, since the current interest rate of 3.1% is lower than the marginal value of 3.63%.

The problem of the balance of debt overhang with uncertainty and the interest is that the bank will rather grant x_2 or x_3 loan, than reduce the

nema motivacije za jak ekonomski napredak, jer će sav novi prinos pripasti samo vjerovnicima, koji će svoju kamatu x_H uvijek nastojati naplatiti u najvećem mogućem iznosu:

$$L\,(1 + r) = x_H$$

Razlog državne rezigniranosti leži i u činjenici da država prema međunarodnom pravu najprije treba namiriti vanjska potraživanja (Sachs, 1990). Vjerovnici, da bi potaknuli državu na ekonomski oporavak, u slučaju viška duga s nesigurnošću nude kamatu nižu od moguće ako je naplata u sljedećem razdoblju neizvediva zbog visine kamate. Time omogućuju porast i veću naplatu kasnijih potraživanja (Krugman, 1988).

Uzmimo hipotetski slučaj u kojemu SAD prelazi u stanje viška duga s nesigurnošću na temelju tržišne kamate duga, ali i kamate defanzivnog kreditiranja. Vjerovnici bi smanjili kamatu od 3,63 % na $i < 3{,}63$ %, tj. $r < 10{,}78$ % i $r < 10{,}83$%, u nastojanju da SAD-u daju veći manevarski prostor za otplatu sljedeće rate duga.[11] U trenutku kada je $x_3 > x_2 > x_1$, može se očekivati da će kamata i i r također rasti do razine marginalne korisnosti za vjerovnike, tj. natrag na 3,63 % i 10,78 %. Pojednostavljeno, ako SAD dođe do stanja viška duga s nesigurnošću (na temelju prevelike kamate), vjerovnici će smanjiti kamatu samo na kratko razdoblje radi povećanja vrijednosti x_1 i x_2, koje im omogućuju naplatu potraživanja. U trenutku kada ti parametri porastu, vjerovnici će podići obje kamate do marginalne razine. Kada država upadne u stanje viška duga s nesigurnošću na temelju kamate, ona se zapravo nalazi u *ad infinitum* stanju regresivne kamate s razdobljima olakšanja. Mogućnost takvog ishoda dodatno pojačava imperativ neprelaženja dugovnog stanja prema višku duga s nesigurnošću na temelju kamate. SAD treba težiti tome da realna kamata duga za prva dva tromjesečja 2024.ostane ispod predviđene marginalne razine od 3,63 %, a kamata defanzivnog kreditiranja ispod 10,78 % i 10,83 %.

Devijacije od marginalnih vrijednosti mogu se pretrpjeti na kratke rokove, budući da ih mogu

existing interest on earlier claims (Krugman, 1988). Creditors follow this trend because they hope that the state will reverse the state of the economy at some point, so the value of past receivables will bring higher returns. This is why creditors are pressing for the recovery of the economic situation of countries that go into a state of debt overhang with uncertainty. Then the state *prima facie* has no motivation to pursue strong economic progress, because the whole new yield will end up in creditors' hands only, who will always strive to charge their interest x_H in the largest amount possible:

$$L\,(1 + r) = x_H$$

The reason for state's indifference also lies in the fact that, according to the international law, the state should first settle external claims (Sachs, 1990). Creditors, in order to push the state toward economic recovery, in the event of debt overhang with uncertainty, offer interest lower than possible if the collection in the next period is unfeasible, due to the amount of interest. This enables an increase and greater collection of later claims (Krugman, 1988).

Let us consider a hypothetical case in which the U.S. go into the state of debt overhang with uncertainty based on market interest on debt, but also interest on defensive lending. Creditors would reduce the interest rate of 3.63% to $i < 3.63$%, i.e. $r < 10.78$% and $r < 10.83$%, in an effort to give the U.S. more leeway to repay the next debt instalment.[11] At a time when interest $x_3 > x_2 > x_1$, i and r can also be expected to rise to the level of marginal utility for creditors, i.e. back to 3.63% and 10.78%. Simply put, if the U.S. find themselves in the situation of debt overhang with uncertainty (based on excessive interest), the creditors will reduce the interest only for a short period in order to increase the values x_1 and x_2, which allows them to collect receivables. At the moment when these parameters rise, the creditors will raise both interest rates to the marginal level. When a state falls into the state of debt overhang with interest-based uncertainty, it is actually in an *ad infinitum* state of regressive interest with periods of relief. The possibility of

uzrokovati ostali čimbenici. Na primjer, SAD se može nominalno naći u stanju viška duga s nesigurnošću radi previsoke eskontne stope. Eskontna stopa je kamata koju komercijalne banke plaćaju za novac stvoren *ex nihilo* pa se komercijalna kamatna stopa kreće proporcionalno s njom (Radošević, 2018). Svako jačanje inflacije dovodi do jačanja restriktivne monetarne politike, što potencijalno jača kamatu iznad regresivne, ali samo nominalno i ne nužno trajno. Kretanje eskontne stope zapravo igra ulogu neempirijskog čimbenika kamate u određivanju stanja viška duga sa ili bez nesigurnosti.

Američki FED počeo je s restriktivnom monetarnom politikom u ljeto 2022., što je vidljivo na Grafikonu 2 (Wessel, 2024). Iz grafikona je vidljiv jasan utjecaj eskontne stope kao neempirijskog čimbenika na kretanje odnosa kamate prema višku duga.

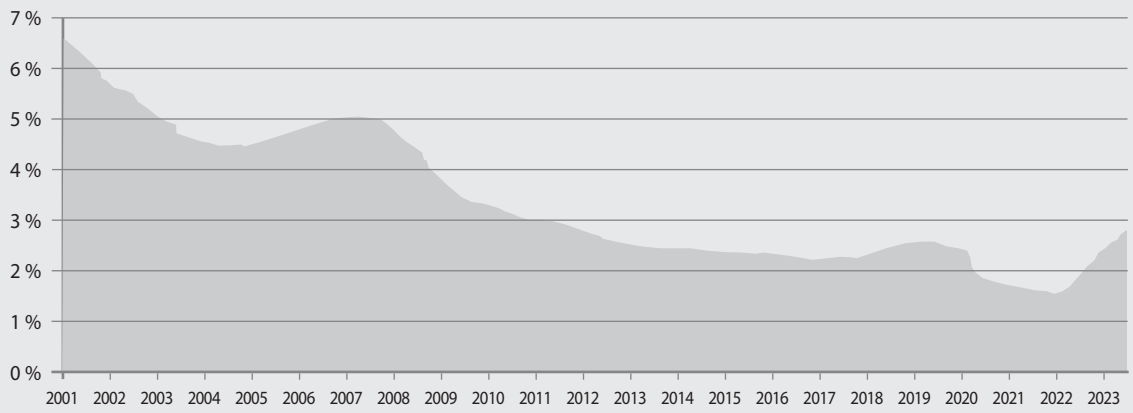
Kada bi eskontna stopa nastavila kontinuirano rasti, olakšala bi put SAD-a prema višku duga s nesigurnošću na temelju kamate.

such an outcome further reinforces the imperative not to go over the debt balance to the debt overhang with interest-based uncertainty. The U.S. should strive to keep the real interest on debt for the first two quarters of 2024 below the projected marginal level of 3.63%, and the interest on defensive lending below 10.78% and 10.83%.

Deviations from marginal values can be tolerated for short periods of time, as they can be caused by other factors. For example, the U.S. can be nominally in a state of debt overhang with uncertainty due to too high a discount rate. The discount rate is the interest paid by commercial banks for money created *ex nihilo*, so the commercial interest rate moves proportionally with it (Radošević, 2018). Any inflation increase leads to a strengthening of restrictive monetary policy, which potentially increases interest above regressive, but only nominally and not necessarily permanently. The discount rate change actually plays the role of a non-empirical interest factor in determining the balance of debt overhang with or without uncertainty.

The US FED started the restrictive monetary policy in the summer of 2022, as can be seen in Graph 2

GRAFIKON 2. KRETANJE KAMATE NA DRŽAVNI DUG SAD-A[12]
GRAPH 2. CHANGES OF INTEREST ON U.S. GOVERNMENT DEBT[12]



Zadržavanje unutar viška duga bez nesigurnosti – Lafferova krivulja duga

Motivacija vjerovnika za kreditiranjem x_2, osim o ukupnom porastu duga i kamate, ovisi o još jednom čimbeniku – ukupnoj vrijednosti prošlih potraživanja. Naime, svakim x_2 kreditom, tj. obrambenim kreditiranjem, vjerovnici se nadaju da će BDP SAD-a rasti brže od duga pa će uvjeti otplate ojačati u nadolazećim godinama. Posredno, to će im omogućiti potpunu naplatu potraživanja, zbog čega izbjegavaju otpisivanje prijašnjeg duga čak i ako se zemlja nalazi u višku duga s nesigurnošću. Manifestacija ove ideje (u slučaju viška duga bez nesigurnosti) događa se kada se u prvom razdoblju x_1 odgađa bankrot posudbom likvidnosti x_2. Naplata potraživanja zapravo se odgađa na drugo razdoblje u vidu resursa x_2. Vjerovnici tada uspijevaju naplatiti ukupna potraživanja, a čak i ako ne uspiju, prinos im je veći nego da su pustili da potraživanje x_1 propadne zbog dopuštanja bankrota zemlje (Krugman, 1988). Za vjerovnike je profitabilnije svojom likvidnošću ojačavati vrijednost x_2, kojim se naplaćuje potraživanje razdoblja x_1 sve do prijelaza države u ranije opisani x_B. SAD bi prešao u stanje x_B kada bi:

$$\frac{p\,x_G + (1-p)\,x_B}{1+i} < D - x_1$$

Zapravo, komercijalne banke daju x_2 kredite da bi se pokrila potraživanja kamate od resursa dostupnih za razdoblje x_1. Ako odredimo da je D inicijalni dug, $d - d^*$ očekivani gubitak, a $(d - d^*)\,D$ vrijednost postojećeg duga, dobivamo da banke posuđuju novac SAD-u jer vrijedi:

$$\frac{L}{D} < (d - d^*)\,D$$

Kroz prizmu vjerovnika, defanzivno kreditiranje ne jača dugovanje države, jer su sva potraživanja nominalno zaključana u kamati. Negativna percepcija vjerovnika, tj. prijelaz u x_B, događa se i kada dug poraste na dovoljno veliku količinu da naplata njegove vrijednosti pada ispod razine profitabilnosti (Krugman, 1988). Taj bi se

(Wessel, 2024). The graph shows a clear impact of the discount rate as a non-empirical factor on the changes of the interest-to-debt overhang ratio.

If the discount rate continued to rise steadily, it would ease the way for the U.S. to debt overhang with interest-based uncertainty.

Retention within debt overhang without uncertainty – The Debt Laffer Curve

The motivation of creditors for lending to x_2, in addition to the overall increase in debt and interest, depends on another factor – the total value of past claims. Namely, with each x_2 loan, i.e. defense lending, creditors hope that U.S. GDP will grow faster than the debt, so the repayment conditions will strengthen in the coming years. Indirectly, this will allow them to fully collect receivables, which is why they avoid writing off previous debt even if the country is in a debt overhang with uncertainty. The manifestation of this idea (in the case of debt overhang without uncertainty) occurs when bankruptcy is postponed in the first period x_1 by borrowing liquidity x_2. Collection of receivables is actually deferred to another period in the form of resources x_2. Creditors then manage to collect the total claims, and even if they fail, their yield is higher than if they let the claim x_1 fail due to allowing the state to go bankrupt (Krugman, 1988). For creditors, it is more profitable to strengthen the value x_2 with their liquidity which collects the receivables of the period x_1 until the state transitions to the state described above, the x_B. The United States would move to a state x_B if:

$$\frac{p\,x_G + (1-p)\,x_B}{1+i} < D - x_1$$

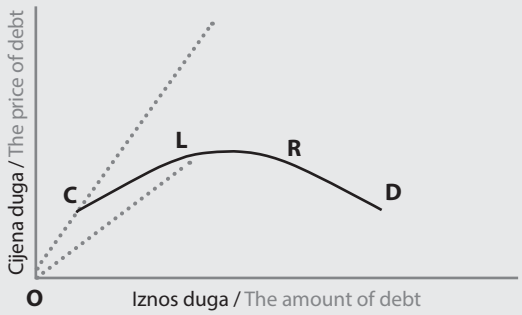
In fact, commercial banks grant x_2 loans to cover interest from resources available for the period x_1. If we determine that D is the initial debt, $d - d^*$ the expected loss, and $(d - d^*)\,D$ the value of the existing debt, the result is that the banks lend money to the U.S. because:

$$\frac{L}{D} < (d - d^*)\,D$$

slučaj dogodio kada bi se SAD našao na desnoj strani krivulje dugova, kao što je prikazano na Grafikonu 3.

Iznad marginalne točke, daljnji rast duga smanjuje predviđenu vrijednost naplate, tj. stavlja SAD u ranije spomenuti x_B. Apscisa predstavlja nominalnu vrijednost državnog duga, a ordinata realnu vrijednost naplate. Pri niskim vrijednostima apscise može se očekivati puna naplata duga, a taj trend prati nagib od 45 stupnjeva. Porast duga, prikazan ispod linije od 45 stupnjeva, smanjuje mogućnost naplate. Kod točke L omjer nominalnog potraživanja i realne naplate može se odrediti kutom nagiba prema liniji od 45 stupnjeva. Pojednostavljeno, točke ispod linije nagiba od 45 stupnjeva predstavljaju vrijednost na sekundarnom tržištu. Iako razine duga iznad točke C smanjuju vrijednost duga na sekundarnom tržištu, ukupna vrijednost potraživanja dugovanja i dalje raste (Krugman, 1988). Međutim, ako razina duga dosegne dovoljno visoku razinu, ukupna vrijednost potraživanja zbog visine duga počinje padati. Primjerice, 1987. godine 57 milijardi dolara nominalnih potraživanja bankarskog sustava prema stranim dužnicima iznosilo je 31,9 milijardi dolara zbog toga što se nalazilo na desnoj strani krivulje (Sachs, 1987). Vjerovnici bi ojačali svoja potraživanja kada bi svoju nominalnu vrijednost

GRAFIKON 3. LAFFEROVA KRIVULJA DUGA[13]
GRAPH 3. DEBT LAFFER CURVE[13]



Through the prism of creditors, defensive lending does not strengthen the state's debt, because all receivables are nominally locked in the interest. The negative perception of the creditors, i.e. the transition to x_B, also occurs when the debt rises to a sufficiently large amount that the collection of its value falls below the level of profitability (Krugman, 1988). This case would occur if the USA were on the right side of the debt curve, as shown in Graph 3.

Above the marginal point, further debt growth reduces the projected collection value, i.e. it puts the USA in the aforementioned x_B. The abscissa represents the nominal value of the government debt, and the ordinate the real value of collection. At low abscissa values, full debt collection can be expected, and this trend is accompanied by a 45-degree inclination. The increase in debt, shown below the 45-degree line, reduces the possibility of collection. At point L, the ratio of the nominal claim to the real collection can be determined by the angle of inclination according to the 45-degree line. Simply put, the points below the 45 degree inclination line represent the value in the secondary market. Although debt levels above point C reduce the value of debt in the secondary market, the total value of debt receivables continues to rise (Krugman, 1988). However, if the level of debt reaches a high enough level, the total value of receivables begins to fall, due to the amount of debt. For example, in 1987, $57 billion of nominal claims of the banking system against foreign debtors amounted to $31.9 billion due to being on the right side of the curve (Sachs, 1987). Creditors would strengthen their claims if they reduced their nominal value from point L to point C, but the total value collected would be lower. Suppose that, at the time of claiming, the value of $100 of the debt falls to $60 in the secondary market, due to the quantity. Even if a bank sold such a claim for $65, it would lose $35 in value in accounting. This leads to a weaker balance sheet and a decline in the price of securities, so the bank will not do so. The reason lies in the previously mentioned optimism towards stronger economic growth, which enables

smanjili s točke L na točku C, ali bi ukupna prikupljena vrijednost bila manja. Pretpostavimo da u trenutku potraživanja vrijednosti od 100 dolara duga vrijednost duga na sekundarnom tržištu zbog količine pada na 60 dolara. Čak i kada bi banka takvo potraživanje prodala za 65 dolara, u službenom knjigovodstvu izgubila bi 35 dolara vrijednosti. To dovodi do slabije bilance i opadanja cijene vrijednosnica, stoga to neće napraviti. Razlog leži u ranije spomenutom optimizmu prema jačem ekonomskom rastu, koji omogućuje otplatu prijašnjih potraživanja, tj. prema većem profitu vjerovnika, koji omogućuje potpunu otplatu (Sachs, 2002). Banke imaju još jedan razlog izbjegavanja otpisivanja duga radi pomicanja prema lijevoj strani krivulje: kada bi komercijalne banke otpisale dio svojih potraživanja prema SAD-u, ostale bi države očekivale isti tretman (Sachs, 2002).

Problem je oprosta i aksiomatske prirode. Pretpostavimo da SAD prijeđe u stanje viška duga s nesigurnošću pa se 1 dolar duga prodaje za 60 centi. To znači da bi smanjivanje nominalnog duga s 31,400 milijardi na 28,400 milijardi dolara zapravo smanjilo realnu vrijednost na krivulji CLRD za samo 900 milijardi, umjesto za nominalnih 3000 milijardi dolara (Krugman, 1990). To bi dovelo do dodatnog oštećenja bilanci bankarskog sustava, pomičući istodobno državu prema lijevoj strani u nezavidnim vrijednostima. Vjerovnici žive i od nade da će se neka međunarodna institucija uplesti u situaciju i time dovesti do lakše otplate duga, tj. njihovih potraživanja. Primjerice, Krugman (1990) navodi da se u trenutku najave *Brady Plana* cijena duga država dužnica povećala za 55 %.

Opisani grafički prikaz teško je primijeniti na empirijske podatke, ali sigurno možemo zaključiti da se dug SAD-a ne nalazi s desne strane krivulje. Razlog je tome dostupnost likvidnosti za pokrivanje tereta duga. Međutim, ako se nastavi trend rasta prema predviđanju Dynan (2023) do 180 % BDP-a do 2053., sigurno je da će se dug nalaziti na desnoj strani krivulje DRLC. U tom trenutku banke bi izgubile poticaj za kreditiranje duga. Budući da je pretpostavljena vrijednost više imaginarna

the repayment of previous claims, i.e. towards higher creditor profits, which enable full repayment (Sachs, 2002). Banks have another reason to avoid writing off debt to move to the left of the curve: if commercial banks were to write off some of their receivables from the U.S., other countries would expect the same treatment (Sachs, 2002).

The problem is debt forgiveness and axiomatic nature. Let us assume that the U.S. get into the state of debt overhang with uncertainty and $1 of debt is sold for 60 cents. This means that reducing nominal debt from $31.4 trillion to $28.4 trillion would actually reduce the real value on the CLRD curve by only $900 trillion instead of the nominal $3 trillion (Krugman, 1990). This would lead to additional impairment of the banking system balance sheets, while at the same time shifting the state to the left in unenviable values. Creditors also live in hope that an international institution will get involved and thus lead to easier repayment of debt, i.e. their claims. For example, Krugman (1990) states that at the time of the announcement of the *Brady Plan*, the debt price of the debtor states increased by 55%.

It would be difficult to apply the described graph to empirical data, but we can safely conclude that the U.S. debt is not on the right side of the curve. This is due to the availability of liquidity to cover the debt burden. However, if the upward trend, as projected by Dynan (2023), continues to 180% of GDP by 2053, it is certain that the debt will be placed on the right side of the DRLC curve. At that point, banks would lose the incentive to finance debt. Since the assumed value is imaginary rather than empirical, such a sequence of events can occur very rapidly. From the creditor's perspective, there is no reason to provide new liquidity if it reduces the possibility of collection and the value of previous claims. This is due to the fact that the market determines the price of banking system securities based on the value of its claims against debtors on the secondary market (Sachs, 1987). Banks are actually forced to stop lending if the U.S. moves to the right side of the curve. Simply put, if

nego empirijska, do takvog slijeda događaja može doći vrlo rapidno. Iz perspektive vjerovnika, ne postoji razlog za davanje nove likvidnosti ako ona smanjuje mogućnost naplate i vrijednost prijašnjih potraživanja. Razlog tome leži u činjenici da tržište određuje cijenu vrijednosnica bankarskog sustava na temelju vrijednosti njegovih potraživanja prema dužnicima na sekundarnom tržištu (Sachs, 1987). Banke su zapravo primorane prestati s kreditiranjem ako SAD prijeđe na desnu stranu krivulje. Pojednostavljeno, ako nastavi s jačanjem duga, SAD neće moći zadržati poziciju na lijevoj strani krivulje te će ga prevelik dug *de facto* izbaciti s međunarodnog tržišta kapitala.

Primicanje marginalnoj razini zaduženosti na krivulji za sobom vuče još jedan problem. Vjerovnici će davati sredstva državi s viškom duga jer je to kolektivni interes svih banaka. Svaka pojedinačna banka[14] bila bi u boljem položaju ako bi kredit za x_2 dale ostale banke bez njezinog sudjelovanja. U takvoj opciji ona bi namirila svoja potraživanja x_1 bez povećanja rizika za ukupnu naplatu zbog davanja likvidnosti za x_2. Problem održivosti duga putem obrambenog kreditiranja javlja se u situaciji kada jedna banka odustaje od kolektivnog x_2 kredita. U tom trenutku ostale banke gube vlastiti interes za obrambeno kreditiranje, budući da bi i njihove bilance bile stabilnije ako bi bile isključene iz sljedećeg vala defanzivnog kreditiranja. U tom trenutku dostupnost likvidnosti prestaje ili se kamata na defanzivne kredite eksponencijalno povećava zbog njezinog manjeg obujma i veće pojedinačne bankarske izloženosti. Sachs (1990) takav problem bankarske nesuradnje naziva terminom „slobodnog jahača" (engl. *free rider*). To je dodatan razlog zbog kojeg SAD treba težiti sprječavanju daljnjeg rasta duga, budući da dug na lijevoj strani krivulje vjerovnicima ne daje motivaciju da budu „slobodni jahači".

DISKUSIJA REZULTATA

Iz prikazanih rezultata može se zaključiti da je *sui generis* održavanja duga SAD-a usmjeren

it continues to increase the debt, the U.S. will not be able to maintain their position on the left side of the curve and too much debt will *de facto* drive them out of the international capital market.

Approaching the marginal level of indebtedness on the curve raises another problem. Creditors will provide funds to the state with debt overhang because this is the collective interest of all banks. Each individual bank[14] would be in a better position if the loan to x_2 was granted by other banks without its participation. In such case, the bank would settle its receivables x_1 without increasing the risk to the total collection due to the provision of liquidity for x_2. The problem of debt sustainability through defense lending occurs in a situation where one bank gives up on a collective x_2 loan. At that moment, other banks lose their own interest in defense lending, since their balance sheets would also be more stable if they were excluded from the next wave of defensive lending. At that moment, the availability of liquidity ceases or the interest on defensive loans increases exponentially, due to its lower volume and higher individual banking exposure. Sachs (1990) calls such a problem of banking non-cooperation "free rider". This is an additional reason why the U.S. should strive to prevent further debt growth, since the debt on the left side of the curve does not give creditors the motivation to be "free riders".

RESULT DISCUSSION

Based on the results presented, it can be concluded that the *sui generis* of U.S. debt maintenance is focused on its perception by creditors. Creditors, based on the amount of debt, its interest, but also the price on the secondary market, believe that the USA is in debt overhang without uncertainty and that further borrowing is possible because there is no risk for past creditors' claims. If the unfavorable factors, observed through Krugman's theory, were to grow according to the hypothetical values shown in Table 2, the U.S. would reach the stage of debt

na njegovu percepciju od strane vjerovnika. Vjerovnici na temelju visine duga, njegove kamate, ali i cijene na sekundarnom tržištu smatraju da je SAD u višku duga bez nesigurnosti i da su daljnje posudbe moguće, a moguće su zato što ne postoji rizik za dosadašnja vjerovnička potraživanja. Kada bi nepovoljni čimbenici promatrani kroz Krugmanovu teoriju rasli prema hipotetskim vrijednostima prikazanima u Tablici 2, SAD bi došao do stadija viška duga s nesigurnošću, tj. bio bi izbačen s međunarodnog tržišta kapitala.

RIZICI BANKROTA I DRŽAVNIH DUGOVANJA

U slučaju SAD-a, bankrot ili privremeno stanje bankrota dogodilo bi se u trenutku kada bi država prešla u stanje viška duga s nesigurnošću, budući da bi tada nastupilo razdoblje pregovora oko nove suradnje s bankama. Ekonomska teorija uči nas da bi glavna posljedica bankrota (iako privremenog) bila povećana volatilnost tržišta, proizašla kao posljedica pada povjerenja u stabilnost američkog duga. Pad povjerenja manifestirao bi se većim premijama rizika, tj. većim kamatama, pa bi teret duga kućanstava porastao simultano s državnim dugom (Stiglitz, 2016). Povećana premija rizika obuhvatila bi i tržite vrijednosnica pa bi došlo do dodatnog usporavanja ekonomije. Takva kretanja empirijski su dokazana tijekom grčke dužničke krize 2011. godine. Stiglitz (2016) navodi da je kamata državnih obveznica rasla toliko visoko (kao posljedica prevelikog duga) da je potražnja za njima pala dovoljno nisko da država njima nije mogla prikupljati sredstva za buduće otplate. U tom trenutku tržište vrijednosnica naglo je posrnulo, zajedno s cjelokupnom ekonomijom i dostupnom likvidnošću. U tom je slučaju Grčku spasila Europska središnja banka, ali u američkom slučaju ne postoji supranacionalna institucija koja bi spasila državu od takvog ekonomskog trenda. Cardin (2023) zaključuje da bi u slučaju privremenog bankrota SAD-a došlo do pada BDP-a od 3 %, broj nezaposlenih skočio bi za 8 %, kućanstva bi izgubila 10 milijardi američkih dolara u vrijednosnoj

overhang with uncertainty, i.e. they would be thrown out of the international capital market.

BANKRUPTCY AND NATIONAL DEBT RISKS

In the case of the U.S., a bankruptcy or a temporary bankruptcy would occur at a time when the state would go into debt overhang with uncertainty, since then there would be new cooperation negotiations with banks. Economic theory teaches us that the main consequence of bankruptcy (albeit temporary) would be increased market volatility, resulting from a shaken confidence in the stability of the U.S. debt. The decline in confidence would be manifested by higher risk premiums, i.e. higher interest rates, so the burden of household debt would increase simultaneously with government debt (Stiglitz, 2016). The increased risk premium would also affect the securities market, so there would be an additional economic slowdown. Such developments were demonstrated empirically during the Greek debt crisis in 2011. Stiglitz (2016) states that the interest rate on government bonds increased so much (as a result of too much debt) that demand for them fell low enough that the state could not raise funds for future repayments. At that point, the securities market stumbled sharply, along with the overall economy and available liquidity. In this case, Greece was saved by the European Central Bank, but in the American case, there is no supranational institution that would save the state from such an economic trend. Cardin (2023) concludes that in the event of temporary bankruptcy of the USA, there would be a 3% drop in GDP, the unemployment rate would rise by 8%, households would lose US $10 billion in value savings, and the long-term consequence would be 1% lower GDP for ten years after the recovery. Also, the total number of employees would be lower by 900,000 throughout that period. The market would be close to Minsky-Fisher deflation, but the state would not be able to stimulate reflation, as its fiscal space would be significantly reduced (Radošević, 2018). Simultaneously, according to Keynes' consumer

štednji, a dugoročna posljedica bio bi 1 % manji BDP države deset godina nakon oporavka. Također, ukupan broj zaposlenih u tom razdoblju bio bi manji za 900 000. Tržište bi bilo blizu Minsky-Fisherovoj deflaciji, ali država ne bi mogla potaknuti reflaciju, jer bi joj fiskalni manevarski prostor bio znatno smanjen (Radošević, 2018). Simultano, prema Keynesovom potrošačkom duhu, likvidnost bi bježala od tržišta vrijednosnica pa bi realan rast proizvodnje bio dodatno potisnut prema dolje (Keynes, 1987). Takvo kretanje dodatno bi smanjivalo fiskalne prihode potrebne za isplate potraživanja. Državni sektor također bi nastradao pa bi isplata plaća u javnom sektoru kasnila paralelno s naplatom privatnih poduzetnika.

Američki bankrot imao bi i velik utjecaj na svjetsku ekonomiju. Tijekom 1960-ih godina većinu državnog duga držale su domaće fizičke i pravne osobe, dok je udio stranog kapitala iznosio samo 5 % (The White House, 2023). Inflacijski pritisci spojeni sa svjetskom dužničkom krizom početkom 80-ih godina prošlog stoljeća povećali su stranu potražnju za američkim obveznicama pa je udio stranog kapitala skočio na 20 % do 1990. godine. Od 1995. do 1997. ta je vrijednost narasla na 33 %, a do kraja 2020. godine 34 % državnog duga držale su strane fizičke i pravne osobe (The White House, 2023). The White House (2023) navodi da 51 % ukupnog stranog državnog duga drže središnje banke, od čega 15 % drži japanska središnja banka, a 12 % kineska. Kolaps vrijednosti američkih obveznica doveo bi do kaosa kreditnih ciklusa i bilanci, a budući da je Kina prva ekonomija svijeta, a Japan četvrta, neupitno je da bi svjetska ekonomija doživjela velik udarac. Jednako tako, u svim državama i bankama koje koriste dolarski kolateral došlo bi do nestabilnosti njihovih bilanci.

REZULTATI I ZAKLJUČAK

Zaključno, percepcija koju vjerovnici imaju o dugu je *sui generis* za opstanak SAD-a na međunarodnom tržištu kapitala. Vjerovnici prema prikazanim

spirit, liquidity would escape the securities market and real output growth would be suppressed (Keynes, 1987). Such a development would further reduce the fiscal revenues required to pay claims. The state sector would also suffer, so the payment of salaries in the public sector would be delayed in parallel with the collection by private entrepreneurs.

A U.S. bankruptcy would also have a major impact on the world economy. During the 1960s, the majority of government debt was held by domestic natural and legal persons, while the share of foreign capital was only 5% (The White House, 2023). Inflationary pressures coupled with the global debt crisis in the early 1980s increased foreign demand for U.S. bonds, so the share of foreign capital jumped to 20% by 1990. From 1995 to 1997, this value increased to 33%, and by the end of 2020, 34% of government debt was held by foreign natural and legal persons (The White House, 2023). The White House (2023) states that 51% of total foreign government debt is held by central banks, of which 15% is held by the Bank of Japan and 12% by the People's Bank of China. The collapse in the value of U.S. bonds would lead to chaos in credit cycles and balance sheets, and since China is the world's first economy and Japan is the fourth, it is unquestionable that the world economy would suffer a major blow. Equally, the balance sheets of all countries and banks that use dollar collateral would be unstable.

RESULTS AND CONCLUSION

In conclusion, the perception that creditors have of debt is *sui generis* for U.S. survival in the international capital market. According to the presented calculations based on Krugman's theory, creditors believe that the U.S. debt is in debt overhang without uncertainty. This means that the U.S. can draw new liquidity to settle past creditors' claims. This paper proves such a thesis on the basis of Krugman's calculations for total

proračunima na temelju Krugmanove teorije smatraju da je dug SAD-a u stanju viška duga bez nesigurnosti. To znači da SAD može povlačiti novu likvidnost za namirivanje prošlih vjerovničkih potraživanja. Rad dokazuje takvu tezu na temelju Kugmanovih proračuna za ukupni dug i kamatu, prema kojima dug spada u stanje viška bez nesigurnosti. Također, na temelju deskriptivnog pregleda Lafferove krivulje duga, rad zaključuje da dug SAD-a nije u regresivnom dijelu krivulje. Upravo tri kretanja koja prikazuje Lafferova krivulja ključna su za poziciju SAD-a na međunarodnom tržištu kapitala, dok su unutarnji politički čimbenici sporedni. Međutim, ako prikazani nepovoljni čimbenici nastave rasti prema pretpostavljenim vrijednostima, SAD će se naći u stanju viška duga s nesigurnošću. Rezultati rada daju empirijske vrijednosti, temeljene na Krugmanovoj teoriji, koje bi dovele do toga da SAD bude izbačen s međunarodnog tržišta kapitala i primoran na rekonstrukciju duga. Nadalje, rad prikazuje da je prodaja duga SAD-a na sekundarnom tržištu trenutačno održiva, ali daje i hipotetske vrijednosti koje bi mogle dovesti do problema financiranja duga. Na kraju, prikazuju se negativne posljedice koje bi pogodile svjetsku ekonomsku scenu kada bi SAD makar kratkoročno zapao u višak duga s nesigurnošću.

Rad može služiti kao predložak za izučavanje kretanja dugova u akademskom i poslovnom spektru. Za daljnja istraživanja preporučuje se analiza dugovne krize 90-ih godina prošlog stoljeća i njezinog utjecaja na bilance bankarskog sektora vjerovnika (u vidu pada cijene njihovih vrijednosnica na temelju postotne izloženosti državama u višku duga). Također se preporuča teorijska analiza međunarodnog tržišta kapitala autora Jeffreyja Sachsa, Paula Samuelsona i Paula Krugmana.

debt and interest, according to which the debt falls into overhang without uncertainty. Also, based on the descriptive review of the Debt Laffer Curve, the paper concludes that U.S. debt is not in the regressive part of the curve. The three trends shown by the Debt Laffer Curve are key to the U.S. position in the international capital market, while internal political factors are secondary. However, if the unfavorable factors presented continue to rise according to assumed values, the U.S. will find themselves in the state of debt overhang with uncertainty. The results of the paper provide empirical values, based on Krugman's theory, that would lead the U.S. to be thrown out of the international capital market and forced into debt restructuring. Furthermore, the paper shows that the sale of U.S. debt on the secondary market is currently viable, but also provides hypothetical values that could lead to debt financing problems. Finally, the negative consequences which would hit the world economic scene, if the United States fell into even a short term debt overhang with uncertainty, are presented.

The paper can serve as a template for studying the development of debts in the academic and business spectrum. For further research, it is recommended to analyze the debt crisis of the 1990s and its impact on the balance sheets of the banking sector of creditors (bearing in mind the price decline of their securities based on the percentage of exposure to countries in debt overhang). Theoretical analysis of the international capital market by Jeffrey Sachs, Paul Samuelson and Paul Krugman is also recommended.

BILJEŠKE

[1] Prema podatcima FRED Economic Data, St. Louis Fed. Dostupno na: https://fred.stlouisfed.org/series/GFDEBTN (pristupljeno 2. 5. 2024.).

[2] Prema podatcima FRED Economic Data, St. Louis Fed. Dostupno na: https://fred.stlouisfed.org/series/GFDEGDQ188S (pristupljeno 2. 5. 2024.).

[3] Prema podatcima FRED Economic Data, St. Louis Fed. Dostupno na: https://fiscaldata.treasury.gov/americas-finance-guide/national-debt/ (pristupljeno 2. 5. 2024.).

[4] Krugman, P. (1988), „Financing vs. Forgiving a Debt Overhang", *NBER Working Papers Series*, Cambridge, Massachusetts: National Bureau of Economic Research.

[5] Kamata američkog duga 2019. – 2024., preuzeto s https://www.statista.com/statistics/1382455/monthly-interest-rate-us-debt/#:~:text=As%20of%20March%202024%2C%20the,reached%2034.47%20trillion%20U.S.%20dollars (pristupljeno 5. svibnja 2024.).

[6] Prema podatcima FRED Economic Data, St. Louis Fed. Preuzeto s https://fred.stlouisfed.org/series/A091RC1Q027SBEA (pristupljeno 5. svibnja 2024.).

[7] Prema podatcima FRED Economic Data, St. Louis Fed. Preuzeto s https://fred.stlouisfed.org/series/FGRECPT (pristupljeno 5. svibnja 2024.).

[8] Prema podatcima FRED Economic Data, St. Louis Fed. Preuzeto s https://fred.stlouisfed.org/series/FGEXPND (pristupljeno 5. svibnja 2024.).

[9] Hipotetske vrijednosti izračunate su su prema podatcima iz Tablice 1.

[10] Pretpostavka za 2024. uz uvjet nepromijenjene opće kamate.

[11] Pretpostavljene vrijednosti vežu se za tromjesečja.

[12] Kamata duga SAD-a 2019. – 2024. Preuzeto s https://www.statista.com/statistics/1382455/monthly-interest-rate-us-debt/#:~:text=As%20of%20March%202024%2C%20the,reached%2034.47%20trillion%20U.S.%20dollars (pristupljeno 5. svibnja 2024.).

[13] Preuzeto od: Šokčević, S., Ćorić, D., Rudančić, A. (2023), „Uloga Europske središnje banke tijekom grčke dužničke krize. *Evropska revija*, I (2023), 17, 195-213, doi: 10.7251/ERB2317194S (pristupljeno 5. svibnja 2024.).

[14] Bilo domaća bilo inozemna, u ovom slučaju nema razlike budući da se sve banke prema državi odnose kao strana, tj. vanjska tijela.

REFERENCES

[1] According to FRED Economic Data, St. Louis Fed. Available at: https://fred.stlouisfed.org/series/GFDEBTN (accessed on May 2, 2024).

[2] According to FRED Economic Data, St. Louis Fed. Available at: https://fred.stlouisfed.org/series/GFDEBTN (accessed on May 2, 2024).

[3] According to FRED Economic Data, St. Louis Fed. Available at: https://fiscaldata.treasury.gov/americas-finance-guide/national-debt/ (accessed on May 2, 2024).

[4] Krugman, P. (1988), "Financing vs. Forgiving a Debt Overhang", *NBER Working Papers Series*, Cambridge, Massachusetts: National Bureau of Economic Research.

[5] Interest on the US national debt 2019 – 2024, retrieved from https://www.statista.com/statistics/1382455/monthly-interest-rate-us-debt/#:~:text=As%20of%20March%202024%2C%20the,reached%2034.47%20trillion%20U.S.%20dollars (accessed on May 5, 2024).

[6] According to FRED Economic Data, St. Louis Fed. Retrieved from https://fred.stlouisfed.org/series/A091RC1Q027SBEA (accessed on May 5, 2024).

[7] According to FRED Economic Data, St. Louis Fed. Retrieved from https://fred.stlouisfed.org/series/FGRECPT (accessed on May 5, 2024).

[8] According to FRED Economic Data, St. Louis Fed. Retrieved from https://fred.stlouisfed.org/series/A091RC1Q027SBEA (accessed May 5, 2024).

[9] The hypothetical values were calculated according to the data from Table 1.

[10] Assumption for 2024 with unchanged general interest.

[11] The assumed values are linked to quarters.

[12] US Debt Interest 2019-2024 retrieved from https://www.statista.com/statistics/1382455/monthly-interest-rate-us-debt/#:~:text=As%20of%20March%202024%2C%20the,reached%2034.47%20trillion%20U.S.%20dollars (accessed on May 5, 2024).

[13] Retrieved from: Šokčević, S., Ćorić, D., Rudančić, A. (2023), "The role of the European Central Bank during the Greek debt crisis. *European Review*, I (2023), 17, 195-213, doi: 10.7251/ERB2317194S (accessed on May 5, 2024).

[14] Whether domestic or foreign, in this case there is no difference since all banks treat the state as foreign, i.e. external bodies.

LITERATURA / LITERATURE

CARDIN, B. (2023), „U. S. Senate Committee on Small Business and Entrepreneurship. The 2023 Debt Ceiling Crisis: Impacts of Budget Cuts and Brinkmanship on America's Small Businesses". Majority Staff, May, 2023

DYNAN, K. (2023), „High and Rising US Federal Debt: Causes and Implications". Aspen Economic Strategy Group, Aspen Institute

ENGEN, E., FOLLETTE, G., & LAFORTE, J.-P. (2013, October 4), „Possible Macroeconomic Effects of a Temporary Federal Debt Default". Federal Open Market Committee, preuzeto s https://www.federalreserve.gov/monetarypolicy/files/FOMC20131004memo02.pdf (pristupljeno 5. svibnja 2024.)

FISCAL DATA (2024), „Average Interest Rates on U.S. Treasury Securities". Fiscal Data, Treasury.gov, preuzeto s https://fiscaldata.treasury.gov/datasets/average-interest-rates-treasury-securities/average-interest-rates-on-u-s-treasury-securities (pristupljeno 5. svibnja 2024.)

FRED Economic Data, St. Louis Fed (2024), „Federal Debt: Total Public Debt as Percent of Gross Domestic Product". Preuzeto s https://fred.stlouisfed.org/series/GFDEGDQ188S (pristupljeno 5. svibnja 2024.)

FRED Economic Data, St. Louis Fed (2024), „Federal Government: Current Expenditures". Preuzeto s https://fred.stlouisfed.org/series/FGEXPND (pristupljeno 5. svibnja 2024.)

FRED Economic Data, St. Louis Fed (2024), „Federal Government Current Expenditures: Interest Payments". Preuzeto s https://fred.stlouisfed.org/series/A091RC1Q027SBEA (pristupljeno 5. svibnja 2024.)

FRED Economic Data, St. Louis Fed (2024), „Federal Government Current Receipts". Preuzeto s https://fred.stlouisfed.org/series/FGRECPT (pristupljeno 5. svibnja 2024.)

HOWELL, M. J. (2020), *Capital Wars: The Rise of Global Liquidity*. Springer International Publishing

KEARNEY, M. S., PARDUE, L. (2023), „In Brief: Cutting the Safety Net Is Not an Effective Way to Reduce Government Spending". Aspen Economic Strategy Group, Aspen Institute

KEYNES, J. M. (1987), *The General Theory of Employment, Interest and Money*. Hertfordshire, Great Britain: Wordsworth Classics of World Literature

KRUGMAN, P. (1988), „Financing vs. Forgiving a Debt Overhang". *NBER Working Papers Series*, Cambridge, Massachusetts: National Bureau of Economic Research

KRUGMAN, P. (1988), „Market-Based Debt-Reduction Schemes". *NBER Working Papers Series*, Cambridge, Massachusetts: National Bureau of Economic Research

KRUGMAN, P. (1990), „Debt Relief is Cheap". *Foreign Policy*, Twentieth Anniversary Issue (Autumn, 1990), No. 80, str. 82-83. Washingtonpost.Newsweek Interactive, LLC

LAFFER, A. B., DOMITROVIC, B., & SINQUEFIELD, J. C. (2022), *Taxes Have Consequences: An Income Tax History of the United States*. New York: Post Hill Press

RADOŠEVIĆ, D. (2018), *Monetarna politika Europske središnje banke: Ciljevi, institucije, strategije i instrumenti*. Zagreb: Školska knjiga

SACHS, J. D. (1990), „A Strategy for Efficient Debt Reduction". *The Journal of Economic Perspectives*, 4 (1), str. 19-29

SACHS, J. D. (2002), „Resolving the Debt Crisis of Low-Income Countries". Brookings Papers of Economic Activity, The Brookings Institution Press

SACHS, J., HUIZINGA, H. (1987), „U.S. Commercial Banks and the Developing-Country Debt Crisis". Brookings Papers of Economic Activity, The Brookings Institution Press

STATISTA (2024), "U.S. monthly interest rate on interest-bearing debt 2019-2024". Statista Research Department, preuzeto s: https://www.statista.com/statistics/1382455/monthly-interest-rate-us-debt/#:~:text=As%20of%20March%202024%2C%20the,reached%2034.47%20trillion%20U.S.%20dollars (pristupljeno 5. svibnja 2024.)

STIGLITZ, J. E. (2016), *Euro: Kako zajednička valuta prijeti budućnosti Europe*. Zagreb: Profil

ŠOKČEVIĆ, S., ĆORIĆ, D., RUDANČIĆ, A. (2023), „Uloga Europske središnje banke tijekom grčke dužničke krize". *Evropska revija*, I (2023), 17, 195-213, doi: 10.7251/ERB2317194S

THE NOBEL PRIZE (2008), „The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2008: Paul Krugman – Facts". Preuzeto s https://www.nobelprize.org/prizes/economic-sciences/2008/krugman/facts/ (pristupljeno 6. svibnja 2024.)

THE WHITE HOUSE (2023), „Analytical Perspectives: Federal Borrowing and Debt". Dostupno na: https://www.whitehouse.gov/wp-content/uploads/2023/03/ap_20_borrowing_fy2024.pdf (preuzeto 5. svibnja 2024.)

WALKER, B. (2023), „IMF Briefing US Debt Ceiling". Preuzeto s https://mediacenter.imf.org/news/imf-briefing-us-debt-ceiling---g7/s/4aed5dc0-44e2-4d68-a51b-0c072c3347c8 (pristupljeno 6. svibnja 2024.)

WESSEL, D. (2024), „How will the Federal Reserve decide when to end "quantitative tightening?" The Brookings Institution. Preuzeto s https://www.brookings.edu/articles/how-will-the-federal-reserve-decide-when-to-end-quantitative-tightening/ (pristupljeno 5. svibnja 2024.)