MONETARY AND ECONOMIC RESEARCH CENTER

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INFLATION 2022 - CIRCUMSTANCES, CHALLENGES, IMPACT

CONFERENCE PROCEEDINGS

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MRC

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The ninth annual scientific conference of the Monetary and Economic Research Center (MRC) was held from the 18th to the 20th of September 2023 at the University of National and World Economy (UNWE) in Sofia, Bulgaria. The MRC Conference aims to bring together the international academic community, enable interactive discussions and other forms of interpersonal exchange of experience, and support the power of scientific research.

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The main accent on the 9th Annual Conference was the inflation in 2022 and its circumstances, challenges and impact. More than 70 researchers, professionals, experts, and students from 12 countries took part.

The present book consists of papers in English language.

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THE IMPACT OF EU SHADOW LIABILITIES ON MEMBER STATES; INFLATION AND CURRENCY EFFECTS

Gordon Kerr, Cobden Partners

Abstract: *Based substantially on the analysis of Bob Lyddon, with whom the author has worked on several papers and reports about EU financial stability, this paper summarises the scale and scope of unrecorded and unreported liabilities that are hidden not so much by weak accounting rules but more by the careful and deliberate design. Some institutions are backed only by Eurozone member states, some by all EU member states. The effect of this practice of creating and hiding liabilities is estimated at almost doubling the combined General Government Gross Debt of the EU member states. This matters; bad for embedded but as yet relatively low inflation, and bad for the stability of the euro as a currency.*

Keywords: *Shadow debts, shadow contingent liabilities, ECB, Global Financial Crisis, GFC, ECB, ESM, TARGET2, QE, quantitative easing, Transmission Protection Mechanism*

1. Shadow Liabilities – the Solution to 15 years of Permanent Crisis

This short paper is heavily based on the unique and impressive research of Bob Lyddon, a professional colleague of the author[1], and in particular his work: Lyddon, R, 2022, *The Shadow Liabilities of EU Member States and the Threat they Pose to Global Financial Stability*, London, The Bruges Group.

The term Shadow Liabilities is defined as simply liabilities which are not captured by the EU's statistical authority Eurostat, which regularly publishes the official figures for the General Government Gross Debt (GGGD) of each EU member state. Crucially, Eurostat's official definition of GGGD liabilities of every member state excludes responsibility for the liabilities of European level entities for which all (or some) member states are responsible.

This definitional exclusion probably made sense at the inception of the euro currency in 1999, when its architects never considered that liabilities would reach the present levels. However, when the EU was forced to confront the fallout from the systemic global financial crisis (GFC) in the recent 15 years, a fallout which has confronted the EU with incessant challenges, the EU's response in every case was simply more debt. Therefore, the temptation to incur and hide liabilities by engaging in a public sector variant of the banking sector's financial engineering which resulted in GFC losses being so much greater than central banks expected, (because of banks hiding their liabilities) appears to have proved overpowering.

Of course, from the very formation of the EU after the 1992 Maastricht Treaty (and even from European Economic Community (EEC) inception in 1957), the structure of the EU has

[1] "The True Cost of EU Membership" by Lyddon and Kerr is cited at p84

involved shadow liabilities. From 1992 the EU was set up as the successor to the original institutions, the EEC and the European Coal and Steel Community. For technical reasons the very small Euratom was and remains separate. The European Investment Bank and the European Investment Fund, analysed in Section 3, were also separate supranational institutions. The European Central Bank was created in the 1990s of course because of the planned euro currency, but it should be noted that the Eurosystem is not a legal entity; the legal entities are only the ECB and the national central banks (NCBs).

So of course we accept that the pan-European structure of the EU created shadow liabilities right from the start, but the purpose of this paper is to illustrate how not only dubious accounting but more importantly the creation of a seemingly unlimited stream of bailout funds and vehicles, and recently pandemic funds and green funds as the EIB's development bank role has shifted, has created vast and unreported shadow liabilities of which we doubt international investors are aware. How has this happened?

It is not within the scope of this short paper to review the detailed history of these financial challenges save to provide a summary in the next three sections.

2. GFC 2007-9, followed by Eurozone Member State debt crisis (Phase 1) 2010 -13

Perhaps having misunderstood the gravity of the banking crisis, and the impact which bailouts of national banking systems would have on the financial stability of the member state itself, three new EU bailout mechanisms were created. The first was the European Financial Stability Mechanism, technically a fund sized at €60 bn and established to bail out Ireland and Portugal. EFSM was set up 2010 under emergency legislation and its exposures are the joint and several liability of each then EU member state, including the UK.

The second bailout mechanism, also 2010, was the European Financial Stability Facility. But as Lyddon points out[2] the structure of EFSF is very different from that of EFSM. It is capitalised by fully paid in shares of €28m, with the rest of its liabilities (€186 bn end 2020) guaranteed by the Eurozone member states as at 2010 formation date, i.e., not including Latvia, Lithuania or Croatia who were not members then. The differences between the two mechanisms go further; EFSF is not a fund, but a Luxembourg listed special purpose company akin to a bank off balance sheet securitisation vehicle. The aim was to have its liabilities rated AAA based on the strength of the stronger member states and overcollateralization. As member states' ratings weakened this rating ambition was abandoned. The structure has effectively collapsed as further member states failed financially and exercised their rights to 'step out' from the guarantee. The reason for this collapse reflects the consistent mistakes to date made by the structurers of these first two shadow liability mechanisms, the failure to think beyond the immediate crisis and the failure to appreciate the scale of the future liabilities which would have to be managed in order to maintain the euro currency's stability. As an aside there can be little doubt that the shift from all EU states backing of EFSM to only Eurozone states backing EFSF was surely triggered by

[2] Lyddon p 43

the UK's absolute refusal to backstop unlimited debts of EU member states. A most interesting feature of ESFS is the tiny level of capital (€28m is 0.015% of its liabilities of €186 bn). Although commercial bank securitisation special purpose borrowing vehicles sometimes get away with trivial levels of capitalisation that is because they have the legal right to receive highly rated contractual cashflows from for example consumer loan contracts such as mortgages. Promised cashflows from highly indebted EU member states such as Greece are a very different level of credit risk. EFSF still exists but in dormant mode and is now managed by the third and only surviving mechanism, ESM, as explained in the next paragraph.

The third EU bailout structure, also agreed in 2010 (the dominoes were then falling fast) is the European Stability Mechanism. Originally set up to bail out **Spain, Greece, Portugal Ireland and Cyprus**, it has become the consolidation vehicle for all bailed out member states. Interestingly, as the years have passed and doubts have grown as to the likelihood of many EU member states being able to service debts, ESM has been repositioned by the EU; it is no longer a weak but now a strong institution, with ample resources and able to assist troubled members. One of the main benefits of Eurozone membership is access to ESM funding if needed. When Italy wobbled in 2018 EU officials dangled the threat of cutting the country off from future ESM 'support' unless it complied with EU rules[3].

ESM is also a Luxembourg SPC with €705 bn of subscribed capital but only €81 bn paid in by its Eurozone member state owners, but on a several but not joint basis, i.e. each member state is liable only for its own pro rata share. ESM has outstanding loans to the (highlighted) above five countries of €205 bn against a maximum lending limit of €500 bn. However, in an extraordinary flouting of established accounting rules its balance sheet shows the entire €705 bn of capital on the liability side, and the unpaid capital claim on its owners of €624 bn as its matching asset. Nonsense. This €624 bn is not an asset at all but a claim on its shareholders. The clear intent behind this accounting presentation is to inflate ESM's perceived firepower and enhance the appeal of Eurozone membership. With increasing mainstream investor focus on the threat to Eurozone stability of the debts of countries such as France €2.8tn and Italy €2.67tn[4] this desire to hide ESM's impotence is understandable but it does not justify such brazen, fraudulent accounting.

3. Member State debt crisis Phase 2, 2015 -20

The ECB finally overcame German and Dutch resistance to money printing (termed quantitative easing by the Bank of England) in early 2015 and launched the first of its multiple Asset Purchase Programmes. Some programmes have opened and closed, but the main one termed the Public Sector Purchase Programme has been a constant tool and survived several legal challenges (mainly from Germany) alleging that it entailed direct monetary financing of member states, claims which the court (ECJ) dismissed on the grounds that activities are secondary market only and in accordance with the capital keys of the ECB. The assets appear

[3] How Will Europe Deal With Italian Fiscal Defiance? - IREF Europe EN

[4] Eurostat figures for both end 2021 quoted in Lyddon paper at p24

only on the balance sheets of the NCBs. The total APP shadow liabilities amounted to €3.2tn in 4/2022[5] of which 79% were in the PSPP.

In parallel with the above mechanisms and programmes, from the onset of the GFC the ECB regularly weakened the credit strength of collateral which it had originally specified it would permit to be posted by borrowing banks with the NCB of a given Eurozone member state, and in turn would allow to be posted by debtor NCBs with creditor NCBs to secure debts and payment obligations within the operations of the Eurosystem.

The essence of the central banking system backing a seemingly robust western fiat currency such as the pound, dollar or Swiss franc is that collateral should be capable of being regarded as 'central bank money', ie sovereign or at a minimum quasi sovereign bonds. The ECB's list of eligible collateral now consists of 26,000 bonds including restructured bank non-performing loan portfolios where all the underlying loans are subject to default procedures and can in no way be considered 'central bank money'. In contrast, the Bank of England (itself subject to strong criticism for its own loose money policies such as bank friendly asset purchase programmes) at least requires bonds to be rated at least single A, three notches higher than ECB rules.

Further measures undertaken by the EU financial authorities, before the pandemic, to 'stabilize' the financial system, the majority of which involve the assumption of more shadow liabilities include:

- Full mobilization of the European Investment Bank
- Invest EU (formerly the European Fund for Strategic Investments)
- ECB Targeted Longer Term Refinancing Operations
- No discouragement of Eurozone member states from drawing under Target 2

For brevity we comment briefly only on the first bullet.

3.1. Full Mobilization of The European Investment Bank (EIB) and European Investment Fund (EIF)

Linking these two entities together we have the EU's development bank. The EIB provides debt funding and the EIF enables equity and mezzanine tranches[6]. Prior to the euro its operations within the EU were heavily focussed on infrastructure projects and developments, such as roads and bridges, where the creditor would be considered a 'public sector' entity. It also lent on certain projects outside the EU but always to a sovereign borrower and to EU SMEs but always through a bank.

[5] Ibid p48

[6] Ibid p32

But EU leaders such as Germany's Angela Merkel realised, from about 2012 onwards as the economies of every EU member state struggled to grow, that the EIB could be mobilised to provide counter-cyclical public spending with a view to create GDP growth and of course assist with the increasingly prioritised Net Zero quest, rather than concentrate on economically viable projects. When the decision makers consider themselves tasked with driving GDP with the support of the controllers of the purse strings, financial discipline weakens and there have been credible rumours of EIB financing installations of WIFI infrastructure in the Apennines for shepherds.

From 2014 Mrs Merkel proudly talked about the EIB being 'bolstered' and EU funds provided to spur economic growth in Europe. And what a tangled web this has grown into, a web which is very difficult to unravel.

Firstly, the EIB and EIF are separate entities although the EIB owns a majority stake in the EIF. Both are highly leveraged, and both use the partly paid capital share structure to presume to foist shadow liabilities on member states. We doubt whether in practice this presumption will work, see section 5 later. The EIB's part paid claims are large, €226 bn on a several but not joint basis. The EU owns a large minority stake in EIF and if it had to recapitalise EIF such obligations would fall on all member states on the usual joint and several basis, meaning that even tiny Cyprus is theoretically liable for all of the liabilities but of course records none of them in its GGGD. The EIF's capital is small but it takes the highest risk equity tranches in projects. The EIB enjoys substantial first loss guarantees from the EU.

To add further layering of shadow liabilities, a new vehicle was set up in 2015 more or less purely to hide the liabilities. Originally called the European Fund for Strategic Investments (EFSI), now renamed Invest EU, EFSI was set up with a modest €16 bn guarantee from the EU plus €5 bn from the EU's own capital, truly minuscule sums given the size of financing projects now undertaken and supported.

The establishment of Invest EU explains why the EIB's balance sheet barely grew after the 2014 announcements; at the end of 2012 its assets were €413 bn, by 2021 they had nudged up to €433 bn. Further complicating the analysis, the pandemic led to the creation of yet another vehicle, the European Guarantee Fund which, together with Invest EU appeared to have amassed €612 bn of liabilities by end 2020[7]. The EIB itself estimated in mid-2021 that by about now the GDP of the EU will have been increased by €1.9tn purely because of the combined activities of EIB, EIF, Invest EU and EGF. Of course, commercial banks and capital markets investors lend substantial sums into these projects, but they do so because all of the first, second and other high-risk tranches are assumed by this network of EU institutions and funds, even though the actual paid in capitalisation of these entities is incredibly small. Establishing the loan amounts or identifying the names and locations of the projects funded, from the accounts of the EIB is virtually impossible.

[7] Ibid p 65

Of even greater consequence to member states and what should concern investors is that it is simply not possible to calculate the contingent liabilities of any member state because of the different pathways that could be taken by the EIB or EIF boards should they become insolvent and require recapitalisation. Take the example of an Invest EU programme that generated financing for the EIB Group of €50bn, and assuming the EU first loss guarantee was €20bn, obviously if €20bn or less was lost the member states are expected to recapitalise through the regular 7 year Multiannual Financial Framework funding mechanism of the EU. But if the next €30bn was lost by the EIF, EIF could choose either to call for more share capital from the EIB or could call directly against the EU which would in turn call from member states. Nobody knows which route would be taken. As Lyddon comments:

"Invest EU is an extremely efficient way of the EU supranationals engaging in high risk business in big amounts but with minimal balance sheet impact, and no impact at all on the General Government Gross Debt"[8] to which we would add, no impact at all on reported contingent liabilities of member states.

4. Pandemic 2020 – present

It is safe to assume that the now experienced financial engineers at the EU realised that this new health crisis provided an opportunity to announce and deploy a new series of programmes and mechanisms which flouted all the previous "constraints" which contained the scope of the EU's creation of shadow debt structures to within the laws and treaties of the EU. For example, the rule prohibiting the direct financing of member states. The main new programmes were[9]:

i) Pandemic Emergency Purchase Programme. €1.85tn of further Asset Purchase Programme bond buying but with weaker "constraints" in terms of member state financing and involving the purchase of even less creditworthy bonds.

ii) EU Coronavirus Recovery Fund. Incorporated within the 2021 -27 standard EU budget (termed Multiannual Financial Framework (MFF)), which was agreed at ECOFIN July 2021, €750 bn in the EU's name, so on a joint and several liability basis, and therefore for which each member state is liable in its entirety and yet for which no member state records any Eurostat liability. Furthermore, this is a long term fund, maturing in 2058. The long final maturity is a further financial structuring technique to improve the PR of this fund. It enables this large amount to be treated as a small percentage, per member state, of annual GNI (Gross national income). Also of great interest is that €390 bn is to be disbursed as grants, and therefore financed by increased member state contributions to the MFF or centralised taxation.

[8] Ibid p72

[9] Ibid p 121

iii) European Guarantee Fund. Set up in 2020 with a limit of €24.4 bn, as mentioned above it is closely aligned with Invest EU and the EIB's development bank/ GDP stimulus projects. Its documentation boasts about "mobilizing" much larger amounts than its own size ie. It acknowledges its role as a high risk, first loss leverage tool to encourage private finance in the less-riskier tranches of projects. Again, it participates in projects which it is impossible to identify – none of the EIF projects are named in its annual report, and it appears to be solely capitalised by guarantees from 22 member states. Interestingly, EGF backing appears to be optional; Estonia, Czech Republic, Hungary, Romania and Latvia have declined to back the programme, but since no member state records any contingent liability, nobody would know this unless reading the small print of the EGF documentation or this paper.

TARGET2 Increase in Imbalances. As of October 2021 the ECB reported a net liability to T2 participants of €352bn and the debtor NCBs had 'net' debts to the creditor countries of €1.3tn. However, this netting process is legally invalid, and the true amounts are far greater, possibly up to €3tn greater. The documentation set out in the Lyddon paper reveals a raft of inconsistencies between published assertions as to the netting process underlying the published net figures, and the legal reality of obligations among TARGET2 members, chief of which is that the ECB wrongly treats all NCBs as a single counterparty. It is surely obvious that the legal relationship the ECB has with each NCB is entirely separate from its legal relationship with every other NCB.

5. Impact of Shadow Liabilities on GGGD. It all tracks back to Germany.

As at the end of 2020, for the reasons set out above, Lyddon concludes that the total amount of shadow debt is €6.4tn and the total for shadow contingent liabilities is €3.8tn, both of which should be added to the official Eurostat figures and distributed among the member states. Making these additions, the official debt to GDP ratios are substantially increased:

- EU GGGD without shadow liabilities: €13 tn or 90% of GDP
- EU Public Sector debt, including shadow debts: €19.3 tn or 134% of GDP
- EU Public Sector debt and contingent liabilities: €23.1 tn or 160% of GDP

It should be noted that Eurozone member states are considerably more exposed than those countries which do not use the euro. Non-Eurozone countries have no exposure to EFSF, ESM, the asset purchase programmes or TARGET2.

Leaving aside the subject of shadow liabilities, there have been many shock events in the 13 years since the first Eurozone sovereign near default events starting in 2010. On each occasion although markets may have wobbled, they have absorbed the shocks and investors' concerns have been assuaged. There have been two reasons for this; the first is the actions, statements and debt instruments (as summarised herein) created and implemented by the ECB and its sister institutions. The second is the general investor impression that the EU in general, and certainly

the Eurozone in particular, is a United States of Europe, akin to the United States of America, and therefore Germany (or better put, the stronger financial member states including Netherlands and Finland) are underwriting and standing behind the whole baileywick of Eurozone debt imbalances. We respectfully submit that if investors believe that they can rely on Germany to kick this can indefinitely along the road, they are mistaken. The assumption is not true either in practice or in law. There are three main points.

A) We have already explained that most of the shadow liabilities assumed by these new 'layering' institutions are contingent liabilities. As bank trainees learn on day 1 of an induction course, all bank instruments (no matter how complex sounding) can be reduced to one of only two underlying 'products'. Loans, where the bank has transferred money to the borrower on Day 1 and hopes to get it back in the future; and secondly guarantees, where the bank legally promises to transfer money at some future event if a contingent event occurs, hence the term 'contingent liability'. In the realm of sovereign debt and certainly in the case of Eurozone, if say 17 member states are unable to pay their debts when they fall due, how likely is it that Germany, Netherlands and Finland will pay the bills on behalf of all of them? So, leaving aside legal liabilities that have been incurred, the situation in the Eurozone is like the game theory puzzle called the Prisoners Dilemma. Germany will likely respond to the call to pay with "we will pay when the others pay".

B) A substantial amount of the shadow liabilities set out in the Lyddon paper and briefly summarised herein are not in fact presently liabilities of Germany, or of any EU member state. Legally the debts of the EIB, ESM and other EU mechanisms do not even track back to any other obligor; the assumption that they do merely presumes that the EU financial architecture, principally the Multiannual Financial Framework remains in place, surviving any putative crisis no matter how severe, and that all of these EU mechanisms manage to avoid default by calling for recapitalisation from all Eurozone and EU member states in accordance with capital keys, respective GNIs, or whatever the specific structure of the specific EU borrowing mechanism. This again is a very optimistic investor assumption. We submit that it is highly unlikely that Germany would accept responsibility for any of these shadow liabilities, even for its own pro rata share. Indeed, the one EU institution that any arbiter of such putative dispute would consider to be an expert in the attribution of such liabilities among the member states and calculation of the size thereof is Eurostat. Eurostat is well aware that some shadow liabilities exist and records these against the relevant member state. But it ignores nearly all of the liabilities summarised herein and in its year end 2020 GGGD figures, publishes a figure of "Zero" for Germany's "off balance sheet liabilities."[10]

   Again, we would cite the Prisoners Dilemma game theory dilemma in the context of the real-world structure of EU finances; the fact that the EU is not a sovereign structure, that membership remains voluntary and that cessation is clearly possible (UK).

[10] Ibid p26

C) Germany cannot afford to pay. The figures set out above for hidden (shadow) liabilities) amount to over €10 trillion. No country or combination could afford to pay anywhere near such amount if the house of cards collapsed. Germany's GGGD is about €2.5 tn or 70% of its GDP. Why would it be willing to bankrupt its economy to keep the EU caravan rolling along?

6. Conclusion; Why These Hidden Liabilities Matter

Skeptical readers will be asking themselves, does any of this matter? The main argument a skeptic could advance as to why none of this matters is that it is in everybody's interest, investors included, for all of this to continue. But this is surely wrong. We think it matters a great deal for several reasons. The most obvious of these reasons is that, if GGGD figures matter enough for the EU to have established the Eurostat agency to record them, then falsifying the official numbers by hiding these shadow figures is a fraud on the citizens of the bailing out countries, on international investors, bank regulators and rating agencies, and a fundamental breach of the international rules-based order. And we submit, the scale and scope of this EU fraud is underappreciated by all the aforementioned bodies and when it becomes so, is likely to trigger a major event.

The second main reason is that debt is inflationary, and inflation is the main root cause for the collapse of national currencies which typically follow sovereign debt crises so serious that the sovereign concerned is compelled to inflate its currency to destruction as happened in Europe most recently in Bulgaria in 1997. Milton Friedman famously said [11]:

"*Inflation is always and everywhere a monetary phenomenon*".

Put differently, the inflation surge which all EU member states experienced in 2022 is entirely attributable to monetary debasement or 'loose money policies. There was substantial convergence of borrowing spreads in the ten previous years; in 2012 credit default swap pricing for Italy implied a borrowing spread of 14%, but by January 2022 all Eurozone member states spreads were well below 2%, tightly compressed with only 150 basis points separating Greece and Germany. In a series of papers analysing this trend Dutch economists Eijffinger and Pieterse-Bloem[12] attribute the movements in these spreads to the risk of a rupture between core and periphery Eurozone states. We agree. Arguably the ECB's main focus has been not controlling inflation, but in controlling Eurozone member state borrowing spread divergence. As inflation rose sharply in 2022 so the ECB pushed for and secured agreement to another

[11] During a speech in India 1963

[12] Eijffinger, S C W and M Pieterse-Bloem (2022), "Eurozone Government Bond Spreads: A Tale of Different ECB Policy Regimes", CEPR Discussion Paper No. 17533.

extraordinary tool, the **Transmission Protection Mechanism** (TPM), allowing it to attempt to reduce divergence by simply buying the bonds of and country whose spreads it deemed too high[13]. As usual, the announcement of this policy agreement worked and spreads converged somewhat, but by the end of 2022 they had started to widen again as investors doubts as to the effectiveness of TPM became apparent. As at September 2023 Germany's 10 year borrowing cost is about 2.75%, way higher than it was during the last few years when its shorter-term bonds bore negative yields; but Italy's yield is about 2% higher. The obvious reason for these market differentials is the perception that Germany is a solvent country and Italy less so. Investors make these decisions based on, inter alia, reported GGGD debt data and of course ECB and related policy data.

It is submitted that the issues of hidden liabilities set out herein are not well understood by investors. The spread divergence of 2022 and the ECB's need for TPM only came about when inflation focussed investors' attention on the ability of different countries to service debt mountains. At near zero borrowing costs there was apparently no great concern in investors minds. Now there is. The genie is out of the bottle and we doubt it can be shoved back in. If investors have already caused spreads to diverge to levels sufficient to cause the ECB to worry about the integrity of the euro currency, how much greater will spread divergence become when investors begin to understand the scale and importance of the shadow debts and liabilities outlined in the Lyddon paper and summarised herein.

In the late 1970s Walter Wriston, head of Citibank famously stated "Countries don't go bankrupt" when seeking to justify US banks continuing to lend to an array of Latin American countries who were clearly struggling to service their debts. The 1980s saw a flood of Latin American sovereign defaults, restructurings, then more defaults. It is clear that countries do default, especially on foreign currency debt. And here is the nub of the whole issue: the euro is not the national currency of any Eurozone member state because neither the government nor NCB of any member state has any effective control over the euro currency, and therefore cannot devalue its way out of difficulties.

Financial crises tend to arise out of the blue; no authorities and few investors anticipated the GFC of 2008. When investor confidence wobbles it can fracture very quickly. As of Q4 2023 it is easy to see a number of potential triggers that might cause the leaders of Germany or Netherlands, Finland etc. to do or even say something that might focus investors' minds on the absence of actual, as opposed to theoretical support from these countries to the physical debt liabilities of the EU institutions who have layered debt onto the contingent shoulders of these countries, but only in a way that will become legally binding if EACH of these countries subsequently agrees to be so bound. This, it is submitted, is likely to become the inflection

[13] ECB Policymakers Run Out of Options; Antifragmentation Cannot BOTH Address Inflation AND Contain Spreads - IREF Europe EN

point. With geopolitical tensions now in Israel as well as Ukraine, it would only take a clumsy announcement from the EU president about future massive financial support for a politician in one of these countries, up against an election challenge, to clarify that in fact Germany is not on the hook for the next proposed trillion of support, for investors to change their risk assessments. If investors desert euro public debt securities, that will not only be the end of the euro but probably of the EU itself.

End October 15, 2023

THE ROLE OF BANKS IN BULGARIA IN INCREASING FINANCIAL LITERACY

Assoc. Prof. Irina Kazandzhieva-Yordanova, PhD[1]

Abstract: *The paper investigates the implementation of a national strategy for increasing financial literacy in Bulgaria and the types of activities performed by the financial sector contributing to financial literacy. Some key elements of the financial literacy strategy are discussed in the paper as well as the role of the financial sector for the realization of the goals of the national strategy. The paper stresses on the role of the banking sector and the types of activities it performs for increasing the financial literacy. The paper argues that despite the number of activities performed by the financial sector the necessity of creating a national strategy is inevitable as it guarantees the involvement of the different social groups, coverage of large scope of topics and sustainability on a long-term basis.*

Keywords: *financial literacy, national strategy for financial literacy, financial sector, financial products and services, banks*
JEL: *G21, G51, D18*

Due to its significant social impact the financial crisis put on the agenda for the policy makers the topic of financial literacy, the necessity to increase consumer protection and the needs to create or reconsider the existing national strategies for increasing financial literacy with measurable results. The Covid-19 pandemic re-confirmed the necessity for increasing financial literacy due to the active digitalization as well as the creation of proper financial behavior. Financial literacy depends on financial knowledge, financial behavior and the attitude of consumers to financial issues. Increasing consumers' financial literacy in a certain country is a long-term process requiring a lot of resources, e.g. monetary, educational, human as well as the involvement of the state authorities, institutions, financial intermediaries and consumers willing to increase their knowledge and change their attitude to financial products and services. This is a challenging and controversial task in times of quick changes in the financial world and the high speed of digitalization.

Increasing financial literacy in the society is a responsible task – it should be realized through the creation of a long-term national strategy, changes in education, proper definition of the needs of the different social groups and targeting tailor-made programs towards each group. A key prerequisite for the success of the national strategy for financial literacy is the involvement of state authorities at different levels as well as the financial sector itself.

The definition of financial literacy is broad and complex. It involves financial knowledge, skills, attitudes and behavior leading to sustainable decisions that

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contribute to increasing personal welfare. Financial literacy is an individual knowledge and skills. It is associated with financial education but financial education is a narrower concept despite being a leading one when defining financial literacy. It involves the process through which consumers improve their understanding of financial products and services and the related risks through acquiring information about them; thus, making consumers able to make effective decisions and take actions leading to improving their financial welfare. Financial inclusion is another concept related with financial literacy meaning a wide range of regulated financial products and services used by all social groups. Financial welfare is determined by the individual perception of own financial state, financial limitations, financial satisfaction and overindebtedness. Financial resilience describes the ability of the consumer to resist the negative effects of unexpected economic and financial crisis and shock. All these key terms should be properly defined and taken into consideration when developing a national strategy for financial literacy as a prerequisite for achieving measurable results from its implementation.

Lusardi &Mitchel (2011) prove that financial illiteracy is widespread in both well-developed and rapidly changing markets as women are less financially literate than men and young people and the old ones have a lower level of financial literacy than the middle-aged people. Stolper &Walter (2017) make a survey and provide evidence with respect to the effectiveness of the programs on financial education proving to be rather disappointing. Van Rooij, Lusardi & Allesie (2011) prove that people with low financial literacy are significantly less likely to invest in stock. Krechovská (2015) argues that it is necessary to increase financial literacy especially among young people who will shape the economy in the future and that nowadays, financial education becomes a lifelong process.

The paper argues that despite the number of activities performed by the financial sector the necessity of a national strategy is inevitable to guarantees the involvement of the different social groups, large scope of topics and sustainability of realization the aim of increasing the financial literacy on a long-term basis. Due to the universal type of banking in the country the major role of the banking sector for the realization of a national strategy is indisputable also taking into consideration the long experience it has in increasing the financial literacy through different projects that have been realized by the banks.

Where does Bulgaria stand in the field of financial literacy: Since 2021 Bulgaria has its National Strategy for Financial Literacy accompanied by a plan for its implementation. The country is quite lacking behind other European countries that implemented such strategies earlier. The implementation of the strategy involves not only state intuitions and organizations but also sectoral organizations representing the financial sector in the country.

In brief, the main aim of the National Strategy is to increase the knowledge of consumers for the management of personal finance, financial control and risk management; thus, leading to the creation of financial stability and abilities for

financial planning on medium and long-term basis. The strategy outlines four priorities as the development of a framework for competencies in the field of financial literacy, content development and free of charge access to educational and information resources through different channels, incl. digitalization, increasing financial literacy of pupils and students and stimulating the inclusion of vulnerable groups in the financial sector. Annual reporting is foreseen to be performed to the Council of Ministers by the Ministry of Finance on the development of the priorities set in the National Strategy. On the basis of the published reports it can be concluded that the main challenges for the strategy implementation are related with the increase of financial literacy of pupils and students which starts from very low levels, the long horizon for the young people and digitalization (e.g. the digital banking is the new normal for the young people today) as well as the vulnerable groups which are rather inhomogeneous as different needs for increasing their financial literacy are detected (MF, 2022, 2023).

Considering the level of financial literacy Bulgaria ranks around the middle among other countries according to the OECD report (OECD, 2020) - 58,5 at average level of 60,5 (the report evaluates three elements of financial literacy - financial knowledge, financial behavior and attitude to finance)[2]. Considering the statistics provided in the report it can be concluded that Bulgaria is below the levels for the OECD countries except the element financial behavior where the country is scored at 59,3 (the average level for OECD is 59,2). These unfavorable results are due to the late start for the creation of a national policy for increasing financial literacy, despite the existing number of initiatives and activities performed by the NGOs and the financial sector.

The first initiat.ive to put financial literacy at national level was in 2013 when a coordination mechanism for financial literacy issues was created at ministry level and the first draft for national financial literacy strategy was created. However, it was not realized. The initiative for creating financial literacy was restarted in 2019 at state level when an intra-institutional working group was created which included representatives of different ministries with the leading role of the Ministry of Finance and representatives of the organizations from the financial sector. The result of the activities of this group was the creation of national strategy in 2021 setting the priorities and target groups as well as the description of a detailed plan for its realization. In the National Strategy a thorough monitoring of the implementation and realization of the strategy is foreseen which indicates the serious involvement of the different stakeholders. It should be also noted that the creation of the intra-institutional working group and the development of the document National Strategy for Financial Literacy came as a result of the realization of a project under a joint project between the Ministry of Finance in Bulgaria and the Ministry of Finance in the Netherland and the OECD (MF, 2021). In the middle of 2023 Bulgaria adopted Framework for financial literacy for Financial Literacy

[2] According to the OECD methodology financial literacy includes three main elements – financial knowledge, financial behavior and financial attitude.

for Adults following the framework of OECD and including four main competences as money and transactions, planning and management of personal finance, risk and profit and financial environment. Each competence is measured in three dimensions as information, knowledge and understanding; skills and behavior; and confidence, motivation and attitude (MF, 2023). The same approach is followed in the OECD/EC financial competence framework for children and youth in the European Union (OECD/EC, 2023).

Where does the financial sector in Bulgaria stand in the field of financial literacy: Considering different surveys (World Bank, 2010, OECD, 2020) in the field of financial literacy it can be concluded that the perception of financial literacy is very low among the Bulgarian citizens together with the poor knowledge of financial products and services and consumers rights as well as the negative reputation of the financial sector. Normally, the lowest levels of financial literacy are associated with the young people, pensioners, low income and marginalized groups and people living in small communities. It should be noted that due to being the poorest country in the EU the majority of the Bulgarians are hardly able to accumulate savings, therefore they hardly look for such opportunities[3]. Another thing is the historical peculiarities as Bulgaria has been for almost a half century a country with a planned economy and the population was traditionally lacking market initiatives and knowledge. Due to historical reasons the Bulgarian population is oriented naturally towards the banks as main financial intermediaries to provide different financial services. Deposits and property investments are seen from the majority of the Bulgarians as main investment opportunities. It should be also noted the level of reputation of the financial sector in the country which is rather low starting from the financial pyramids in the beginning of the 90s, going through huge banks' failures in 1996-1997 where almost 25% of the Bulgarian banks collapsed, the global financial crisis of 2008-2009 which brought back the fears for financial turbulence again despite the fact that the financial sector was not severely hit and no failures of financial intermediaries were registered then and the failure of the fourth largest bank in the country in 2014.

The financial sector unconditionally considers the importance of the financial literacy, especially for consumers of financial services and financial products. The financial sector believes that the high level of financial literacy provides adequate and satisfied customers of financial products and services and stimulates financial institutions to develop innovative and qualified products and services responding to the personal needs. To have customers with high levels of financial literacy is a must today due to the increasing number and complexity of financial products and services, the rapid development of the financial sector, the increasing levels of digitalization and the different types of crises (political, social, health, etc.) that tend to appear nowadays. The high level of financial literacy is a prerequisite for increasing financial resilience of consumers making them able to adapt better to the

[3] According to Eurostat data GDP per capita for 2022 in Bulgaria 41% below the EU average level.

unforeseen shocks and incidents as well as to the risks and challenges associated with these negative changes.

The high level of financial literacy is very important for the financial sector not only as a key provider of financial products and services but also as an employer of specialists with proper level of financial education. The financial sector in Bulgaria tends to involve a lot of efforts for increasing financial literacy of its customers providing budgets for financial initiatives on a regular basis. Increasing financial literacy is a part of the social responsibility and corporate strategy of many financial institutions. Despite the long-term lack of national policy for increasing financial literacy in Bulgaria joint initiatives in the financial sector were created as one such example was the initiative for improving financial education for school students realized in 2017 together with the leading financial associations. In fact, this project reveals the concept of the financial sector for increasing financial literacy in the country that it should go through implementing financial education on a regular basis in school programs involving the efforts of the Ministry of education by providing the necessary changes in school curricula and educational resources and the financial sector itself. The implementation of financial education in the school curricula as a part of the regular curricula is highly effective guaranteeing results on a large scale and on a long-term basis[4]. The positive thing is that this aspect of increasing financial literacy is incorporated in the national strategy and measures as analyses of the school's curricula are foreseen to be undertaken as well as the development of educational platforms and resources and preparation of teachers with respective qualifications. University education should also incorporate financial literacy in its curricula as currently, each young person regardless the type of his/her major should take important financial decisions and responsibilities which may determine the future welfare.

Financial literacy, financial supervision and financial regulation are the elements of consumers' protection of financial services. The financial sector is one of the most regulated economic sectors worldwide, including Bulgaria. Financial regulation aims at providing harmonized rules for the activities of financial institutions in terms of capital stability, providing financial products and services appropriate for the different types of clients according to their risk profiles, thus maintaining the stability of the financial market and contributing to the economic development. Some specialized legal framework even requires banks and investment intermediaries to provide information to the client, thus increasing his/her financial literacy, e.g. the requirement for precontractual information before concluding an agreement for consumer credit where according to Art. 6 in the Law on Consumer

[4] According to the Action Plan (2021-2025) to the National Strategy for Financial Literacy topics related to financial literacy have been developed as a part of the material included in different school subjects but as a separate subject Financial Literacy has not been developed, neither planned to be included in the school curricula. There are some considerations for including Financial Literacy as a facultative (elective) subject at high schools. Currently, at economic universities curricula have been developed including basic knowledge in the field of finance and financial literacy. That subject is also envisaged to be facultative (elective).

Credit the lender should provide appropriate explanations allowing the consumers estimate how far the credit agreement suits to their needs and financial state. Another example is the Ordinance №38 of FSC on the activities of investment intermediaries that requires certain levels of financial knowledge by the employees offering financial products. Thus, it is guaranteed that the people offering financial products to consumers have the proper financial education and knowledge to explain clearly the characteristics of those products, not misleading the clients about their riskiness and profitability[5]. Other financial institution, e.g. the deposit insurance fund and the investor compensation fund provide detailed information and lead campaigns and initiatives explaining and clarifying the protection that is provided by the financial safety net in the country[6]. Additionally, examples can be given regarding the legal requirements for providing certain products in order to guarantee financial inclusion, e.g. the requirement in the Law on Payment Services and Payment Systems (LPSPS) for offering a basic bank account by the banks operating on the territory of Bulgaria. Art.118 of the LPSPS sets the types of operations that could be performed through that account as well as rights for opening such an account. Payment services are basic bank services and they should be guaranteed to all consumers even the vulnerable ones e.g. low-income people, immigrants, minorities, students. Through the basic bank account, it is guaranteed that payment services are provided to those vulnerable groups.[7]

Financial sector is largely involved in the realization of the National Strategy which is a proper approach due to the practical knowledge the financial sector has for the products and services it offers and that knowledge can be transferred from the financial sector to consumers. It is planned to be involved in the strategy realization through providing mainly support for the development of a curricula for financial education, methodology, study materials, practical cases, digital platforms and resources, education of trainers, and channels for the distribution of the information regarding financial education. The financial sector is very active in promoting and increasing financial literacy as different methods for that are used, e.g. simulations for different financial products and services, creation of specialized sections in the Internet sites of financial intermediaries with educational materials, podcasts and webinars dedicated on different financial topics, development of key documents explaining capital markets, instruments traded on them and financial transactions, training of volunteers who teach at schools and universities, internships and scholars, development of specialized curricula for increasing financial literacy among students, creation of platforms, conferences, seminars, meetings. The Internet sites of the branch organizations of the financial sector also have dedicated

[5] These requirements are stipulated in Art. 66 of Ordinance №38 of FSC on the activities of investments intermediaries.

[6] The Law on Deposit Insurance and the Law on Public Offering of Securities require the bank/investment intermediaries to provide the clients information on the level of protection provided by the deposit insurance scheme and the investor compensation scheme in case of a failure of a bank/investment intermediary.

[7] According to Art. 118-120 of LPSPS the basic bank account provides the major payment services in national currency to consumers at prices lower than the average ones for the banking sector.

sections on financial literacy, e.g. the Internet site of the Association of Banks in Bulgaria has a section dedicated on the main banking products and services as deposit, loan, cards, electronic banking, investments, payments and deposit guarantee. Additionally, the Internet site reflects on regular basis the information from different campaigns intending to increase financial literacy as the campaigns against cyber fraud and "financial mules", the European money week[8]. The Association of Bulgarian Insurers has also a special section named For the Consumers which contains interactive information about insurance risks, types of insurances, basic terms used in insurance, as possibility for asking questions on different topics in the field of insurance is provided[9].

Despite its main function as a regulator of the non-bank financial sector the FSC has also developed a special section on its Internet site dedicated to financial literacy which contains detailed information about the insurance, pension and capital market as different practical cases, financial glossary, quiz and consumer guidelines are included[10]. The Deposit Insurance Fund, the major part of the financial safety net in Bulgaria, has a section on its Internet site dedicated to the depositors, which includes questions and answers section explaining the activities of the deposit insurance scheme in Bulgaria as well as short videos explaining the main characteristics of the deposit insurance scheme, guaranteed amounts of deposits and payments provided in a case of a bank failure as well as a test for checking the knowledge about the deposit insurance scheme, a brochure and a glossary[11]. Despite the large number of activities undertaken by the financial sector, including the regulator and the financial safety net, it can be concluded that the activities are directed to the general public, including young people (school and university students) and pensioners but there is a lack of initiatives targeting people with disabilities, minorities and people living in distant places and small communities lacking access to Internet. This proves the need of the creation of a national strategy with a large scope including different social groups, incl. the vulnerable ones and guaranteeing long-term results.

Where do the banks stand in the field of financial literacy: Banks are major financial intermediary in Bulgaria as the Bulgarian banks are universal types specialized not only in attracting deposits and granting loans but also in a number of services as defined in Art. 2 of the Law on Credit Institutions. Banks' assets, composed mainly of loans[12], tend to grow constantly. Despite the increasing interest rates loans to the non-government sector are growing reaching 78,08 bln. BGN as of the end of June 2023 which is a growth of 10,9% on an annual basis.

[8] For more information see https://abanksb.bg/.

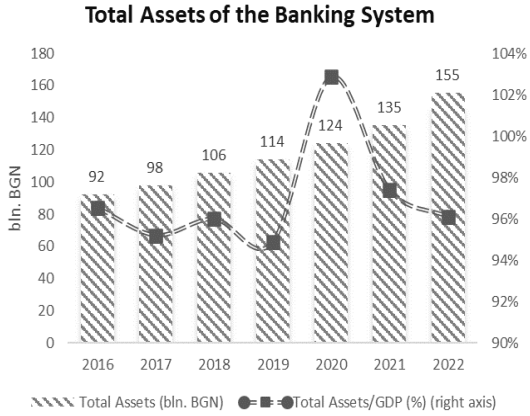
[9] For more information see https://www.abz.bg/en_EN/za-potrebitelya.html.

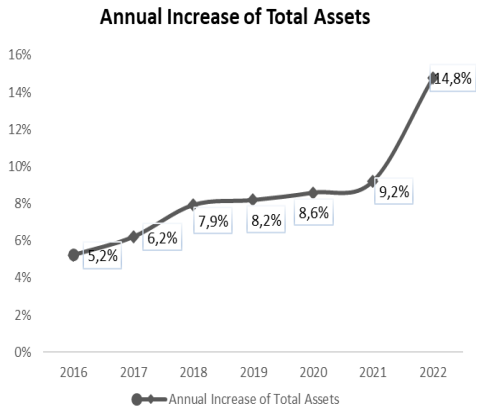
[10] For more information see https://tvoitefinansi.bg/.

[11] For more information see https://www.dif.bg/bg/za-vlojitelite/za-vlojitelite.

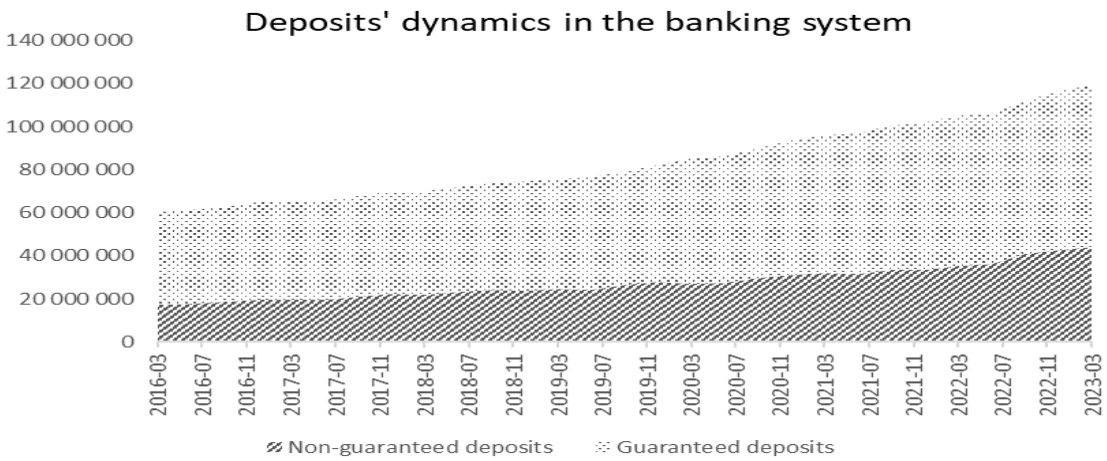
[12] According to Quarterly Report of the ABB as of the end of June 2023 65% of the assets in the banking system are in the form of advances, 15,9% in cash and 15% in securities.

Loans to deposits ratio is also increasing reaching the level of 75,58% as of the end June 2023 but keeping still lower that the EU average of 104,97%[13]. This indicates that deposits continue to be the basic source for lending for the Bulgarian banks and that the Bulgarian banks rely mainly on the deposit market for attracting resources for their lending operations[14]. The figures below show the total assets dynamics and the deposits dynamic in the Bulgarian banking system.





Source: BNB, own calculations



Source: BNB, own calculations

Banks perform different activities for increasing financial literacy that feature regularity and stability as dedicated budgets are set aside for their realization. Even during the Covid 19 pandemic the banks continued with those activities transforming their realization to the digital channels. The activities of the banks are directed to school students, professional schools and university students, young entrepreneurs. Those activities are aimed at providing knowledge about the different bank products, savings and investments

[13] This figure refers to the SSM banks and it is as of the end of March 2023.

[14] As of the end of June 2023 the share of deposits in banks' liabilities reach 97% as the liabilities in the banking system tend to grow with an annual rate of 13,5%.

possibilities, lectures on specialized topics. Except the typical bank products other topics as pensions, insurance, investment products, saving plans are discussed during the activities performed by the banks. Regarding young entrepreneurs the topics are directed towards types of financial instruments, types of risks in developing business projects, good practices for sustainable business. The activities for increasing financial literacy are realized through digital games, podcasts, quizzes and competitions, animated videos. In the last years cyber security is a key topic due to the intensive digitalization and innovations as the majority of activities are directed to fraud prevention. Vulnerable groups are also covered by the banks' activities, e.g. the annual campaigns against financial mules[15] as the banks publish information materials on financial mule schemes, advice for protection and counteraction.

From an investigation[16] of the information published on the Internet sites of the Bulgarian banks (mainly annual reports) it can be concluded that the banks in the first group according to the BNB Banking Supervision classification[17] are more involved in initiatives dedicated to increasing financial literacy compared to the banks from the second group. Some of the banks in the first group have permanent campaigns developed on own dedicated pages on cyber security (information and recommendations on safe online banking), partnership with high schools and universities by providing lecturers and educational materials, providing possibilities for scholarships and internships, educational digital games with practical case studies related to investments, insurance, banking, savings, development of special products, for instance debit cards for teenagers, educational multi media, radio podcasts on financial topics including presentation of forecasts and educative information, joint projects with different NGOs aiming at increasing financial literacy among young people, dedicated monetary resources for initiatives realized by NGOs for increasing financial literacy. Banks from the second group are much more limited in the activities for increasing consumers financial literacy as their activities are mainly brought to the creation of glossaries for financial terms and different types of calculators, e.g. for loan installments, pensions, etc. What is also typical for the banks from the second group is that they use information from other sources, e.g. questions and answers developed by the Deposit insurance fund on the guarantee provided by the deposit insurance scheme, brochure from the European Commission on consumer rights when performing payments in Europe.

[15] Financial mule is a person is a person who transfers illegally acquired funds between different bank accounts, often in different countries and receives a commission for that activity. Financial mule are usually people from vulnerable groups, e.g. unemployed, low-educated, coming from minority groups. Often these people do not understand the consequences of their actions.

[16] A review on the information on banks' websites is performed by the author of this paper.

[17] According to the BNB Banking Supervision classification in terms of assets banks operating on the territory of Bulgaria are divided into three groups: the first group of banks includes the top five banks in terms of assets (DSK Bank, UBB, UniCredit Bulbank, Postbank and Fibank), the second group includes the rest of the banks and the third group includes the branches of foreign banks operating on the territory of Bulgaria. According to the data as of the end of June 2023 in terms of assets the banks in the first group have a share of 76,2%, the banks in the second group – 20,9% and the banks in the third group – 2,9%.

Conclusion: The financial sector in Bulgaria performs a number of activities targeting consumers' financial literacy. Despite the majority of those activities aim at increasing information and knowledge on products and services offered by the financial institutions, thus stimulating their usage general knowledge and information on banking, investments, savings, insurance, and pensions is provided to consumers contributing to the increase of the level of their financial literacy. The expertise from the financial sector is valuable but the implementation of a national financial literacy strategy is a prerequisite in order to achieve measurable results in increasing the financial literacy in the society. The existence of a national strategy guarantees the involvement of a wide scope of topics and target groups, esp. the vulnerable groups. The vulnerable groups require specific attitude and knowledge, specific products and services as well as serious resources to guarantee adequate results. The existence of a national strategy for financial literacy and the collaboration between the financial sector and state institutions responsible for its implementation is a prerequisite for achieving the goal for increasing the financial literacy in the society.

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TRENDS AND OPPORTUNITIES IN THE CONSTRUCTION SECTOR IN SELECTED SOUTH-EASTERN EUROPE'S COUNTRIES

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Abstract

Southeastern Europe (SEE) constitutes a unique geographical sub-region of Europe. This region includes the Balkan countries, which are rich in cultural heritage, historical evolution, and geographical features. The countries in this region have varying stages of economic progress and development.
Considering the variations and unique characteristics of the individual countries within the SEE group and whit purpose to provide a comprehensive coverage of all aspects of the construction sector, this paper focuses on the specificities, structure, development, and future trends in the construction markets of subset of nine SEE countries.

***Key words*:** *Construction, GDP, economic growth, construction growth rate, employment, SEE*

***JEL*:** *I74, J21,O18*

1. A historical overview of the construction sector in Southeastern Europe

Before the decline of socialism in the early nineties, the countries in the Southeast European (SEE) region operated within separate systems. The former Yugoslav Republics (Croatia, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, and Slovenia), as a part of a shared state and market, had notable economic ties among themselves. Former Yugoslavia (SFRJ) also had integration with Western nations. Bulgaria, Romania, Hungary, and Moldova were strongly aligned with the Soviet bloc and were under the influence and control of the Soviet Union (USSR) (Mojsovska, 10/2008). After socialism ended, the former socialist countries started a process of integration in the world economy which was called the

transition process. Its main goals were to help former socialist societies to build democratic political systems and raise open market economies, which will be integrated whit the global market. All transition countries had to go through the process of privatization, establishing political pluralism and democracy, as well as creating the institutional foundations of a market economy. Regarding their substantial integration into the international system, the SEE countries have "chosen" western model of democracy and market economy (Mojsovska, 10/2008).

Greece, ware not socialist country and became a member of the European Union (EU) on January 1, 1981. It was the tenth country to join the EU, marking a significant step in the country's integration into European political and economic structures. Bulgaria, Croatia, and Slovenia are among the countries that have achieved the goals in their development and become EU members, promoting collaboration and opportunities in the union. These EU member states contribute to the region's integration with wider European structures. The countries in Southeastern Europe, including Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, and Serbia have not yet become members of the Union. Despite their non-EU status, these countries play crucial roles in the region's political and economic landscape. Those countries are still having difficulty becoming part of the global system, especially in terms of their economies.

For all countries of Southeastern Europe, it is crucial to improve industrialization and infrastructure development. This is an opportunity to reduce their dependence on foreign technologies and market and achieve significant progress and development in their market and economies.

The development of the construction sector in those countries is linked to the period of intensive industrial development in the countries after World War II. During this period, the first major construction enterprises were established by the states. The whole industry and also construction, as an integrated part of it, in that period operated under centralized planning and state control.

During the years from 1964 to 1980, the construction sector on Balkan saw a notable expansion in part due to increased investment, the involvement of construction companies in foreign projects in international markets as Iran, Iraq, Kuwait, Soviet Union, Germany. In this period, the construction industry in Former Yugoslavia made up around 12-13% of the total economic output (GDP) of the country (Chamber of Commerce of North Macedonia,

2002). Construction companies were enormous, and ware included in countries modernization and urbanization. Thay had significant experience in designing and executing various types of big projects in all areas of construction, including infrastructure (highways, tunnels, bridges, airports, other infrastructure projects), buildings (residential, commercial, industrial, public structures), as well as water management projects (irrigation systems, dams, sewage systems, treatment plants). Significant infrastructure projects and residential buildings, factories were undertaken to support the growing urban population and industrialization. These notable landmarks continue to exist today, serving as the foundation for current and upcoming industrialization and urban development (Chamber of Commerce of North Macedonia, 2002).

The independence of the countries from former Yugoslavia in the 1990s decreased the investment activity, It was period of civil wars in the region (wars in Serbia, North Macedonia, Croatia, Bosnia and Hercegovina, Kosovo), disrupted the sector, damaging infrastructure and causing economic instability. A prolonged period of disinvestment led to the decline in the internal reserves of construction companies. This, in turn, affected the liquidity of companies and contributed to a decline in the construction sector. During the transition period from 1990 to 2000, the construction companies in the SEE countries experienced internal reorganization. This was done with the aim of achieving better operational efficiency. In this purpose, giant construction firms were divided into smaller ones. This transition brought both opportunities and challenges for the construction sector. Foreign investments, privatization of state-owned enterprises, and increased urbanization led to new construction projects and developments (Chamber of Commerce of North Macedonia, 2002).

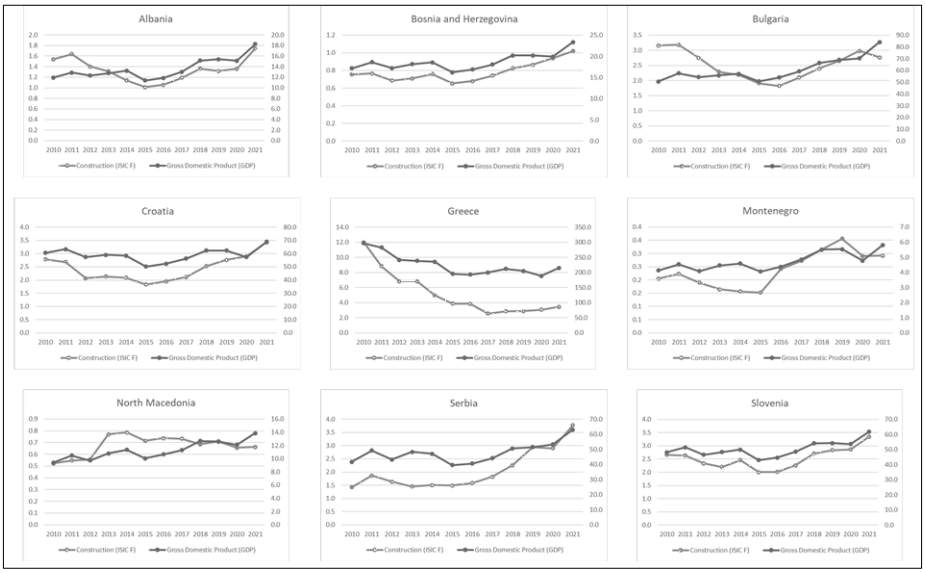
2. Economy trends in selected South-Eastern Europe countries

The period from 2010 to 2021 witnessed dynamic economic changes in South-Eastern Europe countries, reflected in their Gross Domestic Product (GDP) growth, the performance of the construction sector, and its contribution to overall GDP.

GDP growth is a fundamental indicator of a nation's economic health. The GDP growth data for the period 2010-2021 reveals a dynamic economic landscape across the studied SEE countries. Over the analyzed period, various countries exhibited diverse patterns of GDP growth. Different

factors, including global economic crises and the recent pandemic, have significantly influenced their growth trajectories. While some nations showcased remarkable recoveries, others faced oscillation and contraction, The trends in economic growth can be observed through the data presented in Figure 1 and Figure .

Figure 1. GDP and construction trends in selected SEE countries (2010-2021)



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Source: Prepared by author, based on data published on the official website of the United Nations Statistics Division https://unstats.un.org/unsd/snaama/Index, April.2023

Greece, for instance, faced significant challenges, experiencing a decrease from 296.8 billion USD in 2010 to 188.9 billion USD in 2021. The country encountered multiple years of negative growth. The highest positive growth rate of 8.4% in 2021 showed a noticeable contrast with a -10.1% contraction in 2011. This decline was attributed to various economic factors, including the COVID-19 crisis. Tourism is a vital pillar of the Greek economy, contributing significantly to its GDP and providing employment for a substantial portion of the population. With travel restrictions and lockdowns in place, the number of tourists visiting the country plummeted, leading to severe financial losses for businesses that rely on tourism, including hotels, restaurants, transportation services, and local shops.

Countries like Bulgaria and Serbia displayed consistent growth, with Bulgaria's GDP increasing from 50.7 billion USD in 2010 to 84.1 billion USD in 2021, and Serbia's GDP rising from 41.8 billion USD to 63.1 billion USD.

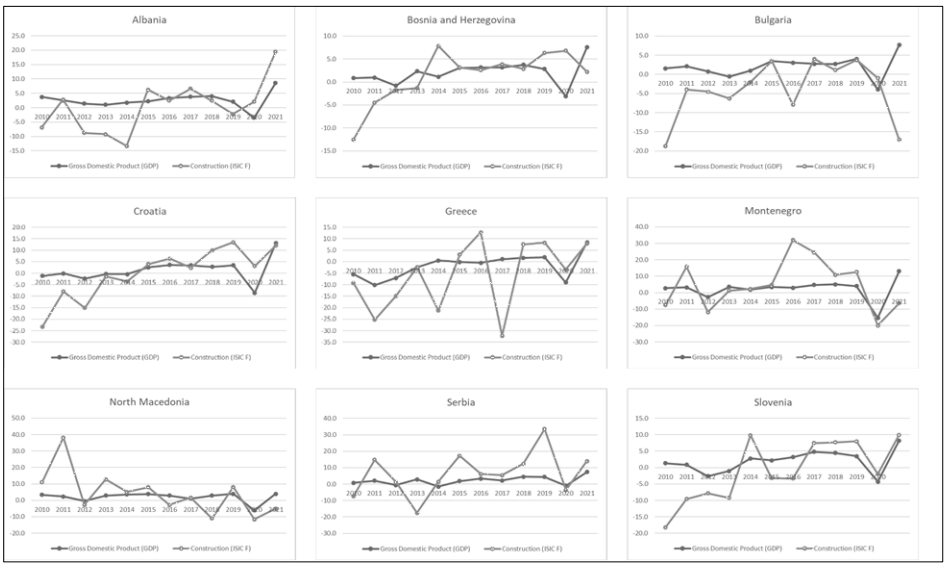
Serbia faced a contraction of -0.9% in 2020 but managed to achieve a substantial recovery with an impressive growth rate of 7.4% in 2021. Slovenia also indicates positive economic development, with its GDP increasing from 48.2 billion USD in 2010 to 61.7 billion USD in 2021. These countries successfully navigated through economic uncertainties by implementing policies that supported sustained growth.

In Montenegro, the GDP exhibited fluctuations but did not show a clear trend, ending at 5.8 billion USD in 2021. The country displayed robust growth in 2010 and 2011, only to experience a severe contraction in 2020 due to the pandemic.

Croatia experienced a notable economic recovery, achieving a remarkable growth rate of 13.1% in 2021 (with a GDP of 69 billion USD). This was a significant turnaround from the severe contraction of -8.6% in 2020, when the GDP decreased to 57.5 billion USD.

In the case of North Macedonia, GDP growth rates displayed overall positivity, albeit with fluctuations. The highest growth rate reached 4.0% in 2021, leading to a GDP of 13.9 billion USD. Conversely, the lowest growth rate was -6.1% in 2020, resulting in a GDP of 12.1 billion USD.

Figure 2. Growth rates of GDP and construction in South-Eastern Europe countries during the period 2010 – 2021 year



Source: Prepared by author, based on data published on the official website of the United Nations Statistics Division https://unstats.un.org/unsd/snaama/Index, April.2023

Bosnia and Herzegovina experienced relatively stable growth rates, encompassing both positive and negative values. The highest positive growth rate was 7.5% in 2021 (with a GDP value of 23.4 billion USD), while the lowest was -3.1% in 2020 when the GDP decreased to 20 billion USD.

The GDP growth rate for Albania fluctuated during this period, with both positive and negative growth rates. The highest positive growth rate was 8.5% in 2021 when the GDP reached 18.3 billion EUR, following a significant contraction of -3.5% in 2020 when the GDP decreased from 15.4 billion to 15.1 billion EUR.

The ongoing global energy crisis, initiated by the conflict between Russia and Ukraine, and international restriction to Russia, presents a new complex and significant challenge for countries in South-Eastern Europe. It impacts individuals, businesses, and nations, leading to disruptions in energy access.

Governments across the region were implementing measures to reduce the consequences of this issue. As the crisis spreads globally, Europe finds itself at the epicenter, with a primary concern being the insufficient supply of natural gas. This situation recalls previous occurrences, such as the oil shortage in the 1970s, although the solution was relatively simpler then, involving reduced oil consumption.

Historical trends indicate that significant global events have led to price increases and subsequent economic instability. These instances underscore the unpredictable nature of energy procurement strategies. The current situation is even more complex, involving diverse elements such as gas, oil, coal, electricity, food, and environmental factors. Moreover, more people are having trouble getting energy and basic essentials. This is the first time in ten years that problems with energy and food have gotten worse.

The simultaneous appearance of this challenge with the ongoing COVID-19 crisis makes the global economic situation even worse. This two-fold crisis also makes the issue of higher living costs around the world more serious, which affects households because higher food and energy prices come at the same time as lower incomes (International energy Agency-IEA, 2023). As a result, these accumulating challenges are placing significant pressure on economies, particularly in regions with limited growth, such as Southeastern Europe.

3. Analyzing the economic impact of the construction sector on South-Eastern European Countries

The construction sector in South-Eastern European countries continues to develop today with a focus on modernization, sustainable practices, and infrastructure development. Countries in the region are investing in various construction projects, including transportation networks, energy facilities, commercial complexes, and residential buildings. International collaborations and partnerships play a significant role in shaping the future of the construction industry in South-Eastern European countries.

However, countries in the region lack proper urban planning and infrastructure, resulting in informal urban areas or illegal constructions in existing urban zones. Experience shows that measures like legalization, penalties, and even demolition have not completely stopped informal development. Furthermore, the absence of effective urban planning or the discontinuation of such efforts has led to disorganized and disorderly urban growth. Political instability and weak administrative capacities can impede successful urban planning and implementation, resulting in unplanned and haphazard urban expansion. In 2019, the total number of enterprises in the construction sector varied across countries, with Bulgaria having the highest count at 408,587, and Montenegro having the lowest at 34,707. In 2020, the total number of enterprises remained relatively stable, with countries like Montenegro, Serbia, and Croatia experiencing slight increases in the number of enterprises.

In 2019, the percentage of construction enterprises as a portion of the total enterprises ranged from 3.78% in Albania to 11.16% in Montenegro, where there were 34,707 such enterprises. In 2020, the percentage generally increased in most countries, indicating a relative growth in construction enterprises as a proportion of the total number of enterprises. Specifically, in the Albanian market, there were 4,294 local enterprises operating in the construction sector, accounting for 4.19% of the total number of enterprises. Bulgaria had 21,297 construction enterprises, making up 5.32% of its total enterprises, while Serbia had 8,320, representing 9.23% of its total. Croatia had 18,065 enterprises in the construction sector, constituting 10.74% of the total number of enterprises in the country. The number of enterprises in the construction sector can reflect the level of business activity and competition within the industry. Further analysis would require additional context and

data to draw more comprehensive conclusions about the impact of these trends on the overall economy of each country.

Table 1. Number of enterprises in 2019 and 2020 year

		2019			2020	
Country	Total	Construction	% in total	Total	Construction	% in total
Albania	104,090	3,930	3.78	102,574	4,294	4.19
Bulgaria	408,587	20,985	5.14	400,492	21,297	5.32
Croatia	165,720	16,523	9.97	168,242	18,065	10.74
Montenegro	34,707	3,874	11.16	37,255	4,304	11.55
North Macedonia	75,914	5,270	6.94	73,061	5,263	7.20
Serbia	88,224	7,899	8.95	90,111	8,320	9.23

Source: Prepared by author, based on data published on the official websites of the Statistical Offices of Albania, Bulgaria, Croatia, Montenegro, North Macedonia, Serbia

The upcoming sections will examine the impacts of the construction sector on the country's GDP and its economic contribution over the period from 2010 to 2021. The construction sector's contribution to GDP is a vital indicator of its economic impact. A growing construction sector often correlates with overall economic growth. It is necessary to analyze how the sector's share of GDP has evolved over the years in these countries. An increasing share can indicate a positive contribution to economic growth. Additionally, these sections will explore the sector's contribution to employment and prospects for infrastructure development in South-Eastern European countries. The construction sector is a significant source of employment, both directly and indirectly, due to its multiplier effect on other industries. Analyzing employment trends in the construction sector can provide insights into its role in job creation and labor market dynamics. Infrastructure development is a key aspect of the construction sector's contribution to economic development. The construction of roads, bridges, buildings, and other infrastructure projects can enhance a country's competitiveness and quality of life. Examining the scale and nature of infrastructure projects undertaken in these countries can reveal their commitment to improving their physical and social infrastructure.

3.1. Economic contribution of the construction sector to GDP

Across South-Eastern European countries, there is a recognizable influence between construction growth and GDP growth rates. There is a clear correlation between positive GDP growth rates and the subsequent increase in GDP values in most cases. Positive construction growth often aligns with positive GDP growth, demonstrating the sector's contribution to

economic expansion. The values of GDP, the construction sector, and its contribution percentages to total GDP can be observed through the data presented in tables and graphs included in this section.

Greece's construction sector faced significant challenges, resulting in a notable decline in both value and contribution. The country's construction industry faced severe economic difficulties, which translated into negative growth rates for the majority of the years extending across from 2010 to 2021. The industry experienced a contraction of -9.2% in 2010, followed by a decline of -25.2% in 2011. Despite intermittent periods of positive growth, such as 12.7% in 2013 and 7.9% in 2021, the industry confronted with significant contractions, working hard to continue recovery. Across the entire period from 2010 to 2022. Greece maintained the highest construction sector value in terms of billion USD compared to other South-Eastern European countries. In 2010, Greece's construction industry held significant value at $12.0 billion USD, contributing 4% to the total GDP. However, over the years, there was a notable decline of $8.5 billion USD in the construction value, reaching $3.5 billion USD in 2021. This decline aligns with the decrease in the construction sector's contribution to the total GDP, dropping from 4.0% to 2.2%. The substantial decrease in both construction value and its contribution percentage underscore Greece's notable construction industry contraction, likely attributed to the economic difficulties the country faced during this period.

The construction sectors of Albania, Montenegro, and North Macedonia were smaller in terms of value compared to other South-Eastern European countries, with varying growth trajectories.

Albania's construction industry experienced fluctuations in growth rates from 2010 to 2021. It faced a contraction of -6.9% in 2010, followed by a positive growth of 2.8% in 2011. The industry saw a significant decline of -8.8% in 2013 but managed to recover with remarkable growth of 6.2% in 2014. In 2020, Albania's construction industry showed strong growth of 19.4%, concluding the period with a growth rate of 2.1% in 2021.

The percentage contribution of the construction sector to the GDP reveals the share of the construction industry in the overall economy. The data shows that the contribution percentage had a declining trend, dropping from 12.9% in 2010 to 8.5% in 2019, and then gradually increasing again to 9.5% in 2021. In terms of value, the sector's worth grew from 1.5 billion USD to 1.7 billion USD in 2021. Across this period, Albania has been directing its efforts

towards enhancing its infrastructure to foster economic expansion, attract foreign investment, and improve connectivity.

Table 2. Construction contribution percentages in South-Eastern Europe countries during the period 2010-2021

County	Indicators (in bill USD)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average %
Albania	Gross Domestic Product (GDP)	11.9	12.9	12.3	12.8	13.2	11.4	11.9	13.0	15.2	15.4	15.1	18.3	
Albania	Construction (ISIC F)	1.5	1.6	1.4	1.3	1.1	1.0	1.1	1.2	1.4	1.3	1.4	1.7	
Albania	**Construction Contribution Percentage**	**12.9**	**12.7**	**11.4**	**10.3**	**8.6**	**8.9**	**8.9**	**9.1**	**9.0**	**8.5**	**9.0**	**9.5**	**9.9**
Bulgaria	Gross Domestic Product (GDP)	50.7	57.7	54.3	55.8	57.1	50.8	54.0	59.2	66.4	68.9	70.2	84.1	
Bulgaria	Construction (ISIC F)	3.2	3.2	2.8	2.3	2.2	1.9	1.8	2.1	2.4	2.6	3.0	2.8	
Bulgaria	**Construction Contribution Percentage**	**6.2**	**5.5**	**5.1**	**4.1**	**3.8**	**3.8**	**3.4**	**3.6**	**3.6**	**3.8**	**4.2**	**3.3**	**4.2**
Croatia	Gross Domestic Product (GDP)	60.7	63.4	57.4	59.0	58.4	50.2	52.4	56.3	62.3	62.3	57.5	69.0	
Croatia	Construction (ISIC F)	2.8	2.7	2.1	2.1	2.1	1.8	2.0	2.1	2.5	2.8	2.9	3.4	
Croatia	**Construction Contribution Percentage**	**4.6**	**4.2**	**3.6**	**3.6**	**3.6**	**3.6**	**3.7**	**3.7**	**4.0**	**4.4**	**5.0**	**5.0**	**4.1**
Montenegro	Gross Domestic Product (GDP)	4.1	4.5	4.1	4.5	4.6	4.1	4.4	4.9	5.5	5.5	4.8	5.8	
Montenegro	Construction (ISIC F)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.3	
Montenegro	**Construction Contribution Percentage**	**4.9**	**4.9**	**4.6**	**3.7**	**3.4**	**3.8**	**5.5**	**5.6**	**5.7**	**6.4**	**6.1**	**5.0**	**5.0**
North Macedonia	Gross Domestic Product (GDP)	9.4	10.5	9.7	10.8	11.4	10.1	10.7	11.3	12.7	12.6	12.1	13.9	
North Macedonia	Construction (ISIC F)	0.5	0.5	0.6	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
North Macedonia	**Construction Contribution Percentage**	**5.6**	**5.2**	**5.7**	**7.1**	**6.9**	**7.1**	**6.9**	**6.5**	**5.4**	**5.6**	**5.4**	**4.8**	**6.0**
Serbia	Gross Domestic Product (GDP)	41.8	49.3	43.3	48.4	47.1	39.7	40.7	44.2	50.6	51.5	53.3	63.1	
Serbia	Construction (ISIC F)	1.4	1.9	1.6	1.5	1.5	1.5	1.6	1.8	2.3	2.9	2.9	3.8	
Serbia	**Construction Contribution Percentage**	**3.4**	**3.8**	**3.8**	**3.0**	**3.2**	**3.8**	**3.9**	**4.1**	**4.5**	**5.7**	**5.4**	**6.0**	**4.2**
Slovenia	Gross Domestic Product (GDP)	48.2	51.5	46.6	48.4	49.9	43.1	44.7	48.6	54.2	54.3	53.7	61.7	
Slovenia	Construction (ISIC F)	2.7	2.6	2.3	2.2	2.5	2.0	2.0	2.3	2.7	2.8	2.9	3.3	
Slovenia	**Construction Contribution Percentage**	**5.5**	**5.1**	**5.0**	**4.5**	**4.9**	**4.7**	**4.5**	**4.7**	**5.0**	**5.2**	**5.3**	**5.4**	**5.0**
Bosnia and Herzegovina	Gross Domestic Product (GDP)	17.2	18.6	17.2	18.2	18.6	16.2	16.9	18.1	20.2	20.2	20.0	23.4	
Bosnia and Herzegovina	Construction (ISIC F)	0.8	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.9	0.9	1.0	
Bosnia and Herzegovina	**Construction Contribution Percentage**	**4.4**	**4.1**	**4.0**	**3.9**	**4.1**	**4.0**	**4.0**	**4.1**	**4.1**	**4.3**	**4.7**	**4.4**	**4.2**
Greece	Gross Domestic Product (GDP)	296.8	282.6	242.0	238.8	235.1	195.6	193.0	199.8	212.0	205.3	188.9	214.9	
Greece	Construction (ISIC F)	12.0	8.8	6.8	6.8	5.0	3.9	3.9	2.6	2.9	2.9	3.1	3.5	
Greece	**Construction Contribution Percentage**	**4.0**	**3.1**	**2.8**	**2.9**	**2.1**	**2.0**	**2.0**	**1.3**	**1.4**	**1.4**	**1.6**	**1.6**	**2.2**

Source: Prepared by author, based on data published on the official website of the United Nations Statistics Division https://unstats.un.org/unsd/snaama/Index, April.2023

The construction industry in North Macedonia had relatively stable growth rates during the observed period. It experienced positive growth in most years, reaching its peak at 38.3% in 2011 and 12.8% in 2013. However, negative years occurred, including -11.6% in 2019 and -5.1% in 2021. The construction sector in North Macedonia exhibited a slight increasing trend in both value and contribution percentage to the total GDP, indicating mild growth. The sector's contribution to the total GDP increased from 5.6% in 2010 to 6.0% in 2021, with the sector's initial value at 0.5 billion USD in 2010. By 2021, the total value of the construction sector had slightly grown to 0.7 billion USD.

Montenegro's construction industry exhibited a combination of positive and negative growth rates from 2010 to 2021. The industry faced a decline of -7.6% in 2010, followed by a strong recovery in 2011 with a growth of 15.9%. Growth years followed, including 32.0% in 2017 and 24.5% in 2018.

However, challenges continued, evident in contractions of -20.0% in 2020 and -6.5% in 2021. Montenegro's construction sector demonstrated relatively stable value and contribution to the total GDP, indicating a more consistent performance within its economy. In 2010, the construction value in Montenegro stayed at 0.2 billion USD, and it experienced growth, reaching a value of 0.3 billion USD in 2021. The sector's contribution to the total GDP increased from 4.9% in 2010 to 5.0% in 2021.

Bulgaria, Croatia, Serbia, Slovenia, and Bosnia and Herzegovina had varying levels of growth and stability in their construction sectors, with fluctuations in value and contribution percentages.

Bulgaria's construction industry faced challenges during the period, marked by years of negative growth. The industry witnessed a substantial decline of -18.7% in 2010, followed by another contraction of -4.0% in 2011. Despite recovery in certain years like 2014 and 2015, the industry encountered difficulties, including a decline of -17.1% in 2021. Bulgaria's construction sector saw a decrease in value over the years, leading to a lower contribution percentage to the total GDP as well. The recorded construction value was 3.2 billion USD in 2010, which declined to 2.8 billion USD by 2021. The contribution percentage decreased from 6.2% in 2010 to 3.3% in 2021. This decline could potentially be attributed to a combination of economic factors influencing the construction industry's performance.

Croatia's construction industry experienced challenges during the period from 2010 to 2021. The industry faced consistent negative growth until 2016, with its most significant contraction at -23.4% occurring in 2010, as a consequence of the global financial crise from 2008. However, a notable turnaround appeared in 2017 as the industry started a recovery, witnessing positive growth rates ranging from 2.4% to 13.5% in the following years. The construction sector in Croatia contributed a total value of 2.8 billion USD. Over the period, the sector's value gradually increased to 3.4 billion USD by 2021. Croatia's construction sector experienced increase in value, resulting in a slight rise in its contribution percentage to the total GDP, progressing from 4.6% to 5% in 2021. This suggests that the sector maintained a relatively stable position within the economy.

Serbia's construction industry demonstrated a varied performance from 2010 to 2021. Following a contraction of -7.4% in 2010, the industry recovered with notable growth rates of 14.8% in 2011 and 33.6% in 2013. Despite periodic negative growth, the industry generally exhibited positive

growth rates, culminating in a growth rate of 14.0% in 2021. In Serbia, the construction value in 2010 amounted to 1.4 billion USD, and it experienced significant growth, reaching a value of 3.8 billion USD by 2021. Serbia's construction sector showcased important expansion in both value and contribution percentage to the total GDP, escalating from 1.4% to 3.8% in 2021. This suggests that the construction industry played an increasingly vital role in the country's economy during this period.

The construction industry in Slovenia encountered challenges during the observed period but also witnessed periods of recovery. The industry saw negative growth until 2012, with its most significant contraction at -18.2% occurring in 2010. Starting from 2013, the industry embarked on a recovery path, showcasing positive growth rates, with a peak growth of 10.0% in 2020. Slovenia's construction sector demonstrated moderate growth in value, although it experienced a slight decrease in contribution percentage. This indicates a stable industry that is not expanding rapidly. The construction value stood at 2.7 billion USD in 2010, growing to 3.3 billion USD in 2021. The contribution percentage of the construction sector to the total GDP exhibited a minor decline, moving from 5.5% (2010) to 5.4%(2021).

The construction industry in Bosnia and Herzegovina exhibited a mixed performance from 2010 to 2021. It initially faced a significant contraction of -12.6% in 2010, followed by another decline of -4.5% in 2011, as a consequence of global financial crise. However, the following years showed signs of recovery, with positive growth rates ranging from 2.6% to 7.8%. The industry maintained generally positive growth rates, with the highest growth of 6.8% observed in 2012. In 2010, the construction value in Bosnia and Herzegovina stood at 0.8 billion USD, growing to 1.0 billion USD in 2021. The construction sector in Bosnia and Herzegovina experienced growth in value. Contribution percentage to the total GDP, maintaining a stable 4.4% share in both 2010 and 2021.

Fluctuations in the construction sector can impact economic performance, and the role of construction varies by country in Southeastern Europe. Overall, the construction sector remains a vital contributor to economic development and recovery in Southeastern Europe. Fluctuations in both GDP and the construction sector, along with its contributions to the total country's GDP, were common across most countries, indicating the influence of various economic factors and policies over the years. Economic conditions, political stability, and investment trends interact and shape the path of the construction industry. These different growth and decline patterns offer

important insights into the challenges and opportunities each country faced during this period.

3.2. The impact of the construction sector on employment

The construction sector offers a diverse array of job opportunities, incorporating skilled workers, specialists, engineers, architects, project managers, administrative staff, and support personnel. This diversity in job roles makes the industry accessible to a wide range of skills and qualifications, serving as a valuable source of employment opportunities.

One of the most significant impacts of the construction sector in SEE is its role in job creation. The sector generates a substantial number of both direct and indirect employment opportunities. Direct jobs involve individuals employed directly by construction companies, while indirect jobs are created in associated industries such as construction material manufacturing, transportation, and logistics. This ripple effect stimulates employment across the entire supply chain. Moreover, the construction sector has the capacity to absorb both skilled and unskilled labor, making it an inclusive employer. Skilled workers, such as masons, electricians, and plumbers, find opportunities to apply their expertise, while unskilled workers often receive on-the-job training and skill development to cultivate the next generation of skilled workers.

The total employment in 2019, varied across the listed countries with Bulgaria having the highest at 1.994.135 employees and Montenegro, as a smaller country has the lowest at 243.800 employees. In 2020, the total employment generally increased in countries in Southeastern Europe, with Serbia experiencing the most significant increase from 1.207.098 to 1.248.987 employees. In 2020, the total employment generally increased in most countries, with Serbia experiencing the most significant increase from 1.207.098 to 1.248.987 employee.

In 2019, the number of employees in the construction industry varied across the listed countries. Bulgaria had 142.188 employees in construction companies, Croatia had 116.000, North Macedonia, 56.036 employees, The percentage of employment in the construction sector as a portion of the total employment varied between 6.93% and 9.93%. In 2020, the percentage generally increased in most countries, with Albania experiencing the highest

increase from 9.07% to 10.02%. The percentage of construction employment as part of total employment generally indicates positive trends for the construction industry and its contribution to the economy. However, the overall economic impact depends on various factors, including the scale of construction projects, government policies, and the broader economic context. A growing construction sector can be a valuable driver of economic growth and job creation when managed effectively. A rise in construction employment is connected with increased investment in infrastructure, real estate, and other construction-related projects.

Table 3. Number of employees in 2019 and 2020

	2019			2020		
Country	Total	Construction	% in total	Total	Construction	% in total
Albania	520,528	47,224	9.07	507,347	50,838	10.02
Bulgaria	1,994,135	142,188	7.13	1,885,050	139,419	7.40
Croatia	1,675,000	116,000	6.93	1,634,000	120,000	7.34
Montenegro	243,800	24,200	9.93	219,400	18,300	8.34
North Macedonia	797,651	56,036	7.03	794,909	55,165	6.94
Serbia	1,207,098	83,682	6.93	1,248,987	87,200	6.98

Source: Prepared by author, based on data published on the official websites of the Statistical Offices of Albania, Bulgaria, Croatia, Montenegro, North Macedonia, Serbia

The cyclical nature of construction projects also influences employment patterns. Large infrastructure projects, for example, can provide steady employment for extended periods. Additionally, the construction sector often experiences peak periods during specific seasons or economic cycles, leading to fluctuations in employment. Therefore, the sector's impact on employment extends beyond just providing jobs; it also influences the stability and duration of employment.

However, it is essential to recognize that the construction sector can also present challenges in terms of job security and working conditions. Usually, construction jobs are project-based, which can lead to periods of unemployment between projects. Ensuring that workers have access to social security and labor protections is crucial to reducing these challenges.

The construction sector in Southeastern Europe is a significant contributor to employment in the region. Its ability to create a wide range of jobs, cater to diverse skill sets, and stimulate employment in related industries underscores its importance in the labor market. While offering opportunities for economic growth and personal development, it also presents challenges that require thoughtful policy considerations. The construction sector's influence on

employment in Southeastern Europe is substantial and multifaceted, making it a vital component of the region's economic landscape.

3.3. Prospects for infrastructure development in the South-Easter Europe countries

Infrastructure development plays an essential role in shaping a nation's economic growth, connectivity, and overall development. Infrastructure is the key element of economic growth, supporting trading activities, improving movement and transport, and attracting foreign investments.

In South-Eastern Europe, the need for improved infrastructure is indicated by its geographical position as a bridge between Europe and Asia. With the expansion of global trade and connectivity, infrastructure is crucial for the region's competitiveness. Improving transportation networks, including roads, railways, and ports, can enhance regional and international trade. The construction of modern highways and well-connected rail systems can reduce transportation costs and stimulate economic activities. Countries like Bulgaria, Serbia, Macedonia can capitalize on their strategic location to develop transit corridors between Asia and Europe. Investing in renewable energy sources and upgrading energy networks can promote sustainability and energy security. The Southeastern Europe region possess potential for solar, wind, and hydropower. Exploiting these resources can diversify energy portfolios and reduce dependence on fossil fuels. Each of the Southeast European countries aims to enhance its infrastructure, thereby creating new opportunities for the construction sector. Infrastructure development always leads to increased demand for construction services. Road and rail networks, airports, ports, energy facilities, and public buildings all require skilled labor and expertise from the construction sector. The trend of further expansion and development of the sector depends on the continuity of investments and the demand for capital projects in the countries. Infrastructure development in Southeast European countries involves investments in infrastructure projects, which creates a supportive environment for local construction companies to expand their operations. This, in turn, leads to job creation, skills improvement, and ultimately better economic development. Additionally, it presents an opportunity to adopt sustainable and innovative practices. By incorporating green technologies and sustainable design principles, these countries can develop infrastructure that minimizes its environmental impact.

This move towards sustainability correlates with global trends and also drives innovation within the construction sector.

In an effort to improve Greece's infrastructure in the next period, the Greek Minister of infrastructure and transport, Christos Staikouras, announced the Greece's development plan 2030. This comprehensive plan includes 188 infrastructure projects worth around 27.6 billion euros (Ekathimerini, 2023). The priorities projects of this plan are as follows:

- Thessaloniki Metro (expected delivery 2024), Central Greece Highway E65 (expected in four years), Patra-Pyrgos Highway (expected in 2025), the Aktio-Amvrakia road connection in Western Greece (expected within 2023), Northern Road Axis of Crete (all worksites expected to open in 2024), Athens Metro Line 4 (ongoing), Halkida-Psachna Diversion and the Bralos-Amfissa Axis (contracts signed early 2023) (Ekathimerini, 2023).

For improvement the Bulgarian infrastructure, at the initiative of Bulgarian government, the European Commission has adopted the first major infrastructure program for Bulgaria for the period 2021-2027 – the Transport Connectivity Program (European commission official, 2022). The EU has allocated €1.61 billion, one of the largest amounts for Bulgarian cohesion program in the period 2021 – 2027. The most important infrastructure investments planned are:

• the construction and modernization of railway sections along Asia/Eastern-Mediterranean corridor, including a railway connection between Bulgaria and North Macedonia, and the modernization of the Sofia-Pernik-Radomir railway line.

• the construction of a road section along Asia/Eastern-Mediterranean corridor and improving connectivity between the Rhine - Danube corridor and Asia/Eastern-Mediterranean corridor in the North-South direction, including the construction of Ruse-Veliko Trnovo Highway.

• the construction of infrastructure for alternative fuels along the main directions of the national road network.

The new construction initiative in the Republic of North Macedonia is involving construction of four highways along Corridor VIII and Corridor X-d. The building of these four segments of a new, modern six-lane highway, covering a total of 110 kilometers, will establish a modern, high-quality, and safe road network across western Macedonia. These sections include Tetovo – Gostivar, Gostivar – Bukojcani, Trebeniste – Struga – Kafasan, border to

Republic of Albania, and Prilep – Bitola, section in central Macedonia. Those projects have considerable economic and geopolitical significance for the country and the region. The complete investment for these highway projects is projected to reach 1.3 billion euros over the period from 2023 to 2027, with annual estimates ranging from 240 to 320 million euros (Ministry of finance of Republic of North Macedonia, 2023). When combined with related infrastructure investments, those infrastructure investments will constitute approximately 10% of the country's GDP. The construction of Corridor VIII and Corridor X-d is expected to generate considerable financial and economic benefits for the country, its economy, and citizens and to have a direct and positive influence on the country's current economic activities (Ministry of finance of Republic of North Macedonia, 2023).

The Serbian Government in 2019 has decided to invest by the end of 2025 amount of 13.5 billion USD for significant development infrastructure initiatives as part of a National Investment Plan. These funds will be allocated towards infrastructure projects as enhancing road, rail, air, and water infrastructure. The Serbia's list of important infrastructure projects for construction in the nearest future includes upgrading the Sumadija Corridor/Highway Vozd Karadjordje, modernizing the railway between Serbia and Bosnia, and expanding the Smederevo Port. The Sumadija Corridor is about 220km long and is worth more than 2 billion USD. Making the railway better between Serbia and Bosnia is really important for both countries. This project will improve the railway for faster electric trains and include electronic signals for safety. They also want to improve the Smederevo Port so it can manage more cargo. The total cost for this is about $106 million, and the biggest amount is planned to go into building the port (International energy Agency-IEA, 2023).

The Government of Montenegro has identified a list of priority infrastructure projects, which includes nine energy projects totaling approximately EUR 1 billion and eighty-one projects in the environmental protection sector, with a combined value of around EUR 885 million. This updated list of priority infrastructure projects, introduced in 2018, encompasses 154 projects with a total investment exceeding EUR 6.3 billion. These projects span various sectors, including transportation, communal infrastructure, education, healthcare, culture, sports, and digitalization. Funding for these projects is expected to come from diverse sources, including the state budget, state-owned companies, loans, European Union

grants, and public-private partnerships. The strategic importance of these projects for the country underlines their prioritization (Spasić, 2022).

In Albania, there are significant ongoing and anticipated infrastructure projects in the tourism, transportation, and energy sectors. These projects are expected to result in increased spending on construction in the near future. Significant building projects include the completion of the Trans Adriatic Pipeline, the development of a $50 million stadium in Tirana, the establishment of various hydro power stations, improvements of major road corridors, and the construction of a new international airport in Kukes city (US International Trade Administration, 2023). In the year 2018, the Albanian government initiated the pre-qualification phase for a substantial $90 million tender aimed at rehabilitating a 35-kilometer railway line connecting Tirana and Durres. Additionally, they are planning to construct a new 5-kilometer railway line that will link the train network with Tirana International Airport. Furthermore, the government has planned a public-private partnership initiative with a total value of 1billion euros. This initiative is focused on upgrading Albania's infrastructure, which encompasses improvements to roads, hospitals, and schools (US International Trade Administration, 2023).

The European Commission announced on 30 June 2023 a new financial package worth 2.1 billion EUR to support investment in transport, energy, environment, human capital, and private sector support in the Western Balkans. Total amount of 303 million EUR in grants have been reserved for Bosnia and Herzegovina to fund four important projects. These projects will bring real benefits to the people by improving transportation, clean energy, and the environment (Delegation of EU to Bosnia and Herzegovina , 2023). When combined with loans from international financial institutions, the total investment will reach €788 million. Here are the four approved projects:

- Road Corridor Vc: Ozimice – Poprikuše Motorway Subsection, which will include the construction of 5 tunnels and nine bridges and Mostar North – Mostar South Motorway Section, 14.2 km motorway.
- Sarajevo Water Project. This project aims to reduce water losses by replacing or fixing old pipelines, pumping stations, and wells. It will also connect about 4,000 new households to the water supply system. The goal is to make the water supply in the wider Sarajevo Canton more efficient.

- Rehabilitation of Čapljina Pump Storage Hydropower Plant. This project is crucial for increasing the use of renewable energy and reducing carbon emissions. It will renovate the equipment at the Čapljina Pump Storage Hydropower Plant, ensuring it can generate and store energy efficiently for another 15 years (Delegation of EU to Bosnia and Herzegovina , 2023).

Croatia is set to receive a significant €6.3 billion in funding from the European Union under its Recovery and Resilience Facility plan. A total of 728 million EUR is allocated for investment in sustainable mobility initiatives. These projects include the upgrading of railway lines, the development of autonomous electric taxis along with supporting infrastructure designed for people with disabilities, the installation of 1,300 charging stations for electric vehicles, and the introduction of zero-emission vehicles and vessels. An amount of 126 million will be invested to improve digital connectivity of rural areas, by increasing national broadband coverage with gigabit connectivity in rural areas and the construction of electronic communications infrastructure (European Commission, 2021).

Slovenia faces challenges in its railway and city transport systems, both of which feature dated infrastructure and transportation methods. One crucial railway connection in Slovenia is the Divača–Koper railway line, spanning between the towns of Divača and Koper. Originally constructed as a single track, recent years have seen the construction of a second track to enhance capacity and facilitate faster and more efficient transportation of goods and passengers. The second track of the Divača–Koper railway line represents a significant infrastructure project in Slovenia, with an estimated value of approximately 1 billion EUR. The project has been executed in stages, and the first section of the second track, linking Divača and Črni Kal, was opened for traffic in September 2020 (China-cee institute , 2023).

Successful execution of planned investments in infrastructure projects will have a transformative effect on the construction sector. An increase in construction projects, ranging from roads and bridges to energy facilities and urban developments, can stimulate job creation, encourage skill development, and economic growth. Moreover, the involvement of local construction companies in these projects is crucial. Local companies bring not only a deep understanding of the local market but also a personal interest in the long-term development of their communities. Their participation not only ensures that the economic benefits remain within the region but also encourages a sense of ownership and responsibility. If planned investments

in infrastructure projects are realized, and local construction companies actively participate, the region can anticipate greater growth and development, leading to increased competitiveness in the construction sector. This, in turn, will contribute to the overall economic progress and prosperity of Southeastern European Countries.

CONCLUSION

This paper has underscored the pivotal role of the construction sector within the Southeastern Europe countries. The construction industry's impact on economic growth is undeniable, and its multifaceted influence extends beyond mere infrastructure development. It involves a complex interplay of building projects, financial investments, job creation.

The construction of capital facilities, particularly infrastructure projects, poses a crucial challenge for every nation, as it profoundly affects the future economic trajectory in the Southeastern Europe countries. It is imperative for each country to carefully consider the conditions for promoting economic growth and development, along with formulating strategic investment plans for capital projects. In cases as in Southeastern Europe where countries engaage with inadequate road infrastructure, heightened investments in this sector are essential. Such investments not only enhance a nation's competitiveness but also attract external investments and elevate the overall level of development.

Moreover, the construction sector's substantial role in job creation in Southeastern Europe countries cannot be understated. As it contributes to the construction of capital goods and infrastructures, it emerges as a linchpin in stimulating economic growth across diverse sectors. Consequently, it becomes apparent that the construction industry holds vital importance for every economy, serving as a catalyst for growth and development. Therefore, recognizing and harnessing the potential of this sector should remain a priority for nations seeking to advance their economic prospects and societal well-being.

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MODEL OF A NEUTRALISED CURRENCY AND EXCHANGE SYSTEM FOR CENTRAL BANKS

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Abstract: *This paper describes a super-neutralised complementary currency as a currency and exchange system for central banks, independent of national interests which describes our world as a finite resource. The goal is a stable, crisis-proof financial system that meets the challenge of ecological and economic sustainability. In fact, it is more a unit of measurement then money, like the primal metre in Paris, but for money. Just as a uniform measure of length is important for natural sciences and technology, a fixed reference value for money can act like a Copernican turning point and could offer many benefits.*

This application leads to equality of weak and strong currencies. It enables weak economies to pursue an independent monetary policy and simplifies the path to monetary unions. It prevents speculation in the system. It creates a constraint to gradually reduce trade imbalances and enables over-indebted countries to get out of the debt trap.

Keywords: *complementary currency, global reference currency, unit of measurement currencies*

JEL: *E500 Monetary Policy, Central Banking, and the Supply of Money and Credit: General*

1 Introduction of the Idea

Coming from the question: „is it possible to find an absolute value for money? “, could I recognize only one answer and this answer is the total. Creating a complementary currency which represents the total, let us name this currency ANNA[1] and let us give the never changing value or never changing money supply of ONE, leads this complementary currency to the following statement...

one ANNA is equal to one common world

If we transform this idea to the abstract world of money and numbers leads it to the equation

one ANNA is an equivalent to the total of world money supply

[1] *ANNA is an arbitrary taken name with no further sense. The name should be free for registration of a world currency, should be simple in pronunciation and represents the mirror imaging behaviour by reflecting A(ll) to N(othing) in dividing the absolute value of One versus N(othing) to A(ll) of adding conventional currencies*

where World Money Supply represents the conventional currencies and behaves like these conventional currencies. It means, coming from the particular going to the total need addition. For example, 1000 DOLLAR = 1000 *times one DOLLAR.

ANNA behaves contrary, because ANNA does not allow additional money supply due to the never changing values of ONE. Coming from the total going to the particular needs division. This is not very practical for daily use of money. But there are two points connecting these two monetary systems together.

- The first one is the total – One ANNA is equal to World Money Supply.
- The second one is the particular. One unit of a currency is equal to One divided by World Money Supply expressed in this currency

This can be used for monetary scaling and monetary scaling can be used as a currency exchange system.

1.1 Similar approaches

Bancor: "It is a supranational currency that John Maynard Keynes and E. F. Schumacher conceptualised in the years 1940–1942 and which the United Kingdom proposed to introduce after World War II. This newly created supranational currency would then be used in international trade as a unit of account within a multilateral clearing system—the International Clearing Union—which would also need to be founded" (wikipedia, https://en.wikipedia.org/wiki/Bancor, 2023).

Terra: "(the Trade Reference Currency, TRC) is the name of a proposed "world currency". The concept was revived by Belgian economist and expert on monetary systems Bernard Lietaer in 2001, based on a similar proposal from the 1930s. The currency is meant to be based on a basket of the nine to twelve most important commodities (according to their importance in worldwide trade). Lietaer opines this would provide a currency that wouldn't suffer from inflation. The basic principle emerged from early concepts presented in an article in the French newspaper Le Fédériste on 1 January 1933. The idea to establish a L'Europa – monnaie de la paix (English: Europe - Money of peace), was given birth. The idea was enthusiastically picked up by Lietaer during an educational journey." (wikipedia, https://en.wikipedia.org/wiki/Terra_(proposed_currency), 2023) (Lietaer, 2001)

1.2 What is ANNA

ANNA is related to money and not to prices of visible commodities. It is not money. It is a currency exchange system. ANNA is a unit of measurement for all currencies. ANNA could also be seen as a unit of account, but only for currencies. It relates currencies to each other by regulating exchange rates. ANNA is not a means of payment. Therefore, no transactions can be carried out in ANNA. ANNA is also not a store for value. It is in fact not money, it is an accounting system, but with huge impact on the financial markets and the global community. ANNA is a unit of measurement. It relies to money but is no money. You cannot own this unit. You can only apply it. Possession can exist only in conventional currencies The exchange value of money lies in the conventional currencies. Hedging with gold reserves or other commodities is also part of conventional currencies. However, all conventional currencies are part of ANNA.

ANNA describes a condition. It is the claim of all nations to be a part of the whole. ANNA is not a value. ANNA is a benefit. The benefit is a stable and fair world order.

Sometimes we have the feeling that the world society prefers to earn money by accepting ecological disasters. Profit or sustainability are opposites. But nevertheless, viewing from the point of humans this not changing value of ANNA means to let everything ongoing forever in a proper way and to keep the world society alive. Human life in total is inalienable. Also Sustainability can be defined as to keep everything ongoing forever in a proper way. Within this global reference currency would be a mathematical description of Sustainability. Money represents a value but it is not a value. It is an agreement of the society to accept money as a representation of values. The never changing value of ANNA can be also seen as an agreement, it is the agreement that one ANNA representation the total of world money supply. We don't save the world with a lot of money, but with a different kind of money

1.3 Foundation of an international institute is needed

ANNA as a centralised and controlled system needs a non-profit management and it is very important that the organisation of ANNA gets and keeps the acceptance of the world community and will be also controlled by the world community. If the economies of the participating countries are very weak, the system must be backed by world community. The principle is, whoever comes first wins the deal. The contract should be awarded to the institute that leads the development, together with the first country to take part in this system.

1.4 Preamble

Preface to an international treaty

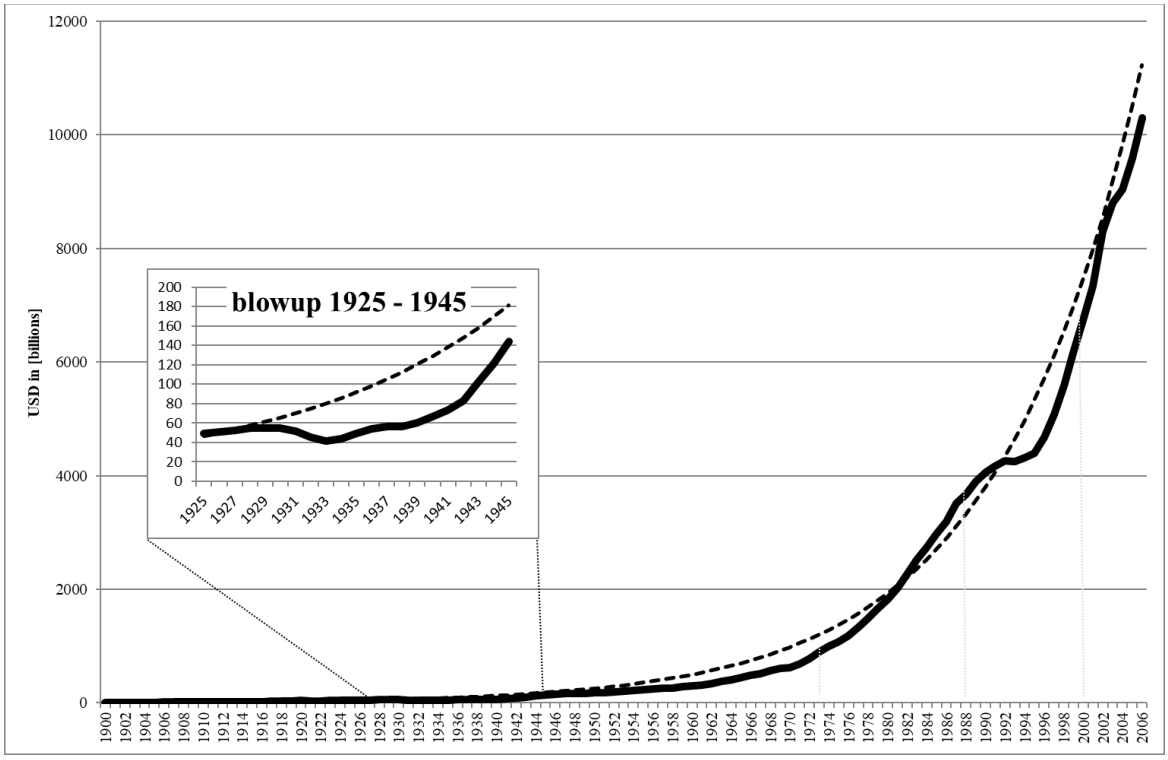
- ANNA is a system of voluntary participation
- ANNA is based on the solidarity of the world communtiy
- The goal of ANNA is the reconciliation of nations

2 Technical- and mathematical description

2.1 World Money Supply

The approach of ANNA uses the fact that money is a unit of account. ANNA is equal to world money supply and World money supply is the sum of all national money supply. We should rather talk about the money amount, but this term does not seem to be common in Economics. Economics usually prefer to use velocity of money supply which in this case is a flow size and relative value. However, this does not meet the requirements of this scheme. We do not want to have the supply of money, we want to have the amount of money, the stock size value and absolute value of money supply

Figure 1. money supply US-Dollar 1900-2006



Source 1:(FRED Economic Data, 2007)

Figure 2. shows Money supply M3 of the US Dollar from 1900 to 2006 as example. FED stopped recording in 2006. The doted-line is a hypothetical curve of 7% growth per year. Due to the effect of the interest compound is M3 an exponential curve. The money supply normally knows only one direction: growth. In deflationary crises, the curve runs horizontally, which are seen in the steps of the curve. There is one major exception to this curve in which the money supply decreases: the Great Depression of 1929. The central bank has probably cleared debts, destroyed money and liquidity, and thus triggered one of the biggest financial crises.

Money is the legal tender, state money, official and valid money as mean of payment in a country or currency area. It means money itself and not any other kind of assets which must be exchanged to be money, except parked liquidity at a central bank, expressed as central bank

receivables. These values of national money supply are based on data from central banks. This is a critical point because

- Central banks must want to supply these figures
  f. e. FED stopped the publishing M3 in 2006
- The values should be accurate and not manipulated
- The values should be comparable
  it seems to be that central banks determine money supply differently
- But let us assume that central banks are able to determine and to supply the right values or at least to estimate money supply quite well
- **Important are the highest values, including all aggregated money accounts, usually called M3**

One important characteristic of world money supply is to exchange all money in one moment into ANNA must be less or equal one [ANNA], ever. Less than One is allowed and means that the calculated WMS can be higher than the real one: It is not necessary to have exact values! This is helpful to compensate errors in the determination and allows to influence the response time of exchange rates from fast and reactive to slow and active. If slow and active response time of exchange rates are wanted additional parameter for money supply must be considered f. e. add on of parked liquidity at the central bank. It would lead to a slight shift of the monetary time beam to higher values and the amount of interest-based-money would have only on direction of increase. A calculated exponential growth of money supply based on the average interest rate ahead of time is even better. It would lead to an additional security shift and would smoothen the curve

2.2 First step is the determination of word money supply

The approach of ANNA is based on data of money supply M3. World Money supply is the sum of all national money supply

$$\mathrm{WMS} = \sum_{x=1}^{x=n} NMS_x \tag{1}$$

WMS = world money supply as sum of all national money supply in a leading currency, f. e. Dollar [$]

NMS = national money supply of currency x described in a leading currency, f. e. Dollar [$]

National money supply is money supply of a currency exchanged into the currency unit of world money supply. As a rule, the leading reference currency is taken, currently the US Dollar [$]. It must be done only once and is based on data of the FOREX

$$NMR = m_x \times exr\left(\frac{x}{\$}\right)$$

m_x = national money supply described in the own unit of currency x (2)

$exr\left(\frac{x}{\$}\right)$ = exchange rates of the leading reference currency f. e. Dollar [$] in the moment of transformation based on the central bank reference exchange rate for interbank trading

2.3 Second step is the fixation of the currency share onto ANNA

The share of a currency is national money supply divided by world money supply. This calculation must be done only once and is based on the data of the FOREX

$$S_x = \frac{NMR_x}{WMS} \tag{3}$$

S_x = share of currency x onto world money supply

As the first country with the first currency participate onto the monetary system of ANNA, the share S of this currency must be fixed. This leads to the possibility to determine the exchange rate of this currency independently from other currencies. This fixation is the crucial trick. It describes the situation of the currency at the time of participation. The assumption is that the state of the currency also reflects the state of the economy in global trade. The fixation transfers the economy into thee protected currency area, because the free trade on the foreign exchange market is suspended. The figures for the calculation, which until then still rely onto the Data from the FOREX markets, is replaced by the dimensionless number S_x (Share onto ANNA). Thus, it will be possible to separate the exchange rate from the FOREX market and allows the independent calculation in the exchange rate regime of ANNA
The fixation of the share S is a declaration of the country to participate into the System. It is also a declaration of the world community to accept this participation. It would be the birth of a new financial design. In this context, questions such as the following arise: Is it permissible to compare the state of the currency with the state of the economy in global trade? What should be taken into account when an economy changes dramatically, as we have seen f. e. with China?

2.4 Third Step is the independent determination of exchange rate

The exchange rate is the share of the currency divided by the money supply expressed in the own currency unit. These calculation can be done always and independent from data of the FOREX.

$$e_x = \frac{S_x}{m_x} \tag{4}$$

e_x = exchange rate of currency x to the superneutralized reference currency ANNA

Balance of trading must be considered by additional parameters in the divider of the equation for exchange rates Beside money supply are these:

$$e_x = \frac{S_x}{m_x + l_x - r_x} \tag{5}$$

l_x = foreign liabilities lent from other countries, which will be added to the money supply and represents trading deficit

r_x = foreign receivables lent to other countries, which will be subtracted from money supply and represents trading surplus

It influences the divider in the following way. If the number in the divider increases by increasing money supply or increasing foreign liabilities caused by trading deficit. Exchange rate will decrease. If the number in the divider decreases by increasing foreign receivables caused by trading surplus. Exchange rate will increase. It influences the price of currencies in the way to support the balance of foreign trading

2.5 Exchange by cross rating

Exchange will be calculated simply by cross rating via ANNA

$$a_y = a_x \times \frac{e_x}{e_y} \tag{6}$$

a_x = amount of currency x

a_y = amount of currency y

e_x = exchange rate of currency x in ANNA

e_y = exchange rate of currency y in ANNA

3 Differences and benefits

Of course, these are very simplified assumptions. It is not a ready developed concept that could be used immediately. Because, as soon as you go deeper into the details, it becomes extremely difficult. If you would want to take this idea further, it can only be done through research and development. Well, first the concept would have to be reviewed, starting with the technical-mathematical description. Already here many questions arise. For example: What is the money supply, how can it be determined, and how often must these values be adjusted. There are very many other questions, but also design options. The idea offers so many interesting approaches for solutions that it is worth thinking about, even if it's just sitting on the shelf.

3.1 Superneutrality

Superneutrality is the never changing value of ANNA. In approach to the orthodox monetary theories means it, that the never changing money supply of ANNA does not influence the visible trading or real economy. It also does not influence the relationship between conventional money and visible trading or real economy, neither nor the economic theories concerning this relationship **ANNA as a global reference currency** is independent from national interests,

because it does not belong to any country It does not need the usual monetary policy, because there is no additional money supply and interest rates are not allowed. It may keep the administration of the system more simple. The never changing value of ANNA is a long term or timeless consideration and reflects the finite nature of our resources. This is like a Copernican turning point for capital. The never changing value of ANNA allows monetary scaling, this means Exchange rates are calculated and not determined by trade anymore. Trade balance is taken into account in the exchange rate. This requires new rules in international payments and capital flow. This monetary regime allows to implement national currencies for common good economies and worldwide standardized social security systems (Brass, 2017). It offers the opportunity to use the effect of reconciliation, which is the ultimative solution for debt crisis.

3.2 Incomplete currency area

This currency system works even if only some countries with weak currencies participate and countries with strong currencies ignore it. In this case another complementary currency must be introduced to allow the free flow of capital between the protected currency area and FOREX markets. This intermediate currency is called FENA (Foreign Exchange Nothing to All currency (Brass, Complementary Currencies and the global economy, 2012)). FENA is the share of the outside currencies onto ANNA and represents the outside currencies as one currency with one exchange rate onto the inside markets. On the inside markets the exchange rate of FENA must be calculated like for each other inside currency. As Vice versa FENA represents the inside currencies as one currency with one exchange rate onto the outside markets. FENA must be traded like each other outside currency on the FOREX markets. It is likely that the dominant currencies will not participate in this exchange rate system. Weak economies that want to protect themselves against the dominance of the strong currencies, could join together, to form a currency area according to the scheme described above. The currency areas can even be geographically separated. Several independent currency areas can also be created.
A theoretical example: A European currency area with national currencies. Of course, the euro is not a weak currency, it is one of the most stable currencies on the global financial markets. However, the member states do not have the opportunity to balance trading through valuation and devaluation. They cannot protect their domestic markets. This leads to strong migration movements towards income opportunities and promotes unemployment. We could imagine a model with national currencies for the euro area, where the euro becomes the function of the foreign exchange currency FENA. The euro will be traded on the global markets. National currencies are only valid on domestic markets. Euros and national currencies are official means of payment and can be used in addition. The advantage could be that the member states present themselves on the global financial markets as a common currency area. The euro can be traded on global financial markets according to the principles of the free foreign exchange market. Nevertheless, with the introduction of national currencies, it is possible to balance trade within member states by the framework of ANNA's neutralized exchange rate system. On international markets Government bonds must be traded in EURO on international markets and on domestic markets Government bonds must be traded in national currencies. This is a good example and would be perfect for the introduction of Digital Central Bank Money (CBCD's). With the introduction of a complementary common currency, we could also unify and simplify our social security systems. It would be a revolution for social security systems. However, I do not expect

the European Central Bank to be receptive to such ideas. I suspect the desire for change to be more on the continents of Africa and South America to get more power on the global financial markets.

3.3 Impossible Trinity (Fleming/Mundell, 2023)

Three factors are necessary to calculate exchange rates

- Share of currency onto ANNA
- Money supply
- Trade balance

We can assume in the exchange rate regime of ANNA, that the currency share in ANNA is fixed. Lending is controlled by the banks and reflects the growth of an economy and thus also influences the trade balance. The money supply is increased by fractional reserve banking through loans. Central banks control lending through monetary policy. Free flow of capital is possible. The exchange rate remains flexible, but is no longer determined by trade, but by the parameters mentioned above. Maybe an interesting question if the impossible trinity of the Fleming/Mundell model still is valid in ANNA? Because monetary policy in ANNA remains completely in self-determination and responsibility of the participating country and economy.

3.4 FOREX versus ANNA

The current foreign exchange markets are decentral and uncontrolled. Exchange rates will be more or less determined by supply and demand of trading the (Fleming/Mundell, 2023)currencies. In contrary, the protected currency area of ANNA is centralized and a controlled system. Exchange rates will be mathematically determined by one equation. The exchange rates are always conclusive to each other. It means, if I change from one currency to the next to next to next going back to the first lead to no spread in the result due to the 100% cross rating, except this transaction would be charged. Of course, rounding errors can happen. These depend on how many decimal places are set up. It also means that speculative trading in currencies always leads to losses and never to profits, especially if the transactions are charged. It is helpful to prevent speculative trading against the participating currencies.

3.5 Effect of reconciliation

Exchange rates in ANNA are related to money supply, where the exchange rate of the interest-based currency decreases in correlation to the exponential growth of money supply of this currency caused by the interest compound. While the money supply and therewith the exchange rate of the interest free money keep more or less constant due to the absents of interest compound.
A heavily indebted poor country which will run into insolvency and changes into a common good economy based on a interest free national currency has only to wait for the decreasing exchange rate of the creditors currency. Nevertheless - the Debtor still has to repay the liabilities, but only in the absolute value of ANNA and the creditor get back the outstanding receivables, but only in absolute value of ANNA. It is more than fair for the creditor and debtor - it is this reconciliation. It interrupts the helix of geometrically growing debts and hinders the

creditor to exploit the debtor. The effect of reconciliation devaluates interest-based money in tax havens and reduces in a long-term consideration the escape of this money into tax havens.

4 Summary

The following economic principles apply:

- maximum return on invested capital
- profit and stability are opposites.

If the goal of the capitalist system is profit through growth and exploitation, we live in the best of all possible worlds. The markets will fight us as soon as they lose a cent of their profit expectations. The powerful economies benefit from the strength of their currencies and will not give up this supposed advantage. The United States of America (USA) will have a problem if the US dollar is questioned as the global reference currency. Powerful enemies, no friends. We know what happens to states that oppose capitalist thinking.
But something is new in human history: with climate change, exploitation by the capitalist system is coming up against natural limits for the first time. We try to ignore them. However, we will not succeed. Therefore, as the changes continue, we must tolerate proposals that are not in the spirit of capitalist thinking.

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THE IMPACT OF THE FEDERAL OPEN MARKET COMMITTEE RATE ACTIONS DURING 2022 ON THE POPULARITY OF DIVIDEND STOCKS AMONGST RETAIL INVESTORS

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Abstract: *The question of the investors' motivation in the investment decision making process is a topic that is always relevant and subject of research in the field of economics. The turbulence on the stock exchanges observed in the last few years makes this issue particularly relevant, and the introduction of new scientific knowledge in this direction equally useful.*

The question of the influence of dividend policy on the stock market performance of public companies is a question that has been examined repeatedly in the past, and to this day the companies' dividend policy is of serious scientific interest. The past few years have been marked by significant stock market uncertainty and substantial inflation in the United States and many of the World's leading economies. The observed upheavals in recent years have created fertile ground for the conduct of scientific research in the field of investing.

This report examines the impact of the Federal Open Market Committee's federal funds rate actions in 2022, and examines the extent to which these actions have had an impact on the popularity of dividend companies among individual investors

Keywords: *dividends, dividend policy, social networks, stock exchanges, individual investors, institutional investors*
JEL: *G01, G10, G11, G12, G15*

1. Introduction

The influence of companies' dividend policy on their stock market prices has been a subject of great scientific interest over the years. At the same time, although this is an issue that has been extensively researched in the past, the scientific community has not been able to arrive at a definitive and generally accepted model describing the impact of dividend policy. For example, according to the well-known dividend indifference theory of (Miller & Modigliani, 1961), all other things being equal, investors are indifferent to the dividend policy of companies and have no preference for dividend or capital gains. On the other hand, numerous empirical studies have shown that dividend policy affects the stock market performance of companies, fuelling an ongoing interest in the mechanisms through which dividend policy affects stock market prices. The ever-changing environment on the stock markets, especially in the dynamic investment environment observed in the last few years, determines the usefulness of further research examining dividend policy and how its impact on the stock market performance of public companies is influenced by other factors.

This report leverages the turbulent economic environment that has been observed in the last few years and examines the dividend policy of companies in a particularly relevant perspective, namely in the conditions of high inflation, as observed in the post-pandemic situation in the USA and other leading World economies. Specifically, the report examines the inflation-moderation actions taken by the Federal Open Market Committee in 2022 and the impact of those measures[1] on the popularity of dividend companies. Thus, the present report seeks to contribute to the clarification of the question to what extent the dividend policy of public companies' impacts their performance on the stock market in the modern post-pandemic environment.

1.1. Overview of prior research

The impact of FOMC operations has been the subject of scientific interest and previous research. For example, (Fama & French, 1989) connected the investors' desired rate of return to the cyclicality of the economy and prove that the required rate of return is lower in favourable economic conditions and higher in unfavourable conditions. Considering that FOMC adapts its policy to the state of the economy, it can be expected that its policy will have an impact on investors. (Bernanke & Blinder, 1992) examined the impact of interest rates set by the FOMC and conclude that the FOMC interest rate actions are a good indicator of monetary policy and an especially good indicator of real macroeconomic indicators and in addition exerts influence on the composition of bank assets so a monetary policy aimed at limiting the money supply leads to the tendency for banks to get rid of the securities they hold and limit lending. (Jensen, et al., 1996) built on the Fama and French model and proved that the FOMC monetary policy had a significant impact on the return sought by investors. (Thorbecke, 1997) also examined the impact of the FOMC monetary policy on the return that investors achieve on the stock

[1] Which, as outlined in this report, resulted in an increase in the federal interest rate.

markets and managed to confirm that an expansionary policy had a positive effect on the return realized after the FOMC action, and that the exposure of an asset to monetary policy has the potential to raise its future returns following expected potential actions by the FOMC. (Campbell & Cochrane, 1999) were able to build a model that linked consumer habits to the dynamic performance of stock markets. The derived model succeeded in achieving long-term predictability of excess return[2] of stocks and bonds relative to the ratio of dividends to stock price, the yield spread[3] and short-term interest rates. (Rigobon & Sack, 2002) examined the effect of FOMC policy on the prices of various types of financial assets and proved that increases in short-term interest rates lead to a decrease in stock market prices and especially in the components of the Nasdaq index. On the other hand, (Bomfin, 2003) proved that unexpected FOMC actions lead to a strong increase in market volatility, with a higher-than-expected rate of interest leading to greater volatility than a lower-than-expected rate values. (D'Amico & Farka, 2003) also examined the impact of FOMC actions on interest rates and concluded that stock exchange participants reacted strongly and statistically significantly to FOMC monetary policy, and that quantitative tightening policy supply led to a fall in the prices of traded assets. (Goto & Valkanov, 2002) found that roughly a quarter of the negative correlation between excess returns and inflation can be explained by monetary policy shocks. According to their research, in the short term, the restrictive policy of the Fed, applied through an increase in the federal funds rate, lead to a decrease in the excess return due to the effect of the monetary policy on the variables of a real nature. (Bernanke & Kuttner, 2004) examined the impact of interest rate actions and found that a 0.25% rate decrease would cause stock indexes to jump by approximately 1%. This several times stronger reaction illustrates the strength of the interest rate influence. (Gurkaynak, et al., 2004) examined the impact not only of interest rate changes but also of the opinions that the FOMC published along with its actions and found that implemented opinions have a greater explanatory effect on stock market dynamics than the federal funds rate, on the basis of which it can be concluded that not only the change in the federal funds rate is important for investors, but also the circumstances that led to this change and the goals that FOMC seeks to achieve. The same conclusion was reached by (Rosa, 2013), who confirmed that the publication of the minutes of FOMC meetings was accompanied by a sharp increase in the volatility and trading volumes of the American stock exchanges. (Chatziantoniou, et al., 2013) noted that extant research had focused solely on monetary policy in the United States and built on this by examining the combined impact of monetary and fiscal policy on a broader set of countries. They hypothesized that monetary policy can affect stock markets through five channels (interest rates, credit supply, wealth effect, exchange rate effect, and money supply) and were able to confirm that monetary and fiscal policy had an effect on the stock exchanges in the range of countries under consideration. In this way, they confirmed that the mechanism by which the interest rate affects the American stock exchanges was also representative for the rest of the developed stock exchanges globally.

[2] Excess return is the excess return above a specified return used for benchmarking purposes, such as the risk-free rate of return or the return of a specified index used as a benchmark (Chen, 2021)

[3] This is the spread between bond yields and the risk-free rate of return ((Chen, 2020)).

2. Thesis

Looking at the impact of companies' dividend policy on their popularity among individual investors, the impact of actions taken by the Federal Open Market Committee (FOMC) is also of interest. The FOMC is a committee, part of the Federal Reserve System of the United States and has an oversight function over open market operations[4]. The FOMC is the primary body that governs US monetary policy, and setting federal funds rate falls under its mandate ((FED, 2023), (Segal, 2023)).

Considering the great importance that, as per the studies outlined in section 1.1 the federal funds rate has on equity investments, the FOMC actions in managing the federal funds rate can affect the popularity of companies among individual investors, depending on their dividend policy. A potential hypothesis regarding the impact of the FOMC actions is that in periods of low rates, the discount rate that investors apply in the investment decision process is correspondingly low, and this stimulates the popularity of companies that are focused on growth, rather than stability. Such type of companies usually has a low dividend yield or do not pay dividends. At the same time, in periods of high federal funds rate, investors' interest can be expected to shift to companies with a high value in the near timeframe. These are usually large and stable companies that return significant value to shareholders - either through dividends or stock buybacks. On the other hand, the increase in the federal funds rate may divert investment flows from shares in general to risk free treasury bills. Such observations were made by (Randall, 2023), who examined the currently observed upward trend in the federal funds rate. At the same time, the rate can also influence the popularity of dividend companies through other, more complex mechanisms. For example, often companies that offer a higher dividend yield are in industries where there is a high rate of debt, therefore a rise in the interest rate has a particularly bad effect on them (Picardo, 2022).

The thesis of the present study is that in the modern investment environment, the dividend policy of public companies continues to be a significant factor that affects their stock market representation, and the strength and direction of this influence depends on additional factors. From this point of view, it can be expected that the implementation of a restrictive policy resulting in an increase in interest rates will lead to an increase in the relative popularity of dividend companies based on the hypotheses described above.

2.1. The actions of the Federal Open Market Committee in regards to the federal funds rate as a factor impacting the popularity of dividend companies amongst individua investors

The question of the impact of the FOMC rate actions on investors' preferences for companies

[4] Open market operations are the purchase and sale of securities in the open market by the Federal Reserve System. Open market operations are the main tool for implementing the Fed's money supply policy ((Hayes, 2022), (FED, 2023))

based on their dividend yield is particularly relevant, given the current quantitative tightening policy of the FOMC in the direction of increasing the federal funds rate, which began in 2022 and which is illustrated in table 1:

Table 1. Federal Open Market Committee Rate Actions – 2020 - 2022.

Date	Federal Funds Rate	Discount Rate	Increase / Decrease
14 December 2022	4,25% - 4,50%	4,50%	Increase
02 November 2022	3,75% - 4,00%	4,00%	Increase
21 September 2022	3,00% - 3,25%	3,25%	Increase
27 July 2022	2,25% - 2,50%	2,50%	Increase
15 June 2022	1,50% - 1,75%	1,75%	Increase
04 May 2022	0,75% - 1,00%	1,00%	Increase
16 March 2022	0,25% - 0,5%	0,5%	Increase
05 November 2020	0,00% - 0,25%	0,25%	No change
16 September 2020	0,00% - 0,25%	0,25%	No change
27 August 2020	0,00% - 0,25%	0,25%	No change
29 July 2020	0,00% - 0,25%	0,25%	No change
10 June 2020	0,00% - 0,25%	0,25%	No change
29 April 2020	0,00% - 0,25%	0,25%	No change
31 March 2020	0,00% - 0,25%	0,25%	No change
23 March 2020	0,00% - 0,25%	0,25%	No change
19 March2020	0,00% - 0,25%	0,25%	No change
15 March 2020	0,00% - 0,25%	0,25%	Decrease
03 March 2020	1,00% - 1,25%	2,75%	Decrease

This heightened interest has made the question of the impact of the FOMC rate actions on the stock markets one of the leading topics in investment-oriented media publications (such as: (Seabury, 2023), (Waters, 2022), (Hur, et al., 2023), (Goldberg, 2023), (Karaian & Rennison, 2023)).

The above hypothesis regarding the impact of the FOMC federal funds rate policy on the popularity of dividend companies among individual investors has been tested in the current paper by conducting several statistical studies.

To begin with, a database containing statistical information on the number of citations of public companies on social networks has been created. The statistical information was collected by creating a program in Python[5] which automatically downloads posts from the social network Reddit and automatically analyzes[6] publications, searching for mentions of tickers of public companies. The collected information was then consolidated on a weekly basis for the period ranging from the beginning of 2020 to the end of 2022. The database tracks for each week the top ten most quoted companies, the number of quotes for each company, whether the company distributes a dividend and what dividend yield it offers.

[5] Python is a high-level object-oriented programming language. It is particularly suitable for the analysis of textual information and is one of the most widely used programming languages.

[6] The analysis was performed by Spacy - Human Spoken Language Processing API.

Subsequently, the database was converted to the following format:

- The information for each of the weeks that fall within the period under review was aggregated to show the number of companies that distribute a dividend among the 10 most quoted companies. This information is stored in the DivStocks variable.
- Added a new variable, DivStocksQuotes, which tracks the total number of quotes for companies that distribute dividends for each of the weeks covered by the survey time frame.
- Added a new variable NonDivStocksQuotes, which tracks the total number of quotes for non-dividend companies for each of the weeks covered by the survey time frame.
- Added variables that track the policy of the FOMC regarding the federal funds rate by monitoring for a change in the rate within up to 3 weeks prior to the current week. The variables track changes in the base interest rate within the current week or the previous 1, 2 or 3 weeks respectively. The database monitors for changes in the base rate up to 3 weeks prior to the current week, as it is assumed that there may be some lag before investors reflect changes in the base rate in their investment preferences.

To examine the potential impact of a change in the federal funds rate on the popularity of dividend companies among individual investors, test of difference of means was performed. This test can show whether a statistically significant difference exists between two observed populations. In this case the following two populations were considered based on the grouping variable:

- The group of weeks that fall within the survey time frame for which there was no change in the federal funds rate either for the current week or for the previous 3 weeks.
- The group of weeks that fall within the time frame of the survey for which there was a change in the base rate either in the current week or in any of the previous three weeks.

When conducting a statistical analysis, the presence of a statistically significant difference of means between the two examined variables would be a strong indication that the FOMC policy regarding the federal funds rate has an impact on individual investors in their preferences for the companies they invest in based on dividend yield.

The described test can be conducted using the parametric t-Test or a non-parametric Mann-Whitney test.

The requirements for using the t-Test are:

- Random sample selection
- Homogeneity of variation
- Suitable sample size (less than 30 cases)
- Normal distribution

In this case, the considered sample does not meet the sample size requirement, as it contains more than 30 records. In addition, a check for normality of the distribution of the records in the sample was made using the non-parametric Kolmogorov-Smirnoff test.

The non-parametric Kolmogorov-Smirnoff test was conducted with the following parameters:

- Null hypothesis H_0 - the observed distribution does not differ from the normal distribution.
- Alternative hypothesis H_a - the observed distribution is significantly different from the normal distribution.
- Target significance level $\alpha = 0,05$ - if the test returns significance level less than α, the null hypothesis H0 is rejected in favour of the alternative hypothesis.
- The test for normality of distribution was conducted on the following variables:
    - DivStocks - the variable shows the number of companies that pay a dividend and are among the ten most quoted companies in the considered social networks on a weekly basis. Values range between 0 - 10 and 156 entries are tracked in the database, that reflect each of the weeks between the beginning of 2020 and the end of 2022.
    - DivStocksQuotes - aggregate number of citations of companies that distribute dividends among the ten most quoted companies in the social networks considered on a weekly basis. There are 156 entries that cover each of the weeks between the beginning of 2020 and the end of 2022.
    - NonDivStocksQuotes - aggregated number of citations of non-dividend companies among the ten most cited companies in the social networks considered on a weekly basis. There are 156 entries that cover each of the weeks between the beginning of 2020 and the end of 2022.

Table 2. Test for normality of the distribution of the following variables: number of dividend-paying companies among the top 10 most quoted companies on a weekly basis during the period under review (DivStocks), number of weekly quotes for dividend-paying companies (DivStocskQuotes), number of quotes on a weekly basis for companies that distribute dividends. (NonDivStocskQuotes).

		DivStocks	DivStocksQuotes	NonDivStocksQuotes
N		156	156	156
Normal parameters	Mean	2,47	423,95	1754,36
	Std. Dev	1,47	423,95	1754,36
Kolmogorov-Smirnoff Z		2,57	4,22	3,33
Asymp. Sig.		,000	,000	,000

The results described in table 2 show that for each of the considered variables a level of significance was obtained, close to 0, which is below the target level of significance $\alpha = 0.05$. Therefore, the null hypothesis H_0 is rejected in favour of the alternative hypothesis H_a, according to which the observed distribution is significantly different from normal.

Considering the characteristics of the sample, the analysis of difference of means of the examined populations was carried out by the non-parametric Mann-Whitney test.

The Mann-Whitney test was conducted under the following conditions:

- Null hypothesis H_0 - no statistically significant difference is observed in the means of the examined populations. Confirmation of the null hypothesis H_0 would be an indication that the FOMC policy regarding the base interest rate does not influence the preferences of individual investors regarding the dividend yield of the companies in which they invest.
- Alternative hypothesis H_a - a statistically significant difference is observed in the average values of the considered populations. Rejecting the null hypothesis in favor of the alternative hypothesis Ha would be an indication that the FOMC federal funds rate policy has a statistically significant effect on the preferences of individual investors regarding the dividend yield of the companies in which they invest.
- Tested variables - the variables DivStocks, DivStocksQuotes and NonDivStocksQuotes described above are considered, which describe, respectively, the number of dividend companies falling among the ten most quoted companies, the number of quotes on a weekly basis for companies that distribute dividends and the number of quotes on a weekly basis for companies, which do not distribute a dividend.
- Grouping variables - the test is performed based on the following grouping variables:
    - FOMC_Rate_Action_Week0 - the variable monitors whether a change in the federal funds rate is observed during the current week and has two values 0 (no change observed) and 1 (change observed).
    - FOMC_Rate_Action_Week3 - the variable monitors whether a change in the federal funds rate has been observed in the current or the previous three weeks and has two values 0 (no change observed) and 1 (change observed). Examining this additional variable is necessary because of the assumption that it may take some time for individual investors to reflect interest rate policy changes in investment preferences and for these changes to be reflected in social media posts.

The conducted Mann-Whitney test gives the following results for the grouping variable FOMC_Rate_Action_Week0, which reflects the presence of changes in the base interest rate in the current week only:

Table 3. Nonparametric Mann-Whitney Test for Difference of Means on Grouping Variable FOMC_Rate_Action_Week0 – Statistics.

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (two-sided)
DivStocks	641,50	686,50	-,16	,876
DivStocksQuotes	455,00	11333,00	-1,57	,116
NonDivStocksQuotes	602,50	11480,50	-,45	,654

Table 4. Nonparametric Mann-Whitney Test for Difference of Means on Grouping Variable FOMC_Rate_Action_Week0 - Descriptive Statistics.

	Count	Mean	Std. Dev.	Minimal	Maximum
DivStocks	156	2,47	1,53	0	7
DivStocksQuotes	156	423,95	706,95	0	3203
NonDivStocksQuotes	156	1754,36	2814,85	0	28330

The results described in table 3 show that for all three examined variables the level of significance obtained is above the target $\alpha = 0.05$, therefore, the null hypothesis H_0 cannot be rejected. This means that if the analysis is restricted to only the presence of a change in the federal funds rate in the current week, no statistically significant difference in the popularity of dividend companies among individual investors is observed between the subsets of weeks in which there is a change in the federal funds rate and the weeks it doesn't happen.

On the other hand, when conducting the Mann-Whitney non-parametric test using the grouping variable FOMC_Rate_Action_Week3, which reflects the presence of changes in the federal funds rate in the current or previous three weeks, the following results are observed:

Table 5. Nonparametric Mann-Whitney Test for Difference of Means on Grouping Variable FOMC_Rate_Action_Week3 - Statistics.

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (two-sided)
DivStocks	1424,50	9809,50	-1,53	,127
DivStocksQuotes	435,50	8820,50	-6,12	,000
NonDivStocksQuotes	642,00	9027,00	-5,15	,000

Table 6. Nonparametric Mann-Whitney Test for Difference in Means on Grouping Variable FOMC_Rate_Action_Week3 - Descriptive Statistics.

	Count	Mean	Std. Dev.	Minimal	Maximum
DivStocks	156	2,47	1,53	0	7
DivStocksQuotes	156	423,95	706,95	0	3203
NonDivStocksQuotes	156	1754,36	2814,85	0	28330

The test statistics outlined in table 5 show that with respect to the variable DivStocks, which tracks the total number of dividend companies that fall among the ten most cited companies in social networks on a weekly basis, a significance level of 0.127 was obtained, which is above the target $\alpha = 0.05$. Therefore, the null hypothesis H_0 cannot be rejected, for the variable DivStocks, and no statistically significant difference is observed between the examined subsets of weeks for which a change in the federal funds rate was observed in the current or the previous three weeks and weeks, for which this is not fulfilled.

On the other hand, for the variables DivStocksQuotes and NonDivStocksQuotes, which reflect the number of quotes of dividend companies on a weekly basis and the number of

quotes of non-dividend companies on a weekly basis, respectively, a significance level of nearly 0 was obtained, which was less than the target significance level of $\alpha = 0.05$. Therefore, for these two variables, the null hypothesis H_0 is rejected in favour of the alternative hypothesis H_a. This means that a statistically significant difference is observed in the populations of these two variables for the weeks for which there is a change in the interest rate in the current or one of the previous three weeks, compared to the populations of these two variables for the weeks when this condition is not met. This means that there is a statistically significant relationship between the presence of a change in the federal funds rate during the current or one of the previous three weeks and the number of quotes of dividend and non-dividend companies.

In order to describe the dependence shown in table 5 an analysis of the descriptive statistics of the variables DivStocksQuotes and NonDivStocksQuotes for the weeks for which is fulfilled the condition to observe a change in the interest rate during the current or one of the previous three weeks and for the weeks for which this condition is not met.

The results of the analysis are described in tables 7 and 8:

Table 7. Descriptive statistics for the DivStocksQuotes and NonDivStocksQuotes variables for the weeks that met the condition of observing a change in the base rate during the current or one of the previous three weeks.

	Count	Mean	Std. Dev
DivStocksQuotes	27	1179,07	636,05
NonDivStocksQuotes	27	3347,26	1225,42

Table 7. Descriptive statistics for the variables DivStocksQuotes and NonDivStocksQuotes for the weeks that did not meet the condition of observing a change in the base rate during the current or one of the previous three weeks.

	Count	Mean	Std. Dev
DivStocksQuotes	129	265,90	614,47
NonDivStocksQuotes	129	1420,96	2939,81

Based on the obtained results, the following conclusions can be made:

- Both in the weeks for which the condition of the existence of a change in the base interest rate in the current or one of the previous three weeks is met, and for the weeks for which the condition is not met, the quotations of non-dividend companies exceed the quotations of companies, which distribute a dividend.
- For the weeks for which the condition of having a change in the base interest rate during the current or one of the previous three weeks is met, there is a relatively higher number of citations of companies that distribute dividends compared to companies that do not. As can be seen from table 7, for the weeks for which the condition is met, the average value of the number of quotes of companies that distribute dividends is 1179.07, while for the number of companies that do not distribute dividend it is 3347.26. Therefore, based on the average values, it can be

concluded that companies that do not distribute dividends are quoted approximately 2.84 times more on average. On the other hand, for the subset of weeks for which the condition is not met[7], the average value of dividend company quotes is 265.90, and of non-dividend companies it is 1420.96. Or based on the averages, it can be concluded that companies that do not distribute dividends on average are quoted approximately 5.35 times more.

- Comparing these values, it can be concluded that with a change in the base interest rate, the popularity of dividend companies among individual investors increases approximately twice.

On the other hand, as can be seen from table 1, the policy of the FOMC during the considered period is predominantly in the direction of increasing the federal funds rate, therefore, taking into account the conclusions made above, the conclusion is that the policy of raising the interest rate leads to a statistically significant increase in the popularity of dividend companies among individual investors.

3. Conclusion

The conducted investigation manages to establish new scientific knowledge by examining the question of the impact of the dividend policy on the stock market performance of public companies from the particularly relevant point of view of inflation and the measures that the institutions (in this case the Federal Open Market Operations Committee) take to keep inflation within certain range.

In order to fulfil the objectives of the study, the influence of the dividend policy of companies on their popularity among retail investors was examined as well as the extent to which the restrictive measures of the Federal Open Market Operations Committee during 2022 affected the popularity of public companies among individual investors depending on their dividend politics.

The hypothesis under consideration is that in the conditions of a restrictive policy aimed at managing rising inflation, as observed in 2022, an increase in the relative popularity of dividend companies should be expected. The reason is that an increase in the federal interest rate would have the effect of raising the discount rate that investors use in building their investment strategies, which would make growth-oriented companies relatively less profitable in the long run and at the same time, would make companies that are oriented towards returning value to investors in a relatively near time frame more attractive. Since one of the main approaches to return value to shareholders is through dividends, this would make companies that pay dividends relatively more popular among retail investors

The stated hypothesis was confirmed and the statistical analyses carried out within the investigation showed that there was a statistically significant relationship between the policy of increasing the federal funds rate by the Federal Open Market Operations

[7] Therefore, no change in the base rate has been observed in the current or one of the previous three weeks

Committee in 2022 and the relative popularity of dividend companies among individual investors. The analysis of the open relationship showed that the relative popularity of dividend companies significantly increased in the conditions of an increase in the federal funds rate.

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THE FACTORS INFLUENCING CONSUMER CHOICE

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Abstract: *The purpose of this article is to investigate which part of the packaging information plays an important role in consumer choice between both Generation Z and Generation Millennials. How inflation changes consumer demand for groceries. The comparative analysis between the two generations is of interest because the market is currently accustomed to the demands of the Millennial generation. It is yet to adapt to Generation Z as well. The benchmarking was done through an online survey distributed in major cities and among highly educated consumers.*

Keywords: *food products, the package, generation Z, Millennial generation inflation*
JEL: *M31*

1.Introduction

The future purchasing power lies in the hands of the Millennials and Generation Z. Both these generations represent massive commerce opportunities for many brands, owing to their high buying power, spending power, and brand loyalty. The purpose of this article is to examine their consumer habits.

The purpose of this article is to examine their consumer habits and determine what information needs when buying fast-moving consumer goods. How inflation changes consumer demand for groceries. According to the GFC report (2023), inflation in the prices of fast-moving goods in Bulgaria last year jumped by 12%. As a result of inflation, we have reduced consumer demand for food products by 10% in the middle price range. Millennials are more affected by inflation than Generation Z.

The hypothesis 1: Generation Z likes information presented with icons, emoticons and infographics or QR code, compared to millennials.

The hypothesis2: Millennials prefer the information on the label to be presented in numbers.

2. The importance of food packaging information

The meaning of the label might carry only the brand name or a great deal of information (Kotler, 2001). When purchasing food, labels are one way to communicate sustainability features of a food product to the consumer. According to the FDA (1998), a label should clearly and minimally state the name of the product, the net weight, the nutrition facts panel (nutritional label), the name and address of the manufacturer, and the brand name. These

food labels have become increasingly complex, particularly as products move from the status of basic commodities to highly processed, value-added products (APO, 2002).

In recent decades, various nutrition label formats have been introduced (Kanter et al., 2018). These differ in several respects: the types of nutrients on which they focus (e.g., highlighting only critical nutrients or also considering health-promoting nutrients), the kind of presentation/design features they use (e.g., using numbers, colour codes, shapes, or letters), and how directive they are (Hodkins et al., 2009). The mandatory nutrition facts table on the back of the package can be considered a nondirective label because it provides detailed numerical information about the nutritional components of a product without explicitly evaluating the product's healthiness.

Figure1. Example of the mandatory nutrition facts table

Nutrition Facts
Valeur nutritive
Per 1 cup (250 mL)
pour 1 tasse (250 mL)

Calories 110	% Daily Value* / % valeur quotidienne*
Fat / Lipides 0 g	0 %
Saturated / saturés 0 g + Trans / trans 0 g	0 %
Carbohydrate / Glucides 26 g	
Fibre / Fibres 0 g	0 %
Sugars / Sucres 22 g	22 %
Protein / Protéines 2 g	
Cholesterol / Cholestérol 0 mg	
Sodium 0 mg	0 %
Potassium 450 mg	10 %
Calcium 30 mg	2 %
Iron / Fer 0 mg	0 %

*5% or less is **a little**, 15% or more is **a lot**
*5% ou moins c'est **peu**, 15% ou plus c'est **beaucoup**

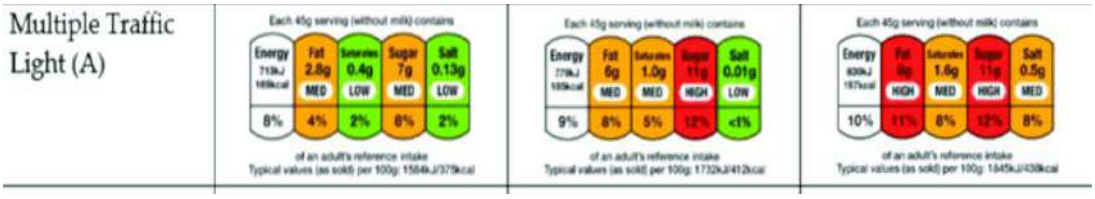
Figure 1 shows the traditional labeling of products in Bulgaria. Providing information in this way has a number of difficulties to be read by users who are not specialists in the field of dietetics. The font is not always clear and legible, this also leads to problems with interpreting the information. The majority of food products are impulse goods, where a purchase decision is made quickly and the difficulty of reading information leads to a more difficult purchase decision.

Another way to make the information easier to read is to present the information with different infographics. For the first time, the multiple traffic light is presented in the UK, as 69% of the English are overweight and the Food Agency of the UK is preparing this methodology in order to better inform consumer choices.

Semi directive nutrition labels, such as the multiple traffic light (MTL) signpost, use visual cues such as colour codes or symbols to communicate an evaluation of the product's critical nutrient content. On the MTL label, each nutrient attribute (the amount of fat, saturated fatty acids, sugar, and salt/sodium) is represented by a separate symbol that indicates whether the

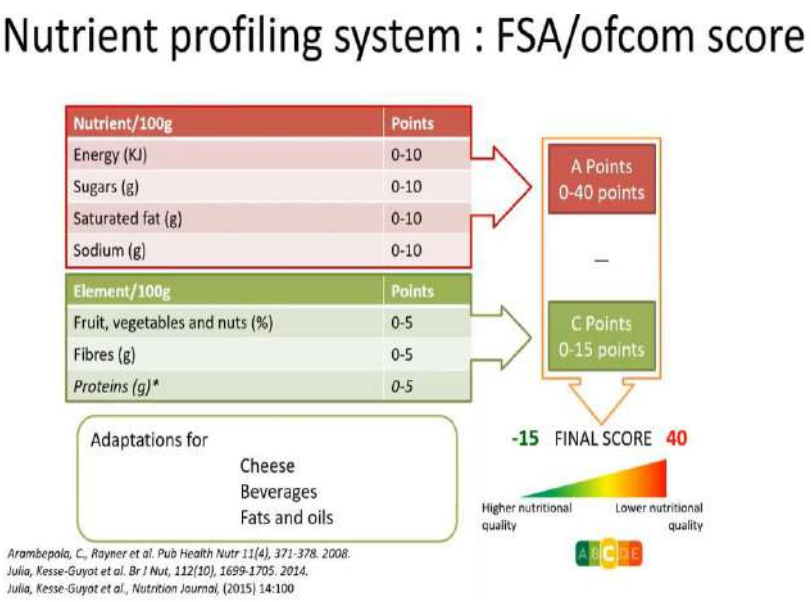
amount is low (green), medium (amber), or high (red). These labels do not provide a global evaluation of the product's healthiness. Directive labels, by contrast, provide a summary evaluation of the healthiness of a product without any detailed information.

Figure .2. Multiple traffic light



According to Epidemiological nutrition research, healthy diets contain plenty of fruit, vegetables, fibre, plant-based sources of fat and protein, and low amounts of fat, saturated fat, total sugar, and salt, among others (Willett & Stampfer, 2013). A relatively new method, nutrient profiling (NP), enables the evaluation and ranking of food products according to the healthiness of their nutritional composition (WHO, 2017). Various NP models exist, such as the Ofcom/FSA NP model (Food Standards Agency, 2011) and the Health Canada Surveillance Tool (HCST) tier system (Health Canada, 2014). Each of these models includes a different number of health-relevant nutrients and serves as a basis for the classification schemes on nutrition labels and the determination of food-related health taxes (Rayner, 2017). Currently, there is no consensus regarding which model should be considered the gold standard for objectively defining the healthiness of foods (Poon et al., 2018). However, the Ofcom/FSA NP model is one of the most well-known and well-validated models (Rayner, 2017), and it is considered the gold standard by a growing number of countries and food producers, which are introducing the Nutri-Score (the label based on this model) to communicate the healthiness of products to consumers in a simple way.

Figure 3. Nutrient profiling system



Nutri-Score is a science-based, front-of-pack food labeling system that allows consumers to make informed nutritional choices. The creators of the Nutri-Score system are a scientific team from France and Germany. On the French side, the system was developed by the National Institute for Health, Food and Environmental Research (INRAE) and the Scientific and Technical Committee for Food Products (Scientific and Technical Committee for Food - CSTA). On the German side, the development of the system was led by the University of Bonn and the Max Planck Institute for Nutritional Research.

Nutri-Score classifies food products in terms of nutritional profile based on the balance of ingredients, labeling them with colors: green to red and letter A to E. Green and letter A products are of high nutritional value , which are good to consume more often or in larger quantities, and those marked with red and the letter E have a higher content of ingredients that should be limited in the daily diet (e.g. saturated fat, sugar, salt), which is why they should be consumed less often or in smaller quantities.

Figure 4. Nutri-Score

There are no widely accepted theoretical or empirical guidelines for evaluating the factors that influence the willingness to pay for nutritional labeling on food items (Nayga, 1996). However, Guthrie et al., (1995) and Nayga (1996).

The information provided by nutrition labels as a commodity, which consumers will continue to make use of as long as the benefits surpass the costs of label usage. This methodology initially proposed by Stigler (1961), specifically models the consumer's search for information which itself has been shown to be influenced by individual characteristics and many other characteristics. Working within this classification system, nutrition label use was modeled as a function of several major categories of variables including individual characteristics such as sex, age, education, household size, special diet status and monthly income.

Govindasamy and Italia and Beus and Dunlap (1992) have concluded that females are more likely to use nutritional labelling than males and have shown that sex play a major role in buying behaviour. Age is found to be significantly influencing the use of nutritional labelling where younger individuals are more likely to use nutritional labels than older individuals.

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Research shows when purchasing food, consumers are influenced by front-of-pack (FOP) labelling (Shangguan et al., 2019). Generally, a lot of research in the field of sustainability labelling already exists (Osman and Thornton, 2019; Bauw et al., 2021; Biasini et al., 2021; Torma and Thøgersen, 2021). Studies demonstrate that consumers better understand interpretative labels than, for example, the nutrition fact panel as a back-of-pack label. Reasons are the inconspicuous placement on the back and difficulties to interpret numerical information (Maubach et al., 2014). Therefore, FOP labelling is a more effective tool to draw attention to information (Bix et al., 2015). In the context of healthy diet, inter pretative labels provide an overall evaluation of the healthiness of foods. They can be divided into two types (1) nutrient-specific indicators (e.g., low in sugar): and (2) summary indicators (e.g., Nutri-Score).

3. Results

The obtained results of the study confirm the hypothesis and the two hypotheses of the study. Influenced by social media, a generation likes information presented with icons and color to a greater extent while a generation likes the text on the packaging.

An online questionnaire was conducted in Sofia and Varna in autumn 2022. To ensure data quality, two quality control tasks were included. If participants incorrectly answered these tasks, they were directly excluded from the survey. 1260 participants took part in the study. 800 were women and 600 were men. 3 of them were excluded from the dataset due to rapid response behaviour (faster than ½ of the median response time). Half of the participants were generation z and the other half were generation Millenarians. The sample size required to detect small effects (Cohen's f = 0.10) was calculated. Given an alpha level of 0.05 and a power of 0.80, a minimum sample of 240 participants per condition was needed (Cohen, 1988).

In the beginning of the questionnaire, sociodemographic characteristics, and statements about food labels had to be a had to be answered. In hypothetical decision situations, participants do not face any consequences for their decisions. Thus, participants were motivated to respond as honestly and realistically as possible (Lusk, 2003; van Loo et al., 2014).

Table 1 Demographic characteristic generation Z

	N	Nutri - Score	Nutrient profiling system	Nutrition facts table	Multiple traffic light
Responded in the marketing survey	600	310	101	94	89
Unrealistic response time	3	1	2	3	0
Inconsistent responses	3	2	1	0	0
Final sample	554				
Males	250	45.3	44.1	45.8	51.5
Females	304	54.7	55.9	54.2	48.5
Educational level					
Low %	10%	4.9	3.9	3.8	5.8

Medium %	30%	55.9	55.9	57.3	49.6
High %	60%	39.2	40.2	38.9	44.6

Table 2 shows the demographic characteristics of the Millennials generation

	N	**Nutri - Score**	**Nutrient profiling system**	**Nutrition facts table**	**Multiple traffic light**
Responded in the marketing survey	600	150	101	94	255
Unrealistic response time	1	1	0	0	0
Inconsistent responses	1	1	0	0	0
Final sample	554				
Males	250	45.3	44.1	45.8	51.6
Females	304	54.7	55.9	54.2	48.6
Educational level					
Low %	10%	4.9	3.9	3.8	5.8
Medium %	30%	55.9	55.9	57.3	49.6
High %	60%	39.2	40.2	38.9	44.6

Participants had to compare the different forms of presenting information on the label and determine which of the information was important to them. The first package information was presented in nutrition facts table. The second package was given information about the product in the form - Multiple traffic light. The fourth packet of biscuits the information was presented in the form of Nutrient profiling system. The fifth packet of biscuits the information was presented in the form of Nutri-Score.

From the research we can draw the following conclusions: Generation Z likes the information presented through Nutri-Score. The reasons for this lie in the easier interpretation of the information. 70% of them read the information on the packaging very often. There is a direct correlation between education level and reading label information. People with higher education are more interested in the information on the label. People with a higher degree of Gen Z are interested in eco-packaging to a greater extent and their thinking is directed towards protecting the environment compared to Millennials.

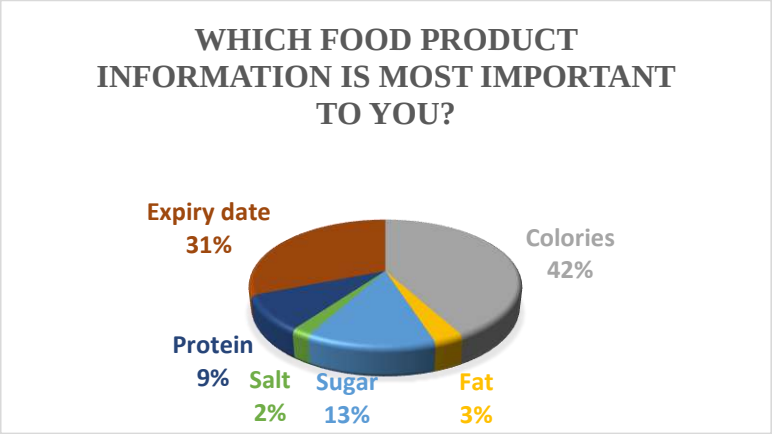

Figure 5. The important information on the label for the generations Z

For Generation Z, the most important information is calories of the products, this is due to the fact that the majority of them put the quality of food and the quality of life as one of their first priorities. Next is the shelf life of the food followed by the amount of sugar in the products. They like the information to be presented in color using infographics which confirms the main thesis of the article.

Generation Millennials are consumers with more stable incomes than Generation Z, have longer shopping experience and a greater shopping routine. This is also due to the fact that they read the information on the packaging less. Skeptical of the quality of the presentation of information and treat it with distrust to a large extent. This is due to the negative shopping experience they had. Of the listed ways of presenting information, they like Multiple traffic light the most. They like Multiple traffic light better because they also have a quantitative expression of the numbers.

Generation Millennials mostly like the digital image of information, they find information more credible when it has a quantitative expression. They are less concerned about environmental protection. The influence of eco-coatings affects them to a lesser extent in consumer choice. The most important information on the package is the expiration date of the product and then

the calorie content of the product. Millennials prefer label information to be delivered digitally rather than infographics

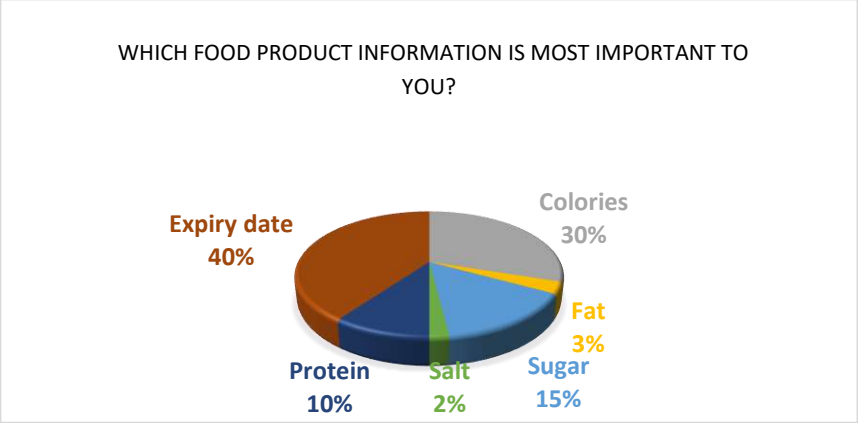

Figure 6. The important information on the label for the Millennials generations

Table 3 shows the aggregated results of all research participants on how they rate voluntary consumer information systems.

Table 3 analysis of the perceived usefulness of different types of nutrition information.

Type of information	All [N = 1200]
	M (SD)
MTL	5.42 (1.51)
Nutri-Score	4.72 (1.76)
Nutrition facts table	5.26 (1.49)
Nutrition facts table	5.27 (1.47)

The summary evaluation, it can be seen that Multiple traffic light is liked more than Nutri Skora. This is due to the fact that it contains both digital and color information. Participants in the marketing research used the scale for assessing perceived usefulness ranged from 1 (‘not at all useful’) to 7 (‘very useful’).

5.Conclusion

Voluntary rating systems are not widely used in the Bulgarian market. But the consumer accepts them positively their introduction to the grocery market. Generation Z prefers colorful

presentation of information and with infographics. Because this generation has lived with and influenced by social media for most of their lives, they like this way of presenting information. While the Millennial generation likes the digital presentation of information. The two generations differ in the way they make a purchase decision. As Gen Z, grocery choices are influenced by calories, and millennials are influenced by expiration dates. Inflation has affected both generations and they have shrunk their consumer demand.

The millennial generation is more sensitive to inflationary processes. Their rate of contraction of consumer demand is up to 15%. Generation Z have shrunk their consumer demand by 10%.

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IMPACT OF SOCIAL MEDIA MESSAGES ON ONLINE SHOPPING

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Abstract

Verbal communication (WOM-Word of Mouth) is a current marketing tool, the main purpose of which is communication and socialization, followed by the promotion and sale of products that takes place face to face between sellers and buyers. With the advent of the Internet, WOM turns into eWOM, that is, electronic word-of-mouth communication that takes place between online sellers and online buyers through social networks and online store pages.

Buyers can exchange online messages, experiences, reviews and leave rated reviews for products they have already purchased online. This new mode of eWOM communication has great potential to influence online purchase intentions. In this context, the purpose of this paper is to analyze and investigate the impact of eWOM communication on online shopping intentions. As determinants of online messages, which are transmitted through social networks and websites of online stores, the following are analyzed: quality of messages, credibility of messages, needs and attitudes of buyers to messages, usefulness of messages. messages and acquisition of messages by online shoppers. In this research, the determinants of online messages are derived from the Consumer Attitudes and Needs Acquisition Model (IACM), which is also the research model of this paper, on the basis of which the impact of messages is investigated. on online shopping intentions. Finally, by applying adequate statistical methods, an analysis of two online eWOM communication platforms was made, to determine whether messages transmitted through online stores' Facebook pages have a greater impact on online purchase intentions than broadcast messages. through the means of communication of the websites of the online stores or vice versa. The research results provide useful conclusions for marketers, in terms of adapting their online marketing strategies for successful promotion and sales of products on Facebook and online store websites.

Keywords: eWOM (electronic word of mouth), online shopping intentions, social networks, online stores.

1. INTRODUCTION

Traditional word-of-mouth communication takes place between individuals who receive non-commercial messages in terms of promoting a particular brand of product or service. That is, it is the only marketing tool, the structure of which is formed by certain evaluations, experiences and positive or negative information about products or services, which reduces the perceived risk of purchase appearing among buyers. The Internet only facilitates the path of information seeking, thus creating electronic word-of-mouth communication, defined by the transmission of messages through various online platforms such as: social networks, online store websites, blogs and discussion forums. . There is a large body of research on the influence of messages on online purchase intentions whether they are distributed through blogs (Chu and Kamal, 2008; Lin et al., 2012), forums (Chiou and Cheng, 2003; Huang and Chen, 2006) , online store websites (Li and Zhan, 2011; Park et al., 2007).

Social networks are defined as "a set of Internet-based applications that allow the free creation and exchange of information that is created by the users of these networks themselves" (Kaplan and Haenlein, 2010). According to the latest statistics that exist on the Internet, in 2021 there are more than 95 social networks that are used in the world today, of which the most famous and most used according to the number of daily active users are: Facebook, WhatsApp, QQ, WeChat, QZone, Tumblr, Instagram, Twitter, Google+, Baidu Tieba, Skype, Viber, Sina Weibo, LINE, Snapchat, YY, VKontakte (VK), Pinterest, LinkedIn, Telegram, Reddit, Taringa, Foursquare, Renren, Tagged, Badoo, Myspace , Mix, The Dots, Kiwibox, Skyrock, Delicious, Snapfish, ReverbNation, Flixster, Care2, CafeMom, Raverly, Nextdor, Wayn, Cellufun, YouTube, Upstreeam, Classmates, MyHeritage, Viadeo and many more. Some of these social networks are also used in the territory of the Republic of North Macedonia for communication and socialization between their users, but also for promoting the products and services of the companies to their active or potential online buyers. In fact, online shoppers constantly comment on social media about their satisfaction/dissatisfaction with using certain products and services and rate them from 1 to 5.

1.1 *Definition and development of word of mouth communication (WOM) – then, today and tomorrow*

Until a few years ago, the Internet and virtual communication were based on Web 2.0. Among other meanings, Web 2.0 is presented as a social phenomenon that includes an approach to the generation and distribution of Internet content, characterized by open communication and freedom of sharing, decentralization of authority, etc. Despite Web 2.0. did not create anything new that did not exist before when the Internet was invented, however the platform was expanded for word-of-mouth communication whose English name is WOM, that is, for this communication through the presentation of online messages or eWOM - electronic word of mouth-communication through the word. Word of mouth essentially forms an exponential chain

of referrals and referrals that spreads the reputation of something worth talking about to get people talking about it. That is, references between people influence the creation of opinions created by mutual communication, which leads to the sale of a certain brand. While some marketing tools need a strong promotion that would resonate online and thus attract new buyers, electronic word of mouth communication directly affects online purchase intentions and does not need a strong promotion of it. Buyers are exposed to a large number of advertising messages through various media. Print media such as newspapers and magazines, mass media such as television, radio and the Internet provide a large flow of information to consumers. eWOM also provides a large flow of information to consumers through the use of the Internet. Sen and Lerman (2007) found that buyers trust the opinions and experiences of previous buyers more than marketers' advertisements. According to Trusov et al. (2009), advertisements begin to lose their power over consumers due to credibility issues. The sender of information, who shares his thoughts, and the receiver, who receives the information, constitute the two sides of WOM communication (Bansal&Voyer, 2000). The relationship between the sender and the receiver is a determining factor in terms of credibility. If the ties between the sender and receiver of the information are strong, the credibility of the information will be high enough for the receiver to believe that the seller is genuine (Brown and Reingen, 1987).

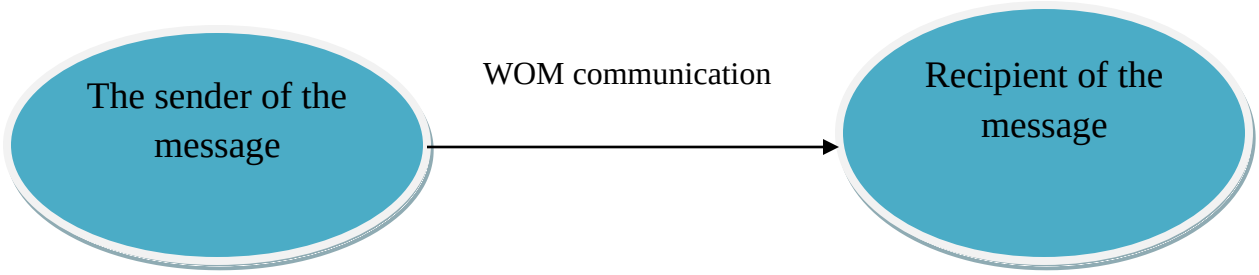

Figure 1. Participants in communication

Figure 1 gives a clear schematic representation of the WOM communication mode and its participants. Accordingly, WOM communication occurs between information senders and information receivers. It is about word-of-mouth communication in a certain place with a physical location and at a certain time. Information senders can be all persons who need to convey certain information, such as the sale of a certain product, the exchange of experiences for certain products, the expression of satisfaction or dissatisfaction with a situation, object, certain person, etc. On the other hand, recipients of information can be all persons who must receive and accept certain information that will affect their motives, needs, attitudes, etc. This communication is two-way with the possibility of feedback between the sender and the receiver. On the other hand, WOM takes on a new dimension as a result of frequent Internet use (King et al., 2014). The Internet has facilitated WOM communication by providing an ever-increasing

space for buyers to share personal thoughts and experiences (Erkan, 2014). It also provides quick access to information. This way, buyers can easily find content created by other buyers about brands, products and services. This new form of information sharing is called eWOM (Hennig-Thurau et al., 2004). There are many different online platforms that enable eWOM communication such as: blogs, online store websites, discussion forums and social networks (Cheung &Thadani, 2012). If once the Internet was used only for searching and surfing and it was difficult to imagine that it could advertise products and services and be used as a marketing space, it is known about social networks that their main purpose was to connect people and make some kind of contact , now the world seems unimaginable without fast internet, social networks and advertisements that make everyday life. Early research on WOM focused only on face-to-face consumer decisions (Arndt J, 1967; Blackwell & Kegerreis, 1969; Katz & Lazararsfeld, 1955; Richins 1983). Online sales have become important in the last ten years. Accordingly, due to concerns about quality and other buyer risks where the difference between what is produced and what is bought is emphasized, and is not consistent with the image and brand of the products offered, (Chai & Kim, 2011), the challenges of online shopping, especially in terms of familiarity and mistrust, have started to become relevant. Therefore, online shoppers need a useful, reliable and accurate product rating before purchasing it. Online tools and electronic word-of-mouth (eWOM) help buyers make the right purchase decisions. eWOM is defined as Internet-based peer-to-peer communication for the exchange of messages or information between people. It differs from face-to-face communication and traditional WOM in several ways. First, the Internet allows people to communicate with other people in a different way, just with a single click, with cascading effects similar to mass media, messages can reach many people at the same time. This traditional oral communication cannot do (Hennig-Thurau et al., 2004). Electronic communication is similar to face-to-face communication in that messages can be personalized for the recipient (Phelps, Lewis, Mobilio, Perry, & Raman, 2004). Second, online communication is written, so it is more formal and professional than traditional WOM characterized by Marshall McLachlan's "media is the message" doctrine, in which communication technology embodies the information being conveyed (Griffin, 2003). Third, eWOM information is available to the user at any time, even when the sender of the information is absent (Chevalier, & Mayzlin, 2006; Reichheld, 2003).

1.2 *Definition and development of electronic verbal communication (word of mouth) and online messaging*

The simplest definition of "word of mouth communication", which is used in this paper with its original name - WOM (word of Mouth), is that it is "the act of buyers providing information to other buyers". Kotler (2006) defines word of mouth influence as "personal communication about a product between target customers and neighbors, friends, family members and co-workers". The difference between traditional WOM and eWOM is simple, eWOM is internet based. In this paper, the abbreviation eWOM is also used, which is also the

original name of electronic verbal communication. Hennig-Thurau & Walsh (2004) define eWOM as "any positive or negative statement made by potential, current or former customers about a product or company that is available to the majority of people and institutions via the Internet". WOM is considered the most powerful, influential and persuasive force in the market. It is also only generation and exponential growth that make it limitless in speed and scale. WOM arises from the relativity of a small number of sources. A survey conducted by Magazin Incorporated found that 82% of the fastest growing private companies use word of mouth (WOM) as the most used communication technique (Ferguson 2008, p. 179).

The new digital market through the Internet as a key facilitator for access to information, represents an inevitable type of communication between producers and buyers (Berman, Abraham, Battino, Shipnuck, & Neus, 2007). The Internet also presents a synergistic opportunity for feedback, leaving recommendations and suggestions through eWOM. (Dellarocas, 2003). In traditional word-of-mouth communication, one person influences the attitudes and behavior of approximately two other people, while in eWOM, one person influences the attitudes and behavior of eight other people. Considering these figures, the daily use of computers and the Internet, as well as the availability of useful and extensive content, e-influencers today influence everyone who searches the Internet. Formally, eWOM is an important remark made by a potential, current or former customer about a particular product or service (Hennig-Turau, Quinner, Walsh and Gremler, 2004). eWOM consists of text-based, recorded, easily tracked, organized and multiple interactions between buyers on online platforms. Dellarocas (2003) argues that the two-way communication of the Internet and the possibility of generating "artificial" word-of-mouth results for low-priced products can have implications for brand reputation, customer loyalty and quality. Meislin, (2006) in his research studies the credibility of online messages exchanged on the Internet and their influence on online shopping intentions. According to Fiona (2005), eWOM is strengthening buyers' trust in online products and sellers and adding value to sales.

Figure .2 Participants in eWOM communication

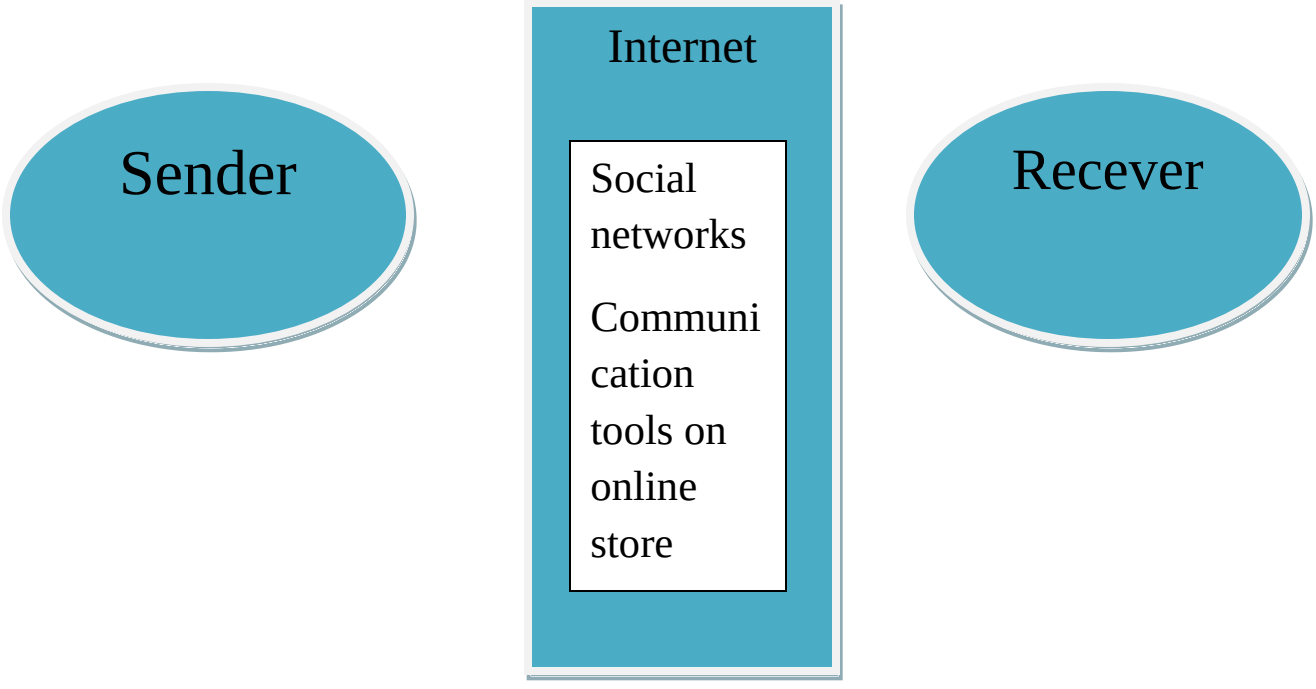

Figure 2. gives a clear graphic representation of the participants and the mode of eWOM communication. This communication consists of a sender of information, a receiver of information and a moderator. The moderator of eWOM communication is the Internet, which in this doctoral topic is analyzed through two online platforms, i.e. social networks and communication tools on the websites of online stores. eWOM communication is two-way, where the main role is played by the receivers. That is, the success of eWOM will depend on the positive or negative reactions of the message receivers, depending on the information provided by the message senders.

2. Defining message determinants that influence online shopping

The terms "information determinants" are used in the literature. In this paper, instead of the term "information", the term "messages" is used. Also analyzed in this paper as determinants of online messages that influence online shopping intentions are: Message Quality, Message Credibility, Message Needs, Message Attitudes, Message Usefulness, and Message Acceptance or Acquisition. The determinants "message quality" and "message credibility" have been investigated by Chau &Hu (2002), Morwitz et al (2007), while "message usefulness" and "message fit" have been investigated by Sussman & Seagal (2003), and Erkan&Evans (2016). Message quality refers to the value with which buyers perceive product information, which affects buyers' changing attitudes, message acquisition or acceptance, and online purchase intentions. The reliability of the messages is highly dependent on the reliability of the sender of the messages as a reliable source of accurate messages. The credibility of the sender of the messages also affects the trust, reliability and competence of the receivers of the messages, which leads to the acceptance of the messages. According to Sussman & Seagal (2003) and Shen et al. (2013), message usefulness or perceived usefulness is also individual buyers' perception of products and services. Once buyers become aware that the messages are useful to them, they accept them and make decisions to buy the products.

2.1 *Quality of Messages*

The quality of messages refers to the persuasive power of the arguments of which they are composed. The quality of the messages derives from the actual value of the messages and the perceived value of the buyers. From the perspective of buyers, the quality of the messages will depend on their assessment of the content of the messages, the accuracy of the messages, the availability and the duration of the messages. Cheung et al. (2008) also stated that the quality of messages will depend on their completeness, timeliness, accuracy and relevance, while Filieri and McLeay (2014) added two more dimensions to the assessment of message quality, namely added value which refers to the extent to which messages are useful and encourage buyers to apply them in making their purchase decisions, and the extent to which messages are perceived by buyers. Cheung et al. (2008).

Researchers have begun to develop an informational dimension to message quality as a result of technological advances and the need for online shopping. Wu et al. (2014) show that the greater the buyers' perception of the quality of the messages transmitted via the Internet, the greater the perception of buying products from a well-known brand and when there are negative elements in the message, then the attitudes towards the brands are created. According to them, the quality of the messages has an impact on the brand image. In the online shopping process, purchase decision making can be measured by the perceived quality of the online messages they receive. Measuring message quality is of particular importance for predicting online shopping intentions.

2.2 *Message Requests*

Online shopping intentions depend on buyers' willingness to use eWOM communication. Researchers have found that online shoppers who use online messaging to make online purchase decisions have several types of motives, namely: altruism (Teng et al. 2014), self-enhancement (Wang et al. 2014), emotionality, and social benefits (Munzel et al. al. 2014) and economic incentives (Alhidari et al. 2015). Many researchers have examined the relationship between online shopping needs and motives and their influence on online shopping intentions (Alhidari et al. 2015; Husnain and Toor 2017). For example, Husnain and Toor (2017) in their research with 243 internet users of social media and social networks in Australia found that needs and motives have a positive influence on online shopping intentions. Namely, buyers start from their psychological identification and the strength of emotions they develop towards the products they want to buy. Buyers who do not develop emotions or have negative emotions towards products do not feel the need to read messages on the Internet, while buyers who develop strong positive emotions towards the products they want to buy need a wide range of data and information about products, which will further positively influence their online shopping intentions. (Hwang&Takane 2004).

Researchers have also examined the relationship between shopping wants and needs and shopping intentions (Alhidari et al. 2015; Park & Kim 2008; Teng et al. 2014) For example, Alhidari et al. (2015) conducted an experiment with 142 students and found that the desire to buy a certain product leads to the development of certain needs for that product that positively affect online shopping intentions in fast food restaurants and online laptop purchases. There are several types of customer needs for a particular product, namely: physical needs, the need for social inclusion, the need to increase self-esteem, financial needs, the need for self-knowledge, the need to own a brand, etc. (Kannan & Hongshuang, 2017; Husnain & Toor, 2017). The need for lack of time to visit physical store locations to gather as much information as possible about the products customers want to buy drives them to shop online because they can read a lot in a very short time. and with just one click reviews and comments about products on the social network Facebook, as well as on the websites of online stores. The availability of a wide range of data on the characteristics of products, on their use, on their strengths and weaknesses, consistency in the development of new products on the market, the latest brands of products, influence the needs of

buyers for online shopping. In addition, buyers' needs are highly dependent on their social involvement in eWOM communication, then on economic incentives, such as coupons, rewards, points, discounts, etc. Henig Turau et al., 2004; Hussein et al., 2018). Buyers' online messaging needs have a significant impact on data adoption.

2.3 *Use of Messages*

The usefulness of messages comes to the fore when buyers have to make the final purchase decision, that is, it is assumed that if they decide to buy the products, the messages they received online have been useful to them, and vice versa, if they do not buy the products, it is assumed that the messages they have received online have not been helpful to them. Several researchers have examined the relationship between message usefulness and online shopping intentions (Zhang 2014; Gunawan and Huarng 2015; Huang et al. 2013; Lee et al. 2011; Mafael et al. 2016; Park & Lee 2007,). For example, Huang et al. 2013 in their research with 549 respondents from China found that message usefulness has a positive effect on hotel booking intentions.

eWOM communication provides useful and reliable data to buyers compared to traditional media. The more useful the product data, the lower the risk of making the wrong purchase decisions. That is, if online messages are clear and relevant to buyers so that they are able to categorize and interpret products, they are perceived as more useful and thus increase the probability of being used in the decision-making process.

The usefulness of messages depends a lot on the quality of the messages. Previous research has found that online reviews with high ratings and quality are perceived as more trustworthy and useful than reviews with low ratings and quality (Zhang et al 2014; Guo et al. 2009; Park & Kim 2008; Robinson et al. 2012) Finally, buyers perceive high-rated and high-quality reviews as more effective in making their purchase decisions.

According to the Information Acquisition Model (IAM) the acceptance or rejection of information depends on the intentions, beliefs, behavior of the buyers and the usefulness of the information. Shoppers who believe that online messages are reliable and accurate also believe that they are helpful to them in their product purchasing choices. While the TRA and TAM models provide useful evidence of purchase intentions in terms of message adoption, but have a limited scope of their influence process, Erkan & Evans (2016) argue that the IAM model deals with quality, reliability and the usefulness of the information. which influence the adoption of messages.

2.4 *Acceptance or Acquisition of Messages*

In the decision-making process, buyers seek information about products or services in order to increase their level of satisfaction, expectations and experiences. Adopting messages about recommended products or services is not just a one-time process of making one-time

purchase decisions, but is a process that happens continuously with each new purchase decision made. (Huang & Chen, 2006). Buyers usually search the Internet themselves for useful and reliable information, but very often they also accept information provided by other people, which may be reliable to accept, and the same affects the intentions of their buying behavior, subjective norms, beliefs and attitudes. Receiving messages is the last stage of searching for data and information about products on the Internet. That is, as stated above in the text, buyers accept only those messages that are of high quality, reliable and come from a reviewer with high rating and credibility, then they have positive attitudes towards them and should be useful in so as to be accepted in the end.. Also, positive and negative eWOM communication presented through positive and negative reviews and comments of products on the Internet has a great impact on the acceptance and acquisition of reviews and comments of products available on the Internet. Agarwal et al. (2012) found that negative online messages have a greater impact on buyer attitudes than positive online messages, especially when all reviews are negative. However, positive reviews have a greater direct impact on online purchase intentions.

The acquisition of messages is best explained in Information Acquisition Theory (TAM). (Sussman & Siegal, 2003) That is, according to this model, acquisition or acceptance of messages depends primarily on buyers' beliefs and desires for specific products and services that directly affect their search intentions, and then the acceptance of data or information. necessary. . These beliefs are based on the perceived utility and use of the products. In this context, perceived usefulness has a direct impact on the approval or acceptance of online messages. Message quality and message credibility are the main determinants that shape the usefulness of the message as a determinant, which further directly affects the adoption of the message as the ultimate determinant. These determinants, along with the other two determinants, message needs and attitudes have a direct impact on online shopping intentions using the Internet as a mediator and mediator.

3.Comparative analysis of the impact of messages through the social network facebook and communication means of online stores in the Republic of North Macedonia

The research in this paper is carried out according to a predetermined research plan, namely: clearly defined goals and hypotheses for the research, precisely defined survey questions, a specifically defined technique of respondents and appropriate statistical techniques for data analysis and forecasting of the results. qualitative and quantitative methods were used for the purposes of the research. Quantitative methods were used to examine the relationships between dependent variables and independent variables and to test hypotheses based on the data collected, while qualitative methods were used to establish the foundations of the research and define the research questions.

For research purposes in this paper, as already mentioned, an online questionnaire consisting of 29 questions was used, of which the first two questions refer to the demographic characteristics of the respondents, namely the gender and age of the respondents, as well as the

four questions the following refer to the frequency of visits to Facebook pages and online store websites to purchase products, as well as the frequency of using product reviews and comments and communication chats to exchange messages about products sold online . Questions seven to twenty-three refer to the description of the influence of the determinants of messages transmitted through Facebook pages or communication tools on online store websites on the intentions to buy online by applying a Likert scale with the ranking of the answers. grades from 1 to 5, respectively: 1 – I do not agree at all; 2 – I do not agree; 3 – I am neutral, I don't know; 4 – partially agree; 5 – I completely agree (completely). The respondents ranked each question on two separate scales, i.e., one scale is used to rank their responses in terms of the impact of messages through online stores' Facebook pages, and the second scale is used to rank the responses of them in terms of message impact. through the means of communication of online store websites on online shopping intentions. In this context, three questions were asked for each determinant, which give the basic characteristics for it, except for "usefulness of data" as a determinant, for which two questions were asked. Questions twenty-four to twenty-nine refer to the specification of online shopping intentions as an independent variable in this research, through the influence of positive or negative online reviews and comments.

The table shows the statements for all message determinants and online purchase intentions that made up the questionnaire. Statements for the determinant "quality of messages" are marked as: KVP1, KVP2 and KVP3, statements for the determinant "reliability of messages" are marked as KRP1, KRP2 and KRP3, statements for the determinant "message needs" are marked as PP1, PP2 AND PP3 , statements for the determinant "attitudes toward messages" are marked as SP1, SP2 AND SP3, statements for the determinant "usefulness of messages" are marked as KOP1 and KOP2, statements for the determinant "reception of messages" are marked as PRP1, PRP2 AND PRP3. The last statements refer to the impact of positive and negative online reviews and comments on online purchase intentions and are labeled as: NMK1, NMK2, NMK3, NMK4, NMK5 AND NMK6.

The quality of the messages transmitted through the Facebook pages of the online stores and through the means of communication on the websites of the online stores	Product messages are objective (KVP1) Product messages are understandable (KVP2) Product messages are qualitative (KVP3)
Reliability of messages transmitted through Facebook pages of online stores and through communication tools of online store websites	Product messages are correct: (KRP1) Product messages are reliable (KRP2) Product messages are persuasive (KRP3)
Needs for messages transmitted through the Facebook pages of online stores and through the means of communication on the websites of online stores	I read product messages when I'm thinking about buying a new product (PP1) I read product messages when I have to choose the best product from several alternatives (PP2) I read product messages when I have no experience using the product I want to buy (PP3)

Comments on the messages transmitted through the Facebook pages of the online stores and through the means of communication on the websites of the online stores	When I read the messages about the desired product, I am sure that I am making the right purchase decision (SP2) Product messages irritate me and prevent me from wanting to buy the product (SP3)
The usefulness of messages transmitted through the Facebook pages of online stores and through the means of communication on the websites of online stores	Product messages are generally useful to me (COP1) Product messages are descriptive enough for me (COP2)
Acquisition (acceptance) of messages transmitted through Facebook pages of online stores and through the means of communication of websites of online stores.	Product messages motivate me to buy the product (PRP1) Product messages increase my knowledge about the product I want to buy (PRP2) Product messages increase my efficiency in making purchase decisions (PRP3)
When I read reviews and positive reviews about the product I want to buy..... (purchase intentions)	I am very likely to buy that product (NMK1) I will definitely recommend that product to my relatives and friends (NMK2) Next time I need to buy, I will definitely buy the product (NMK3)
When I read negative reviews about the product I want to buy.....	I will most likely not buy that product (NMK4)
	I will definitely not recommend that product to my relatives and friends (NMK5) Next time I have to buy, I will definitely not buy the product (NMK6)

Tabel 1. Determinants of online messaging and online shopping intentions

The sample of respondents that was considered for the needs of the research in this paper is called "purposive" data because 350 Internet users and buyers from different age groups were considered: under 18 years old, from 18 to 25 years old. years old, from 26 to 33 years old, from 34 to 41 years old, from 42 to 49 years old and from 50 years old and above. It is about a technique that will provide adequate answers to meet the objectives and object of the research. Internet users are suitable for this type of research because the purpose of the research is to analyze and investigate the influence of message determinants on online shopping intentions, and then compare the intensity of the influence of message determinants that influence purchase intentions online depending on whether they are transmitted through the social network Facebook or through electronic means of communication on the websites of online stores.

After the data were collected using the online questionnaire, they were subjected to statistical processing using appropriate methods and analyses. To investigate internal consistency and consistency of variables, Krombach's alpha test is applied. It shows the relationship between variables as a group, that is, to what extent they are related as a group. This test is mostly applied when the questionnaire consists of several questions to which the Likert scale is applied, as is the case with the questions in this doctoral dissertation, where the test examines whether the Likert

scale for a certain set of questions asked is reliable for further predictions in research. Furthermore, to test the hypotheses, regression analysis is applied. Regression analysis assesses the relative influence of the independent variables (in this case, the determinants of online messages) on the dependent variable, that is, online shopping intentions.

Descriptive analysis

For the purposes of this paper as stated above, was used an online questionnaire which was created through the online platform https://freeonlinesurveys.com/. Online questionnaires are very practical and easy to use, because they are created automatically, choosing the type of question from several options provided, and depending on the type of question selected, several options are provided for answers that can be adapted according to needs of the researcher. Namely, 350 Internet users who have already had experience with online shopping were surveyed. Of them, 91% or 320 respondents are women, while the rest 9% are men (Fig. 2) In terms of age, 34% of respondents are between 26 and 33 years old, 32% are between 34 and 41 years old, 15% are between 42 and 49 years old, 11% are between 18 and 25 years old and 7% are over 50 years old. (Figure 3). Although the survey offered an opportunity for the response of persons under 18 years of age, there was no such response.

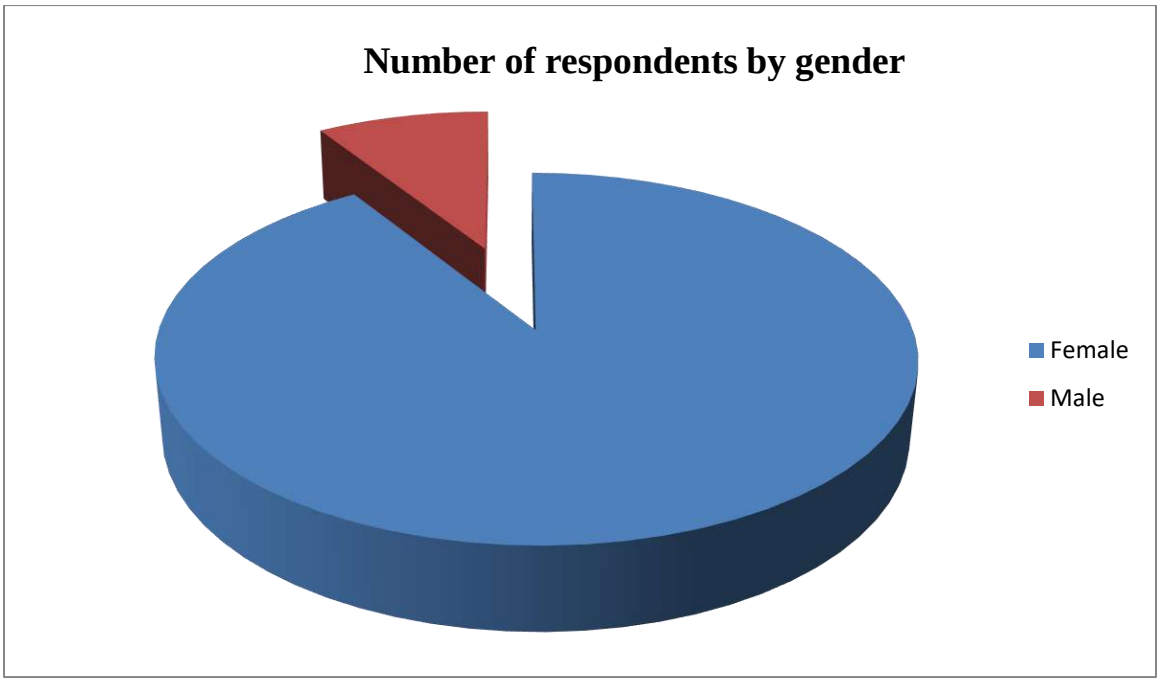

Fig. 3 Number of respondents by gender

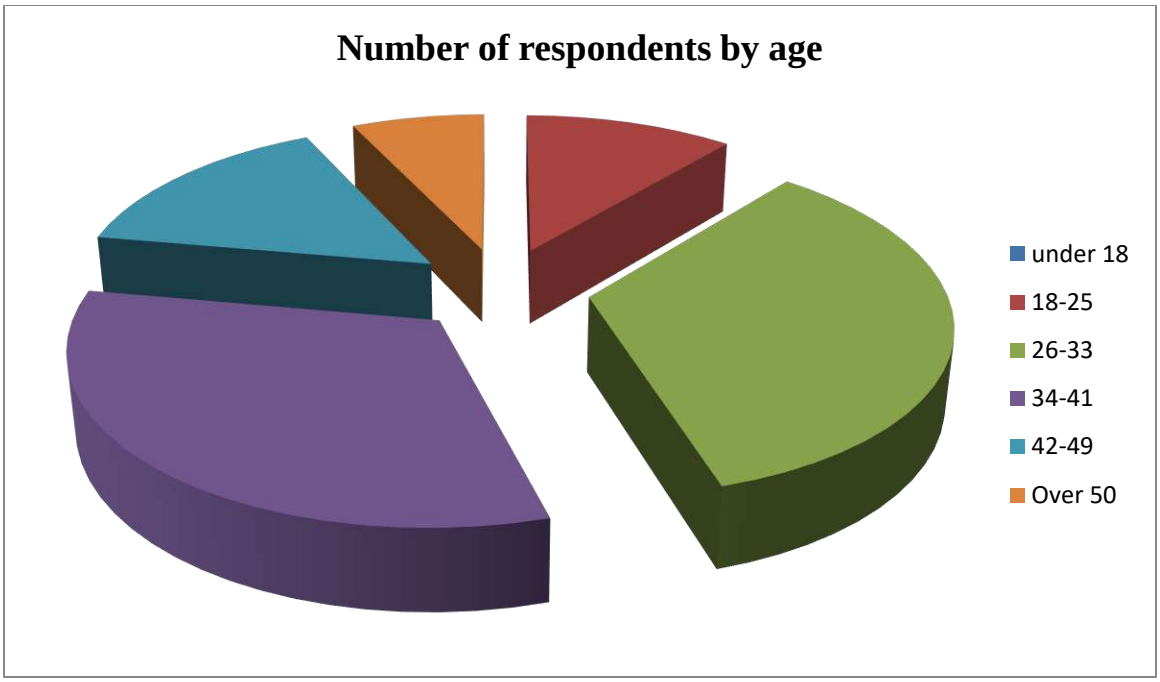

Fig.4 Number of respondents by age

Regarding the frequency of visits to Facebook pages and online store websites, the results are shown in Figure 3.

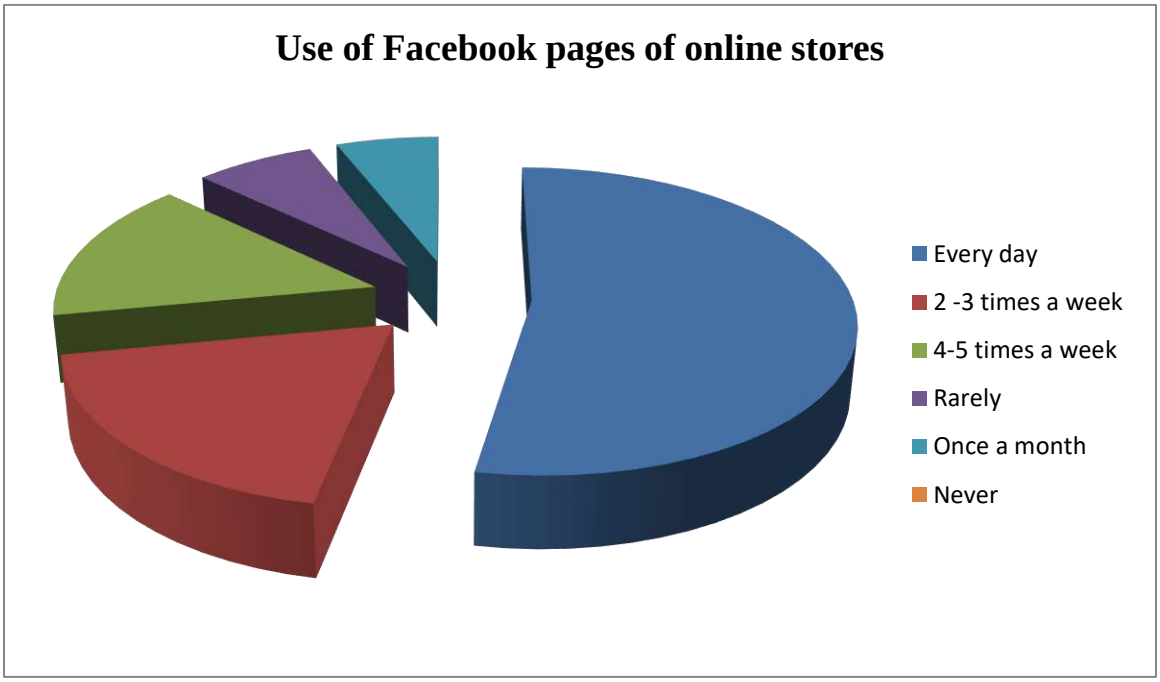

Fig 5. Use of Facebook pages of online stores

According to the graphic presentation, about 53% of the respondents visit the Facebook pages of the online stores where they buy the desired products every day, 19% visit

them 2 to 3 times a week, 15% visit them 4 to 5 times. per week, 7% of the respondents visit them very rarely and the remaining 6% visit them once a month, which shows the fact that online shoppers really use the Facebook social network as a moderator in making product purchase decisions.

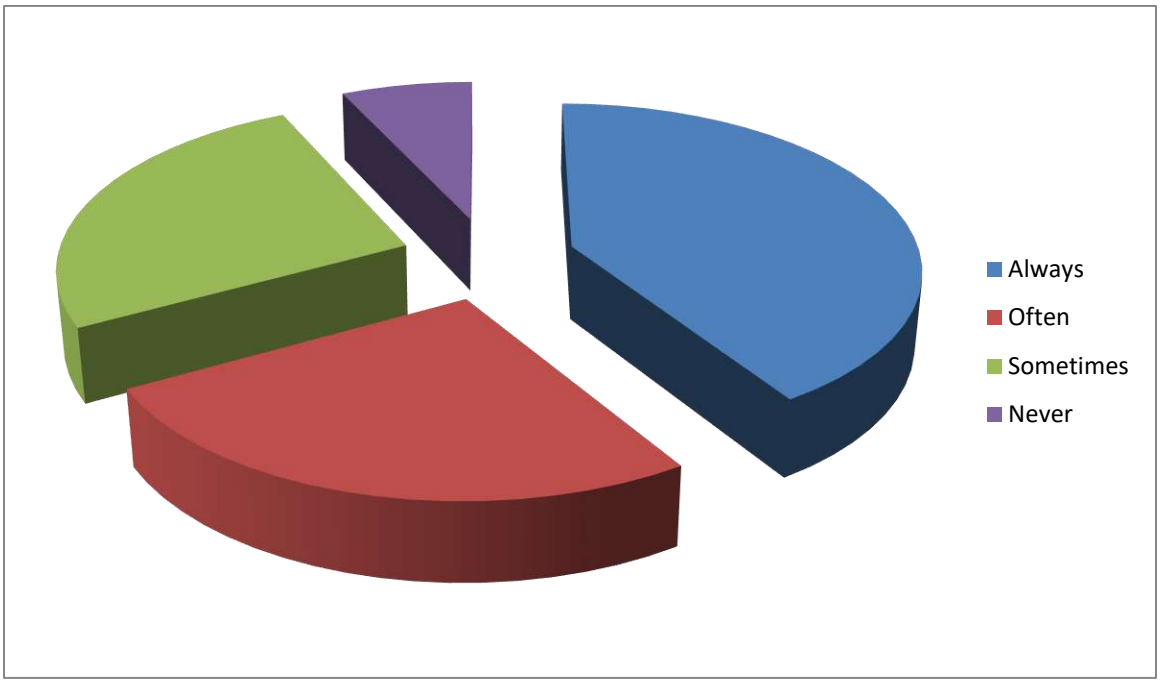

Fig 6. Frequency of using chats for communication on Facebook and online store websites

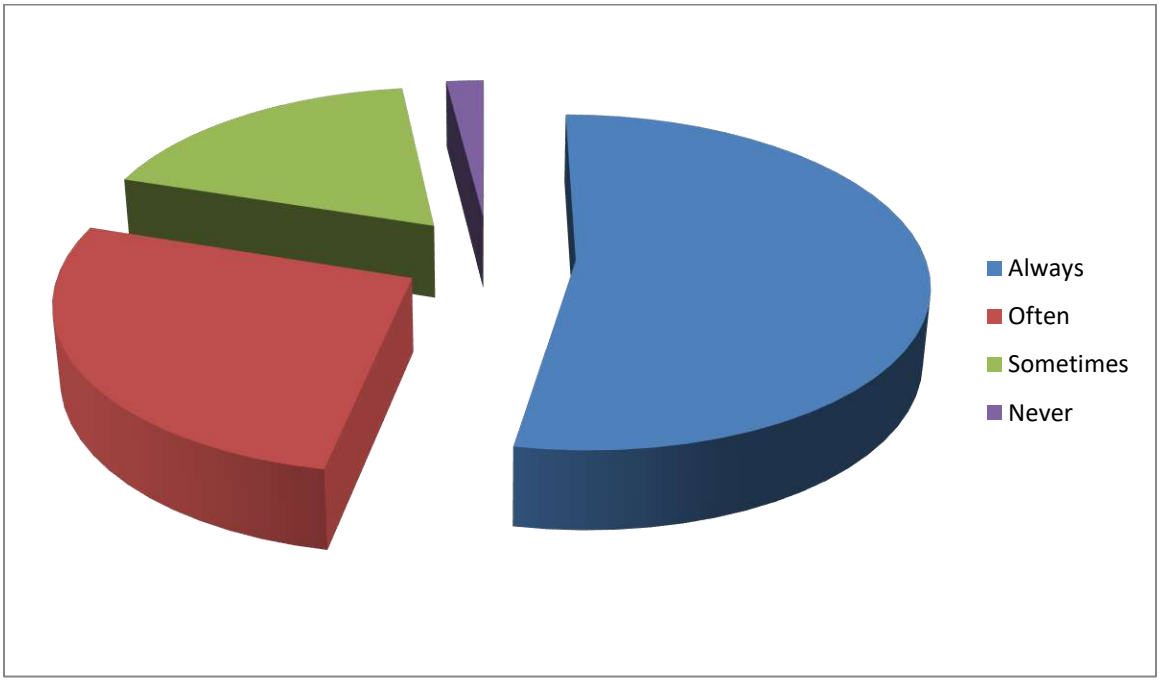

Fig. 7 Frequency of reading comments on Facebook and online store websites

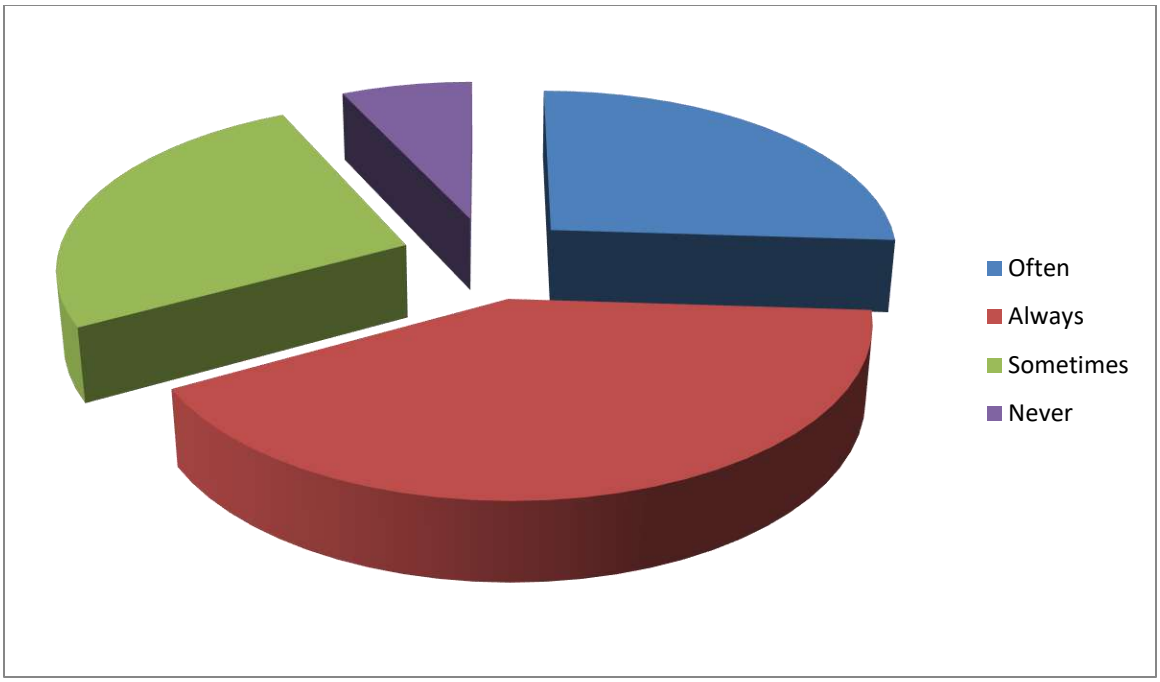

Fig.8. Frequency of using chats for communication on Facebook and on online store websites

The results shown in Figure 7 and 8 show the fact that online buyers always use communication chats and Facebook messages to gather enough messages about products before making final purchase decisions. Accordingly, about 41% of respondents stated that they always use chat for communication, and only 7% do not communicate with online buyers before purchasing products. The percentage of respondents, only 26%, who often or sometimes use these chats for communication or Facebook Messenger is remarkable.

Regarding the frequency of reading online reviews and comments about products, the results presented in Figure 6 show that up to 53% of respondents always read reviews and comments, 27% of them read them often, 18% of respondents ever. read the same, and only 2% of respondents never read reviews and product reviews online.

Based on the results processed so far, and based on the selected part of the respondents, it can be concluded that online shoppers open Facebook pages and online store websites every day and always read reviews and comments about the products they want to buy. those. Also, they always use communication chats to exchange messages about products.

CONCLUSIONS

In this paper, the focus is electronic word-of-mouth communication, which is denoted by the abbreviation eWOM and is defined through the determinants of online messages. The following are explained as determinants of messages that influence online shopping intentions: message quality, message credibility, message needs, message attitudes, message usefulness, and message acceptance.

WOM is the well-known verbal communication that has always been used as a successful marketing tool to communicate, but also to convince potential buyers to buy the advertised products. That is, it takes place between sellers and buyers, or multiple buyers located in the same physical location at the same time. They can only discuss a specific topic that is not necessarily related to a purchase, or a classic communication between a seller and a buyer regarding the sale of a particular product. WOM communication can directly influence buyers' purchase intentions. In fact, it is a free way of advertising products and in this context a free influence on buyers, then increases the loyalty of buyers to the brand and can be applied endlessly. It can be positive and negative. Positive eWOM communication creates excellent customer care, creates a positive image for the companies that apply it, and increases the desire of buyers to buy the desired products. Unlike positive eWOM communication, negative eWOM can convey wrong information about the products offered in the market, create a negative image or a negative reputation for the products and the companies that apply it.

The results of the research create important managerial implications, as it practically analyzes the influence of the determinants of online messages on Facebook and online store websites. This is especially important for marketers who advertise products on Facebook. The more followers an online store's Facebook page has, the more people will see product posts and the more likely the online store's sales will increase. Also, almost every online store has its own Facebook page where it constantly advertises its products. In this context, marketers must adapt their online marketing strategies to successfully promote and sell products on Facebook and online store websites.

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EURO AREA MEMBERSHIP EFFECTS ON INFLATION

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Abstract: *The inflation rates and their convergence within the Euro area were a major concern even before the advent of the single currency. The study attempts to examine the main factors of inflation and differentials in members of the Euro area for the period 2007–2022. The search for the causes of the current high inflation starts with the consequences of the Covid-19 pandemic. The global economy recovered fast once the pandemic ended and the restrictions on consumption and travel were lifted. Then conflict between Russia and Ukraine caused energy and commodity prices, including food prices, to increase. The differences between the inflation rates in the various countries of the Euro area first started to widen in 2020 when the pandemic caused stronger disinflation in countries that have large tourism sectors. As the pandemic faded, inflation picked up most in countries where the economy had declined less and where labor shortages were starting to put pressure on wages.*

Keywords*: Euro area, European Union, inflation, crisis, impact, economic stability.*

Introduction

Inflation is one of the most important macroeconomic indicators that influences interest and exchange rates, consumer and investment demand, as well as various social aspects, including expenses and the quality of life. Inflation differentials are a normal phenomenon in any monetary union and even in long-established monetary unions. The relevance of this issue in contemporary conditions is driven by the ongoing surge in prices that began in late 2021 and continues to date. Inflation rates have reached double-digit figures, which, combined with the effects of the COVID-19 pandemic and the conflict in Ukraine disrupted supply chains, create even greater uncertainty and unpredictability.

The aim of the study is to analyse the inflation dynamics and to determine the possible factors for the acceleration in inflation.

The main thesis that is defended is that the countries' membership in the euro area and the adoption of the single European currency as a national currency is not the reason for the realization of higher inflation, but external reasons and factors lead to the rise in prices, including the last euro area member states. This leads to corresponding problems for the ECB due to the difficulties of applying the common monetary policy in countries with different inflation rates.

Many economists hold the viewpoint that inflation, when it is moderate in size and accompanied by a corresponding increase in the money supply, can stimulate production. At the same time, the increase in the money supply in circulation accelerates the money turnover, contributing to the activation of investment activity. In summary, it can be concluded that inflation can have both positive and negative impacts on socio-economic processes. The positive effects of inflation include the following points: Inflation has a stimulating effect on trade, as the expectation of future price increases encourages consumers to buy goods today. Exchange rates can be influenced by inflation differentials between countries; Inflation serves as a factor of "natural selection" in economic evolution. In conditions of inflationary economic

development, weaker enterprises go bankrupt. Only the strongest and most efficient enterprises remain in the national economy. At the same time, inflation can contribute to increasing the competitiveness of local goods. In an economy with incomplete employment, moderate inflation, by slightly reducing the real incomes of the population, compels it to work more and better. During inflation, debtors, buyers, importers, and those working in the real sector benefit. Inflation redistributes income between creditors and borrowers, benefiting borrowers. After obtaining a long-term loan with a fixed interest rate, the borrower will only need to repay a part of it, as the real purchasing power of money will decrease due to inflation.

Some of the negative effects are connected with high or unpredictable inflation, which can create uncertainty in the economy. Businesses may be hesitant to invest or make long-term plans because they are unsure about future prices and costs. All monetary reserves (deposits, loans, account balances, securities) are devalued. Thus, due to unforeseen inflation, holders of savings in current accounts lose their income - money is devalued, and savings decrease. There is spontaneous, uncontrolled income redistribution, resulting in creditors, sellers, exporters, and employees of state-owned enterprises losing out due to inflation. Price increases are accompanied by a devaluation of the national currency exchange rate. All major economic indicators, such as GDP, income, interest rates, etc., are distorted. Inflation affects the volume of national production.

The study is structured as follows: The first part introduces the type of factors developing inflation processes and the importance of a country's monetary policy. The second part describes in detail economic processes and inflation data in the EU and Euro area during the crisis. The inflationary processes in the countries that recently joined the Euro area are analyzed in the end.

1. Factors contributing to the development of inflation

Inflation is often caused by a combination of economic and political factors within a country. There are two main categories of factors that influence inflation: *internal factors*, which include monetary and non-monetary aspects, and *external factors*, which involve international market conditions, structural imbalances in the global economy, cross-border capital flows, a country's external debt, etc. Monetary factors are those that lead to a crisis in public finances, a budget deficit, and an increase in public debt. They operate on the demand side and the monetary circulation, relatively independently of the production process (Baumol, Blinder, 2006). Monetary factors of inflation include an increase in money supply - the rise in the money supply, often caused by factors like excessive money emission to cover budget deficits or rapid credit expansion, can lead to increased overall demand, resulting in higher prices and inflation; If the speed at which money circulates exceeds the growth rate of production, it can contribute to inflation. This can happen if the turnover of money in transactions increases disproportionately to the production of goods and services. A persistent deficit in the state budget covered by excessive money emission, unrelated to the real needs of the economy, can lead to additional demand without a corresponding increase in production, contributing to inflation. Another factor is exchange rate instability (imported inflation). Fluctuations in the exchange rate of the national currency, known as imported inflation, can

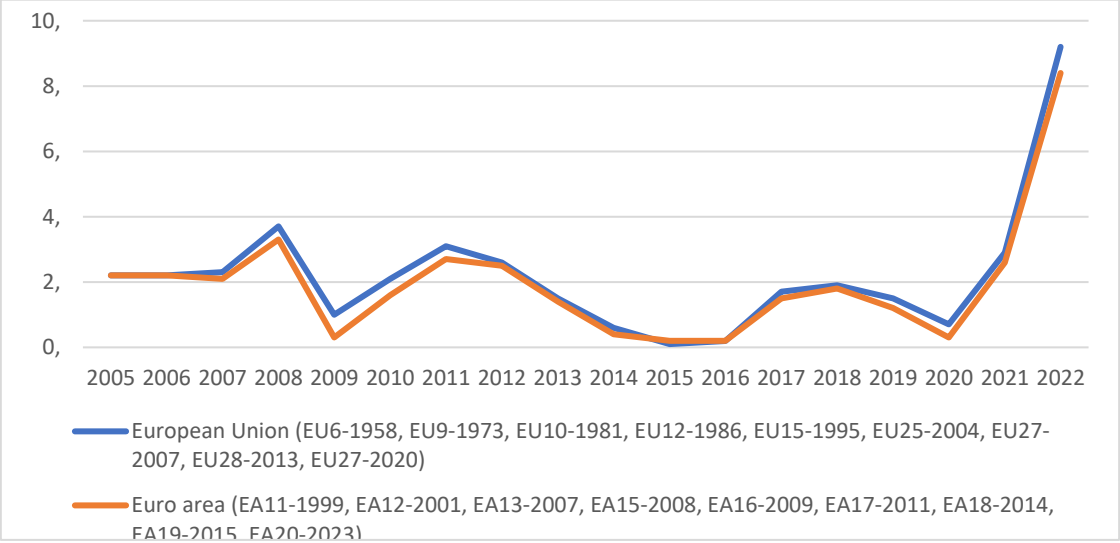
result in the population holding part of the external inflation. Measures taken by currency authorities to stabilize the exchange rate can increase the supply of national currency in circulation, leading to inflation. Overinvestment can create additional unsatisfied demand in the domestic market, and uneven distribution of investments across industries can lead to economic imbalances, increasing the demand-supply gap and contributing to inflation. It is supposed that while monetary factors play a primary role in initiating inflationary processes, inflation solely driven by monetary factors, especially excessive issuance of unsecured money, is a relatively rare occurrence.

The non-monetary factors are those rooted in the sphere of production. They typically manifest as disruptions to economic development (Taylor, 2008). Incorrect monetary policies lead to imbalances in production, sometimes resulting in the monopolization of the economy. Unsustainable Economic Structure is most typical of developing countries with outdated and inefficient economic structures. When the structure of the national economy is not rationalized or diversified, it can lead to economic inefficiency and inflationary pressures; In conditions of economic monopolization, where individual entrepreneurs dominate the market and set their prices, price competition is severely limited. Lack of competition can result in higher prices and contribute to inflation. Another factor is the militarization of the economy: The growth of the military-industrial complex can lead to unproductive use of national income, with a significant portion directed toward military needs rather than civilian requirements. Increased military expenditures often lead to budget deficits, which can indirectly contribute to inflation. Rising production costs can result from increases in wages, profits, or taxes that exceed the growth in productivity. When production costs rise faster than output, businesses may pass those costs on to consumers through higher prices, contributing to inflation.

2. Inflation processes in the European Union and the Euro area

At the European Union level, in the post-global financial crisis period, there were no significant changes in the inflation rate, with its values remaining below the target set by the European Central Bank. There were even periods of deflation. The situation began to change from the beginning of 2021, initially with a gradual increase in the price level, accelerating towards the end of the year and in the period following the onset of the military conflict in Ukraine. The disrupted supply chains due to the war caused a shortage of goods and an increase in the prices of essential raw materials, particularly energy sources. This, in turn, triggered an inflationary spiral, raising prices for all other goods and services, as energy and fuels are a major component of costs in any production. In some countries, including Bulgaria, inflation reached double-digit values for several months. Fig. 1 presents the annual inflation in the Euro area and the EU for the period 2005 – 2022.

Fig. 1. Annual inflation in the EU and Euro area



Source: https://ec.europa.eu/eurostat/databrowser/view/PRC_HICP_AIND__custom_7421803/default/table

Looking at the data on the figure, it becomes clear that the current inflation, which started in 2020 and continues to the present day, is double the rate even compared to the major crisis in 2008. Adhering to the trend, the inflation rate in 2008 was around 3.8%, slightly above the target annual inflation rate. In contrast, in 2022, we observe an inflation level of 8.5%, which does not even reveal the full picture. We get a clearer understanding of the real state of inflation when we include expenditures on energy, housing, and food in the equation. With these factors, inflation jumps to over 18%. This precisely implies the need for a thorough investigation of the dynamics in inflation processes from 2017 to the present to discover possible causes and the moment when the world is facing economic challenges more severe than those of 2008. There is a slightly different perspective - the difference between how people perceive inflation versus the actual measured rate. This issue is important because individuals' perceptions of inflation today - and their expectations of it for the future - influence their spending and saving behavior, and thus affect overall macroeconomic outcomes. Moreover, inflation expectations have significant implications for the credibility of the percent inflation target and for the effectiveness of monetary policy. Many people feel that the official consumer price index (CPI) inflation rate does not reflect the higher inflation they believe they are facing. The average consumer tends to think they are facing higher inflation than both measured inflation and the target of the Central Bank. The behavior of consumers—which is determined by psychology as well as knowledge—has been found to have a significant impact on inflation perceptions and expectations. Consumption habits have an impact on the "personal" inflation rate. While all of the expenditures are included in the basket, each experiences a different inflation rate. The more individual spending pattern differs from the composition of the overall spending pattern, the more personal inflation rate deviates from measured inflation (Euro Area Statistics, 2023). In terms of behavior, research shows that consumers' perceived inflation rate tends to be influenced more by rising prices. The perception gap narrows when sharply declining prices are excluded. The reason behind this is simple: in forming their perceptions of inflation, consumers seem to put more weight on prices that go up rather than down. The loss of purchasing power from rising prices has been found to have an outsized psychological

impact. (Vogel L., Menz J.-O., and. Fritsche U. (2019).

The annual inflation rate in the Euro area was 1.5 % in January 2017 and 1.7% in the EU during the same period. In January 2017, the lowest annual rates were recorded in Ireland (0.3%), Romania (1.1%), and Bulgaria (1.2%). The highest annual levels were recorded in Belgium (2.8%), Latvia and Spain (both at 2.9%), and Estonia (3.7%).

The annual inflation rate in the Euro area was 1.8% in December 2018. One year earlier, the rate was 1.5%. In the European Union, the annual inflation rate was 1.8% in December 2018. One year prior, the rate was again 1.7%. The lowest annual inflation rates were recorded in Greece (0.8%) and Denmark (0.7%). The highest annual rates were observed in Estonia (3.3%), Romania (4.1%), and Hungary (2.9 %). During the examined period, the lowest inflation was observed in 2020. In December 2020, the annual inflation in the Euro area was 0.3%. One year earlier, the percentage was 1.2 %. The annual inflation in the European Union was 0.3% in December 2020, compared to 0.2 % in November. One year earlier, the percentage was 1.5 %. The lowest annual rates were recorded in Greece (-2.4%), Slovenia (-1.2%), and Ireland (-1.0%). The highest annual levels were reported in Poland (3.4 %), Hungary (2.8%), and the Czech Republic (2.4%).

Table 1. HICP - Annual data (average index and rate of change) for EU and Euro area countries

TIME	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GEO (Labels)																
European Union (EU6-1958, EU9-1973, EU10-	2,3	3,7	1,0	2,1	3,1	2,6	1,5	0,6	0,1	0,2	1,7	1,9	1,5	0,7	2,9	9,2
European Union - 27 countries (from 2020)	2,4	3,7	0,8	1,8	2,9	2,6	1,3	0,4	0,1	0,2	1,6	1,8	1,4	0,7	2,9	9,2
European Union - 28 co	2,4	3,7	1,0	2,1	3,1	2,6	1,5	0,6	0,1	0,2	1,7	1,9	1,5	:	:	:
Euro area – 20 countrie	2,2	3,4	0,3	1,6	2,7	2,5	1,4	0,4	0,2	0,2	1,5	1,8	1,2	0,3	2,6	8,4
Euro area - 19 countrie	2,2	3,3	0,3	1,6	2,7	2,5	1,3	0,4	0,2	0,2	1,5	1,8	1,2	0,3	2,6	8,4
Belgium	1,8	4,5	0,0	2,3	3,4	2,6	1,2	0,5	0,6	1,8	2,2	2,3	1,2	0,4	3,2	10,3
Bulgaria	7,6	12,0	2,5	3,0	3,4	2,4	0,4	-1,6	-1,1	-1,3	1,2	2,6	2,5	1,2	2,8	13,0
Germany	2,3	2,8	0,2	1,1	2,5	2,2	1,6	0,8	0,7	0,4	1,7	1,9	1,4	0,4	3,2	8,7
Estonia	6,7	10,6	0,2	2,7	5,1	4,2	3,2	0,5	0,1	0,8	3,7	3,4	2,3	-0,6	4,5	19,4
Greece	3,0	4,2	1,3	4,7	3,1	1,0	-0,9	-1,4	-1,1	0,0	1,1	0,8	0,5	-1,3	0,6	9,3
Spain	2,8	4,1	-0,2	2,0	3,0	2,4	1,5	-0,2	-0,6	-0,3	2,0	1,7	0,8	-0,3	3,0	8,3
France	1,6	3,2	0,1	1,7	2,3	2,2	1,0	0,6	0,1	0,3	1,2	2,1	1,3	0,5	2,1	5,9
Croatia	2,7	5,8	2,2	1,1	2,2	3,4	2,3	0,2	-0,3	-0,6	1,3	1,6	0,8	0,0	2,7	10,7
Italy	2,0	3,5	0,8	1,6	2,9	3,3	1,2	0,2	0,1	-0,1	1,3	1,2	0,6	-0,1	1,9	8,7
Latvia	10,1	15,3	3,3	-1,2	4,2	2,3	0,0	0,7	0,2	0,1	2,9	2,6	2,7	0,1	3,2	17,2
Lithuania	5,8	11,1	4,2	1,2	4,1	3,2	1,2	0,2	-0,7	0,7	3,7	2,5	2,2	1,1	4,6	18,9
Luxembourg	2,7	4,1	0,0	2,8	3,7	2,9	1,7	0,7	0,1	0,0	2,1	2,0	1,6	0,0	3,5	8,2
Romania	4,9	7,9	5,6	6,1	5,8	3,4	3,2	1,4	-0,4	-1,1	1,1	4,1	3,9	2,3	4,1	12,0
Slovenia	3,8	5,5	0,8	2,1	2,1	2,8	1,9	0,4	-0,8	-0,2	1,6	1,9	1,7	-0,3	2,0	9,3
Slovakia	1,9	3,9	0,9	0,7	4,1	3,7	1,5	-0,1	-0,3	-0,5	1,4	2,5	2,8	2,0	2,8	12,1
European Economic Ar	2,3	3,7	1,0	2,1	3,1	2,6	1,5	0,6	0,1	0,3	1,7	1,9	1,5	0,7	2,9	9,2
Switzerland	0,8	2,4	-0,7	0,6	0,1	-0,7	0,1	0,0	-0,8	-0,5	0,6	0,9	0,4	-0,8	0,5	2,7
United States	2,6	4,4	-0,8	2,4	3,8	2,1	1,2	1,3	-0,8	0,6	1,8	2,2	1,4	0,8	5,3	8,7

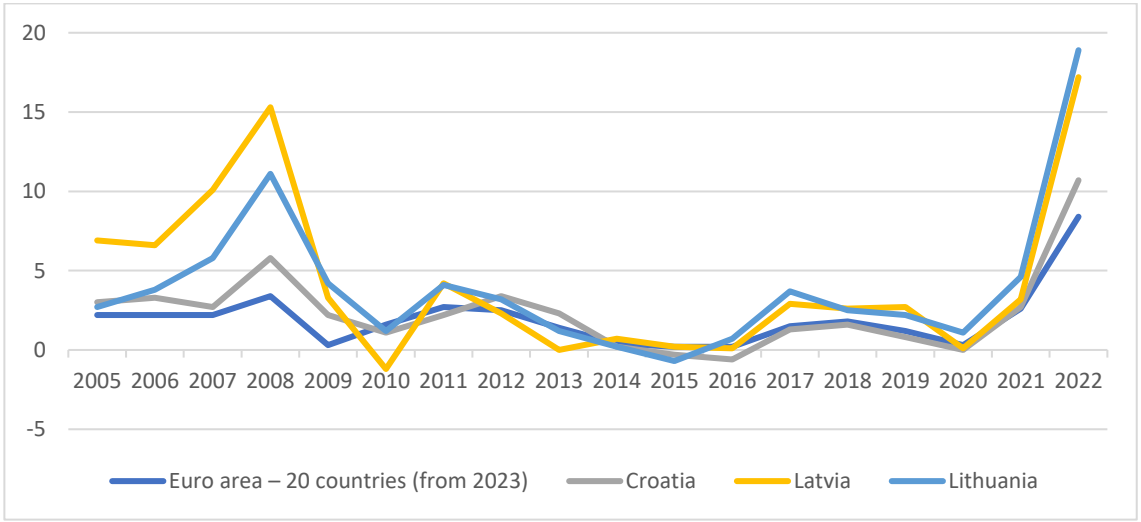
Source: https://ec.europa.eu/eurostat/databrowser/view/PRC_HICP_AIND__custom_7421803/default/table

A return to inflationary processes occurred in 2021, when the COVID-19 pandemic also raged, as well as in 2022, as a result of the Russian invasion of Ukraine. Thus, the annual inflation rate in the Euro area is about 2.7 %. Annual inflation in the European Union was 2.9 % in December 2021. A year earlier, the rate was 0.7%. The annual euro area inflation rate was 8.6% in June 2022, up from 8.1% in May. A year earlier, the rate was around 2.0 %. Annual inflation in the European Union was 9.6% in June 2022, up from 8.8% in May. A year earlier, the rate was 2.2%.

In order to clearly assess the impact and effect of membership in the Euro area on inflation, an analysis has been conducted on the latest three countries that joined.

On 01.01.2014, Latvia became the 18th country to join the Euro area and have the Euro as its official currency. The decision to join the Euro area was made in the context of Latvia's broader integration into the EU and its commitment to participate in the Economic and Monetary Union. The euro is considered a means to enhance macroeconomic stability, promote economic growth, and increase Latvia's competitiveness. On an annual basis, we observe a decrease in the price rates of 0.5 percentage points; thus, the inflation reaches from 0.7% in 2014 to 0.2 in 2015, close to the data of the Eurozone. Only in 2017 was observed a serious increase in this indicator, when it reached 2.9%. Probably Latvia is already reaping the benefits of the transition to the euro, including improved competition, banking brokerage, and lower levels of interest rates, which secure immediate and long-term benefits for the economy. On the other hand, the growth of real estate prices and salaries increases faster, which can be partially accelerated by the expectations related to the Euro. According to Eurostat data, the annual data of HCIP before joining in Euro area (2012-2013) was between 4.2 % and 2.3 %. Over the next three years, levels remain around 0%. Latvia's accession to the Euro area took a total of 10 years and can be considered a success. After the accession, the country's economic indicators stabilized and grew steadily. Joining Lithuania in the Euro area on January 1, 2015, is an important event for the Baltic nation. After nearly a decade of negotiations, the country officially adopted the euro as its currency, becoming the **19th member of the currency union**. On an annual basis, during the year of adoption, there is deflation in Lithuania at a rate of -0.7 %. This percentage is lower than the average for the Euro area, whereas still observed a fall compared to the base year 2014 when Lithuania still uses its national currency. In 2016 there was a rise in the price rates, which in 2017 reached 3.7%. In comparison, the accumulated inflation after Lithuania's accession to the Euro area as of July 2018 is 7. 23%. The economic benefits of adoption are significant. Above all, the level of inflation in Lithuania remains relatively low, and the country's exports are growing steadily. In addition, there has been an increase in foreign investment, and Lithuania's economy is positioned among the fastest-growing in the EU.

Fig.2. Inflation rate in Croatia, Latvia and Lithuania



Source: https://ec.europa.eu/eurostat/data/database

The latest member to join the Euro area is Croatia. For the two-year period in ERM II, Croatia has demonstrated resilience to the convergence criteria and the implementation of additional legislative changes with the aim of Euro area membership. On January 1, 2023, Croatia became the 20th country - a member of the Euro area. Inflation rates in Croatia for the period (2020-2022) were between 0% and 10.7%. At the time, in the April 2022 Convergence Report, the 12-month average rate of HICP inflation in Croatia as of April 2022 was 4.7%, i.e., below the reference value of 4.9% under the price stability criterion. But the levels at the end of 2022 turned out to be higher - 10.7%. This did not prevent Croatia from adopting the euro, i.e., a compromise on the part of the ECB was observed. In the last ten years, the rate of inflation in Croatia fluctuated in a relatively wide range - from -0.8% to 4.7%, with an average of 1.1% for the period. The expectations in the short and long term from the adoption of the euro are related to the attraction of foreign investments, the reduction of transaction costs, and the growth of the economy. Croatia was admitted to the Euro area after some compromises were reached by the European institutions related to its debt ratio exceeding the reference value of 60%.

An analysis of inflation for recent euro area member states shows that inflation does not show up immediately after euro adoption. Indeed, after a certain period, there is an increase in inflation in all three countries, but this is related to external factors that affect all countries on a global scale. The real benefits of adopting the euro for each of these countries should be highlighted, including in terms of attracting investment, boosting confidence and credit ratings, reduction of transaction costs, etc.

Conclusion

Headline inflation is falling in the Euro area, but it still remains too far above the ECB's target of 2%. That measures of underlying inflation are still very high is even more worrisome, as it indicates the presence of more persistent inflationary forces that can be difficult to break. The differences in inflation rates between the member states of the euro area have largely been driven by energy prices and the policy measures taken by governments, and they remain wide. This may become a problem for the euro area, if such differences become persistent and hamper the transmission of monetary policy and the smooth functioning of the currency union. The ECB can only make monetary policy for the euro area as a whole, without tailoring it to the needs of any particular country. This makes it vital that such divergences in national inflation and real interest rates are kept in check by national structural and fiscal policies.

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THE CONVINIENCE OF INFLATION IN THE NEOLIBERAL DOCTRINE

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Abstract: *The overall inflation and its trajectory over the interruption of supply chain management , caused by the unforeseen peril introduced by the COVID-29 pandemic in the global economy, encouraged all sorts of novel disruptions to maintain market equilibrium. The elites in the world successfully used the pandemic consequences to gain more power. The inflation is one of the powerful tool that serve them.*
This paper uses process mining analysis to identify the importance of inflation in the neoliberal doctrine. The research papers have been compiled from Web of Science and Research Gate. Cross-reference networks have been extracted from the source papers, enabling visualization to uncover the disciplinary contributions which have supported the relation between inflation and neoliberal doctrine .

Keywords: *Neoliberalism, Inflation,*

Introduction

2022's inflation rate hit its highest level in four decades, for the US and EU – about 10 % according to consumer price index data. The accelerating rate of inflation is being attributed by most of politics to the pandemic stimulus. Four decades ago a major change in the world's governance officially started - the neoliberal paradigm insensibly took over the world.

The focus of this paper is the convenience of inflation for politics, who use the unstable situation and fundamentally change the popular conception of economics cleared the way for the implementation of the neoliberal doctrine in states' governance and the nowadays post – COVID inflation.

The paper is organized in 3 parts. The first part clarifies the terms neoliberalism and its hypocrisy, the second provides historical information for the first neoliberal experiment in the world, and the third is about the post-COVID situation now.

Historically, there have been two main concepts describing inflation: - the first one which took place until the end of the 19th century and its meaning was connected with the amount of money in the economy. An increase in the amount of money means an increase in the demand for goods by those people who are the first to acquire the new money tokens, which on your part means that the prices of those goods will be higher than they would otherwise be. As the new monetary units are exchanged between individuals (buyers and sellers), more and more prices rise. Th second one is spread in the last 50 years, as a result of Milton Friedman's statistics, inflation has been understood as a constant and complete rise in money prices, which means a constant fall in the purchasing power of money. There is no consensus among historical economists as to the causes giving rise to this phenomenon. For example, monetarists believe that a rise in the quantity of money causes its purchasing power to fall, while neo- and post-Keynesians believe that the cause stems from a shortage of aggregate supply. The second type

of inflation is connected with the theme of this paper and appears to be a powerful tool for the neoliberals. How do they use it?

The hypocrisy in neoliberal doctrine

The pure neoliberal policy paradigm emphasises maintaining low and stable inflation, a low tax environment, fiscal conservativism, welfare state retrenchment, active labour market policies and the importance of the state as a facilitator of private markets, rather than a substitute for them (Hay, C. (2004a) The normalizing role of rationalist assumptions in the institutional embedding of neoliberalism, Economy and Society, 33: 500–527.)

David Harvey claims that the turn to the new political system with all its subsystems is a way to redistribute this accumulated capital during the glorious 30 years after the Second World by the established middle class in capitalist states to a limited circle of people.

This is the hypocrisy in the new doctrine - instead of making policies to improve the life of society, neoliberals, served by the new politicians, direct all business benefits to a small percentage of people, hiding behind the mask of liberal rights and freedoms. Deregulation, privatization and the withdrawal of the state from many areas of social care happened in most world states since the 70s. In the 1970s a clear turn towards neoliberal political-economic practices and a neoliberal way of thinking was everywhere. Neoliberalism turned to be liberalism only for economic elites; all the liberal aspects of the polity are diminished. A negative consequence of the imposition of neoliberal regimes is a gradual undermining of the institutions of political democracy. Harvey points out that "the freedom of the masses will be curtailed in favor of the freedoms of the few" (Harvey, D,).

There have been several events in the history of neoliberalism that directed the world economy towards a new way of managing fiscal and monetary policies. In this paper three of them are presented – The Chilean miracle, The Stagflation crisis which led to The Volker shock in the US, and Post-COVID inflation during the year 2022.

The Chilean miracle

As David Harvey says *The first experiment with neoliberal state formatio*n (Harvey, D, Ä brief history of neoliberalism, p. 7) was initiated 50 years ago. On September 11th of 1973 Augusto Pinochet took power in Chilie via coup against the democratically elected government of Salvador Allende.

The previous year the state's inflation was 150 %, With promises to present the democracy in Chilie the neoliberals started its governing. A term "Miracle of Chile" was used by economist Milton Friedman to describe the reorientation of the Chilean economy in the 1980s and the effects of the economic policies applied by a large group of Chilean economists known "The Chicago Boys". They have studied at the University of Chicago where Friedman taught. Milton said in interview in year 2000the "Chilean economy did very well, but more importantly, in the end the central government, the military junta, was replaced by a democratic society. So the really important thing about the Chilean business is that free markets did work their way in bringing about a free society.(

Working alongside the IMF, they restructured the economy according to their theories. They reversed the nationalizations and privatized public assets, opened up natural resources (fisheries, timber, etc.) to private and unregulated exploitation, privatized social security, and facilitated foreign direct investment and freer trade. The right of foreign companies to repatriate profits from their Chilean operations was guaranteed. Export-led growth was favoured over import substitution. The only sector reserved for the state was the key resource of copper (rather

like oil in Iraq). This proved crucial to the budgetary viability of the state since copper revenues flowed exclusively into its coffers. The immediate revival of the Chilean economy in terms of growth rates, capital accumulation, and high rates of return on foreign investments was short-lived. It all went sour in the Latin American debt crisis of 1982. The result was a much more pragmatic and less ideologically driven application of neoliberal policies in the years that followed.

According Daniel Matamala "The neoliberal result for his country "was a laboratory for neoliberalism in its most pure (or extreme) version. Drastic reforms that would be unthinkable in a democracy were executed as military orders, without criticism or opposition and at an enormous social and human cost, thanks to a dictatorship that used blunt force to block any debate."

The Chicago Boys' legacy in Chilie is an example of how neoliberal policies serve the elites. In 1977 the country's GDP was $14 billion in 2017 is $247 billion, which is supposed great growth. 28.1 % of the total income is concentrated among 1 percent of the population. This data explains why nowadays Chile is one of the world's most unequal nations.

The stagflation crisis and the Volker shock

Until the 1970s, when the Keynesian school economics was replaces with monetarism many economists relied on a stable inverse relationship between inflation and unemployment. Data collected since the 1860s suggested unemployment fell as inflation rose and rose when inflation fell. (Nielsen, B., 2022.). When a sudden rise in oil prices jump started an inflationary spiral in the early '70s in that continued despite rising unemployment, it was an unexpected state of affairs, and no one was sure what to do about it. Then the next most widely discussed and visible macroeconomic event of the last 50 years of U.S. history started. The oil crisis of 1973 generated inflationary forces, increasing energy and commodity prices. At the same time, the world economy was in recession. The Bretton Woods international monetary system was formally ended in 1973, and currencies were now free to float independently. This inflatotionary forces ended into stagflation crisis that fundamentally changed the popular conception of economics. The school of Keynesian economics that had held sway since the Great Depression postulated that inflation was primarily a consequence of a juiced economy with low unemployment. The moment was proper for the neoliberals to implement their doctrine. Two crucial figures in polit-economic theories arose. Milton Friedman rejected the Keynesian cost-push model for inflation and postulated that inflation was solely a factor of excess growth in the money supply. In other words, the sole factor driving inflation was the relative ease with which people and businesses could borrow, and insufficient incentives to save. Paul Volcker, who was named Fed chair by President Jimmy Carter in 1979, used Friedman's monetary theories to justify his policy of drastically raising interest rates. The result was back-to-back economic recessions, leading to reduced demand and ultimately the end of runaway inflation. This became known as the Volcker shock. Most of the conversation around the Volcker shock frames it as an unfortunate necessity. Since it was effective in ending the inflationary spiral without doing lasting damage to Wall Street profits, it was quickly embraced as the only serious way to deal with runaway inflation.

David Harvey claims that the turn to the new political system with all its subsystems is a way to redistribute the accumulated capital during the glorious 30 years after the Second World War by the established middle class in capitalist states to a limited circle of people. His explanation of new doctrine's hypocrisy - instead of maintaining low and stable inflation, a low tax environment, fiscal conservativism, welfare state retrenchment, active labour market policies and the importance of the state as a facilitator of private markets, something else happened - the 1970s a clear turn towards neoliberal political-economic practices and a neoliberal way of thinking was everywhere. Deregulation, privatization and the withdrawal of the state from many

areas of social care were common. Neoliberalism is liberalism only for economic elites; that the liberal aspects of the polity are diminished. A negative consequence of the imposition of neoliberal regimes is a gradual undermining of the institutions of political democracy. Harvey points out that "the freedom of the masses will be curtailed in favor of the freedoms of the few (Harvey, D. 2005).

The Chilean experiment, including the pragmatism, provided helpful evidence to support the subsequent turn to neoliberalism in both Britain (under Thatcher) and the US (under Reagan) in the 1980s. Not for the first time, a brutal experiment carried out in the periphery became a model for the formulation of policies in the centre. The fact that two such obviously similar restructurings of the state apparatus occurred at such different times in quite different parts of the world under the coercive influence of the United States suggests that the grim reach of US imperial power might lie behind the rapid proliferation of neoliberal state forms throughout the world from the mid-1970s onwards.

Colin Crouch points out that the Achilles heel of Keynesianism is the inflationary tendencies of its politically determined ratchet and connects the raise of the neoliberalism as an inevitable consequence of the inflation that hit the advanced countries of the West, though nothing like what had been experienced in Germany in the 1920s, or in various parts of Latin America and Africa more recently, was seen as intolerable (Crouch, C. 2011).

The effects of the Volcker shock were not confined to America's borders. Developing countries in the Global South found themselves unable to pay back loans issued by American banks. With the income of their exports diminished by trade deals and the expanding global economy, many countries found themselves in unexpected financial crises.

The result was the International Monetary Fund intervening to bail out these countries at the cost of putting them in permanent debt to Western OECD nations.

Austerity was forced upon these countries, and national programs meant to provide education and social services were cut, thus severely hampering any effort to combat poverty.

Post-COVID inflation – flashback to 70s

In 2022, weak growth and elevated inflation mimicked the economic stagflation of the 1970. The outbreak of the COVID-19 pandemic in 2020 wreaked havoc on human society – we still have not gotten rid of the pandemic's effect, and at the same time global politics and economics took a huge hit. Under the pandemic's impact, the global economy grew negatively for the first time over the years in 2020, with a growth rate of 3.2%. Only China witnessed slight growth in its economy (2.3%), among the top ten economies in the world. Other nations experienced negative economic growth. As the world's largest economy, the United States had an economic growth of 3.5% in 2020, according to World Economic Outlook by the IMF (2021). The main difference between inflation in the 70s and nowadays situation is the globalization. New technologies can be found in any aspect of the economy. The speedup of movements and exchanges of human beings, goods, and services, capital, technologies or cultural practices has spread all over the globe. It promotes and increases interactions between different regions and populations around the planet. This happened during COVID and also reflects in global economic situations.

Conclusion

Neoliberalism replaced Keynesianism as the dominant form of economic policymaking in many advanced economies in the 1980s, after the collapse of the Bretton Woods system and the inflation and productivity crises of the 1970s (Hay, 2004a; Best, 2021). Although a highly contentious term, we consider neoliberalism an economic policy paradigm, defined as an

interpretative framework based around a set of economic ideas about how the economy should be run (Hall, 1993). The neoliberal policy paradigm is oriented around the main macroeconomic objective of maintaining low and stable inflation while also advocating policies of welfare state retrenchment, fiscal conservatism, low taxation, and labor market activation, as well as using the state to facilitate private markets rather than substituting for them (Hay, 2004a). The neoliberal doctrine started governing the world at the 80s and until COVID there have been a lot of neoliberal practices through the whole world. COVID 19 paused some of the neoliberal processes as the state started again to pay attention to its citizens. There are no clean signs of what is about to come, but it is for sure that the neoliberal era has been exhausted.

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THE IMPACT OF INFLATION AND INCOME GROWTH ON NON-PERFORMING AND RESTRUCTURED LOANS: THE CASE OF BULGARIA

***Violeta Todorova*[1]**

Abstract

This paper examines the relationship between non-performing and restructured loans, inflation and income growth in Bulgaria. The linear regression analysis shows that there is significant negative impact of inflation and income growth on NPLs and restructured loans for consumer credits and significant negative impact of inflation on NPLs and restructured loans for housing credits. There is no heteroscedasticity of the errors which proves that the coefficients are precise. Results show lack of multicollinearity, normal distribution of residuals and correct linear functional form of the model. However, there is autocorrelation of residuals and weak explanatory power. For improving the explanatory power of the linear regression model, more explanatory variables should be included - bank-specific, macroeconomic and institutional determinants.

Abbreviations

NPLs – non-performing loans

1. Introduction.

Non-performing loans are a problem for the banking sector and for the whole economy. NPLs can break confidence in the banking institutions, which may lead to negative cross-border effects and may hamper investment. Restructuring of NPLs is an instrument for reduction of financial fragmentation and facilitation of capital flows.

The post-COVID-19 economic situation in combination with high inflation is expected to have impact on the level of NPLs in banks` portfolios. In comparison, the previous crisis of 2007-2009, leads to a huge amount of non-performing loans in countries all over the world.

Before the crisis 2007-2009 the economic situation seems favourable - globally high growth rates, stable and low inflation rates, low short-term interest rates as a result of the prudent monetary policy pursued by leading industrial countries, simultaneously acceptable long-term interest rates due to the relatively high levels of savings in Asia and oil-exporting countries, increase in productivity and trade. This leads to greater integration of developing countries into the global economy. The economic growth leads to increased production in many countries, and this, in combination with greater integration of developing countries into the global economy and the significant increase in trade, allows prices of most goods and services to remain relatively unchanged for several years.

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This growth combined with the lack of regulation leads eventually to excessive indebtedness of financial institutions, businesses and households in the United States and Europe - debt that can hardly maintain for a long time. Due to low interest rates investors orientate themselves to riskier financial instruments, including equity, real estate and commodities. The world economy faces serious losses. Leading banks write off large items of their assets. Banks in many developed industrial countries have significant difficulties, forced to seek foreign support.

Hardly someone can define clearly the reasons which lead the world economy to helpless situation. One of the most commonly appointed reasons is the excessive loosening of loan requirements, caused by the strong desire of the financial institutions to increase their market presence. It is known that during periods of economic progress financial institutions exchange stability against market share. As a result, the financial standards get easier, candidates for obtaining credit rarely receive denial, and a significant portion of the assets of the banking system pass into the hands of people who cannot serve their loans. Thus the banking system loses its resistance and ability to stand shocks and even the least slowing pace of economic growth can cause a chain reaction followed by collapse.

Researchers notice the increased amounts of non-performing loans in the years after the crisis and their interest is focused on the factors that have negative impact on banks` portfolios. The reason is that maintaining a safe level of bad loans is an important issue for the survival of banks. There are many factors responsible for this ratio. In recent years, the determinants of NPLs have been the subject of particular interest. There is a number of publications discussing the problem of bad loans, the quality of the loan portfolio and the soundness of banks.

2. Impact of inflation on NPLs – literature review.

Inflation is one of the most studied macroeconomic indicators concerning economic shocks and severe downturns.

The impact of inflation on non-performing loans is not clearly stated. Opinions are controversial, but some researchers point out that higher inflation has a negative effect on lenders and increases the level of credit risk and hence bad loans. Agarwal and Baron (2023) claim that rising inflation can lead to losses in the whole banking sphere because banks reduce lending, primarily in the housing sector. This in turn leads to a rise in house prices. According to Peshev (2014), inflation can increase loan demand as it leads to redistribution of wealth from creditor to debtor, but it can also negatively affect loan demand as rising prices reduce households' disposable income and firms' net cash flow. Klein (2013) also argues that the impact of inflation on NPLs is ambiguous, as on one hand higher inflation reduces debt real value, making loan servicing easier, but on the other hand rising inflation reduces people`s real income against background of high prices.

Golitsis, Fassas, & Lyutakova (2019) examine the factors affecting credit risk specifically for the Bulgarian banking sector and find among them the importance of the impact of inflation. Kjosevski

& Petkovski (2021) find evidence that inflation is among the most important macroeconomic factors influencing NPLs.

Anita, Tasnova, & Nawar (2022) investigate selected macroeconomic determinants of non-performing loans for eight South-Asian Association for Regional Cooperation countries and find that low levels of inflation lead to high levels of NPLs. Erdinc & Abazi (2014) reveal that inflation has very significant negative impact on NPLs in twenty emerging European countries, suggesting that inflation "reduces the real debt obligations of borrowers". Mazreku et al. (2019) test the relationship between macroeconomic factors and the level of NPLs in ten transition countries from Central and Eastern Europe, including Bulgaria, during the period 2006 - 2016 and reveal that inflation has a significant negative relationship with NPLs, "possibly due to the resulting reduction in real debt repayments".

Radivojević et al. (2019) create econometric model in order to demonstrate the impact of crucial macro and microeconomic variables on NPLs for countries in Latin America. The authors define high inflation as one of the main problems in Latin America and the results of their study show that inflation has not statistically significant effect on NPLs.

Peric & Konjusak (2017) argue that inflation can have a positive or a negative influence on NPLs. They explain the negative influence with the reduction of loan's real value as a result of high inflation which makes repayment easier or, based on the Philip curve[2], inflation can decrease unemployment and increase creditworthiness of borrowers. Nevertheless, their study reveals that inflation is not statistically significant determinant of NPLs in the Central and Eastern European countries. Trying to identify the factors affecting the non-performing loans rate of Eurozone's banking systems for the period 2000-2008, Makri, Tsagkanos & Bellas (2014) find that inflation does not have any significant impact.

3. Inflation, income, interest rates and NPLs.

In response to rising inflation policymakers increase nominal interest rates. Thus the cost of the borrowed money is higher, so consumers and investors may prefer to save because of a higher interest income. For example - high interest rates can force consumers to refuse to buy home or car because the cost of repaying the loan is too high; businesses would also prefer to put their money in bank deposits because of the high return, or spend the money for new projects, rather than using expensive crediting.

Credit demand is inversely related to interest rate - at high interest rates aggregate demand for credit declines and vice versa. In addition, during times of high inflation and high rates not only credit demand decreases, but creditors are also less willing to give credits because of the asymmetric information and moral hazard - at higher interest rates, the adverse selection problem appears more often; at lower interest rates there are more potential borrowers, and fewer of them have a high credit risk profile. Moreover, higher risk reduces the attractiveness of investments.

The theoretical prediction is that higher inflation associated with higher nominal interest rates depresses investments of entrepreneurs and consumers[3], which results in fewer granted loans and hence, fewer non-performing loans.

[2] The Philip curve is an economic concept developed by A.W.Philips, which states that inflation and unemployment have a stable and inverse relationship.

[3] According to the traditional interest rates channel a monetary contraction through increase in the short-term interest rate leads to pushing up longer-term rates, which leads to decrease in investments.

Besides, the impact of higher interest rates on existing loans may vary depending on whether the loan is with fixed or variable interest rate. If the nominal interest rate is fixed, as a result of a high inflation the real value of the liabilities decreases, i.e. real borrowing costs fall and debt burden also falls. Consequently, the probability that the loan will not be repaid decreases. For this reason, loosening monetary policy by raising inflation, higher income and raising the price level leads to a fall in real interest rates, lowers borrowing costs and increases the real net wealth of firms and households. This makes servicing the loans with fixed nominal interest rates easier and reduces the likelihood of non-performing loans.

Simultaneously, high inflation and rising nominal interest rates make loans with variable rates more expensive, because borrowers with a variable rate will pay more than the initially agreed loan instalment. This may increase the possibility for not servicing the loan. Variable interest rate has two components: 1) the cost of financing for lenders, linked to a benchmark interest rate which indicates the borrowing costs for banks for the funds they take from the marketplace; 2) margin that covers the costs and the profit of the lender. The rate of the outstanding balance of the loan depends on the market interest rate. It increases when the market interest rate rises, but it decreases as well, when market interest rate declines. As fixed rates are less flexible, they should predict all possible scenarios and generate bank profit in all circumstances. For this reason, fixed rates are usually higher and used mostly for short-term loans. The most popular mortgage loan has fixed rate for the first five years and after this period the rate is adjusting, depending on the market interest rate. Therefore, the mortgage instalment may rise, but it may also fall, in a period of declining interest rates.

Nobody can predict long-term economic conditions, and it is better for both borrowers and lenders to have opportunity for reaction and further negotiations. This includes not only changes in interest rates and loan repayments, but also the opportunity for debt restructuring, for the common goal - avoiding the possibility of default and fairly satisfying the interests of lenders and borrowers. Credit institutions have variable instruments for management of non-performing exposures, including restructuring, improving the collection process, use of collaterals and sell. Making a loan price requires not only calculation of the interest rate but also consideration of all macro- and microeconomic conditions at national and world level, as well as their predictive values. In this context, evidence exists about low interest rates that induce higher amounts of NPLs. Maivald & Teplý (2020) analyze a sample of 823 banks from the Eurozone, Denmark, Japan, Sweden, and Switzerland for a period of zero and negative rates and conclude that "after 1 year of low interest rates, the NPL ratio increases". It can be assumed that low rates suppress the attention of borrowers and lenders for possible losses amid changes in the economic environment, while rising inflation associated with expectations for higher rates is a signal for considering reasonable reactions.

Moreover, the level of the interest rates would not be embarrassing if borrowers have sufficient income to pay their debts. The income effect states that income growth influences peoples` ability to buy goods and services. The increase in consumer`s purchasing power supposes increased demand and increased willingness to take credits. As a result of expansionary monetary policy, which includes growing income, higher prices and increasing inflation, the interest rates would rise. The question is: are people rich enough to pay for this?

4. Methodology and data used.

This paper studies the impact of inflation and income growth on non-performing and restructured loans in Bulgaria for the period 2010-2023 through linear regression model, performed with E-views 12.

It examines the influence of inflation and income growth on two dependent variables:
- NPLs_restructured loans of housing households` loans;
- NPLs_restructured loans of consumer loans.

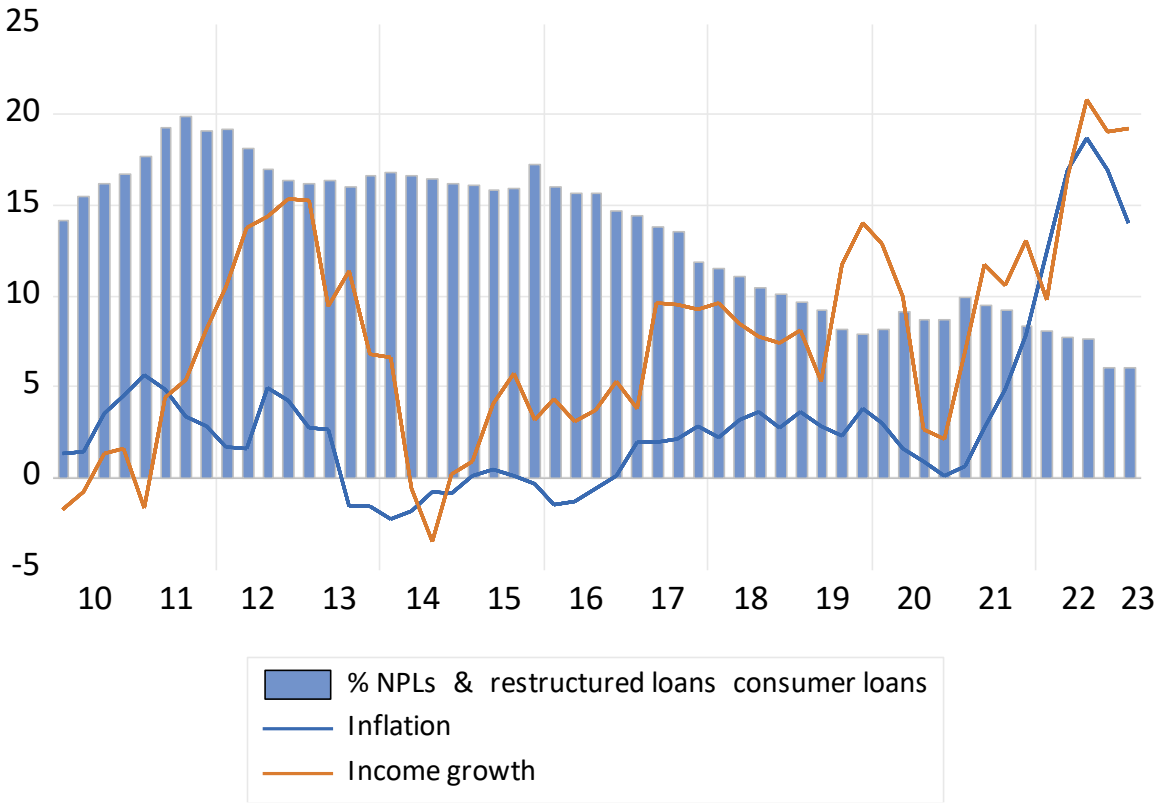
The equation used for the linear model is:
$Y_n = \beta_0 + \beta_1 X_{1n} + \beta_2 X_{2n} + U_n$, where:

Y_n is the dependent variable NPLS_RESTRUCTURED_LOANS;
X_{1n} is the explanatory variable INFLATION;
X_{2n} is the explanatory variable INCOME_GROWTH;
β_1 and β_2 are the coefficients that show the effect of the explanatory variables on the dependent variable Y;
U_n is the error term;
n =1,2,3 … is the number of observations.

The number of observations for each variable is 53, quarterly time series data for the period March 2010-March 2023. The data is derived from Bulgarian National Bank statistics and National Statistical Institute of Bulgaria. The inflation values are calculated on an annual basis compared to the same quarter of the previous year. The income growth is the percentage change in the average income per capita compared to the corresponding quarter of the previous year.

Graphics of the dynamics of the dependent variables and the explanatory variables are shown in Figure 1 and Figure 2.

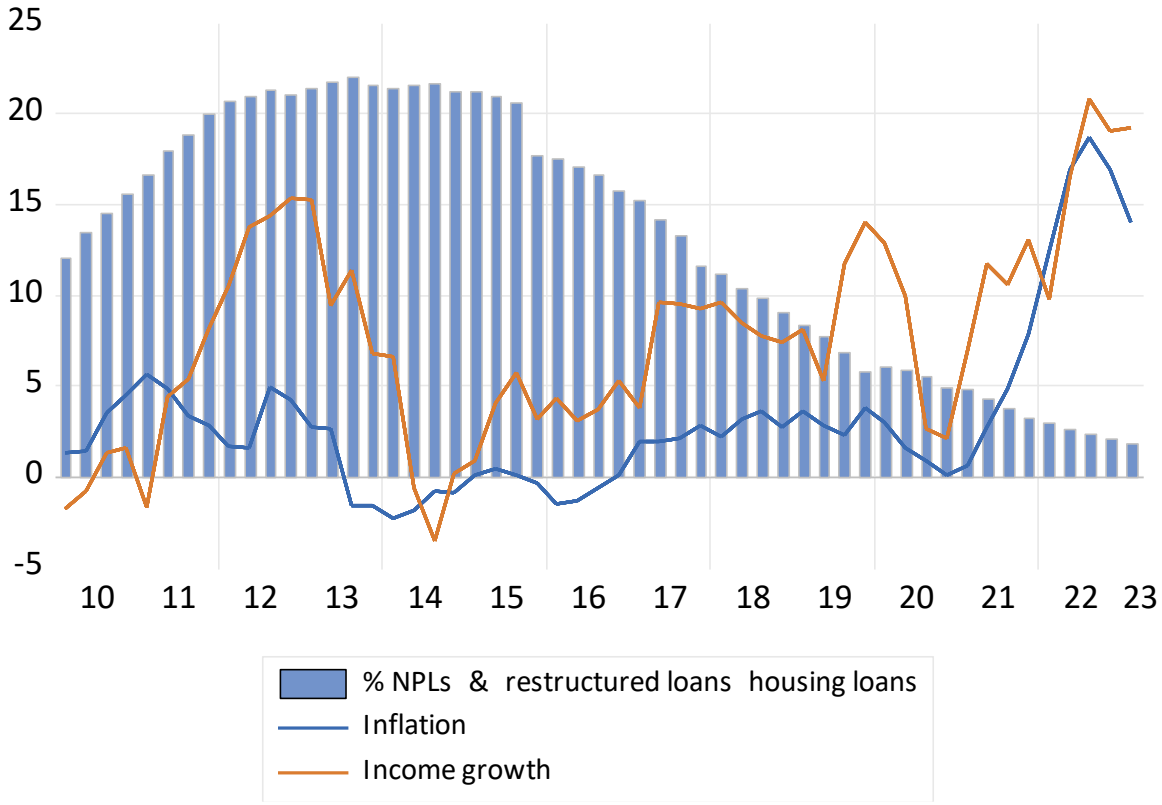
Figure 1: Relationship between NPLs_restructured consumer loans, inflation and income growth in Bulgaria



Source: Bulgarian National Bank, National Statistical Institute

The graphics show that in Bulgaria to high values of NPLs and restructured loans correspond high income growth rates and low or negative inflation rates. The influence of the crises from 2007-2009 on bad consumer loans leads to their highest value of 19% in 2011, slightly decreasing in the next years. The crisis leads to boost in bad housing loans and they stay at incredibly high values of about 20% in the period 2011-2015. In the years after the crises the inflation is low and the rate of income growth is high. This leads to reduction of non-performing and restructured loans, which is more significant after 2015-2016 and has more considerable effect on housing credits.

Figure 2: Relationship between NPLs_restructured housing loans, inflation and income growth in Bulgaria



Source: Bulgarian National Bank, National Statistical Institute

A linear regression is performed for the two dependent variables separately. After the regression the following tests are performed:

- test for heteroscedasticity;
- test for autocorrelation;
- test for multicollinearity;
- test for normal distribution of residuals;
- test whether the linear functional form is correct.

It is assumed that the impact of inflation and income growth on NPLs&restructured loans occurs with a certain time lag. For this reason, the linear regressions are run with 2-lag values of the explanatory variables “inflation” and “income growth”.

The results of the regressions and the tests are summarized in Table 1:

Table1: Results of the linear regression models

	NPLs and restructured loans of consumer loans	**NPLs and restructured loans of housing loans**
See	Appendix 1	Appendix 2
Representation of the model	NPLS_RESTRUCT_LOANS_CONSUMER_LOANS = 15.89-0.27*LINFLATION - 0.26*LINCOME_GROWTH	NPLS_RESTRUCT_LOANS_HOUSING_LOANS = 16.43-0.75*LINFLATION - 0.15*LINCOME_GROWTH
p-value of predictive variable *inflation*	0,07	0.00
p-value of predictive variable *income growth*	0.02	0,47
R2	0,29	0,25
Testing for heteroscedasticity	no heteroscedasticity	no heteroscedasticity
Testing for autocorrelation of residuals	serial correlation of residuals	serial correlation of residuals
Testing for multicollinearity	no multicollinearity	no multicollinearity
Testing for normal distribution of residuals	normal distribution of residuals	normal distribution of residuals
Testing whether the linear functional form is correct	the model is free from specification errors	the model is free from specification errors

5. Discussion of results

The results of the linear regressions show negative impact of inflation and income growth on NPLs and restructured loans in Bulgaria on the two dependent variables: consumer loans and housing households` loans. Though, the effect of income growth on non-performing housing loans is insignificant.

It can be concluded that in Bulgaria:

- inflation has negative impact on NPLs and restructured consumer loans;
- inflation has negative impact on NPLs and restructured housing households` loans;
- income growth has negative impact on NPLs and restructured consumer loans.

The R^2 values show weak explanatory power of the regression models - only about 30% of the variability of NPLs and restructured loans can be explained with these models. This leads to the assumption that more advanced econometric techniques and more determinants are required for analyzing the factors which deteriorate banks` portfolios.

The lack of heteroscedasticity predicts that the variance of the errors of the two simple linear regressions is constant. This means that the standard deviations of the predicted variable "NPLs and restructured loans" for a specific time are constant, monitored over the different values of the independent variable "inflation". The homoscedasticity of the errors states that the coefficients are precise.

The presence of autocorrelation of the residuals states that the errors in the regressions are not independent of each other. Nevertheless, the residuals are normally distributed. The lack of specification errors in the two linear regressions leads to the assumption that the linear model is specified correctly.

6. Conclusion

In Bulgaria the reduction of the level of non-performing and restructured loans for consumer and housing credits happens at low inflation rates and high income growth rates. Both rising inflation and income growth influence negatively the amount of NPLs. Expectations for rising inflation in combination with higher income may increase interest rates. In such period, management of financial institutions should give specific attention to mitigate potential credit risk and losses.
The findings of the study show negative relationship between NPLs&restructured loans and inflation and NPLs&restructured loans and income growth in Bulgaria for housing and consumer loans, as the effect of income growth on housing non-performing loans is insignificant. The inference supports the prediction that higher income and higher inflation associated with higher nominal interest rates depresses investments and lending, simultaneously lowers borrowing costs for loans with fixed rates, which results in fewer non-performing loans. The lagged negative influence of inflation and income growth on NPLs suggests that expectations for higher interest rates warns borrowers and lenders to take actions to avoid non-performance, which will be a loss for both of them.

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Linear regression with 2 lags

Dependent Variable: __NPLS RESTRUCTURED LOANS CONSUMER LOANS
Method: Least Squares
Date: 12/04/23 Time: 15:58
Sample (adjusted): 2010Q3 2023Q1
Included observations: 51 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINFLATION	-0.269474	0.147549	-1.826334	0.0740
LINCOME_GROWTH	-0.260199	0.111451	-2.334661	0.0238
C	15.88861	0.831201	19.11524	0.0000

R-squared	0.289760	Mean dependent var	13.29952
Adjusted R-squared	0.260166	S.D. dependent var	4.085194
S.E. of regression	3.513822	Akaike info criterion	5.408308
Sum squared resid	592.6535	Schwarz criterion	5.521945
Log likelihood	-134.9119	Hannan-Quinn criter.	5.451732
F-statistic	9.791371	Durbin-Watson stat	0.085624
Prob(F-statistic)	0.000271		

Estimation Command:
==========
LS __NPLS___RESTRUCTURED_LOANS_CONSUMER_LOANS LINFLATION LINCOME_GROWTH C

Estimation Equation:
==========
__NPLS___RESTRUCTURED_LOANS_CONSUMER_LOANS = C(1)*LINFLATION + C(2)*LINCOME_GROWTH + C(3)

Substituted Coefficients:
==========
__NPLS___RESTRUCTURED_LOANS_CONSUMER_LOANS = -0.269474334636*LINFLATION - 0.260199332049*LINCOME_GROWTH + 15.8886131606

Testing for Heteroscedasticity:

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.455523	Prob. F(2,48)	0.6368
Obs*R-squared	0.949957	Prob. Chi-Square(2)	0.6219
Scaled explained SS	0.387042	Prob. Chi-Square(2)	0.8241

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 12/04/23 Time: 16:14
Sample: 2010Q3 2023Q1
Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.555892	2.692217	3.549451	0.0009
LINFLATION	-0.002344	0.477904	-0.004904	0.9961
LINCOME GROWTH	0.287356	0.360982	0.796039	0.4299

R-squared	0.018627	Mean dependent var	11.62066
Adjusted R-squared	-0.022264	S.D. dependent var	11.25646
S.E. of regression	11.38108	Akaike info criterion	7.758804
Sum squared resid	6217.393	Schwarz criterion	7.872441
Log likelihood	-194.8495	Hannan-Quinn criter.	7.802228
F-statistic	0.455523	Durbin-Watson stat	0.349527
Prob(F-statistic)	0.636829		

H_0: Homoscedasticity/No heteroscedasticity
H_1: There is heteroscedasticity

p=0.6368>0.05 – so the null hypothesis of homoscedasticity could be accepted

Testing for autocorrelation of residuals:

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	333.1458	Prob. F(2,46)	0.0000
Obs*R-squared	47.70640	Prob. Chi-Square(2)	0.0000

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 12/04/23 Time: 16:15
Sample: 2010Q3 2023Q1
Included observations: 51
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINFLATION	0.084641	0.043060	1.965657	0.0554
LINCOME_GROWTH	-0.014319	0.029070	-0.492563	0.6247
C	-0.104873	0.218466	-0.480043	0.6335
RESID(-1)	1.216731	0.146751	8.291140	0.0000
RESID(-2)	-0.258672	0.150684	-1.716649	0.0928

R-squared	0.935420	Mean dependent var	-2.19E-15
Adjusted R-squared	0.929804	S.D. dependent var	3.442829
S.E. of regression	0.912161	Akaike info criterion	2.746894
Sum squared resid	38.27373	Schwarz criterion	2.936288
Log likelihood	-65.04579	Hannan-Quinn criter.	2.819267
F-statistic	166.5729	Durbin-Watson stat	1.947669
Prob(F-statistic)	0.000000		

H_0: No serial correlation
H_1: There is serial correlation

p=0.000, so the null hypothesis is rejected and there is serial correlation

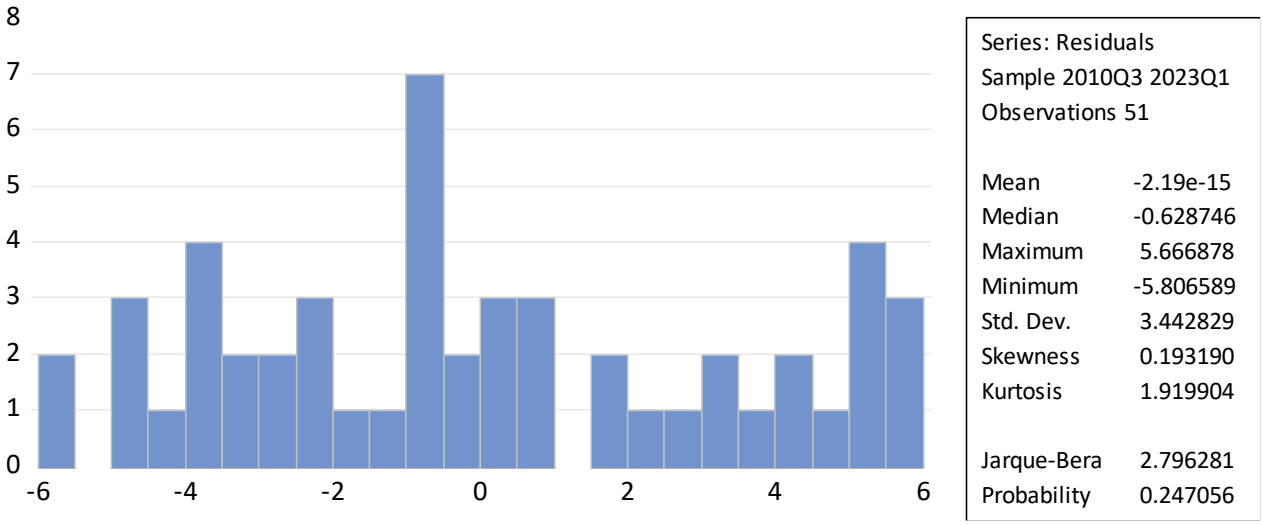
Testing for multcollinearity

Variance Inflation Factors
Date: 12/06/23 Time: 18:30
Sample: 2010Q1 2023Q1
Included observations: 51

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LINFLATION	0.021771	2.078613	1.447575
LINCOME_GROWTH	0.012421	4.112487	1.447575
C	0.690896	2.853797	NA

Centered VIF<10, there is no multicollinearity in the model.

Testing for normality – the Bera-Jarque normality, if the residuals are normally distributed, the Bera-Jarque statistic would not be significant.



H_0: the residuals are normally distributed;
H_1: the residuals are not normally distributed.

The p-value of Jarque-Bera statistic=0.247056>0.05, which means that Jarque-Bera statistic is not significant and we accept H_0: the residuals are normally distributed

Testing whether the linear functional form is correct:

In order to test whether the linear functional form is correct, the Ramsey`s RESET Test is applied.

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: NPLS RESTRUCTURED LOANS_CONSUMER L OANS LINFLATION LINCOME_GROWTH C

	Value	df	Probability
t-statistic	0.003731	47	0.9970
F-statistic	1.39E-05	(1, 47)	0.9970
Likelihood ratio	1.51E-05	1	0.9969

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000176	1	0.000176
Restricted SSR	592.6535	48	12.34695
Unrestricted SSR	592.6533	47	12.60964

LR test summary:

	Value
Restricted LogL	-134.9119
Unrestricted LogL	-134.9119

Unrestricted Test Equation:
Dependent Variable: NPLS RESTRUCTURED LOANS CONSU MER LOANS
Method: Least Squares
Date: 12/04/23 Time: 16:19
Sample: 2010Q3 2023Q1
Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINFLATION	-0.268070	0.404954	-0.661976	0.5112
LINCOME_GROWTH	-0.258291	0.523856	-0.493056	0.6243
C	15.82226	17.80365	0.888709	0.3787
FITTED^2	0.000269	0.072126	0.003731	0.9970

R-squared	0.289760	Mean dependent var	13.29952
Adjusted R-squared	0.244425	S.D. dependent var	4.085194
S.E. of regression	3.551006	Akaike info criterion	5.447524
Sum squared resid	592.6533	Schwarz criterion	5.599039
Log likelihood	-134.9119	Hannan-Quinn criter.	5.505422
F-statistic	6.391596	Durbin-Watson stat	0.085628
Prob(F-statistic)	0.001010		

The p-values of the t-statistic, F-statistic and Likelihood ratio are greater than 0,05, so it can be inferred that the model is free from specification errors.

Linear regression with 2 lags

Dependent Variable: NPLS RESTRUCTURED LOANS HOUSING LOANS
Method: Least Squares
Date: 12/06/23 Time: 18:37
Sample (adjusted): 2010Q3 2023Q1
Included observations: 51 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINFLATION	-0.754822	0.264515	-2.853604	0.0064
LINCOME GROWTH	-0.145535	0.199800	-0.728403	0.4699
C	16.43024	1.490115	11.02615	0.0000

R-squared	0.248849	Mean dependent var	13.38183
Adjusted R-squared	0.217551	S.D. dependent var	7.121398
S.E. of regression	6.299316	Akaike info criterion	6.575782
Sum squared resid	1904.706	Schwarz criterion	6.689418
Log likelihood	-164.6824	Hannan-Quinn criter.	6.619206
F-statistic	7.950950	Durbin-Watson stat	0.056430
Prob(F-statistic)	0.001041		

Estimation Command:
==========
LS __NPLS___RESTRUCTURED_LOANS_HOUSING_LOANS LINFLATION LINCOME_GROWTH C

Estimation Equation:
==========
__NPLS___RESTRUCTURED_LOANS_HOUSING_LOANS = C(1)*LINFLATION + C(2)*LINCOME_GROWTH + C(3)

Substituted Coefficients:
==========
__NPLS___RESTRUCTURED_LOANS_HOUSING_LOANS = -0.754822206823*LINFLATION - 0.145535014745*LINCOME_GROWTH + 16.4302406129

Testing for Heteroscedasticity:

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	3.001618	Prob. F(2,48)	0.0591
Obs*R-squared	5.669383	Prob. Chi-Square(2)	0.0587
Scaled explained SS	2.573951	Prob. Chi-Square(2)	0.2761

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 12/06/23 Time: 18:39
Sample: 2010Q3 2023Q1
Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.75153	8.692319	2.617429	0.0118
LINFLATION	-2.250383	1.543003	-1.458444	0.1512
LINCOME_GROWTH	2.852364	1.165499	2.447334	0.0181

R-squared	0.111164	Mean dependent var	37.34718
Adjusted R-squared	0.074130	S.D. dependent var	38.18863
S.E. of regression	36.74593	Akaike info criterion	10.10295
Sum squared resid	64812.63	Schwarz criterion	10.21659
Log likelihood	-254.6253	Hannan-Quinn criter.	10.14638
F-statistic	3.001618	Durbin-Watson stat	0.345985
Prob(F-statistic)	0.059117		

H_0: Homoscedasticity/No heteroscedasticity
H_1: There is heteroscedasticity

p=0.06>0.05 – so the null hypothesis of homoscedasticity could be accepted

Testing for autocorrelation of residuals:

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	717.3311	Prob. F(2,46)	0.0000
Obs*R-squared	49.41557	Prob. Chi-Square(2)	0.0000

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 12/06/23 Time: 18:40
Sample: 2010Q3 2023Q1
Included observations: 51
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINFLATION	0.233900	0.071292	3.280866	0.0020
LINCOME GROWTH	-0.056061	0.036649	-1.529662	0.1329
C	-0.168335	0.282042	-0.596845	0.5535
RESID(-1)	1.137845	0.165698	6.866962	0.0000
RESID(-2)	-0.147586	0.173476	-0.850754	0.3993

R-squared	0.968933	Mean dependent var	-5.31E-16
Adjusted R-squared	0.966231	S.D. dependent var	6.172044
S.E. of regression	1.134190	Akaike info criterion	3.182610
Sum squared resid	59.17385	Schwarz criterion	3.372004
Log likelihood	-76.15655	Hannan-Quinn criter.	3.254983
F-statistic	358.6655	Durbin-Watson stat	1.666347
Prob(F-statistic)	0.000000		

H_0: No serial correlation
H_1: There is serial correlation

p=0.000<0,05, so the null hypothesis is rejected and there is serial correlation

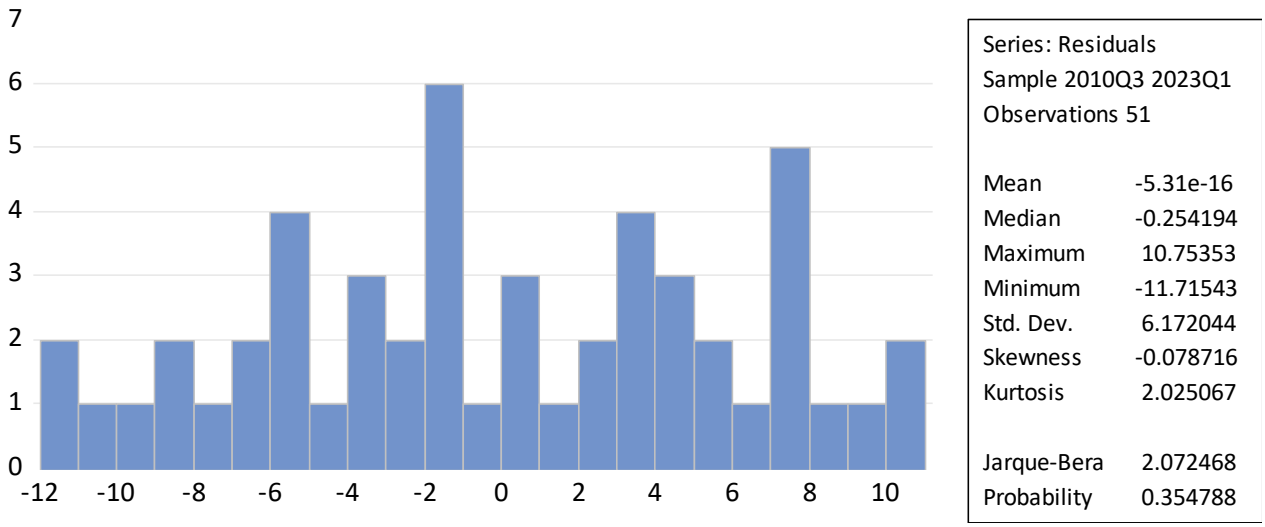
Testing for multcollinearity

Variance Inflation Factors
Date: 12/06/23 Time: 18:42
Sample: 2010Q1 2023Q1
Included observations: 51

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LINFLATION	0.069968	2.078613	1.447575
LINCOME_GROWTH	0.039920	4.112487	1.447575
C	2.220443	2.853797	NA

Centered VIF<10, there is no multicollinearity in the model.

Testing for normality – the Bera-Jarque normality, if the residuals are normally distributed, the Bera-Jarque statistic would not be significant.



H_0: the residuals are normally distributed;
H_1: the residuals are not normally distributed.

The p-value of Jarque-Bera statistic=0.354788>0.05, which means that Jarque-Bera statistic is not significant and we accept H_0: the residuals are normally distributed

Testing whether the linear functional form is correct:

In order to test whether the linear functional form is correct, the Ramsey`s RESET Test is applied.

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: NPLS RESTRUCTURED LOANS HOUSING LOANS LINFLATION LINCOME GROWTH C

	Value	df	Probability
t-statistic	0.622659	47	0.5365
F-statistic	0.387704	(1, 47)	0.5365
Likelihood ratio	0.418975	1	0.5174

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	15.58343	1	15.58343
Restricted SSR	1904.706	48	39.68138
Unrestricted SSR	1889.123	47	40.19410

LR test summary:

	Value
Restricted LogL	-164.6824
Unrestricted LogL	-164.4729

Unrestricted Test Equation:
Dependent Variable: NPLS RESTRUCTURED LOANS HOUSING LOANS
Method: Least Squares
Date: 12/06/23 Time: 18:45
Sample: 2010Q3 2023Q1
Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINFLATION	-0.411156	0.612783	-0.670966	0.5055
LINCOME GROWTH	-0.038261	0.264798	-0.144490	0.8857
C	9.831047	10.70399	0.918447	0.3631
FITTED^2	0.025677	0.041237	0.622659	0.5365

R-squared	0.254994	Mean dependent var	13.38183
Adjusted R-squared	0.207441	S.D. dependent var	7.121398
S.E. of regression	6.339882	Akaike info criterion	6.606782
Sum squared resid	1889.123	Schwarz criterion	6.758298
Log likelihood	-164.4729	Hannan-Quinn criter.	6.664681
F-statistic	5.362252	Durbin-Watson stat	0.061094
Prob(F-statistic)	0.002936		

The p-values of the t-statistic, F-statistic and Likelihood ratio are greater than 0,05, so it can be inferred that the model is free from specification errors.

Appendix 2- Housing loans regression analysis