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THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND FINANCIAL STABILITY BANKING INDUSTRY IN G20 EMERGING MARKET COUNTRIES: A PANEL DATA EVIDENCE[9]

This study aims to identify the effect of the financial inclusion sub-index on financial stability in the banking industry proxied by Bank Z Score. This research uses secondary data in the form of panel data with annual data from 2011 to 2021 and the scope of 5 G20 Emerging Market countries. The analysis technique in this study uses the Fixed Effect Model (FEM). The results showed that the banking penetration dimension had a negative and significant effect, bank availability had a significant positive effect, while bank usage had a positive but not significant effect on banking stability. To achieve better financial inclusion and sustainable banking stability in emerging market countries, collaboration between governments, regulators, financial institutions, and other stakeholders is needed. Effective banking regulation and supervision can be the basis for introducing new financial practices and services that support financial inclusion for all levels of society.
Keywords: Financial Inclusion; Financial Stability; Emerging Market; Banking Industry
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1. Introduction

In the financial world, maintaining financial system stability is a top priority for all countries (Platonova et al., 2018). Past financial crises, such as the global financial crisis of 2008, have revealed how important it is to pay attention to financial system stability as a precaution against widespread and prolonged economic losses (Bordo, Meissner, 2016). Therefore, the management and maintenance of financial system stability has become a major focus in economic policy and financial regulation. Babar et al. (2019) support the idea that financial stability can be achieved through operational efficiency of the financial system, control of financial risks, and efforts to minimize the impact of systemic crises.

Financial inclusion became an important highlight after the 2008 crisis, considering its impact, especially on those at the lowest levels of society and often do not have access to banking, especially in developing countries (Soederberg, 2013). Although various definitions of financial inclusion have been put forward by the authors, it should be noted that there is a close relationship between financial inclusion and financial stability, especially in the face of global economic challenges. Financial inclusion provides opportunities for individuals and businesses to access financial products and services that are not only useful, but also affordable according to their needs, such as transactions, payments, savings, credit, and insurance (World Bank, 2022). In this context, Bank Indonesia (2011) states that financial inclusion includes circumstances where all adults of working age have effective access to credit, savings, payments, and insurance from formal service providers. This understanding is reinforced by Patwardhan's (2018) view, which explains that financial inclusion is not just a means, but as a key to achieving universal access to financial services at affordable prices.

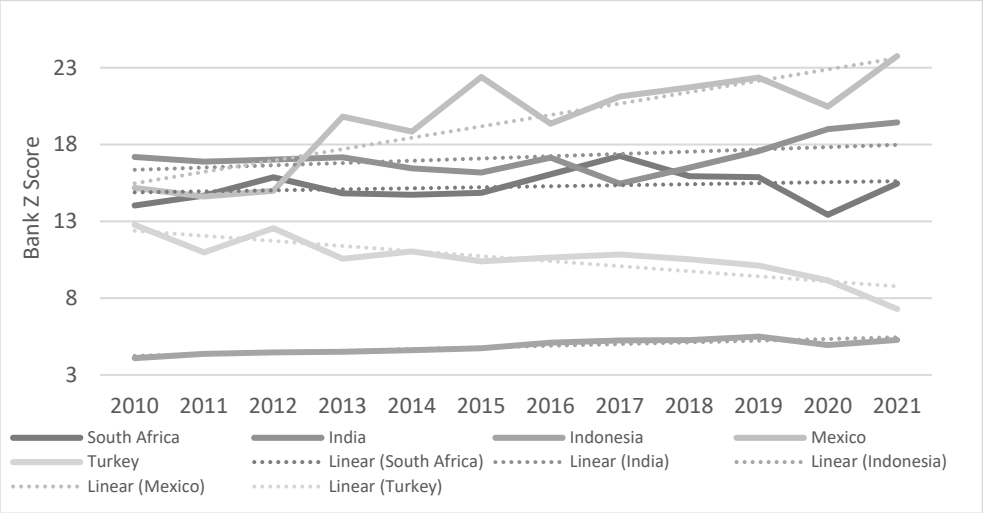
Many emerging market countries have high levels of economic inequality, namely the gap between rich and poor (Nature & Paramatic, 2016). Inequality can affect people's access to and participation in formal financial services (Demir et al., 2022). Financially underserved communities tend to have poorer asset quality and are vulnerable to higher credit risk, which will impact banking stability. Emerging market countries often face challenges in terms of infrastructure and access to technology (Marquis, Raynard, 2015). Technology limitations can also affect banks' ability to manage credit and liquidity risk efficiently (Shair et al., 2021). Emerging market countries are often in complex geopolitical environments and are vulnerable to systemic risks, such as global economic crises or currency fluctuations (Li, Huang, Chen, 2021).

The ongoing COVID-19 crisis has reinforced the need to increase digital financial inclusion. In 2021, additional needs due to the COVID-19 pandemic have increased strong linkages between Emerging Market countries and domestic banks (Feyen et al., 2021). The surge in sovereign debt by domestic banks of Emerging Market countries is a finding revealed in the global financial stability report published by the International Monetary Fund (2022). This phenomenon reflects the significant impact of the pandemic on the financial sector in these countries. In the face of global financial sector weakness and to address the crisis, various organizations and institutions, such as the World Bank, IMF, G20 countries, and the Alliance for Financial Inclusion, have launched initiatives to strengthen the financial inclusion agenda in both developing and developed countries (Čihák, Mare, Melecky, 2016). Global

cooperation within the framework of the G20 has also implemented a financial inclusion action plan since it was agreed in Seoul at the 2010 G20 Summit (Danisman, Tarazi, 2020).

Based on Figure 1, in 2020, most emerging market countries experienced a decline in the value of the Bank Z Score, indicating an increase in the vulnerability of the banking industry to bankruptcy risk (Chiaramonte et al., 2015; Khasawneh, 2016). This is related to the impact of the COVID-19 pandemic that affects the economy as a whole, including declining business performance, declining revenue, as well as increasing credit risk and economic uncertainty. The decline in Bank Z Score reflects significant pressure on the banking industry and indicates potential systemic risks that could disrupt financial stability (Klomp, 2014). However, as we head into 2021, there are signs of recovery and improvement in banking stability in various countries over time. This can be due to policy measures taken by financial and monetary authorities to overcome the negative impact of the pandemic (Elnahass, Trinh, Li, 2021). Among the measures are fiscal and monetary stimulus, liquidity assistance, and regulatory intervention aimed at maintaining the stability of the banking industry.

Figure 1. Bank Z Score (Banking Stability) of G20 Emerging Market Countries



Source: World Bank (2011-2021).

Despite signs of recovery, it should be noted that the situation may vary between different countries and banking sectors in Emerging Market countries. Some countries are experiencing faster recovery and showing more significant improvements in banking stability, while others may still face greater challenges in coping with the impact of the pandemic on their banking industries. Thus, careful monitoring of the stability of the banking industry and an in-depth assessment of the vulnerability of the banking industry amid the COVID-19 pandemic remain important priorities (Siregar, Gunawan, Saputro, 2021).

Some measures in measuring financial inclusion include bank penetration, bank availability bank, and bank usage dimensions. With wider access, more equitable distribution, and active

public participation in formal financial services, credit and liquidity risk can be better managed (Hassan, Khan, Paltrinieri, 2019). Strengthening banking stability can have a positive impact on sustainable economic growth and overall public welfare (Sharma, 2016). Therefore, efforts to improve these three dimensions must be the focus in the design of financial inclusion policies and initiatives to achieve a strong and highly resilient banking system.

In previous studies, it was mentioned that the lack of financial inclusion can potentially lead to ongoing systemic crises (Čihák, et al., 2016). However, the literature also highlights a positive correlation between increased financial inclusion and increased financial stability, especially in the banking sector (Ahamed, Mallick, 2019; Alvi et al., 2020; Anarfo et al., 2019; Wang, Luo, 2022). In addition, increasing the number of domestic savers can help reduce dependence on external sources of funds that tend to be less stable in developing countries (Feghali, et al., 2021).

Although many studies have explored the impact of financial inclusion on banking stability, there is still debate in the literature. For example, Wu et al., (2017) investigated financial stability in developing countries, and Mulyaningsih et al. (2015) examined the effect of financial inclusion in the Indonesian banking industry. Both studies show that financial inclusion can improve banking stability. Mader (2018) argues that broader financial inclusion allows more individuals and businesses to access a variety of financial products and services. In addition, Renn et al., (2022) imply that financial inclusion can reduce systemic risk by distributing financial risk more evenly among various economic stakeholders. However, Vučinić (2020) research indicates the potential negative impact of high financial inclusion on banking stability, such as increased systemic risk or adverse competitive influences.

The importance of discussing and understanding the relationship between financial inclusion and financial stability is the purpose of this study. Further in-depth research is needed to investigate the effect of the financial inclusion subindex on banking system stability in developing countries that are members of the Group of Twenty (G20). In examining the relationship between financial inclusion and financial stability in the banking industries of G20 emerging market countries, this study makes an important contribution to investigating how smart and adaptive banking regulation and supervision supports the introduction of new financial practices and services, and the development of financial inclusion in a sustainable and stable manner in these countries. The choice of the G20 as the focus of research on emerging market countries, even though they have differences in financial systems, can be explained by considering the high diversity of economies and financial systems. This allows research to explore the impact of financial inclusion on financial stability by considering diverse economic contexts. Emerging market countries are major actors in the global economy and have a strategic role in the dynamics of international finance. The novelty of this research lies in the panel data approach used to analyse the relationship between financial inclusion and financial stability in the banking sector of G20 emerging market countries. The use of panel data provides advantages in overcoming endogeneity and heteroscedasticity problems, so that analysis results can be more robust and accurate. Therefore, this research does not only focus on local aspects, but also has implications for global policies and strategies in achieving better financial stability.

The series of structures for this research are as follows. After the introduction in Part 1, the researcher reviews relevant literature and formulates a hypothesis which is explained in Part 2, the data and research methodology are explained, then continued in Part 3, the researcher presents the analysis of variable movements, estimation results and discussion. Section 4 explains the conclusions and recommendations for emerging markets.

2. Research Methods

The data used in this research comes from various sources, including the International Monetary Fund (IMF) and the World Bank. This research focuses on five Emerging Market countries that are members of the G20, with data ranging from 2011 to 2021. The variables used in this study include Bank Z Score, Bank Penetration, Bank Availability, and Bank Usage.

This study uses quantitative analysis techniques using calculation methods with regression estimation techniques of Ordinary Least Square (OLS) panel data in analyzing the effect of financial inclusion on financial system stability. Where the financial inclusion sub-index is used as an independent variable and financial stability as a dependent variable, the functions of this study are formed as follows:

$$\mathbf{BZS} = \mathbf{f(PTT, AVB, USG)} \quad (1)$$

From the above function, a regression equation can be formed for this research model, which is as follows:

$$\mathbf{BZS_{i,t}} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\mathbf{PTT_{i,t}} + \boldsymbol{\beta_2}\mathbf{AVB_{i,t}} + \boldsymbol{\beta_3}\mathbf{USG_{i,t}} + \mathbf{e_{it}} \quad (2)$$

BZS is the dependent variable, β is the coefficient of the independent variable, PTT is banking penetration, AVB is the bank availability dimension, USG is the bank usage dimension, it is time series and cross-section, and e is the error standard.

Table 1. Variable and Data Source Description

Variable	Notation	Variable Description	Formula	Data Sources
Bank Z-Score	BZS	Data Bank Z-Score Data		World Bank
Bank Penetration	PTT	Number of deposit accounts per 1000 adults in a commercial bank	$Di = wi\frac{Ai - mi}{Mi - mi}$	International Monetary Fund (IMF)
Bank Availability	AVB	Number of commercial bank branches per 100,000 adult population		International Monetary Fund (IMF)
Bank Usage	USG	Outstanding loans + Deposits from commercial banks as a percentage of GDP		International Monetary Fund (IMF)

Source: World Bank and International Monetary Fund (IMF), 2023.

Where: Di presents the dimensional value of the financial inclusion indicator, wi is the value weight, Ai is the actual value of the i-th dimension indicator, mi is the lowest value of the i-th dimension and Mi is the highest value of the i-th dimension.

3. Data Trend Analysis

3.1. Trend of Bank Penetration Dimensions in G20 Emerging Market Countries

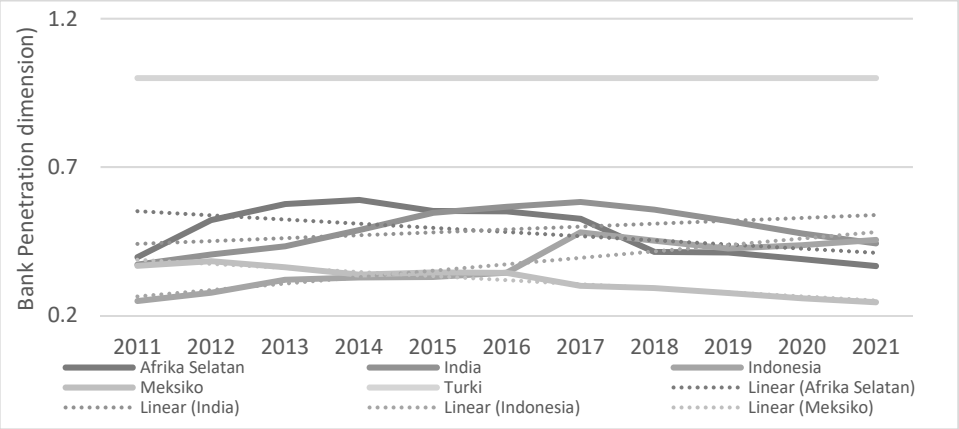
The bank penetration dimension is one of the key aspects in measuring financial inclusion, as banks as formal financial institutions play a central role in providing various financial services to the public (Sharma, 2016). In measuring financial inclusion, the bank penetration dimension includes various indicators such as the number of bank accounts, per capita bank account penetration, and the level of community participation in rural and urban areas. Information on the use of digital banking services also provides insight into the adoption of financial technology by the public, which can be key in increasing financial inclusion in the digital age (Aziz, Naima, 2021). The dimension of bank penetration in India is important given its large population and diverse income levels (Goel, Sharma, 2017). The dimension of bank penetration is also key to overcoming geographical differences in Mexico, Indonesia, and Turkey. High economic inequality in South Africa makes the bank penetration dimension critical in facing these challenges (Tchamyou, Asongu, Odhiambo, 2019).

The downward trend in the movement of bank penetration dimensions occurred in South Africa and Mexico. South Africa faced significant economic challenges during the period 2011-2021, including slow economic growth, high unemployment, and rising inflation (Blecher et al., 2017). Such economic instability can reduce public confidence in the banking industry and hinder participation in banking services (Han, Melecky, 2013). Income inequality can affect people's access to banking services, as most people do not have enough income to open a bank account or use banking products and services (de Haan and Sturm, 2017). The downward trend in bank penetration movements in Mexico was caused by economic instability during 2011-2021, including currency exchange rate fluctuations, high inflation, and fluctuating economic growth (Hsing et al., 2020; Baharumshah et al., 2017). Economic instability can reduce public confidence in the banking industry and cause uncertainty in using banking services.

Based on Figure 2, Turkey has the highest dimension of banking penetration among other countries. Turkey has the highest score with a score of one in the banking penetration dimension, making it the only country to achieve a high category of financial inclusion among the five countries studied. That is, Turkey has succeeded in providing its people with wide access to banking services (Yorulmaz, 2013; Atkinson & Messy, 2014). This success was able to contribute to the improvement of the stability of the Turkish financial system.

The Turkish government has successfully implemented active policies in promoting financial inclusion and increasing public access to banking services. Turkey has also successfully launched programs such as the Financial Literacy and Inclusion Program and Turca-style Microcredit aimed at improving financial literacy and expanding people's access to banking services (Güngen, 2017; Atkinson, 2017). This has enabled new approaches to providing financial services, such as digital banking and electronic payments. The adoption of this technology facilitates people's access to banking services through digital platforms, which in turn increases the penetration rate of banking in Turkey.

Figure 2. Trend of Bank Penetration Dimensions in Five G20 Emerging Market Countries

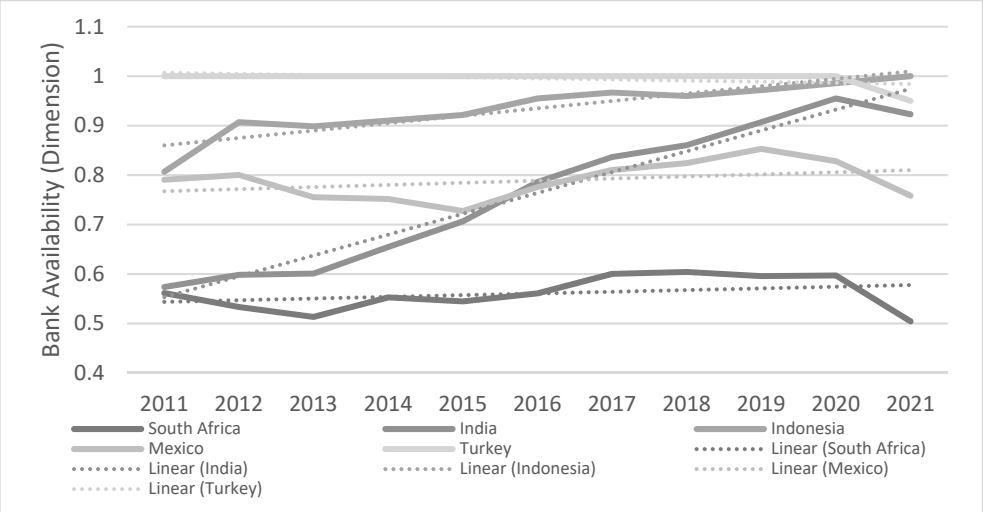


Source: International Monetary Fund (IMF) (2011-2021).

3.2. Trend of Bank Availability Dimensions in G20 Emerging Market Countries

The bank availability dimension is one of the important aspects in measuring financial inclusion, which reflects the level of availability and accessibility of formal financial institutions, especially banks, to the public (Sharma, 2016). The availability of bank branches is a key factor in ensuring public access to formal financial services (Iqbal, Sami, 2017). In Emerging Market countries such as India, Indonesia, and South Africa, bank availability becomes very important due to the large geographical area and diverse levels of settlement (Tang, Yao, 2018). Thus, the dimension of bank availability is an integral component in realizing an inclusive and resilient financial system at the global level. Based on Figure 3, in all countries studied there has been a downward trend since 2020. The COVID-19 pandemic has had a significant impact on the global financial sector, including in emerging market countries (Raza et al., 2022). To control the spread of the virus, many countries implemented lockdown policies and physical restrictions (Hoon, Wang, 2020; Han et al., 2020). This resulted in the temporary closure or reduction of bank branch operations. Lack of direct access to branch offices can hinder the physical availability of banks for the public. In response to physical restrictions, many banks are upgrading and expanding their online and mobile banking services (Kwan et al., 2020).

Figure 1. Trend of Bank Availability Dimensions in Five G20 Emerging Market Countries



Source: International Monetary Fund (IMF) (2011-2021).

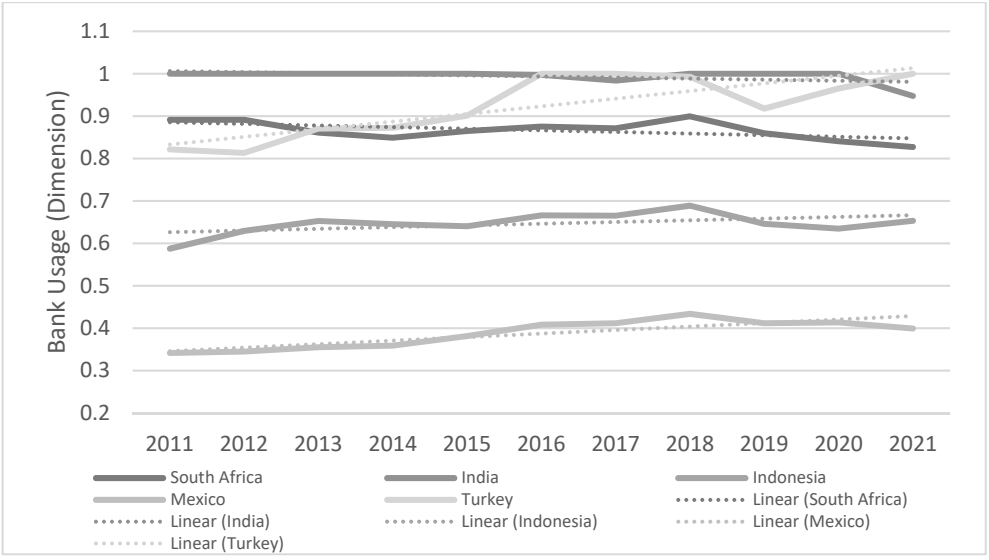
The COVID-19 pandemic has caused uncertainty, making banks reluctant to provide new loans (Didier et al., 2021). Uncertainty about the future of the business as well as economic conditions make banks more cautious in taking credit risk (Chi, Li, 2017). The COVID-19 pandemic has driven instability in global financial markets (Ibrahim, 2020). Volatility and a decrease in asset value make it difficult for banks to obtain the liquidity needed to finance loans (Gornall, Strebulaev, 2018). This decrease in liquidity can affect banks' ability to expand credit and offer a wider range of financial services. In an effort to overcome the economic impact of COVID-19, governments in emerging markets adopted stricter policies and regulations related to the banking industry (Miroslav, Usman, Tariq Sahyouni, 2021).

During this period, the banking industry in India experienced significant growth and expansion. Many private banks as well as state-owned banks, opened new branches in various parts of India (Acharya et al., 2013; Cooper et al., 2007). The Indian government has increased financial inclusion by launching programs such as the Jan Dhan Yojana (Winn, Koker, 2013; Singh, Ghosh, 2021). The program aims to expand access to financial services for the entire population, especially the unbanked. So, there is an increase in the number of bank accounts and an increase in the availability of banking services as a whole. The Indian government has also encouraged the development of banking networks in remote and rural areas. Through programs such as Pradhan Mantri Jan Dhan Yojana, banks are encouraged to open branches as well as ATMs in areas that have not been well served before (Barua, Kathuria, Malik, 2016). It aims to increase the accessibility and availability of banking services.

3.3. Trend of Bank Usage in Five G20 Emerging Market Countries

The Bank Usage Dimension is an important dimension for measuring financial inclusion, reflecting the extent to which people use formal financial services provided by banks (Camara, Tuesta, 2017). The use of banks is an important benchmark in evaluating the extent to which financial services have been adopted and utilized by people to meet their financial needs (Ali et al., 2020). High bank utilization can create diverse sources of funding for banks, encouraging a reduction in the risk of dependence on certain sources of funds (Neaime and Gaysset, 2018). Based on Figure 4, Turkey shows a fluctuating trend in bank usage dimensions with the highest decline occurring in 2019. In the period 2018-2019, Turkey experienced a financial crisis involving the weakening of the currency exchange rate (turkey) and high inflation. This crisis resulted in significant economic instability, making people lose confidence in the banking system and choose to reduce the use of banks. High economic uncertainty can also be a factor in decreasing bank usage. During the period, the unstable economic situation made people hesitant to deposit their money in banks or use banking services. High inflation rates can also affect bank usage. High inflation reduces people's purchasing power and discourages them from keeping money in banks that may not provide enough returns to fight inflation.

Figure 2. Trend of Bank Usage in Five G20 Emerging Market Countries



Source: International Monetary Funds (IMF) (2011-2021).

The downward trend in bank usage occurred in South Africa during the 2011-2021 period. South Africa has one of the highest levels of income inequality in the world (Solt, 2016). This inequality impacts financial accessibility and inclusion for a large part of the population. For some people with low incomes, banking services may be unaffordable or not easily

accessible. This factor can hinder the growth of bank usage among people with weaker economies. In addition to economic and infrastructural factors, changing preferences and adoption of technology also play an important role. Along with the development of fintech and digital financial services, some people in other countries in emerging markets have switched to digital banking services or non-bank alternatives. However, in South Africa, the adoption of this technology has not reached the same level due to the infrastructure and accessibility challenges faced by a large part of the population (Akpan, Udoh, Adebisi, 2022).

India has the highest dimensional level of bank usage (Figure 4). India has launched various strong financial inclusion initiatives and the adoption of innovative financial technologies such as UPI (Unified Payments Interface) and e-wallets has also helped increase the use of banks in India (Sharma, 2018; Gochhwal, 2017). Steady economic growth and increased financial literacy have also contributed to the high level of bank usage in the country. However, in 2020 there was a decline in the trend of bank usage in India. The COVID-19 pandemic caused a significant decline in economic activity in India (Debata, Patnaik, Mishra, 2020). Many businesses face temporary closures or operational reductions, resulting in a decrease in banking transactions related to those businesses.

4. Results and Discussion

4.1. Descriptive Statistics

Statistical descriptions for each of the variables used in this investigation are compiled in Table 2. The variables studied include Bank Z score which was influenced by the financial inclusion sub-index in G20 Emerging Market countries for eleven years from 2011 to 2021. In the table obtained, the mean, median, maximum and minimum values and standard deviation with the sum of all observations is 55.

Table 2. Descriptive Statistics of Five G20 Emerging Market Countries (2011-2021)

	BZS	PTT	AVB	USG
Means	13.55164	0.532512	0.808706	0.763353
Median	14.85629	0.443034	0.828195	0.859631
Maximum	23.75342	1.000000	1.000000	1.000000
Minimum	4.370431	0.244652	0.504340	0.341559
Std. Dev.	5.594071	0.252509	0.167975	0.226216
Observations	55	55	55	55
Cross sections	5	5	5	5

Source: Output EViews 9 (2011-2021).

Financial stability in the banking sector can be reflected by the bank Z score variable which shows how much the level of bank solvency is in facing the crisis. The average Bank Z Score for 11 years in the G20 Emerging Market was 13.55% and the highest Bank Z score occurred in Mexico in 2021 at 23.75%. However, the lowest bank Z score occurred in Indonesia in 2011 with a value of 4.37%.

In this study, all three dimensions of the financial inclusion index (banking penetration, banking availability, and banking usage) were associated with financial inclusion. A comprehensive financial system requires wide consumer penetration. The proportion of individuals who have bank accounts is used to calculate banking penetration. Based on Table 2 it is seen that between 2011 and 2021, the variable of banking penetration in the G20 emerging markets had an average value of 0.53, with Turkey having the highest value of 1 for all annual periods and Mexico having the lowest value of 0.24.

Financial services must be accessible to all residents of the country to be part of an inclusive financial system. So, the dimension of accessibility of bank services, which has an average value of 0.80 and the highest value of 1 in Turkey, is one of the indications used to calculate the financial inclusion index. In 2021, Indonesia will have the highest score, while South Africa will have the lowest score. Furthermore, the average score of 0.76 belongs to the dimension of bank service use with a maximum score of one achieved by India and Turkey while the lowest score is owned by Mexico in 2011 of 0.34. The level of access to banking services is used as an indicator to create the Financial Inclusion Index because some groups of individuals are still unable to take advantage of the availability of financial services.

4.2. Econometric Analysis

In the selection of regression models used in this study, the best model testing was carried out including the Chow test which gave results that the Fixed Effect Model was better than the Common Effect Model or Pooled Least Square seen from a p-value of less than 0.1. Then a Hausman test is carried out which gives a p-value result smaller than 0.1 so that the model chosen from the Hausman test is a fixed effect model better than the random effect model. As an alternative model selection according to determining the method whether Fixed Effect Model or Random Effect Model is better in research can also be seen from, if the number of time series periods is large and the number of cross-section units is small, there will likely be small differences in the estimated parameter values between FEM and REM then choosing FEM or REM depends on convenience, however, FEM models are better to use. Based on this, it is known that the number of time series is 11 years and the cross-section unit used is small as many as 5 countries, so the model used in this study is the Fixed Effect Model (FEM). The fixed effects model has the advantage of including individual fixed effects for each unit in panel data analysis, allows control of variables that do not change over time, overcomes the problem of omitted variables, and provides robustness to constant factors over time, as well as controlling for overall differences between units, so it is effective in identifying the influence of the independent variable on the dependent variable without being influenced by factors that do not change over time.

The results of the estimated model test using the Fixed Effect Model (FEM) are as follows:

$$BZS_{i,t} = 10.16672 - 6.927524PTT_{i,t} + 6.372205AVB_{i,t} + 2.516103USG_{i,t} + e_{i,t} \quad (3)$$

From the equation above, it is known that the results shown are bank penetration seen from the probability of less than α=10% having a negative and significant effect as well as the variable bank availability which has a significant effect with a positive direction seen from

the probability of less than α=10%. In contrast to the variable bank usage which does not have a significant effect on financial stability in the banking sector because the probability is more than α=10%. Then when viewed from the value of the coefficient of determination of 0.93 shows that the three independent variables can describe the effect of bank penetration, bank availability and bank usage on the financial stability of the banking sector by 93% and the remaining 7% explained by other variables. Then looking at the F-statistical probability below α=1% shows that the three independent variables together affect the banking financial sector.

Table 3. Estimated Output

Variable	Coefficient	T-Statistics	Probability
C	10.1667	2.0508	0.0459
PTT	-6.9275	-1.9252	0.0603*
AVB	6.3722	1.9912	0.0523*
USG	2.5161	0.4493	0.6553
R-squared	0.9328		
Prob(F-statistic)	0.0000***		
Chow Test	0.0000		
Hausman Test	0.0000		
Country	Intercept		
SOUTH AFRICA	2.7748		
INDIA	3.0217		
INDONESIA	-10.2576		
MEXICO	5.9928		
TURKEY	-1.5317		

*Note: *, **, and *** indicate significance levels at levels of 10%, 5% and 1%*
Source: Output EViews 9 (2011-2021)

From the intercept value of each country presented in Table 3, South Africa, India and Mexico have positive intercept values, while Indonesia and Turkey have negative intercept values. Positive intercept scores in South Africa, India, and Mexico indicate that when the independent variables (Bank Penetration, Bank Availability, and Bank Usage) have a value of zero (or when there is no influence from the independent variable), then Bank z-scores (banking stability) in these countries have a value higher than zero. This can mean that these countries have naturally quite good basic banking stability, before considering the impact of factors measured by independent variables. The negative intercept values of Indonesia and Turkey indicate that when the independent variable has a value of zero, then banking stability in these countries has a value lower than zero. This can mean that these countries have relatively lower basic banking stability or may face greater challenges in terms of banking stability, without considering the influence of independent variables.

4.3. Bank Penetration Relationship to Banking Stability

The banking penetration has a significant effect with a negative correlation to banking stability. Banking penetration refers to the level of public access and participation in using banking services. The negative correlation between the banking penetration and the stability

of the banking system indicates that the higher the banking penetration, the lower the stability of the banking system. The more individuals or businesses that have access to banking facilities, the more likely there is a demand for credit. This can lead to increased credit risk for banks that have to evaluate and lend to large numbers of debtors. If the quality of credit provided is not properly supervised, the risk of default and deterioration in the quality of bank assets may increase, which in turn reduces the stability of the banking system. With more customers and funds circulating in the banking system, banks may face challenges in managing liquidity. If not managed properly, this increase in liquidity can lead to unstable short-term financing risks. Banks may struggle to meet customer withdrawal requests or face uncontrollable liquidity pressures. A high banking penetration index can also mean that more customers have access to a wide range of financial products and instruments. If a customer's financial education and understanding of the product and associated risks is low, they may be more vulnerable to abuse or inadequate risk-taking. This can lead to increased risk and a deterioration in the asset quality of the bank.

In India, low levels of financial inclusion and limited infrastructure in some rural areas have resulted in a low banking penetration. The negative impacts include an increase in the risk of non-performing loans as many people use informal loans and high-risk sources of funds. This situation can threaten the stability of the banking system and the overall financial health. On the other hand, Indonesia faces challenges in inequality of access to financial services between urban and rural areas. More advanced infrastructure in urban areas supports higher levels of financial inclusion and better banking penetration indexes. However, rural areas that still have limited infrastructure experience a low banking penetration index, which has the potential to create inequality in banking system stability. South Africa, with its more advanced infrastructure and technology, supports higher levels of financial inclusion. However, low levels of financial literacy and economic inequality issues may cause some groups of people to remain financially underserved. This can affect the bank's asset quality and increase credit risk, which impacts the stability of the banking system. Mexico, on the one hand, faces differences in infrastructure and financial inclusion between metropolitan areas and rural areas. More advanced infrastructure in metropolitan areas supports an increase in the banking penetration dimensions, while rural areas may experience limited access. The negative impact that may arise is inequality in the stability of the banking system in various regions. Meanwhile, Turkey enjoys strong economic growth overall, supporting better financial inclusion rates and a higher banking penetration index among other countries. However, Turkey has challenges in managing liquidity risk and regulatory changes that may affect the stability of the banking system in the future. These results are in line with research by Quisumbing et al., (2014); Camara & Tuesta (2017); Ghosh, (2015).

4.4. The Relationship of Bank Availability to Banking Stability

The dimension of bank availability has a positive and significant effect on banking stability. The bank availability dimension refers to the level of presence of banks in a banking system, which can be measured by the number of banks operating or the level of geographical presence of banks in a particular region. The positive and significant correlation between the dimensions of bank availability and banking system stability shows that the higher the level

of bank availability, the higher the stability of the banking system. With more banks operating, the risks faced by the banking system can be more diversified (Meslier, Tacneng, Tarazi, 2014). If a bank is experiencing difficulties or facing certain risks, the presence of other banks can help reduce its overall impact. In other words, risk diversification can help protect the banking system as a whole from vulnerability to external pressures (Dionne, 2013). High bank availability also means that people have better access to banking services. It can promote financial inclusion, where more individuals and businesses can use banking products and services to store and manage their money. With increased access to banking services, people can reduce dependence on the informal financial sector which may be more vulnerable to risk.

The difference in bank availability levels between urban and rural areas is a major challenge in countries like India and Indonesia which have populations spread across different geographical regions. In urban areas, there are more bank branches and ATM machines with better access to technology. Conversely, in rural areas, access to banking services is limited due to long distances between villages, lack of bank branches, and lack of technological facilities. Despite such challenges, Indonesia and India have experienced positive improvements in the Bank Availability Dimension. Some banks have partnered with microfinance institutions (MFIs) to reach communities in rural areas. MFIs have strong networks at the local level and can be a conduit for providing banking services to smaller groups of people. As it did in India, Indonesia has also implemented an inclusive finance program to bring banking services to previously underserved segments of society. These programs include low-cost bank account opening, financial literacy training, and financial assistance for the poor. Banking services through banking applications, e-wallets, and fintech platforms have become an alternative to providing financial services in hard-to-reach areas.

South Africa, as an upper middle-income country, has a relatively developed and diversified banking sector. Strong bank availability in major cities supports wide access to banking services. However, challenges include financial inclusion issues among people with low-income levels and in rural areas. Financial inclusion policy and the development of banking infrastructure in remote areas are priorities to increase bank availability equally. Meanwhile, Mexico, as a middle-income country, faces challenges in addressing regional inequalities in bank availability. Large cities have good access to banking institutions, but rural and remote areas may have limited access. Banking infrastructure in remote areas needs to be improved to achieve better financial inclusion and improve overall banking stability. On the other hand, Turkey, as an upper-middle-income country, tends to have a more advanced level of technological availability and extensive internet connections. This enables the rapid development of digital banking and fintech services, which contributes to the increasing availability of banks nationwide. Nevertheless, currency fluctuations pose a challenge to banking stability in the country. This is in line with research by Akhisar et al. (2015), Alvi et al., (2020) and Villarreal (2017).

4.5. The Relationship of Bank Usage to Banking Stability

A positive but not significant correlation between dimensions of bank usage and banking stability suggests that there is a positively likely relationship between public use of banks and banking system stability, but this relationship is not strong enough to be considered statistically significant. The positive correlation between bank usage and banking system stability can be explained by the presence of several other factors that have a greater influence on banking system stability. For example, factors such as good regulation, strict supervision, appropriate monetary policy, and strong banking governance can have a more significant impact on the stability of the banking system than the level of bank usage. The use of banks by the public can be influenced by behavioural factors as well as individual preferences. It is possible that the high level of use of banks by some people does not necessarily have implications for the stability of the banking system as a whole. Some individuals tend to prefer to use non-bank financial services or have other preferences in managing their finances. In addition, Turkey's highly fluctuating state data and large variations from year to year can cause the influence to be insignificant.

India has the highest bank usage dimension value among other countries. The widespread adoption of banking technology and the growing accessibility of banking services are able to contribute to banking stability. Mexico and Indonesia tend to be stable in their bank usage dimensions, but experience relatively low growth. This means that there are challenges in achieving more significant growth in bank availability and access to banking services for people in these countries. The decline in the dimension of bank usage in South Africa shows the challenges in achieving bank availability and accessibility of banking services for the public. South Africans such as rural areas and low-income communities are numerous, unable to open and maintain bank accounts due to the associated costs and difficulty of meeting requirements. Although the results showed a positive relationship between dimensions of bank usage and banking stability in these five countries, the relationship was not always significant. That is, there are other factors beyond the dimension of bank usage that also affect banking stability, such as aggregate economic conditions, banking regulation, and political stability. These results are in accordance with the findings of Hallam and Ahlem (2022), Feghali et al. (2021), Fabris (2018) and Merhi et al. (2019).

5. Conclusion

Banking penetration is negatively correlated and significantly affects banking stability. This is due to several risk factors that have not been managed properly, including increased credit risk, uncontrolled liquidity risk, and the risk of abuse or inadequate risk-taking by customers. To overcome this, the government needs to adopt policies that can strengthen banking regulation and supervision, as well as improve credit and liquidity risk management. The dimension of bank availability is positively correlated and significantly affects banking stability. This indicates that risk diversification and better financial inclusion can contribute to strengthening banking system stability. Emerging Market countries can achieve this by encouraging the growth of the banking industry, the implementation of financial inclusion programs, the development of banking networks, and the adoption of technology that

facilitates the accessibility of banking services. There is also a positive but not significant correlation between the dimensions of bank usage and the stability of the banking system. This shows that there are other factors that are more dominant in influencing the stability of the banking system, such as regulation, supervision, monetary policy and individual preferences towards financial management. Active financial inclusion policies, digital technology development, and efforts to improve accessibility can increase bank penetration rates.

India experienced a significant increase in the dimension of bank availability due to the growth of the banking sector, financial inclusion programs, banking network development, and several programs that support the enhancement of financial inclusion. On the other hand, Turkey achieved the highest banking penetration rate due to the active adoption of financial inclusion policies, the development of digital technologies, and efforts to improve accessibility. Taking these findings into account, emerging market countries need to design holistic and balanced policies. The importance of effective banking regulation and supervision lies in its role as a solid foundation for introducing innovative financial practices and services that support financial inclusion for all levels of society. Given the different characteristics and challenges in each country, a tailored approach needs to be applied to improve bank availability and accessibility of banking services. The importance of the role of government policies and regulations cannot be overlooked either, as they play a central role in creating an environment that supports the introduction of new financial practices and services. Thus, well-coordinated collaborative efforts between various relevant parties are required to ensure that effective banking regulation and supervision are key drivers for the advancement of financial inclusion and banking stability at the national level.

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Aim and Scope

Economic Studies Journal was founded in 1988 by the Economic Research Institute at the Bulgarian Academy of Sciences. It is the first international economic journal in Bulgaria, referenced and indexed in SCOPUS since 2009. Over the past 15 years, following good international practices and standards, the journal has become an authoritative publication for authors from all continents.

The aim of the journal is to select and publish articles that will have a high impact and significance for the scientific community. It publishes the results of theoretical and empirical research in the field of economic science, practice and policy. It presents new ideas and provides a platform for discussions on contemporary issues relevant to the scientific community and society in Bulgaria and Europe, as well as on a global scale.

The journal publishes articles on issues within the scope of the macroeconomics and microeconomics, international and regional economics, and social-economic policy. Among the priority areas of the journal are:

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- Public Administration and Management
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- Entrepreneurship
- Corporate Social Responsibility
- International Business
- Corporate Governance
- Sustainability and Green Business
- Green Finance
- Financial Markets
- Public Finance
- Behavioural Economics
- International Economics

- Financial Economics
- Economic Policy
- Environmental and Ecological Economics
- Labour Economics

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ИНСТИТУТ ЗА ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ НА БЪЛГАРСКАТА АКАДЕМИЯ НА НАУКИТЕ

ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ

ECONOMIC STUDIES

Volume 33, Issue 6, 2024

CONTENTS

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
ECONOMIC STUDIES

Volume 33(6), 2024

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BULGARIAN ECONOMY IN 2023 – STRUCTURAL CHALLENGES AND MEDIUM-RUN PERSPECTIVES[7]

The paper examines the current state and development of the Bulgarian economy in 2023, considering domestic and regional factors. We analyze the real sector by tracking GDP, inflation, and unemployment, linking these to EU processes. Emphasis is placed on labour market adjustments in the context of digitalization and transitioning to a climate-neutral economy. The sustainability of the fiscal sector is explored through financing the green and digital transition with EU funds, and the necessary policies to maintain fiscal stability. We discuss foreign trade prospects, considering the economic conditions and expectations for Bulgaria's main trading partners, the high dependence on euro area performance, and the specifics of foreign trade relations. The banking sector and the capital market analysis focus on the implications of European Central Bank monetary policy, regulatory actions of the Bulgarian National Bank, and risks to sector stability in a dynamic macroeconomic environment. Expectations and forecasts for the Bulgarian economy through 2026 are based on assumptions about global

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[7] *The paper is an abridged version of the first part "Analysis of Macroeconomic Development in 2023 and Medium-term Projections" of the Annual Report of the Institute of Economic Research at the Bulgarian Academy of Sciences for 2024.*
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economic processes and local challenges. We make economic policy recommendations aimed at preserving the purchasing power of the population's income and restructuring certain fiscal measures.
Keywords: economic dynamics; labour market; digitalization and climate change; fiscal sustainability; foreign trade; banking sector; capital market; macroeconomic projections; economic policy recommendations
JEL: E2; E44; E47; E60

Introduction

The Economic Research Institute at the Bulgarian Academy of Sciences (ERI at BAS) presents its 13th report on Bulgaria's economic performance and policies. The report examines the state and development of the Bulgarian economy in 2023 and projects economic development through 2026.

The paper aims to trace the future development trajectory of Bulgaria's economy by examining macroeconomic development in 2023, outlining the challenges for 2024, forecasting economic dynamics to 2026, assessing economic policies in the context of regional and global trends, and making specific economic policy recommendations. Using a structural macroeconomic model, the report proposes medium-run projections based on external economic dynamics and expected economic governance. It concludes with recommendations to preserve the purchasing power of incomes and restructure fiscal measures to ensure smooth accession to the euro area.

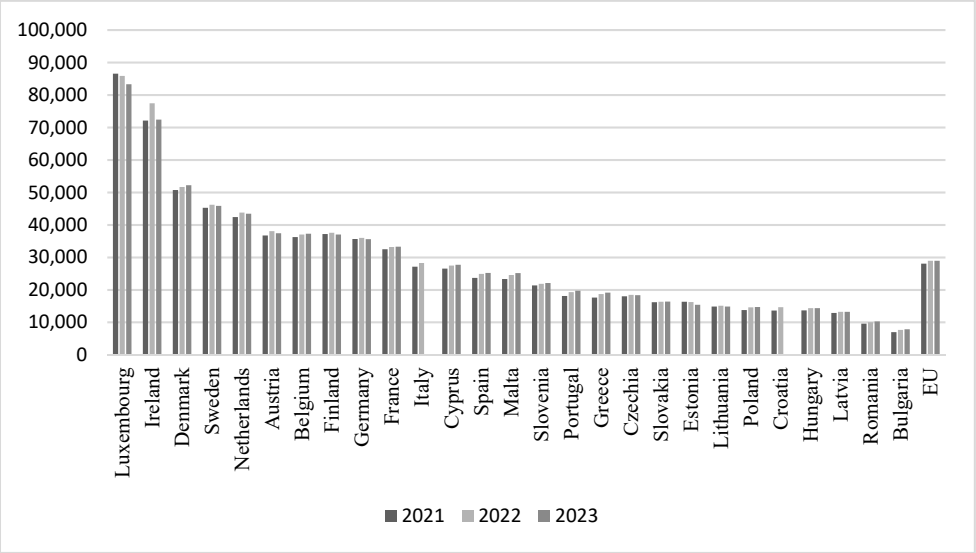
1. Real sector and labour market

1.1. Dynamics of economic activity

In 2023, the GDP at current prices stands at BGN 191.2 billion. The economy grew by 1.8% which is significantly lower than the 3.4% growth rate recorded in 2022. The deceleration of the economic activity is due to the challenging regional and global economic conditions caused by the ongoing Russia-Ukraine military conflict, the broad range of economic sanctions imposed on Russia and Belarus, and escalating geopolitical tensions in the Middle East. One of the main obstacles to Bulgaria's economic growth is the slowdown experienced by its key trading partners, such as Germany and Italy.

Based on chain-linked indices (2010=100), Bulgaria's GDP per capita in 2023 is €7,850 compared to the EU average of €28,940. Therefore, Bulgaria's real per capita income is approximately one-quarter of the EU average (Figure 1). Despite these trends, Raleva (2022) found that Bulgaria's economy has been consistently closing the gap with the average GDP per capita levels in the EU and the euro area based on the convergence in real GDP per capita in 2020-2021, using the purchasing power standard (PPS) indicator.

Figure 1. Real GDP per capita (Euro), (2010 = 100)

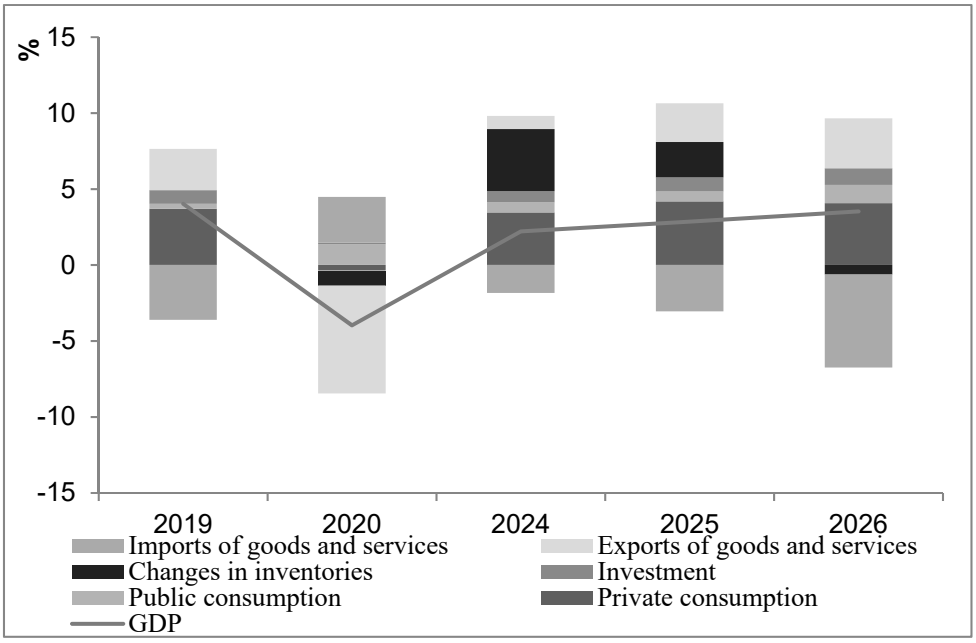


Source: Eurostat.

Among the components of GDP by final expenditure, private consumption made the most significant contribution to the annual growth of real GDP in 2023, increasing by 3% (Figure 2). This growth was primarily driven by higher labour income and various discretionary fiscal measures implemented by the government, such as increased social payments and initiatives to support household disposable income and firm liquidity. Additionally, the growth in consumer credit and the persistence of nearly zero interest rates on household deposits enhanced the propensity to consume. In comparison, public consumption exhibited considerably less growth in 2023. This was primarily due to social transfers in kind, including healthcare costs. Major constraints on public consumption included a decline in intermediate government consumption and a slowdown in public sector wage growth.

Gross fixed capital formation in both the private and public sectors contributed only 0.1% to real GDP growth in 2023. Despite the rise in consumer spending and the availability of credit resources from banks at relatively lower interest rates compared to the euro area, investment activity remained subdued. Potential obstacles to private investment growth included unfavourable external conditions, efforts to enhance productivity in specific industries such as energy, and a reported annual decline in new home sales.

Figure 2. Dynamics of real GDP by final expenditure (%)



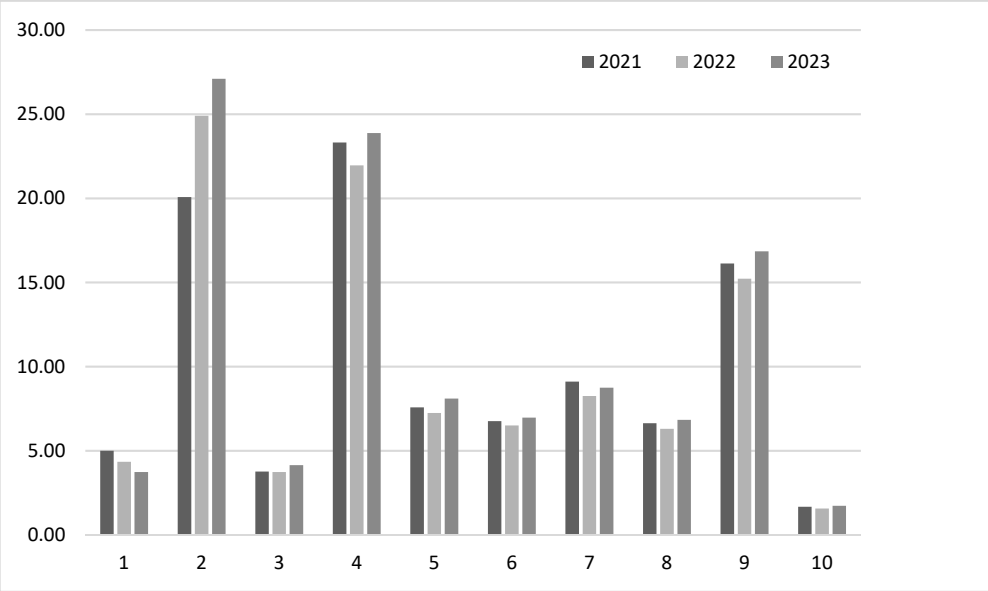
Source: National Statistical Institute.

In 2023, net exports contributed to the annual growth of real GDP by experiencing a smaller decline in the exports of goods and services compared to imports. The slowdown in imports of goods resulted from lower inventories of raw materials, supplies, and finished goods held by businesses since late 2022. This reduction was due to increased efficiency in global supply chains, decreases in the prices of key raw materials in international markets, and reduced uncertainty regarding economic development.

1.2. Economic sector performance and short-run indicators of economic activity

In 2023, the gross value added (GVA) reached BGN 161.2 billion, reflecting a real growth of 1.8%. The share of all economic activities in GDP increased except for agriculture, which experienced a slight decline. The sectors contributing most significantly to the higher GVA in 2023 include industry (excluding construction); trade, transport, hospitality, and catering; government; education; health and social work; and real estate operations (Figure 3). Industry, accounting for approximately 27% of the GVA, saw the largest increase in 2023, driven mainly by higher exports of goods and increased domestic demand. In contrast, the agricultural sector's share in the GVA continued to decline. This trend is due to various constraints on agricultural development in Bulgaria, such as fragmented land ownership, a sluggish restructuring process, and insufficient progress in absorbing EU funds and programs.

Figure 3. Share of economic activities in GVA (%)



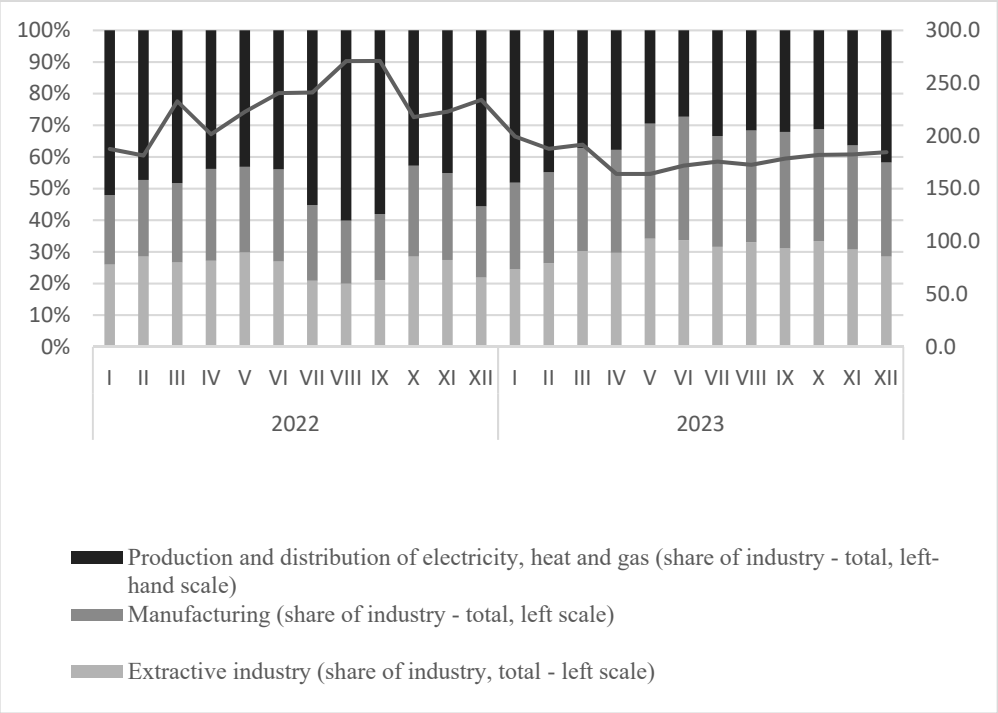
Note: 1 – Agriculture, forestry and fishing; 2 – Industry (excluding Construction); 3 – Construction; 4 – Wholesale and retail trade, transport, accommodation and food service activities; 5 – Information and communication; 6 – Financial and insurance activities; 7 – Real estate activities; 8 – Professional, scientific, technical, administration and support service activities; 9 – Public administration, defence, education, human health and social work activities; 10 – Arts, entertainment and recreation; other activities.

Source: National Statistical Institute, author's calculations.

Seasonally adjusted short-run business statistics indicate that the industrial production index declined in 2023 compared to 2022. This decline is observed across all types of activities, primarily due to the reduced volumes and prices in both international and domestic markets. However, the manufacturing industry remained the largest contributor to the industrial production index. Notably, the production of vehicles (excluding cars) significantly contributed to the growth of the manufacturing industry in 2023, followed closely by the production of computer and communication equipment, and electronic and optical products. This growth was driven by increased domestic demand and exports in various transport industry sectors, higher international transport costs, and ongoing technological advancements in the automotive sector to meet the EU's low-carbon economy requirements.

In 2023 enterprises in electricity, heat energy and gas production and distribution achieved the highest turnovers (Figure 4). This is largely due to the still high prices of energy on international markets, despite a downward trend. Contributing factors include internal processes within the EU and escalating sanctions against Russia and Belarus, which have driven up energy commodity prices worldwide.

Figure 4. Industry structure (left scale) and industrial turnover index – total (right scale)



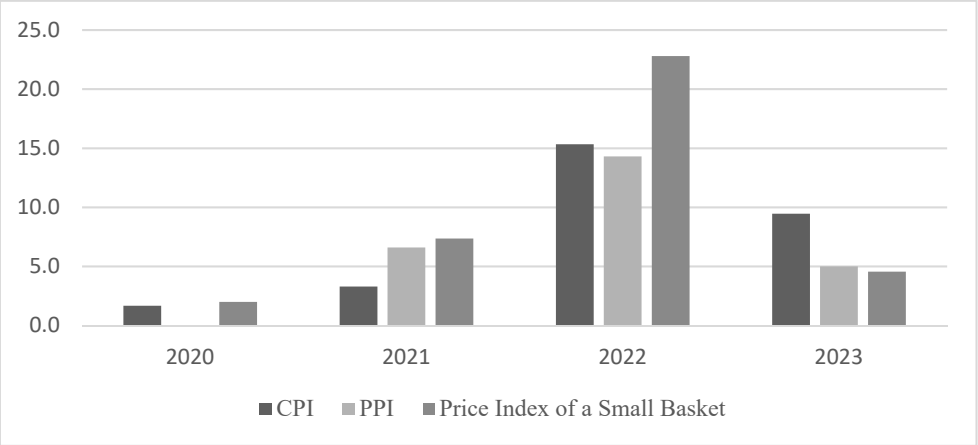
Source: National Statistical Institute.

Data on the general business climate indicator in Bulgaria for the first six months of 2023 show an improvement compared to 2022, with values exceeding their long-term average. The sectors primarily contributing to this positive trend include industry, construction, trade, and services. According to the business surveys of the National Statistical Institute (NSI), significant obstacles hindering corporate activity in 2023 include the uncertain economic environment, intense competition, and labour shortages in key sectors such as healthcare, education, engineering, and the food industry. These sectors are crucial for achieving the green and digital transition.

1.3. Price dynamics

Annual inflation measured by the consumer price index (CPI) decelerated significantly in 2023, reaching 4.7% by the end of the year, down from 16.9% in 2022. Similarly, annual inflation measured by the Harmonized Index of Consumer Prices (HICP) experienced a substantial decline, dropping to 5% at the end of 2023 from 14.3% in 2022. The price index of the small basket also experienced a notable decrease falling from 22.8% in 2022 to 4.6% at the end of 2023 (Figure 5).

Figure 5. Annual rate of change of consumer price indices



Source: National Statistical Institute, author's calculations.

Among the HICP components, passenger air transport, transport-related insurance, and pharmaceuticals were the most significant contributors to the increase in the average inflation. Air transport encounters substantial challenges in both the USA and Europe. The International Air Transport Association attributes these difficulties to disrupted supply chains for aircraft engine spare parts, labour strikes by airline employees, and heightened demand for tourist travel. The most significant price drops in 2023 were observed in prices of key energy sources, raw materials, and agricultural goods on international markets.

Despite the anti-inflationary impact of international factors, such as reductions in energy, raw materials and agricultural prices, along with the European Central Bank's restrictive monetary policy, several domestic macroeconomic factors continued to exert pro-inflationary pressure in 2023. Discretionary fiscal policy measures of lower excise duties and VAT rates on certain energy and food products and compensation to industrial end-users for high electricity prices fueled inflation. Increased social payments, wage hikes in various public sectors, and higher fiscal transfers to households contributed to growth in private consumption, hindering the transmission of downward trends in international raw material prices to final consumer prices in Bulgaria.

1.4. Labor market performance

In 2023, the labour market remains relatively calm despite negative structural changes compared to 2022. The adjustment to low economic growth dynamics is reflected in a relative contraction in employment and a slight increase in unemployment while maintaining the economic activity levels of the population. Additionally, there is an increase in the share of inactive persons who experienced difficulties transitioning to the labour market due to its contraction (Table 1).

Table 1. Labor market indicators

	2019	2020	2021	2022	2023
Employed persons aged 15-64:					
Number (thousands)	3136.3	3024.3	2986.7	2840,7	2821.7
Coefficient (%)	*70.1*	*68.5*	*68.1*	*70.6*	*70.7*
Employed persons aged 20-64:					
Number (thousands)	3121.2	3014.7	2976.8	2830.8	2812.8
Coefficient (%)	*75.0*	*73.4*	*73.2*	*75.9*	*76.3*
Unemployed persons aged 15-64:					
Number (thousands)	140.1	166.1	168.6	124.7	129.7
Coefficient (%)	*4.3*	*5.2*	*5.3*	*4.2*	*4.4*
Share of unemployed persons for 12 months and longer (%)	56.7	45.0	49.4	54.0	52.3
Long-term unemployment rate (%)	*2.4*	*2.3*	*2.6*	*2.2*	*2.3*
Labour force aged 15-64:					
Number (thousands)	3276.4	3190.4	3155.3	2965.4	2951.4
Economic activity rate (%)	*73.2*	*72.2*	*72.0*	*73.7*	*73.9*
Economically inactive persons aged 15-64 (thousands)	1197.7	1226.7	1227.4	1057.0	1041.2
Proportion of economically inactive persons aged 15-64 (%)	*10.2*	*11.3*	*14.0*	*13.1*	*11.9*

Source: National Statistical Institute, Labor Force Survey (LFS).

The number of employed people of working age is declining and continues to depend mainly on those aged 35-64. Despite the increase in the number of unemployed aged 15-64, their unemployment rate remains relatively low compared to the EU-27. The reasons for this decline below 4% include limited demographic resources and the high risk of poverty for the unemployed. Therefore, reducing long-term unemployment and the share of young people neither in employment nor in education and training (NEETs) is imperative.

The structural changes in employment in 2023 are weak. The ageing of the labour force continues, but with positive changes in its structure by educational attainment. The distribution of employees by economic activity and occupation effectively illustrates the links between the labour market and structural economic changes. In 2023, only the share of employees in the industry has increased. The presence of employees in other economic activities decreased, while their share in the service sector remained unchanged. To derive an overall estimate of changes in the distribution of employees by economic activity, an integral coefficient of their structural differences is calculated following Shopova (2018) and Gatev (2007). We find it is negligible – 0.025 – in 2023. In terms of occupation, the highest share of employees was in personal services, trade, and security, followed by professional experts. The coefficient of structural disparity for 2023 was very low at 0.016. Thus, the structural changes in employment by economic activity and occupation are minimal.

Labour demand remains subdued, although employers' needs for qualified labour in some economic activities remain consistently unmet. We expect an intensification of employer demand in the near future, particularly in relation to decarbonization and digitalization.

In 2023, labour cost dynamics remained high. The wages and salaries increased by 14.4% compared to 5.2% for the EU-27. However, Romania (16.3%), Hungary (15.5%), and Croatia (14.5%) experienced even higher growth rates. According to the NSI, the average annual wages of employees grew at an annual rate of 13.7% in 2023, compared to 13.4% in 2022

and 12.3% in 2021. The highest annual wage growth was reported in education (17.8%), followed by construction and transport (15.7% and 14.4%, respectively). Despite these increases, wages in Bulgaria remain the lowest in the EU-27. In 2023, the integral coefficient of structural change was 0.018, indicating insignificant changes in the wage structure compared to 2022.

According to Eurostat, in 2023 the ratio of minimum to average monthly wages in Bulgaria is 38.4%, the lowest among EU Member States. The share (and number) of people with wages below 60% of the national median equivalized disposable income (after social transfers) is increasing. This reduces the importance of wages as a material incentive for employment. Due to the observed disinflation, the real wage dynamics are diverging from nominal wage dynamics in 2023. This trend indicates a lack of effective labour income protection policy, combined with declining labour productivity.

1.5. Adaptation of the labour market in the transition to a climate-neutral economy and digitalization

The restructuring of the Bulgarian economy in line with the requirements of digitalization and efforts to limit climate change and decarbonize production (the so-called greening of the economy) will impact the quantity, quality, and structure of employment. Direct effects will be evident through changes in the number of employees in the environmental goods and services sector (EGSS) and information and communications technology (ICT) sector. We also expect indirect impacts, such as redundancies or job creation in ICT-related and greening activities. Although some academic research (Beleva, 2023; Loukanova & Houbenova, 2024) exists, it remains challenging to determine the cumulative employment effects of greening and digitalization.

In the near term, we anticipate an expansion of employment in the environmental sector, with energy resource management continuing to play a leading role, as well as stabilizing the decline in employment in waste management and limiting the reduction in employment in forest conservation. Additionally, new job creation is expected in activities aimed at improving the energy efficiency of buildings and in renewable energy generation. However, job losses are foreseen due to the restructuring of the Maritsa East power complex.

We also expect the higher share of ICT services employment in Bulgaria to be maintained. A restructuring within the ICT sector is anticipated, with an increase in the share of self-employed professionals working remotely for both Bulgarian and foreign companies. Additionally, changes in the professional composition of ICT workers are expected due to advancements in artificial intelligence.

1.6. Short-run outlook for the real sector and labour market

We foresee the economic activity in Bulgaria to experience an acceleration but remain below its potential due to foreign uncertainties and internal political instability. Economic growth is forecasted to reach pre-pandemic levels on average. Domestic demand will continue to be a significant driver of growth, influenced by increasing wages, modest employment growth,

and still limited credit expansion. Investment activity will primarily be fueled by EU funds and programs, including the Next Generation EU initiative.

Considering current trends, international commodity price dynamics, and Bulgaria's labour market conditions, annual inflation for 2024 is expected to gradually decrease. Factors contributing to this trend include persistently higher unit labour costs and private consumption. Additionally, the government's income policy also contributes to a higher inflation rate compared to the EU average. Meeting the Maastricht criterion for inflation has emerged as the primary challenge for entry into the euro area.

A crucial factor in overcoming the negative changes in the labour market in 2023 is the acceleration of new investments in the real economy, particularly in creating new quality jobs in competitive, high-value-added industries in the field of environmental technologies. This requires extensive greening and digital training of the labour force.

2. Fiscal policy challenges

2.1. The fiscal sustainability in the European context

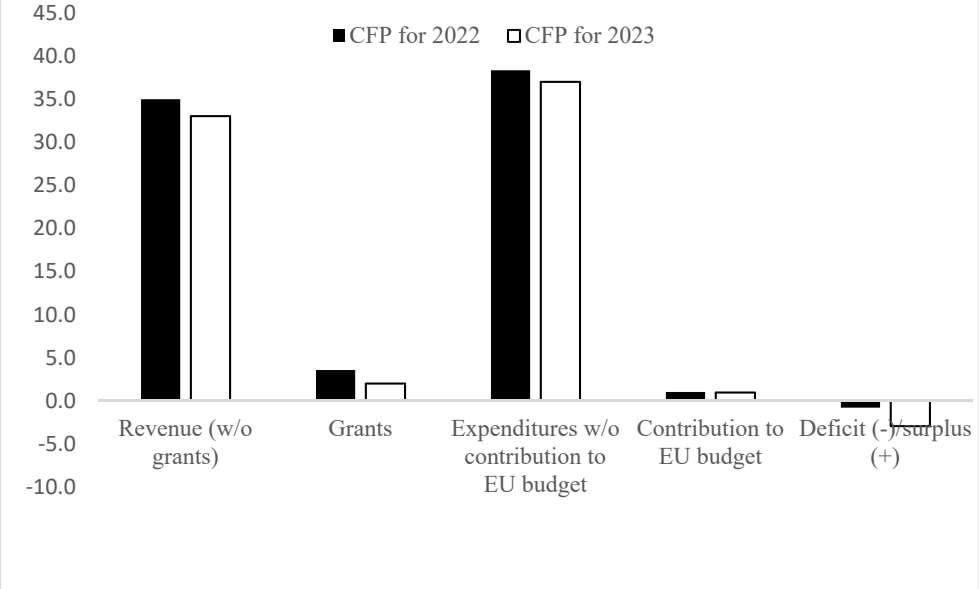
Despite the expansionary fiscal policy and inflationary processes, Bulgaria is not listed by the European Commission among the EU Member States at risk of macroeconomic imbalances. However, it should be highlighted that following the COVID-19 pandemic and given the military conflict between Russia and Ukraine, fiscal consolidation in Bulgaria and other Central and Eastern European (CEE) countries, is occurring at a slower pace than after the 2008 global financial and economic crisis. During the period 2021-2023, Bulgaria together with Croatia, Latvia, and Estonia reported a budget deficit within the reference value of 3% of GDP, while the rest of the CEE countries are still in the excessive deficit procedure.

With a budget deficit of 1.9% of GDP on an accrual basis for 2023, Bulgaria (Figure 6) formally complies with the Maastricht criteria for the fiscal deficit and debt. However, achieving the Maastricht inflation criteria in 2024 appears challenging. The increase in the cash budget deficit compared to 2022 is mainly due to substantial resources allocated for municipal investment projects, reported as expenditure on a cash basis for 2023, which will impact the deficit on an accrual basis for 2024.

In 2023, Bulgaria and Estonia continue to be the EU Member States with the lowest government debt-to-GDP ratio, at 22.4% and 19.2% of GDP respectively (Figure 7). This provides them with fiscal space to counter economic shocks and issue state guarantees related to strategic energy projects and the green transition of state-owned enterprises. As of December 2023, the nominal amount of the central government debt of Bulgaria amounts to 21.6% of the GDP. The debt-to-GDP ratio of the other subsectors of local government and social security funds is 0.8% of GDP for 2023, primarily related to investment projects, including those financed by the EU. Municipal debt poses a potential fiscal risk if beneficiaries fail to comply with the EU requirements and must repay funds under the European projects. The share of external debt of the central government increased by 0.5 percentage points of GDP compared to 2022. Despite the low level of government debt-to-

GDP ratio, the demographic situation with an ageing population and net migration suggests a potential shortening of this fiscal advantage.

Figure 6. Fiscal performance of the Consolidated Fiscal Program for 2022 and 2023 (cash basis, % of GDP)

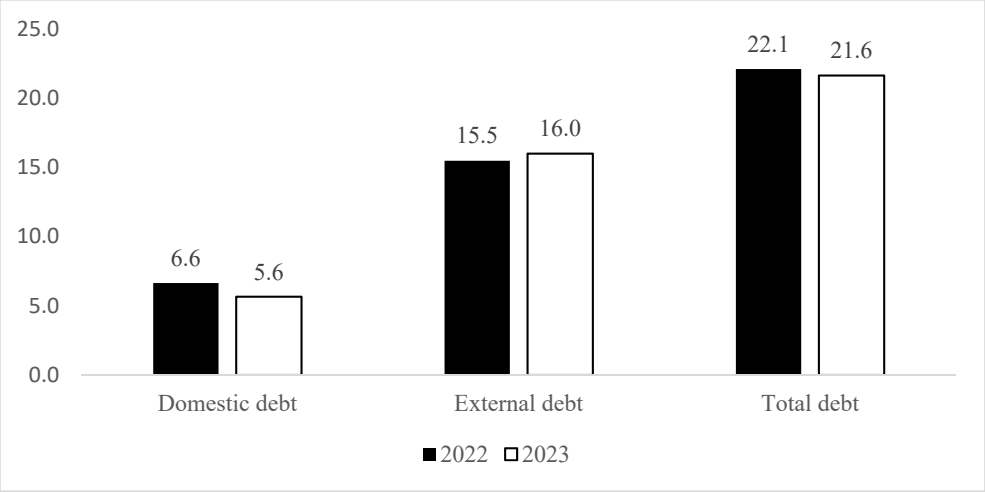


Source: Ministry of Finance, EDP Notification Tables (April 2024).

Government-guaranteed debt is still at a low level of 0.4% of GDP. However, financing strategic projects in the energy sector, achieving higher energy efficiency, and supporting the green transition are expected to significantly increase government-guaranteed debt in the coming years. Projections for 2024 indicate that government-guaranteed debt could rise to 2.3% of GDP, which may lead to an increase in government debt in the event of the guarantees being activated.

Maintaining the fiscal reserve at the mandatory level set by the annual state budget law provides buffers in the event of crises and a liquidity resource when state guarantees are activated. This amount is well above the mandatory level but represents a decrease as a percentage of GDP compared to 2022 when the first tranche from the Recovery and Resilience Mechanism was received.

Figure 7. Debt of Central Government sector for 2022 and 2023 by sources of financing (% of GDP)



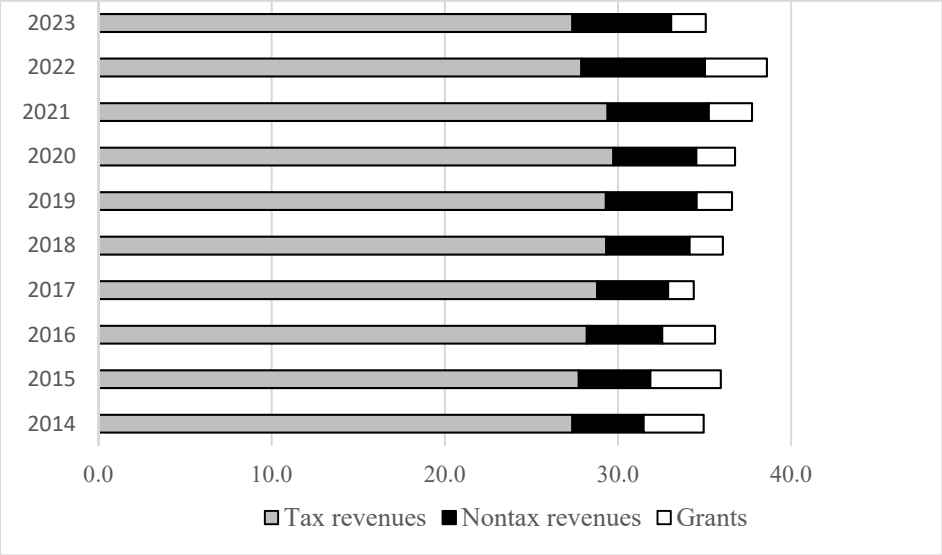
Source: Ministry of Finance.

Negotiations for the Partnership Agreement and the National Recovery and Resilience Plan's (NRRP) projects are ongoing. However, the implementation and payment of NRRP projects by the Recovery and Resilience Mechanism are expected to be delayed. This poses a fiscal risk, as projects not completed by the end of 2026 will require national funding. Although budgeted for 2023, the second tranche is expected in 2024, due to delays in the first milestones and targets. Despite reform in the management of state-owned enterprises and improved transparency of public procurement, the 2022 OECD report for Bulgaria points to the need to create a more modern platform to promote investment.

2.2. Budget revenues and tax policy

In 2023, budget revenues increased by 3.5% on an annual basis, but decreased by 2.1 percentage points as a ratio to GDP compared to 2022, amounting to 36.5% of GDP (Figure 8). The significant change in the revenue-to-GDP ratio was mainly due to less revenue from the European funds in 2023. The delayed second tranche from the Recovery and Resilience Mechanism affected the reduction in grant revenue. An additional negative effect resulted from the reduction of nontax revenues primarily due to the abolition of the duty to end-users of electricity charges on the free market and energy producers and suppliers. This charge was partially offset by the new tax on energy suppliers' windfall profits introduced in accordance with Regulation (EU) 2022/1854. In 2023, tax revenues were slightly below the level of 2022 as a ratio to GDP, and the planned indirect taxes of about BGN 2.4 billion were not realized. The income policy aimed at compensating for the declining purchasing power of households as a result of inflation and gradually reaching the average European levels led to an increase in the share of direct taxes in the structure of tax revenues.

Figure 8. Budget revenues for the period 2014-2023 (% of GDP)



Source: Ministry of Finance.

In July 2022, the European Council recommended that Bulgaria take action to ensure that in 2023 the growth of nationally financed current expenditure would align with the neutral policy stance. As a result, in 2023 current expenditures were reduced by 1.5 percentage points of GDP compared to 2022, thereby formally complying with the recommendation. However, in order to also achieve a reduction in current expenditures in the medium run, the efficiency of public spending should become a priority, which will allow long-term needs to be met within the planned fiscal trajectory.

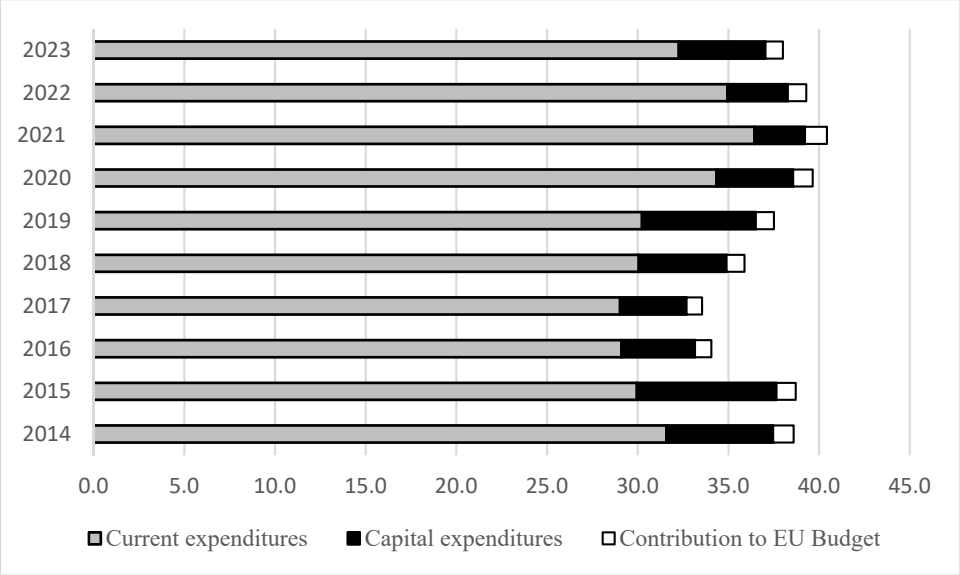
2.3. Government expenditures and fiscal policy

In 2023, the total budgetary expenditure under the Consolidated Fiscal Program (CFP) was about 39% of GDP (Figure 9). The elimination of subsidies for compensating domestic and non-domestic final customers of electricity reduced subsidies to the non-budgetary sector by 3% of GDP, from 6.2% in 2022 to 3.2% in 2023. Meanwhile, the implementation of investment projects with European funding increased to 4.8% of GDP, up from 3.2% in 2022. This increase was anticipated, given that 2023 was the final year for payments under the 2014-2020 program period.

Over the years, expenditures by functions remain relatively constant as a percentage of GDP, with education and health at around 4% and 5% of GDP, respectively. However, the low educational results measured by the OECD Program for International Student Assessment (PISA) indicate a need for serious structural reforms of educational programs. This includes ensuring lifelong learning, as well as continuous improvement of the qualifications of

teachers in secondary education, who are the main driver of changes in the quality of knowledge and the qualification of the future labour force.

Figure 9. Budget expenditures in 2014-2023 (% of GDP)



Source: Ministry of Finance.

The primary reason for the growth of current expenditure as a ratio to GDP in recent years has been the anti-crisis fiscal measures to support households and businesses in coping with the consequences of the COVID-19 pandemic. The cancellation of one-time fiscal measures for households and subsidies led to a reduction in current expenditure by 2 percentage points of GDP. However, the persistent upward trend in public social spending as a ratio of GDP, driven by an ageing population and ongoing net migration, poses a major risk to the labour market and, consequently, to the fiscal position in the medium term.

Capital spending increased to 4.8% of GDP in 2023 (from 3.3% of GDP in 2022). These capital expenditures have been crucial for the green transition, the improvement of infrastructure and trans-European connectivity, and modernizing educational and social infrastructure. In 2023, the anticipated acceleration of European investment projects for the EU program period 2014-2020 has been justified, resulting in a roughly 60% annual increase in capital expenditure. Part of the final payments for European projects from the 2014-2020 program period were refinanced with national funds in 2023, pending the final audit by the European Commission.

The recovery of the European funds improves the fiscal space, but it is primarily an advocacy process for European funding, which has no impact on the budget balance according to the EU methodology.

2.4. Fiscal policy outlook in the short run

Fiscal space to address long-term education, social and investment needs imply improving spending efficiency and reviewing taxation to increase the fairness of the tax system and have a greater impact on inequality. Restoring uniform VAT rates for restaurants, gyms and tour operators is expected to create a level playing field for businesses and increase tax revenues, enabling new spending policies to be pursued. Continuous reviews of the structure of public spending and an increase in public investment at the expense of current spending are expected to provide a fiscal stimulus to economic growth in the medium run. Opportunities for gradual fiscal consolidation are emerging. Maintaining fiscal buffers under an uncertain external environment will require fiscal prudence.

The Next Generation EU funds are expected to provide investments in renewable energy, energy efficiency and digitalization of the economy. This will reduce the carbon footprint and improve the efficiency of public services. By prioritizing sustainable and growth-enhancing investments to meet the 2030 Digital Transition priorities, the introduction of digital public services will be facilitated. This will reduce direct contact with tax administration, thereby improving the efficiency of public administration and optimizing its size.

3. External economic environment and external sector

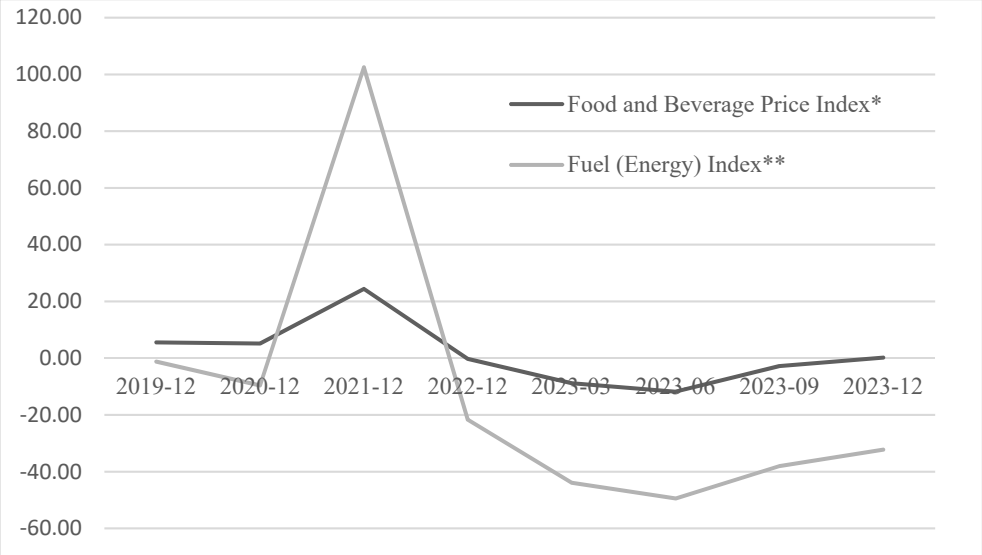
3.1. Global trade and price dynamics

In 2023, world trade in goods declined by 5% primarily due to weaker domestic demand in the advanced economies as a result of tighter financing conditions by central banks, disinflation, and ongoing constraints in global supply chains from the post-COVID-19 period. The global trade in services rose by 8%, with a significant increase in tourism, reflecting the still high savings accumulated under the COVID-19 period and higher prices. Although the COVID-19 anti-epidemic measures were fully lifted, the Middle East military conflict and trade difficulties in the Red Sea and the Suez Canal caused higher shipping prices and longer transportation periods. These issues significantly impeded trade between China and Europe, leading to a fragmentation of world trade in combination with weaker trade growth in East Asia and Latin America and signs of deglobalization exacerbated by the COVID-19 pandemic.

In 2023, global inflation slowed to 6.4%, with the EU experiencing a rate of 3.4% and the euro area of 2.9%. According to the International Monetary Fund, the average annual decline in the global energy price index was 32% in 2023 and the food price index saw an average annual decline of 5%, following the easing of supply constraints (Figure 10). Therefore, the core inflation (excluding food and energy prices) declined, partially offsetting the still higher contribution of service prices to headline inflation in developed countries. Another key factor for disinflation was the contraction of domestic demand as a result of tighter macroeconomic policies. The gradual reduction of fiscal support implemented during the COVID-19 pandemic in the EU and the euro area contributed to lowering inflation. Tighter financing conditions in the euro area squeezed consumption and investment, further reducing inflation.

Additionally, the EU Green Deal initiatives, which effectively add taxation to economic activity, constrained domestic demand and output. In contrast, the macroeconomic policy strategy in the USA focused more on stimulating the long-term drivers of economic growth. This difference in policy approach reflects the varied methods countries have adopted to manage inflation and promote economic stability.

Figure 10. Annual change in food and energy price indices (%)

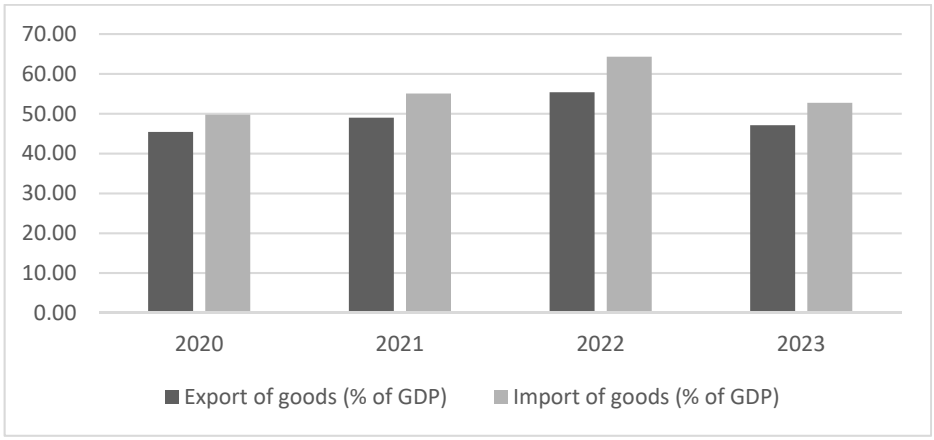


* Food and Beverage Price Index, 2016 = 100, includes Food and Beverage Price Indices.
** Fuel (Energy) Index, 2016 = 100, includes Crude oil (petroleum), Natural Gas, Coal Price, and Propane Indices.
Source: International Monetary Fund.

3.2. Bulgarian foreign trade in goods

In 2023, Bulgaria's exports of goods declined by 6.9%, while imports of goods fell by 10.2% on an annual basis. The trade balance remained negative at -5.6% of GDP, roughly the same as it was in 2020 and 2021 (Figure 11). In the structure of exports by commodity group, the dominance of machinery, equipment and vehicles became more evident, accounting for 11.2% of GDP in 2023 with an annual growth of 9.1%. Additionally, the share of exports of manufactured goods classified chiefly by material (precious and non-ferrous metals, textiles, paper, rubber, leather, etc.), remained relatively stable at 9.4% of GDP in 2023. This process illustrates the still volatile adjustment of Bulgarian exports to higher-tech production and foreign trade in investment goods. Bulgarian foreign trade remains strongly dependent on raw materials, energy resources and military goods, making it susceptible to fluctuations in global markets and international relations. This dependency serves as a direct channel for cyclical fluctuations to impact Bulgaria's highly trade-open economy.

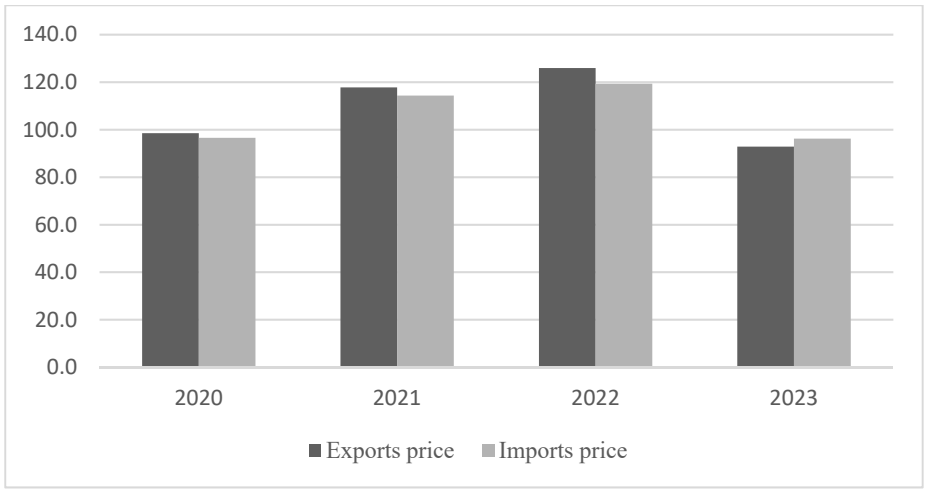
Figure 11. Foreign trade in goods in 2020-2023 (% of GDP)



Source: National Statistical Institute.

In 2023, there was a larger annual decline in the export price index (-26%) compared to the import price index (-19%) (Figure 12). Despite the overall deterioration in the terms of trade, the terms of trade for investment and industrial goods improved noticeably in 2023, which is a favourable indicator for the technological restructuring of Bulgarian exports.

Figure 12. Price indices for exports and imports of goods in 2020-2023



Source: National Statistical Institute.

Bulgaria's main trade partners in the export of goods are Germany, Romania, Italy, Greece and Turkey – together accounting for approximately 40% of total exports of goods in 2023 (19.5% of GDP). A similar concentration is observed in the import of goods. This high

concentration of exports of goods to EU Member States and the lack of significant trade diversification to other countries make Bulgarian exports highly dependent on the economic conditions in these countries and predetermine the high share of foreign value added in the exports.

The comparative advantages in trade with Germany, Romania, Italy, Greece and Turkey can be traced through the export-import coverage ratio, which measures the ratio between exports and imports from a given trading partner by commodity group (Table 2).

Table 2. Export-import coverage ratio in 2023 by commodity group and main trading partner (%)

Trade partner / Commodity group	Germany	Romania	Italy	Greece	Turkey
Total	***98.05***	***121.13***	***95.19***	***112.49***	***63.17***
Food and live animals	62.99	135.26	82.44	170.08	136.32
Beverages and tobacco	22.76	33.39	19.06	28.67	34.62
Crude materials, inedible, except fuels	906.91	33.01	46.13	83.40	72.91
Mineral fuels, lubricants and related materials	22.15	120.29	127.42	16.96	27.16
Animal and vegetable oils, fats and waxes	69.73	22.85	923.33	229.37	544.32
Chemicals and related products, n.e.s.	35.20	193.39	76.13	93.12	49.02
Manufactured goods are classified chiefly by material	129.80	162.88	154.48	130.68	52.80
Machinery and transport equipment	85.00	109.47	48.77	103.73	83.57
Miscellaneous manufactured articles	140.37	150.54	149.78	165.48	30.22
Commodities and transactions not classified elsewhere in the SITC	15.98	0.20	1697.78	20.13	143.92

Source: Eurostat, author's calculations.

The most balanced trade is achieved with Germany and Italy, where the export-import coverage ratio is close to 100%. Substantial export trade advantages with Germany are observed for crude materials whose prices fell in 2023 due to shrinking domestic demand and economic stagnation. On the import side, there is a significant imbalance in bilateral trade (higher imports relative to exports) in beverages and tobacco, as well as in mineral fuels, lubricants and related materials, where prices halved in 2023.

Imports of machinery, transport equipment and crude materials from Italy are higher than their exports. Bulgarian companies have an advantage in exports to Italy in animal and vegetable oils, fats and waxes (whose prices decline by 62% in 2023), as well as in household goods, clothing and medical equipment. The export potential in textiles is based on the Italian investments in small and medium enterprises with low-tech production and a low-qualified labour force made during Bulgaria's transition to market economy.

Bulgaria has advantages over all its main trading partners except Turkey only in miscellaneous manufactured articles (furniture, furnishings, clothing, footwear, travel goods, medical appliances and devices). The prevalence of imports over exports in the case of Turkey is clearly visible in almost all commodity groups due to the depreciation of the Turkish lira. Bulgaria has export advantages in trade with animal and vegetable oils, fats and waxes, as well as food and live animals, driven by high domestic demand in Turkey amid very high inflation (65% in December 2023).

In 2023, Bulgaria realized most trade advantages in exports of goods with Romania. The significant potential in exports to Romania is a result of strong domestic demand and investment activity in recent years (according to Eurostat, Romania ranked second in the EU in economic growth in the third quarter of 2023). Romania is increasingly establishing itself as Bulgaria's leading foreign trade partner within the EU. Given the economic turmoil in the euro area and Germany in particular, Bulgarian exports of goods can be redirected to the Romanian market. Exports to Romania are steadily replacing the Greek market as a preferred destination for Bulgarian firms, which is a direct consequence of the accelerated growth rates of the Romanian economy and the shrinking purchasing power in Greece following the euro area debt crisis in 2012. Relative trade advantages for Bulgarian exports to Greece are realized in agricultural products. Exports of machinery and transport equipment to both Romania and Greece exceed imports.

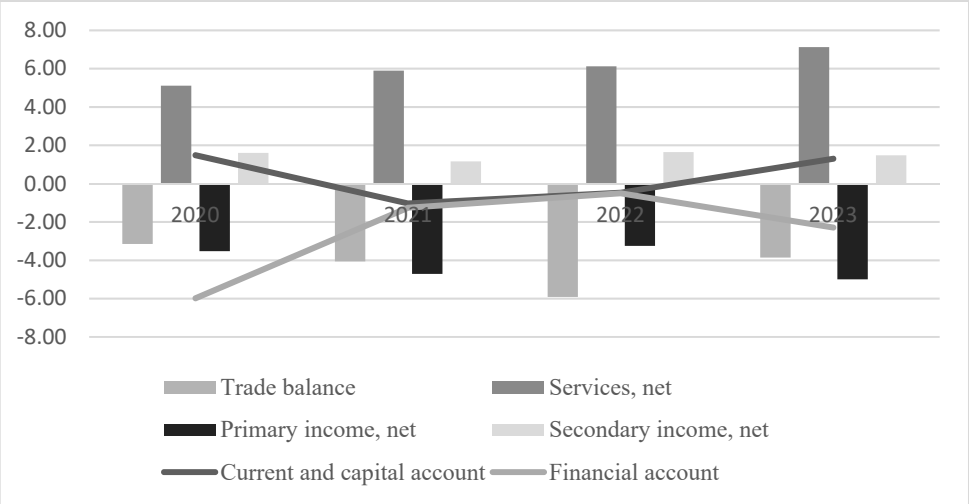
When comparing Bulgarian export profile to other EU Member States, Bulgaria is closely followed by Latvia, Lithuania, Estonia, and Croatia. In terms of exports of food and crude materials, Bulgaria ranks closest to Slovakia, and closest to Latvia and Greece in trade with mineral fuels and chemicals. The exports of investment goods bring Bulgaria closer to Slovenia and even Ireland, whose GDP per capita in PPP terms is more than 3.5 times higher than Bulgaria’s in 2023. Bulgaria's foreign trade profile in 2023 resembles that of countries with much higher purchasing power and an accelerated rate of convergence towards the euro area which is a prerequisite for a smooth trade integration when joining the currency union.

Despite the strong orientation of Bulgarian exports towards the EU, opportunities for diversification should not be neglected. In 2022, exports of food and live animals to Algeria increase 21-fold, accounting for 8% of total exports in this commodity group in 2023. Exports of beverages and tobacco to Egypt and Morocco increase steadily in 2022 and 2023, tripling in the 4 years between 2020 and 2023. A similar trend can be observed for exports of mineral fuels, lubricants and related materials to Egypt, which increased 10-fold over the same four-year period and accounted for 15% of Bulgaria's total exports in this commodity group.

3.3. Balance of payments and trade flows

In 2023, the current and capital account balance improved relative to 2022, reaching 0.66% of GDP (Figure 13). The main contributor to this improvement is the positive balance of the services. Exports of services reached 15% of GDP in 2023 as a result of rising domestic demand in main trading partners, higher price dynamics, the lifting of the COVID-19 restrictions and a stronger use of accumulated household savings. In the structure of services exports in 2023, telecommunications, computer and information services account for approximately 1/4, followed by tourism (4% of GDP) and transport services (2.6% of GDP). Among business services, consulting, technical and trade-related services emerged as the most important. This underscores the increasing importance of the outsourcing sector for the economy of Bulgaria.

Figure 13. Key balance of payments indicators in 2020-2023 (% of GDP)



Source: Bulgarian National Bank.

In 2023, significant deterioration was recorded in the net primary income, primarily due to the higher outflow of foreign direct investment (FDI) income, amounting to BGN 12.7 billion (6.9% of GDP), which is an extremely unfavourable trend that is worsening. The persistent inability to create sufficiently good conditions for the reinvestment of profits from direct investments in Bulgaria does not allow for restructuring and the widespread adoption of digital technologies in the production process. The negative balance of the financial account deepened to -2.3% of GDP following higher FDI inflows (4.3% of GDP), a decrease in residents' currency and deposits abroad by BGN 4.1 billion, and portfolio investment abroad exceeding 3.2% of GDP.

3.4. Prospects for the development of foreign trade in 2024 and in the medium term

The dynamics of Bulgarian exports in 2024 are expected to be influenced by divergent factors. The economic recession and stagnation in Germany are likely to have a significant impact on Bulgaria's foreign trade flows. However, Romania has become increasingly important as a trading partner. Given the declining importance of the Italian and Greek markets for Bulgarian exports and the persistence of high inflation in Turkey, a more limited effect on Bulgaria's foreign trade is expected from the economic situation in these countries.

The deteriorating terms of trade due to the disinflation and global trade fragmentation, along with the still dominant share of lower value-added goods in the export structure, are factors that will limit growth in 2024. The export ban on oil and petroleum products produced from Russian oil to countries other than Ukraine adversely impacts both foreign trade and customs duty revenues to the government budget. Given that around 6% of Bulgaria's exports consist of petroleum oils and products, this ban poses a significant challenge.

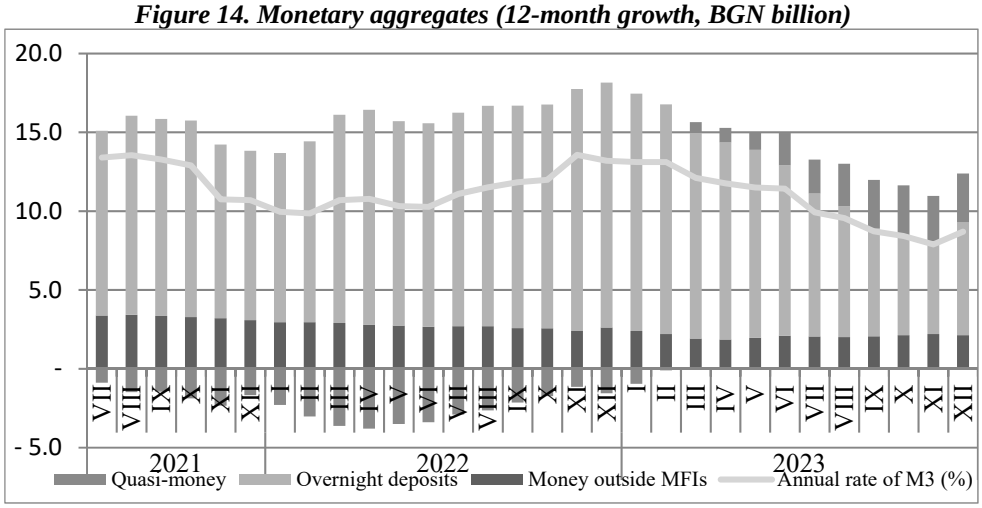
4. Banking sector and capital market

4.1. Dynamics of monetary aggregates

The dynamics of the money supply visibly slowed down, with the reported growth of overnight deposits for December 2023 on an annual basis being half of the previous year's rate, reaching BGN 7.2 billion (Figure 14). This slowdown is due to the gradual downsizing of the anti-inflationary fiscal measures and the slowing growth of the funds from non-financial enterprises. Corporate deposit growth, particularly in the first half of 2023, also slowed due to decreased nominal turnover in retail trade and a contraction in the industrial sector. The most significant decrease in deposits in the first six months of 2023 was observed in sectors most directly affected by sanctions against Russia – transport and trade. This indicates that the main reason for the limited supply of corporate deposits is the disrupted rhythmicity of income and the need to compensate for the resulting shortfall with own funds in order to ensure business continuity.

Broad money (monetary aggregate M3) continues to grow, but since the beginning of 2023, its annual rate has steadily slowed. Both firms and households continue to save mostly in local currency. Since the second half of 2021, quasi-money started to rise again after the end of the first quarter of 2023 as a result of the gradual recovery of interest rates on deposits.

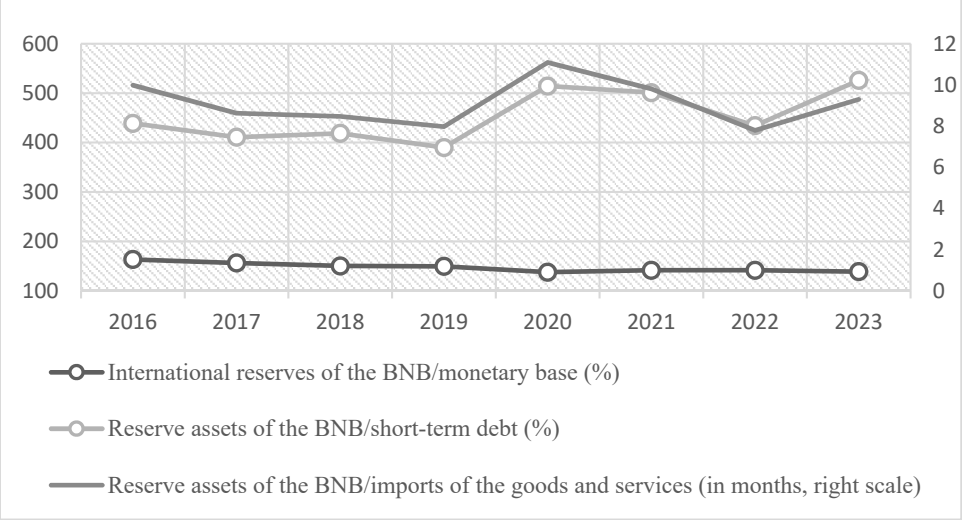
Figure 14. Monetary aggregates (12-month growth, BGN billion)



Source: Bulgarian National Bank, author's calculations.

The market value of the BNB's international reserves reached BGN 81.99 billion at the end of 2023, increasing by BGN 6.85 billion compared to 2022 (Figure 15). This increase was primarily due to the rise in the balance sheet value of the government securities (by BGN 27.99 billion). This gain was partially offset by the decrease in cash and deposits provided in foreign currency, which fell by BGN 21.58 billion. Insignificant increases were registered in the remaining components of international currency reserves (monetary gold and special drawing rights).

Figure 15. Key Indicators for the Currency Board Arrangements



Source: Bulgarian National Bank, author's calculations.

The total growth of the BNB's international reserves significantly compensates for the growth of the monetary base, resulting in their ratio remaining almost unchanged (138.81% for 2023 versus 141.63% for 2022). The lagging growth in imports of goods and services, as well as short-term debt, has led to an improvement in the ratio between them. However, maintaining this ratio unchanged in 2024 will be challenging due to reduced investor confidence and a slowdown in domestic manufacturing.

4.2. Banking sector performance

In 2023, the banking sector operated in a volatile environment, primarily driven by the disruption and rerouting of some logistics chains as a result of sanctions, imposed on Russia and Belarus in response to the military conflict between Russia and Ukraine. The transmission of effects from the ECB's monetary policy led to a slowdown in inflationary processes, although with a certain delay due to the inherent time lag. The rise of interest rates led to some cooling of lending to non-financial enterprises.

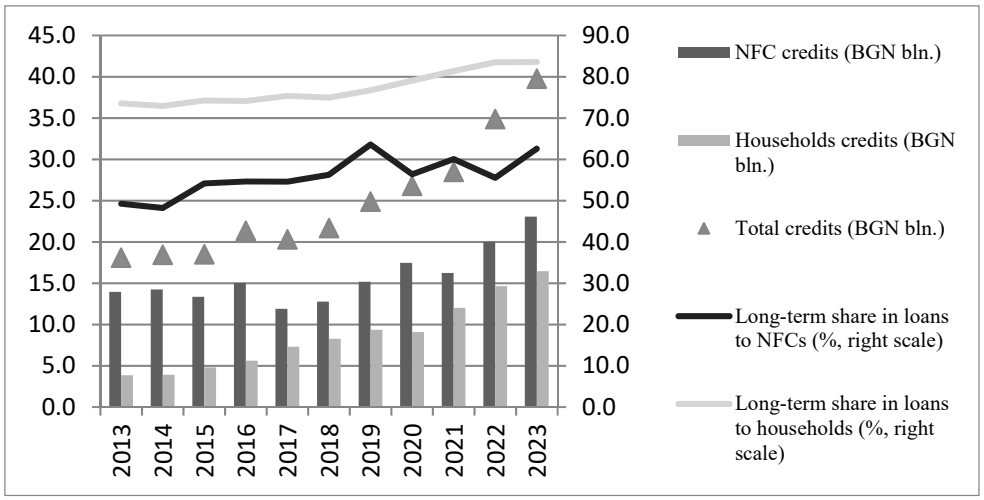
The banking system is adapting to the changing conditions and with automatically increasing interest rates on loans, gross interest income increased by 62% on an annual basis, while gross loans grew by only 13.1%. Gross bank revenues from fees and commissions rose by 5.9%, reaching BGN 1,862 billion in 2023. Combined with the increased net interest margin, this led to a record profit for the banking sector, amounting to BGN 3,417 billion after taxes, which is by 65.9% more than in 2022. Despite serious challenges in the economic and regulatory environment, Bulgarian banks remain sustainable and profitable, maintaining high levels of liquidity and capital buffers.

In addition to the continued profit increase, significant trends in 2023 include the digitization of banking products and services, as well as the initial phase of introducing new requirements for the disclosure of information on climate change, announced in March 2023 by the European Central Bank and the European supervisory authorities.

Bank concentration continued to increase, as it has throughout the entire period since the start of the COVID-19 pandemic. In 2023 alone, the share of the five largest banks increases from 67.2 to 76.8% as a result of the merger between UBB and KBC Bank Bulgaria. Regarding digitization and transformation of banking services, customer migration remains focused on larger banks, enclosing greater investments in the development of new market channels, as well as more active information campaigns for their promotion.

Analysis of the monetary statistics (Figure 16) shows that the positive growth trend in new business loans for non-financial corporations (NFC) continues. The volume of new business loans reached a record value of BGN 23.1 billion, and the ratio between the volumes of new business for NFC and the reported value of gross loans to this segment reached 47.58% at the end of 2023.

Figure 16. Annual volumes of new business loans



Source: Bulgarian National Bank, author's calculations.

Interest rates in Bulgaria remain lower than those in the euro area which can be explained by the desire of commercial banks to expand their market share. The excess of liquid funds allows most of them to engage in price competition, which rises the risk of artificially underestimating the risk premium.

Gross loans (excluding those to banking institutions) are growing, with total loans increasing by 9.6% in 2023. When excluding loans to credit institutions, the growth rate reached 12.14% annually. This dynamic is driven by the increase in interest rates on new business (especially in the corporate segment), and the yield on new issues of public debt, leading to a decrease

of the relative attractiveness of other categories. Consequently, the share of loans to financial institutions decreased at the expense of the shares of all others, except for loans to enterprises. The share of the last category decreased with 112 b. p. to 45.6% due to partially reduced demand for corporate loans as interest rates in this segment normalized more quickly and financial intermediaries sought better diversification by increasing household exposures. Loans to non-bank institutions continued to grow, outpacing even the most intense levels seen in this segment in 2017-2018. In 2023, the total amount of receivables from other financial enterprises increased by 32.4%, which is 3 times more than what was achieved in 2022. Financial institutions are motivated not so much by excess liquidity but by the objective to offload high-risk-weight assets onto the balance sheets of (usually affiliated) non-bank institutions, thus preventing deterioration of capital adequacy ratios.

The volumes of new business in retail lending continued to grow, reaching BGN 16.45 billion in 2023 which is BGN 1.80 billion more than in 2022. Mortgage loan activity remained strong, which is somewhat surprising given the decreasing number of real estate transactions and the increasing share of bank financing in real estate transactions (at the expense of self-financing).

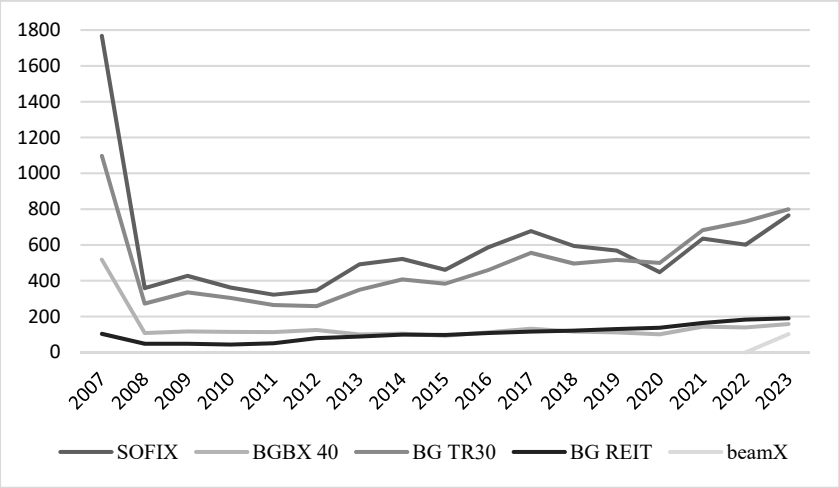
Depositors continue to increase their savings, motivated by the rising deposit interest rates. The total value of the resources from the non-financial sector grew by 8.4% on an annual basis, which is twice the rate reported in 2022. This growth is mainly driven by households, whose savings growth contributes to over 3/4 of the total growth of the deposit base. The sharp decrease in the activity of legal entities is striking. After the intense increase in savings by BGN 16.84 billion in 2022 (despite the effect of additional fees), legal entities limited their propensity to save at the beginning of 2023, resulting in zero growth of the attracted resources from this source in the first six months of the year.

4.3. Capital market development

In 2023, there was an upward trend in the development of the Bulgarian Stock Exchange (BSE) indices. The SOFIX reached 795.12 points, marking a 27.2% increase compared to 2022. The broad BGBX40 and BGTR30 indices also increased by 13.35% and 9.33% respectively. However, the sectoral BGREIT index rose at a slower rate, with a 3.89% increase. The BeamX index for the emerging growth market reached 101.85 points. Figure 17 illustrates that after more than a decade, the BSE is gaining strength, with the main SOFIX index reaching its highest point in 15 years. This surge is mainly due to the shares of two companies – Shelley Group (formerly Alterco) and Sopharma. However, the index values have not yet surpassed those realized before the global financial and economic crisis of 2008.

By the end of 2023, the market capitalization of segments organized by the BSE indicates a significant 48.6% decrease compared to the end of 2022. Among BSE trades in 2023, the Standard shares segment dominated with a share of 50% (BGN 7,745.94 million), followed by the Premium shares segment with 19.9% (BGN 3,083.13 million).

Figure 17. Values of market indices



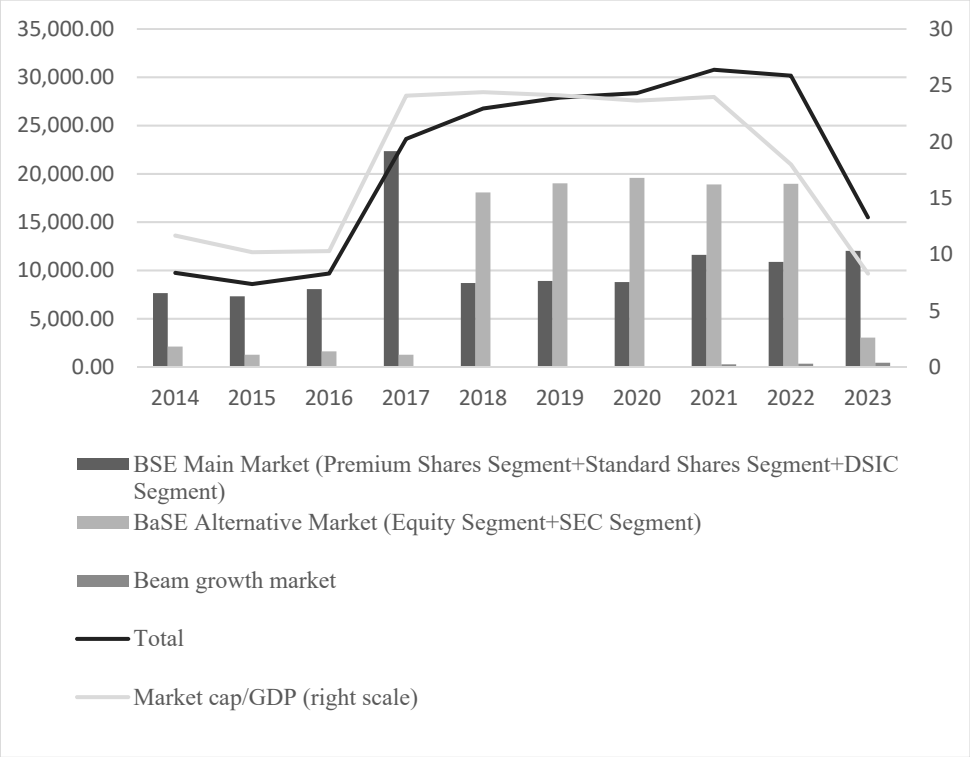
Source: Bulgarian Stock Exchange, author's calculations.

Notably, in 2023, the market capitalization of the primary BSE market claimed a substantial portion of the total market capitalization, continuing a trend seen since 2017. The Beam Growth Market has sustained consistent interest since its inception in 2021, with its market capitalization steadily growing, reaching BGN 436 million in 2023. The BSE's market capitalization relative to GDP was 8.3% at the end of 2023, continuing a downward trend that began after 2021 (Figure 18). According to this metric, the Bulgarian capital market significantly lags behind and remains notably underdeveloped compared to established capital markets.

In 2023, 33 new issues were registered for trading on the BSE, a significant decrease from the 240 issues recorded in 2022. No initial public offerings (IPOs) of shares took place on the regulated market. However, bond trading (excluding government securities) continued to grow, increasing by 72.7%. On December 15, 2023, Finance Plus Management Holding successfully conducted the first primary offering of bonds on the regulated market of the BSE, raising BGN 40.40 million. Given the uncertain equity markets and low interest rates on bank deposits, bonds remain an attractive option for many investors seeking yield.

On the Beam Growth Market, there were 4 primary public issues of shares and 1 primary public issue of bonds registered. The Multilateral Trading System (MTF) BSE International recorded only 1 share issue in 2023, a significant decrease compared to 2022, which can be attributed to investor outflows amid global economic uncertainty.

Figure 18. Market capitalization by types of markets (volumes in million BGN and ratio to GDP)

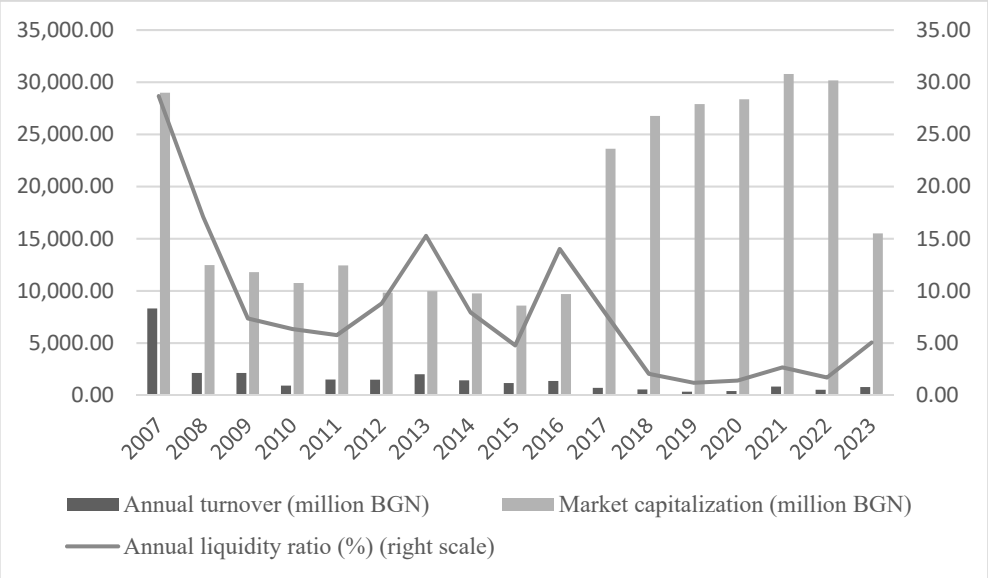


Source: Bulgarian Stock Exchange, author's calculations.

Financial and insurance activities dominated the turnover on the BSE main market in 2023 (Figure 19), accounting for BGN 303.5 million (63% of the total turnover). Real estate activities followed with a turnover of BGN 76 million and the electricity, gas, steam and air conditioning supply sector with BGN 64 million (13.35% of the total share). Professional, scientific, technical, administration and support service activities ranked fourth, contributing 10.54% of the total turnover with BGN 50.7 million.

In 2023, 38 intermediaries facilitated stock exchange transactions – 7 of them generating turnovers exceeding BGN 100 million. ABV Investments led with transactions totalling approximately BGN 262 million, followed by Real Finance with BGN 219 million. Carol led in the number of executed transactions, with 49,653 executed transactions accounting for approximately 66% of all transactions in 2023. Elana Trading and Benchmark Finance followed with over 10,000 transactions each, totalling 26,234 and 13,846 transactions, respectively.

Figure 19. Annual liquidity ratio of the BSE in 2007-2023 (%)



Source: Bulgarian Stock Exchange, author's calculations.

Despite international market turmoil fueled by concerns over rising interest rates and a potential recession, SOFIX and the Bulgarian capital market have remained relatively resilient. Recent years have witnessed increased market activity due to new companies listing on the stock market and a general uptick in positive market sentiment. The detachment from global events may provide some level of protection against more severe crises in global markets. However, such detachment may not be sustainable indefinitely and could deter investors, potentially leading to a downward spiral. To attract new high-quality issuers and enhance liquidity, concerted efforts from the BSE and comprehensive policies for capital market development in Bulgaria are necessary.

4.4. Prospects for the financial sector in the medium run

Global economic uncertainty leads to more pessimistic expectations for the banking system. The slowdown in economic growth is expected to negatively affect banks' profitability, increase the share of non-performing loans, and necessitate higher provisions. Another significant factor that will influence the banks' behaviour in 2024 is the anticipated effect of Bulgaria's expected accession to the euro area.[8]

[8] A detailed analysis was made in Rangelova, R., Bobeva, D., Sariyski, Gr., Zlatinov, D., Atanasov, At. (2023). The Euro area and economic prospects for Bulgaria. Sofia: Publishing House of BAS Prof. Marin Drinov, ISBN 978-619-245-324-4.

The main trends in the banking sector will be shaped by economic processes related to the military conflict in Ukraine; attempts to limit risks arising from expected changes in key interest rates; balance between lending conditions and standards against the backdrop of a deteriorating macroeconomic environment; intensive processes of digital transformation and management of the processes related to the green transition. In 2024, the European Banking Authority is set to establish requirements for financial institutions to identify, measure, manage, and monitor risks related to environmental and social management, including plans to address the risks arising from the transition to a climate-neutral EU economy. This will cause a further increase in the administrative burden and a tightening of the borrower's requirements.

The Bulgarian capital market is expected to grapple with ongoing challenges related to low liquidity, largely due to the market's small scale and limited investment culture among the population. The number of active participants in the Bulgarian capital market is expected to remain small, with individual investors with modest to moderate capital predominating. Investors will continue to seek secure income, placing value on companies that prioritize transparency and dividend payments, particularly those with a track record of consistent dividend increases. Institutional investors, notably pension funds, are likely to reduce their presence in the market as asset values decline. There is a potential to enhance liquidity on the BSE by introducing new instruments, such as derivatives trading, short selling, and secondary trading in government securities, accessible to individual investors.

5. Forecast for the Bulgarian economy until 2026

The macroeconomic forecast of the Economic Research Institute at the Bulgarian Academy of Sciences is based on a structural model that includes key macroeconomic indicators. This forecast relies on assumptions about medium-term economic development (until 2026) concerning international prices, external demand, and the economic policies outlined in the Medium-Term Budget Forecast in 2024-2026. The macroeconomic forecast is based on macroeconomic information available as of March 12, 2024.

The main assumptions related to the presented forecast are based on the following evaluations and expectations:

- The military conflict between Russia and Ukraine is expected to persist beyond the US presidential elections. Sanctions against Russia and Belarus will continue, with the possibility of intensification. Military tensions in the Middle East will continue to negatively impact the global economy.
- The prices of primary energy resources will remain high compared to the average values of the previous three years but are expected to gradually decline. Economic growth in EU Member States will slightly accelerate but remain low and below potential.
- External demand for Bulgarian exports will decline, especially in 2024. This will be countered by increased production and export of military products in 2024 and potentially beyond, along with Romania's ascending economic trajectory, positioning it as a key trade partner.

- Financial flows to Bulgaria will be primarily determined by the funds from European structural funds and the Recovery and Resilience Mechanism under the Next Generation EU initiative.
- Economic activity will remain subdued, influenced by both the unstable external environment and internal political situation. The early parliamentary elections in mid-2024 are expected to encourage populist actions and hinder the implementation of serious economic reforms.
- In the absence of new shocks in energy prices, the economy will enter a period of disinflation, though this process will be rather slow. Meeting the Maastricht criterion for inflation is unlikely within the forecast period, suggesting that the country's accession to the euro area in 2025 will be postponed.
- There is significant uncertainty regarding the labour market. Unemployment is not a major economic problem, despite the increase in labour costs at the end of 2023 and the beginning of 2024. Instead, a labour shortage is observed largely due to the worsening demographic situation and continued labour emigration rather than a slowdown in economic activity.
- The state of public finances will be strongly dependent on political stability and the realization of projects funded by European structural funds and the Recovery and Resilience Mechanism. Compliance with the Maastricht criterion for the general government sector deficit and consolidated public debt in 2023 provides grounds for gradual fiscal consolidation.
- Public debt will slowly increase but remain below 30% of GDP by 2026. The increase in public debt will finance the budget deficit and maintain the fiscal reserve, ensuring liquidity in the event of activating state-guaranteed debt.

The forecast assumes that the parameters and policies in the medium-term budget framework remain unchanged, with no significant alterations in the tax system and targeted efforts for fiscal consolidation to meet the Maastricht criteria for euro area accession.

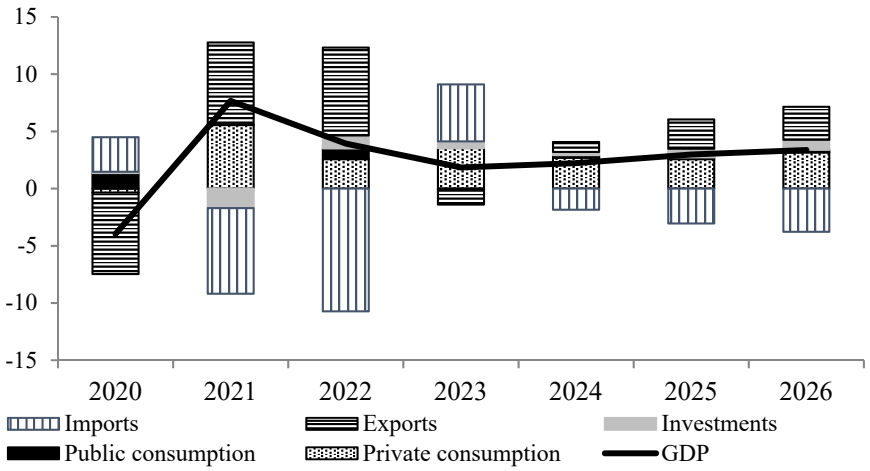
5.1. Dynamics of key macroeconomic indicators during the forecast period

Given the unfavourable external and internal economic conditions, real GDP growth is projected to remain below potential, with an expected rate slightly above 2% in 2024. By 2026, growth is anticipated to gradually recover to the average pre-pandemic levels, with domestic demand continuing to be the main driver of economic growth. In the medium term, economic growth in Bulgaria is expected to be within the range of 3.0-3.5% annually. The increase in investments will primarily be driven by the progress of the programming period and the assumptions of accelerated absorption of European funds under the National Recovery and Resilience Plan.

The dynamics of consumption will be determined by wage growth, moderate increases in employment, and low but still positive growth in credit activity. Investments will mainly be influenced by the rate of absorption of EU funds.

For the entire period of 2024-2026, the contribution of net exports to economic growth will remain negative (Figure 20). Given the expected weak economic growth among Bulgaria's main trading partners, external demand will remain relatively low, leading to a deterioration in the balance of payments throughout the period of 2024-2026.

Figure 20. Contributions to economic growth (p.p.)



Source: National Statistical Institute, author's calculations.

During the entire forecast period, inflation will gradually decrease but will remain higher than usual compared to the previous decade. This is largely due to external factors as well as some discretionary government measures (such as an income policy not sufficiently aligned with actual budget capabilities). These factors contribute to a higher rate of inflation compared to the average values for the EU Member States.

During the period 2024-2026, employment will continue to be determined by the pace of economic growth, constrained by the demographic situation. At this stage, no significant change is observed in the labour supply due to the refugee wave from Ukraine. This is because nearly one-third of the refugees are below working age and the remaining part (at least for now) does not show a desire for permanent settlement in Bulgaria. Unemployment is forecasted to remain at current levels, potentially slightly decreasing in 2025 and 2026. It is expected that the dynamics of wage growth will remain positive in real terms, though lower than in previous years.

Given the overall macroeconomic background, expectations for 2024 include a cooling of lending to both businesses and households amid increasing risks in the economic environment, the imposition of a higher risk premium and a gradual increase in interest rates on loans.

Table 3. Macroeconomic Forecast 2024-2026

	Provisional data	Forecast		
	2023	2024	2025	2026
Real sector (%)				
GDP	1.8	2.2	3.0	3.4
Private consumption	5.4	4.0	3.7	4.5
Public consumption	-0.4	1.3	1.0	1.4
Investments	-18.1	1.5	4.2	4.8
Exports of goods and services	-1.9	1.3	3.8	4.2
Imports of goods and services	-6.3	2.5	4.2	5.1
Price dynamics (%)				
HICP (average)	8.6	3.9	3.2	2.9
GDP deflator	7.5	3.6	2.8	2.3
Labor market				
Employment rate (15-64)	66.4	67.7	68.8	69.4
Unemployment rate (15-64)	4.4	4.0	3.7	3.7
Average monthly wage (BGN)	1995	2154	2316	2477
Wage growth (%)	12.7	8.0	7.5	7.0
External sector (% of GDP)				
Current account	0.3	-0.2	-0.5	-0.5
Trade balance	3.2	2.2	1.6	0.9
Capital account	1.4	1.5	1.6	1.8
Financial account (incl. foreign reserves)	1.5	1.2	1.1	1.2
FDI inflows	4.0	4.1	4.0	3.9
Gross foreign debt	48.0	47.6	47.5	47.8
Financial sector (annual change, %)				
Monetary aggregate M3	8.7	8.1	7.5	7.4
Loans to non-financial sector	12.0	5.3	4.0	5.0
Fiscal sector (% of GDP)				
Budget revenue	36.5	37.2	37.0	36.5
Budgetary expenditure	39.6	39.5	39.0	38.4
Budget balance (cash-based)	-3.1	-2.3	-2.0	-1.9
General government debt	23.3	24.6	25.4	28.4

5.2. External and internal growth constraints and risks

The risks of a possible escalation of the military conflict between Russia and Ukraine, and its potential transition from a local to a global conflict, cannot be overstated. In addition to these known risks, we must consider the risk of escalating tensions in the Middle East and additional restrictions on global trade. The potential consequences of a sharp escalation in military conflicts would render any forecasts meaningless, so they will not be considered. The focus is only on other constraints and risks:

- Political tension in Bulgaria persists, with ongoing challenges and unclear economic policy parameters following the early parliamentary elections in June 2024. Progress on Schengen and euro area accession and judicial reform is still unsatisfactory.
- The external environment remains unfavourable, with risks of further deterioration if the Russia-Ukraine military conflict isn't resolved, US-China trade disputes escalate, or the

Middle East conflict deepens. The euro area economic slowdown is a fact, but it's uncertain if the European Central Bank will adjust its restrictive monetary policy.

- The Bulgarian economy is near full employment, limiting the positive impact of new job creation on economic growth. Solutions involving foreign labour attraction depend largely on Bulgaria's political situation.
- Inflation risks are asymmetrical and upward. Previously an 'importer of inflation,' Bulgaria's recent expansionist fiscal policy significantly impacts inflation dynamics. An unstable economic environment, excess liquidity, and rising public debt contribute to higher inflation expectations.
- Optimistically, resolving the Russia-Ukraine military conflict and accelerating EU-funded programs could boost economic growth, though this is unlikely.

Conclusions

The analysis of the Bulgarian economy in 2023 and forecasts until 2026 lead to several policy recommendations aimed at addressing structural challenges and promoting sustainable development:

- While pursuing euro area membership, focus on both nominal and real convergence to avoid overshadowing the need for genuine economic progress.
- Enhance socio-economic welfare by improving the legal and institutional framework, building infrastructure, and addressing the skilled labour shortage by attracting educated workers from abroad and encouraging the return of Bulgarian professionals.
- Extend compensatory measures for subsidized recruitment of at-risk groups and implement specific policies for sectors and regions in the green and digital transition. Provide specialized support for employees in the Maritsa East, Bobov Dol, and Pernik energy complexes.
- Reform vocational training for older people to support lifelong learning, introduce micro-qualifications, and focus on acquiring green and digital skills.
- Gradually move towards a balanced budget to ensure macroeconomic stability and meet new fiscal governance requirements. Shift from expansionary to counter-cyclical fiscal policy to support growth and the EU's green and digital transitions. Expand fiscal space for education, social, and investment needs by revising taxation and restoring uniform VAT rates to increase revenues.
- Continuously review public expenditure structure and increase public investment at the expense of current expenditure. Redirect subsidies and price caps towards vulnerable households and maintain fiscal prudence amid demographic changes and euro area membership.
- Improve mechanisms for transparent spending and accountability, enforce public procurement requirements, and monitor project quality.

- Build capacity at central and municipal levels for effective maintenance of public infrastructure and efficient use of budgeted funds.
- Develop foreign trade with emerging African countries through enhanced economic and trade diplomacy and bilateral agreements to diversify markets.
- Limit property market risks by increasing reserve requirements. Facilitate the transition to new reference interest rates as Bulgaria approaches euro area accession.
- Enhance corporate governance, provide tax incentives, and reduce income inequalities to attract quality issuers and improve liquidity in the Bulgarian capital market.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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THE IMPACT OF SOCIAL MEDIA ON THE PERFORMANCE INDICATORS (PRODUCT DEVELOPMENT, MARKET DEVELOPMENT AND CUSTOMER LOYALTY) IN THE GASTRONOMY SECTOR[3]

The aim of this study is to explore and assess the significance of social media in terms of their impact on market performance indicators, including product development, market development, and consumer loyalty.

This study utilized a sample of 279 companies operating in the HoReCa sector (Hotel, Restaurant, and Cafeteria) in Kosovo. To assess the impact of social networks on the gastronomy sector, a structural equation model was employed to analyse the collected data.

Based on our research, the results indicate a positive relationship between social media and performance indicators. However, it is worth noting that the correlation between social media and performance indicators was not particularly strong. This study adds to the existing body of literature on digital marketing strategies from an academic standpoint, highlighting the positive outcomes derived from the influence of social media through performance indicators. From a practical standpoint, the findings of this research suggest that the gastronomy sector can benefit from investing in a comprehensive digital marketing strategy based on the insights gained. Given that many businesses within this sector have a clear requirement for digital marketing and the appropriate platform design, effective management of the HoReCa sector can enable the development of an effective social media strategy that amplifies the impact of performance indicators.

Consequently, the paper begins with a theoretical explanation of the terms of digital marketing of social media, analysing the theoretical aspect of performance indicators such as product development, market development and customer loyalty. Then the paper continues with the hypotheses of the paper and presentation of the conceptual model.

By giving the paper the practical part of the work, the distribution of the questionnaires and finally the analysis of the results.

For clarification, in the paper we have relied on various literatures that have dealt with such variables and we have dealt with our case in Kosovo of these variables that we have called.

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This research study makes unique contributions to the existing literature on social media and performance indicators specifically within the gastronomy sector. The novelty of this study lies in its efforts to enhance the comprehension of social media's impact through performance indicators, ultimately leading to improved performance in gastronomy services.
Keywords: social media; performance indicators; gastronomy sector; digital marketing.
JEL: M00; M20; M31

1. Introduction

Digital technologies are now an integral part of the daily lives of a significant portion of the global population (Blazheska, Ristovska, & Gramatnikovski, 2020). From the review literature, the majority of aims suggest an application that detects the Satisfaction that leads to customers using Social media for any activity like Big Data from Facebook, Linked In, Twitter or any other social media platform (Kenan, et al., 2023). This presents an opportunity for companies to establish closer connections with their customers, considering that every user has the potential to become a customer for any business. Presently, Facebook and Instagram are the most popular social media platforms for promoting products and services (Sheikh, 2023). This accessibility to social media platforms has made it increasingly convenient for various businesses, particularly in the food industry, to distinguish their offerings. Through social media, people now have the ability to share a wealth of information and experiences with other users (Gashi & Ahmeti, 2021). Companies greatly benefit from utilizing social media, as they can display ideas and posts, and describe how social media can make each activity more open. According to Ian P. McCarthy et al (2023) even an idea can develop a process model of five research activities network.

This paper acknowledges its focus primarily on urban, high-end gastronomy businesses, which may not fully represent the diverse range of establishments within the sector. Future research could expand to include rural and smaller gastronomic enterprises for a more comprehensive view. Stakeholders, including gastronomy business owners, digital marketers, policymakers, and academic researchers in hospitality and marketing fields, will find this paper particularly insightful. The findings offer valuable insights for these stakeholders in understanding the role of social media in shaping customer perceptions and driving business performance in the gastronomy sector. Additionally, the research can inform policy decisions and marketing strategies tailored to this vibrant industry's unique challenges and opportunities. The purpose of the paper is the recognition of digital marketing strategies through social media and variables obtained in the study (product development, market development, customer loyalty).

The importance of gastronomy as part of tourism is continuously increasing day-by-day in the world. This fact is approved by the Committee on Culture and Education of the European Parliament for the importance of gastronomy: cultural and educational aspects. “It recognizes the importance of food and gastronomy as artistic and cultural expression and fundamental pillars of family and social relationships” (Hegyes, Máté, Vafaei, & Farkas, 2017).

In the research that we have done with the gastronomy network, we have seen that the importance of consumers is followed by hotels, restaurants and cafes, trying to fulfilling every desire of consumers.

The paper is structured to understand the effect of social media on performance indicators.

Product development is compared to other research where, according to the authors that have been cited, the product plays an important role in social media.

Market development is important for consumers because they have the opportunity to identify the characteristics of global service companies through technological development (Capobianco, 2023). Customer loyalty, according to the review literature, is important to the consumer's approach to what the company presents on social media.

The paper will provide answers to the research questions that are related to the raised variables, we will prove the research questions with the hypotheses that we will raise in the paper. The main purpose of the paper is to recognize and influence digital social tools through market performance indicators and the variables we mentioned and were taken into the study.

The paper will deal with why companies should use social media, and can then measure the effects on the performance indicators we have set. This study shows us that the use of social media measures the effects of consumers on food enjoyment (a common service from HoReCa) seeing 'satisfaction' as a mechanism to measure performance indicators. The consumer can come to his favourite food or his favourite restaurant using social media. In other words, when consumers are positively stimulated while reading online gastronomy reviews on social media platforms, satisfaction is evoked, subsequently increasing the desire to enjoy the various foods displayed online.

Hence, this research paper aims to examine the impact of social media on performance indicators in the market by utilizing an adapted conceptual model and investigating relevant variables. The findings of this study provide valuable insights into the influence of social media on performance indicators within the gastronomy sector. Ultimately, this paper serves as a direct representation of how social media can contribute to the success of companies.

The study may have limitations in terms of the sample size and the demographics of the respondents. If the research primarily focused on a specific geographic region or demographic group, the results might not be generalizable to other areas or populations. Future research should aim to include a more diverse and larger sample to enhance the generalizability of the findings. The study's temporal scope might be limited, possibly focusing on a short-term analysis. Social media trends and their impacts on gastronomy can evolve rapidly. Future research should consider longitudinal studies to understand the long-term effects of social media on market performance indicators in this sector.

2. Literature Review

2.1. The evolution of digital marketing

The external environment and the great technological progress have changed the way of doing business, especially in the field of marketing as a whole, since digitalization has brought many opportunities and alternatives (Reshidi & Baca, 2023).

Based on that, the business environment in marketing has gone through several stages, which have been accompanied by changes in the market, and companies today are more competitive. Marketing has evolved through phases: the production concept (marketing 1.0), the sales concept (marketing 2.0), people-oriented marketing (marketing 3.0), digital marketing (marketing 4.0), and artificial intelligence (marketing 5.0). Marketing has evolved in the market always communicating with the audience. Marketing evolution has been an evolution from traditional to digital. If, in traditional marketing, the attention paid to the consumer has sometimes been dethroned by the attention given to the product in the company's marketing strategy, in the case of digital marketing, the focus remains on the consumer and to his choices to fulfilling his desires and needs (Baltes, 2016).

According to Kotler, the evolution has been from phase 1.0 to 5.0 where along these phases technological changes have been followed and developed along with the era (Kotler, Kartajaya, & Setiawan, 2021).

Digital marketing is a specific term that has evolved using digital channels as a general term that describes the process of using digital technologies to acquire customers and increase sales (Walle, Rodriguez, & Estrada, 2020). According to the American Marketing Association (Association, 2023) social media involves the use of social networks as marketing communications media.

Social media channels are used according to the digital marketing strategies that the company implements. The role of social media marketing is broad and focused on digital marketing strategies. As a result of the development of marketing, as mentioned above, other processes were also developed. Digitalization in the company was born out of a market need and the adaptation of customer requirements as the approach to service provision changed in the market and the need for its adaptation arose (Rachinger, Rauter, Müller, Vorraber, & Schirgi, 2018). Digitalization is important in the gastronomy sector too because it brings faster results (Digital, 2022).

This paper acknowledges the evolution of marketing strategies in gastronomy, highlighting a significant shift from traditional methods to digital platforms. The transition towards digital marketing has been pivotal, reflecting the changing consumer behaviours and technological advancements. This shift underscores the importance of digital means, such as social media, in contemporary marketing strategies. By leveraging these digital tools, businesses in the gastronomy sector can more effectively engage with their target audience, gather valuable consumer insights, and adapt to the dynamic market landscape. This evolution from traditional to digital marketing methods is central to our discussion on the impact of social media on business performance in the gastronomy sector.

2.2. The evolution of gastronomy

Throughout history, people have prepared food which was sourced from, and influenced by, their immediate surroundings and circumstances, and its consumption has always been fundamental to civilisation and daily life. However, the evolution and development of gastronomic tourism arguably has a more substantial genesis in forces capable of penetrating cultural barriers and internationalising food (Mulcahy, 2019).

Such evolution has made consumers perceive and observe and develop gastronomy. Since its development has progressed to the technological approach of taste and consumer satisfaction, as we will treat in this paper the case of the HoReCa network in Kosovo.

2.3. Social media like performance in the gastronomy sector

The application of digital trends and digital services can increase the power of the local self-government and help organize this event for successful business (Blazheska, Ristovska, & Gramatnikovski, 2020). Social media have a significant impact on market performance indicators such as product development, market development, market penetration, and consumer loyalty (Lin, Yang, Ma, & Huang, 2018). The technological approach has changed after the end of the COVID-19 pandemic, especially in the service industry in gastronomy, where restaurants have not faced the losses created and have built new strategies for providing their services by moving to a completely digital platform (Kotler, Kartajaya, & Setiawan, 2021). After the COVID-19 pandemic, customers also know that the main information about the company's products originates from social media, where the social networks Facebook, Instagram, etc. enable the rapid spread of news or different information and have influenced many companies to change formats and their communication skills (Gashi & Ahmeti, 2021).

This study underscores the pivotal role of social media in enhancing key performance indicators in the gastronomy sector. We delve deeper into this relationship's social and economic ramifications, providing a comprehensive analysis of how social media strategies drive both tangible and intangible benefits. Social media's influence extends beyond mere marketing metrics; it fosters community engagement, brand loyalty, and customer satisfaction, all of which contribute significantly to the economic sustainability and growth of businesses in the gastronomy sector. Our findings reveal that an effective social media presence amplifies product and market development and cultivates a loyal customer base, leading to improved financial performance and market competitiveness. This paper, therefore, contributes to the broader understanding of digital marketing's economic and social impacts in the gastronomy sector, offering practical insights for businesses seeking to harness the full potential of social media.

The top 23 social media sites of 2023, as more important and more used are (Lua, 2023): Facebook — 3.03 billion MAUs, YouTube — 2.5 billion MAUs, WhatsApp — 2 billion MAUs, Instagram — 2 billion MAUs, WeChat — 1.3 billion MAUs, TikTok — 1.05 billion MAUs, Telegram — 700 million MAUs, Snapchat — 557 million MAUs, Kuaishou — 626 million MAUs, Qzone — 600 million MAUs, Sina Weibo — 584 million MAUs, QQ — 574 million MAUs, X (formerly Twitter) — 556 million MAUs, Pinterest — 445 million MAUs,

Reddit — 430 million MAUs, LinkedIn — 424 million MAUs, Quora — 300 million MAUs, Discord — 154 million MAUs, Twitch — 140 million MAUs, Tumblr — 135 million MAUs, Threads — 23.7 million (predicted U.S. users), Mastodon — 1.7 million MAUs and Bluesky — MAU unknown. Based on this data, we conclude that social media are indispensable and that almost every consumer can find themselves on one platform.

Therefore, even with the change in the climate of doing business, companies are changing their rules so that the promotion of new products is done through social networks, where companies cooperate more with customers.

2.4. Product development

The process of developing company products and services begins with ideation, launch strategies, and the overall advancement of the organization's offerings, as discussed by Adler et al (2003). While different companies may perceive product stages differently, it is crucial to exercise heightened supervision, particularly during the introduction phase, as it can be a risky period where many new products may fail after their launch, as emphasized by Gashi and Ahmeti (2021). In companies where there are many products, companies have life cycle stages of their products. Where according to the authors Baca and Reshidi (2023) there are four phases of the product life cycle: 1. Introduction, 2. Growth, 3. Maturity, and 4. Decline.

Companies utilize digital marketing to enhance their products in collaboration with business partners and suppliers, and they can leverage social media to positively impact product development, as highlighted by Piller et al. (2011). Building upon the research conducted by Nader et al (2019), it is noted that product development may not have significant effects on the operations of high-tech companies. However, this paper aims to measure the impact of product development on social media as a performance indicator. This presents a dilemma regarding how product development influences performance indicators, which will be assessed through the research questions incorporated in the model. Based on the research conducted by Nader et al (2019), the paper provides a reference for managers of high-tech companies and helps them reduce the failure rate of product development. As well as to measure if the marketing strategy is effective, Rumelt (2011) as an expert on strategies stated in his book that the strategy is to "choose the way to promote innovation and the realization of ambitions, as well as to decide what they are for leadership and determination, how to serve him and why". From what it discusses, we can conclude that product development is important in digital marketing strategies.

2.5. Market development

The expansion of opportunities and the pursuit of new customers are key objectives of market development, as outlined by Alkasim et al. (2018). The market development strategy (MDS) is an organizational approach that focuses on expanding the firm's product offerings in both existing and new markets, as highlighted by Alkasim S. B. et al. (2017). The development of the market is also advanced in offering their products to the market, because they can combine their market elements to benefit from the benefits that those products have. To build

good market, companies take five steps to develop to gain market share (Kotler & Kotler, 2013):

1. Companies seek more efficiency,
2. Companies prepare an analysis of strengths, weaknesses, opportunities and threats (SWOT Analysis),
3. Companies improve financial and marketing strength,
4. Reassess the marketing mix and profile,
5. Develop winning strategies for market share.

Notably, social media serve as a valuable platform for understanding customers' immediate needs, and their impact is positively perceived in terms of providing businesses with faster and timely information, as stated by Livingstone (2008). Customers also engage in brand communities to discuss products and services, where they assert that social media has influenced market development and consistently had a positive impact, as discussed by Arnone et al. (2010). According to Arnone (2010), the impact of social media is positive, because social media with their platforms have created great facilities. Since the company meets its audience on many online platforms such as Facebook, Instagram, Twitter and Linkedin. Regardless of country or location, companies find which platform to use. This is a relief since, based on social media, the company also targets other groups of consumers.

2.6. Customer loyalty

The satisfaction of customers plays a crucial role in determining the success of any business. When Henry Ford (2013) was asked about the importance of consumers in business, he answered that: "employers only receive money from sales – it is the consumer who pays the wages". In the marketing literature, it is constantly and deliberately emphasized that consumers are kings, therefore it is of critical importance that companies devote considerable time and resources to understanding the needs of their consumers (Baca & Reshidi, 2023).

According to Khadka & Maharjan (2017), when establishing a business, prioritizing customers over profit is essential. This is all to gain the trust of consumers. Companies win customer when he returns and likes the company's services. Also, the customer is connected with the company for a long-term approach, according to Khadka & Maharjan for the primary company is the customer and the gain of customer credibility.

The research represents a small step in a series of studies needed to understand the broader picture and more precisely measure consumer satisfaction in gastronomy (Andaleeb & Conway, 2006). Customer service in the gastronomy network has changed due to a new trend of consumer preferences and demand. Maintaining service quality is the main strategy to treat the customer to remain satisfied and loyal with the service provided (Razak, Aminuddin, & Ghazali, 2020).

Customer satisfaction has received significant attention in the existing literature, with several prior studies conducted in various types of restaurants to investigate the impact of service

quality on customer satisfaction, as highlighted by Almohaimmeed (2017). In line with the research conducted by Ramanathan et al. (2017), it has been found that social media has a positive influence on customer loyalty. The authors explain that leveraging social media for promotions can enhance service operations by facilitating interactions between the company and its customers, consequently fostering customer loyalty.

2.7. Hypotheses and conceptual model

Drawing from the analysis of existing literature and utilizing the conceptual framework derived from Kotler et al., this study puts forth a set of hypotheses that will be examined through research questions. Furthermore, the study evaluates the influence of performance indicators on the market and their ramifications on social media. In light of the aforementioned research, we can propose the following hypotheses:

H1. There is a positive relationship between social media engagement and product development in the gastronomy sector.

H2. Social media engagement positively correlates with market development for the gastronomy sector.

H3. There exists a positive relationship between social media interaction and consumer loyalty in the gastronomy sector.

The hypotheses are built in such a context that each of them is proven in the corresponding questions. The purpose of the research is to measure the impact of social media as a digital marketing strategy in companies. We have seen this best in past research because social media has a positive impact on companies. Against this, in the model, we also presented performance indicators, which will measure the effect of social media in terms of companies. The performance indicators in this paper will show which has the largest weight in the company and how they are related. The conceptual model has been approximated and combined by different authors in the field of marketing. Considering the weight of social media in many factors and indicators of performance, we have researched and combined the model from the work of (Gashi & Ahmeti, 2021). The authors have foreseen the development of social media in many spheres therefore their weight has been taken and carried in many works and researches.

Also, in the research of (Gashi & Ahmeti, 2021) it is stated that digital marketing is necessary for company environments if they want to stay long-term in the market. In the following, we will have the opportunity to see the connection of the variables in the model, based on them as well.

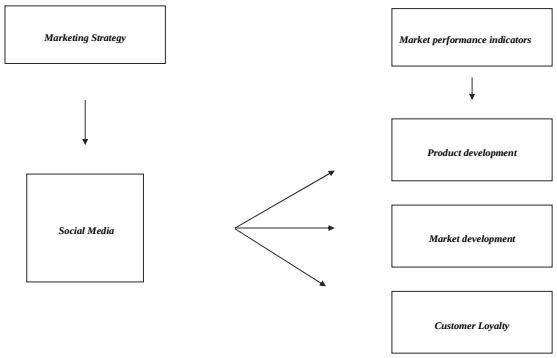
3. Methodology

3.1. Data collection – sampling strategy and sampling technique

The methodology of the work in the paper starts from the analysis of the variables of the conceptual model that we will present. The model has been adapted by different authors,

alluding to the variables that have been taken into the study and each variable has been treated from a theoretical point of view, and thus based on the research, we have included questions for each of them. The figure below presents the conceptual model for this study.

Figure 1. Conceptual Model



The research sample is segmented at the country level and further analyses are within different cities. Taken in total, the number of hotels, restaurants, and cafes in Kosovo is 18646 (source obtained from the Ministry of Trade and Industry). To determine the required sample size, a simplified formula by Yamane (1967) was employed: n = N / [1 + (N*(e)2]], where *n* represents the sample size, *N* represents the population size, and *e* represents the level of precision.

Assuming the desired level of confidence to be 95% and the level of accuracy to be +/- 5%, given the size of the population (number of businesses), we can derive the necessary sample size for the research. In our case, n = 18646 / 1 + (18646*5%)2 = 18646/47.61 = 392 businesses of the HoReCa network were interviewed to complete our questionnaire.

Out of the total sample size of 392, only 315 completed questionnaires were returned. However, 36 of these questionnaires were only partially completed and, as a result, were excluded from the analysis.

3.2. Measures and instrument development

This research utilizes two types of data: primary and secondary. Secondary data is obtained from literature sources focusing on digital marketing strategies and their impact on business performance. Primary data, on the other hand, is collected through fieldwork and questionnaires. The study employed well-established measurement scales derived from a comprehensive review of the literature on digital marketing and social media.

Our methodology centres on the use of quantitative surveys to collect primary data. These surveys are designed to capture various metrics related to social media usage, consumer behaviour, and business performance indicators in the gastronomy sector. Respondents include customers, business owners, and marketing professionals within this industry. For secondary data, we analyse existing academic research, industry reports, and social media analytics to contextualize our findings and identify prevailing trends. This approach allows for a data-driven, quantitative analysis of the impact of social media on gastronomy businesses.

All constructs were assessed using a five-point scale ranging from strongly disagreeing (1) to strongly agreeing (5). The questionnaire consists of two sections.

The first section includes constructs related to the study, such as social media, product development, market development, and customer loyalty. The second section gathers demographic information from participants, such as gender, age, work experience in the industry and activity of business.

As shown in Table 1, demographic data were considered control variables rather than influencing factors when creating hypotheses for this investigation. This research also collected data on these control variables through the survey instrument.

Table 1. Respondent's profile

Measure	Data	n	%
Gender	Male	249	89
	Female	30	11
Age	18-24	52	19
	25-30	67	24
	31-40	88	32
	41-50	49	18
	51+	23	8
Work experience	0-12 months	10	3.6
	1-3 years	54	19.4
	3-5 years	52	18.6
	5-10 years	67	24
	10+	96	34.4
Activity	Hotel	34	12.2
	Restaurant	122	43.7
	Cafeteria	123	44.10

In examining the influence of social media on market development, we drew upon various sources to inform our study. Aronu et al., (2014) provided the foundation for our research by exploring the relevant variables. We also considered the work of other authors to guide our investigation into specific aspects. For instance, Ali et al. (2016) examined the impact of social media on influencing behaviour, while Su, Tsang, and Peng (2009) informed our understanding of product development. To explore market development, we adapted our research based on the findings of Pellissier, Joubert and Garg (2004). Lastly, to understand customer loyalty, we referred to the insights of Ramanathan et al. (2017).

3.3. Measurement model reliability and validity

To evaluate the reliability of the measures used in the study, reliability measures such as Cronbach's α and item factor loadings were utilized. The recommended threshold for acceptable values is 0.70, as suggested by Ringle et al. (2015) and Hair et al. (2011).

Table 2 displays all the constructs employed in this study. Moreover, all variables demonstrated Cronbach's α values higher than 0.70, indicating that the measures effectively and reliably assessed each construct.

Table 2. Measurement model results

Constructs	Indicators	a	(CR)	(AVE)
Social media	SM1 – Customer perceptions can change from marketing activity on social media! SM2 – Digital marketing strategies must be relevant and clear on social media. SM3 – People mainly buy those services that are most visible on social media. SM4 – Social media are helpful in operating for advertise products and services. SM5 – Consumers perceive information posted by other consumers on social media as more credible. SM6 – Social media have a positive impact on customer engagement.	.930	.945	.742
Product Development	PD1 – Product development affects the quality of digital marketing strategies. PD2 – Digital marketing strategies influence rapid product growth. PD3 – Digital marketing strategies affect service improvement. PD4 – Product development directly affects the reputation of the company.	.896	.785	.508
Market development	MD1 – Digital marketing strategies have an impact on increasing sales. MD2 – Digital marketing strategies have an impact on increasing market share. MD3 – Digital marketing strategies have an impact on the image of the company. MD4 – Digital marketing strategies have an impact on company loyalty.	.904	.784	.517
Customer loyalty	CL1 – Customer loyalty is focused on customer satisfaction. CL2 – Digital marketing strategies encourage activities that improve customer satisfaction. CL3 – Digital marketing strategies meet consumer expectations. CL4 – Digital marketing strategies help you respect the customer. CL5 – Digital marketing strategies help you explain the quality of the product.	.912	.831	.615

The reliability and validity of the measurement model are assessed using specific statistical techniques. For reliability, Cronbach's alpha is used to measure the internal consistency of the scales. A Cronbach's alpha value above 0.7 is generally considered acceptable, indicating that the items within a scale are reliably measuring the same underlying construct.

For validity, the manuscript employs factor analysis. This technique helps understand whether the items grouped under a particular construct measure that construct. It involves examining the factor loadings of the items, with higher loadings indicating a stronger relationship between the item and the underlying construct, thus supporting the construct validity of the measurement model. These methods ensure that the scales used in the research are reliable and valid, providing confidence in the findings derived from the data. The overall model demonstrated satisfactory fit indices, including degrees of freedom CMIN/DF = 2.155, comparative fit index CFI = 0.959, Normed Fit Index NFI = 0.926, and root mean square error of approximation RMSEA = 0.959. These values suggest that the data fit the model well. The results of the hypothesized paths are provided in Table 3.

These values suggest that the data fit the model well. The results of the hypothesized paths are given in Table 3.

Table 3. Results of path analysis

Path from	Path to	Hypothesis	Std. Coeff.	p-Value
Social media	Market Development	H2: Supported	0.713	***
	Customer Loyalty	H3: Supported	0.818	***
	Product Development	H1: Supported	0.786	***

*Note *p<0.05, **p<0.000*

We mention the hypotheses again:

H1. There is a positive relationship between social media engagement and product development in the gastronomy sector.

H2. Social media engagement positively correlates with market development for the gastronomy sector.

H3. There exists a positive relationship between social media interaction and consumer loyalty in the gastronomy sector.

For clarification, let's analyse the results a bit. Hypothesis 1, the strongest support is found in product development and has good positive effects or satisfying effects. Based on the results called Standard, the coefficient is 0.786, so there is a strong connection.

The second hypothesis has a positive impact on market development. And it has satisfying effects, as far as the standard coefficient is concerned, it is 0.713.

And the third hypothesis has a higher standard coefficient than the other two. The third hypothesis has a Stand. coeff. of 0.818.

So, the three hypotheses remain with positive effects, where social media have a positive effect and a good relationship in performance indicators.

4. Discussion

In this study, we utilized the AMOS statistical platform to conduct structural equation modelling. Our choice to employ a structural equation model was driven by our desire to assess the influence of social media on key performance indicators, namely product development, market development, and consumer loyalty.

Based on the data collected, the results indicate that Social Media has had a positive impact on performance indicators. This demonstrates that numerous companies have recognized the importance of utilizing digital marketing to enhance their businesses and maintain ongoing communication with customers, particularly through social media platforms. Our findings also align with prior research, such as Aronu (2014), which highlights the significance of market development in relation to the influence of social media.

The obtained results reveal the effects of social media on performance indicators in the following ways:

Impact on Customer Perceptions: The study finds that social media marketing significantly influences customer perceptions in gastronomy. Specifically, it demonstrates how effective digital marketing strategies on social media can alter consumer views and preferences regarding gastronomy services in Kosovo.

Influence on Consumer Purchasing Decisions: The results indicate that visibility on social media platforms is critical in influencing consumer purchasing decisions. Services that are more prominently featured on these platforms tend to attract more customers, underlining the importance of a strong social media presence for gastronomy businesses.

Role in Product Development: The findings suggest a substantial impact of social media on product development within the gastronomy sector. Digital marketing strategies not only promote rapid product growth but also contribute to improving services, showcasing a dynamic interaction between social media engagement and product innovation.

Contribution to Market Development: The study reveals that effective digital marketing strategies on social media are key to market development, particularly in increasing sales. This highlights the significant role of social media in expanding market reach and enhancing the economic performance of gastronomy businesses in Kosovo.

Our findings align with prior research conducted by Piller et al. (2011), which emphasizes the significance of product development. However, our findings contradict the previous research by Seyyedamiri and Tajrobehkar (2019) that emphasizes the importance of product development. Based on our results, the following outcomes have been observed:

Product development plays a crucial role in shaping the effectiveness of digital marketing strategies, and in turn, digital marketing strategies contribute to the rapid growth of products. These findings have a substantial impact. Additionally, product development directly impacts the reputation of the company. This aspect of our findings holds a moderate impact. The findings are consistent with previous research that has emphasized the importance of customer loyalty (Ramanathan, Subramanian, & Parrottc, 2017). Based on the questions, have the following results: Customer loyalty is centered around ensuring customer

satisfaction, and digital marketing strategies serve to promote such activities. These findings carry significant weight.

Based on the results, we can consider the research important because companies can now refer to the research, to also develop other parts of digital marketing. From what we have seen, the gastronomy sector in Kosovo does not have a high focus and orientation on the development of digital marketing, but it focuses more on what social media offers (a post or a sponsor). Therefore, this paper is only a part of what we will be able to research further in the field to see companies and make them aware that they have a focus on digital marketing. Focus on the design of digital marketing strategies to benefit more audiences and to have effects in the market. Also, based on the results obtained, companies operating in the Republic of Kosovo widely use digital marketing and maintain a strong presence on social media platforms. Where they provide information about their products and services. These companies demonstrate a clear understanding of the benefits and necessity of leveraging digital marketing and developing effective digital strategies, particularly in relation to products and markets and driving customer loyalty. Here we make an intervention, since companies in Kosovo know the importance of digital marketing, but marketing terms are not defined. Very often we had to clarify the importance of social media. Among other things, it was necessary to create research teams that should clarify marketing terms. I consider the lack of research in the field of marketing to have brought the company to this point. But now I emphasize that after the pandemic, the effect of marketing is clear, but the strategy of its construction is still being worked on by people who are not experts in the field of marketing.

I consider that the research will serve everyone who reads it, because in the research it is mentioned and it is proven that social media have a positive role in the company. Also, the connection of social networks with performance indicators is positive and satisfactory. For this reason, the performance indicators, whether the product, the market or the consumer, are each related to social media. These companies demonstrate a clear understanding of the benefits and necessity of leveraging digital marketing and developing effective digital strategies, particularly in relation to products, markets, and fostering customer loyalty.

4.1. Academic and practical implications

The research aims to assist managers in focusing their digital marketing strategies. The findings from this study will help gastronomy managers in the effective management of their digital marketing strategies, especially in increasing market performance through the indicators identified in the research. Additionally, the research will create a framework for training the communication of digital marketing strategies and increase the accountability of internal investments by identifying measurable organizational benefits resulting from these efforts.

The paper contributes to the existing marketing literature, as well as to the management of digital marketing strategies and the overall performance of the enterprise in the market. The paper also has its gap as we have researched the findings of social media and their impact on performance indicators but we have not addressed the role of other marketing strategies. This research was started with the idea of being a basis for why it should be invested in digital

marketing. Especially in the gastronomy network, a network whose main goal is service, and through service I can benefit the consumer.

As we can see from the literature, the best indicator of performance is the satisfied customer, therefore the goal of each company at the practical level is to have satisfied customers. From what I have seen during the research, the main implication of the company is the construction of a real strategy. I mention this because, in a way, as I mentioned in the conclusions, digital marketing has been given a higher focus by companies after the COVID-19 pandemic. And that they have understood that the impact is positive and that the idea is for the consumer to come back again and benefit from the company on the products it has.

Also today, another practical implication is the market in Kosovo, based on Table 1 (respondent's profile), the number of hotels that accepted was small. From this point of view, I see a small obstacle because if the phenomena are not researched, it will be difficult for the consumer to access them.

4.2. Conclusion

In conclusion, the paper empirically examines the impact of social media on the company, thereby adding to the marketing management literature. It also adds value to digital marketing strategies by evaluating their contribution to market development and measuring enterprise performance in the market. By incorporating essential variables from the research, a more comprehensive approach to managing digital marketing strategies will be provided.

The paper's main purpose was to recognize and influence digital social tools through market performance indicators. The study has successfully achieved this by conducting a detailed analysis of the role of social media in product development, market development, and customer loyalty in the gastronomy sector.

The objectives were to explore why companies in the gastronomy sector should use social media and to measure the effects on the set performance indicators. The paper has effectively proven the hypotheses raised through the research, providing empirical evidence to support the claims.

The study compared the role of product development in the context of social media, highlighting its significant impact and aligning with previous research. The research underscored the importance of market development, showing how consumers can identify the characteristics of global service companies through technological advancements. The study also emphasized the importance of customer loyalty, focusing on how consumers' approach to a company's presentation on social media influences their loyalty.

Based on the results obtained, companies operating in the Republic of Kosovo extensively utilize on social media platforms, where they provide information about their services. These companies demonstrate a clear understanding of the benefits and necessity of leveraging digital marketing and developing effective social media, particularly in relation to services, markets, and fostering customer loyalty. Based on the results obtained, companies operating in the Republic of Kosovo extensively utilize on social media platforms, where they provide information about their services. These companies demonstrate a clear understanding of the

benefits and necessity of leveraging digital marketing and developing effective social media, particularly in relation to services, markets, and fostering customer loyalty.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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RELATIONSHIP BETWEEN LEADERSHIP BEHAVIOUR AND EMPLOYEE SATISFACTION IN AN ORGANISATION (BASED ON THE EXAMPLE OF THE SECTOR OF TRADE)[3]

This article aims to establish the connection between managerial style and employee satisfaction. Two hypotheses are examined, based on satisfaction markers and different management techniques: X1. The significant correspondence is between management style and job satisfaction; X2. Employees who favour their manager's style are more satisfied than those who seek a different manager. Both hypotheses are proven. To achieve higher satisfaction having an attentive manager ranks higher than participating in the decision-making. Results point to specific actions that can be taken in SLAES spheres to boost job satisfaction. Such actions include stronger involvement in the organisation, better performance, lower turnover and others. Those results are based on the questionnaires amongst 1145 participants from the SLAES sector (of which 865 are traders by profession). The conclusions from this paper are applicable in the mentioned field.
Keywords: leadership; behaviour; job satisfaction; influence
JEL: L29; L81; M14; J28

1. Introduction

Research on the relationship between *leadership behaviour* and *employee satisfaction* in the organisation has been a subject of sustained research interest. The main reason for this is the belief that satisfied employees ensure higher productivity and quality of work performed; they are more involved with the organisation's needs and have a greater contribution to the achievement of the organisation's goals. Satisfied employees are more loyal to the organisation and less likely to leave it. Thus, employee satisfaction turns out to be a major factor for the success of the organisation. Satisfaction and dissatisfaction often manifest themselves in behaviour. This is why the view of satisfaction and work morale is found in literature as well (Paunov, 2009, p. 101). The relationship leadership behaviour – satisfaction

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has been investigated and modelled. The results are not unequivocal. Although the issue is exploited frequently and in the context of what has been said, it is of timeless topicality and significance to any organisation.

The purpose of this research is to establish the link between management styles and employee satisfaction within the organisation.[4] The data was collected in 2021. In a series of observations on organisational behaviour and practices (Davidkov, 2019; Davidkov et al., 2023) we examine leadership behaviour and employee satisfaction. In the research presented (n = 2651), there is a subset of the respondents from the sector of trade. The interest in the individual examination of the sector was prompted by the specific ethos of this professional group. For more on the issue see (Yankulov, 2012); (Yankulov, 2022). The following respondents are excluded from the total number of respondents in the sector of trade (n = 1353): a) respondents who have not answered the question "Are you a trader by profession?" – Yes/ No (180 respondents); b) respondents who have no direct supervisor (28 respondents). A sample of 1145 respondents is dealt with. Each of the respondents falls into one of the subsets *trader by profession* or *other staff* & each of the respondents has a direct supervisor.

2. Literature Review

What does job satisfaction mean? Adrian Furnham, in his 2013 work, has noted that most often job satisfaction is strongly reliant on the individual employee's outlook on the job. His findings support that those attitudes are the building blocks of an employee's behaviour. (Furnham, 2013, p. 415-416) Our studies also show that they are related to beliefs and values.

A similar view is shared by Paunov, who further builds on this idea by pointing out that the emotional investment people have in their work is directly correlated to their job satisfaction, as well as that satisfaction with work is formed based on several groups of factors. Those can be intrinsic; extrinsic; related to the quality of operational management; factors related to the team; related to success and failure (Paunov, 2009, p. 101-102).

Ilieva's opinion that job satisfaction is amongst the most frequently investigated factors of people's professional behaviours (Ilieva, 1998, p. 26) is expanded on by Radoslavova, who establishes that if one is to take the classical definitions of job satisfaction it applies to specific activities within the organisation. Radoslavova further specifies that satisfaction is only an isolated response to neural conditions based on the individual's ideals and needs. The strength of those responses, however, depends on the employee's ability to merge their personal values with their professional responsibilities. Radoslavova found the emotional reaction throughout the employment to be fairly consistent, as the result of a sound organisational foundation. Job satisfaction is a complex and non-homogeneous reaction or more specifically a configuration of mostly positive experiences of individual content. Job satisfaction seems to regulate in various degrees the individual's professional behaviour (Radoslavova, 2001, p. 12).

[4] In the text, the terms job satisfaction; overall satisfaction; satisfaction in an organisational context; satisfaction with work environment factors; satisfaction with the work situation is used as synonyms.

In the context of the subjective significance of work, V. Topalova follows the well-established paradigm that job satisfaction is an intermediate concept that characterizes the importance of work and reflects the way employment facilitates the realisation of personal needs reflects on the degree of job satisfaction (Topalova, 1989, p. 15). Satisfaction seems to be directly influenced by the subjective emotional and moral investment in the specific work performed. This emotional attitude to work is in itself complicated and inconsistent in nature. It also reflects ambiguously on work behaviour. V. Topalova emphasizes the relation between job satisfaction and the value aspects of work situation, including work motivation. Job satisfaction has various functions – evaluative, motivational, adaptive and protective (ibid; see chapters № 2, 4, 5, 6).

D. Nelson and J. Quick define attitude (satisfaction is an *attitude* – the authors) as a mental bias whether positive or negative (Nelson et al., 2017, p.170).[5] Following the ABC model, the authors emphasize that in order to understand attitudes, one should take into account their three-component structure (Nelson et al., 2017, p. 170-171) – affect (emotional reaction) – behavioural intention – persuasion (the way of justifying this reaction). Attitudes are acquired (learnt) mostly through direct (personal) experience and social learning (ibid, p. 171).

In an organisational context, E. Tair examines the relationship between satisfaction and engagement. As a manifestation of a positive experience from the work situation, satisfaction is related to pleasure and the feeling of happiness and inspires enthusiasm. The antithesis is a negative emotional reaction – anger, anxiety, etc. with subsequent behavioural reactions (Tair, 2020, p. 181).

Depending on the paradigms and models applied to explain human behaviour in an organisational context, the content and structure of job satisfaction are described and explained differently (Ilieva, 1998, p. 26 et seqq.).

The specified definitions of satisfaction and its relationships with other organisational phenomena provide insight into the significant role of satisfaction in the structure of the human psyche and the potential for embedding the concept in various models for the evaluation and prediction of human behaviour.

Leadership behaviour is considered both independently (by itself) and in relation to various organisational phenomena. As a rule, the way of consideration determines the approach and the categorical apparatus through which it is studied.[6]

Depending on the managerial decision-making type, the types of leadership behaviour can be authoritarian, paternalistic, consultative or democratic (see Hofstede, 2001, p. 470).[7] A

[5] In this statement, they refer to (Eagly & Chaiken, 1993).

[6] A typical example is the terms executive, leader and manager and the concepts related to them – their use and functioning in the Bulgarian language environment. Part of the difficulties are related to the problematic construction of the term-concept relationship and their communication. Often, a separate problem is the quality of the translation from one language into another, including the fragmentary understanding of the functioning of specific terms and specific concepts in the system of a specific language.

[7] Hereafter, an authoritarian leader is also referred to as leader 1; a paternalistic leader as leader 2; a consultative leader as leader 3; a democratic leader as leader 4.

constitutive criterion can be the leading orientation in managers' behaviour. Five main types of leadership behaviour are defined in the popular *managerial grid* (Managerial Grid, Blake & Mouton) based on two dimensions (results orientation and people orientation): impoverished style, produce-or-perish style, middle-of-the-road style, country club style, team style (Blake, Mouton, 1965). The model of the varieties of transformational leadership styles is popular as well (Bass, Riggio, 2006): idealised influence; inspirational motivation; intellectual stimulation; and individual consideration. Radoslavova states that every leadership style encompasses the same managerial actions that are united by a common goal. Thus, a leader's behaviour is an amalgamation of different but complementary styles through which the leader achieves their goals, oftentimes through different methods. (Radoslavova, 2008, p. 22).

The *cultural context* of leadership is noteworthy as well. Within each culture, both successful and unsuccessful leadership practices can be observed. Due to its nature and content (as a system of values, rules, convictions, beliefs, etc. about proper thinking and behaviour), culture sets fundamental orientations for the functioning of leadership, including the determination to a high degree of the perceptions of actual leadership behaviour and the expectations of leaders (Ilieva, 2006, p. 160 et seqq.).

Three major approaches are used when considering leadership behaviour in general – traits models, behavioural models and contingency models (Hellriegel, & Slocum, 1993; pp. 475) A systematic view of the trends in leadership research can be gained based on the meta-analysis "Models for Explanation of Leadership" (Petkova-Gurbalova, 2019; p. 20 et seqq.) The conclusion can be drawn and justified that in the study of leadership behaviour, along with the search for classification criteria as a basis for distinguishing different leadership behaviours, more and more attention is paid to the complex, contradictory and integrative nature of the *phenomenon of leadership behaviour*.

An overview of the ideas and research on the relationship between leadership behaviour and satisfaction shows that, in general, what is in common is the following belief (based on empirical observations and/or scientific results): the different leadership behaviours are related to different levels of satisfaction. This relationship is complex and contradictory – both because of the extreme complexity and intricacy of the correlates (leadership behaviour, job satisfaction)[8], as well as due to the extreme intricacy and complexity of the organisational context. So too due to individual differences in the workplace. Some research postulates that leadership behaviour characteristics directly affect satisfaction parameters. In other models, this relationship is mediated – leadership behaviour significantly influences a variety of organisational phenomena that are important to the feeling of satisfaction (Mladenova, Davidkov, 2023).

In the search for reliable predictors of satisfaction-based behaviour in organisational contexts, authors have directed their efforts in different directions. One line of development is related to the inclusion of attitudes in more complex models (e.g. Ajzen's theory of planned behaviour) – (Ajzen, 1991 as cited by Furnham, 2013, p. 420). Others emphasize the mediating role of enduring personality traits (Furnham, 2013, p. 415 et seqq.). People with

[8] An idea of this complexity is given by the independent study of these conceptual indicators.

an internal locus of control are more satisfied than those with an external locus of control (both in general and at work). One explanation has to do with attitudes toward success (Furnham, 2013, p. 430). Employees with an internal locus of control prefer their managers to apply a participatory approach – this way they themselves participate in the decision-making process (ibid). There are numerous studies revealing different aspects of the relationship satisfaction-values-motives-engagement and the big five personality traits (Furnham, 2013; Tair, 2020). Significant differences are invariably reported in these studies based on socio-demographic characteristics of the subjects, for instance, gender, age, work experience, etc. (ibid).

Buama focuses on the traits and qualities of leaders that enhance employee satisfaction. Employees perceive positively characteristics such as openness, honesty, extroversion (outward orientation) and optimism. Managers' manifestations of nervousness and tension negatively affect employee satisfaction negatively (Buama, 2019).

Petkova-Gourbalova thinks that organisation executives would benefit if they invested more time in conversations and meaningful discussions with their teams to articulate key values and discuss each employee's work in the context of organisational goals. This would lead to increased engagement, motivation and satisfaction (Petkova-Gourbalova, 2019, p. 66) (Petkova-Gourbalova, 2015) In another study, (Petkova-Gourbalova, 2015), the author identifies three factors related to leadership that result in enhanced employee engagement and motivation: vision, skills for team-building, and innovative (entrepreneurial) spirit.

Given the fact that job satisfaction is an emotional reaction and attitude closely related to work values and behaviour motives in the organisation, subordinates' *preferences* for *the type of leadership behaviour* of their executive are of interest. The results of a research project including five observations in organisations in Bulgaria (1995 – 2001 – 2008 – 2014 – 2021) show the following: the most preferred type of leadership behaviour is invariably the consultative one (50 – 41%). Invariably, authoritarian leadership behaviour is the least preferred (Davidkov et al., 2023).

In his research on the relations between the satisfaction, loyalty, and engagement of the employees of a trade company in Bulgaria, E. Stanimirov notes that a managers' attitude towards their subordinates is among the crucial motivators, ranked third after job security and work conditions. In the fifth place and among the key motivators, is moral appreciation of the employee's efforts (Stanimirov, 2011). In another study, the satisfaction of employees (front office workers) and customers in the field of business services are examined in parallel. It is concluded that the factors that have the greatest impact on the satisfaction of the respondent employees are pay, physical working conditions, access to information necessary for the good performance of official duties and opportunities to develop personal skills (Stanimirov, Cherkezova, 2012).

In a study involving 1234 employees in the hospitality industry, R. Minkovski (Minkovski, 2019) reports results on the relationship between the power distance (PD) index and employee job satisfaction. In half of the cases (out of fourteen investigated factors of the working environment), a significant relationship between the level of power distance and the level of satisfaction is established – in these cases, the increase in satisfaction correlates with a decrease in the level of power distance. Since leadership style is a composite indicator of

the power distance index, it can be assumed that there is evidence of a significant relationship between the exercised managerial style and satisfaction with specific factors of the work environment[9].

3. Methodology and Data

The relation between leadership behaviour and job satisfaction is realised based on the following indicators (Table 1):

Table 1. Indicators used in the survey

Conceptual indicator – № + name	Empirical indicator	Response scale
(1) Actual (real) leadership behaviour (decisions)	The descriptions below refer to four different types of leaders[10]. In your opinion, which of them is closest to your direct supervisor at present?	1 – Leader 1; 2 – Leader 2; 3 – Leader 3; 4 – Leader 4
(2) Actual (real) leadership behaviour (care)	Can it be claimed that your direct supervisor is interested in your own development and helps you?	1 – Yes, always; 2 – Yes, usually; 3 – She/He sometimes is; 4 – She/He rarely is; 5 – She/He never is
(3) Desired leadership behaviour (employees' choice)	With reference to the leaders listed, please indicate who you prefer to work with.	1 – Leader 1; 2 – Leader 2; 3 – Leader 3; 4 – P Leader 4
(4) Satisfaction (overall)	How would you characterise your overall satisfaction with the work in your organisation?	1 – completely satisfied; 2 – satisfied; 3 – neither satisfied, nor dissatisfied; 4 – dissatisfied; 5 – completely dissatisfied

Leadership behaviour is examined in three different aspects based on three separate empirical indicators (indicators 1, 2, 3 – Table 1). Job satisfaction is examined based on one empirical indicator (4 – Table 1).

[9] R. Minkovski notes that some of the authors investigate "the direct effect of PD on job satisfaction..." while others analyze the mediating role of PD in the relationship between satisfaction and specific job characteristics (Minkovski, 2019, p. 324)

[10] This classification is borrowed from H. Hofstede's questionnaire – see (Hofstede, 2001).

Leader 1. The leader usually makes their decisions quickly and communicates them to their subordinates clearly and categorically. She/he expects them to carry out the decisions exactly and without objection.

Leader 2. The leader usually makes her/his decisions quickly, but before assigning them for implementation, she/he tries to explain them in detail to their subordinates. The leader explains the reasons for the decisions and answers all questions.

Leader 3. Before making decisions, the leader usually consults with their subordinates. She/he listens to advice, considers it, and then announces their decision. She/he expects everyone to work loyally for its implementation, regardless of whether it is in accordance with the advice given by subordinates.

Leader 4. When an important decision is to be made, he/she usually calls a meeting to present the issue and reach a general agreement. If an agreement is reached, the leader accepts the general opinion for a decision. If consent is impossible, the leader makes the decision independently.

The following hypotheses are checked based on the available data:

H1 The style of leadership behaviour affects the level of satisfaction.

H2 When the actual and desired leadership behaviour match, higher levels of satisfaction will be found // when the actual and desired leadership behaviour does not match, lower levels of satisfaction will be measured.

Hypothesis testing procedures

H1 The style of leadership behaviour affects the level of satisfaction.

The reason for formulating the hypothesis is the results of numerous previous studies in which the relationship between *leadership behaviour* and *job satisfaction* is problematized.

H1 is checked in two ways as follows:

- The presence/absence of statistical evidence of dependence between leadership behaviour (decisions) and the level of satisfaction is established (indicator 1 x indicator 4).
- The presence/absence of statistical evidence of dependence between leadership behaviour (care) x satisfaction (indicator 2 x indicator 4).

H2 When the actual and desired leadership behaviour match, higher levels of satisfaction will be found // when the actual and desired leadership behaviour does not match, lower levels of satisfaction will be measured. This hypothesis is justified on the basis of the assumed and empirically confirmed strong relationship between actual (perceived) and preferred leadership behaviour (Table 2).

Table 2. Dependence between actual and preferred leadership behaviour

Actual leadership behaviour (ALB) / Preferred leadership behaviour (PLB)	L1 (PLB)	L2 (PLB)	L3 (PLB)	L4 (PLB)	Average for the category
	% of respondents				
• Leader 1 (ALB)	**67**	20	17	17	22
• Leader 2 (ALB)	23	**62**	21	16	30
• Leader 3 (ALB)	4	14	**56**	19	31
• Leader 4 (ALB)	6	4	6	**48**	17
Total	**100**	**100**	**100**	**100**	**100**

Approx. Sig. = 0.000 Cramer's V = 0.443

The data in Table 2 are based on the following logic:

- Of all respondents who prefer to work with leader 1 (authoritarian), two-thirds (67%) have this type of (actual) leader.
- Of all respondents who prefer to work with leader 2 (paternalistic), 62 % have this type of (actual) leader.
- Of all respondents who prefer to work with leader 3 (consultative), 56% have this type of (actual) leader.

- Of all respondents who prefer to work with leader 4 (democratic), 48% have this type of (actual) leader.

In each of the indicated cases, the share of respondents for whom there is a match between the actual (perceived) and preferred leader significantly dominates the other groups of respondents. The expressions that sound like puns ("We like what we have." and "We have what we like.") have a considerable cognitive value.

H2 is tested based on the following research procedures:

Applying two-dimensional distribution (cross) between indicator 1 and indicator 3, subsets of populations are distinguished as follows:

- Subset 1 – includes respondents who identify their direct supervisor with L1 and (at the same time) prefer to work with L1.
- Subset 2 – includes respondents who identify their direct supervisor with L2 and (at the same time) prefer to work with L2.
- Subset 3 – includes respondents who identify their direct supervisor with L3 and (at the same time) prefer to work with L3.
- Subset 4 – includes respondents who identify their direct supervisor with L4 and (at the same time) prefer to work with L4.
- Subset 5 – includes respondents for whom the actual leader does not coincide with the preferred one.

The level of satisfaction is established, and the results are compared for each of these subsets.

Research limitations

A potential limitation of this study is the use of the indicators for leadership behaviour and satisfaction.

Leadership behaviour is a uniquely complex phenomenon that can be studied in all manner of system (or systematic) notions, categories, or approaches. The indicators chosen (Table 1 – indicators 1, 2, 3) greatly limit the results with respect to the potential of *those indicators.*

Satisfaction is also a uniquely complex event – while studying it in different contexts, certain contexts and interpretations take precedence. The chosen indicator of satisfaction (Table 1 – indicator 4) undoubtedly affects the research's outcome.

When defining the limitations, the characteristics of the majority of respondents are commonly considered. Similarly, the effect of the parameters of the research methodology and the actual conditions under which the initial empiric information should be considered. Given this conditionality, we can claim that during all stages of the research we have adhered to science-based standards for ensuring high-quality early empiric data, their processing, and their interpretation.

4. Results and Discussion

Tables № 3, 4, 5 and 6 show the one-dimensional distribution of the responses for the four indicators used. The total set of respondents (n = 1145) is presented by two subsets of populations: *professional traders* (n = 865) and *other staff* (n = 280).

Table 3. Leadership Behaviour (decisions) (perception of the direct supervisor – indicator 1)

Which of the enumerated supervisors do you think is closest to the direct supervisor you are currently working with?	Total – sector of trade (1145 respondents)	Professional trader (865)	Other staff (280)
	% of respondents		
• Leader 1 (P1)	22	22	23
• Leader 2 (P2)	30	31	27
• Leader 3 (P3)	31	30	34
• Leader 4 (P4)	17	17	16
Total	**100**	**100**	**100**

The perceptions of actual leadership behaviour are slightly dominated by authoritarian styles (L1 + L2 – 53%). Dialogic (L3) and democratic (L4) leadership behaviours are found in the perceptions of 47% of the respondents. There is no statistical evidence for significant differences between the two surveyed subsets.

Table 4. Leadership behaviour (care) – indicator 2

Do you think that your direct supervisor is interested in your own development and helps you?	Total – sector of trade (1145 respondents)	Professional trader (865)	Other staff (280)
	% of respondents		
• Yes, always	36	38	30
• Yes, usually	32	32	32
• She/He sometimes is	18	17	20
• She/He rarely is	8	7	10
• She/He never is	6	6	8
Total	100	100	100

The trait of *caring* is consistently attributed to 52% of the managers (yes, always + yes, usually). There is no statistical evidence of significant differences between the two sub-populations compared.

Consultative leadership (L3 – 41%) appeals to 2/5 of the respondents. A quarter of them prefer the democratic style (L4 – 26%). Another quarter – paternalistic leadership behaviour (L2 – 24%). Authoritarian leadership (in its purest form – L1) appeals to less than 1/10 of the respondents (9%). There is no evidence of significant differences in the preferences of the two sub-populations compared.

Table 5. Preferred leadership behaviour – indicator 3

With reference to the leaders listed, please indicate who you prefer to work with.	Total – sector of trade (1145 respondents)	Professional trader (865)	Other staff (280)
	% of respondents		
• Leader 1	9	9	7
• Leader 2	24	25	22
• Leader 3	41	41	41
• Leader 4	26	25	30
Total	100	100	100

Table 6. Overall satisfaction with the work in the organisation – indicator 4

How would you describe your overall satisfaction with your work in this organisation?	Total – sector of trade (1145 respondents)	Professional trader (PT) (865)	Other staff (280)
	% of respondents		
• Completely satisfied	24	26	20
• Satisfied	52	50	55
• Neither satisfied, nor dissatisfied	19	20	17
• Dissatisfied + completely dissatisfied	5	4	5
Total	100	100	100

A quarter of the respondents (24%) indicated a high level of satisfaction; a little over 50% chose "satisfied". In the responses of about a quarter of the respondents, there is a different degree of dissatisfaction indicated. For the indicator of satisfaction, there is evidence of significant differences between the compared sub-populations (Approx. Sig. = 0.005; Cramer's V = 0.107). In general, the respondents from the PT category are more satisfied compared to the category of other staff. Evidence is found in the comparison of the average values of the indicator for the two subsets of populations – 2,02 for PT; and 2,15 – for other staff.[11]

Checking H1 (option 1). The style of leadership behaviour affects the level of satisfaction. As stated above, this hypothesis is tested based on establishing the presence or absence of statistical evidence of a relationship between leadership behaviour (decisions) – indicator 1/Table 1 – and the level of satisfaction (indicator 4/Table 1). The result is presented in Table 7.

[11] The response scale suggests the following: the average value of this indicator can take values from [1.00 to 5,00]. Values close to 1.00 indicate the highest level of satisfaction; those tending to 5.00 indicate the highest level of dissatisfaction.

Table 7. Impact of leadership behaviour (decisions) On the level of satisfaction

Leadership behaviour (decisions) x Level of satisfaction	Completely satisfied	Satisfied	3 + 4 + 5	Average for this category
	% of respondents			
• Leader 1	12	19	39	22
• Leader 2	27	33	26	30
• Leader 3	35	33	25	31
• Leader 4	26	15	10	17
Total	100	100	100	100

Approx. Sig. = 0.000 / Cramer's V = 0.190

H1 is confirmed when checking through a double distribution (cross) of indicator 1 and indicator 4. **The style of leadership behaviour (decisions) affects the level of satisfaction**[12]. The logic of the responses shows that:

- Among all respondents who declare that they are *completely satisfied*, more than a third (35%) work with a consultative manager (L3). Over a quarter (27%) work with a paternalistic manager (L2). Approximately the same number of respondents who work with a democratic manager (L4) are completely satisfied (26%). It is these three types of leadership behaviour that provide the highest level of satisfaction in almost 9 out of 10 cases.
- The *conditional level of satisfaction* (satisfied) in 2/3 of the cases is provided by L2 and L3 (the remaining respondents of this category work with either L1 (19%) or L4 (15%)).
- The share of those who are *really dissatisfied* (Table 1, indicator 4 – responses 3 + 4 + 5) is the highest for L1 (39%) – Table 7 – and decreases successively for L2 (26%) – L3 (25%) – L4 (10%).

It can probably be concluded that in the conditions of the labour culture in Bulgaria, there is a well-defined picture of the dependence between the leadership behaviour exercised (decisions) and the levels of satisfaction (in an organisational context). The manifestation of the relationship between the satisfaction with specific factors of the work environment and the overall satisfaction (here indicator 4) gives a satisfactory answer to the question "What, actually, affects overall job satisfaction?"[13].

Checking H1 (option 2). The style of leadership behaviour affects the level of satisfaction. As stated above, in option 2, the hypothesis is tested based on establishing the

[12] This dependence for the entire surveyed population (n = 2651) is even more visible (Approx. Sig. = 0.000 / Cramer's V = 0.200). The distribution of the responses in Table 7 is similar to the distribution of the responses of the whole population.

[13] In the regression models we used, based on which the impact of satisfaction with specific factors of the work environment on overall satisfaction is estimated (here, indicator 4), the explanatory power of the twenty-one investigated factors (R2) is about 65%.

presence or absence of statistical evidence of a relationship between *leadership behaviour (caring)* – indicator 2/table 1 – and the level of satisfaction (indicator 4/table 1). The result is presented in Table 8.

Table 8. Impact of leadership behaviour (care) On the level of satisfaction (option 2)

Leadership behaviour (care) / Level of satisfaction	Completely satisfied	Satisfied	3 + 4 + 5	Average for this category
	% of respondents			
• Yes, always	74	29	13	36
• Yes, usually	20	41	24	32
• She/He sometimes is	4	21	26	18
• She/He rarely is + She/He never is	2	9	37	14
Total	100	100	100	100

Approx. Sig. = 0.000 / Cramer's V = 0.405

H1 is confirmed when checking by double distribution (cross) of indicator 2 and indicator 4. **The style of leadership behaviour (care) (significantly) affects the level of satisfaction**[14]. The logic of the responses shows the following:

- When the manager systematically shows concern for the development of the employees and takes care of them, 3/5 of the respondents are completely satisfied (Table 8). This dependence confirms the importance of *the other people of importance* in the organisation with regard to the perception of the organisational reality and the formation of motives for a desired organisational behaviour.
- When the manager's behaviour is evaluated positively but with conditions ("Yes, it's usually like that"), conditional satisfaction dominates ("I'm satisfied") – in this situation are 2/5 (41%) of the respondents – Table 8. This attitude is assumed to generate positive but more limited motivation for a desired behaviour in the organisation. As the manager's care (attention + help) weakens, the level of satisfaction decreases as well.

The strong and well-defined relationship between leadership behaviour (caring) and employee satisfaction confirms the belief that managers have a cheap and – at the same time – invaluable means of influencing employees: attention – concern – empathy – help. Nothing is so cheap, and nothing is so highly prized as attention. This type of dependence has been confirmed in numerous studies, particularly in the research on the impact of transformational leadership behaviour on employee satisfaction.

It is noteworthy that the strength of the relationship in the two versions of testing H1 is different: there is a stronger relationship between satisfaction and leadership behaviour (care); the relationship between employee satisfaction and leadership behaviour (decisions) is significant but weaker. Although both situations are quite complex, in summary, it is more valuable for employees to feel that someone cares about them (strong paternalistic attitude –

[14] This dependence for the whole surveyed population (n = 2651) has the following characteristics (Approx. Sig. = 0.000 / Cramer's V = 0.437)

need for a "benevolent father") than to have / not be able to influence the decision-making process. It is obvious that the selected typology of leadership behaviour affects significantly the nature and strength of the established dependence. In the case shown for testing H1 when choosing a typology of leadership behaviour based on *decision-making* style (testing H1 – option 1), the strength of the relationship is significant, but not particularly high (Cramer's V = 0.190). When using a typology based on the criterion of *caring for the subordinates* (testing H1 – option 2) there is a significantly stronger dependence (Cramer's V = 0.405). The message of this comparison to managers seems clear. Managers choose the (profitable) behaviour in accordance with the subordinates' expectations. You have a better chance of achieving a high level of employee satisfaction if you regularly nurture them (appropriate attention; appropriate communication; appropriate support; …). The established decision-making style (format) also affects satisfaction.

The confirmation of H1 is in agreement with the positive/negative relationship between the type of leadership behaviour and job satisfaction found in many previous studies. There is reason to believe that this dependence is sustainable and is confirmed by a large part of the research conducted. Managers have a strong incentive to strive to achieve high levels of job satisfaction – both with specific factors of the work environment and with overall satisfaction. As a rule, high satisfaction is associated with higher productivity; stronger motivation for good performance; stronger attachment and commitment to the organisation; lower turnover etc. Given the complexity and intricacy of the investigated issue, it is worth taking into consideration the following:

- When interpreting research results related to leadership behaviour and satisfaction, it should be taken into account that satisfaction is *an emotional reaction* (Nelson et al., 2017; p. 170-171) that can hardly be appreciated and understood outside the triad of affect – behavioural intention – belief (ibid). There is reason to claim that the relationships between the elements of this triad are functional – the state and development trends of each of them is both a result and a prerequisite (or cause) of the state and development trends of the others.

- The elemental (partial) and overall perception and evaluation of the work situation are mediated by essential personal characteristics (traits) – (Furnham, 2013); (Tair, 2020) etc. This is the big topic of individual (and possibly group!) differences in the workplace. Differences based on the locus of control were noted above (Furnham, 2013). The intermediation of *the Big Five*, etc., is widely discussed in the literature (Furnham, 2013); (Tair, 2020). A conclusion with practical value (which is partially proven by the results obtained here – Tables 7, 8) is that no specific leadership behaviour can be a universal means of satisfying all employees at the same time! The structure and levels of satisfaction shown (in this and other studies) are guidelines for choosing leadership behaviour. In order to justify a good choice (make a good decision), the manager needs both a thorough analysis and (possible) comprehensive understanding of the situation, as well as an understanding of the leading trends. The factors of organisational dynamics,

etc. have a significant influence on the choice[15]. The choice is considerably influenced by the factors of organisational dynamics, etc.

- An essential motive for the interest in satisfaction is related to the belief that its measurement has prognostic value – human behaviour in an organisational context can be predicted. Job satisfaction regulates an individual's work behaviour, whether it is directly or indirectly (Radoslavova, 2001). "Attitudes are functional and guide behaviour" (Furnham, 2013). In connection with this dominant interest, the diverse functions of satisfaction should be considered – evaluative¸ motivational, adaptive and "protective" (Topalova, 1989). In the process of building the prognostic chains, satisfaction functions as an emotional **evaluation**. It is associated with personal needs, values, claims and ideals of work. (ibid). It is a generalised and "relatively *stable* emotional reaction to the usual conditions and typical characteristics of the activity and events in the organisation…" (Radoslavova, 2001). The attitude towards the factors of motivation in the organisation is an important source in the formation of satisfaction (Paunov, 2009). At the same time, satisfaction is an important factor in the system of **motivation** because it is "a derivative of the feeling of correspondence between deficits, motives, attitudes to work, the level of expectations, claims and requirements, and the possibilities for their realisation in the work process." (ibid). **Adaptability** is an important mechanism for the realisation of a winning personality strategy in the workplace. Tracing these functional connections and being able to account for cumulative effects create a more reliable basis for the prediction of behaviour in an organisational context.
- The statement shared above that *attitudes are acquired (learned)* mainly through direct experience and social learning (Nelson et al., 2017) contains a valuable message for managers: there are many (specific) mechanisms in organisations through which one can purposefully influence the formation and development of attitudes.

Checking H2. When actual and desired leadership behaviours match, higher levels of satisfaction will be found. A mismatch between actual and desired leadership behaviour will measure lower levels of satisfaction. In accordance with the stated procedure for testing H2, we defined 5 subsets of populations (based on a bivariate distribution between indicators 1 and 3) as follows:

- Subset 1 – includes the respondents who identify their direct supervisor as L1 and (at the same time) prefer to work with L1 (the subset consists of 66 respondents).
- Subset 2 – includes the respondents who identify their direct supervisor as L2 and (at the same time)- prefer to work with L2 (the subset consists of 174 respondents).
- Subset 3 – includes the respondents who identify their direct supervisor as L3 and (at the same time) prefer to work with L3 (the subset consists of 259 respondents).

[15] Let us not forget that the regularities in the field of social sciences and humanities manifest themselves precisely as trends.

- Subset 4 – includes the respondents who identify their direct supervisor as L4 and (at the same time) prefer to work with L4 (the subset consists of 143 respondents).
- Subset 5 – includes the respondents for whom the perceived actual leader does not match the preferred one (503 respondents).

Table 9 presents summarised data about the level of satisfaction for each subset of the population. Column 2 shows the average value of the indicator of satisfaction for each subset. Columns 3, 4 and 5 show the percentage distribution of the responses by response scale categories.

Table 9. Respondents' satisfaction (by subsets)

Group	Level of satisfaction (average value of the indicator for this group)[16]	Completely satisfied	Satisfied	3+4+5
Column 1	Column 2	Column 3	Column 4	Column 5
		% of respondents		
Subset 1 (L1 & L1)	1,91	30	48	22
Subset 2 (L2 & L2)	1,80	33	56	11
Subset 3 (L3 & L3)	1,85	31	53	16
Subset 4 (L4 & L4)	1,71	43	47	10
Subset 5	2,36	12	51	37

Hypothesis 2 was confirmed – respondents who like their supervisor (subsets 1, 2, 3, 4) have higher levels of satisfaction than those who dislike their supervisor (subset 5).

The highest overall satisfaction is observed with respondents from subset 4 (1.71). These are the respondents who "recognize" their direct supervisor as L4 (democratic leadership behaviour) and prefer to work with this type of supervisor. They are followed by the respondents who prefer to work with L2 (1,80) and with L3 (1,85). Among all respondents who approve of their manager's style (which means that they chose to indicate the same leadership style as a desired one) the lowest satisfaction is observed with L1 (1,91). The general cultural situation in the organisations from the sector of trade is synthesized to a high degree in this distribution.[17] The overall satisfaction of the respondents from subset 5 (these are the situations in which the choice of desired leadership behaviour differs from the actual one) is notably lower (2,36).

In the context of the relationship studied (leadership behaviour – satisfaction), the results presented in Table 9 need a more thorough analysis. The initial thesis here is that (as already noted), in this distribution the general cultural situation in the organisations in the sector of

[16] In accordance with the logic of the question and the scale of possible answers, the average values of the indicator can vary in the interval [1.00 – 5.00]. Indicator values close to 1.00 indicate a high level of satisfaction; values that tend to 5.00 speak of a lack of satisfaction.

[17] In general, the presented configuration is valid for the entire studied population (n = 1651): satisfaction is highest for sub-population 4 (average value – 1.73) and lowest for sub-population 1 (average value – 2.09). The level of satisfaction for subsets 2 (1.88) and 3 (1.82) is intermediate, but the positions are reversed – satisfaction for subset 3 is (slightly) higher than that for subset 2.

trade is synthesized to a high degree. The choice of this approach emphasizes the value dependence and sustainability of behaviour and thinking.[18]

- Organisational culture is a "software of the mind" (Hofstede, H. et al., 2020). As a system of values and norms, it offers patterns of behaviour and thinking that are accepted as a measure of what is expected (behaviour) in the organisation. Within the framework of the common (organisational culture), subcultures function, a common model of behaviour and thinking within the framework of separate organisational groups. If we accept the subsets (Table 9) as separate organisational groups based on the combined criterion of *the actual leader – preferred leader*, we can consider the common and the different between them in terms of categories of organisational culture. For different groups in the organisation, the measure of what is expected may be different. And the same measure may be evaluated and preferred in different ways. In other words, the situation presented in Table 9 can be considered as sustainable, with a low potential for change.
- An interpretation taking into account *responsibility* can help considerably for the understanding of the obtained results (Table 9): what is it to be responsible; whence arises the obligation to be responsible for…; who is responsible for …; do we have to be responsible for …; when do we have a motive to be responsible for … and when not; what is the relation between involvement and responsibility; can responsibility be shared; is group responsibility possible (or is responsibility always personal), etc. In the motives to prefer/like (or not to prefer/like) a particular leadership behaviour, the attitude towards responsibility (conscious or unconscious) is invariably present. The right to make decisions (including influencing the process) is a right to choose and – at the same time – a responsibility. There is no doubt that attitudes towards decision-making and responsibility are *culturally determined* as well.
- To fully interpret the obtained result and evaluate its prognostic value, we can rely on the role of personal and group standards. The latter are related to *the behavioural beliefs and assessments, normative beliefs and motivation for obedience and subjective norms* – essential elements in the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975, as cited by Furnham, 2013; p. 419 et seqq.) and the theory of planned behaviour (TPB) (Ajzen, 1988, 1991 as cited by Furnham, 2013; p. 420 et seqq.)[19]

5. Conclusions

The aim of the authors was to test two hypotheses based on a solid empirical basis. H1: **The style of leadership behaviour affects the level of satisfaction.** H2: **When actual and**

[18] When claiming (showing, proving) that something is culturally determined or is a cultural phenomenon, we actually emphasize its value determination and sustainability (durability; inability to change quickly). This is determined by the fact that values are assigned a stabilising role.

[19] To understand better the two conceptual models – TRA and TPB – attention should also be paid to the other conceptual indicators through which they are constructed. For instance, beliefs about the extent to which one has personal control over the behaviour one wants to perform (self-efficacy); past behaviour – how we interpret, what conclusions we draw from our past experience; other (ibid; p. 421).

desired leadership behaviours match, higher levels of satisfaction will be found. A mismatch between actual and desired leadership behaviour will measure lower levels of satisfaction.

The *conceptual indicators* are listed in Table 1. The *empirical data* collected through the empirical indicators listed in Table 1 are used to test the hypotheses.

H1 *was confirmed in two independent ways*. The varieties of leadership behaviour differentiated on the basis of the decision-making format imposed by the leader are associated with significantly different levels of satisfaction (Table 7: Approx. Sig. = 0.000 / Cramer's V = 0.190). The varieties of leadership behaviour differentiated on the basis of the *care* the leader takes (or not) for employee development are also associated with significantly different levels of satisfaction (Table 8: Approx. Sig. = 0.000 / Cramer's V = 0.405). The difference in the strength of these dependences is considerable. When choosing their behaviour, managers must necessarily comply with the expectations of the management. The managers in the sector of TRADE have a higher chance of achieving a high level of job satisfaction of their employees if they regularly care for them (appropriate attention; appropriate communication; appropriate support). The established decision-making style (format) also affects satisfaction.

H2 *was confirmed as well*. The check of H2 required dividing the population of respondents into two types of sub-populations: a) subsets where there is a match between the actual leader (decisions) – as perceived by the respondents – and their preferred leader (subsets 1, 2, 3, 4); b) a subset of respondents for whom the actual leader differs from the preferred one (subset 5). Consistent with what was hypothesized in H2, the satisfaction of the respondents from subsets 1, 2, 3 and 4 is significantly higher than that of the respondents from subset 5 (Table 9). Of separate interest is the comparison of the levels of satisfaction in subsets 1, 2, 3 and 4.

Due to the solid methodological soundness of the study (and taking into account the quality of the empirical data), the reported results are heuristic in themselves. Their cognitive potential increases based on the possibility of embedding leadership behaviour and satisfaction in different conceptual models and cognitive chains. This is achieved in the process of result interpretation based on the conceptual and categorical basis built during the literature review. An essential emphasis in the interpretation of the research results is their problematisation "for the needs of" the managers in commercial organisations.

Due to the fact that each defensible result of scientific research functions as a "conquered frontier", for us, it is a step towards the integration of the used conceptual indicators (leadership behaviour, satisfaction) into more comprehensive and systematic research models. Opportunities for such integration are provided by the adaptation of models based on TRA and TPB (Furnham, 2013); and the inclusion of personal and/or group characteristics of respondents as mediating the relationship leadership behaviour – satisfaction, etc. The further systematic development of the fundamental conceptual indicators makes research sense as well.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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DISCOVERING THE RELATIONSHIP BETWEEN LEADERSHIP STYLES AND ORGANIZATIONAL COMMITMENT: THE CASE OF THE PRIVATE SECTOR OF A DEVELOPING COUNTRY[4]

There has been great interest evolving around leadership ever since so, scholars have been challenged by various variables that have been considered relevant for discovering some of the complexities related to leaders. The output orientation of organizational commitment and employee engagement naturally seeks a relationship with leadership. Hence discovering the relationships among leadership and organizational commitment considering the context of Kosovo is one of the main aims of this paper. The presented work reflects three leadership styles that will be considered: laissez-faire, transactional, and transformational, and three dimensions of organizational commitment: affective, normative, and continuance. The main aim is oriented towards understanding relationships and what they will bring to the organizational context. At this stage, the paper utilizes Pearson's Correlation, whereas collected data was gathered through questionnaires distributed to employees and managers in the private sector in Kosovo. A total of 202 samples were collected using random sampling from diverse industries including retail, manufacturing, service, construction, and wholesale. The results of this paper provide some insights and, in this respect, confirm that leadership styles have a moderate positive correlation with organizational commitment. That implies that organizational commitment will eventually determine leadership in organizations and in this line bring forward new possible discussions in the respective field.

Keywords: Leadership styles; laissez-faire; transactional; transformational; organizational commitment
JEL: M12; D23; D91

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Introduction

Leaders who succeed in creating a positive work environment, trust, and align organizational goals with individual aspirations are more likely to cultivate committed and engaged employees.

While, on the other side commitment can lead to increased productivity, reduced turnover, and overall organizational success. Therefore, one organizational factor that is considered a key determinant of organizational commitment is leadership (Mowday et al., 1982; Keskes, 2014).

Many scholars have studied and presented evidence about different leadership styles that leaders can adopt to encourage employees to aspire to the highest level of commitment (Bogler, 2015; Oladipo et al., 2016; Beauty, Aigbogun, 2022). Nevertheless, it still raises various discussions within the academic community. The concept of organizational commitment, which is central to individual and organizational performance, refers to the relationship between an organization and its employees (Swailes, 2002; Öztekin et al., 2015).

What defines an excellent leader? This is one of many questions that have arisen over time regarding leadership in all organizations and society. There is no society with a complete absence of leadership and leadership itself is influenced by the organizations and the broader societal context in which it operates (Bass, 1997; Van Beveren et al., 2017). Effective leadership is considered one of the key elements to keep the employees committed to the organization. Therefore, organizations should consider leadership approaches and use them to educate managers on the complexities of leading people. Also, leaders need to manage and motivate their employees to reach their maximum potential, be engaged, embrace change, and make good technical decisions (Silva, Mendis, 2017).

Every organization makes an effort to have employees who demonstrate a strong organizational commitment to their company. Organizational commitment is considered a main factor in employee engagement and overall organizational success. This creates a positive bond between employees and leaders where dedicated employees contribute to the company’s prosperity and loyalty. Organizations that have a strong organizational commitment tend to achieve their goals more effectively and employees tend to be more productive which means higher profitability for the organization (Setiawan et al., 2019; Purnomo et al., 2020).

The target of organizations are employees who are committed to achieving the company's objectives, and one of the factors that determine employee commitment is leadership. Therefore, in this paper, we will investigate the relationship between leadership styles and organizational commitment, based on data from respondents of private enterprises in Kosovo from different sectors. Furthermore, the research will determine which of the factors keep the employee more committed to the organization such as emotional connection with the organization (affective commitment), the cost of leaving the organization (continuance commitment), or simply feeling a sense of responsibility and obligation to the organization (normative commitment).

Very few studies on this topic have been conducted in developing countries (Yahaya, Ebrahim, 2016), even less in Kosovo, a country that after **15 years of independence** remains a country in transition. Given the context, it becomes imperative to rigorously examine the potential correlation between leadership paradigms and employee allegiance within private enterprises in Kosovo. Therefore, this relationship could demonstrate a base for further research as well as for raising new questions. For instance, leadership could be considered further in coherence with employees' organizational loyalty which is a dimension strongly related to the abovementioned organizational commitments. The results offer solutions for companies while seeking and fostering organizational commitment with the aim of achieving greater performance. Therefore, this research effort tries to address some of these issues and present some new reflections on the topic of leadership building up the base for even stronger discussions among scholars and generate new research ideas.

2. Literature Review

2.1. Leadership

According to Bhattacharyya and Jha (2018), the act of leadership is considered to be as old as human civilization and one of the fundamental pillars for the progress of human civilization has been humankind's ability to work in teams (Bhattacharyya, Jha, 2018). This topic is multi-layered and multi-disciplinary and its identification, explanation, and description require the simultaneous use of different approaches and conceptual frameworks (Davidkov, 2005; Mladenova, Davidkov, 2023). Leadership is one of the most widely researched and discussed topics in all areas of organizational sciences because literally nothing gets accomplished without it (Yammarino, 2013). It is not surprising that researchers have such an overwhelming interest in the topic because leadership issues are vital for organizational success (Kumar, Kaptan, 2007; Yahaya, Ebrahim, 2016).

The term "leadership" has only been in use since the late 1700s, although the concept of a "leader" has existed since the 1300s (Stogdill, 1974; King, 1990). The term was introduced by G.W. Allport (1937), with reference to different types of personality or behaviour and it is specific to psychology (Vasilescu, 2019). However scientific research on the topic did not begin until the twentieth century (Bass, 1981; King, 1990). Since then, there has been intensive research on this topic (King, 1990).

Leadership is defined as the ability of an individual to motivate, influence, and enable a specific group of people to contribute to increasing the effectiveness and success of the organization (House et al. 1999; Karacsony et al., 2020). Leadership is a disposition agreed upon based on signs of eligibility to be a member of the leader who leads in an organization (Chaurasia, Shukla, 2013; Hajiali, 2022).

Therefore, leadership is essential for creating a clear vision, motivating people, leading individuals and organizations to success creating a positive and productive work environment, promoting innovation, and helping organizations navigate challenges and opportunities (Ejike, 2022). According to Ejike (2022), leadership is challenging and many

of the leaders are neither aware of their leadership style nor know how to improve it to become more effective.

2.1.1. Transactional Leadership

Within contemporary discussions of leadership, leveraged by traditional leadership theory, transactional and transformational leadership have been often reaffirmed. Burns (1978) who pioneered the study of transactional leadership indicated that transactional leaders are those who seek to motivate followers by appealing to their self-interests (Lo, et al., 2009).

During the late 1970s and early 1980s, leadership theories began to diverge from the specific perspectives of the leader, leadership context, and the follower and toward practices that concentrated further on the exchanges between the followers and leaders. Transactional leadership was described as that in which leader-follower associations were grounded upon a series of agreements between followers and leaders (House, Shamir, 1993; Khan et al., 2016).

Transactional leaders can be defined as those who set explicit, work-related goals and determine the rewards that can be expected for performing successfully. However, the implication is that they do not do this proactively or in close cooperation with each team member (Rowold, 2011; Jangsiriwattana, 2019). Some studies revealed that transactional leadership shows a discrepancy between the level of leaders' actions and the nature of the relations with the followers (Khan et al., 2016).

2.1.2. Transformational Leadership

The natural coherence in leadership research has been considered also transformational leadership being the natural follow-up of transactional leadership. The word “to transform” as a term means to change the appearance or character of something completely or someone, especially so that thing or person is improved (Cambridge Dictionary, 2015; Cetin, Kinik, 2015). Transformational leadership sets the standard level of human interaction between the leader and follower and this can be accomplished by the relationship the leader develops with followers wanting to exceed to the next level therefore creating a new era of leaders (Banerji, Krishnan, 2000; Gray, Williams, 2012).

Transformational leaders transform the values of followers to support the vision and organizational goals by creating a climate of trust and in which visions can be shared (Stone, Russell, Patterson, 2004; Cetin, Kinik, 2015). Transformational leadership improves job satisfaction and followers’ job performance through the use of inspiring, supporting, and challenging followers (Dumdum, Lowe, Avolio, 2013; Judge, Piccolo, 2004; Wang, Oh, Courtright, Colbert, 2011; Breevaart, Zacher, 2019).

2.1.3. Laissez-faire Leadership

The term "laissez-faire" is mostly used in economics and political science to define a policy of minimal governmental interference in the economic affairs of individuals and society (Encyclopædia Britannica, and; Tosunoglu, Ekmekci, 2016). According to Northouse (2010), the term laissez-faire refers to a "hands-off, let things ride". Laissez-faire leadership style is considered to be the style that tends to avoid and relinquish one's responsibilities (Hinkin, Schriesheim, 2008b; Skogstad, Hetland, et al., 2014; Robert, Vandenberghe, 2021), makes it less effective and less satisfied style (Bass & Bass, 2008; Robert and Vandenberghe, 2021). Because, leaders who use this leadership style tend to avoid making decisions, abdicate their responsibilities, delay actions, and refrain from using the authority associated with their roles (Robert, Vandenberghe, 2021; Bass, Bass, 2008; Den Hartog et al., 1997).

Kelloway et al. (2005) mentioned two types of negative leaders. The first type consists of active behaviours that are related to a destructive manner and the second type is described by passive behaviours, including laissez-faire leadership (Nguyen et al., 2017). Some researchers might consider laissez-faire leaders as displaying leadership skills that attract and avoid conflict management styles (Gray, Williams, 2012).

2.2. Organizational commitment

Despite organizational commitment had been a subject of study during the 1960s and 1970s, it only gained popularity in the 1980s since it has dominated as one of the most popular topics leaving behind topics such as trust, organizational citizenship behaviour, and extra-role behaviour (Giacalone, Greenberg, 1997; Roe et. al, 2009). The publications that contributed to its popularity in that period were by authors such as Walton (1985; Roe et al., 2009), who sparked managers' interest in "management by commitment" rather than "management by control" and the group of authors such as Mowday, Porter and Steers (1982; Roe et al., 2009).

The key to organizational success depends on the commitment of employees toward the organization. Organizational commitment is a situation where an employee is in line with a particular organization as well as the goals and wishes to maintain membership in the organization (Robbins, Judge, 2007; Sjahruddin, Sudiro, 2013).

Organizational commitment is also defined by Allen and Mayer (1997; Malaysia, 2016) as the desire of employees to remain employed with their organization. George and Jones (1996) said that employees who are committed to the organization like to be members of the organization, believe in the organization have good feelings about the organization, are willing to defend the organization, and want to do something good for the organization (Kreitner & Kinicki, 2014; Yandi and Havidz, 2022). Mowday et al. (1979) conceived organizational commitment as “the relative strength of an individual’s identification with and involvement in a particular organization”. O’Reilly et al. (1991) defined commitment as the psychological bond an individual has with an organization, including job involvement, loyalty, and belief in organizational values (Abstar, Das Swain, 2009). According to Rehman, et al. (2012; Asaari, 2020), organizational commitment in the research represents a major influence on the relationship between employees and their employing organization (Jussila et al., 2012; Zainuddin, Asaari, 2020).

2.2.1. Dimensions of Organizational Commitment

Organizational commitment is a broad popularity researched component of employee attitudes (Gokyer, 2018; Bawuro et al., 2018; Meyer et al., 2002; Meyer, Herscovitch, 2001; Mowday et al., 1979; Porter et al., 1974; Chughtai, Zafar, 2006; Mowday et al., 1982; Abu-Saad, Haj, 2020). Reilly and Chatman (1986) presented three dimensions of commitment including compliance, identification and internalization. Calculating direction given by Penley and Gould (1988), Meyer and Allen (1991) established a model with affective, continuance, and normative commitment (Sabir et al., 2010).

Affective commitment represents an emotional connection, identification, and involvement with the organization. The third dimension of commitment is normative commitment. Allen and Meyer (1990; Meyer et al., 2002) later suggested this distinguishable component to the model which reflects a perceived obligation that may have employees toward their organization (Meyer, Allen, 1991, 1997; Meyer et. al, 2002).

Affective commitment is the emotional bond of employees toward the organization (Wankel 2009; Sabir et al, 2010). Affective commitment consists of three factors: beliefs, willingness, and desire toward the organizational goal (Porter 1974; Sabir et al, 2010). Mowday (1982; Sabir et. al, 2010) categorized affective commitment with personal and structural characteristics, job and work experience. This dimension leans towards a psychological perspective, where emphasis is placed on the binding force between the person and the organization. Employees who are identified with strong affective commitment desire to continue being a member of the organization, accepting values and goals from the organization taking in exchange psychological rewards, such as support or recognition (Mowday et al., 1979; Mathieu, Zajac, 1990; Herrera, 2021).

Continuance commitment refers to the benefits an employee receives from leaving the organization or staying in the organization as an investment of the employee. This investment may be due to retirement or emotional attachment to other employees (Sabir et al., 2010). Continuance commitment is based on the principle of social exchange, where an individual's commitment to an organization is a result of the small investments they have made over time and these investments prevent voluntary disengagement from the organization (Becker, 1960; Herrea, 2021). This perspective was later developed by Meyer and Allen (1991, 1997; Herrea, 2021) where it was named Commitment to Continuity (CC) (Herrea, 2021).

Normative Commitment, known as the third dimension of Meyer and Allen (1991), focuses on a work ethic and the responsibility that the employees provide toward the organization which drives them to perform their jobs to the best of their abilities in any circumstance (Herrea, 2021). Normative Commitment (NC) refers to an employee's feeling of obligation towards their organization and represents the value of loyalty and responsibility that an employee exhibits towards the organization (Meyer, Allen, 1991; Sabir et al, 2010).

2.3. Leadership Styles and Organizational Commitment

One organizational factor that is considered a key determinant of organizational commitment is leadership (Mowday et al., 1982; Keskes, 2014). An important number of research studies

provided significant results putting forth that leadership behaviour has a positive effect on organizational commitment (Adebayo, 2010; Akbolat, Isik, Yilmaz, 2013; Avolio, Zhu, Koh, Bhatia, 2004; Huang, 2000; Cilek, 2019).

Leadership effectiveness can be measured through organizational commitment, which provides a broad measure of the effectiveness of leadership and offers a way to explore further the subject of the relationship between leadership and commitment. Specifically, leaders have the responsibility to emphasize to their employees their link and contribution to the success of the organization and they should also understand the significance of developing a positive relationship with their employees in order to enhance the level of commitment to the organization (Truckenbrodt, 2000; Keskes, 2014).

After analyzing the arguments presented above, we suggest the following hypothesis:

Hypothesis

H1. Leadership has a positive linear correlation with organizational commitment.

H1a.Transactional leadership has a positive linear correlation with effective commitment.

H1b.Transactional leadership has a positive linear correlation with continuance commitment.

H1c. Transactional leadership has a positive linear correlation with normative commitment.

H1d. Transformational Leadership has a linear correlation with effective commitment.

H1e. Transformational Leadership has a positive linear correlation with continuance commitment.

H1f. Transformational Leadership has a positive linear correlation with normative commitment.

H1g. Laissez-faire has a positive linear correlation with effective commitment.

H1h. Laissez-faire has a positive linear correlation with continuance commitment.

H1j. Transformational Leadership has a positive linear correlation with normative commitment.

3. Methodology

Sampling size

This study utilized a random sampling method and involved 202 participants as its respondents. It should be noted that the survey was distributed widely to a group of over 450 potential respondents but less than 44.88% of the distributed surveys were returned.

Data collection

Data was collected using two ways. In most of the organizations, the questionnaire was completed online with a Google Form (175), with the link being provided to the participants.

In recent years, the availability and relatively low cost of professional online samples have caused their use as a data collection tool to skyrocket (e.g., Aguinis et al. 2021, Bernerth et al. 2021; Zickar and Keith, 2023). In the beginning, the research author contacted managers in every organization that was part of the study (mainly entrepreneurs). The link was then shared by them with employees and managers of organizations. For 27 employees who had difficulty completing the questionnaire and asked for additional clarification, the questionnaires were filled in person, and administered by a person with authority in the organization who had previously been instructed by the authors of the research.

Questionnaire data were automatically generated in an Excel sheet which was then imported into the SPSS (SPSS Statistics 27) database.

Questionnaire

The questionnaire completed for this research consists of three sections. The first section has 18 questions related to organizational commitment. The second section has 19 questions related to leadership styles. The third section has a total of 8 questions related to demographic data.

All the questions for organizational commitment and leadership style are measured by using a Likert scale. A five-point Likert scale questionnaire was developed to provide respondents with the convenience of answering questions according to their level of agreement (McLeod, 2008; Khudhair et al., 2022).

Measurement of Variables

Instrument for organizational commitment

To measure organizational commitment for this study we used the scale from Allen and Meyer (1991, 1993) adapted from Bar-Haim (2019). The authors made some changes to their instrument by reforming and refining it into an 18-item instrument with 6 items for each of three dimensions which are affective, continuance, and normative commitment (Khajuria and Khan, 2022). Each item on this scale was rated on a 5-point scale. The Cronbach's **α** for this scale was 0.767.

Instrument for Leadership styles

To measure transactional leadership for this study we used a MLQ developed by Bass and Avolio (1995). Eight items were rated on a five-point Likert scale. Cronbach's α of the scale for transactional leadership is 0.789.

To measure transformational leadership, we used the scale from Carless, Wearing, and Mann (2002). Seven items of the scale were rated on a five-point Likert scale. The Cronbach's α of the scale for transformational leadership is 0.924.

To measure laissez-faire leadership was used also multifactor MLQ by Bass and Avolio (1995) and four items of this scale were rated on a five-point Likert scale. The Cronbach's α of laissez faire leadership scale is 0.857.

The questionnaire for leadership styles was in rater form which means that others perceive the leader's leadership behaviors.

Respondents profile

In this study participated total of 202 employees and managers from the private sector. Of the respondents through the questionnaire distributed can be concluded that 126 (62.4%) of the respondents were males and 69 (34.2%) were females. The youngest was 19 years old and the oldest was 64 years old. The average was 35 years old. The majority of the respondents 65.8%, were married, 26.7% were single and 6.4% chose not to answer. While regarding the education of the respondents, 78 (38.6%) had a Bachelor's degree, 71 (35.1%) had a Master's degree, 20 (9.9%) had higher or middle school education, and 13 (6.4%) had a PhD or PhD students. Most of the respondents had a diploma (n=202, 81%).

Regarding the years of service in the organization, the minimum number of services was 1, while the maximum was 35. Respondent answered an open question about the length of service in the current organization, and the results show that 1 year was the minimum and 35 years was the maximum. Furthermore, 123 (52.3%) of them were in managerial positions and 79 (33.6%) were in non-managerial positions. The cross-tabulation between gender and position of the respondents shows that even in the attempt of society to promote gender equality in management positions the findings show a stronger presence of men in managerial positions (90 out of 123 respondents from management positions) and in non-managerial positions females (42 out of 79 respondents from non-managerial positions). Of the 123 respondents from managerial positions, 10.9% were part of the top, 35.6% were in the middle, and 14.9% were part of the low level of the managerial hierarchy. The majority of respondents work in the service sector 58 (28.2%), 47 (20.0%) work in the manufacturing sector, 45 (19.1%) in the retail sector, and 20 (8.9%) in the wholesale.

Validity and Reliability

To interpret Cronbach's alpha coefficient in this study, we used the general rule presented by the authors George and Mallery (2003). They presented an accepted rule for describing internal consistency when using Cronbach's alpha, and they interpret the value alpha as follows: when $\alpha \geq 0.90$ is considered excellent, $0.80 \leq \alpha \leq 90$ is good, $0.70 \leq \alpha < 0.80$ is acceptable, $0.60 \leq \alpha < 0.70$ is questionable. 0.60 is weak and when $\alpha < 0.5$ is considered unacceptable. The results of our study show that Cronbach's α coefficient for each variable is: organizational commitment $\alpha = 0.767$, laissez-faire leadership $\alpha = 0.857$, transactional leadership $\alpha = 0.789$ and transformational leadership $\alpha = 0.924$. Therefore, considering that the coefficient α of the model and its average for each variable was higher than 0.70 confirms the reliability of the model.

Descriptive statistics

Table 1 presents results from descriptive statistics for leadership styles. The mean value for the laissez-faire leadership style is 2.3676 (between low and medium) and the standard deviation is 1.12832. The mean value for transactional leadership style is 3.7420 (high) and the standard deviation is .70193. The mean value for transformational leadership style is 4.0021 (high) and the standard deviation is .85945. The leadership style questionnaire was in rater form which means that others perceive the leader's leadership behaviors. Of the responses from the participants, the most depicted leadership style from leaders in organizations is transformational leadership. The less-depicted leadership style is laissez faire which means that managers do not display a level of refusal to assume the responsibilities that are part of their position.

Table 1. Descriptive statistics of three leadership styles

	N	Mean	Std. Deviation
Laissez-Faire Leadership	202	2.3676	1.12832
Transactional Leadership	202	3.7420	0.70193
Transformational Leadership	202	4.0021	0.85945
Valid N (listwise)	202		

From 1.00 to less than 2.33 = low, from 2.33 to 3.66 medium, and from 3.67 to 5.00 = high, (Al-Daibat, 2017).
Source: Prepared by the authors

Table 2. Descriptive statistics of organizational commitment

	N	Mean	Std. Deviation
Affective Commitment	202	3.2409	0.60789
Continuance commitment	202	3.5396	0.70970
Normative Commitment	202	3.4818	0.79711
Valid N (listwise)	202		

From 1.00 to less than 2.33 = low, from 2.33 to 3.66 medium, and from 3.67 to 5.00 = high, (Al-Daibat, 2017).
Source: Prepared by the authors

Table 2 presents results from descriptive data for organizational commitment, in detail for the three organizational commitment dimensions. Meyer and Allen (1997) do not guide about expected, desired, average, or ideal means for organizational commitment scales (namely affective, continuance, and normative commitment). Instead, they and other researchers (Allen, Meyer, 1996; Dunham, Grube, Castaneda, 1994) examined whether there was a positive or negative relationship between the different types of organizational commitment, the outcomes that are being measured, as well as the pattern for those findings (Garg, Ramjee, 2013). The scores for the three dimensions are above the average. Normative commitment (NC) has the highest standard deviation, where the mean value is 3.4818 (medium), and the standard deviation is .79711, which means that most of the participants feel that have obligations towards organizations and are loyal to the organizations but not because they have an emotional relationship with the organization. This is followed by continuance commitment (CC) with a mean value of 3.5396 (medium) and a strong deviation of 0.70970. This dimension also has a score above the average which means that employees stay in a current organization because they take into consideration the cost of leaving of organization.

The standard deviation for affective commitment (AC) is the lowest but also is above the average. The lowest score for this dimension means that employees do not have a strong emotional attachment to the organization.

4. Results and Analysis

Table 3 below presents the results of the multicollinearity and variance inflation factor (VIF) between leadership styles and dependent variables which are dimensions of commitment (affective, continuance, and normative). Belsley (1992; Shrestha, 2020) shows how to interpret the VIF value when it takes certain values as below. If the value of VIF is 1 indicates that the independent variables are not correlated with each other. If VIF is between 1 and 5, variables are only moderately correlated. But if VIF is between 5 and 10, variables are highly correlated, which can make it difficult to accurately estimate regression coefficients. A VIF value above 10 indicates that multicollinearity is present and that regression coefficients are weakly estimated (Belsley, 1991; Shrestha, 2020), so in this study correlation between leadership styles (laissez-faire, transactional, transformational) with affective commitment as a depended variable is between 1 and 5 which indicated a moderate correlation between those variables. None of the VIF values in this study exceed value 5, indicating that multicollinearity will not be a problem in the regression model.

The results found a moderate correlation between leadership styles, specifically laissez-faire, transactional, and transformational, and continuance commitment as the dependent variable. The correlation score ranged from 1 to 5. Additionally, the VIF values were all less than value 5, indicating that multicollinearity would not pose a problem in the regression model.

The results found a moderate correlation between leadership styles (laissez-faire, transactional, transformational) and normative commitment, with a correlation score ranging from 1 to 5. Additionally, none of the VIF values exceed value 5, indicating that multicollinearity will not be a concern for the regression mode.

Table 3. Multicollinearity

		Collinearity Tolerance	Statistics VIF
1. Dependent Variable: affective commitment (AC)	Laissez-Faire Leadership	0.843	1.186
	Transactional Leadership	0.555	1.802
	Transformational Leadership	0.507	1.972
2. Dependent Variable: continuance commitment (CC)	Laissez-Faire Leadership	0.843	1.186
	Transactional Leadership	0.555	1.802
	Transformational Leadership	0.507	1.972
3. Dependent variable: Normative commitment (NC)	Laissez-Faire Leadership	0.843	1.186
	Transactional Leadership	0.555	1.802
	Transformational Leadership	0.507	1.972

Source: Prepared by the authors.

According to Asuero et al. (2016), the rule of thumb scale to evaluate the strength of the correlation is: 0.90 to 1.00 very high correlation, 0.70-1.89 high, 0.50-0.69 moderate, 0.30-0.49 low and 0.00-0.29 little if any correlation. Based on this rule it's interpreted the results from the table below (Table 4).

Table 4. Pearson correlation between leadership styles and organizational commitment

		Organizational Commitment	Affective Commitment	Continuance commitment	Normative Commitment
Leadership Styles	Pearson Correlation	0.617**	-	-	-
	Sig (2-tailed)	<0.001	-	-	-
	N	202	-	-	-
Leaissez-Faire Leadership	Pearson Correlation	-	0.398**	0.209**	0.053
	Sig (2-tailed)	-	<0.001	0.003	0.455
	N	-	202	202	202
Transactional Leadership	Pearson Correlation	-	0.270**	0.304**	0.477**
	Sig (2-tailed)	-	<0.001	<0.001	<0.001
	N	-	202	202	202
Transformational Leadership	Pearson Correlation	-	0.239**	0.370**	0.536**
	Sig (2-tailed)	-	<0.001	<0.001	<0.001
	N	-	202	202	202

Source: Prepared by the authors.

Table 4 above presents the Pearson correlation between three leadership styles and organizational commitment dimensions. The Pearson correlation coefficient between leadership styles and organizational commitment is 0.617. Since this number is between 0.50 to 0.69 indicates a moderate positive linear correlation between the two variables. The p-value is <0.001. Since the value is less than the accepted value of 0.05, indicating a statistically significant association between leadership styles and organizational commitment.

The Pearson correlation coefficient between laissez-faire leadership and affective commitment is 0.398. Since this number is between 0.30 to 0.49 indicates a low but positive linear correlation between the two variables. The p-value is <0.001. Since the value is less than 0.05 the two variables have a statistically significant association.

The Pearson correlation coefficient between laissez-faire leadership and continuance commitment is 0.209. Since this number is between 0.00 and 0.29 indicates negligible correlation or little if any correlation between the two variables. The p-value <0.003. Since the value is less than 0.05, laissez-faire leadership and continuance commitment have a statistically significant association.

The Pearson correlation coefficient between laissez-faire leadership and normative commitment is 0.053. Since this number between 0.00 and 0.24 indicates negligible or little if any positive correlation between two variables. The p-value <0.455. Since this value is not less than 0.05 the two variables don't have a statistically significant association.

The Pearson correlation coefficient between transactional leadership and affective commitment is 0.270. Since this number is between 0.00 and 0.29 indicates negligible correlation or little if any correlation between the two variables. The p-value <0.001. Since this value is less than 0.05 the two variables have a statistically significant association.

The Pearson correlation coefficient between transactional leadership and continuance commitment is 0.304. Since this number is between 0.30 to 0.49 indicates a low positive linear correlation between the two variables. The p-value <.001. Since this value is less than

the accepted value of 0.05, indicating a statistically significant association between transactional leadership and continuance commitment.

The Pearson correlation coefficient between transactional leadership and normative commitment is 0.239. Since this number is between .00 to 0.29 indicates a low positive linear correlation between the two variables. The p-value <0.001. Since the value is less than 0.05 the two variables have a statistically significant association.

The Pearson correlation coefficient between transformational leadership and affective commitment is 0.239. Since this number is between 0.00 and 0.29 indicates negligible or little if any correlation between two variables. The p-value <0.001. Since the value is less than the accepted value of 0.05, transformational leadership and affective commitment have a statistically significant association.

The Pearson correlation coefficient between transformational leadership and continuance commitment is 0.370. Since this number is between 0.30 to 0.49 indicates a low but positive correlation between the two variables. The p-value <0.001. Since the value is less than 0.05 the two variables have a statistically significant association.

The Pearson correlation coefficient between transformational leadership and normative commitment is 0.536. Since this number is between 0.50 to 0.69 indicates a moderate positive correlation between the two variables. The p-value <0.001. Since the value is less than 0.05 indicating a statistically significant association between transformational leadership and normative commitment.

The results of our study demonstrate varying degrees of correlation between three leadership styles and three organizational commitment dimensions. Generally, there's a statistically significant association between most leadership styles and commitment dimensions, with strengths of correlations ranging from negligible to moderate. However, laissez-faire leadership's association with normative commitment is not statistically significant, indicating no strong relationship between these variables.

5. Discussions

The results provided a broader picture setting the tone for future research efforts. In this perspective starting with descriptive statistics where it is indicated that the average score across the three dimensions of organizational commitment is higher than the mean. The results suggest that most of the respondents feel that they have obligations toward the organization and should be loyal to it, but not necessarily because of an emotional bond they have with the organization. The continuance commitment dimension also scores above the average, indicating that many employees remain in their current organization because they weigh the costs of leaving it. The affective commitment (AC) dimension has the smallest standard deviation, yet it's still higher than the mean. This result of the AC dimension suggests that there isn’t a strong emotional bond between employees and the organization. The leadership style survey was in a rater form, which implies that employees are assessing the leadership behaviours exhibited by their leaders. The least observed leadership style is laissez-faire, suggesting that some managers might avoid or neglect their responsibilities.

This paper aimed to investigate how strong is relationship between leadership styles and organizational commitment. The results from the study found a moderate positive correlation between leadership styles and organizational commitment which is consistent with previous research by Yahaya and Ebrahim (2016) who consider that using a variety of leadership and commitment measures in various settings consistently showed a positive linkage between leadership style and organizational commitment. The results are consistent also with results from Yousef (2000; Yahaya and Ebrahim, 2016) who examined the linkages between leadership behaviour and organizational commitment in 50 major organizations in the United Arab Emirates and the results of the study found significant positive relationships between leadership behaviour and organizational commitment (Yahaya and Ebrahim, 2016).

According to the results, laissez-faire leadership has indicated a low but positive correlation with affective commitment but little if any correlation with continuance commitment. The correlation between laissez-faire leadership and normative commitment is not statically significant which supports to some extent and the previous studies that have found that laisses-faire leadership style either has no correlation or correlates negatively with organizational commitment as a whole (Erkutlu, 2008; Mass, 2014) but does not support finding from Clinebell (2013) and colleagues as well and studies from Silva and Mendis (2017) that said that laissez-faire leadership correlate negatively with affective commitment, because in this study the correlation between those variables is low but positive. Not much research has been done on the effects of laissez-faire leadership on the different dimensions of organizational commitment (Mass, 2014), even less in Kosovo.

Transactional leadership indicates negligible correlation or little with affective commitment but indicates a low but positive correlation with continuance and normative commitment. This study does support the suggestions by Ahmad (2015) who suggested that the relationship between transactional leadership and organizational commitment is significant. The results were also supported by Chen (2002) who found that both transformational and transactional leadership behaviours have a weak positive correlation with organizational commitment (Yahaya and Ebrahim, 2016). However, the study does not support the findings from Lee (2004; Keskes, 2014) which say that transactional leadership does not have a significant relationship with organizational commitment. A relationship between transactional leadership and affective commitment is not found in many studies (Bučiūnienė & Škudienė, 2008; Dahie, 2017).

According to the results, transformational leadership indicates negligible or little if any correlation with affective commitment, low but positive correlation with continuance commitment, and moderate positive correlation with normative commitment. Based on the results of the study not all suggestions are supported by Bycio, Hackett, and Allen (1995; Dahie 2017) that there exists a significant positive correlation between transformational leadership and affective commitment and a somewhat weaker but significant positive relation with normative commitment. Very similar results from Bycio and colleagues were presented by Bučiūnienė and Škudienė (2008) in manufacturing firms as well as a group of authors, Dun, Dastoor, and Sims (2012) who found that no significant relationship between transformational and continuance commitment (Clinebell, et al., 2013), but which findings do not find support in this study.

The research found a moderate positive correlation between leadership styles and organizational commitment, consistent with prior studies. However, some findings, such as the relationship between transformational leadership and various dimensions of commitment, diverged from earlier research.

6. Conclusions

The study investigated the magnitude and direction of the relationship between leadership styles and organizational commitment. The results obtained from this study show varying degrees of correlation between leadership styles and commitment dimensions. Most leadership styles have a statistically significant association with commitment dimensions, with the strengths of correlations ranging from negligible to moderate which means that when one variable increases, the other variable also tends to increase. The results demonstrated a moderate positive linear correlation between leadership styles and organizational commitment which is consistent with prior studies. For example, between transformational leadership and normative commitment exists a moderate correlation. This means that leaders who tend to inspire and stimulate employees and create an environment where employees feel motivated can moderately increase the obligation and responsibility of employees towards the organization.

On the other hand, there is no correlation between laissez-faire leadership and normative commitment. This means that by increasing or decreasing the use of laissez-faire leadership the other variable (in this case normative commitment) doesn't change in any particular direction. So, when leaders refuse to assume the responsibilities that are part of their position, it will not increase or decrease the level of the employee's obligation toward the organization.

Limitations and recommendations for future research

The aim of simple regression analysis is to assess how significantly a predictor variable influences a specific outcome. This is distinct from correlation analysis, which focuses on determining the magnitude and direction of the relationship between two random variables (Zou et al., 2003). In this research, we probed the direction of the relationship between leadership styles and organizational commitment. Hence that is the main limitation and shall be considered for subsequent studies, by utilizing linear regression is advised. This paper treated a direct effect between leadership styles and organizational commitment. For future research, it will be important to treat the indirect effect of those variables.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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MEAN-VARIANCE ENVIRONMENTAL INVESTMENT OPTIMIZATION OF BULGARIAN PRIVATE PENSION FUNDS[3]

Pension funds' investments are increasingly linked to the changes in climate and environmental protection. The integration of environmental, social and governance (ESG) factors into their investment process is still varying in different countries and regions. The limited number of studies on the application of the ESG investment approach by private pension funds in Bulgaria shows that the country lags behind the trends in Europe.

Although pension funds do not perceive environmental investments as riskier or less profitable than conventional ones, many of them remain cautious due to the shorter-term financial performance data of green assets. To achieve adequate retirement savings and a high replacement rate saving "more and for longer" is not enough. As far as the topic of portfolio investment performance is on the agenda, one would reasonably ask what the reflection of environmental investments would be on the widely diversified portfolios of pension funds in the country.

The present research is dedicated to a mean-variance (MV) portfolio optimization involving a selection of conventional and green assets under different constraints and "shades of green" by using historical data. The empirical results from the portfolio optimizations performed shed light on the questions raised and complement the motivational spectrum "in favour of" or "against" environmental investment.

Keywords: private pension funds; environmental investments; ESG factors; portfolio optimization; mean-variance model; efficient frontier
JEL: J32; G11; Q56

1. Introduction

The critical analysis of the investment policy of voluntary pension funds (VPFs) in Bulgaria shows that the information disclosed about it is of extremely similar content and, in some cases, the formulation of objectives with respect to risk and profitability is entirely consistent.

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[3] This paper should be cited as: *Kirov, S., Beneva, M. (2024). Mean-Variance Environmental Investment Optimization of Bulgarian Private Pension Funds. – Economic Studies (Ikonomicheski Izsledvania), 33(6), pp. 88-112.*

In general, there are no distinctive features and specific spirit of the different policies.[4] The ESG investment approach, which has become increasingly applied among pension funds in Europe, *is still poorly represented in Bulgaria*. The share of green investment in the portfolios of VPFs in the country during the period 2012-2021 fluctuates between 0.55% and 1.92% of total assets, reaching 3-4% in certain funds (Beneva, 2023a, 311). The values mentioned are totally acceptable with a view to the lack of a formal investment policy on matters related to sustainability.

During the studied 10-year period (2012-2021), only VPF "Doverie" declared the conduct of socially responsible investment policy based on its Code of Conduct. At present, only three out of nine funds have identified environmental, social and governance (ESG) risks as potential investment risks ("UBB", "Doverie" and "Saglasie") and their integration into the investment policies is comparatively recent (in November 2021, October 2022 and March 2023, respectively). *The information disclosed is limited and not sufficiently specific*. Pension funds declare the use of negative screening as a strategy to manage ESG risks, however, without specifying the criteria and/or without mentioning the materiality thresholds when doing the screening or the lists of "forbidden" companies and countries, which is the practice with environmental leaders all over the world.

VPFs licensed in the country not only refrain from considering the way sustainability matters affect their results, status and development (the "outside-in" perspective); they further fail to take into account the impact of their investment decisions on people and the environment (the "inside-out" perspective). The investment policy so applied by VPFs in Bulgaria puts the country in the group of the ones lagging behind the process of ESG investment.

The research thesis of the article is that the environmental investments of the VPFs in Bulgaria do not harm portfolio return and vice versa help for better performance of their portfolios. The objective of this paper is to empirically study the effects of including green assets in the investment portfolio of VPFs in Bulgaria. Optimization has to reveal whether green financial instruments could contribute to a better compromise between the risk and return of the investment portfolio, i.e. whether they outperform their traditional equivalents.

The research focuses on one of the ESG factors, particularly – the environmental one. The arguments are related to the policy of the European Union in the field of environmental protection, the commitments undertaken (Green Deal, Paris Agreement, etc.) and the objectives declared with respect to climate finances. The selection of green indices and funds for the portfolio optimization covers the topics, related to climate change, fossil fuels, carbon emissions, clean energy, waste management, water treatment, etc. Benchmarks of assets associated with the wider principles of ESG and sustainable investment by incorporating social and governance criteria are outside the scope of analysis, as there is no way to isolate their environmental component as a factor for the assets' financial performance.

[4] The analysis is based on the investment policies of VPFs disclosed by pension insurance companies on their official websites (last accessed on 1 November 2023). Survey includes all VPFs licensed in Bulgaria into 31 December 2021 except VPF "DallBogg: Life and Health", which starts activity a month before.

The green indices used in the optimization procedure were selected based on the environmental criteria that were in effect as of June 2022. Given that the process of formulating and revising definitions, standards, labels, road maps, benchmarks, etc., in the field of green finance is extremely dynamic, the authors are not responsible for possible deviations from the stated environmental criteria that may generate a greenwashing risk.

The optimization problem is considered from the perspective of voluntary funds for several reasons. The choice of employers and employees for voluntary pension insurance is based on the perceived need for secure, stable and decent income in old age. About 1/5 of the economically active population of Bulgaria owns an individual party in a voluntary pension fund, but the amount of accumulated funds is still small. If the investment policy of the pension funds corresponds to the consumer's expectations of risk, return and investment beliefs, the potential of the market can be developed. As investments in VPFs are less regulated (Bulgarian legislation envisages lower investment restrictions as compared to the ones for mandatory pension funds), they have a real opportunity to offer better product design, helping to boost confidence in the sector.

The study is fully in line with stipulated regulatory requirements for the investment activity of VPFs, but the questions related to legislative restrictions expediency and possibilities to quantitative limits liberalization remain outside the scope.

2. MV optimization as one of the possible portfolio approaches

The significance of the problem of ensuring adequate income at retirement age explains the large number of studies on the strategic capital allocation and optimization of the investment portfolios of pension funds. The studies are distinguished by their varieties of models and assumptions, however, they are all based on the traditional investment approach, e.g.:

- maximising the expected utility in the case of different preferences by the investor (utility functions) – risk-adjusted function (Blake, 1999), power function (Deelstra, Grasselli, Koehl, 2004), functions of the Constant Absolute Risk Aversion, Constant Relative Risk Aversion or Hyperbolic Absolute Risk Aversion type (Menoncin, Scaillet, 2006; Vigna, 2009; Vigna, 2011);
- optimal allocation of the portfolio with a guaranteed minimum of pension income (Boulier, Huang and Taillard, 2001; Deelstra, Grasselli, Koehl, 2003);
- accounting for the individual characteristics of the insured persons, including contribution rate, income replacement rate and change in risk preferences (Haberman, Vigna, 2002; Liu, et al., 2023; Vigna, Haberman, 2001; Walker, 2005);
- optimization for pension plans with defined contributions and return clause of premium with an interest rate (Akpanibah, Osu, 2018);
- application of the “mean-variance” model (Vigna, 2009; Vigna, 2011), “mean-VaR” (Zhu, Dong, Wu, 2022), “mean-CvaR” (Hollenwaeger, 2017);

- guidelines to savers on how to manage their pension plans before and after retirement according to economic and personal characteristics (Konicz, Mulvey, 2015).

The interest in socially responsible investing over the past few years has provoked a number of studies on the possibilities for portfolio optimization by using green assets or assets with ESG characteristics. A significant part of the studies apply the "mean-variance" approach for portfolio optimization. Shen and LaPlante (2019) compare portfolio performance in the context of different climate scenarios, He and Cai (2012) make a parallel between the conventional and green portfolio and Herzel, Nicolosi and Stariča (2012) study the efficient frontiers of a conventional and ESG portfolio with respect to each of the three dimensions. There are several publications that demonstrate the performance of sustainable portfolios as compared to portfolios comprising of conventional and sustainable assets (Pedersen, Fitzgibbons and Pomorski, 2021; Porage, 2020; Wong, 2020). And while most studies are based on portfolio optimization by using stock, Mascelluti (2018) studies the impact of incorporating green bonds in the portfolio. A recent study (Beneva, 2023b) tests pension portfolio optimization with green assets, based on the UPM/LPM (Upper Partial Moment/ Lower Partial Moment) model. Despite the advantages, the UPM/LPM algorithm is not often used in practice, due to its computational complexity.

Some of the considered models are not applicable for Bulgarian pension funds' optimal portfolio selection, because of the specifics of the system. The legislation does not provide a guaranteed income, return clause of premium, possibility to take into account insured persons' different degrees of risk aversion or preferences on portfolio composition, etc. That's the reason the choice of a framework for the present optimization of a VPF's portfolio in Bulgaria by incorporating green assets focuses on the MV approach. Furthermore, the model has been arguably the most widely used portfolio optimization method in scientific literature. Of course, it cannot be claimed that MV is the most reliable optimization method, but it is distinguished by easy recognition, computational convenience and adaptability. It is also a good basis for comparing the results, generated by the other optimization studies.

The MV approach, which is based on Markowitz's (1952, 1959) traditional portfolio theory, is applied to identify the optimal ratio between the different asset classes in the diversified portfolio and to determine the efficient portfolios out of a set of possible portfolios. Variance as a measure of risk has certain advantages with respect to other risk indicators related to costs, convenience and recognition. The application of the "mean-variance" approach is reasonable where the distribution of return is close to a multivariate normal distribution or where the investor has a quadratic utility function. Practically, the optimal portfolio in the "mean-variance" model can be calculated by minimising the following expression (Markowitz, 1952):

$$Var\left(R_p\right) = \sum_{i=1}^{n}\sum_{j=1}^{n} w_i w_j \sigma_{ij} \quad (1)$$

subject to the constraints:

$$\sum_{i=1}^{n} w_i . \bar{R}_i = \bar{R}_p \tag{2}$$

$$\sum_{i=1}^{n} w_i = 1 \tag{3}$$

$$w_i \geq 0, i = 1, \dots \dots n \tag{4}$$

where: $Var(R_p)$ – variance of portfolio return; w_i – asset weight i in the portfolio; $\bar{R}_i$ – expected return on asset i; $\overline{R_p}$ – expected return on the portfolio; n – number of assets in the portfolio; σ_{ij} – the covariance between asset i and asset j.

The covariance matrix (symmetric and positive semi-definite) of n risky assets is:

$$\sigma_{ij} = \begin{pmatrix} \sigma_{11} & \cdots & \sigma_{1n} \\ \vdots & \ddots & \vdots \\ \sigma_{n1} & \cdots & \sigma_{nm} \end{pmatrix} \tag{5}$$

Alternatively, the model could be stated as maximizing portfolio's expected return, for a given level of portfolio's acceptable risk, Var (R_p):

$$\overline{R_p} = \sum_{i=1}^{n} w_i . \bar{R}_i \tag{6}$$

subject to the constraints:

$$\sum_{i=1}^{n} \sum_{j=1}^{n} w_i . w_j . \sigma_{ij} = Var(R_p) \tag{7}$$

and analogous constraints on the asset's weight (formulas (3) and (4)).

MV optimization of portfolios of private pension funds in this study is performed through the functions and instruments of Financial Toolbox from the software system of MATLAB®. The integrated functions allow effective calculation of the asset's moments, setting numerous types of constraints, optimization of the portfolio and visualisation of the efficient frontier. The selected solver is for quadratic programming – *quadprog* by application of the interior point algorithm for convex optimization problems.

First, a „standard" portfolio object has to be created – incorporate the list of assets, the risk-free rate, and the moments of asset returns into the object. The next step is setting up the MV portfolio optimization problem with default constraints (non-negative weights that must sum to 1) and adding other constraints.

The optimization problem is solved by finding the minimum of the target function that is subject to the constraints. The algorithm has two possible pathways depending on the type of the Hessian matrix, which influences the necessary time for solving the optimization problem. The first option is to have a full matrix and the second one is to have a sparse matrix. The algorithm performs the following steps:

- presolve/postsolve – an attempt is made to mitigate the problem by removing the excess information (checks are made whether any linear equality/inequality constraint includes only one variable, whether any linear matrix with constraints has null rows, whether the limits of the linear constraints are consistent, etc.) and by simplification of constraints;
- generation of an initial point;
- predictor-corrector – the initial objective is to find the point where the Karush-Kuhn-Tucker (KKT) conditions (necessary and sufficient conditions to find the global optimum) are maintained. Then, a step based on Newton-Raphson's formula is foreseen, followed by the calculation of the corrector step;
- stopping conditions – the predictor-corrector algorithm is repeated until a point is reached, where the constraints within the tolerance are satisfied and where the relative sizes of the step are small;
- infeasibility detection – the quadprog solver calculates a function measuring the similarity between the data and the problem-solving model (merit function) of each iteration. In the case of high values of the function, the solver stops and declares that the problem cannot be solved (MathWorks, 2021).

Solving the "mean-variance" optimization problem ends with the development of an efficient frontier. This is a curve formed by multiple portfolios that meet the conditions for minimum variance at a certain level of return or maximum return at a given risk level, by observing the predefined constraints. It is possible to locate specific efficient portfolios for given target values of return or risk, especially useful when comparing portfolios with different restrictions, as well as generate a portfolio that maximizes the Sharpe ratio (a measure of return-to-risk that plays an important role in portfolio analysis, and also represents the tangency portfolio on the efficient frontier from the mutual fund theorem).

To assess the impact of the green investment approach, multiple conventional and green indices have been selected, which are a kind of benchmark for the performance of the different groups of investment instruments within the diversified portfolio. Global and regional indices and funds from both developed and emerging markets are included.

The selection of indices and funds adheres to the requirements for the individual financial instruments envisaged in Bulgarian legislation (constraints regarding issuers, investment grade, trading markets, registration, etc.).

The benchmarks have been selected based on the following criteria:

1) they should reflect the performance of investment instruments Bulgarian VPFs can actually invest in;

2) they should be either launched on the market or there should be back-tested data available, if the investment pool is substantially restricted (which is characteristic mainly for green indices) for a period of at least the last 10 years (i.e. as of 31.12.2011);

3) the indices are calculated by leading global providers of benchmarks, analyses and data about investors and stock exchanges (e.g. S&P Dow Jones, MSCI Inc., etc., which often use the large pension funds around the world as a benchmark for the performance of their investments);[5]

4) they are calculated as total return indices. This is the better indicator of actual income from financial assets and allows comparison between assets of both the same class and different classes;

5) the selection of collective investment schemes (CIS) (including funds traded on the stock exchange) focuses on: top managers of assets offering a wide product range (Invesco, iShares, VanEck, First Trust, etc.); large funds (with more than 500 million EUR of managed assets, as far as the size of the funds is an indicator of their profitability and efficiency); lack of requirements for minimum amount of investment.

SSC envisages a restriction of up to 30% for VPF investments in assets denominated in a currency other than BGN or EUR, except in cases of concluded risk hedging transactions. From this perspective, for the optimization performed indices and funds calculated in BGN or EUR have been preferred, where possible. The yield on AAA-rated 10-year government bonds issued in the Eurozone and published by the European Central Bank is taken as the risk-free rate of return.

This study adopts three target levels of environmental performance in VPF investment portfolios tied to "floors" with respect to the weight of the green instruments in them. The portfolios are defined as "light green", "medium green" or "dark green", with a minimum share of green assets in them of 5%, 10% or 20%, respectively. The idea is analogical to the classification of green investors applied by Mascelluti (2018) and the "shades" of green bonds distinguished by the Center for International Climate Research.

"Mean-variance" optimizations take place at two levels. First, based on the data about the performance of investment assets during the period December 2011 – December 2021 (120 months) due to the long-term orientation of environmental factors. Second, based on 72-

[5] Official data sources are as follows: MSCI's 6 indices – M SI (www.msci.com); LEONIA + – Bulgarian National Bank (www.bnb.bg/Statistics/StBIRAndIndices/StBILeoniaPlus); S&P DJ's 16 indices – S&P Dow Jones Indices (www.spglobal.com/spdji/en); EONIA – European Central Bank (www.ecb.europa.eu/stats); Schroder ISF Global Climate Change – Schroders (www.schroders.com); Invesco Morningstar US Energy Infrastructure MLP – Invesco (www.invesco.com/corporate/en); Eurekahedge Hedge Fund Index – Eurekahedge (www.eurekahedge.com); Triodos Groenfonds NV – Triodos Investment Management (www.triodos-im.com); DV Tresury Bonds Index – DV Asset Management (dvam.bg/en); Nikkei 225 – Investing.com (www.investing.com). Data of ChinaBond's 2 indicies, Solactive Green Bond Index, SOFIX and BGREIT are provided through personal correspondence from China Central Depositiry&Clearing Co., Ltd. (yield.chinabond.com.cn/cbweb-mn), Solactive AG (www.solactive.com) and Investor.BG AD (www.investor.bg). The data of the others 10 indices and funds – Yahoo Finance (finance.yahoo.com).

month data by annual rebalancing of the portfolios in the interval between 2017-2021. In this way, 5 "rolling" periods are observed based on the example shown by Dechant and Finkenzeller (2011), He and Cai (2012), Wojt (2010) and others.

In order to form efficient frontiers based on the 10-year data, the following problems are solved:

1) optimization without investment constraints and a wider investment pool (38 assets – 22 conventional and 16 green);
2) optimization with a set of conventional and green assets (35 assets)[6] with a different set of constraints:
   - test 1 – basic quantitative limits (the quantitative limits by investment instruments as envisaged in the SSC – up to 5% in one CIS, up to 10% in REITs, up to 10% in investment properties);
   - test 2 – additional constraints (a requirement for a minimum share of liquid assets – at least 1.5% in the LEONIA+ index is added to the basic quantitative limits) and a currency constraint (the share of currencies other than BGN and EUR is limited to 30%);
3) optimization with a set of conventional and green assets with basic quantitative limits and different shades of the "green" portfolios: "light green" portfolio (min. 5% in green assets), "medium green" portfolio (min. 10% in green assets) and "dark green" portfolio (min. 20% in green assets).

The use of a "rolling" optimization procedure allows us to account for the changing characteristics of the assets and to generate a time series of portfolio allocations. The rebalancing of portfolios provides more realistic allocations as compared to the static optimization procedure which ends with one efficient frontier. In the case of yearly rebalancing, optimizations form 5 time intervals: A (2012-2017), B (2013-2018), C (2014-2019), D (2015-2020) and E (2016-2021). The following problems are solved for each period:

1) optimizations with conventional and green assets with basic quantitative limits;
2) optimizations with conventional and green assets with additional constraints (basic constraints, minimum of liquid assets and currency constraint);
3) optimizations by using additional assets ("new" instruments are added, where no time series are available for the entire period studied (2012-2021), but just for part of this period) with basic quantitative limits.

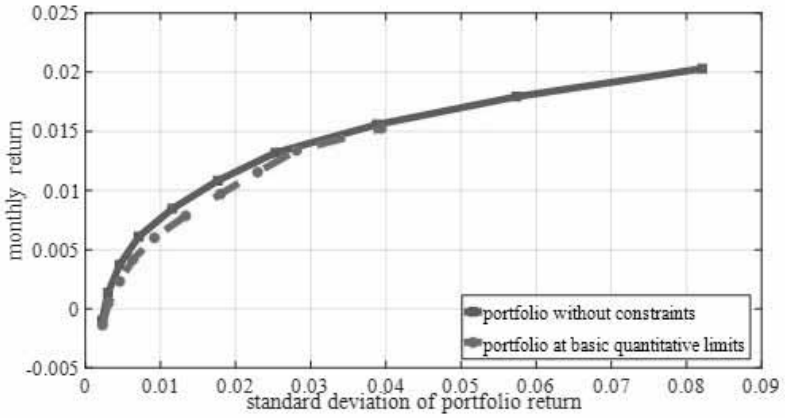
[6] The investment pool consists of 21 conventional and 14 green indices – 3 assets less than optimization without constraints, because some of assets do not meet the legislative requirements (eligible markets and investment rating for green bond indices, and availability of a license for alternative investment funds).

3. A palette of efficient frontiers in the MV approach

3.1. Efficient investment decisions based on 10-year data

The portfolios from the efficient frontier generated without investment constraints are actual investment opportunities if the pension funds apply the principle of prudence. VPFs in Bulgaria, however, are faced with a limited investment choice, which graphically translates into a lower frontier of efficient portfolios as compared to the efficient frontier in the absence of regulatory constraints (Figure 1).

Figure 1. Efficient frontiers under the presence and absence of regulatory restrictions[7]



Source: Authors' calculations.

Practically, the efficient portfolios for Bulgarian VPFs carry an identical risk with lower return and, moreover, with limited potential. The difference in the monthly return from efficient portfolios with the same risk varies between 0.04% and 0.14%, which forms of interval from 0.52% to 1.76% on an annual basis. Actually, the most significant deviation is observed in medium-risk portfolios, which provide annual returns between 3% and 10%. The end portfolios report lower contrast. If we take the investment horizon into account, the inequalities would be significant.

The selection of the investment pool of assets and the setting of quantitative limits in accordance with the requirements of the SSC *has a significant impact on the share of green assets in efficient portfolios*. If there are no regulatory constraints, the weight of green assets will exceed 10% in any case or may even be more than 1/4 or even more than 1/2 of the

[7] The efficient frontier of a portfolio without constraints is generated by an investment pool of 38 assets (22 conventional and 16 green) under absence of quantitative limits. The efficient frontier of a portfolio at basic quantitative limits is constructed by an investment pool of 35 assets (21 conventional and 14 green) under the presence of following restrictions: up to 5% in one CIS, up to 10% in REITs, up to 10% in investment properties. The additional optimizations with such constraints show that the efficient frontier of combined assets is better than a set only with one of the asset groups.

investment instruments in some portfolios.[8] Even though green investments find their place at the efficient frontier and with basic quantitative limits (table 1), their weight varies from 3.58% to 20.25%.

Table 1. Investment instruments weights in the efficient frontier portfolios under different constraints[9] (%)

Investment instrument	Portfolio's number									
	1	2	3	4	5	6	7	8	9	10
	test 1 (basic quantitative limits)									
Conventional bonds	7.94	26.34	42.20	58.40	49.18	34.76	19.31	4.09	0.00	0.00
Conventional stocks and shares	0.38	5.53	9.74	13.84	24.65	33.90	43.60	57.50	69.70	80.00
Bank deposits	83.01	55.00	27.89	0.76	-	-	-	-	-	-
Alternatives	1.83	7.31	14.17	20.88	22.59	23.53	23.82	21.92	10.06	5.00
Green bonds	1.22	-	-	-	-	-	-	-	-	
Green stocks and CISs	5.62	5.83	5.99	6.11	3.58	7.81	13.27	16.49	20.25	15.00
	test 2 (additional constraints)									
Conventional bonds	7.94	22.40	31.62	45.67	52.86	37.09	20.62	5.80	0.00	0.00
Conventional stocks and shares	0.38	5.88	9.67	15.37	24.07	35.91	46.73	62.35	71.33	78.50
Bank deposits	83.01	58.51	39.33	16.89	1.50	1.50	1.50	1.50	1.50	1.50
Alternatives	1.83	7.53	13.77	16.69	19.03	21.13	21.38	19.30	10.00	5.00
Green bonds	1.22	-	-	-	-	-	-	-	-	
Green stocks and CISs	5.62	5.68	5.62	5.38	2.54	4.37	9.77	11.05	17.17	15.00

Source: Authors' calculations.

The application of additional constraints for liquid assets and currency also reduces the weight of green instruments in optimised solutions. The maintenance of funds in current accounts is generally compensated by the investment resources in conventional assets. The introduction of the currency constraint, however, contributed to a decline in the green instruments in efficient portfolios by between 0.15 and 5.44 percentage points, where the smaller differences were observed at the beginning of the efficient frontiers. It is expected that this problem will fade away over time considering the constantly growing green investment opportunities in EUR, particularly after the regulatory changes started by the

[8] Bulgarian REITs, Chinese green bonds and some green CISs stand out with a high weight in the efficient portfolios. Descriptive statistics for ChinaBond China Green Bond Index reveal low volatility and relatively good average return, so the index has the lowest coefficient of variation among the investment set. It also has a negative correlation with Asian stock indices and a very weak positive correlation with bond and bank deposit indices (between 0.10 – 0.23). The risk-return ratio of the BGREIT index also places it in the leading positions. In addition, it is observed to be negligigly correlated with almost all indices in the investment set. The exception is 3 of them (SOFIX, S&P Eurozone Investment Grade Corporate Bond Index, TGF), where the correlation coefficient is in the range 0.3 to 0.4, revealing a weak dependence. On the other hand, CIS QCLN is characterized by high risk but also high return. For this reason, it finds a place among the second half of efficient portfolios.

[9] Investments in property (including through REITs), infrastructure and private equity are marked as "alternatives".

European Union. This will inevitably contribute to a wider investment choice for VPFs with the possibility of limiting currency risk.

Green bonds have minimum participation in the formation of the efficient frontier and this is so only in the lowest-risk portfolio. When interpreting the results, one should not underestimate the lack of variety among the indices for this instrument and the fact that they have existed only for a short period. Investments in green stocks are dominated by the low-carbon S&P500 Fossil Fuel Free Index, which has an excellent risk-return profile. The index stands out with a moderate to very high correlation with some equity indices and green CISs, however, the correlation with the Bulgarian equity and property market, Indian equity market and global infrastructure is very weak, so it generates diversification benefits. By contrast, the risk profiles of green CISs are quite heterogeneous, which is also highlighted by the weights of the schemes in the efficient portfolios. Some CISs only participate in the first, lowest-risk efficient portfolio, others – in portfolios from 1 to 5, while others are included in the second half of the efficient frontier and two of the CISs only participate in the 10th portfolio, which has the highest-risk and, respectively, a high return. In practice, investments in funds reflecting global markets for low-carbon energy, water management and green project financing *have the potential to add value to VPFs portfolios*.[10]

The introduction of the currency constraint leads to a reduction in the weights of the indices that follow the US treasury and municipal bonds, which is compensated by including the sovereign debt of Eurozone countries in investment portfolios. The impact of constraints on the structure of investment portfolios also causes a change in their risk-return profile.

Table 2. Risk and return of the efficient portfolios under different investment restrictions
(annualized data, %)

Portfolio's number	1	2	3	4	5	6	7	8	9	10
Basic quantitative limits (test 1)										
Return	-1.63	0.57	2.82	5.12	7.46	9.85	12.29	14.78	17.32	19.91
Standard deviation	0.79	1.06	1.59	2.19	3.18	4.62	6.23	7.94	9.74	13.65
Additional constraints (test 2)										
Return	-1.63	0.54	2.75	5.01	7.31	9.66	12.06	14.50	17.00	19.54
Standard deviation	0.79	1.06	1.72	2.50	3.40	4.67	6.19	7.85	9.60	13.46

Source: Authors' calculations.

The optimization solutions show that limiting investments in currencies other than BGN and EUR leads to an increase in the standard deviation in 7 out of the 10 efficient portfolios. In

[10] The involvement of TGF and FIW in the low segment of the efficient frontier deserves attention. Although the risk-return ratio is not particularly favorable, TGF is characterized by very low risk, which gives it the ceiling for this instrument with share of 5% in four of efficient portfolios. Its participation is enhanced by its negligible correlation with bank deposits, global infrastructure and US treasury bonds. The correlation with shares and real estate on the Bulgarian market is also weak (with a coefficient of up to 0.3). FIW has a better coefficient of variation and shows very low to low correlation with the pointed markets, as for bank deposits and treasury bonds it is negative. Green CISs from the second half of the efficient frontier are characterized by a very good coefficient of variation (iShares Global Water) or a very high returns (QCLN, SMOG, TAN), exhibiting respectively a very high and moderate correlation only with S&P500, while the dependence with the others indices in the portfolio is weak.

reality, however, the currency risk is reduced. In addition, maintaining a portfolio with a significant share in a foreign currency implies costs for currency risk hedging transactions, which would have a negative impact on the reported return of pension funds. Maintaining resources on current accounts and bank deposits is low-risk, however, at the same time, it has also been characterised by negative yield during the last years of the analysed period. For this reason, efficient portfolios with a minimal share of liquid assets achieve lower returns and also lower risk at the second half of the efficient frontier.

Defining a certain pension fund as a "green" or "sustainable and responsible" one depends on the incorporation of ESG policy into the corporate culture and the overall activity of the investor. No quantitative criteria for the minimum weight of green assets in the investment portfolio have been introduced (and there is no need to do so) for an investor to be identified as "green". However, in the event that pension funds have an explicit policy for applying environmental criteria in the investment process, the share of green assets in their portfolios should be higher and more stable than the one reported by pension funds that use a conventional investment approach. In this case, what would be the scale of the changes in risk and return of pension funds that could occur and could this compromise the financial interests of their beneficiaries?

The formation of environmental portfolios of different shades makes it possible to reveal their different risk profile at a given target return, to make a comparison to alternative options and to analyse the results in response to the questions formulated above.

The inclusion of green assets in investment portfolios has the potential to lower the risk at a given rate of return or increase the return at a given risk rate. Table 3 shows that VPFs in Bulgaria can form efficient "light green" portfolios at a lower risk and with a higher return potential as compared to conventional portfolios that lack green instruments. The efficiency frontier of the "medium green" portfolio lies above the conventional one at a target return higher than 10%, and the "dark green" portfolio outperforms it at a return higher than 12%.

Table 3. Green and benchmark portfolios' risk under set rates of target return[11]
(annualized data, %)

Standard deviation	Portfolio	Target return									
		0.00	3.00	5.00	7.00	10.00	12.00	15.00	19.07	19.89	19.91
	Conventional	0.9737	1.6510	2.1720	2.9407	4.7354	6.0731	8.1588	12.7685		
	Benchmark	0.9497	1.6343	2.1586	2.9342	4.7159	6.0379	8.0899			13.6492
	Light green	0.9497	1.6343	2.1586	2.9381	4.7159	6.0379	8.0899			13.6492
	Medium green	0.9665	1.6564	2.1795	2.9683	4.7168	6.0379	8.0899			13.6492
	Dark green	1.3621*	1.7749	2.2676	3.0504	4.7571	6.0573	8.0930		13.6338	

Source: Authors' calculations.

In practice, the "light green" portfolio is almost identical to the benchmark. The only difference in the risk of the two portfolios occurs at a target return between 6-8%, where the standard deviation of the "light green" portfolio is higher, but the difference is minimal (from

[11] The conventional portfolio is formed from an investment pool, which does not include green instruments. The portfolio with the basic quantitative limits (test 1) is defined as a benchmark.
* The value is obtained at a higher target return (0.2331%) as this is the lower bound for the portfolio return under the specified model constraints.

0.0001% to 0.0084%). The risk of the "medium green" portfolio becomes equal to the one of the benchmark at 12% target return, while the "dark green" portfolio turns out to be riskier at all values of the return.

VPFs' choice to be "light green" investors *would not harm the financial interests of their clients*; on the contrary, it would contribute to better results as compared to choosing the conventional approach. Portfolios where the weight of green instruments is at least 10% would not "sacrifice" their return either, if the portfolio yield achieved was a two-digit number. Unfortunately, however, the Bulgarian VPFs report such values very rarely. The "dark green" portfolio generates higher risk, however, the differences decrease as the risk-return profile increases. This is even more easily observed by calculating the portfolio return at a given target risk (table 4). In the low-risk range, the "medium green" portfolio would demonstrate up to 0.09% lower return than the benchmark, while the "dark green" portfolio would lag behind by up to 0.61%. At first sight, based on the results it could be concluded that portfolios with a higher weight of green instruments are unable to generate sufficiently attractive profiles at a low risk.

Table 4. Green and benchmark portfolios' return under set rates of target risk[12]
(annualized data, %)

Portfolio	Target risk							
	0.97	1.65	2.17	2.94	4.74	6.07	8.16	12.77
	Portfolio return							
Conventional	0.00	3.00	4.99	6.99	9.99	12.00	14.99	19.07
Benchmark	0.13	3.07	5.04	7.01	10.02	12.05	15.09	19.51
Light green	0.13	3.07	5.04	7.00	10.02	12.05	15.09	19.51
Medium green	0.04	2.98	4.97	6.94	10.02	12.05	15.09	19.51
Dark green	0.23*	2.46	4.62	6.77	9.96	12.03	15.09	19.50

Source: Authors' calculations.

Considering that portfolios positioned at the far left of the efficient frontier usually comprise of predominantly low-risk bonds and bank deposits, the reasons for the higher risk of the "medium green" and "dark green" portfolios may be several:

- Lack of low-risk green assets on the financial markets. In such a case, if we apply a "floor" of 10-20% for green assets, even the first efficient portfolios include higher-risk bonds, stocks and CISs that follow the equity market;
- Faults of the investment pool used in the model. There are 7 indices for conventional bonds and only 1 for green bonds among the 35 investment instruments selected. It may turn out that green sovereign or municipal bonds, as well as investment-grade green corporate bonds, are excellent investment opportunities. Their "boom" however has only been observed over the past few years, so the short period of existence prevents us from making a thorough assessment of their financial performance;

[12] Risk is measured by standard deviation of portfolio return.
* The value is obtained at a higher standard deviation (1.3621%) as this is the lower bound for portfolio risk under the specified model constraints.

- The investment constraints of Bulgarian VPFs. When quantitative limits are added to the limited variety of types of green indices for bonds and CISs investing in debt, the optimization model is "forced" to look for green opportunities among other types of investment instruments.

In practice, investment constraints aimed at reducing the risk also reduce the possibility of VPFs to compile highly environmental portfolios, without causing a reduction in return. It should be noted, however, that VPFs operating in the Bulgarian market are still far from constructing "light green" or "medium green" portfolios with profitability that is fully competitive to the one of conventional portfolios. The lack of opportunity for persons who pay voluntary pension insurance contributions to choose from multiple alternatives reflecting their different investment preferences can be considered a significant drawback of the system.

3.2. Efficient frontiers based on 6-year "rolling" periods

How does the composition of efficient portfolios formed under the basic quantitative limits change as a result of a change in the studied 6-year period? Based on the data from the first time interval "A" (2012-2017) – stocks of the most capitalised companies in Bulgaria, the USA, India and Japan take part in optimal portfolios with a significant weight. Bond portfolios are formed by debt securities (sovereign, municipal and corporate) of countries from the Eurozone and the USA. The investment property market is a good choice during the period, as the limit of 10% of the assets in the portfolio is reached both for the Bulgarian market through REITs and the European real estate market. The conventional infrastructure also finds its place through debt instruments and all bank deposits should be in Bulgaria. *Green assets take part in 9 out of the 10 efficient portfolios with a weight between 6.34% and 20.14%* (table 5). The selection focuses on several indices, where the tracking stocks are characterised by high average return and those that reflect green debt – by low volatility. The efficient portfolios formed based on the data for the period 2013-2018 *do not differ significantly*. The decline in the weight of green assets after the eighth efficient portfolio is notable. Conventional stocks on the US market are being "displaced" by their equivalent low-carbon equity securities.

Table 5. Green assets weight in the optimized "rolling" portfolios[13] (%)

Period	Type of constraints	Number of efficient portfolio*									
		1	2	3	4	5	6	7	8	9	10
A	basic	10.40	6.34	7.37	8.44	10.70	8.08	10.36	12.38	20.14	0.00
	additional	10.40	6.28	6.86	7.07	8.87	11.54	8.36	11.11	14.52	0.00
B	basic	10.43	6.37	6.48	7.15	9.07	8.24	5.50	5.01	0.00	0.00
	additional	10.43	6.37	6.36	5.87	7.91	8.94	5.43	4.93	0.00	0.00
C	basic	10.70	7.13	7.23	7.46	7.79	2.27	0.36	0.02	0.00	0.00
	additional	10.70	7.13	6.60	6.00	5.00	0.00	0.00	0.00	0.00	0.00
D	basic	0.53	6.35	7.38	8.28	10.68	19.12	29.29	38.84	55.48	100.00
	additional	0.53	6.24	7.95	11.00	15.02	17.18	23.14	22.59	26.31	35.00
E	basic	0.27	2.35	5.95	7.23	6.38	17.35	24.18	34.60	52.04	30.00
	additional	0.28	2.19	6.91	7.99	9.71	12.60	16.76	20.19	17.41	30.00

Source: Authors' calculations.

[13] *The matching number of efficient portfolios does not mean the same risk and return.

Significant changes were observed in investment instruments that determine the efficient frontier calculated for time interval "C" (2014-2019). There is a sharp decline in the weight of Bulgarian stocks and sovereign and corporate debt from the Eurozone, which is offset by similar instruments representing the US market. Equity instruments are making their way into conventional infrastructure. In addition, in low-risk portfolios, the weight of bank deposits in the European Union is increasing at the expense of those in Bulgaria. Green investment instruments *are "visible" in the top 5 efficient portfolios* with a relative share of 7.13% to 10.70%. However, the share declines significantly in the second half of the efficient frontier and is reduced to zero in the options with the highest risk.

The efficient frontiers over the last 2 periods (D (2015-2020) and E (2016-2021)) also differ from the previous ones, but are similar to each other. The absence of European in-vestment properties and stocks of infrastructure companies is noticeable. Bulgarian stocks maintain low weights. Investments in US stocks are also reduced. The weights of green assets in optimised portfolios grow noticeably in the second half of the efficient frontier and reach values above 50%. There is significant participation of stocks of Asian fossil fuel-free companies (tracked by the S&P Asia 50 Fossil Fuel Free index) and a record number of ETFs (seven-eight).

It needs to be noted that during the initial periods (B and C) green instruments participated more significantly in the portfolios from the beginning of the efficient frontier, while during the last time intervals (D and E) – at the end of that frontier and, furthermore, the number (variety) of the selected green assets in efficient portfolios doubled over time. In fact, the risk-return profile of green CISs forming the investment pool *has been improving significantly over the last years of analysis*. About half of them are characterised by high volatility, however, during the period after 2014-2015, it was also accompanied by high returns, so they turned from initially unprofitable investment alternatives into good choice. Low-risk efficient portfolios during the last time intervals were almost entirely formed by the index reflecting the interbank money market in EUR (EONIA), reaching a weight of up to 99% generated by the unprecedented low interest rates and the low volatility of the index. Thus, the efficient frontiers originate from very low-risk levels and negative return, which further provides argument for the insignificant weight of green assets in the lower segment of the efficient frontiers of the last two "rolling" periods.

Compared to the optimizations where we have 10-year data, which demonstrate that the recommended weight of green assets should be above 5% in almost all cases, the results based on the 6-year periods are more contradictory. Based on Table 5, it becomes clear that the relative share of green investment instruments should be limited to under 1% or even completely absent in some time intervals. However, this affects the portfolios located high on the efficient frontier (at A, B and C) or those at the low-risk register (the first 1-2 efficient portfolios at D and E). The targets with respect to return typically position Bulgarian VPFs between the 3rd and the 5th portfolio of the efficient frontier. In this segment, all efficient portfolios contain a minimum of 5% green assets, and some portfolios allocate up to 10-11% to those assets. The thesis about *better financial performance of the "light green" investors is also valid* in the case of annual rebalancing of the portfolios.

The optimizations of the "rolling" portfolios made with "additional assets" deserve special attention, insofar as the efficient frontiers are located above those formed under the basic quantitative limits (Figure 6). The inclusion of Bulgarian government securities in the investment pool immediately assigns them high weights in the efficient portfolios, reaching up to 44% during the 2012-2017 period. In fact, this instrument is neither characterised by the highest return, nor by the lowest volatility, however, the risk-return ratio is the best among the entire range of investment assets. During the next two time intervals, their relative share at the efficient frontier decreases, mainly due to the presence of profitable green bonds (their coefficient of variation is even lower), however, the weights remain high (up to 25%) in the middle range. The impact of green bonds issued in RMB on the potential performance of investment portfolios is substantial and noticeable for all 4 periods (from B to E) they are included in. Although the risk and return of the "end" efficient portfolios coincide, the effect of the additional assets is visible precisely in the positioning range of VPFs in Bulgaria.

The return of the China Bond CIB Green Bond Index during periods B and C correlates very weakly (although, in most cases positively) with all assets in the investment pool. A weak dependence is reported only with EONIA for the period 2014-2019 (correlation coefficient is 0.35). During the next two time intervals, the correlation coefficients reveal weak dependence again, however, this time the direction is negative. The solutions of optimization problems "return" impressive values for the weight of this tool in efficient portfolios (often exceeding 15-20% and reaching up to 65-68% in some cases). Thus, the optimal weight of green assets increases dramatically. It is evident that even "dark green" portfolios lie on the efficient frontier. Bulgarian VPFs have the real opportunity to invest in these green bonds, certainly not in such large volumes, insofar as the portfolios are well-diversified and the costs for transactions for hedging currency risk are taken into account.

The index reflecting the performance of green bonds on the global market (Solactive Green Bond Index) does not perform sufficiently competitively compared to the other assets in the investment pool. It was included in just one efficient portfolio (the first one) for the period 2015-2020 and its weight was 0.58%. Interestingly, even in the absence of the Chinese green bonds, the weight of the global index remained unchanged and it was completely absent in the efficient choice during the last period. The results obtained correspond to the conclusions found by Mascelluti (2018).

The funds that reflect the performance of the US energy companies MLP and Yield-Co are among the instruments with a high coefficient of variation. During the periods 2014-2019 and 2015-2020, the MLP fund (Invesco Morningstar MPL) reported a negative average return and very high volatility, which ranked this instrument in one of the last places among the investment pool. Even though a positive return has been reported over the last 6-year period, the fund maintained its weak ranking. Both funds reported positive dependence (with a moderate to significant degree) on the performance of the selected investment assets, which further hindered their choice for the optimised options. The fact that the Bulgarian VPFs face significant constraints to invest in energy companies with specific structure *does not have a negative effect at this stage* considering the results from the optimizations.

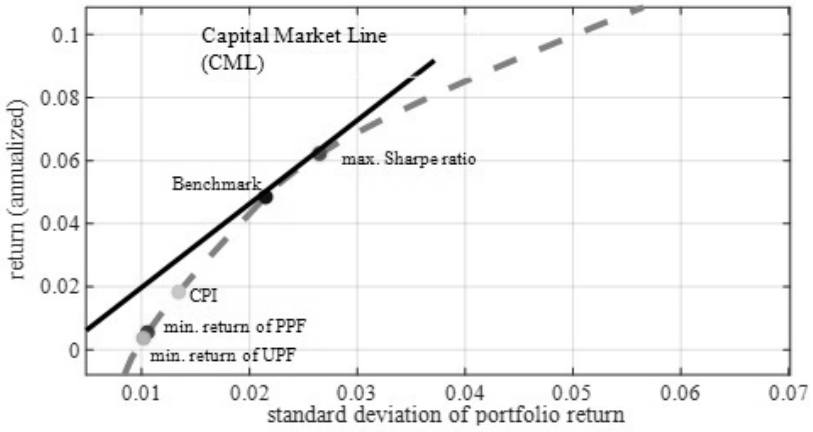
The analysis of "rolling" portfolios showed that the investment results and the optimal investment choices can vary significantly. Not all green investments are successful business cases, but some of them certainly have an excellent risk-return profile or bring diversification

benefits to broad portfolios. Even seemingly small changes ("introducing" one or two new investment instruments) could have a significant effect on the investment performance of VPFs. Now the most important question is the one about asset allocation.

4. A critical overview of MV optimization solutions

The decision of pension funds which of the efficient portfolios to pursue is inevitably determined by the pre-formulated risk and return objectives. To complement the analysed picture, several portfolios were built, where the target return – performance is equal to the consumer price index (CPI), the benchmark (VOLIDEX index) and the minimum performance of universal (UPF) and professional pension funds (PPF) (by taking into account that there is no statutory requirement for the VPFs to calculate and guarantee minimum performance and that insurance is voluntary and the restrictions are more liberal, so it is recommended that VPFs realise return above the minimum one realised by the mandatory funds), which are illustrated on fig. 2.

Figure 2. Efficient frontier, capital market line and target portfolios[14]



Source: Authors' calculations.

The target portfolios with the minimum return of UPF and PPF are a fairly low "bar" for voluntary funds. The efficient portfolio yielding a return equal to inflation is generated at an annual standard deviation of 1.34%, and the one providing the return of the benchmark – of 2.16%. The share of green assets in the target portfolios falls in the range of 5.81% to 6.11% and is only formed by investments in two of the CISs (TGF and FIW) in all four cases. According to Tobin (1958), even though all portfolios lying on the efficient frontier offer the best return for the respective risk level (or the lowest risk for the respective return), the choice

[14] The illustrated efficient frontier (dashed line) is a segment of the graphical representation of the efficient portfolios under the basic quantitative limits. Calculations are based on 10-year period.

of a portfolio with the best expected risk-return ratio can be only made after including risk-free return in the analysis. The portfolios with the best characteristics are those that form the Capital Market Line (CML). It is constructed as a tangent to the efficient frontier through the risk-free return point (from the ordinate axis) and its slope is equal to the Sharpe ratio. Given that short selling is not allowed for VPFs, they are left with the option of choosing a portfolio that either coincides with the tangency portfolio or is positioned below that portfolio. The specific choice of the proportion of the risk portfolio and the risk-free asset the pension fund will invest in will depend on the fund's degree of risk aversion.

The portfolio maximising the Sharpe ratio is positioned higher than the target portfolios considered. Its return and risk indicators are 6.40% and 2.65%, respectively, on an annual basis. The optimization conducted found that the tangent portfolio was formed at a rather low level of green instruments – 1.72%.[15] If VPFs actually stopped at a combination involving a certain ratio between the risk portfolio and the risk-free asset, then the share of green assets in their portfolio should be lower than 2% under the constraints discussed. If VPFs aim for a nominal return of more than 7.67%, which is given by the tangency portfolio, they will position themselves to the right of it on the efficient frontier, thus significantly increasing the weight of green instruments (up to 20%). This practically means that green assets have the potential to improve the return on pension investments, but they can do so at a lower Sharpe ratio.

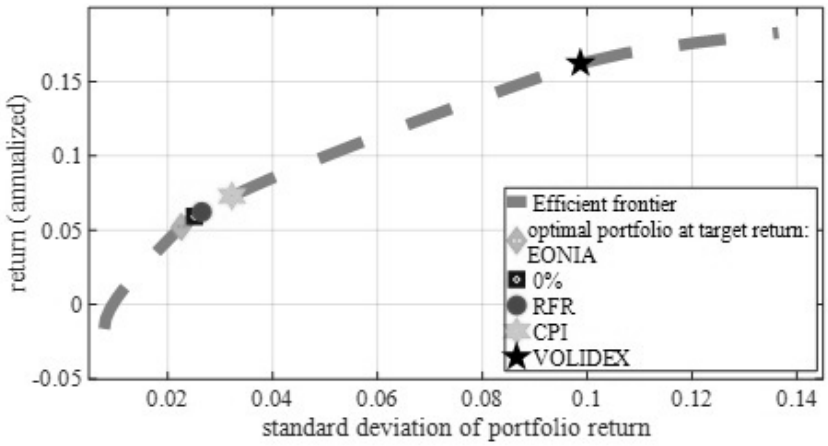
Since modelling risk sensitivity through a utility function is a difficult task, Roy (1952) considered that all investors are united by their willingness to minimise the likelihood of realising a "disaster", i.e. they should apply the "safety first" principle when choosing between investment alternatives. The disaster level is practically the investor's target return. The optimal portfolios are the ones that minimise the risk of return below the target and, respectively, maximise the value of the "safety first ratio" (SFR). If the risk-free return is defined as the "disaster level", then the SFR coincides with the Sharpe ratio.

The change in the optimal investment choice resulting from the choice of target return is illustrated in Fig. 3. Due to the close values of the EONIA index, 0 and the risk-free rate (RFR) for the period 2012-2021, the portfolios based on the "safety first" principles are positioned next to each other on the efficient frontier. The optimal portfolio with a target return equal to inflation is a little but farther away. If minimisation of the risk that the portfolio return will be lower than VOLIDEX is desired, the investor should position himself quite "high" along the efficient frontier.

What is the optimal investment choice in the presence of risk-free investment opportunities during the "rolling" periods? The share of green assets in the tangency portfolios (those with a maximum Sharpe ratio) varies significantly both during the 5 periods under consideration and with respect to the investment pool (Table 6).

[15] By default, optimization solutions show the results of compiling 10 efficient portfolios. It turns out that if the efficient frontier is formed by 30 portfolios, the lowest share of green assets is formed in the interval between 6-7% annual return and those green assets form only 1.5-2.5% of the investment portfolio.

Figure 3. Optimal investment choice according to the "safety first" criterion[16]



Source: Authors' calculations.

Table 6. Risk and return indicators of the portfolios with a maximum Sharpe ratio[17]

Period / Indicator	Investment pool of 35 assets					Investment pool with additional assets				
	A	B	C	D	E	A	B	C	D	E
Standard deviation, % (annualized data)	3.43	3.32	2.35	2.66	2.72	3.22	1.92	1.54	1.70	1.51
Return, % (annualized data)	9.80	6.95	5.93	5.35	6.95	9.81	5.95	5.68	5.25	5.37
Coefficient of variation	0.3502	0.4767	0.3970	0.4968	0.3916	0.3280	0.3221	0.2718	0.3236	0.2802
Sharpe ratio	2.3249	1.8402	2.3062	1.9409	2.5404	2.4827	2.6594	3.3554	2.9773	3.5447
Share of green assets in the portfolio, %	12.43	9.57	7.72	7.30	8.78	7.26	45.02	43.16	61.65	71.51

Source: Authors' calculations.

The optimizations with 35 assets show that when faced with the choice between risk-free assets and a risk portfolio, VPFs should invest up to 12.43% of their investment resources in green instruments based on the results for the first period (A), and below 7.30% for the fourth period (D). On the other hand, extending the investment choice with just one type of assets *has the potential to significantly change the situation*. The inclusion of the Chinese green

[16] Five different target return values are assumed. Calculations are based on a 10-year period under basic quantitative limits. The data of net asset value, used for VOLIDEX calculation, is published by the Financial Supervisory Commission (eis.fsc.bg/pension-share/498/), RFR and EONIA index – by the European Central Bank (www.ecb.europa.eu/stats), CPI – by the National Statistical Institute (www.nsi.bg/en/content/779/macroeconomic-statistics).

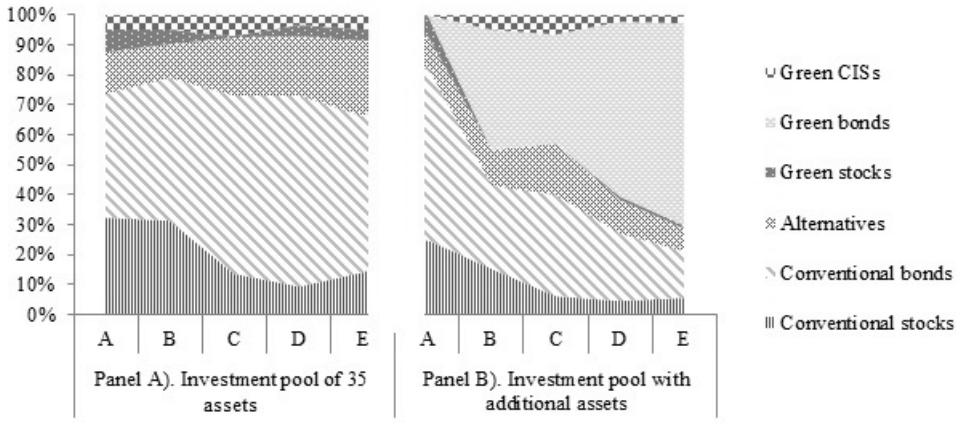
[17] Optimizations are performed under basic quantitative limits.

bonds shows that, based on the degree of risk aversion, VPFs should invest almost half or up to 2/3 of their resources in green instruments.

It needs to be noted that during the five periods considered, the portfolios with a broader investment pool were distinguished by a higher Sharpe ratio and a lower coefficient of variation as compared to their counterparts. Furthermore, these metrics were generated at lower returns and lower risk.

The significant dynamics in the relative shares of investment instruments in "rolling" portfolios demonstrate *the need for rebalancing by VPFs* (fig. 4). Based on the tracking of the optimised portfolios with the best risk-return ratio, it is observed that the share of conventional stocks changes from 9% to 32% and the share of traditional bonds varies between 41% and 64%. Investments in infrastructure and real estate should demonstrate smaller changes in weight.

Figure 4. Dynamics in the structure of "rolling" portfolios with a maximum Sharpe ratio[18]



Source: Authors' calculations.

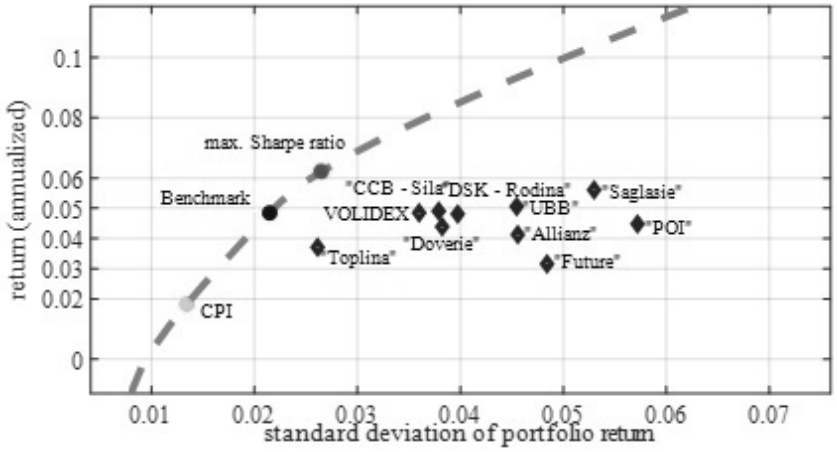
Optimizations with additional assets also lead to major structural changes. If the share of traditional shares in the portfolio was almost 25% during the first period, it was 5.56% during the last one. Conventional bonds are giving up their share in the portfolio to green bonds. At the same time, the group of alternative investments remains relatively constant.

After the numerous optimizations conducted, it is reasonable to raise the question about where the portfolios of VPFs are positioned based on the performance and risk achieved with respect to the efficient frontier. The results reported by VPFs for the period 2012 – 2021 place their portfolios below the optimal opportunity curve. The closest portfolio is the one of

[18] Optimizations are performed under basic quantitative limits. Investments in property (including through REITs), infrastructure and private equity are marked as "alternatives".

VPF "Toplina" and the farthest ones from the efficient frontier are VPF "Future" and VPF "POI" (Pensionnoosiguritelen Institute).

Figure 5. Efficient Frontier, target portfolios and VPFs investment portfolios [19]



Source: Authors' calculations.

How inefficient, however, are VPF portfolios? According to Michaud and Michaud (2008) and Statman and Clark (2013), it should be admitted that the efficient frontier is practically unattainable. These authors discuss an efficient area (range) of efficient portfolios that may turn out to be more reasonable and practical investment choices. Efficient portfolios derived by MV optimization are often defined as counterintuitive, inconsistent with the investors' preferences, and highly sensitive to inaccurate (imprecise) estimates. This view is valid, especially if short selling is allowed, since some of the optimal portfolios are practically unrealisable.

MV optimization is an "error maximiser" because using it leads to significant over-estimation of securities with high expected return, negative correlation and low variance, assigning them substantial weights. These securities are, of course, most likely also characterised by major estimation errors (Michaud and Michaud, 2008: 35). The studies of Jobson and Korki (1981), Fisher and Statman (1997), and Michaud and Michaud (2008) illustrate the extreme sensitivity of optimised MV portfolios to small changes in the estimates of parameters. Minor differences in baseline data result in major differences in the optimal allocation. Kritzman (2011) does not deny this fact, but notes that while changes in resource allocation are significant, the performance of optimal portfolios is largely similar, while Green and

[19] The illustrated efficient frontier (dashed line) is a segment of the graphical representation of the efficient portfolios under the basic quantitative limits. The portfolios marked with a rhombus represent the investment portfolios of VPF. The VPFs' portfolios return is calculated of net asset value, published by the Financial Supervisory Commission (www.https://eis.fsc.bg/pension-share/498). Calculations are based on 10-year period.

Hollifield (1992) recommend investors to give up their ideas of attractive portfolios and accept optimised portfolios, even if unattractive, as the best portfolios (Cite by: Statman and Clark, 2013). However, as noted by Statman and Clark (2013), investors have ignored and will likely continue to ignore this advice. In fact, investors do not always prefer portfolios lying on the efficient frontier because they are interested in additional characteristics (besides risk and return), such as considerations related to their values. Furthermore, MV optimizations "neglect" investors' consumption objectives (e.g., retirement, education, charity, etc.), particularly the fact that portfolios are the means for achieving these objectives (Statman and Clark, 2013: 2).

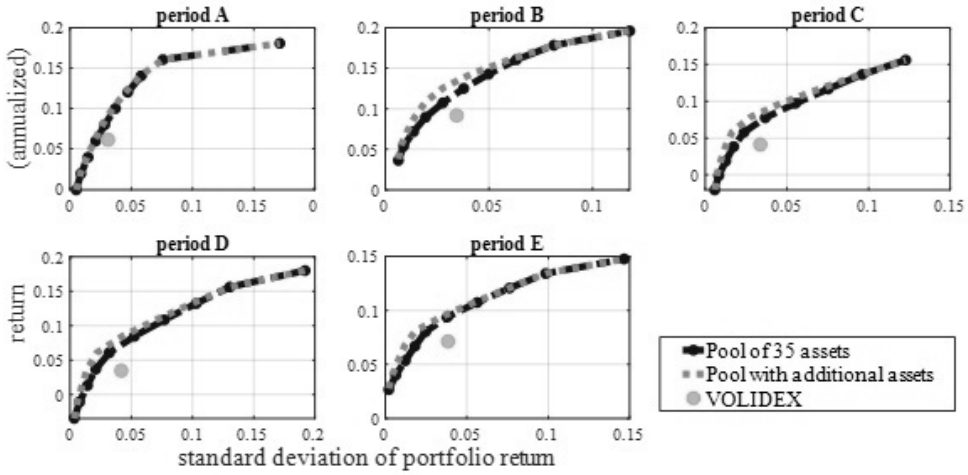
If the investor gives up seeking the "true efficient frontier" and puts their stake in the efficient range, they should use their judgement to determine the reasonable frontiers. In fact, judgment is an essential point in the proper application of MV optimization. In this context, conscious and desired socially responsible investments (e.g. green portfolios of different shades – light, medium or dark green) may fall within the efficient range, even if they do not lie on the efficient frontier, because such portfolios meet the public preferences of conscious investors (see further: Statman and Clark, 2013: 7-10).

From a holistic perspective, the expected utility of beneficiaries is a subjective quantity, beyond its traditional understanding as a function of risk and return, so ESG investments could contribute to its maximization. Beal, Goyen and Phillips (2005), for example, suggest adding one more factor to the utility – ethics. Thus, the indifference curve is transformed into a plane of three dimensions. In this line of thought, pension schemes should be designed to reflect the risk tolerance, investment objectives, values and philosophies of the insured persons, especially in cases where they are not only beneficiaries but bear the entire investment risk (like it is in Bulgaria).

The graphics in Fig. 5 and Fig. 6 reflect the efficient frontiers under the basic quantitative limits. As demonstrated by the previous experiments, however, adding more constraints inevitably leads to a lower positioning of the efficient frontier. VPFs often apply additional constraints (including, but not limited to, liquid assets and currency) to ensure better diversification and to meet the strategic allocation by investment assets specified in their investment policies.

The graph shows the position of the benchmark for the performance of Bulgarian VPFs (VOLIDEX index) against the efficient frontiers at different investment pools for the "rolling" portfolios. The index is positioned below the efficient frontiers of the 5 portfolios discussed, being farther positioned from the frontier reflecting the inclusion of additional assets.

Figure 6. Efficient frontiers and investment performance of VOLIDEX in the "rolling" periods[20]



Source: Authors' calculations.

5. Conclusion

The implementation of ESG determinants in the investment process of private pension funds in Bulgaria has the potential to not only improve the consideration of risk factors for portfolios, but to also generate better investment opportunities. The empirical research is an ample example that *green assets have found their place on the efficient frontiers*. Depending on the portfolio constraints applied and the risk profile of the efficient portfolios, MV optimizations demonstrate green asset weights between 2.54 and 20.25% (in 10-year data). The illustration of green portfolios by "light" and "medium" shades of green under the basic quantitative limits *is fully competitive to conventional portfolios*. In practice, the pursuit of green investments within the range of 5-10% of VPFs assets would not compromise the financial interests of the beneficiaries. This is also confirmed by the optimizations for the "rolling" periods. These demonstrate a positive shift in the risk-return profile of green instruments and highlight the allocation of assets.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND FINANCIAL STABILITY BANKING INDUSTRY IN G20 EMERGING MARKET COUNTRIES: A PANEL DATA EVIDENCE[9]

This study aims to identify the effect of the financial inclusion sub-index on financial stability in the banking industry proxied by Bank Z Score. This research uses secondary data in the form of panel data with annual data from 2011 to 2021 and the scope of 5 G20 Emerging Market countries. The analysis technique in this study uses the Fixed Effect Model (FEM). The results showed that the banking penetration dimension had a negative and significant effect, bank availability had a significant positive effect, while bank usage had a positive but not significant effect on banking stability. To achieve better financial inclusion and sustainable banking stability in emerging market countries, collaboration between governments, regulators, financial institutions, and other stakeholders is needed. Effective banking regulation and supervision can be the basis for introducing new financial practices and services that support financial inclusion for all levels of society.
Keywords: Financial Inclusion; Financial Stability; Emerging Market; Banking Industry
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1. Introduction

In the financial world, maintaining financial system stability is a top priority for all countries (Platonova et al., 2018). Past financial crises, such as the global financial crisis of 2008, have revealed how important it is to pay attention to financial system stability as a precaution against widespread and prolonged economic losses (Bordo, Meissner, 2016). Therefore, the management and maintenance of financial system stability has become a major focus in economic policy and financial regulation. Babar et al. (2019) support the idea that financial stability can be achieved through operational efficiency of the financial system, control of financial risks, and efforts to minimize the impact of systemic crises.

Financial inclusion became an important highlight after the 2008 crisis, considering its impact, especially on those at the lowest levels of society and often do not have access to banking, especially in developing countries (Soederberg, 2013). Although various definitions of financial inclusion have been put forward by the authors, it should be noted that there is a close relationship between financial inclusion and financial stability, especially in the face of global economic challenges. Financial inclusion provides opportunities for individuals and businesses to access financial products and services that are not only useful, but also affordable according to their needs, such as transactions, payments, savings, credit, and insurance (World Bank, 2022). In this context, Bank Indonesia (2011) states that financial inclusion includes circumstances where all adults of working age have effective access to credit, savings, payments, and insurance from formal service providers. This understanding is reinforced by Patwardhan's (2018) view, which explains that financial inclusion is not just a means, but as a key to achieving universal access to financial services at affordable prices.

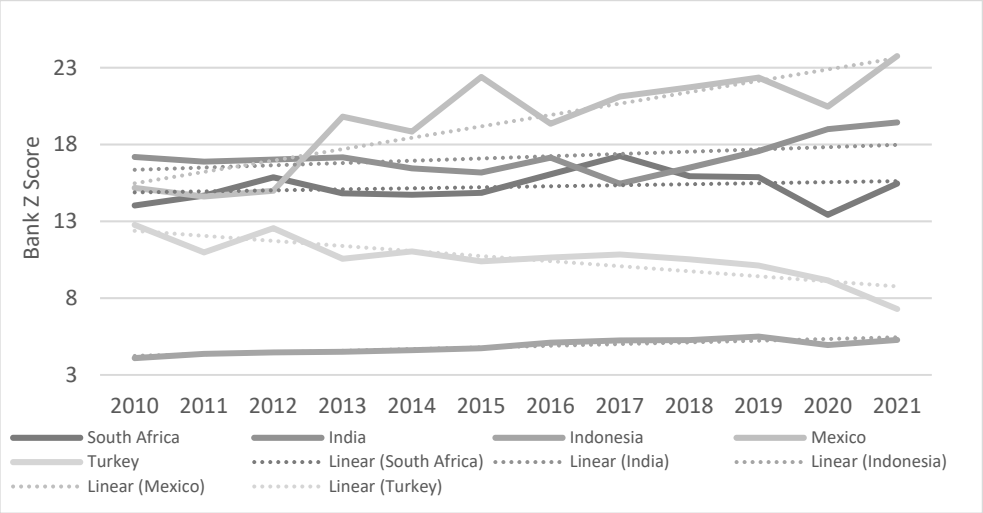
Many emerging market countries have high levels of economic inequality, namely the gap between rich and poor (Nature & Paramatic, 2016). Inequality can affect people's access to and participation in formal financial services (Demir et al., 2022). Financially underserved communities tend to have poorer asset quality and are vulnerable to higher credit risk, which will impact banking stability. Emerging market countries often face challenges in terms of infrastructure and access to technology (Marquis, Raynard, 2015). Technology limitations can also affect banks' ability to manage credit and liquidity risk efficiently (Shair et al., 2021). Emerging market countries are often in complex geopolitical environments and are vulnerable to systemic risks, such as global economic crises or currency fluctuations (Li, Huang, Chen, 2021).

The ongoing COVID-19 crisis has reinforced the need to increase digital financial inclusion. In 2021, additional needs due to the COVID-19 pandemic have increased strong linkages between Emerging Market countries and domestic banks (Feyen et al., 2021). The surge in sovereign debt by domestic banks of Emerging Market countries is a finding revealed in the global financial stability report published by the International Monetary Fund (2022). This phenomenon reflects the significant impact of the pandemic on the financial sector in these countries. In the face of global financial sector weakness and to address the crisis, various organizations and institutions, such as the World Bank, IMF, G20 countries, and the Alliance for Financial Inclusion, have launched initiatives to strengthen the financial inclusion agenda in both developing and developed countries (Čihák, Mare, Melecky, 2016). Global

cooperation within the framework of the G20 has also implemented a financial inclusion action plan since it was agreed in Seoul at the 2010 G20 Summit (Danisman, Tarazi, 2020).

Based on Figure 1, in 2020, most emerging market countries experienced a decline in the value of the Bank Z Score, indicating an increase in the vulnerability of the banking industry to bankruptcy risk (Chiaramonte et al., 2015; Khasawneh, 2016). This is related to the impact of the COVID-19 pandemic that affects the economy as a whole, including declining business performance, declining revenue, as well as increasing credit risk and economic uncertainty. The decline in Bank Z Score reflects significant pressure on the banking industry and indicates potential systemic risks that could disrupt financial stability (Klomp, 2014). However, as we head into 2021, there are signs of recovery and improvement in banking stability in various countries over time. This can be due to policy measures taken by financial and monetary authorities to overcome the negative impact of the pandemic (Elnahass, Trinh, Li, 2021). Among the measures are fiscal and monetary stimulus, liquidity assistance, and regulatory intervention aimed at maintaining the stability of the banking industry.

Figure 1. Bank Z Score (Banking Stability) of G20 Emerging Market Countries



Source: World Bank (2011-2021).

Despite signs of recovery, it should be noted that the situation may vary between different countries and banking sectors in Emerging Market countries. Some countries are experiencing faster recovery and showing more significant improvements in banking stability, while others may still face greater challenges in coping with the impact of the pandemic on their banking industries. Thus, careful monitoring of the stability of the banking industry and an in-depth assessment of the vulnerability of the banking industry amid the COVID-19 pandemic remain important priorities (Siregar, Gunawan, Saputro, 2021).

Some measures in measuring financial inclusion include bank penetration, bank availability bank, and bank usage dimensions. With wider access, more equitable distribution, and active

public participation in formal financial services, credit and liquidity risk can be better managed (Hassan, Khan, Paltrinieri, 2019). Strengthening banking stability can have a positive impact on sustainable economic growth and overall public welfare (Sharma, 2016). Therefore, efforts to improve these three dimensions must be the focus in the design of financial inclusion policies and initiatives to achieve a strong and highly resilient banking system.

In previous studies, it was mentioned that the lack of financial inclusion can potentially lead to ongoing systemic crises (Čihák, et al., 2016). However, the literature also highlights a positive correlation between increased financial inclusion and increased financial stability, especially in the banking sector (Ahamed, Mallick, 2019; Alvi et al., 2020; Anarfo et al., 2019; Wang, Luo, 2022). In addition, increasing the number of domestic savers can help reduce dependence on external sources of funds that tend to be less stable in developing countries (Feghali, et al., 2021).

Although many studies have explored the impact of financial inclusion on banking stability, there is still debate in the literature. For example, Wu et al., (2017) investigated financial stability in developing countries, and Mulyaningsih et al. (2015) examined the effect of financial inclusion in the Indonesian banking industry. Both studies show that financial inclusion can improve banking stability. Mader (2018) argues that broader financial inclusion allows more individuals and businesses to access a variety of financial products and services. In addition, Renn et al., (2022) imply that financial inclusion can reduce systemic risk by distributing financial risk more evenly among various economic stakeholders. However, Vučinić (2020) research indicates the potential negative impact of high financial inclusion on banking stability, such as increased systemic risk or adverse competitive influences.

The importance of discussing and understanding the relationship between financial inclusion and financial stability is the purpose of this study. Further in-depth research is needed to investigate the effect of the financial inclusion subindex on banking system stability in developing countries that are members of the Group of Twenty (G20). In examining the relationship between financial inclusion and financial stability in the banking industries of G20 emerging market countries, this study makes an important contribution to investigating how smart and adaptive banking regulation and supervision supports the introduction of new financial practices and services, and the development of financial inclusion in a sustainable and stable manner in these countries. The choice of the G20 as the focus of research on emerging market countries, even though they have differences in financial systems, can be explained by considering the high diversity of economies and financial systems. This allows research to explore the impact of financial inclusion on financial stability by considering diverse economic contexts. Emerging market countries are major actors in the global economy and have a strategic role in the dynamics of international finance. The novelty of this research lies in the panel data approach used to analyse the relationship between financial inclusion and financial stability in the banking sector of G20 emerging market countries. The use of panel data provides advantages in overcoming endogeneity and heteroscedasticity problems, so that analysis results can be more robust and accurate. Therefore, this research does not only focus on local aspects, but also has implications for global policies and strategies in achieving better financial stability.

The series of structures for this research are as follows. After the introduction in Part 1, the researcher reviews relevant literature and formulates a hypothesis which is explained in Part 2, the data and research methodology are explained, then continued in Part 3, the researcher presents the analysis of variable movements, estimation results and discussion. Section 4 explains the conclusions and recommendations for emerging markets.

2. Research Methods

The data used in this research comes from various sources, including the International Monetary Fund (IMF) and the World Bank. This research focuses on five Emerging Market countries that are members of the G20, with data ranging from 2011 to 2021. The variables used in this study include Bank Z Score, Bank Penetration, Bank Availability, and Bank Usage.

This study uses quantitative analysis techniques using calculation methods with regression estimation techniques of Ordinary Least Square (OLS) panel data in analyzing the effect of financial inclusion on financial system stability. Where the financial inclusion sub-index is used as an independent variable and financial stability as a dependent variable, the functions of this study are formed as follows:

$$\mathbf{BZS} = \mathbf{f(PTT, AVB, USG)} \quad (1)$$

From the above function, a regression equation can be formed for this research model, which is as follows:

$$\mathbf{BZS_{i,t}} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\mathbf{PTT_{i,t}} + \boldsymbol{\beta_2}\mathbf{AVB_{i,t}} + \boldsymbol{\beta_3}\mathbf{USG_{i,t}} + \mathbf{e_{it}} \quad (2)$$

BZS is the dependent variable, β is the coefficient of the independent variable, PTT is banking penetration, AVB is the bank availability dimension, USG is the bank usage dimension, it is time series and cross-section, and e is the error standard.

Table 1. Variable and Data Source Description

Variable	Notation	Variable Description	Formula	Data Sources
Bank Z-Score	BZS	Data Bank Z-Score Data		World Bank
Bank Penetration	PTT	Number of deposit accounts per 1000 adults in a commercial bank	$Di = wi\frac{Ai - mi}{Mi - mi}$	International Monetary Fund (IMF)
Bank Availability	AVB	Number of commercial bank branches per 100,000 adult population		International Monetary Fund (IMF)
Bank Usage	USG	Outstanding loans + Deposits from commercial banks as a percentage of GDP		International Monetary Fund (IMF)

Source: World Bank and International Monetary Fund (IMF), 2023.

Where: Di presents the dimensional value of the financial inclusion indicator, wi is the value weight, Ai is the actual value of the i-th dimension indicator, mi is the lowest value of the i-th dimension and Mi is the highest value of the i-th dimension.

3. Data Trend Analysis

3.1. Trend of Bank Penetration Dimensions in G20 Emerging Market Countries

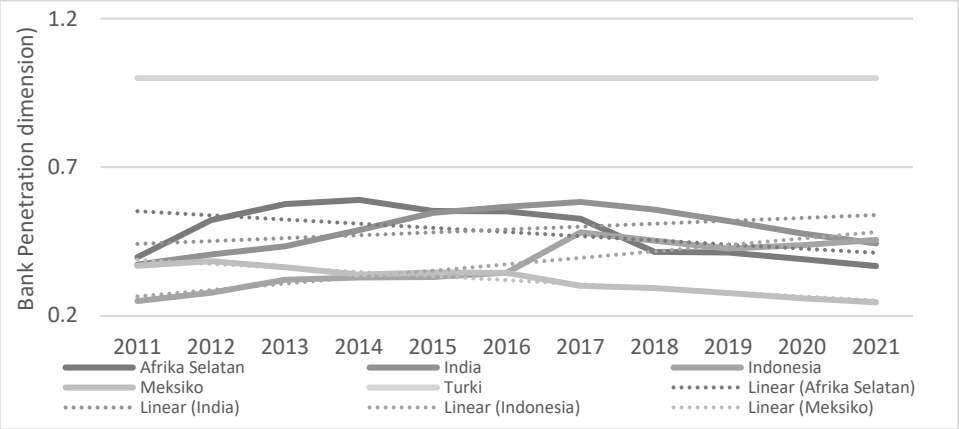
The bank penetration dimension is one of the key aspects in measuring financial inclusion, as banks as formal financial institutions play a central role in providing various financial services to the public (Sharma, 2016). In measuring financial inclusion, the bank penetration dimension includes various indicators such as the number of bank accounts, per capita bank account penetration, and the level of community participation in rural and urban areas. Information on the use of digital banking services also provides insight into the adoption of financial technology by the public, which can be key in increasing financial inclusion in the digital age (Aziz, Naima, 2021). The dimension of bank penetration in India is important given its large population and diverse income levels (Goel, Sharma, 2017). The dimension of bank penetration is also key to overcoming geographical differences in Mexico, Indonesia, and Turkey. High economic inequality in South Africa makes the bank penetration dimension critical in facing these challenges (Tchamyou, Asongu, Odhiambo, 2019).

The downward trend in the movement of bank penetration dimensions occurred in South Africa and Mexico. South Africa faced significant economic challenges during the period 2011-2021, including slow economic growth, high unemployment, and rising inflation (Blecher et al., 2017). Such economic instability can reduce public confidence in the banking industry and hinder participation in banking services (Han, Melecky, 2013). Income inequality can affect people's access to banking services, as most people do not have enough income to open a bank account or use banking products and services (de Haan and Sturm, 2017). The downward trend in bank penetration movements in Mexico was caused by economic instability during 2011-2021, including currency exchange rate fluctuations, high inflation, and fluctuating economic growth (Hsing et al., 2020; Baharumshah et al., 2017). Economic instability can reduce public confidence in the banking industry and cause uncertainty in using banking services.

Based on Figure 2, Turkey has the highest dimension of banking penetration among other countries. Turkey has the highest score with a score of one in the banking penetration dimension, making it the only country to achieve a high category of financial inclusion among the five countries studied. That is, Turkey has succeeded in providing its people with wide access to banking services (Yorulmaz, 2013; Atkinson & Messy, 2014). This success was able to contribute to the improvement of the stability of the Turkish financial system.

The Turkish government has successfully implemented active policies in promoting financial inclusion and increasing public access to banking services. Turkey has also successfully launched programs such as the Financial Literacy and Inclusion Program and Turca-style Microcredit aimed at improving financial literacy and expanding people's access to banking services (Güngen, 2017; Atkinson, 2017). This has enabled new approaches to providing financial services, such as digital banking and electronic payments. The adoption of this technology facilitates people's access to banking services through digital platforms, which in turn increases the penetration rate of banking in Turkey.

Figure 2. Trend of Bank Penetration Dimensions in Five G20 Emerging Market Countries

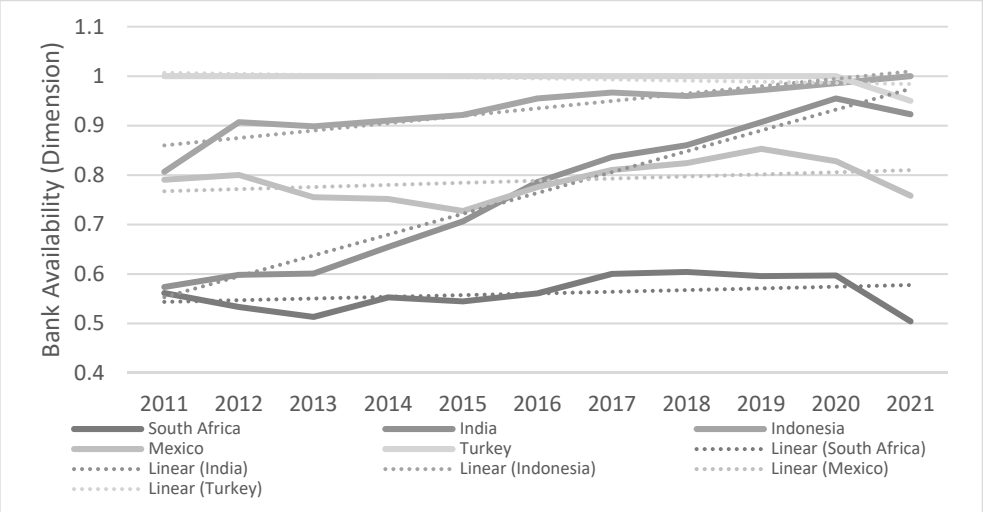


Source: International Monetary Fund (IMF) (2011-2021).

3.2. Trend of Bank Availability Dimensions in G20 Emerging Market Countries

The bank availability dimension is one of the important aspects in measuring financial inclusion, which reflects the level of availability and accessibility of formal financial institutions, especially banks, to the public (Sharma, 2016). The availability of bank branches is a key factor in ensuring public access to formal financial services (Iqbal, Sami, 2017). In Emerging Market countries such as India, Indonesia, and South Africa, bank availability becomes very important due to the large geographical area and diverse levels of settlement (Tang, Yao, 2018). Thus, the dimension of bank availability is an integral component in realizing an inclusive and resilient financial system at the global level. Based on Figure 3, in all countries studied there has been a downward trend since 2020. The COVID-19 pandemic has had a significant impact on the global financial sector, including in emerging market countries (Raza et al., 2022). To control the spread of the virus, many countries implemented lockdown policies and physical restrictions (Hoon, Wang, 2020; Han et al., 2020). This resulted in the temporary closure or reduction of bank branch operations. Lack of direct access to branch offices can hinder the physical availability of banks for the public. In response to physical restrictions, many banks are upgrading and expanding their online and mobile banking services (Kwan et al., 2020).

Figure 1. Trend of Bank Availability Dimensions in Five G20 Emerging Market Countries



Source: International Monetary Fund (IMF) (2011-2021).

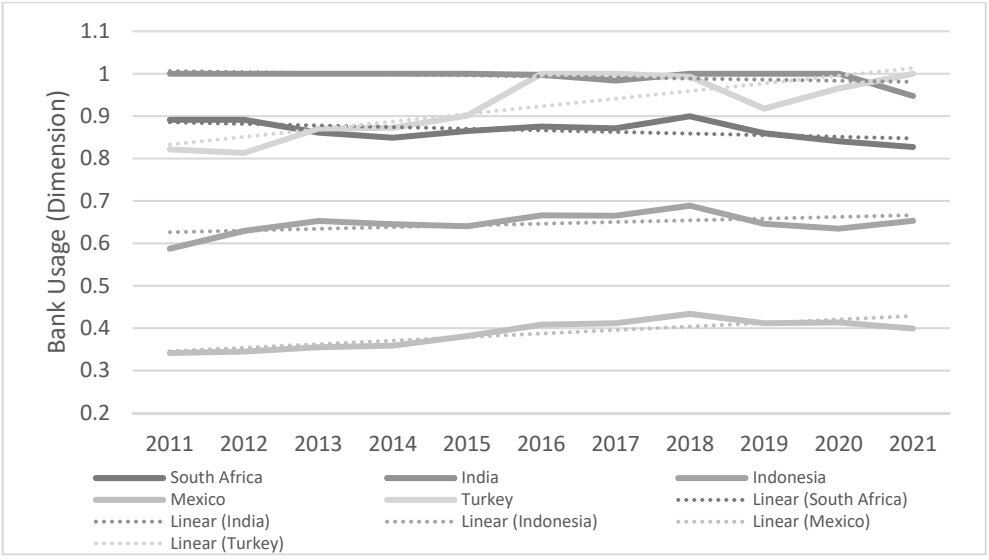
The COVID-19 pandemic has caused uncertainty, making banks reluctant to provide new loans (Didier et al., 2021). Uncertainty about the future of the business as well as economic conditions make banks more cautious in taking credit risk (Chi, Li, 2017). The COVID-19 pandemic has driven instability in global financial markets (Ibrahim, 2020). Volatility and a decrease in asset value make it difficult for banks to obtain the liquidity needed to finance loans (Gornall, Strebulaev, 2018). This decrease in liquidity can affect banks' ability to expand credit and offer a wider range of financial services. In an effort to overcome the economic impact of COVID-19, governments in emerging markets adopted stricter policies and regulations related to the banking industry (Miroslav, Usman, Tariq Sahyouni, 2021).

During this period, the banking industry in India experienced significant growth and expansion. Many private banks as well as state-owned banks, opened new branches in various parts of India (Acharya et al., 2013; Cooper et al., 2007). The Indian government has increased financial inclusion by launching programs such as the Jan Dhan Yojana (Winn, Koker, 2013; Singh, Ghosh, 2021). The program aims to expand access to financial services for the entire population, especially the unbanked. So, there is an increase in the number of bank accounts and an increase in the availability of banking services as a whole. The Indian government has also encouraged the development of banking networks in remote and rural areas. Through programs such as Pradhan Mantri Jan Dhan Yojana, banks are encouraged to open branches as well as ATMs in areas that have not been well served before (Barua, Kathuria, Malik, 2016). It aims to increase the accessibility and availability of banking services.

3.3. Trend of Bank Usage in Five G20 Emerging Market Countries

The Bank Usage Dimension is an important dimension for measuring financial inclusion, reflecting the extent to which people use formal financial services provided by banks (Camara, Tuesta, 2017). The use of banks is an important benchmark in evaluating the extent to which financial services have been adopted and utilized by people to meet their financial needs (Ali et al., 2020). High bank utilization can create diverse sources of funding for banks, encouraging a reduction in the risk of dependence on certain sources of funds (Neaime and Gaysset, 2018). Based on Figure 4, Turkey shows a fluctuating trend in bank usage dimensions with the highest decline occurring in 2019. In the period 2018-2019, Turkey experienced a financial crisis involving the weakening of the currency exchange rate (turkey) and high inflation. This crisis resulted in significant economic instability, making people lose confidence in the banking system and choose to reduce the use of banks. High economic uncertainty can also be a factor in decreasing bank usage. During the period, the unstable economic situation made people hesitant to deposit their money in banks or use banking services. High inflation rates can also affect bank usage. High inflation reduces people's purchasing power and discourages them from keeping money in banks that may not provide enough returns to fight inflation.

Figure 2. Trend of Bank Usage in Five G20 Emerging Market Countries



Source: International Monetary Funds (IMF) (2011-2021).

The downward trend in bank usage occurred in South Africa during the 2011-2021 period. South Africa has one of the highest levels of income inequality in the world (Solt, 2016). This inequality impacts financial accessibility and inclusion for a large part of the population. For some people with low incomes, banking services may be unaffordable or not easily

accessible. This factor can hinder the growth of bank usage among people with weaker economies. In addition to economic and infrastructural factors, changing preferences and adoption of technology also play an important role. Along with the development of fintech and digital financial services, some people in other countries in emerging markets have switched to digital banking services or non-bank alternatives. However, in South Africa, the adoption of this technology has not reached the same level due to the infrastructure and accessibility challenges faced by a large part of the population (Akpan, Udoh, Adebisi, 2022).

India has the highest dimensional level of bank usage (Figure 4). India has launched various strong financial inclusion initiatives and the adoption of innovative financial technologies such as UPI (Unified Payments Interface) and e-wallets has also helped increase the use of banks in India (Sharma, 2018; Gochhwal, 2017). Steady economic growth and increased financial literacy have also contributed to the high level of bank usage in the country. However, in 2020 there was a decline in the trend of bank usage in India. The COVID-19 pandemic caused a significant decline in economic activity in India (Debata, Patnaik, Mishra, 2020). Many businesses face temporary closures or operational reductions, resulting in a decrease in banking transactions related to those businesses.

4. Results and Discussion

4.1. Descriptive Statistics

Statistical descriptions for each of the variables used in this investigation are compiled in Table 2. The variables studied include Bank Z score which was influenced by the financial inclusion sub-index in G20 Emerging Market countries for eleven years from 2011 to 2021. In the table obtained, the mean, median, maximum and minimum values and standard deviation with the sum of all observations is 55.

Table 2. Descriptive Statistics of Five G20 Emerging Market Countries (2011-2021)

	BZS	PTT	AVB	USG
Means	13.55164	0.532512	0.808706	0.763353
Median	14.85629	0.443034	0.828195	0.859631
Maximum	23.75342	1.000000	1.000000	1.000000
Minimum	4.370431	0.244652	0.504340	0.341559
Std. Dev.	5.594071	0.252509	0.167975	0.226216
Observations	55	55	55	55
Cross sections	5	5	5	5

Source: Output EViews 9 (2011-2021).

Financial stability in the banking sector can be reflected by the bank Z score variable which shows how much the level of bank solvency is in facing the crisis. The average Bank Z Score for 11 years in the G20 Emerging Market was 13.55% and the highest Bank Z score occurred in Mexico in 2021 at 23.75%. However, the lowest bank Z score occurred in Indonesia in 2011 with a value of 4.37%.

In this study, all three dimensions of the financial inclusion index (banking penetration, banking availability, and banking usage) were associated with financial inclusion. A comprehensive financial system requires wide consumer penetration. The proportion of individuals who have bank accounts is used to calculate banking penetration. Based on Table 2 it is seen that between 2011 and 2021, the variable of banking penetration in the G20 emerging markets had an average value of 0.53, with Turkey having the highest value of 1 for all annual periods and Mexico having the lowest value of 0.24.

Financial services must be accessible to all residents of the country to be part of an inclusive financial system. So, the dimension of accessibility of bank services, which has an average value of 0.80 and the highest value of 1 in Turkey, is one of the indications used to calculate the financial inclusion index. In 2021, Indonesia will have the highest score, while South Africa will have the lowest score. Furthermore, the average score of 0.76 belongs to the dimension of bank service use with a maximum score of one achieved by India and Turkey while the lowest score is owned by Mexico in 2011 of 0.34. The level of access to banking services is used as an indicator to create the Financial Inclusion Index because some groups of individuals are still unable to take advantage of the availability of financial services.

4.2. Econometric Analysis

In the selection of regression models used in this study, the best model testing was carried out including the Chow test which gave results that the Fixed Effect Model was better than the Common Effect Model or Pooled Least Square seen from a p-value of less than 0.1. Then a Hausman test is carried out which gives a p-value result smaller than 0.1 so that the model chosen from the Hausman test is a fixed effect model better than the random effect model. As an alternative model selection according to determining the method whether Fixed Effect Model or Random Effect Model is better in research can also be seen from, if the number of time series periods is large and the number of cross-section units is small, there will likely be small differences in the estimated parameter values between FEM and REM then choosing FEM or REM depends on convenience, however, FEM models are better to use. Based on this, it is known that the number of time series is 11 years and the cross-section unit used is small as many as 5 countries, so the model used in this study is the Fixed Effect Model (FEM). The fixed effects model has the advantage of including individual fixed effects for each unit in panel data analysis, allows control of variables that do not change over time, overcomes the problem of omitted variables, and provides robustness to constant factors over time, as well as controlling for overall differences between units, so it is effective in identifying the influence of the independent variable on the dependent variable without being influenced by factors that do not change over time.

The results of the estimated model test using the Fixed Effect Model (FEM) are as follows:

$$BZS_{i,t} = 10.16672 - 6.927524PTT_{i,t} + 6.372205AVB_{i,t} + 2.516103USG_{i,t} + e_{i,t} \quad (3)$$

From the equation above, it is known that the results shown are bank penetration seen from the probability of less than α=10% having a negative and significant effect as well as the variable bank availability which has a significant effect with a positive direction seen from

the probability of less than α=10%. In contrast to the variable bank usage which does not have a significant effect on financial stability in the banking sector because the probability is more than α=10%. Then when viewed from the value of the coefficient of determination of 0.93 shows that the three independent variables can describe the effect of bank penetration, bank availability and bank usage on the financial stability of the banking sector by 93% and the remaining 7% explained by other variables. Then looking at the F-statistical probability below α=1% shows that the three independent variables together affect the banking financial sector.

Table 3. Estimated Output

Variable	Coefficient	T-Statistics	Probability
C	10.1667	2.0508	0.0459
PTT	-6.9275	-1.9252	0.0603*
AVB	6.3722	1.9912	0.0523*
USG	2.5161	0.4493	0.6553
R-squared	0.9328		
Prob(F-statistic)	0.0000***		
Chow Test	0.0000		
Hausman Test	0.0000		
Country	Intercept		
SOUTH AFRICA	2.7748		
INDIA	3.0217		
INDONESIA	-10.2576		
MEXICO	5.9928		
TURKEY	-1.5317		

*Note: *, **, and *** indicate significance levels at levels of 10%, 5% and 1%*
Source: Output EViews 9 (2011-2021)

From the intercept value of each country presented in Table 3, South Africa, India and Mexico have positive intercept values, while Indonesia and Turkey have negative intercept values. Positive intercept scores in South Africa, India, and Mexico indicate that when the independent variables (Bank Penetration, Bank Availability, and Bank Usage) have a value of zero (or when there is no influence from the independent variable), then Bank z-scores (banking stability) in these countries have a value higher than zero. This can mean that these countries have naturally quite good basic banking stability, before considering the impact of factors measured by independent variables. The negative intercept values of Indonesia and Turkey indicate that when the independent variable has a value of zero, then banking stability in these countries has a value lower than zero. This can mean that these countries have relatively lower basic banking stability or may face greater challenges in terms of banking stability, without considering the influence of independent variables.

4.3. Bank Penetration Relationship to Banking Stability

The banking penetration has a significant effect with a negative correlation to banking stability. Banking penetration refers to the level of public access and participation in using banking services. The negative correlation between the banking penetration and the stability

of the banking system indicates that the higher the banking penetration, the lower the stability of the banking system. The more individuals or businesses that have access to banking facilities, the more likely there is a demand for credit. This can lead to increased credit risk for banks that have to evaluate and lend to large numbers of debtors. If the quality of credit provided is not properly supervised, the risk of default and deterioration in the quality of bank assets may increase, which in turn reduces the stability of the banking system. With more customers and funds circulating in the banking system, banks may face challenges in managing liquidity. If not managed properly, this increase in liquidity can lead to unstable short-term financing risks. Banks may struggle to meet customer withdrawal requests or face uncontrollable liquidity pressures. A high banking penetration index can also mean that more customers have access to a wide range of financial products and instruments. If a customer's financial education and understanding of the product and associated risks is low, they may be more vulnerable to abuse or inadequate risk-taking. This can lead to increased risk and a deterioration in the asset quality of the bank.

In India, low levels of financial inclusion and limited infrastructure in some rural areas have resulted in a low banking penetration. The negative impacts include an increase in the risk of non-performing loans as many people use informal loans and high-risk sources of funds. This situation can threaten the stability of the banking system and the overall financial health. On the other hand, Indonesia faces challenges in inequality of access to financial services between urban and rural areas. More advanced infrastructure in urban areas supports higher levels of financial inclusion and better banking penetration indexes. However, rural areas that still have limited infrastructure experience a low banking penetration index, which has the potential to create inequality in banking system stability. South Africa, with its more advanced infrastructure and technology, supports higher levels of financial inclusion. However, low levels of financial literacy and economic inequality issues may cause some groups of people to remain financially underserved. This can affect the bank's asset quality and increase credit risk, which impacts the stability of the banking system. Mexico, on the one hand, faces differences in infrastructure and financial inclusion between metropolitan areas and rural areas. More advanced infrastructure in metropolitan areas supports an increase in the banking penetration dimensions, while rural areas may experience limited access. The negative impact that may arise is inequality in the stability of the banking system in various regions. Meanwhile, Turkey enjoys strong economic growth overall, supporting better financial inclusion rates and a higher banking penetration index among other countries. However, Turkey has challenges in managing liquidity risk and regulatory changes that may affect the stability of the banking system in the future. These results are in line with research by Quisumbing et al., (2014); Camara & Tuesta (2017); Ghosh, (2015).

4.4. The Relationship of Bank Availability to Banking Stability

The dimension of bank availability has a positive and significant effect on banking stability. The bank availability dimension refers to the level of presence of banks in a banking system, which can be measured by the number of banks operating or the level of geographical presence of banks in a particular region. The positive and significant correlation between the dimensions of bank availability and banking system stability shows that the higher the level

of bank availability, the higher the stability of the banking system. With more banks operating, the risks faced by the banking system can be more diversified (Meslier, Tacneng, Tarazi, 2014). If a bank is experiencing difficulties or facing certain risks, the presence of other banks can help reduce its overall impact. In other words, risk diversification can help protect the banking system as a whole from vulnerability to external pressures (Dionne, 2013). High bank availability also means that people have better access to banking services. It can promote financial inclusion, where more individuals and businesses can use banking products and services to store and manage their money. With increased access to banking services, people can reduce dependence on the informal financial sector which may be more vulnerable to risk.

The difference in bank availability levels between urban and rural areas is a major challenge in countries like India and Indonesia which have populations spread across different geographical regions. In urban areas, there are more bank branches and ATM machines with better access to technology. Conversely, in rural areas, access to banking services is limited due to long distances between villages, lack of bank branches, and lack of technological facilities. Despite such challenges, Indonesia and India have experienced positive improvements in the Bank Availability Dimension. Some banks have partnered with microfinance institutions (MFIs) to reach communities in rural areas. MFIs have strong networks at the local level and can be a conduit for providing banking services to smaller groups of people. As it did in India, Indonesia has also implemented an inclusive finance program to bring banking services to previously underserved segments of society. These programs include low-cost bank account opening, financial literacy training, and financial assistance for the poor. Banking services through banking applications, e-wallets, and fintech platforms have become an alternative to providing financial services in hard-to-reach areas.

South Africa, as an upper middle-income country, has a relatively developed and diversified banking sector. Strong bank availability in major cities supports wide access to banking services. However, challenges include financial inclusion issues among people with low-income levels and in rural areas. Financial inclusion policy and the development of banking infrastructure in remote areas are priorities to increase bank availability equally. Meanwhile, Mexico, as a middle-income country, faces challenges in addressing regional inequalities in bank availability. Large cities have good access to banking institutions, but rural and remote areas may have limited access. Banking infrastructure in remote areas needs to be improved to achieve better financial inclusion and improve overall banking stability. On the other hand, Turkey, as an upper-middle-income country, tends to have a more advanced level of technological availability and extensive internet connections. This enables the rapid development of digital banking and fintech services, which contributes to the increasing availability of banks nationwide. Nevertheless, currency fluctuations pose a challenge to banking stability in the country. This is in line with research by Akhisar et al. (2015), Alvi et al., (2020) and Villarreal (2017).

4.5. The Relationship of Bank Usage to Banking Stability

A positive but not significant correlation between dimensions of bank usage and banking stability suggests that there is a positively likely relationship between public use of banks and banking system stability, but this relationship is not strong enough to be considered statistically significant. The positive correlation between bank usage and banking system stability can be explained by the presence of several other factors that have a greater influence on banking system stability. For example, factors such as good regulation, strict supervision, appropriate monetary policy, and strong banking governance can have a more significant impact on the stability of the banking system than the level of bank usage. The use of banks by the public can be influenced by behavioural factors as well as individual preferences. It is possible that the high level of use of banks by some people does not necessarily have implications for the stability of the banking system as a whole. Some individuals tend to prefer to use non-bank financial services or have other preferences in managing their finances. In addition, Turkey's highly fluctuating state data and large variations from year to year can cause the influence to be insignificant.

India has the highest bank usage dimension value among other countries. The widespread adoption of banking technology and the growing accessibility of banking services are able to contribute to banking stability. Mexico and Indonesia tend to be stable in their bank usage dimensions, but experience relatively low growth. This means that there are challenges in achieving more significant growth in bank availability and access to banking services for people in these countries. The decline in the dimension of bank usage in South Africa shows the challenges in achieving bank availability and accessibility of banking services for the public. South Africans such as rural areas and low-income communities are numerous, unable to open and maintain bank accounts due to the associated costs and difficulty of meeting requirements. Although the results showed a positive relationship between dimensions of bank usage and banking stability in these five countries, the relationship was not always significant. That is, there are other factors beyond the dimension of bank usage that also affect banking stability, such as aggregate economic conditions, banking regulation, and political stability. These results are in accordance with the findings of Hallam and Ahlem (2022), Feghali et al. (2021), Fabris (2018) and Merhi et al. (2019).

5. Conclusion

Banking penetration is negatively correlated and significantly affects banking stability. This is due to several risk factors that have not been managed properly, including increased credit risk, uncontrolled liquidity risk, and the risk of abuse or inadequate risk-taking by customers. To overcome this, the government needs to adopt policies that can strengthen banking regulation and supervision, as well as improve credit and liquidity risk management. The dimension of bank availability is positively correlated and significantly affects banking stability. This indicates that risk diversification and better financial inclusion can contribute to strengthening banking system stability. Emerging Market countries can achieve this by encouraging the growth of the banking industry, the implementation of financial inclusion programs, the development of banking networks, and the adoption of technology that

facilitates the accessibility of banking services. There is also a positive but not significant correlation between the dimensions of bank usage and the stability of the banking system. This shows that there are other factors that are more dominant in influencing the stability of the banking system, such as regulation, supervision, monetary policy and individual preferences towards financial management. Active financial inclusion policies, digital technology development, and efforts to improve accessibility can increase bank penetration rates.

India experienced a significant increase in the dimension of bank availability due to the growth of the banking sector, financial inclusion programs, banking network development, and several programs that support the enhancement of financial inclusion. On the other hand, Turkey achieved the highest banking penetration rate due to the active adoption of financial inclusion policies, the development of digital technologies, and efforts to improve accessibility. Taking these findings into account, emerging market countries need to design holistic and balanced policies. The importance of effective banking regulation and supervision lies in its role as a solid foundation for introducing innovative financial practices and services that support financial inclusion for all levels of society. Given the different characteristics and challenges in each country, a tailored approach needs to be applied to improve bank availability and accessibility of banking services. The importance of the role of government policies and regulations cannot be overlooked either, as they play a central role in creating an environment that supports the introduction of new financial practices and services. Thus, well-coordinated collaborative efforts between various relevant parties are required to ensure that effective banking regulation and supervision are key drivers for the advancement of financial inclusion and banking stability at the national level.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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CORPORATE ENTREPRENEURSHIP AND INNOVATION IN STATE-OWNED ENTERPRISES: RESULTS FROM BULGARIA[2]

In this article, we explore the paradigms of corporate entrepreneurship and innovation in state-owned enterprises (SOEs) in Bulgaria. The author has conducted qualitative research based on case studies with in-depth interviews with long-term executives in key Bulgarian SOEs. The results of the author's findings on the nature of innovation and barriers to innovation in Bulgarian SOEs are presented. Research results illustrate the nature of innovations in SOEs as well as management's understanding of innovation in the context of entrepreneurial activities. The results show the role of SOEs and their contribution to the level of innovation in the country's economy. A unique combination of barriers to innovation for SOEs are identified that are specific to the Bulgarian context. The study contributes to the understanding of the functional dynamics of innovations in SOEs in Bulgaria, offering conclusions and recommendations for policy development.

Keywords: entrepreneurship; corporate entrepreneurship; state-owned enterprises; SOEs; innovation; Bulgaria; dividend policy
JEL: L32; L26; O31

Introduction

Around 15% of Bulgaria's gross domestic product (GDP) is attributed to state-owned enterprises (SOEs), out of which 10% comes from the energy sector (APPC, 2022). Established as part of the country's public sector reforms in the 1990s, these enterprises are state-owned but commercially oriented organisations that operate on a market basis with explicit profit targets. In Bulgaria, there is an ongoing debate about the role, governance, and future of SOEs and whether retaining or privatising SOEs is in the best interests of the country. Attention is focused on whether some of these companies would be better placed (in terms of governance and competitiveness) in the public or in the private sector, with the option of partially or fully privatising them through a public offering of their shares on the stock exchange. Despite this assertion, a significant number of Bulgarian SOEs are publicly

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recognised, both nationally and internationally, as innovative, entrepreneurial, and established global competitors in their respective industries.

In this paper, we link the paradigm of corporate entrepreneurship to innovation opportunities in state-owned enterprises. Drawing on qualitative research conducted by the author, we analyze the nature of innovation adoption and the barriers to innovation in the studied SOEs from different economic sectors in Bulgaria. We discuss the results obtained by the author on the understanding of innovation of SOEs' senior managers with long managerial experience in the public sector.

1. Key Aspects of Corporate Entrepreneurship

Entrepreneurship, a term traditionally associated with start-ups and small enterprises, has evolved over time to encompass activities within large and established structures. This evolution has led to the emergence of the concept of corporate entrepreneurship (CE), which is key to driving innovation and strategy in established organizations. In this context, SOEs are one such category of established organizations that have a significant impact on the economic life and daily lives of people.

CE is a term used to describe entrepreneurial behaviour within established medium and large organizations (Covin, Slevin, 1991). Definitions of corporate entrepreneurship have evolved over the past thirty years. At a basic level, CE involves the generation, development and implementation of new ideas and behaviours by the company (Damanpour, 1991). The viewpoint of this definition focuses on innovation, which may include new products or services, new processes, administrative systems, or employee-related programs in the organization. In this context, corporate entrepreneurship focuses on improving the company's ability to acquire and operate with new skills and capabilities.

Zahra et al. (Zahra et al., 2000) believe that CE can involve formal and informal activities to create new businesses in established organizations through innovation in products, services, processes and market development. The perspectives discussed on the nature of CE are unified by Ling et al. (2008) into the following definition: CE is the sum of a firm's innovation efforts, strategic renewal and venture ventures to create new business. Through this integrated approach, innovation, organizational renewal and corporate venturing are important integral parts of the concept of CE, which can occur in different ways in an established organization (Kugatko et al., 2011).

Corporate entrepreneurship is identified with undertaking specific activities as follows:

- Establishment of business or structural units, including joint ventures, partnerships, key partnerships; mergers and acquisitions; integration of companies; new divisions; new subsidiaries, etc. (Guth, Ginsberg, 1990; Garvin, Levesque, 2006);
- Strategic renewal, transformation of the company or parts of the company (incl. processes/new ways of working/structure/organizational culture) through innovation and ventures, incl. corporate venturing (Zahra, 1993, 1996; Covin, Miles, 1999; Stopford, Baden-Fuller, 1994);

- Product innovation (McFadzean et al., 2005), as well as process innovation (Shaw et al., 2005), development of new products, services, technologies, administrative techniques, processes, strategies and competitive approaches (Antoncic, Hisrich, 2003).

2. SOEs

According to the OECD (2015) definition, a state-owned enterprise is any legal entity recognized by national law as an enterprise in which the central government exercises ownership and control. This includes joint stock companies, limited liability companies and limited partnerships. as well as enterprises established by special law. Undertakings whose legal personality is established by special legislation should be considered to be public enterprises if they carry out economic activities exclusively or in conjunction with the pursuit of public policy objectives. An economic activity is one that involves the supply of goods or services in a market and that could, at least in principle, be carried out by a private operator for profit (OECD, 2015). In the 21st century, the cross-border activities of public sector companies have diversified and increased (Cuervo-Cazurra et al., 2014). At the same time, many governments are struggling to effectively manage state-owned companies.

SOEs have been the subject of extensive academic research and their study touches on various aspects including governance, efficiency, performance, privatization and their role in economic development. Some major topics of research on state-owned enterprises from the academic literature are:

- Governance: SOEs often operate under different governance structures than private enterprises. The role of the state as regulator and owner can create conflicts of interest, sometimes leading to inefficiencies (Shleifer, Vishny, 1994).
- Performance and efficiency: the efficiency of SOEs is a controversial topic. According to some studies, SOEs are less efficient than private firms due to bureaucratic management and political interference (Boardman, Vining, 1989). However, others argue that SOEs can operate efficiently in certain circumstances and in certain sectors, especially when clear objectives are set and appropriate supervision is in place (Megginson, Netter, 2001).
- Privatisation: the privatisation of SOEs has been a major global trend, especially since the 1980s. Research in this area examines the impact of privatisation on efficiency, profitability and social welfare. Findings generally show positive economic outcomes, but also highlight the importance of the way in which privatisation is implemented (Megginson, 2005).
- Economic development and social goals: SOEs play a significant role in many economies, especially in emerging markets. They can be used to achieve social objectives such as employment or the provision of basic services. Some studies suggest that SOEs can effectively support economic development, while others highlight the risks of inefficiency and corruption (Shirley, Walsh, 2000).
- Globalization and International Operations: Recently, research has begun to focus on the internationalization of SOEs, particularly from emerging markets such as China. These

enterprises are playing an increasing role in the global economy and their strategies and performance are the subject of research (Cuervo-Cazurra et al., 2014).

The main research topics related to corporate entrepreneurship in SOEs can be distinguished as follows:

- Corporate entrepreneurship in SOEs: Corporate entrepreneurship refers to the search for new business opportunities within existing organizations. Research shows that SOEs can engage in corporate entrepreneurship, but success depends on factors such as governance structure, autonomy, incentives, and risk tolerance. SOEs with a commercial mandate may demonstrate higher levels of corporate entrepreneurship (Peng & Luo, 2000).
- Innovation in SOEs: The ability of SOEs to innovate is a subject of debate. Some argue that SOEs may be less innovative due to the lack of competition and bureaucratic constraints (Liu & White, 2001). However, others believe that SOEs can be innovative, especially in strategic sectors where the government is willing to invest in research and development (R&D) (Chang & Xu, 2008). The role of management, leadership, and organizational culture in driving innovation in SOEs has also been highlighted (Zahra, 1996).
- Comparative studies between SOEs and private firms: Traditional studies often portray SOEs as less entrepreneurial than private firms, partly due to bureaucratic constraints and political influences (Boardman & Vining, 1989). However, some studies find that entrepreneurship can flourish in SOEs under the right conditions, for example, when there are clear organizational goals, support from top management, and a culture that encourages innovation (Bruton et al., 2015). Most comparative studies often show mixed results. Some find that state-owned companies lag behind in innovation and entrepreneurial activities (Lau et al., 2002), while others find no significant difference or even superiority in certain conditions (Jiang et al., 2021)).

The performance of state-owned enterprises varies widely depending on various factors such as: region, country, industry, governance and quality of governance. In general, SOEs have been criticised for being less efficient than private enterprises, mainly due to bureaucratic inefficiencies and lack of competitive pressure. However, this is not a universal rule; some SOEs perform exceptionally well.

The Organisation for Economic Cooperation and Development (OECD) conducts extensive research on SOEs worldwide on several variables such as sectoral distribution, financial and market performance, corruption, and governance practices. According to an OECD report, in 2017, SOEs accounted for 22.8% of the global Fortune 500 largest companies. The number of SOEs is particularly high in countries such as China and Russia. SOEs tend to be concentrated in certain economic sectors such as utilities (electricity and water supply), mining and oil refining, although they also hold significant stakes in transportation, telecommunications, and banking. At the national level, the share of SOEs among the largest domestic companies varies considerably. For example, SOEs account for around 40% of the largest companies in China, around 80% in the United Arab Emirates and just under 30% in France and Italy. Their share is significantly smaller in countries such as the United States and the United Kingdom (OECD, 2017).

3. SOEs in Bulgaria

As of the end of 2021, there are 265 SOEs in Bulgaria, in which the ministries and holding structures exercise a dominant interest (PECA, 2022). SOEs are classified into two categories: group A – 118 enterprises primarily engaged in commercial activities; and group B – 147 enterprises primarily charged with the implementation of public functions and policies (126 group B enterprises are hospitals and 21 are fully state-funded). SOEs generate about 15% of Bulgaria's GDP. According to their annual financial statements for 2021, SOEs employ around 122,000 people. Many SOEs are essential to the country's economy and are leading in sectors such as energy, healthcare, transportation, water and sewerage (PECA, 2022).

4. Research Methodology

We present the results of a qualitative study conducted by the author during February-March 2023 among Bulgarian SOEs using a case study approach. We have used a non-random purposive sampling of SOEs across different economic sectors to construct six case studies based on six in-depth semi-structured interviews. The interviewees are senior executives who have extensive experience and affiliation with state-owned enterprises of strategic importance to the country. The stated objectives of the qualitative research include: to explore the process and nature of innovation in public enterprises; to identify the barriers to innovation in the SOEs studied; and to provide further understanding and interpretation of entrepreneurship and innovation in in SOEs that do not receive government subsidies or grant funding but operate on a market economy basis.

The research design is to develop case studies through in-depth interviews of the organisations studied with a focus on corporate entrepreneurship and innovation. The questionnaire was adapted according to the profile of the interviewees, the organization for which each was interviewed, and the sector in which each company operates. The data analysis is qualitative and presents the contextual framework of corporate entrepreneurship and innovation in the state-owned companies studied. Keywords and phrases are extracted for each question and context studied. The conclusions and recommendations reached provide a deeper level of understanding of the nature of innovation in the organisations examined, the barriers and opportunities to innovation and the development potential of these companies. The results of the study build on existing theory in the field of corporate entrepreneurship regarding the drivers of CE and innovation in state-owned companies.

Advantages associated with each case study methodology include the ability to examine corporate entrepreneurship in detail, thereby achieving a fuller or more complete understanding of this phenomenon. The case studies were undertaken in an attempt to gain a deeper understanding of corporate entrepreneurship and innovation (Mitchell, 1983), to describe and understand in depth both the concept and the environmental context, and to address the subtleties and complexities associated with each specific activity of the state-owned enterprises examined. Participants in the in-depth interviews were selected not

because their views were representative of the dominant opinion in the field, but because their experiences and attitudes reflected the full range of issues under study (Langer, 2001).

The use of a qualitative approach provides an opportunity to answer the how and why questions related to the phenomena of entrepreneurship and innovation in state-owned public enterprises in Bulgaria. This approach allows for rich data, thick description, and greater depth of analysis (Cooper, Schindler, 2011) so that through the insights and experiences of SOE managers a fuller understanding of the nature and understanding of innovation can be achieved. In the case study, participants are invited to tell the story of their experiences so that different participants can complement and contribute depth of perspectives on the phenomenon under study. During the analysis, each case study is analysed separately before moving on to a cross-case analysis (cross-analysis). The focus of the cross-case analysis is what differences are observed, why, and to what effect. Conclusions and recommendations for best practices are made after case studies are completed for multiple organizations or situations (Cooper, Schindler, 2011; Mason, 2002).

5. Research results: discussion

The surveyed companies are from different economic sectors, namely: a holding company with companies from different sectors in its portfolio – State Consolidation Company, an aircraft repair plant – Avionams, an arms merchant – Kintex, certification and storage of essential oils and wine – National Institute for Research and Certification Ltd, electricity generation and trading – National Electricity Company. The Ministry of Economy and Industry is among the organizations studied as it was the leading ministry in the restructuring process of over 200 Bulgarian SOEs during the period 2006-2015. The diversity in this group in terms of the industries, activities, history and profile of the organisations shows the differences and potential depth of the analysis. As a typical representative of the energy sector and a significant contributor to the country's GDP, the case of the National Electricity Company (NEC) is examined. We discuss the results that are related to the understanding of innovation, the types of innovations introduced and the barriers to innovation in the studied organizations.

5.1 Attitudes towards the nature of innovation

Senior management's understanding of the nature of innovation is key to the direction in which the organisation is steered. This is therefore directly related to the factor that has the strongest influence on corporate entrepreneurship in the organization, namely "management support" (Kanazireva, 2016). Further inferences can be drawn from senior managers' perceptions of innovation as to what entrepreneurial activities and types of innovation they would support relative to their perceptions.

The importance of innovation was emphasised uniformly in the interviews. Those surveyed believe that innovation is critical for the development, sustainability and competitiveness of their organisations. For some of them, innovation is not limited to technological advances, but also includes organisational changes, new processes and a change in corporate culture.

Emphasis is placed on the idea that innovation should not only be in line with global trends, but also respond to the local context and needs of each company and economic sector concerned.

It is argued that in the context of a highly dynamic environment, technology increases the speed of change in the external and internal environment of the organisation. An extreme example of high environmental dynamics is the state of war when historically the most technological and bio-chemical innovations have been introduced (incl. in the healthcare sector). There is a consensus among the individuals surveyed in understanding the expected outcome of innovation: higher added value, higher efficiency, higher profit, market and competitive advantage and better quality of life. For example, the introduction of technological and process innovations, including process automation in manufacturing, leads to improved efficiency while making employees with basic skills redundant (low-skilled labour is most easily robotized).

Most interviewees discussed innovation beyond mere technological advancement. This holistic view is consistent with the academic understanding that innovation encompasses products, processes, and organizational structures (Tidd, Bessant, 2020). The need to align global trends with local contexts highlights the importance of 'contextualised innovation', suggesting that SOEs in this country are inclined towards innovations that respond to local socio-economic, cultural and market nuances.

5.2 Introducing innovations. Sector innovations.

We explore interviewees' practical experiences with innovation adoption. In comparative terms, it is apparent that the innovation in the structures of the Ministry of Economy and Industry (MEI) and the holding company State Consolidation Company (SCC) involves more managerial and organisational changes, while in the other companies, innovation is determined by the environmental and market context related to the specifics of the company's particular industry, including the products, services and processes offered by each company. The SCC is the linking holding-structure between the MEI and the other sixteen companies it manages with total assets of approximately €500 million, with the exception of the National Electricity Company (NEC), which is under the structures of the Ministry of Energy. On the other hand, NEC was part of the companies under the umbrella of the MEI when it also merged the energy sector companies into its structure during the period from 2005 to 2014.

MEI has taken an innovative approach in the area of organizational management, transforming a large number of SOEs through mergers, acquisitions and restructuring. In the period 2006-2015, the number of companies in liquidation reached from 118 to less than 10, and from 100 operating companies to less than 17, most of which were merged into a single holding structure – the SCC. This type of restructuring leads to greater efficiency in management and lower administrative costs for both the Ministry and the companies themselves. Many innovations in the product range and new production methods have been introduced in the production companies under the Ministry's umbrella. Initiatives have been taken to increase labour productivity in a tight labour market in Bulgaria. Automated production processes have been introduced in the defence industry manufacturing facilities.

At LB Bulgaricum, new probiotic products have been developed and added to the range of traditional products such as yoghurt and cheese. Innovations related to environmental sustainability and electricity trading have been introduced in companies from the energy industry.

Avionams operates in the aviation industry and more specifically specializes in the repair and maintenance of defense aircraft. The aviation industry is renowned for its stringent safety standards, capital intensity and rapid technological advances. It is driven by continuous improvements in materials, design, and avionics to enhance flight safety, efficiency and environmental sustainability (Lee et al., 2010). Furthermore, the maintenance, support, and repair domain in which Avionams operates is critical to aircraft lifecycle management, driving innovation in diagnostics, predictive maintenance and digitization (Tsang, 2016). What is special about Avionams is that the company was privatized and then reacquired by the state in a dire financial situation. The aircraft repair plant was established in 1939. The historical development of the aircraft repair base followed the development of the aviation equipment in use in the Bulgarian Air Force. In 2008 the company was privatized. In 2015, the company won a tender organized by NSPA (NATO Support and Procurement Agency) worth BGN 160 million for the repair of Mi-8/17 helicopters of the Afghan Air Force used by the US MoD and partner countries in the NATO mission in Afghanistan. At the same time, as being a part of the portfolio of Corporate Commercial Bank (CCB), the company fell into a difficult financial situation. Following the bankruptcy of CCB in 2016, the state, through the State Consolidation Company (SCC), reacquired Avionams in a public sale of assets of CCB (in bankruptcy). In this way, SCC saved a strategic asset for the state. By granting a commercial loan to Avionams, SCC secured the necessary funds to cover the accumulated liabilities and to start the helicopter repair activities under the NSPA contract. Avionams was rescued by the State from bankruptcy and asset liquidation.

Innovations introduced in Avionams after 2016 are related to the transition to a condition-based maintenance strategy, the development of a digital helicopter model for digital testing; participation in various modernization programs improving the performance of aviation equipment (AE); and innovations in AE lifecycle management. The results of the innovations introduced are related to higher labour efficiency; reduction of repair, maintenance and delivery time of spare parts and equipment; and higher financial efficiency.

Kintex is a state arms merchant. The defence industry is inextricably linked to global political dynamics, security issues and technological change. It is subject to frequent innovations in areas such as precision weapons, stealth technology and unmanned aerial vehicles. These advancements are driven not only by government defence requirements but also by competition in the global arms market (Dunne, Perlo-Freeman, 2003). On the other hand, arms trade and arms manufacturing are conservative business industries. Innovations are in the areas of how transactions, payments and bank guarantees are structured and in positioning the company in new markets through networking methods.

The National Institute for Research and Certification Ltd (NIRC) is operating in testing and storing Bulgarian rose oil and quality certification of other essential oils, wines and spirits. That type of business is increasingly influenced by consumer demand for authenticity, quality and product safety that is guaranteed by the supply chain. Innovations in this sector are related

to the improvement of testing methods for greater accuracy, the use of biotechnological tools and the development of new certification protocols to guarantee the authenticity and traceability of products in the supply chain (Kotsanopoulos, Arvanitoyannis, 2017). New management methods are introduced in the laboratory, new equipment, constant optimization of work processes; a new method of storage of rose oil through digitalization of processes and a tripartite electronic signature. As a consequence of the company's digital transformation, its own software product VinoLab has been created.

The National Electricity Company (NEC) is a producer and trader of electricity with complex functions for the Bulgarian and European electricity market and for balancing the electricity supply. The energy sector represented by NEC involves complex dynamics of market trends and ensuring the security of supply. Specific innovations in this sector are the introduction of green electricity generation and storage technologies, reflecting the sector's focus on increasing electricity storage capacity and grid reliability. Globally, the energy sector is undergoing a transformation due to decentralization, digitalization and the drive towards renewable energy sources. This is in line with the theory of sectoral innovation systems, according to which sectors are characterized by different innovation patterns, actors and network dynamics (Malerba, 2002). The evolution of smart grids, energy storage solutions and renewable energy technologies reflects this trend (IRENA, 2020).

Innovations in the studied SOEs range from technological improvements to the introduction of new business models and approaches The discussed differences in innovation approaches across researched SOEs highlight the need for individual innovation strategies tailored to sector-specific challenges and opportunities. While some companies prioritize innovation related to technological improvements, others focus on new business models or methodologies or introduce an appropriate mix according to environmental conditions. The outcome of innovation is always linked to the pursuit of improved efficiency of resources used, better market and competitive performance and higher profits for the companies.

5.3 Barriers to innovation

There are four main groups of problems identified in the study for introducing innovations by SOEs: (1) historical lack of access to European funding by SOEs since the accession to the EU; (2) lack of clear state policy for innovation in SOEs and Bulgaria's lagging behind the EU members in terms of R&D spending as a percentage of GDP, (3) bureaucracy and political interference in terms of management and decision-making (4) 50-100% of the profits of SOEs are collected as dividends for the benefit of the state budget, and the dividend is planned to remain 100% for the next years.

It has long been known that political interference in SOEs' corporate governance is harmful (OECD, 2015). but here this effect is multiplied by the identified unique combination of obstacles that is specific to Bulgaria. The size of the dividends for SOEs is not defined in the legislative framework. The government decides on the size of the dividend after the end of the fiscal year. Historically, the dividend size has been in the range 50-100% but during periods of economic crisis, it has been more than 100%. In Bulgaria, the government makes

the SOE dividend decision without discussion with the management of these enterprises and without consideration of planned investments and of need for innovation.

6. Conclusion

The results of the case studies highlight a shared understanding of what innovation is and what it entails. Interviewees believe that innovation extends beyond simply creating products to initiating different products, services or processes that offer added value. The spectrum of this understanding covers both tangible and intangible elements, ranging from product evolution to procedural and administrative innovations. Based on the in-depth interview data, it is clear that Bulgarian SOEs also have enormous potential. Balancing the managerial role with the entrepreneurial spirit remains key. It is vital that the management has the necessary skill set and motivation to support this entrepreneurial and innovative vision.

The results highlight a complex understanding of innovation, where innovation is seen not only as technological advances but also as improvements in processes and administrative practices. The sector-specific innovation patterns observed, particularly in the energy sector (NEC), essential oil testing (NIRC), aircraft repair (Avionams) and arms trading (Kintex), are consistent with Malerba's (2002) theory of sectoral innovation. In this sense, it is necessary to implement individual strategies that address sector-specific challenges and opportunities.

The specific case of NEK in the power sector and the Company's efforts to integrate Green Transition opportunities into specific renewable energy projects is an example of a sector-specific approach to innovation, in line with broader trends in state-owned multinationals (Cuervo-Cazurra et al., 2014; Musacchio, Lazzarini, 2014).

In line with Bruton et al. (2015), the study finds that despite the bureaucratic constraints often associated with SOEs, some Bulgarian enterprises have established themselves as innovative and competitive, both nationally and internationally. This is consistent with Musacchio and Lazzarini's (2014) insights into the hybrid nature of SOEs, which combine government and commercial logics, creating conditions for unique patterns of innovation. Considering the adopted innovations in the researched SOEs, we can also conclude that Bulgarian SOEs are followers of global trends in innovation, rather than innovation leaders.

We have identified a unique combination of innovation obstacles for SOEs that is specific for Bulgaria. We find that the SOEs in Bulgaria are at a disadvantage to be competitive and innovative compared to their private competitors as well as to their EU counterparts due to the complex effects of the identified barriers to innovation. The country is lagging behind the average EU research and development expenditure relative to GDP of 2.23% (for 2022) compared to 0.8% for Bulgaria. That effect is further enhanced by the government policies towards SOEs, political interference in corporate governance and lack of innovation strategy for SOEs. SOEs face uncertainty in government dividend policy and suffer from the lack of government policy for the development and innovation of SOEs. The draining of the profits of the SOEs by 50-100% makes it impossible for them to plan and invest in innovation. They

cannot plan and implement long-term strategies for innovation because government policy changes from year to year without coherence and long-term clarity.

In relation to the identified problems and barriers for the development of SOEs, we can call for a review of the legislative framework, lowering the dividend rate and change in the decision-making process for the payment of dividends by SOEs. It is necessary to apply best international practices both in terms of dividend policy and innovation strategies.

In conclusion, the study contributes to the understanding of the functional dynamics of SOEs in Bulgaria. The study paves the way for future research to design specific policies and strategies that address the identified barriers and that can effectively leverage the entrepreneurial and innovative potential of SOEs.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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REMITTANCES, MIGRATIONS INTENTIONS, AND LABOUR PARTICIPATION IN KOSOVO[3]

This paper examines the intricate nexus between remittances, migration, and the labour force. It aims to enlighten the interplay of migration and remittances, analyzed in isolation, and their collective impact on the labour market across varying demographical strata. This analysis assumes particular pertinence for Kosovo, characterized by a notable intensity of migration fluxes and remittances. This study uses biprobit techniques to alleviate the endogeneity inherent in remittance and migration to evaluate the correlation between those and the labour force. The empirical data from the Millennium Century Corporation's survey was conducted in Kosovo in 2017. According to the findings, remittances and migration have a significant role in shaping the dynamics of the labour force, affecting inequalities across gender, age, and educational attainment. We surfaced compelling evidence of the disincentivizing ramifications of remittances vis-à-vis the labour force.
Keywords: Migration; Remittances; labour Force Participation
JEL: F22; J61; O15; R23

1. Introduction

The migration dynamics, precipitating impetuses, and the fiscal significance of remittances matching with labour participation, constitute a central theme of this analysis. This segment functions multiplicatively, enriching the core dissection of this paper, which emphasizes the validity of the domestic purview in representing migration conduct within Kosovo. Initially, this partition foregrounds the salience of the investigative objectives that shall be pursued in successive evaluations. Concomitantly, it provides a foundational environment for constructing rigorous models of migration patterns, thus offering a critical backdrop for considering the eventual findings.

According to the data on migrant movements after 1999, it has been observed that emigration from Kosovo attained its zenith during 2014 and 2015 and was predominantly characterized by its illegal nature (Eurostat, 2019). According to recent data from ASK (2022) and Eurostat

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(2019), there has been a decline in the population of undocumented migrants since 2015; nowadays, migration is predominantly lawful and is motivated by family reunification, employment, and education (Kastrati et al., 2022). Despite Kosovo's consistent economic growth and transition to the upper middle-income, many emigrants from Kosovo desire to leave in search of improved employment opportunities.

Most Kosovan migrants are predominantly in Western European nations, with minor factions residing in other countries. The majority are in Italy (24.4%), Germany (20.3%), and France (15.6%), as per the International Organization for Migration (IOM) 2022 report 'Flow monitoring surveys' report Kosovo'. This distribution resonates with the contractual emigration pattern in the last decade. The 2022 IOM survey reaffirms that Italy, Germany, and France remain the preferred destination countries among Kosovar emigration. This prevailing trend is hardly unexpected, given the likely influence of network effects created by existing migrants (IOM, 2022).

The fiscal contributions induced by transnational labourers via remittances constitute a pivotal revenue stream for Kosovo's economic infrastructure. According to the World Bank's 2022 data, Kosovo witnessed personal remittances of over 1.5 billion US dollars in 2022, accounting for more than 18% of Kosovo's GDP. The World Bank's data further underscores a significant increase of more than 50% in remittances in 2022 compared to 2012. The majority of these remittances are from Germany and Switzerland, compiling to more than 39.2% and 18.9% of the total remittances sent to Kosovo (World Bank, 2022a; World Bank, 2022b; Central Bank of Kosovo, 2021).

From 2012 to 2021, the workforce participation ratio was 39.7% on average, while a mere quarter of the populace of employable age was engaged. Notably, the state of affairs within the labour market has maintained a conspicuous constancy after 2012, an era marked by a proliferation of public expenditure. As of 2021, the three critical labour market indices – workforce participation, employment, and unemployment – have sustained a uniform movement (Kosovo Agency of Statistics (KAS), 2021). Potential determinants precipitating the low participation rates can be addressed with the low levels of female participation, the consequences of which are subsequently, or potential underestimations of the actual rates attributed to the extensive subterranean economy or the enhancement of the minimum wage due to remittances (OECD, 2022).

According to the International Monetary Fund (2023), OECD (2022), and World Bank (2023), to achieve a reduction of the current unemployment in the next ten years, Kosova would need to grow at about 5 % annually and 1.5% annual increase in the labour force participation rate, and growth to productive employment elasticity of 1.2%. Private-sector employment has expanded continuously after the war. The expansion was considerable in hotels, restaurants, and construction industries. As expected, the number of construction enterprises increased by more than 30% from 2013 to 2022, mainly due to the large construction projects financed by the Kosovo government (Kosovo Agency of Statistics, 2022).

The suppressed youth labour force engagement can be traced to various socio-economic determinants. These include the normative cultural values that prescribe domestic and familiar obligations as the primary responsibility of women, the deficiency of affordable and

easily accessible childcare facilities, the reluctance of private sector employers who view training leave as a burdensome financial liability, and the stringent access to opportunities for investment and finance (RCC, 2021).

In light of experiences relating to migration and associated remittance flows controlling Kosovar family units and the enhancements in labour market dynamics, the lack of any perceivable surge in labour market involvement among the youth demographic throughout the last two decades presents a disjuncture. This presents Kosovo as a compelling subject for research, thereby prompting the construction of the research query: 'How do remittances and migration patterns shape labour market participation, influencing economic transformations within the social structure of Kosovo'.

The structure of the current discourse unfolds as follows: The next section elaborates on the previous empirical research that bears relevance to the study, followed by a rigorous analysis of the dataset and methodological approach in the third section. The next part explores the critical drivers of the labour force disparity, employing the Bivariate probit analysis proposed by Li, Poskitt, and Zhao (2019). Subsequently, this paper presents the findings on the impact of migration movements, remittances, and prevailing social norms on labour force participation. Finally, this paper concludes with an introspective discussion of the essential findings and their policy implications.

2. Literature Review

Given the theoretical ambivalence of the impact of remittances and migration movements on labour forces, it is hardly surprising that empirical evidence remains uncertain. The diverse empirical narratives align predictably with the observed heterogeneity across academic efforts concerning economic modelling, methodological approaches, and the distinct socio-economic and cultural idiosyncrasies of the nations under examination. Recognizing this significant diversity, we have structured our appropriate literature aligned with economic models to furnish a robust basis for our empirical analysis. Our meta-analytic review has divided the inquiries into three categories: those attributing consideration to remittances, migration, and incorporating remittances and migration. We comprehensively evaluate the empirical methodologies within each sector and compare their respective empirical findings. This ongoing study underscores youth economic empowerment and intends to examine the influence of remittances and migration on labour participation.

Considering the income effect, remittances have been presented to wield influence over the minimum wage and the opportunity cost of leisure and productivity. This effect results in a decline in the labour market participation rate. This dynamic is typically identified as the 'disincentive effect'. Remittances are deemed decoupled from the risk attached to income accrued in one's native country and statistically differentiated from it (Finkelstein Shapiro, Mandelman, 2016; Kotorri, Krasniqi, Dabic, 2020; Cummings, Deeds, Vaaler, 2019; Olney, 2015).

In the realm of interest under scrutiny, Stuart's (2010) deployment of 'Probability with Replacement' (PWR) furnishes an analytical approach to grapple with the dilemma of self-

determined migration. This methodological approach sanctions a comparison grounded in observable characteristics, neglecting the endogenous relationship linking remittances and labour participation. This analysis identified empirical substantiation advocating for the influence of remittances broadly and individually for each group. Some studies have unveiled that remittances tend to attenuate labour participation for both sexes while augmenting self-employment rates (Vadean, Randazzo, Piracha, 2019; Dey, 2022; Kalaj, 2013; Maslii et al., 2022).

Furthermore, some research unveiled a significant surge in self-employment opportunities within Tajikistan attributed to the escalating influx of remittances. Based on the empirical evidence from Vadean, Randazzo and Piracha (2019), there is a positive correlation between the remittances received and self-employment. The analysis revealed a significant remittance propensity with an augmented engagement in domestic responsibilities.

In this divergent empirical analysis, Charbonneau (2012), Ullah, Akhtar and Zaefarian (2018) and Mannan and Fredericks (2015) improve the endogeneity dilemma by applying a fixed effects methodology to panel data. The implications of the investigation underscore that females in households receiving remittances exhibit an increased propensity to participate in on-farm endeavours. While exhibiting adverse tendencies, the male demographic remains statistically inconsequential. The researcher has found that remittances precipitate detrimental effects exclusively within male self-employment. However, it is worth noting that these studies acknowledge panel analysis's constraints. While this technique proves efficacious in addressing the unobserved heterogeneity that is essentially time-varying within the confines of a household, it neglects to account for the corresponding time-varying unobserved heterogeneity factors potentially affiliated with the dynamics of labour supply.

Several economic theorists utilize a refined model of remittance effects and benefit responses to tackle the inherent endogeneity issue, a methodological advancement diverging from earlier studies. In examining the empirical findings, remittances predispose single individuals to part-time employment. A finding stratified based on gender revealed that the probability of participation decreases with the receipt of remittances for males and females. Nonetheless, this impact is exclusively among females who inhabit economically deprived households (Jadotte, 2009; Rivers, 2011; Petreski, 2019; Rapoport, 2016).

Merla (2013), Du, Park and Wang (2005), Fresnoza-Flot (2014), Carletto and Mendola (2009) argue that migration patterns could incite modifications in allocating obligations and the concentration of decision-making authority within family structures. This could precipitate a transmutation in labour force dynamics, increasing economic agency among young affiliates. Consequently, in the circumstances characterized by male diaspora, female constituents may find themselves compelled to recalibrate their time between vocation and providing care for their family. This realignment may enhance their discretion over familial resources, potentially accruing tangible advantages. In this context, female members would be further allowed to strategize optimizing returns on their labour investments. In particular, this phenomenon may be more pronounced when decision-making is non-cooperative due to insufficient oversight by migrant members and in societal structures that adhere steadfastly to conventional norms (Murard, 2021; Carletto and Mendola, 2009).

Studies employing the methodology of propensity score matching have produced diverse results. Through their study, Agasty and Patra (2014) demonstrated that when the sample was constrained to Odisha, Indian women, there was an increase in the likelihood of gainful employment for these women across urban and rural areas, a phenomenon attributable to male migration. Moreover, it was clarified by the researchers that women who are domiciled in households characterized by migration, especially those located in rural environs, display a high propensity towards involvement in labour force orientation, but their probability of engagement in such subsistence tasks exhibits a relative diminution within rural landscapes.

The findings persist as ambivalent even within studies that adopt the instrumental variable technique. In line with these studies, the effects of residence within migrant households in rural areas appear inconsequential concerning the probability of male and female participation in activities outside of farming (Taylor, Lopez-Feldman, 2020; Halliday, 2021). Further, these studies found an upsurge in female commitment to agricultural tasks and increased involvement of males in domestic labour due to migration. Agasty and Patra (2014) utilised a set of Odisha Indian women as their sample and implemented parametric and non-parametric instrumental variable methodologies. Their study suggested a favourable correlation between migration and the likelihood of subsistence labour within urban locales whilst presenting a positive impact on the propensity for uncompensated labour within rural areas.

The extant literature characterized by an empirical exploration into intra-group and inter-group dynamics presents ambiguous results, which may be attributed to disparities in economic paradigms, econometric procedures, and geographical entities. This research thoroughly investigates the abovementioned subject, focusing specifically on data procured from MCC Kosovo 2017. By doing so, it offers substantial enrichment to the existing corpus of knowledge concerning the import of migration and remittances about labour force involvement through multiple channels. Another feature of this study involves the application of the Bivariate Probit model to analyse the relationship between labour force participation, remittances, and migration. This study represents the inaugural effort to surmount the restrictions endemic to Instrumental Variables, Probit, Ordinary Least Squares, and Fixed Effect Panel data methodologies confronting the quandary of endogeneity of the three variables. In the next part, this study incorporates metrics for subjective constituents that delineate the ramifications of individual dispositions towards the disparities in decision-making authority within domestic environments on labour force involvement. The research underscores the function of migration and remittances in expediting economic transformations for their bearing on labour force participation.

3. Methodology Framework

The empirical evidence of this analysis is extracted from the labour Force and Time Use Survey (LFTUS) 2017. This study selected 5520 individuals who engaged in comprehensive discursive interactions. Guided by the objectives of the research inquiry, the empirical analysis was bounded to these individuals who offered input into the extended interview. The evaluation of the survey's quality is inherently contingent upon the number of residential

units engaging in the research and their capacity to faithfully represent the broader populace regarding geographical distribution, degree of urbanization, ethnic constitution, gender, and other significant individual characteristics.

The empirical framework of this study is predominantly structured around two primary measures: the incidence of labour force participation and the categorization of employment status. The first measure is represented as binary data, which indicates that roughly 51.89% of the survey participants are involved in labour activities. Concurrently, the second measure transforms from a categorical to a binary construct indicative of the specified employment category.

The domains of remittances and migration are extrapolated from two salient areas of inquiry: the incidence of the respondents' receipt of remittances over the preceding year and their migration aspirations. The ensuing results divulge that approximately 22.28% of the 5520 respondents have been recipients of remittances, and a subset equivalent to 14.60% possess migration prospects soon (see Table 1).

Table 1. Descriptive Statistics

Variables	Observation	Mean	Standard Deviation	Min	Max
sdls_n	29195	0.519	0.5	0	1
rc_rem_tot	5520	0.223	0.416	0	1
rem_abr_f	5520	0.146	0.353	0	1
rc_ps_age	29195	40.098	18.481	15	86
ps_sex	26127	0.502	0.5	0	1
ea_ur	29195	0.6	0.49	0	1
ps_student	29195	0.172	0.378	0	1
rc_income_hh	5520	5547.642	5984.904	0	52503
rc_ed_highest_nfps	29195	0.051	0.22	0	1
rc_ed_highest_pe	29195	0.072	0.258	0	1
rc_ed_highest_lse	29195	0.338	0.473	0	1
rc_ed_highest_usg	29195	0.152	0.359	0	1
rc_ed_highest_usv	29195	0.257	0.437	0	1
rc_ed_highest_psv	29195	0.028	0.164	0	1
rc_ed_highest_ter	29195	0.086	0.281	0	1
rc_ed_highest_pgd	29195	0.016	0.127	0	1

Source: Millennium Century Corporation, Kosovo labour Force and Time Use Study Research Report.

The present analysis elucidates the role of social paradigms in modulating labour force participation. We found that approximately 44.07% of the participants were male employees, compared to around 13.15% of female employees. Among the many implications, this demographic distribution presents the existence of patriarchal ideologies profoundly shaping the social fabric of Kosovo, notwithstanding the notable strides made over the past two decades. The examination unveiled that the average age for both genders stood at 40 years. Female participants constituted a proportionate share of the total sample, while a significant majority of the respondents, about 60.01%, resided in rural areas.

Analysing the educational attainment, this scholarly uses four binary variables reflecting an individual's accomplishment of upper secondary general education, upper secondary vocational education, post-secondary vocational education, and education at the tertiary or

doctoral level. Women demonstrate a comparatively diminished education attainment compared to males, with a mere fraction of 7.7% of women holding tertiary qualifications compared to approximately 9.2% of men who have reached this academic zenith. However, the highlighted disparities seem to attenuate among young people, particularly those under 30 (see Appendix for more information on the variables).

The scholarly literature articulates arguments about the simultaneous determination of remittances and migration intentions concerning an individual's choice to partake in the labour market. The methodology in this paper is addressed by applying a bivariate probit model (biprobit), as it exclusively manages the endogeneity of two variables. The deployment of biprobit is solely directed towards ensuring the commensurability of the results with those gleaned from other scholarly pursuits.

The biprobit analytical approach estimates two distinct models, each composed of a pair of equations. *Model 1* encapsulates the decision of an individual to engage in the labour market and to receive remittances. *Model 2* addresses the individual's decision to join the labour market while planning to migrate. These models comprise dual equations wherein the binary dependent variables evaluate the probability of an individual's labour market involvement on one facet and the potentiality of receiving remittances in *Model 1* and migrating in *Model 2*. The implementation of the biprobit methodology finds its rationale in the binomial nature of the intertwined dependent variables. This approach mitigates complications associated with unobserved endogeneity, demonstrating its efficiency and appropriateness within the scope of the current analytical framework.

A reduced-form equation presents the basic specification of the bivariate probit model:

$$Y^* = X'\beta_Y + D_\alpha + \varepsilon_1, \quad Y = \mathbb{I}(Y^* > 0); \tag{1}$$

$$D^* = X'\beta_D + Z'_\gamma + \varepsilon_2, \quad D = \mathbb{I}(D^* > 0); \tag{2}$$

where $\mathbb{I}(\cdot)$ signifies the indicator function. From the equations above, X encompasses the shared covariates while Z houses the instrumental variables. The fundamental continuous latent variables, denoted as Y^* and D^*, are transformed into the discernible outcome Y and the observed (potentially endogenous) regressor D through threshold-crossing conditions. Consequently, the joint distribution of Y and D, conditioned on X and Z, denoted as $P = (Y = y, D = d|X = x, Z = z)$ – which, for the sake of notational simplicity, is abbreviated to P^{yd} comprises four components:

$$P^{11} = P(\varepsilon_1 > -x'\beta_Y - \alpha, \varepsilon_2 > -x'\beta_D - z'\gamma), \tag{3}$$

$$P^{10} = P(\varepsilon_1 > -x'\beta_Y - \alpha, \varepsilon_2 < -x'\beta_D - z'\gamma), \tag{4}$$

$$P^{01} = P(\varepsilon_1 < -x'\beta_Y - \alpha, \varepsilon_2 > -x'\beta_D - z'\gamma), \tag{5}$$

$$P^{00} = P(\varepsilon_1 < -x'\beta_Y - \alpha, \varepsilon_2 < -x'\beta_D - z'\gamma), \tag{6}$$

The probabilities articulated in these equations are conclusively defined once a joint distribution for ε_1 and ε_2 has been delineated. Subsequently, in possession of a dataset comprising N observations denoted as (y_i, d_i, x_i', z_i') for $i = 1, \dots, N$, the log-likelihood function can be computed accordingly.

$$L(\theta) = \sum_{i=1}^{N} \log P^{y_i d_i}(\theta) \tag{6}$$

Wherein $P^{y_i d_i}(\theta)$ denotes the probabilities evaluated at the coordinates (y_i, d_i, x_i', z_i'). This highlights the dependencies of the probabilities on the parameter θ, which encapsulates the coefficients β_D, β_y, γ and α in addition to other undisclosed parameters of the joint distribution of ε_1, ε_2 that necessitates estimation from the provided data.

The methodology above implements the biprobit approach by simultaneously tackling endogeneity in remittances and migration within the parameters of a single, unified model, as presented by Li, Poskitt and Zhao (2019). A composite model of these equations is subsequently calculated wherein the individual makes contemporaneous decisions about labour market participation, the receipt of remittances, and the intention to migrate. The study integrates three intertwined binary response variables designed to assess the probability of an individual's engagement in the labour market, the receipt of remittances, and the predisposition towards migration.

4. Findings

This part provided the results of biprobit analytical techniques within the empirical examination. The conclusions will be delineated distinctly for each variable used, and findings derived from the analysis will be elucidated in the ensuing discourse.

4.1. The bivariate probit model

Examine the theoretical propositions pertinent to the endogenous interpretation of migration and remittances within the structures of labour market outcomes; we can see from *Table 2* the findings extracted from the biprobit estimations. *Model 1* corresponds to the circumstance where the decision regarding labour force engagement transpires simultaneously with the receipt of remittances. *Model 2* aligns with the situation wherein choosing to partake in the labour force is implemented with migration plans. The results posit that their mental constructs and societal attitudes significantly sway Kosovans' labour supply determinations. Empirical data provides substantiation for the discouragement effect of remittances. However, the results are non-definitive concerning the impact of migration intentions. The findings from *Model 1* will be meticulously scrutinized in conjunction with the results of *Model 2* only in circumstances where significant variances are discernible. Moreover, gender-specific biprobit analyses will be periodically referenced throughout the text.

Table 2. Bivariate Probit Model Regression Results for labour Force Participation

	Model 1		Model 2	
	Labor Force Participation and Remittances		Labor Force Participation and Migration Plans	
Variables	sdls_n	rc_rem_tot	sdls_n	rem_abr_f
rc_ps_age	-0.044***	0.004**	-0.044***	-0.033***
	(0.002)	(0.002)	(0.002)	(0.002)
ps_sex	-1.495***	-0.051	-1.494***	-0.446***
	(0.048)	(0.042)	(0.048)	(0.048)
ea_ur	-0.130***	0.151***	-0.130***	-0.011
	(0.042)	(0.040)	(0.042)	(0.046)
ps_student	-1.457***	0.276	-1.463***	0.836*
	(0.467)	(0.509)	(0.465)	(0.491)
rc_ed_highest_pe	0.303*	-0.126	0.305**	0.011
	(0.155)	(0.133)	(0.155)	(0.190)
rc_ed_highest_lse	0.418***	-0.118	0.418***	0.151
	(0.138)	(0.116)	(0.137)	(0.164)
rc_ed_highest_usg	0.722***	-0.231*	0.721***	0.084
	(0.148)	(0.129)	(0.148)	(0.175)
rc_ed_highest_usv	0.985***	-0.192	0.980***	0.151
	(0.142)	(0.120)	(0.141)	(0.167)
rc_ed_highest_psv	0.881***	-0.358**	0.882***	-0.105
	(0.167)	(0.155)	(0.166)	(0.216)
rc_ed_highest_ter	1.410***	-0.407***	1.407***	-0.105
	(0.159)	(0.136)	(0.159)	(0.184)
rc_ed_highest_pgd	1.723***	-0.310	1.720***	0.026
	(0.269)	(0.204)	(0.269)	(0.244)
rc_income_hh	0.001	0.001***	0.001	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	2.427***	-0.881***	2.419***	0.521***
	(0.176)	(0.149)	(0.176)	(0.192)
rho		-0.062		0.190
		(0.028)		(0.033)
Likelihood-ratio test of rho=0; chi2 (1)=		4.892**		31.554***
Observations	5,519	5,519	5,519	5,519

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The labour supply's response to remittances is inherently unclear in its determination. The empirical results bolster the hypothesis, postulating a small effect in alignment with most scrutinized scholarly research. This signifies that remittances' reception results in an augmentation of the minimum wage among Kosovar individuals, thereby precipitating a diminished probability of their engagement in the workforce. Nevertheless, it is significant to highlight that the statistical pertinence of the coefficient about remittances is detectable exclusively within the framework of *Model 1*. The deductions derived from the gender-focused inquiry insinuate that remittances might induce a discordant influence on women, simultaneously functioning as a stimulant for men. Notwithstanding, it is incumbent upon us to remark that the coefficients do not demonstrate statistical robustness. *Model 1* offers substantiation supporting the disruptive effect hypothesis applicable to both genders, albeit with statistical relevance manifested solely in the male demographic.

Per the insights derived from *Model 2*, Kosovar individuals who have migration aspirations demonstrate a heightened propensity to participate in the labour market. This insinuates their inclination to enrich their human capital through vocational experience, potentially enhancing their likelihood of obtaining overseas employment. Despite the contradictory implications suggested by the results of *Model 2*, the associated coefficient fails to demonstrate any statistical robustness. The empirical investigation specifically targeting migration intentions elucidates a remarkable dichotomy concerning the repercussions of such plans. Specifically, the exploration unveils a positive influence on women and a detrimental effect on men, with statistical relevance discernible in both instances. The findings of *Model 2* display a divergence from those of *Model 1* in terms of the impact, which is deleterious for both genders, notwithstanding the statistical significance being exclusively confined to females (See *Table 2*).

The elucidations drawn from both specifications signal the presence of a discrepancy in labour force participation. The regression coefficient tethered to the variable symbolic of gender showcases a negative correlation, one bearing statistical significance. This suggests a lesser inclination among females towards involvement in the labour force than their male counterparts.

As anticipated, the deductions emanating from the research illustrate a significant imprint of variables pertinent to individual psychological frameworks on their labour supply decisions within the Kosovar context. The gleaned insights harmonize with the forecasted implications, indicating that individuals who perceive themselves as endowed with a decision-making role within the familial setup and those possessing a less orthodox viewpoint are more predisposed towards labour force participation. More educated individuals are likelier to participate in the labour market but are less interested in migrating perspectives. Furthermore, males are more interested in labour market participation, sending remittances, and migrating than females. Being a student diminishes the likelihood of labour force participation but increases the likelihood of migrating. The older you are, the less likely you will migrate, but if you are already a foreign worker, the results show that more remittances are sent with age. Lastly, income diminishes migration; the more you have, the fewer your chances of migrating.

Contrary to the antecedent conjecture, the main research postulation concerning the simultaneous determination of decisions fails to find empirical support. The insubstantial statistical pertinence in the correlation coefficient (rho) related to the error terms of the two equations discernible in both *Model 1* (rho=-0.062, not significant) and *Model 2* (rho=0.190, not significant), points to the nonexistence of mutual dependence between the choice to partake in labour activity and the acquisition of remittances or migration intent (See *Table 2*). Hence, one can deduce that the pair of equations exhibits self-sufficiency and can be assessed as separate probit equations (Xu and Craig, 2010). However, one should approach the interpretation of the procured empirical indications with caution, as the biprobit model employed in the current exploration neglects endogeneity within migration schemata. Consequently, the approximated interdependence between the potentiality of labour force involvement and the acceptance of remittances might be prone to distortion. Therefore, the ensuing discourse shall propose a more advanced methodology, specifically multivariate probit, anticipated to counteract the limitations imposed by the biprobit model.

5. Conclusion and Policy Applications

This paper examines the impact of remittances and migration on the dynamics of labour force participation, where we adopted meticulous techniques to underscore the profound relevance of social and behavioural patterns. To tackle the predicament of endogeneity inherent in the complex interplay of remittances and migration within the theoretical constructs of labour force participation, we have applied the biprobit statistical model as a sophisticated stratagem to surmount these inherent obstacles.

The findings of this study are consistent with prior research, suggesting that remittances exert a disincentive effect on labour force participation. However, it is essential to highlight that this impact demonstrates statistical significance solely for the entire sample when analyzed using biprobit *Model 2*. The statistical significance of this impact is confined to the males, as evidenced by the biprobit model. The hypothesis concerning the influence of migration prospects on individuals' investment in work experience has produced mixed results. The empirical evidence indicates a gender and age disparity in the labour force participation of Kosovan migrants. Specifically, women intending to migrate exhibit a higher likelihood of labour force engagement, as suggested by biprobit *Model 1*. Conversely, men with migration plans demonstrate a reduced propensity for labour force participation.

The conclusions in this study investigation substantiate empirical substantiation, advocating for the existence of gender and age incongruities within workforce participation stratifications. Distinctively, it is observed that the female demographic within the Kosovar societal construct exhibits a diminutive predilection towards involvement in economically productive pursuits. Further, domicile within a familial setting that includes geriatric dependents attenuates the probability of active engagement within the labour force. It is of particular note that this identified phenomenon engenders adverse implications for both genders. However, it illustrates statistical prominence mainly in males. This intimates the potential advent of migration strategies, potentially triggered by intra-household contractual obligations, wherein remaining males and females acquiesce to the exigency of shouldering the caretaking responsibilities for senior household members after the departure of another constituent.

In the circumstances delineated by a lack of labour participation, it is incumbent upon policymakers to recognize and harness the prospective yields of channelling remittances towards self-reliant employment and entrepreneurial exploits. To stimulate gender equilibrium and fortify youth agency the exigency arises to fabricate policy paradigms with an exclusive mandate to address the idiosyncratic requisitions and obstructions inherent in labour force incongruities. Concurrently, it is propounded to endow potential emigrants with capacity-building enterprises tailored to amplify their competitive advantage within extraterritorial domains.

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Appendix

Table 3. Describing the Depended Variables

Variables	*Description*	*Values*	*Transformed Values*
sdls_n	During the last week in which of the following categories would (the surveyee) classify him/herself?	1- Employed, including self-employment, unpaid work for a family business or farm, or an apprenticeship or paid traineeship, etc. 2- Unemployed 3- Pupil, student, further training, unpaid work experience 4- In retirement or early retirement 5- Permanently disabled 6- Fulfilling domestic tasks 7- Other (specify)	1- Individual participate in labour market This category is formed form: • Employed, including self-employment, unpaid work for a family business or farm, or an apprenticeship or paid traineeship, etc. • Unemployed 0- Individual NOT participates in labour market This category is formed form: • Pupil, student, further training, unpaid work experience • In retirement or early retirement • Permanently disabled • Fulfilling domestic tasks • Other (specify))
rc_rem_tot	Over the past 12 months, what is the total amount of foreign remittances that you have received (€)?	Continuous variable	0- No Remittances (0 € Remittances) 1- Getting remittances (from 1€ and as much as they can get)
rem_abr_f	In the next 12 months, do you plan to work outside of Kosovo?	0- No 1- Yes	0- No 1- Yes

Source: Millennium Century Corporation, Kosovo labour Force and Time Use Study Research Report.

Table 4. Desribing the Social Behavior Variables

Variables	*Description*	*Values*	*Transformed Values*
rc_ps_age	What is (the surveyee) age in years?	Continuous variable	Continuous variable
ps_sex	What is (the surveyee) sex?	0- Male 1- Female	0- Male 1- Femle
ea_ur	Whether the Enumeration Area (EA) is urban or rural	0- Urban 1- Rural	0- Urban 1- Rural
ps_student	Is (the surveyee) a full-time student?	0- No 1- Yes	0- No 1- Yes
rc_income_hh	What is the total ANNUAL income in Euros (€) of all the members of your household (including remittances), including your income, as one combined figure?	Continuous variable	Continuous variable

Source: Millennium Century Corporation, Kosovo labour Force and Time Use Study Research Report.

Table 5. Describing the Transformed Variable

Variables	*Description*	*Values*	*Transformed Values*
rc_ed_highest	What is the highest level of education completed by (the surveyee)?	1- Did not finish primary school (Omitted category) 2- Primary education 3- Lower secondary education 4- Upper secondary – general 5- Upper secondary – vocational 6- Post secondary – vocational 7- Tertiary 8- Post graduate or Doctorate	For each category a Dummy variable has been created: 1-rc_ed_highest_nfps (Omitted Category) 2-rc_ed_highest_pe 3-rc_ed_highest_lse 4-rc_ed_highest_usg 5-rc_ed_highest_usv 6-rc_ed_highest_psv 7-rc_ed_highest_ter 8-rc_ed_highest_pgd
rc_ed_highest_nfps	Created form the original variable *rc_ed_highest*	Dummy Variable	1- The Individual Did not finish primary school 0- Otherwise
rc_ed_highest_pe	Created from the original variable *rc_ed_highest*	Dummy Variable	1- The Individual has Primary education 0- Otherwise
rc_ed_highest_lse	Created from the original variable *rc_ed_highest*	Dummy Variable	1- The Individual has Lower secondary education 0- Otherwise
rc_ed_highest_usg	Created from the original variable *rc_ed_highest*	Dummy Variable	1- The Individual has Upper secondary – general 0- Otherwise
rc_ed_highest_usv	Created from the original variable *rc_ed_highest*	Dummy Variable	1- The Individual has Upper secondary – vocational education 0- Otherwise
rc_ed_highest_psv	Created from the original variable *rc_ed_highest*	Dummy Variable	1- The Individual has Post secondary – vocational education 0- Otherwise
rc_ed_highest_ter	Created from the original variable *rc_ed_highest*	Dummy Variable	1- The Individual has Tertiary education 0- Otherwise
rc_ed_highest_pgd	Created from the original variable *rc_ed_highest*	Dummy Variable	1- The Individual has Post graduate or Doctorate 0- Otherwise

Source: Millennium Century Corporation, Kosovo labour Force and Time Use Study Research Report

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THE EFFECT OF SERVICE QUALITY ON RECERTIFICATION. MEDIATED BY CUSTOMER SATISFACTION AND RELATIONSHIP COMMITMENT[5]

Providing certificates to companies is to maintain the existence of the company and to be more competitive. The existence of certification service companies in Indonesia from year to year is increasing, and this will provide its phenomenon in maintaining customers among companies in charge of this service because every company in charge of this certification service will compete with each other to retain customers and attract customers from other companies in a similar field. This study aims to determine whether the intention to recertify is influenced by mediating variables, namely customer satisfaction and relationship commitment, or predictor variables, namely service quality, from certification service companies. In addition, this study synergises two intermediary factors, namely customer satisfaction and relationship commitment, in examining service quality on recertification. Factor analysis in this survey is to test the indicators of questions or statements as forming factors. The test results of the factors show that all values meet the validity and reliability. The service quality of the product or service produced by the company greatly affects customer satisfaction and relationship commitment. Because recertification is indirectly influenced by service quality. If customers have the intention to recertify, it is not influenced by customer satisfaction based on service quality but is influenced by relationship commitment. Ongoing communication is an essential factor in maintaining relationship commitment between the company and the client.

Keywords: service quality; customer satisfaction; relationship commitment; recertification
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1. Introduction

Economic activities in the current industrial 4.0 era have changed the concept of producer and consumer behaviour. In the light era, we know the establishment of companies as a demand from the community to fulfil their needs. Meanwhile, the current modern concept has shifted; namely, the presence of companies is no longer just to meet the needs of the community but more than that. There is a special attraction, namely the market following the pattern of demands and needs for products and services so that the presence of companies today competes with each other to create its own image with the aim of attracting new consumers or retaining old consumers.

The development of an increasingly competitive industry today requires companies to provide excellent or superior service to customers. As in the view of Golara et al. (2021), it is said that if the company has difficulty providing services to customers, it will suffer a decrease in market share in the future. The same thing happens in e-commerce companies; according to Wilson et al. (2019), companies must really pay attention to service quality because it becomes important for new consumers to buy or old consumers the intention to repurchase the product or service launched.

The products and services produced must give their own assessment and impression from customers. Companies that produce products and services must also provide satisfaction to customers. In addition to customer satisfaction, companies must continue to build good relationships with customers. These two things will have a positive impact so that the company will grow and ultimately provide additional value through increased sales and lead to increased profits. On the one hand, the position of the customer becomes king because the demands are so complex, so according to Stanimirov and Georgieva (2019), they are positioned as *sophisticated customers*. The reason is first, business competition is so intense, so every company is competing to retain its customers, even though it is quite difficult to meet their demands. Second, customers feel that not only the product or service has been fulfilled but also the fulfilment of the inner being after purchasing the product or service.

So many companies in Indonesia continue to improve the assessment of the quality of their goods and services through the provision of certificates, so the implementation of certification for companies that need it must be truly independent and professional, and this means that it must be free of conflict of interest in the relationship between the certification company and the client. According to Lakhal (2014), the purpose of granting certificates is to improve the quality of company management. Boulanger (2016) emphasises the need for a good relationship and cooperation between the company to be assessed and the institution that has the authority to issue the certificate. The purpose of granting certificates is to encourage the company's presence in the market environment to be increasingly competitive. Market and customer demands must be followed by companies to improve the quality of management, products, services, and overall company performance. If it is not followed, the company will automatically lose the competition and ultimately decrease profits from period to period, and the worst is the closure of its operational activities.

The higher the company's demand for audits and certificates, the more the presence of certification bodies. The presence of this certificate body creates a potential conflict of

interest. The occurrence of this conflict of interest is a result of competition between certification bodies (Bar, Zheng, 2018; Dranove, Jin, 2010). Whatever the type and form of the business environment, it will create competition between *business markets*. Competition is not only about getting new customers (clients) but also about how certification bodies try to maintain their clients. In view of Babin et al. (2017) explained that efforts in recertification are a form of maintaining old clients. Recertification is part of the behavioural intention to buy and re-consume products from the same company (Molinari et al., 2008). Certificate providers find it quite difficult to retain old clients, and this is due to competition from other parties to attract old clients by providing tantalising information for old clients to move to other parties, which old clients may consider more competent and prestigious.

So many studies such as Fared et al. (2021), Khan et al. (2021a) Leonnard (2018), Mensah and Mensah (2018), Saleem et al. (2017), Suhaily and Soelasih (2017), and Wilson et al. (2019) explained that quality service will provide satisfaction to customers. The results of research by Gustafsson et al. (2005) showed that there is a positive influence between service quality and relationship commitment. In the end, customer satisfaction and relationship commitment also have a positive impact on repurchase intentions. But in fact, other findings from Foster (2019) and Susanto et al. (2021) explain that service quality does not have a significant effect on *repurchase intention*. An inconsistency in this study must be resolved by giving different treatments, namely, including other variables to bridge the differences in findings from previous studies.

In previous research, testing service quality on repurchase intentions mediated by each, namely customer satisfaction and relationship commitment, has never been tested together. From the results of searching various literature, it is usually found that customer satisfaction and relationship commitment become predictor variables together with other predictor variables, namely service quality. Therefore, in this study, the two factors are tested together, especially in certification service provider institutions with clients.

Recertification is the intention to repurchase by consumers or existing clients for the services of a certification-granting company. Recertification is also a company's effort to retain customers. Therefore, the purpose of this study is to determine whether recertification is only influenced by service quality or customer satisfaction and relationship commitment as mediating factors in the influence relationship. In the review of previous research, it was found that not many have examined the relationship or influence of service quality on recertification, and also, not many have examined synergising the two factors, namely customer satisfaction and relationship commitment, as mediation. The uniqueness of these two mediating factors is that customer satisfaction is assessed based on what the client feels, while relationship commitment is assessed based on what the company feels. So this reason becomes a new uniqueness.

The limitation of this research is that it only takes two intermediary factors, namely customer satisfaction and relationship commitment, to test service quality on recertification. These two factors are considered important in maintaining the certification service company's relationship with existing clients. Thus, it is unique that customer satisfaction can only be measured by the experience felt by the client on the quality of service provided by the

company, while relationship commitment is also only based on the assessment of the intensity of communication felt by the company in the relationship with the client.

2. Literature Review and Hypotheses Development

This planned behaviour is a reciprocal relationship between thought and intuition. According to Ajzen (2005), behaviour or intention with the basic theory is the theory of planned behaviour that can be controlled. The theory of planned behaviour shares three essential factors, namely, a person's personality, social environment, and perceived behavioural control. The three factors in the theory of planned behaviour can create a series of compositions that are always different.

According to Ajzen (2005), if the information received is inaccurate, it will also have an impact on individual behaviour. The causes of inaccurate information can come from inappropriate experiences, insufficient knowledge, and presentation of information through biased media. The theory of planned behaviour emphasises that intentions are also sufficiently influenced by individual background factors. These factors can be divided into three types, namely personal, social, and information.

The theory of consumer behaviour, according to Hoyer et al. (2021), is a person's decision on goods or services that will be consumed from time to time. The study of this theory is from acquiring, consuming, and disposing of products or services based on activities, experiences of oneself and others, and ideas in making a decision over time. The measuring instrument starts from buying and consuming the goods or services, then assessing and comparing based on his or others' experience. Meanwhile, consumer behaviour, according to Babin et al. (2017), is a series of activities that give the right assessment according to personal needs. There is an unbroken chain through consumer reactions using psychological processes, thoughts, feelings, and behaviour. Consumer behaviour starts with something that is a need, whether it is urgent or not. After that, there is an urge within consumers to try to get what they need. The action to fulfil these needs is through an exchange process, be it money for goods or goods for goods (barter transactions).

Intention is a planned behavior that is felt within a person. It is commonly associated with the affective component of attitudes. Intention arises from within a person through intuition and is then channelled into cognition to do or not. Ajzen (2005) asserts that the three primary factors in the theory of planned behaviour are highly dependent on how much the intention is considered to be implemented or not, so the surrounding conditions must also support these three factors.

Recertification will occur when the validity period of the certificate has expired, so it is necessary to carry out an assessment procedure by the authorised institution. Recertification occurs only with the same certification service company. According to the FINAS (Finnish Accreditation Service) (2022), certificate maintenance is only carried out periodically within a certain time frame, and after this time frame, a reassessment can be carried out, whether it is eligible or not. If qualified, it can be given back; otherwise, the client can fix the

deficiencies or move to another certificate service company. Even according to Midor and Wilkowski (2021), recertification is not done because of the economic situation.

2.1. Quality of Service → Recertification

Consumers always have their perceptions in assessing the products or services to be consumed. Before the intention of new consumers to buy or old consumers to buy again, it will lead to a perceived expectation. The definition of service quality, according to Fejza & Fejza (2023), is a difference between the services provided by a particular company and customer expectations for these services. Wilson et al. (2019) found that there are expectations from consumers that are not in accordance with what was imagined before if the product or service purchased is not good. Good or bad assessments of service quality differ between conventional (non-online) and online sales. According to Fared et al. (2021), service quality for online transactions is assessed at the same time, while conventional sales, according to Salem and Kiss (2022), are assessed at the time or post-sale because this is related to accuracy and better than with other companies. Service quality, according to Yousapronpaiboon (2014), is a comparison using common sense and intuition between expectations and the reality of the product or service obtained by the customer.

Service companies need to pay attention to service quality. According to Zeithaml et al. (2017), there are five dimensions to measure service quality, namely: (1) reliability dimension, (2) *responsiveness dimension,* (3) *assurance dimension, (*4) empathy dimension, and (5) physical or *tangible dimension*. Leonnard and Thung (2017) explained that good service quality will benefit the company's relationship with consumers.

Recertification is carried out for certain reasons, as in the view of Midor and Wilkowski (2021), due to the benefits of certification. Because the purpose of certification, according to Cândido et al. (2021), is to improve economic performance. It is not only these benefits but the quality of service that causes clients to recertify.

The following hypotheses are designed to explain the effect of certification service quality on intention to recertify.

H1: Service quality has a positive and significant effect on recertification

2.2. Service Quality → Customer Satisfaction

Service quality is part of a form of appreciation from customers in providing an assessment or perception of the product or service purchased. Salem and Kiss (2022) define service quality as the result of a comparison between expected and actual performance. The form of appreciation of the assessment can be good or bad, and this depends on how important the company is in maintaining the quality of the service (Wilson et al., 2019). Therefore, companies must continue to maintain service quality even after purchase. Currently, many companies hire research institutions to conduct surveys on service quality either before or after purchasing a product or service. If there are criticisms or suggestions from consumers,

the product or service, the division of the company, namely *quality control and quality assurance,* tests and assesses the product or service that will be launched or has been sold.

Zeithaml et al. (2017) argue that in assessing customer satisfaction, one of the essential elements of the upstream path is service quality. Another thing that is no less important is customer perceptions of reliability, insurance, responsiveness, empathy and tangibility of the services received. Wijaya and Astuti (2018) assess the importance of service quality, as this will increase customer satisfaction. Wilson et al. (2019) add that what is recorded in customer cognition is an expression of satisfaction. If the assessment of consumers states that their reason for repurchasing the same product or service is because it meets the criteria and satisfaction with improving service quality, such as responding to customer complaints and quickly improving service quality. If the company ignores the quality of post-purchase service, then gradually, customers will move to products or services from other companies.

Companies must really pay attention to service quality in an effort to retain customers in today's competitive era, and this greatly influences customer satisfaction (Midor & Wilkowski, 2021). So, according to Esgarrancho and Cândido (2020), service quality must provide satisfaction to clients. To improve service quality, companies usually provide a consumer complaint centre (call centre) to receive any complaints from consumers, whether it is a product purchased or a service received. For companies that produce finished products, it is usually not only the products that are consumed but also complaints about the service of selling the product, whether it is pleasant or not. The role of this complaint section is to find out how much customer satisfaction with service quality. Because the company cannot measure the existence of the company and its products or services if there is no section that receives complaints from consumers. So Zeithaml et al. (2017) observed that there are several factors that influence customer assessments of service quality, such as product and service features, customer emotions, attribution of service success or failure, customer perceptions of equality and fairness, and finally, other customers including family members and coworkers. Fared et al. (2021) emphasise that perceived value has a positive relationship with satisfaction, meaning that the higher the perceived value of service quality, the higher the satisfaction achieved.

The following hypotheses are designed to explain the effect of certification service quality on customer satisfaction.

H2: Service quality has a positive and significant effect on client satisfaction.

2.3. Service Quality → Relationship Commitment

The company continues to maintain the quality of service at the time of sale, and after the sale of goods or services, it will continue to maintain good communication between the company and customers. Salem and Kiss (2022) emphasise the ability of company management to maintain service quality by continuously evaluating relationship commitment. Communication becomes tenuous if customers begin to experience a little disappointment in what they get. Venetis and Ghauri (2004) emphasise that to maintain the commitment of the relationship between the company and the customer, the quality of service must be considered. Because this is to maintain a lasting relationship, when customers feel

satisfied with a product or service after purchase, they will tend to continue using the product or service. Based on research from customers themselves regarding how good service quality is, it can meet expectations and can bind customers not to switch to another product or service. Khan et al. (2021b) argue that loyalty is a form of sustainable relationship and is an important foundation in maintaining relationships between companies and customers. According to Fared et al. (2021), a sustainable relationship is a characteristic of commitment from customers to the company, and it can be in the form of making visits. Sustainable relationships are a relatively easy factor, the reason being: first, maintaining old customers is better (they already know each other) than looking for new customers; second, looking for new customers is quite a drain on time, energy, and costs. Therefore, maintaining service quality is a requirement that cannot be avoided.

The relationship between companies and consumers can change or be dynamic. Changes in this relationship can continue, or vice versa, if there is a disconnection. According to Georgieva and Stanimirov (2021), it is influenced by changes in consumer behaviour with sellers. Gustafsson et al. (2005) define relationship commitment as a desire to maintain an ongoing relationship followed by sacrifice if the relationship ends. The relationship commitment theory emphasises the quality of a relationship. If made in the form of a pyramid, then relationship commitment is the highest part, so it is considered to be the highest and easy to fall. If the company does not maintain service quality, it is easy to shake this relationship commitment, and this is different from other factors such as customer satisfaction; if the customer is satisfied with the service quality but there is no commitment from the customer, then the value of the service quality means nothing. Therefore, Golara et al. (2021) consider that companies must improve service quality because this also affects the sustainability of relationships with clients.

Whether a certification service company's relationship with its clients is good or bad depends on the quality of service provided. The following hypotheses are designed to explain the effect of service quality on relationship commitment.

H3: Service quality has a positive and significant effect on relationship commitment

2.4. Customer Satisfaction → Recertification

The buyer's assessment of a product or service becomes a basic reference for customer satisfaction after a purchase occurs (Krystallis, Chrysochou, 2014). Customer satisfaction is seen from the high and low pleasure of receiving the product or service (Orel, Kara, 2014). Zeithaml et al. (2017) observed it by giving a positive or negative assessment of the customer's satisfaction. There are several factors in assessing customer satisfaction, namely product and service features, emotions surrounding customers, attribution of service success or failure, perceptions of awareness and fairness, and other parties (other customers, family members, and coworkers).

Intention is a behavior that arises within the individual. When associated with recertification, this is the intention to repurchase certification that has expired. According to Ibzan et al. (2016), the intention to repurchase is defined as the actual behaviour of consumers by buying products or services on more than one occasion. Electronic transactions will make it easier

to pamper customers in the current era of digitalisation, and it will increase trust and desire to repurchase the same product or service (Pandiangan et al., 2021).

Research of Camango and Cândido (2023) found that thousands of companies fail to renew certification, and this is because the cost of recertification is greater than the benefits to the company. It could be that clients consider the costs incurred to obtain certification are not worth the benefits. Fornés-Rivera et al. (2021) argue that recertification is carried out to replace a new version or another because it is considered outdated or not in accordance with the client's business field. Midor and Wilkowski (2021) also argue that recertification is carried out as a mirror of the satisfaction provided by the company to clients. Therefore, customer satisfaction must be maintained and not decreased.

The following hypotheses are designed to explain the effect of customer satisfaction on intention to recertify.

H4: Customer satisfaction has a positive and significant effect on recertification.

2.5. Relationship Commitment → Recertification

Relationship commitment, according to Gustafsson et al. (2005), has two types, namely first, affective commitment because it arises from the emotional self, and next, calculative because it uses rationality analysis. Nora (2019) believes that the intention to repurchase is largely determined by the existence of strong trust and is based on religious faith, which can strengthen the intimacy of the company's relationship with customers, as happens in the relationship between Islamic Banks and their customers. Islamic banks strongly emphasise Islamic religious values such as profit sharing and not profit sharing and dividends because profit and dividends are *riba* as in conventional banks, so this is contrary to religious teachings. Therefore, relationship commitment is also strongly influenced by the dimension of religious beliefs held by customers. The concept of relationship commitment states that there is a strong relationship between the seller and the customer so that the effect is to continue to commit and make repeat purchases.

Companies can observe and assess what happens after purchasing a product or service. Do customers still want to buy back or not? The intention of the buyer to buy or not is influenced not only by what is felt but also by what is thought and analysed. Hellier et al. (2003) made a separate measurement related to the intention to repurchase, using three indicators, namely: (1) the extent to which customers will continue to buy the same product or service in at least the same amount over the next year; (2) how likely it is that customers will actually repurchase, at least in the same amount of products or services from the company over the next year; and (3) how likely it is that customers will continue to buy, at least in the same amount of products or services from the company over the next year. These three indicators of repurchase intention will form a pattern of relationship commitment assessed by the company.

Recertification, in the thinking of Rybski et al. (2017), is a form of trust that is still maintained between the company and the client because the result of trust is the commitment to a continuing relationship. Dai and Lee (2018) added that one of the dimensions of relationship

commitment is intimacy because recertification (intention to repurchase) is highly dependent on intimacy in a relationship. Wilson et al. (2019) emphasise that maintaining relationships with existing customers is much better than getting new customers because this has an impact on the costs incurred. Camango and Cândido (2023) explain that if recertification is seen as beneficial in improving the quality management system (QMS), then clients will maintain good communication with the company.

The following hypotheses are designed to explain the effect of relationship commitment on intention to recertify.

H5: Relationship commitment has a positive and significant effect on recertification.

2.6. Customer Satisfaction as Mediation in the Relationship between Service Quality and Recertification

Service quality, in the observation of Dai and Lee, 2018 (2018), must fulfil several important elements, namely security, convenience, interactivity, information availability, and service quality. These elements will determine whether or not customers are satisfied with buying products or services from the company. The quality of these elements must be well maintained because, according to Wilson et al. (2019), the service quality factor is an antecedent before the client decides to repurchase the product or service.

The theory of customer satisfaction, according to Gajewska et al. (2020), is a person's expectation of a product or service according to their perception of it. Measuring customer satisfaction is one of the most important matters related to business organisations. Zouari and Abdelhedi (2021) explain customer satisfaction is related to what the customer feels about the product or service after use. Wilson et al. (2019) define customer satisfaction as an emotional expression of customers or clients for what they receive. According to Salem and Kiss (2022), customer expectations influence the intention to repurchase. If there is perceived satisfaction, it means that the customer feels that there are expectations beyond; while the customer does not feel any satisfaction, the expectation is not achieved.

To develop hypotheses for each of the two mediating variables on intention to recertify. This study uses measurements based on what has been done previously by Hellier et al. (2003) using the following statements: (1) the likelihood that customers can continue to be certified through the old certification service company; (2) the likelihood that customers can recertify through the old certification service company; and (3) the likelihood that customers can obtain other types of certification through the old certification service company.

Fejza and Fejza (2023) argue that each client has its own assessment of service quality. This difference will cause each to have a different level of satisfaction. So, in the end, there are those who recertify or do not continue to renew the certification with the same company or move to another company. Even according to Camango and Cândido (2023), if the client's assessment is below expectations, the client does not continue to renew the certification (decertification). In addition, Salem and Kiss (2022) also examined that customer satisfaction is primarily determined by the comparison of price with service quality, so this will affect recertification.

The following hypotheses are designed to explain how customer satisfaction factors mediate the effect of service quality on intention to recertify.

H6: Customer satisfaction mediates the effect of service quality on recertification

2.7. Relationship Commitment as Mediation in the Relationship between Service Quality and Recertification

Service quality, in the eyes of Dai and Lee (2018), consists of several elements, namely speed, reliability, familiarity, accuracy, and the quality of service itself. These elements greatly affect customer satisfaction because the only party who can assess the elements is the client. Therefore, the company must be able and quick to respond to any complaints from clients about the quality of service provided. Because what is prioritised in service quality, according to Fejza and Fejza (2023), is to satisfy customers.

Relationship commitment is strongly influenced by the quality of service that has been provided. Even if the service quality is good, but there is no strong relationship commitment, the intention to repurchase in the form of recertification will be lost. According to Gustafsson et al. (2005), customers can be influenced by tempting offers from competitors so that they break the relationship. Wilson et al. (2019) illustrate that recertification is a form of reflection of client loyalty to the company by continuing to use the services of the company. Golara et al. (2021) also considered that relationship commitment becomes a means of communication and learning because finding out whether the client will renew the certification or not can be judged by the quality of service provided to the client.

Hellier et al. (2003) added that separate considerations in the current situation cause the customer's desire to repurchase with a comparison of future situations. This consideration is the result of intensive communication between the client and the company, thus forming a solid commitment. Golara et al. (2021) found that an essential aspect of relationship commitment is loyalty in a relationship; this can occur because of the intention of loyalty to the truth. Client management decisions also influence loyalty. If the quality of service is good but the client's management has other policies, desertification can occur. Cândido and Ferreira (2023) suggest that decertification occurs as a result of internal policies such as unusually high rates of certification renewal.

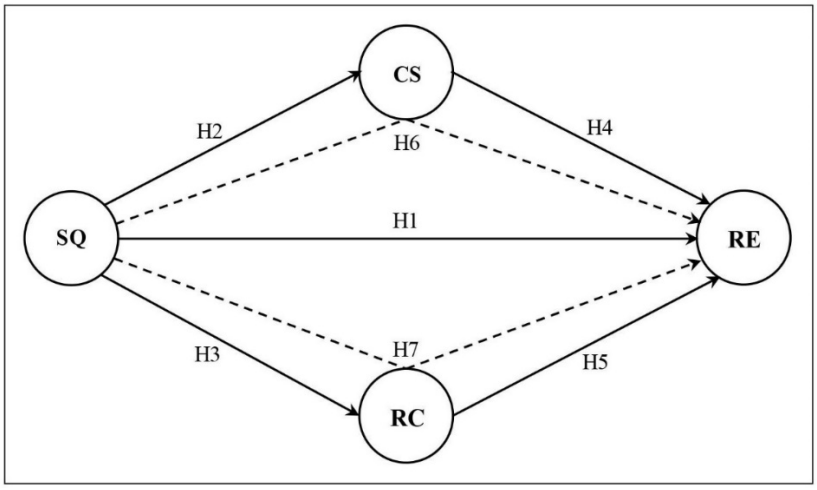
Wilson et al. (2019) emphasise that trust is decisive because, in the relationship between service quality and recertification, there is an emotional connection between the company and the client. Salem and Kiss (2022) consider that there is an element of option to determine whether to buy back or not. The company can assess this option at the time of communication with the client. Communication with the client is not continued, according to Cândido and Ferreira (2023), making the client's decision to decertify due to internal reasons.

The following hypotheses are designed to explain how relationship commitment factors mediate the effect of service quality on the intention to recertify.

H7: Relationship commitment mediates the effect of service quality on recertification

Figure 1 explains the direct effect of service quality (SQ) on recertification (RE). As for the indirect effect of service quality (SQ) on intention to recertify, it must go through two other factors, namely customer satisfaction (CS) and relationship commitment (RC). In addition, there is also a direct effect of each, namely SQ on CS, SQ on RC, CS on RE, and RC on RE; this can be explained by the fact that there are factors that influence and are influenced that do not require a connecting bridge as a solution, while there are those that require a connecting bridge to find the right solution.

Figure 1. Research conceptual framework model



Source: author's design.

3. Methodology

3.1. Scope of Research

This research study was conducted at a certification service company that has been conducting activities since 2014, with an address in Jakarta. The number of clients who have been certified is 463 throughout Indonesia. The certification process is carried out through several stages, namely, the initial certification stage, the periodic monitoring stage (every year), and recertification (every three years). The fields of certification services consist of quality management systems, environment, occupational health and safety, anti-bribery, food safety, information security, and technology. As for the form of certification to date, there are still three types, namely, product certification, personal certification, and railroad certification. In addition, the certification service company also carries out assessment service activities related to testing laboratories and training.

This research uses a survey method, so the participants involved as respondents are 130 people. Respondents are representatives of companies as clients of companies that issue certificates. Clients who are assessed to obtain a certificate consist of several types, such as finance, management, environment, work safety, and information system security. These 130

companies are all domiciled in the territory of Indonesia. The types of client companies are from various business sectors, namely service, manufacturing industry, ship crew agency, BUMN (State-Owned Enterprises), and public services.

Table 1 shows that the gender group with the majority of respondents is male than female (with a ratio of 9: 4). In the age group, the most respondents were in the 46-53 age range, and the least respondents in the 54-61 age range.

Table 1. Participants' profile based on gender and age

Items	Categories	Numbers	Percentage
Gender	Male	89	68.46%
	Female	41	31.54%
Age	22 – 29	9	6.92%
	30 – 37	12	9.231%
	38 – 45	49	37.692%
	46-53	56	43.077%
	54-61	4	3.077%

Source: data is processed.

Table 2 shows that the Java region dominates as the centre of Indonesia's industry. For regions outside Java, the number of companies is still small, amounting to 32.31%.

Table 2. Participants' profile based on company location

Areas	Numbers	Percentage
Java	88	67.69%
Kalimantan	6	4.62%
Nusa Tenggara	5	3.85%
Sulawesi, Moluccas and Papua	6	4.62%
Sumatra	25	19.23%

Source: data is processed.

Table 3 describes the position group for most respondents, who are management representatives. For the relationship group between the certificate granting company and the client, the most respondents with the longest relationship are in the 3-3.9 year group, while the least respondents are in the 1-1.9 year group.

Table 3. Participants' profile based on job position and relation with client

Items	Categories	Numbers	Percentage
Job position	President Director	48	36.92%
	Management Representative	82	63.08%
Relations with clients	< 1 year	19	14.62%
	1 – 1.9 years	3	2.31%
	2 – 2.9 years	27	20.77%
	3 – 3.9 years	32	24.62%
	4 – 4.9 years	10	7.69%
	> 5 years	39	30.00%

Source: data is processed.

Table 4. Participants' profile based on achievement

Type of Certificate	Numbers	Percentage
Bioc INS	2	1.54%
BRC8	23	17.69%
ISCC	24	18.46%
ISO 45001	7	5.38%
ISO 9001	69	53.08%
MLC 2006	5	3.85%

Source: data is processed.

Table 4 shows the types of certificates that clients mostly take. The group of certificate types that are mostly taken is ISO 9001, and the second most is the ISCC type. The last group is the Bioc INS certificate type, and the next least is MLS 2006.

3.2. Procedure

The questionnaire consists of several questions or statements. Questions or statements are built based on indicators designed based on theory. The indicators of each variable vary in number. The service quality variable consists of 17 questions or statements. The mediating variable, namely customer satisfaction, consists of 11 questions or statements, while relationship commitment consists of 7 questions or statements. The intention to recertify variable only has three questions or statements.

Researchers sent questionnaires via email to clients located outside Java. For clients located in the Java region, the questionnaire was sent using paper format and sent to their respective addresses through mail delivery services. Furthermore, the researcher confirmed that the questionnaire had been sent through a short message on the *Whatsapp* number. It was the client who determined who had sufficient time and opportunity to complete the questionnaire. All questionnaires that were completed via email and paper were sent back to the researcher. For the purpose of sending back the results of the questionnaire answers by the client, a stamp with the express price was provided, which was put in the envelope at the time of sending the questionnaire to the client. The reason for sending an email was because it was far away and quickly received, while through mail delivery services because it was close, affordable, and there was an intention to fill out the questionnaire (reluctant and included a return stamp).

The results of respondents' answers will be processed using SPSS software version 26. This software is used to test the reliability and validity of the data. While more detailed statistical testing, the software used is PLS version 3.0.

The test results of each hypothesis are discussed in detail by looking at the significance test both with t-statistics and p-value. The discussion traces from the first to the seventh hypothesis. Furthermore, the seven hypotheses will be compared with theories or concepts and the results of previous research.

4. Results

Java is the centre of the economy and government, so almost all the clients in this study are concentrated on this island. The reality that has occurred so far is that although the company's operational activities are outside Java, the head office is still on Java Island, either in Jakarta or in Surabaya. So, the data presented in Table 2 explains that almost all companies as clients receiving certification services are located on Java Island; this is very helpful for researchers in distributing questionnaires and also affects the return rate of questionnaires, which is higher than outside Java.

This study uses one predictor variable, namely X, and one criterion variable, namely Y. In addition, there are two intervening variables, namely Z1 and Z2. Validity and reliability tests were first carried out before testing the effect of each variable. The purpose of this test is to find out whether each variable tested has met the statistical criteria or not.

In conducting the validity test, it still refers to certain criteria. If it is said to be valid if the significance result < α, or t-count> t-table. With the provisions of α = 0.05, t-table = 0.1723 (N-2, 130-2 = 128). As for the reliability test, it must be above 0.7, but it can still be tolerated at a minimum of 0.6.

The validity test results show that X (service quality), Z1 (customer satisfaction), Z2 (relationship commitment), and Y (intention to recertify) < 0.05, or all t counts of the question items or statements > 0.1723. For the reliability test with Cronbach's alpha, namely X = 0.962, Z1 = 0.959, Z2 = 0.958, and Y = 0.827.

Table 5. Reliability and validity of the reflective constructs

Constructs	Outer loadings	CR	AVE	Heterotrait-Monotrait Ratio (HTMT)			
				X	Z1	Z2	Y
Service Quality (X)	0.863, 0.819, 0.823, 0.687, 0.828, 0.893, 0.848, 0.865, 0.839, 0.615, 0.895, 0.648, 0.893, 0.901, 0.897, 0.690, 0.886	0.972	0.676				
Customer Satisfaction (Z1)	0.721, 0.878, 0.910, 0.833, 0.827, 0.913, 0.927, 0.917, 0.927, 0.888, 0.824	0.972	0.760	0.984			
Relationship Commitment (Z2)	0.907, 0.937, 0.944, 0.941, 0.933, 0.933, 0.888	0.977	0.858	0.950	0.947		
Repurchase Intention (Y)	0.912, 0.964, 0.824	0.929	0.813	0.959	0.947	1,013	

Source: processed data.

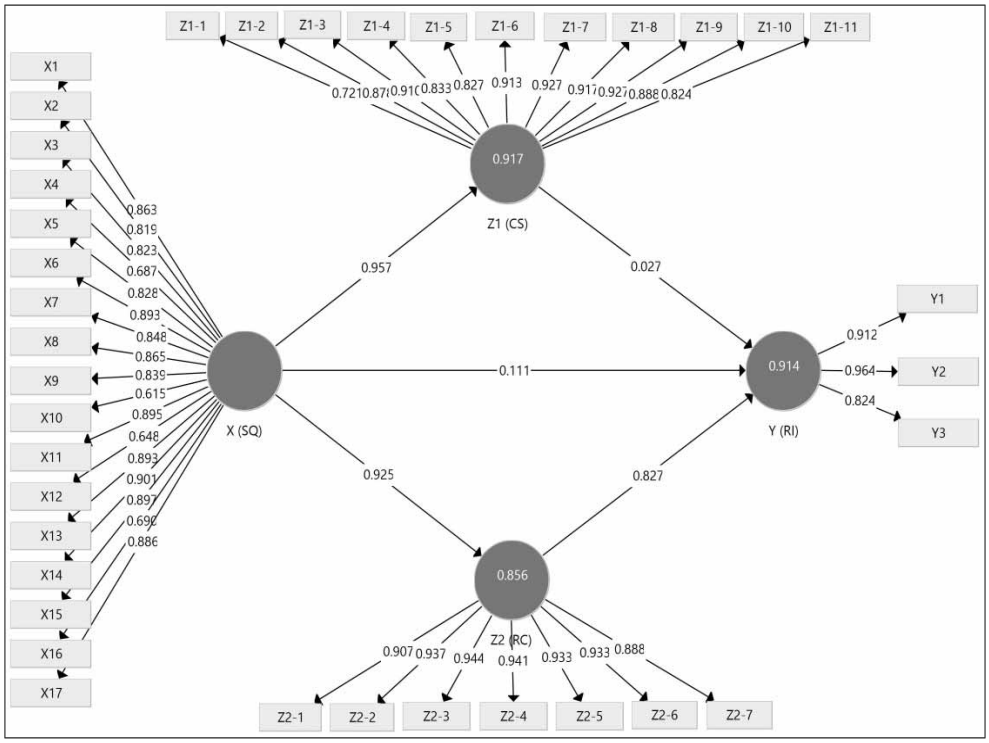
Each construct consists of service quality (X), customer satisfaction (Z1), relationship commitment (Z2), and intention to recertify (Y). In Table 5 above, the outer loadings with each value correspond to the number of latent variables for each construct. For composite reliability, each construct is X = 0.972, Z1 = 0.972, Z2 = 0.977, and Y = 929. Meanwhile, the average variance extracted (AVE) is X = 0.676, Z1 = 0.760, Z2 = 0.858, and Y = 813. The Heterotrait-Monotrait Ratio (HTMT) test results show the effect of each construct on other constructs, namely X Z1 = 0.984, X Z2 = 0.950, X Y = 0.947.

Figure 2 explains that each latent variable value with its respective reliability for indicators X1 to X17 is above 0.6. For indicators of mediation variables from Z1.1 to Z1.11 and for Z2.1 to Z2.7 above 0.7. The same is true for the criterion variable indicators from Y1 to Y3, which are also above 0.7.

The reliability of the influence of each variable on other variables is X → Y = 0.111. The effect of variable X on the mediating variable and the mediating variable on variable Y is X → Z1 = 0.957, X → Z2 = 0.925, Z1 → Y = 0.027, and Z2 → Y = 0.827.

Table 6 shows the measurement results, both the direct effect of X on Y and the indirect effect using two mediating variables. First, four measurement results show a p-value = 0.000, namely X → Z1, X → Z2, Z2 → Y, and X → Z2 → Y. Second, there are three measurement results that produce a p-value above 0.05, namely X → Y, Z1 → Y, and X → Z1 → Y. However, all constructed relationships, both directly and indirectly, show a positive influence.

Figure 2. Results of part analysis



Source: processed data.

Table 6. Descriptive statistics of the constructs

Parameters	O	M	SD	t-statistics	p-values
X (SQ)→Y (RE)	0.111	0.142	0.222	0.501	0.616
X (SQ)→Z1 (CS)	0.957	0.959	0.013	75,593	0,000
X (SQ)→Z2 (RC)	0.925	0.925	0.025	37,347	0,000
Z1 (CS)→Y (RE)	0.027	0.020	0.210	0.130	0.896
Z2 (RC)→Y (RE)	0.827	0.803	0.154	5,373	0,000
X (SQ)→Z1 (CS)→Y (RE)	0.026	0.019	0.202	0.130	0.897
X (SQ)→Z2 (RC)→Y (RE)	0.765	0.742	0.139	5,487	0,000

Source: processed data.

Most respondents were male, which greatly influenced the answers to questions or statements. For the age range, maturity and being at a productive age, namely between 46 and 53, have a higher responsibility than the age range group below, although there is an age group above this that has experienced productivity. This mature and productive age group is expected to be responsible for answering every question or questionnaire statement. The geographical location of the certification service provider company and the client also affects the rate of return of the questionnaire. If the questionnaire is sent in paper form, the return rate outside Java Island is very low; this is different from respondents located on the island of Java, where the return rate of the questionnaire is higher. Even the questionnaire in the form of Google Form is the same; namely, respondents located on Java Island are much higher and more accessible than those outside Java Island.

Respondents, based on position or position in the client company, can affect the seriousness in answering each question or statement. The management representative position is a subordinate who is asked by the head of the client company to answer the questionnaire. Due to lack of experience, the answers may be biased, but because they are under pressure from their superiors, they are more serious in reading and answering each questionnaire statement. The relationship between the certifying company and the client also influenced the answers to the questionnaire. The longer the relationship with the client, the more likely the questionnaire answers are to be true. Conversely, a less-long relationship with the client will have an impact on the ability to understand the questionnaire questions or statements so that it can cause confusion and seem to answer just like that.

The relationship of each construct, namely service quality to customer satisfaction, service quality to relationship commitment, customer satisfaction to intention to recertify, and relationship commitment to intention to recertify, explains that all construct relationships are built to meet the validity value. Meanwhile, all constructs also meet the reliability value. However, the analysis of Hair et al. (2021) and Hair et al. (2022) provided a tolerance limit for the minimum reliability value of 0.60. The calculation of convergent validity using AVE (average variance extracted) has met the requirement, which is above 0.50, while for discriminant validity through the results presented in cross-loading, it is the same, which has met the requirement.

5. Discussion

This study developed as many as seven hypotheses. The results of testing the seven hypotheses show that: First, there is a positive influence between service quality and intention to recertify, but it is not significant; this means that the higher the value generated from the company's service quality to customers, the higher the intention to recertify. However, the results of this study show that the relationship does not have enough evidence of the effect of service quality on the intention to recertify. Therefore, these results reject the first hypothesis statement, and this is corroborated by the results of research by Amoako et al. (2023), which emphasises that quality is measured by the time span in providing services to customers. Second, there is a positive influence between service quality and customer satisfaction. The results are significant, and this means that the higher the value produced by the quality of service provided, it can increase customer satisfaction. This relationship shows sufficient evidence of the effect of service quality on customer satisfaction. Therefore, the test results accept the second hypothesis. Third, there is a positive influence between service quality and relationship commitment, and the results are significant; this means that the higher the value resulting from service quality, the better the commitment relationship is built, and this is enough evidence to show that there is an effect of service quality on relationship commitment. Therefore, the test results accept the third hypothesis. Fourth, there is a positive influence between customer satisfaction and intention to recertify, but the results show that it is not significant; this means that the higher the value of perceived customer satisfaction, the better the intention to recertify. However, customer satisfaction does not have enough evidence of its influence on the intention to recertify. Therefore, the fourth hypothesis is rejected. Fifth, there is a positive influence between relationship commitment and intention to recertify, and the results show significance; this means that the higher the value of the relationship commitment between the company and the client, the better the intention to recertify. The relationship has sufficient evidence of the influence of relationship commitment on the intention to recertify. Therefore, the fifth hypothesis is accepted. Sixth, there is a unidirectional relationship between service quality and customer satisfaction and customer satisfaction and intention to recertify. However, the test results show that it is not significant; this means that the higher the quality of service provided, the higher the perceived customer satisfaction, and ultimately, the better the intention to recertify. However, customer satisfaction does not have enough evidence to mediate the effect between service quality and intention to recertify. Therefore, the seventh hypothesis is rejected. Seventh, there is a unidirectional relationship between service quality to relationship commitment and relationship commitment to intention to recertify. The test results show significance; this means that the higher the quality of service provided, the higher the perceived relationship commitment, and the better the intention to recertify. Relationship commitment has enough evidence to mediate the effect between service quality and intention to recertify. Therefore, the seventh hypothesis is accepted.

The results of this study are in line with research by Fejza and Fejza (2023), who explain that the most important thing in repurchasing a product or service is the customer's judgment. These assessments are related to satisfaction and relationships. Georgieva & Stanimirov (2021) emphasise that companies must be able to maintain customer loyalty to keep returning, so relationship commitment must be really considered. This research is also similar

to previous research conducted by Khan et al. (2021b), who outlines that consumer loyalty is highly dependent on relationship commitment because commitment is also closely related to trust. So, relationship commitment also determines the effect of service quality on the intention to repurchase; this is further corroborated by Kraleva and Dimitrova (2018) that there are assurances from sellers that consumer rights are guaranteed by law, thus strengthening relationship commitment. Wilson et al. (2019) repurchase intention is a form of relationship commitment between the company and the client because relationship commitment will show client loyalty. The results of Wilson et al.'s research show that service quality has a significant effect on customer satisfaction, and this is the same as the results of our research. However, what distinguishes our research from theirs is that customer satisfaction cannot mediate the intention to recertify, while in their research, it can mediate.

6. Conclusions and Recommendations

This study proves that service quality cannot directly affect the intention to recertify; this is also the same for the direct effect of customer satisfaction on the intention to recertify. However, it is different in the direct effect of service quality and customer satisfaction because it has a significant effect. So, customer satisfaction cannot mediate the effect of service quality on the intention to recertify. Relationship commitment as mediation, both in the direct relationship between service quality and relationship commitment, as well as relationship commitment with intention to recertify, has a significant effect. Therefore, relationship commitment can mediate the effect of service quality on the intention to recertify. The purpose of this study is to determine whether the effect of service quality on intention to recertify can be mediated by customer satisfaction and relationship commitment. So, it is concluded that only relationship commitment is able to mediate this influence.

Companies, in an effort to retain old customers, find it not easy. Therefore, communication with old customers must be continuous so that there is a reluctance to move to another company. As a consideration for future research, it is necessary to include other mediating variables such as personal orientation, emotional state, and brand selection. This study only focuses on recertification, which is related to old customers, so for future research, it should also test new customers in buying certificate services. It is possible that in future research, it will also be necessary to examine the factors that influence decertification or withdrawal of certification or who have not been certified. Research in the field of certification services is still very limited, so this is a contribution to companies and clients in certification services.

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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THE EFFECT OF GREEN ACCOUNTING IMPLEMENTATION AND CORPORATE SOCIAL RESPONSIBILITY ON COMPANY PROFITABILITY[6]

This study was conducted to determine how the implementation of green accounting and corporate social responsibility affects company profitability. The independent variables are green accounting and corporate social responsibility and the dependent variable is company profitability. Companies listed on the Indonesia Stock Exchange that are members of the Jakarta Islamic Index 2017-2021 group are the research population. The sample obtained was 8 companies or 40 observations for 5 years of observation. The approach in selecting samples is called purposive sampling. Multiple linear regression analysis was performed in this study using e-views 12 statistics. The results showed that green accounting and corporate social responsibility (CSR) have an influence on company profitability. In the 2017-2021 period, green accounting and corporate social responsibility together had a significant effect on the profitability of companies included in the Jakarta Islamic Index.
Keywords: Green Accounting; Corporate Social Responsibility; Profitability
JEL: G32; G02; M1; G34; Z1

1. Introduction

Social and environmental issues have become interesting conversations within companies. Social and environmental issues are part of everyday life. The problems discussed concern social issues and environmental damage. The phenomenon of global warming and pollution has a direct impact on the environment. The fact that current social and environmental issues have the potential to negatively impact life in general, of course, must be a concern for all

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parties. Companies have unwittingly produced various information regarding environmental conflicts, including pollution, damage to natural resources, waste, and so on. Although there is only a limited amount of natural resources available and it takes a while to replenish them, corporations aim to increase profitability by continuing to use them. Environmentally conscious companies tend to do better financially in the long run. Because the company's reputation will increase and stakeholders will value it more if it pays attention to environmental responsibility. One solution to the issue of environmental sustainability is environmental accounting (Tisna, et al., 2020). Corporations are faced with the triple bottom line, which states that the purpose of an organization's commercial activities is to improve the welfare of society, preserve the environment, and make a profit (Maharani et al, 2023).

According to Lako (2018) on environmental issues "that the world including Indonesia is experiencing a serious social and environmental crisis and endangers the sustainability of the earth and the lives of humanity". The practice of States, companies, households, and individuals to promote economic growth and profits at the expense of society and the environment is more to blame for the crisis than other groups or individuals. The way to increase the profitability of a company is to provide a good and positive image before the public or society. The application of green accounting and corporate social responsibility is an effort made by the community to overcome the problem of issues related to social and environmental responsibility.

Green accounting has the concept that accounting should not only focus on financial objects and transactions. However, accounting must be able to integrate the utilization of social and environmental phenomena, because this is a component of the economic business system, development, and the life system of citizens in society and the state. Through the use of green accounting, the Indonesian government has encouraged companies to implement green industry practices. One form of government effort is to give awards to companies that use green sector practices. Green accounting is still not implemented optimally in developing countries, such as Indonesia (Wahyuni, et al., 2019). Using the colours gold, green, blue, red, and black, the Ministry of Environment and Forestry of the Republic of Indonesia (KLHK) assesses awards through PROPER by measuring the company's environmental performance.

The provision of corporate social responsibility (CSR) by large companies in Indonesia has an impact on the level of public consumption of products from these companies. Companies that carry out corporate social responsibility activities include companies that feel an obligation to advance society, care about the state of the nation, and believe that they need government assistance in carrying out corporate social responsibility programs. Businesses prioritize all related parties in the industrial Era 4.0, including employees, clients, communities, and the environment, in addition to owners and management (Chasbiandani, et al., 2019).

Profitability is always the top priority for the good of the company, but the environment in which the company operates is ignored. The profitability of a company's relationship with its profitability is significantly affected by green accounting. Profitability is a factor that is given significant consideration because it is necessary for the company to be in a favourable situation for its investors in order to survive (Fauzan, Salira, 2022). The way to increase the profitability of a company is to provide a good and positive image in front of the public or society. The application of green accounting and corporate social responsibility is an effort

made by the community to overcome the problem of issues related to social and environmental responsibility.

Research conducted by Dewi & Wardani (2022) shows that green accounting measurement using PROPER ratings has a positive effect on company profitability. Meanwhile, research conducted by Kholmi & Nafiza (2022) shows that green accounting using the dummy measurement method by disclosing environmental costs in the financial statements has no effect on profitability.

Research conducted by Kholmi & Nafiza (2022) shows that measuring corporate social responsibility using CSR disclosures in financial reports using GRI G4 with 91 indicators has a positive effect on profitability. Meanwhile, research conducted by Kholmi & Nafiza (2022) shows that CSR disclosure measured CSR disclosure using dummy variables with reference to the Global Reporting Initiative (G4) with 91 disclosure indicators has no effect on profitability. This study uses green accounting as measured using PROPER ratings, while corporate social responsibility is measured using GRI G4 indicators.

So, the problem formulation arises, namely: whether the application of green accounting has a significant positive effect on profitability included in the Jakarta Islamic Index in 2017-2021, whether the application of corporate social responsibility has a significant positive effect on profitability included in the Jakarta Islamic Index in 2017-2021, whether the application of green accounting and corporate social responsibility has a positive effect on profitability included in the Jakarta Islamic Index in 2017-2021.

Regarding the objectives to be obtained from this study, namely to determine the effect of applying green accounting on the profitability of companies included in the Jakarta Islamic Index in 2017-2021, to determine the effect of applying corporate social responsibility on the profitability of companies included in the Jakarta Islamic Index in 2017-2021, to determine the effect of applying green accounting and corporate social responsibility on the profitability of companies included in the Jakarta Islamic Index in 2017-2021.

2. Literature Review

2.1. Theory

2.1.1. Legitimacy Theory

Legitimacy theory explains that businesses and society have a social contract that requires them to uphold moral principles in their operations and to increase social and environmental responsibility in order to be accepted by society. The concept of social contract contained in legitimacy theory is that all social institutions, including companies, operate among society through a social contract (Kholmi, Nafiza, 2022). Legitimacy theory also shows that in order to be accepted by society, companies must be transparent about their social actions if they want to ensure their continued existence (Daromes, Gunawan, 2020). The basis of legitimacy theory is the social contract that unites a business with the community it serves and uses its resources (Sulistiawati, Dirgantari, 2016).

Companies must consider the interests of society because their establishment depends on the support of society. Referring to the social contract, which discusses rights and obligations and adapts to the conditions of society (Hartono, 2018) social contract requires companies to uphold high ethical standards in achieving the main goal of increasing profits but not neglecting social and environmental responsibilities (Supriatiningsih et al., 2024; Purwanti, 2021; Taqi et al., 2024). Investors choose to invest in organizations that demonstrate high levels of CSR (Bissoon, 2018). Companies use financial reports as disclosures to describe the impression of environmental responsibility, so that companies are accepted by society and can continue to access resources (Utomo, 2019). The application of this theory is very balanced with green accounting, which states that people's health is closely related to the environment in which they live. The implementation of initiatives that meet society's expectations will improve the company's reputation and impact its profitability.

2.1.2. Stakeholder Theory

Stakeholder theory is a body of principles and practices that address stakeholders, moral principles, legal requirements, social and environmental issues, and the business community's commitment to sustainable development (Wati, 2019). Company management, which is involved in building connections with stakeholders, determines the business success of the organization. The main objective of stakeholder theory is to assist business management in maximizing the value generated as a result of decisions made and minimizing potential stakeholder losses.

Stakeholders are not only creditors and investors, but also the environment as a component of social life, in addition to suppliers, customers, governments, local communities, workers, trade associations, and so on. Companies continue to maintain their image by engaging in corporate social responsibility efforts and disclosures. In order for the company to carry out its commercial operations, it must be responsible to interested parties, in this case, both internal and external stakeholders of the company as well as capital owners (shareholders) (Dianty, Nurrahim, 2022). Because the company will try harder to meet stakeholder demands by engaging in activities and disclosing its corporate social responsibility. Every stakeholder has the right to obtain information about business activities so that they can make informed decisions. This issue is referred to as stakeholder theory (Sulistiawati, Dirgantari 2016).

It can be concluded that the company's ability to survive is greatly and greatly influenced by the level of support it receives from stakeholders. This stakeholder support can help the company perform better, which has a greater influence on the resulting good reputation. Users of financial statements, as well as future investors and customers who will invest money in the company and buy its products, will be attracted to companies with a positive reputation.

2.1.3. Green Accounting

According to Lako (2018), green accounting is the procedure for collecting information about matters, transactions, events, or the impact of economic, social, and environmental activities

on society, the environment, and the business itself in an integrated accounting information reporting package to help users assess and make economic and non-economic decisions. Green accounting is an accounting method that recognizes, seeks to identify, and attempts to mitigate the negative environmental effects of using Conventional reporting practices. It also recognizes environment-related costs and revenues separately from those associated with other factors in conventional reporting systems (Alim, Puji, 2021).

A business that practices sound green accounting shows that it cares about the environment, as well as the quality and safety of its products, its corporate social responsibility obligations to society, and the health and well-being of its employees. High environmental and social concern is an indicator that businesses care about their environmental performance and have adopted corporate social responsibility well (Abdullah, Amiruddin, 2020). The development of Green Accounting is intended to promote corporate responsibility, increase environmental transparency, and help organizations respond to environmental issues. Information about environment-related activities is the main purpose of green accounting (Riyadh et al., 2020). Green Accounting really needs to be applied by various types of companies to make a quantitative evaluation of the costs and consequences of environmental protection.

The purpose of Green Accounting according to Almunawwaroh (2022) is a way to increase the efficiency of environmental management by evaluating environmental activities by evaluating environmental activities based on the point of view of costs (environmental costs) and benefits or impacts (economic benefits). Green Accounting really needs to be applied by various types of companies to make a quantitative evaluation of the costs and consequences of environmental protection. According to Abdullah & Amiruddin (2020) entities that disclose reports on their environmental responsibilities will encourage consumers to choose or use products owned by these entities. In addition, companies that are committed to implementing green accounting will show that the company is not hands-off on the effects of its business activities, this is what can help companies face challenges from society.

Green Accounting measurement uses PROPER results because the PROPER rating is quite reliable as a measure of the company's environmental performance. The company's environmental performance is measured by the achievements of companies that participate in the PROPER program which is one of the efforts made by the Ministry of Environment (KLH). The company's environment is measured by the achievements of companies participating in the PROPER program, which is one of the efforts made by the Ministry of Environment (KLH) to encourage corporate structuring in environmental management through information instruments.

Through PROPER, the company's environmental performance is measured using colours, namely gold, green, blue, red and black.

2.1.4. Corporate Social Responsibility

According to Wati (2019) With the concept of Corporate Social Responsibility (CSR), companies are no longer only expected to think about their one profit, which includes their economy or company value, but also their triple bottom line, which includes their duty to social and environmental issues. Corporate Social Responsibility (CSR) arises from the many

public criticisms of companies that are considered to be only looking for profit, to improve the image of the company is aware to implement Corporate Social Responsibility (Wulandari, et al., 2016). Despite the fact that there are still many companies that fail to fulfil their social obligations, the concept of Corporate Social Responsibility (CSR) in Indonesia has begun to advance in a more positive direction in response to the increasing attention of the international community to the growth of multinational companies operating in Indonesia.

The purpose of implementing Corporate Social Responsibility (CSR) disclosure allows companies to convey the social responsibility they have carried out over a certain period of time (Asokawati, Roekhudin, 2019). Corporate Social Responsibility (CSR) is considered capable of increasing the company's profitability through investors who invest in it, the company is considered to have carried out transparency regarding social and environmental responsibility if it has carried out Corporate Social Responsibility (CSR). Reporting on Corporate Social Responsibility (CSR) activities will be beneficial for improving goodwill or favourable perceptions. In this case, it will be considered social marketing, which will then have an impact on how consumers perceive the company's brand.

Every company that goes public often explains activities related to corporate social responsibility (CSR) in its annual financial statements. corporate social responsibility (CSR) is considered capable of increasing the company's profitability through investors who invest in it, the company is considered to have carried out transparency related to social and environmental responsibility if it has carried out corporate social responsibility (CSR).

Corporate social responsibility (CSR) reporting will also provide benefits in improving the reputation or positive image of the company. In this case, it will be said as social marketing which then has an impact on the company's brand image that will be formed. The company's good brand image will also have an impact on the possibility of product capacity that will be absorbed by the community and further impact on increased sales and increased profits. The purpose of disclosing Corporate Social Responsibility is to increase the legitimacy of the community towards the company. Corporate Social Responsibility (CSR) is also considered capable of building consumer loyalty, expanding market networks, increasing competitiveness, attracting investors, and building a company's brand (Wulandari, et al., 2016).

Corporate Social Responsibility (CSR) in Indonesia, regulated in the Law of the Republic of Indonesia Number 40 of 2007 concerning limited liability companies in Article 1 paragraph 3, namely social and environmental responsibility is the company's commitment to participate in sustainable economic development in order to improve the quality of life and the environment that is beneficial, both for the company itself, the local community, and society in general. Corporate Social Responsibility (CSR) is a business strategy in the company to maintain or improve competitiveness through corporate reputation and image. In reporting Corporate Social Responsibility (CSR), the company publishes a Sustainability Report that provides disclosure of all impacts of the company's activities, both positive and negative. The guidelines used as material in the disclosure of Corporate Social Responsibility (CSR) is the Global Reporting Initiative (GRI).

GRI (Global Reporting Initiative) is an independent international organization that helps businesses and other organizations take responsibility for their impacts, by giving them a

common global language to communicate those impacts. We provide the world's most widely used standards for sustainability reporting GRI standards (www.globalreporting.org) The Global Reporting Initiative (GRI) encourages the adoption of sustainability reporting as a way for companies and organizations to become more sustainable and contribute to a sustainable global economy. The G4 Guidelines include economic performance indicators, environmental performance indicators, and social performance indicators.

Corporate Social Responsibility (CSR) is a business approach used by organizations to improve or maintain their competitiveness through their reputation and image. As part of Corporate Social Responsibility (CSR) reporting, companies release sustainability reports that detail all of the company's impacts, both good and bad. Thus, companies should practice Corporate Social Responsibility (CSR) to help improve the long-term welfare and living standards of society and the environment, in addition to teaching short-term profit maximization.

In this study, a dichotomous approach is used, namely giving a score for each indicator, given a score of 1 if the company discloses, and 0 if the company does not disclose. Later, from the 91 items in GRI G4, the number of indicators that have been disclosed by the company will be accumulated. The following is the calculation formula for Corporate Social Responsibility (CSR):

$$CSR\ Ij = \frac{\Sigma xij}{nj}$$

Description:

CSR Ij: Corporate Social Responsibility (CSR) Index of the Company

nj: Number of items for Corporate Social Responsibility (CSR) disclosure in the company

Σ XIj: Total number of Corporate Social Responsibility (CSR) disclosures by the company

Score 1: If the item is successfully disclosed and

Score 0: If the item is not disclosed there are 91 indicators so that n = 91

In the specific standard, GRI-G4 for the economic category consists of 4 aspects with 9 indicators. The social category consists of 20 aspects with 48 indicators and the environmental category consists of 12 aspects with 34 indicators. Overall it consists of 91 disclosure indicators.

2.1.5. Profitability

Profitability is a ratio that measures the overall effectiveness of management which is addressed by the size of the level of profit obtained in relation to sales and investment. the better the profitability ratio, the better it illustrates the company's high profit-making ability (Kalbuana et al., 2022). Profitability is a company's desire and ability to earn profits from the company's operating activities (Fauzan, Salira, 2022). Profit is a description of the

performance achieved from the general transaction process carried out by the company during a certain period. Profit is used as an indicator for stakeholders to assess the extent of management performance in managing a company. The level of the company's ability to make a profit can be seen and measured by analyzing financial statements through profitability ratios. This ratio shows the success of a company in generating profits.

According to Wati (2018) Profitability ratio is a ratio that displays the final result of a number of policies and decisions. It also displays the final results of a number of policies and decisions, as well as the combined impact of debt, asset management, and liquidity on operating results. Increased profitability indicates that the company can manage its operations effectively and efficiently (Sulistiawati, Dirgantari, 2016; Budiharjo, et al., 2020).

Effective management is needed to generate significant profits because investors place a high value on the company's profitability when making decisions (Andika, 2021). Profitability measures a company's capacity to generate profits and serves as a benchmark for evaluating its financial performance.

Measurable profitability will make it easier for investors, creditors, and stakeholders to assess the condition of the company. Both internal and external parties, especially those who have common interests with the company, have goals and benefits related to profitability.

The ratio used in this study is return on assets (ROA). ROA analysis measures the company's ability to generate profits using the total assets (wealth) owned by the company after adjusting for the costs of funding these assets. The company's high return on assets (ROA) value indicates that the company has good prospects, so that it can increase the company's value. ROA can be calculated using the following formula:

$$\text{Return On Asset} = \frac{\text{Net Profit before tax}}{\text{Total Asset}} \times 100$$

2.2. Hypothesis

2.2.1. Effect of Green Accounting on Profitability

Green accounting is a part of accounting that is able to control environmental costs (Endiana et al., 2020). Therefore, applying green accounting in business can generate higher revenue. Companies will gain social benefits in the form of a favourable reputation. A positive reputation can also persuade investors to invest in the company, allowing it to expand its clientele and increase its chances of increasing revenue. Research conducted (Nisa et al., 2020) shows that green accounting has a positive effect on profitability due to the environmental performance carried out by the company. The research conducted (Chasbiandani et al., 2019) shows that green accounting and environmental performance have a positive effect on company profitability using ROA and ROE analysis.

H1: Green accounting has a positive and significant effect on profitability.

2.2.2. The Effect of Corporate Social Responsibility on Profitability.

Profits will increase when businesses practice corporate social responsibility or social responsibility disclosure. The design of Corporate Social Responsibility (CSR) is in line with the triple-bottom-line concept of profit, planet, and people. Because Corporate Social Responsibility (CSR) is a component of the company's long-term investment business strategy, the company can increase its corporate value and image through this, as well as attract customers to be able to buy the company's products, maximizing its profitability (Putu Purnama Dewi, Wardani, 2022). The research conducted (Wulandari, 2020) shows that the ROA, ROE, and NPM ratios which are proxies for company profitability have a positive and significant impact on CSR Disclosure variables.

Research conducted by (Pratiwi et al., 2020) on the Effect of Corporate Social Responsibility (CSR) on Profitability in Banking Companies Listed on the IDX. The results of this study state that corporate social responsibility (CSR) has no significant effect on ROA. Meanwhile, previous research (Erlangga et al., 2021) put forward findings showing that the application of green accounting and disclosure of corporate social responsibility has a beneficial and significant impact on profitability and brand value.

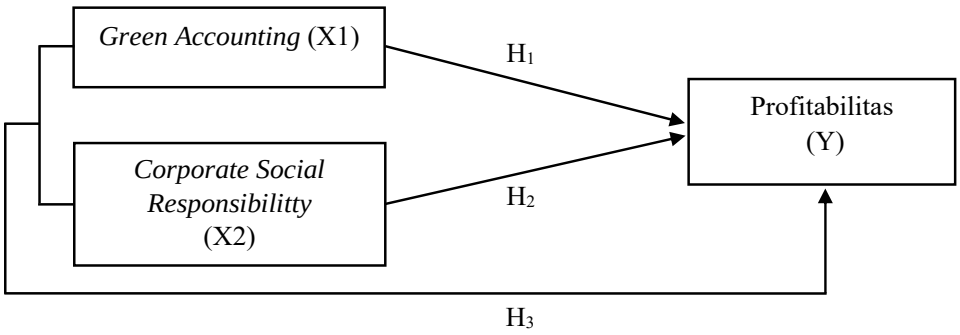
H2: Corporate Social Responsibility has a positive and significant effect on profitability

2.2.3. The Effect of Green Accounting and Corporate Social Responsibility on Profitability

Research conducted (Alim, Puji, 2021) simultaneously Green Accounting & CSR disclosure affect profitability (ROA). Meanwhile, previous research by (Dewi and Wardani, 2022) concluded that simultaneously Green Accounting and Corporate Social Responsibility have an effect on the dependent variable (profitability).

H3: Green Accounting and Corporate Social Responsibility have a positive and significant effect on profitability.

Figure 1. Research Framework



Source: Research Data, 2023.

3. Research Methods

This research design is causal research to test hypotheses about the effect of one or more variables (independent variables) on other variables (dependent variables). This research is quantitative, quantitative research emphasizes testing theories through measuring research variables with numbers and analyzing data with statistical procedures (Indriantoro, Supomo, 2014). Quantitative research was conducted in this study using secondary data obtained from annual reports and sustainability reports of companies listed on the Jakarta Islamic Index for the 2017-2021 period and the results of the PROPER rating assessment for the 2017-2021 period published by the Ministry of Environment and Forestry of the Republic of Indonesia (KLHK).

Table 1. Purposive Sampling Results/Sample Criteria

No	Remark	Total
1	Companies joining the Jakarta Islamic Index (JII) during the 2017-2021 period	30
2	Companies that are not consistently included in the Jakarta Islamic Index (JII) during the 2017-2021 period	(18)
3	Companies whose financial reports do not use the Rupiah currency	(2)
4	Companies that have losses	(1)
5	Companies that do not participate in the Company Work Assessment Program (PROPER)	(2)
6	Number of companies that meet the sample criteria	8
7	Year of research	5
8	Number of research observations	40

Source: Author data, 2022.

Definition and Operational Research Variables

3.1. Dependent Variable

The dependent variable is the variable that is affected by the independent variable or that is produced as a result of its presence. Profitability is the dependent variable of the study.

3.2. Independent Variable

Independent variables are variables that affect or cause changes or the emergence of dependent variables. There are 2 independent variables in this study, namely Green Accounting and Corporate Social Responsibility.

The research population was carried out in companies listed on the Jakarta Islamic Index during the 2017-2021 period, while the sampling used a purposive sampling technique.

The criteria determined in determining the sample in this study are:

Companies listed on the Jakarta Islamic Index in 2017-2021. Financial Statements Companies that publish their annual financial statements comprehensively during the 2017-2021 period. Company financial reports and company sustainability reports that have complete data availability on Green Accounting, Corporate Social Responsibility and Profitability variables.

4. Result And Discussion

4.1. Result

Table 2 shows that during the observation period (2017-2021) the minimum value of profitability was 0.004500 originating from PT Aneka Tambang Tbk. While the maximum value of the company's profitability is 4.66600 which comes from PT Unilever Tbk. The profitability variable (ROA) shows that during the research observation period, the average value of ROA was 0.126913 with a standard deviation of 0.107549.

Table 2. Results of Descriptive Statistical Analysis

	PROF	GA	CSR
Mean	0,126913	3,725000	0,398625
Median	0,096550	4,000000	0,390100
Maximum	0,466600	5,000000	0,648400
Minimum	0,004500	3,000000	0,131900
Stand Dev	0,107549	0,750641	0,132736
Observations	40	40	40

Source: Data processed by researchers, Eviews 2023.

During the research period, Green Accounting had a minimum value of 3 units originating from PT AKR Corporindo Tbk, PT Indofood CBP Tbk, PT Kalbe Farma Tbk, PT United Tractors Tbk and PT Unilever Tbk. While the maximum value of 5 units was obtained from PT Aneka Tambang (Persero) Tbk and PT Tambang Batubara Bukit Asam Tbk. The Green Accounting variable (X1) shows that during the research observation period, the average value of PROPER was 3.73 with a standard deviation of 0.750641.

The minimum value of corporate social responsibility as measured by the GRI-G4 indicator is 0.131900 obtained by PT Kalbe Farma Tbk. The maximum value of the dividend policy is 0.648400 obtained by PT Tambang Batubara Bukit Asam Tbk. The corporate social responsibility variable (X2) shows that during the research observation period, the average value was 0.398625 with a standard deviation of this variable of 0.132736.

4.1.1. Panel Data Regression Analysis

Based on the estimation test results, the model used in this study to test firm value is the Fixed Effect Model using General Least Square (weighted cross-section). The following table shows the regression results of the fixed effect model using the Eviews 12 application program:

Table 3. Fixed Effect Model Regression Results

Variable	Coefficient	Prob.
C	0,127610	0,0000
GA	0,010001	0,0348
CSR	-0,095204	0,0060

Source: Data processed by researchers, Eviews 2023.

Based on the results of the panel data regression equation in Table 4.2 as follows:

Prof = 0,127610 + 0,010001 GA – 0.095204 CSR + e

Description:

a : Constant

Prof : Profitabilitas

β : Linear Regression Coefficient

GA : Green Accounting

CSR : Corporate Social Responsibility

e : error

Based on the regression results using Eviews 12 above, the regression analysis equation results for panel data in this study can be obtained as follows:

In Table 3, it can be seen that the constant value is 0.127610, which means that if the green accounting variable and the corporate social responsibility variable have a value of zero (constant), profitability is 0.127610.

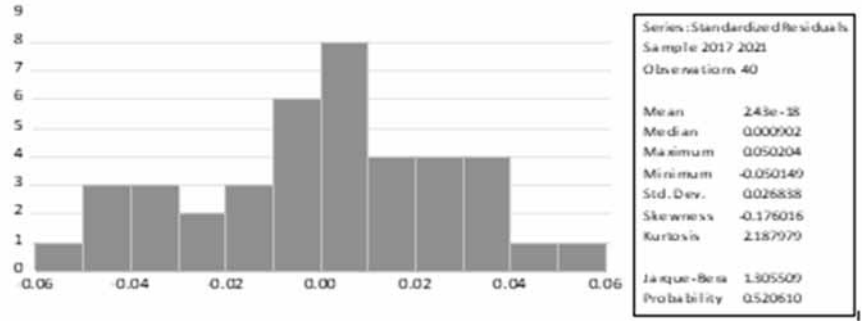
The green accounting coefficient has a value of 0.010001 which means that the green accounting variable has a positive influence on the profitability variable and every one unit increase in the green accounting variable will increase the value of the profitability variable by 0.010001. Because the beta coefficient value on the green accounting variable is furthest away from 0, it can be said that the green accounting variable is the most dominant variable.

The corporate social responsibility coefficient has a value of -0.095204 which means that the corporate social responsibility variable has a negative effect on the profitability variable, and every one unit increase in the corporate social responsibility variable will reduce the value of the profitability variable by -0.095204.

4.1.2. Classic Assumption Test

Normality Test

Figure 2. Normality test



Source: Data processed by researchers, Eviews 2023.

From the picture above, the normality test shows that the probability value is 0.520610 > 0.05, so the distribution of the regression model is normal.

Multicollinearity test

Table 4. Multicollinearity test

	GA	CSR
GA	1.000000	0.161323
CSR	0.161323	1.000000

Source: Data processed by researchers, Eviews 2023

Based on the review output, the results of the multicollinearity test, the correlation coefficient for green accounting (GA) and Corporate Social Responsibility (CSR) is 0.161323 < 0.85. So it can be concluded that it is free from multicollinearity or passes the multicollinearity test.

Heteroscedasticity test

Table 5. Heteroscedasticity test

F-statistic	2.241012	Prob F (2.37)	0.1205
Obs*R-squared	4.321895	Prob.Chi_Square (2)	0.1152
Scaled explained SS	4.74973	Prob. Chi_Square (2)	0.0930

Source: Data processed by researchers, Eviews 2023.

The Obs*R-Squared Probability value is 0.1152 > 0.05, so it can be concluded that the data does not have symptoms of heteroscedasticity or the assumption of the heteroscedasticity test has been fulfilled or passed

4.1.3. Hypothesis Test Results

4.1.3.1. Coefficient of Determination (R^2)

Table 6. Test Results of the Coefficient of Determination R^2

Indicator	Prob.
Adjusted R-squared	0,889727

Source: Data processed by researchers, Eviews 2023.

The results of the coefficient of determination test in this study show an Adjusted R-square value of 0.889727, which means that 88.9727% of the variation in firm value can be explained by the independent variable. While the remaining 11.0273% is explained by other variables not examined in this study.

T Test (Partial Test)

Table 7. Hypothesis Test Results (T Test)

Variabel	t_{hitung}	t_{tabel}	Prob.
GA	2,210564	2,026192	0,0348
CSR	-2,957087	2,026192	0,0060

Source: Data processed by researchers, Eviews 2023.

A partial test (t-test) is conducted to determine whether the independent variables have an influence on the dependent variable. If the t value is obtained < 0.05, the hypothesis is accepted, proving that there is an influence of the independent variable on the dependent variable. If the t value > 0.05 is obtained, the hypothesis is rejected, proving that there is no influence of the independent variable on the dependent variable.

The results of the partial test (t-test) of the green accounting variable obtained a Tcount> Ttable value, which is 2.210564 > 2.026192 and has a positive direction with a significance of 0.0348 < 0.05. So it can be concluded that green accounting variables have a significant effect on company profitability. Thus hypothesis 1 is accepted.

Furthermore, the results show that the corporate social responsibility (CSR) variable has a value of Ttable > Tcount, which is 2.026192 > -2.957087 with a significance of 0.0060 < 0.05. This value shows a number smaller than 0.05, which means that the corporate social responsibility variable has a significant effect on company profitability. So it can be concluded that the corporate social responsibility variable has a significant effect on company profitability. Thus hypothesis 2 is accepted.

4.1.3.2. F Test (Partial Test)

Table 8. Hypothesis Test Results (F Test)

F-statistic	35,96304
Prob(F-statistic)	0,000000

Source: Data processed by researchers, Eviews 2023.

The F test is conducted to determine whether all independent variables simultaneously (together) affect the dependent variable. To see this relationship, it can be done by analyzing the results of its significance value with a level of 5% or 0.05. If the results obtained F < 0.05 can be stated that the hypothesis is accepted and vice versa if the results of F > 0.05 can be stated that the hypothesis is rejected.

The results of simultaneous significance testing resulted in a Fcount > Ftabel value, which is 35.96304 > 3.251924 with a significant F value of 0.000000 < 0.05. So it can be concluded that all independent variables, namely green accounting and corporate social responsibility together (simultaneously) affect the dependent variable, namely company profitability. Thus hypothesis 3 is accepted.

4.2. Discussion

4.2.1. The results show that the green accounting variable has a significant effect on company profitability. The results of this research strengthen previous research, namely (Endiana et al., 2020) regarding Green Accounting, Disclosure of Corporate Social Responsibility and Profitability of Manufacturing Companies can be based on the understanding that by implementing green accounting through environmental performance, namely by participating in the PROPER program which organized by the Ministry of Environment and Forestry of the Republic of Indonesia can increase the company's awareness of the surrounding environment and can indirectly be a positive value for its stakeholders. Through environmental performance assessments, we can show which companies contribute and care for the environment. Companies that participate in the PROPER program will gain trust and a positive image from consumers and the public and in this way can increase consumer interest in using the company's products, which will then have an impact on increasing the company's profitability. The results of this research are in line with those carried out by (Putri, et al., 2015) regarding the Impact of Implementing Green Accounting and Environmental Performance on the Profitability of Manufacturing Companies on the Indonesia Stock Exchange which shows that ROA has a positive effect on profitability. Because the better the Green Accounting disclosure, the higher the company's Profitability (ROA).

4.2.2. The results show that corporate social responsibility has a significant effect on profitability. Research conducted by Kholmi & Nafiza (2022, and Wulandari (2020) shows that Corporate Social Responsibility has a positive effect on profitability. This shows that the announcement of CSR activity information provides a positive signal for the company to show good prospects (good news) in the future, thereby attracting stakeholders, including investors, creditors and consumers to cooperate with the company. Research influences profitability (ROA), which means that if we refer to the social contract theory which explains the company's obligation to provide benefits to society so that the company's activities can be seen as. However, in practice, companies that have implemented environmental social responsibility activities and good business ethics have not been able to attract investors to invest in their shares. One possible cause is the lack of investor perception and public awareness regarding the disclosure of social responsibility carried out by companies. Whether or not corporate social responsibility activities are disclosed cannot affect people's purchasing power so it has no influence on the company's profitability through ROA.

4.2.3. The research results show that green accounting and corporate social responsibility together (simultaneously) influence the dependent variable, namely company profitability.

The research results are in line with those conducted by Dewi (2022) and Alim (2021) showing that the implementation of green accounting and CSR disclosure simultaneously has a positive and significant effect on profitability. Research conducted by Dewi (2022) with the implementation of Green accounting & CSR disclosure can build a good image of the company in the eyes of the community & other stakeholders. This can encourage people's purchasing power so that sales will increase and will also have an impact on increasing profits and research carried out.

5. Conclusion

Conclusions are drawn based on the results of the analysis and discussion of the research used in accordance with the hypothesis that based on the hypothesis test, namely: the Green Accounting variable has a significant effect on company profitability. The corporate social responsibility variable has no effect on company profitability. In this research, the implementation of green accounting and corporate social responsibility simultaneously has a significant influence on profitability in companies listed on the Jakarta Islamic Index.

Suggestion

Based on the research results, the suggestions given through the research results are as follows: Sampling criteria should be developed in future research to allow for more variation in research. Add and change other variables to get better results. Changing the objects used apart from the Jakarta Islamic Index in subsequent research with more diverse samples. Using a research period with a longer period of time to get more accurate results in increasing company profitability.

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SUMMARIES

Dimitar Zlatinov, Pobeda Loukanova, Victor Yotzov, Grigor Sariisky, Iana Paliova, Sonya Georgieva

BULGARIAN ECONOMY IN 2023 – STRUCTURAL CHALLENGES AND MEDIUM-RUN PERSPECTIVES

The paper examines the current state and development of the Bulgarian economy in 2023, considering domestic and regional factors. We analyze the real sector by tracking GDP, inflation, and unemployment, linking these to EU processes. Emphasis is placed on labour market adjustments in the context of digitalization and transitioning to a climate-neutral economy. The sustainability of the fiscal sector is explored through financing the green and digital transition with EU funds, and the necessary policies to maintain fiscal stability. We discuss foreign trade prospects, considering the economic conditions and expectations for Bulgaria's main trading partners, the high dependence on euro area performance, and the specifics of foreign trade relations. The banking sector and the capital market analysis focus on the implications of European Central Bank monetary policy, regulatory actions of the Bulgarian National Bank, and risks to sector stability in a dynamic macroeconomic environment. Expectations and forecasts for the Bulgarian economy through 2026 are based on assumptions about global economic processes and local challenges. We make economic policy recommendations aimed at preserving the purchasing power of the population's income and restructuring certain fiscal measures.
Keywords: economic dynamics; labour market; digitalization and climate change; fiscal sustainability; foreign trade; banking sector; capital market; macroeconomic projections; economic policy recommendations
JEL: E2; E44; E47; E60

Shqiprim Jashari, Nail Reshidi

THE IMPACT OF SOCIAL MEDIA ON THE PERFORMANCE INDICATORS (PRODUCT DEVELOPMENT, MARKET DEVELOPMENT AND CUSTOMER LOYALTY) IN THE GASTRONOMY SECTOR

The aim of this study is to explore and assess the significance of social media in terms of their impact on market performance indicators, including product development, market development, and consumer loyalty.
This study utilized a sample of 279 companies operating in the HoReCa sector (Hotel, Restaurant, and Cafeteria) in Kosovo. To assess the impact of social networks on the gastronomy sector, a structural equation model was employed to analyse the collected data.
Based on our research, the results indicate a positive relationship between social media and performance indicators. However, it is worth noting that the correlation between social media and performance indicators was not particularly strong. This study adds to the existing body of literature on digital marketing strategies from an academic standpoint, highlighting the positive outcomes derived from the influence of social media through performance indicators. From a practical standpoint, the findings of this research suggest that the gastronomy sector can benefit from investing in a comprehensive digital marketing strategy based on the insights gained. Given that many businesses within this sector have a clear requirement for digital marketing and the appropriate platform design, effective management of the HoReCa sector can enable the development of an effective social media strategy that amplifies the impact of performance indicators.

Consequently, the paper begins with a theoretical explanation of the terms of digital marketing of social media, analysing the theoretical aspect of performance indicators such as product development, market development and customer loyalty. Then the paper continues with the hypotheses of the paper and presentation of the conceptual model.
By giving the paper the practical part of the work, the distribution of the questionnaires and finally the analysis of the results.
For clarification, in the paper we have relied on various literatures that have dealt with such variables and we have dealt with our case in Kosovo of these variables that we have called.
This research study makes unique contributions to the existing literature on social media and performance indicators specifically within the gastronomy sector. The novelty of this study lies in its efforts to enhance the comprehension of social media's impact through performance indicators, ultimately leading to improved performance in gastronomy services.
Keywords: social media; performance indicators; gastronomy sector; digital marketing.
JEL: M00; M20; M31

Tsvetan Davidkov, Yavor Yankulov

RELATIONSHIP BETWEEN LEADERSHIP BEHAVIOUR AND EMPLOYEE SATISFACTION IN AN ORGANISATION (BASED ON THE EXAMPLE OF THE SECTOR OF TRADE)

This article aims to establish the connection between managerial style and employee satisfaction. Two hypotheses are examined, based on satisfaction markers and different management techniques: X1. The significant correspondence is between management style and job satisfaction; X2. Employees who favour their manager's style are more satisfied than those who seek a different manager. Both hypotheses are proven. To achieve higher satisfaction having an attentive manager ranks higher than participating in the decision-making. Results point to specific actions that can be taken in SLAES spheres to boost job satisfaction. Such actions include stronger involvement in the organisation, better performance, lower turnover and others. Those results are based on the questionnaires amongst 1145 participants from the SLAES sector (of which 865 are traders by profession). The conclusions from this paper are applicable in the mentioned field.
Keywords: leadership; behaviour; job satisfaction; influence
JEL: L29; L81; M14; J28

Tringë Krasniqi, Aleksandra Janeska Iliev, Ljubomir Drakulevski

DISCOVERING THE RELATIONSHIP BETWEEN LEADERSHIP STYLES AND ORGANIZATIONAL COMMITMENT: THE CASE OF THE PRIVATE SECTOR OF A DEVELOPING COUNTRY

There has been great interest evolving around leadership ever since so, scholars have been challenged by various variables that have been considered relevant for discovering some of the complexities related to leaders. The output orientation of organizational commitment and employee engagement naturally seeks a relationship with leadership. Hence discovering the relationships among leadership and organizational commitment considering the context of Kosovo is one of the main aims of this paper. The presented work reflects three leadership styles that will be considered: laissez-faire, transactional, and transformational, and three dimensions of organizational commitment: affective, normative, and continuance. The main aim is oriented towards understanding relationships and what they will bring to the organizational context. At this stage, the paper utilizes Pearson's Correlation, whereas collected data was gathered through questionnaires distributed to employees and managers in

the private sector in Kosovo. A total of 202 samples were collected using random sampling from diverse industries including retail, manufacturing, service, construction, and wholesale. The results of this paper provide some insights and, in this respect, confirm that leadership styles have a moderate positive correlation with organizational commitment. That implies that organizational commitment will eventually determine leadership in organizations and in this line bring forward new possible discussions in the respective field.

Keywords: Leadership styles; laissez-faire; transactional; transformational; organizational commitment
JEL: M12; D23; D91

Stoyan Kirov, Milena Beneva

MEAN-VARIANCE ENVIRONMENTAL INVESTMENT OPTIMIZATION OF BULGARIAN PRIVATE PENSION FUNDS

Pension funds' investments are increasingly linked to the changes in climate and environmental protection. The integration of environmental, social and governance (ESG) factors into their investment process is still varying in different countries and regions. The limited number of studies on the application of the ESG investment approach by private pension funds in Bulgaria shows that the country lags behind the trends in Europe.

Although pension funds do not perceive environmental investments as riskier or less profitable than conventional ones, many of them remain cautious due to the shorter-term financial performance data of green assets. To achieve adequate retirement savings and a high replacement rate saving "more and for longer" is not enough. As far as the topic of portfolio investment performance is on the agenda, one would reasonably ask what the reflection of environmental investments would be on the widely diversified portfolios of pension funds in the country.

The present research is dedicated to a mean-variance (MV) portfolio optimization involving a selection of conventional and green assets under different constraints and "shades of green" by using historical data. The empirical results from the portfolio optimizations performed shed light on the questions raised and complement the motivational spectrum "in favour of" or "against" environmental investment.

Keywords: private pension funds; environmental investments; ESG factors; portfolio optimization; mean-variance model; efficient frontier
JEL: J32; G11; Q56

Syella Nurhaliza, Ariodillah Hidayat, Siti Rohima, Rasyida Pertiwi, Liliana, Sri Andaiyani, Xenaneira Shodrokova, Ichsan Hamidi

THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND FINANCIAL STABILITY BANKING INDUSTRY IN G20 EMERGING MARKET COUNTRIES: A PANEL DATA EVIDENCE

This study aims to identify the effect of the financial inclusion sub-index on financial stability in the banking industry proxied by Bank Z Score. This research uses secondary data in the form of panel data with annual data from 2011 to 2021 and the scope of 5 G20 Emerging Market countries. The analysis technique in this study uses the Fixed Effect Model (FEM). The results showed that the banking penetration dimension had a negative and significant effect, bank availability had a significant positive effect, while bank usage had a positive but not significant effect on banking stability. To achieve better financial inclusion and sustainable banking stability in emerging market countries, collaboration between governments, regulators, financial institutions, and other

stakeholders is needed. Effective banking regulation and supervision can be the basis for introducing new financial practices and services that support financial inclusion for all levels of society.
Keywords: Financial Inclusion; Financial Stability; Emerging Market; Banking Industry
JEL: E52; G21

Raya Kanazireva

CORPORATE ENTREPRENEURSHIP AND INNOVATION IN STATE-OWNED ENTERPRISES: RESULTS FROM BULGARIA

In this article, we explore the paradigms of corporate entrepreneurship and innovation in state-owned enterprises (SOEs) in Bulgaria. The author has conducted qualitative research based on case studies with in-depth interviews with long-term executives in key Bulgarian SOEs. The results of the author's findings on the nature of innovation and barriers to innovation in Bulgarian SOEs are presented. Research results illustrate the nature of innovations in SOEs as well as management's understanding of innovation in the context of entrepreneurial activities. The results show the role of SOEs and their contribution to the level of innovation in the country's economy. A unique combination of barriers to innovation for SOEs are identified that are specific to the Bulgarian context. The study contributes to the understanding of the functional dynamics of innovations in SOEs in Bulgaria, offering conclusions and recommendations for policy development.
Keywords: entrepreneurship; corporate entrepreneurship; state-owned enterprises; SOEs; innovation; Bulgaria; dividend policy
JEL: L32; L26; O31

Genc Zhushi, Driton Qehaja

REMITTANCES, MIGRATIONS INTENTIONS, AND LABOUR PARTICIPATION IN KOSOVO

This paper examines the intricate nexus between remittances, migration, and the labour force. It aims to enlighten the interplay of migration and remittances, analyzed in isolation, and their collective impact on the labour market across varying demographical strata. This analysis assumes particular pertinence for Kosovo, characterized by a notable intensity of migration fluxes and remittances. This study uses biprobit techniques to alleviate the endogeneity inherent in remittance and migration to evaluate the correlation between those and the labour force. The empirical data from the Millennium Century Corporation's survey was conducted in Kosovo in 2017. According to the findings, remittances and migration have a significant role in shaping the dynamics of the labour force, affecting inequalities across gender, age, and educational attainment. We surfaced compelling evidence of the disincentivizing ramifications of remittances vis-à-vis the labour force.
Keywords: Migration; Remittances; labour Force Participation
JEL: F22; J61; O15; R23

Karolus Karni Lando, Achmad Sudiro, Wahdiyat Moko, Nur Khusniyah Indrawati

THE EFFECT OF SERVICE QUALITY ON RECERTIFICATION. MEDIATED BY CUSTOMER SATISFACTION AND RELATIONSHIP COMMITMENT

Providing certificates to companies is to maintain the existence of the company and to be more competitive. The existence of certification service companies in Indonesia from year to year is increasing, and this will provide its phenomenon in maintaining customers among companies in charge of this service because every company in charge of this certification service will compete with each other to retain customers and attract customers from other companies in a similar field. This study aims to determine whether the intention to recertify is influenced by mediating variables, namely customer satisfaction and relationship commitment, or predictor variables, namely service quality, from certification service companies. In addition, this study synergises two intermediary factors, namely customer satisfaction and relationship commitment, in examining service quality on recertification. Factor analysis in this survey is to test the indicators of questions or statements as forming factors. The test results of the factors show that all values meet the validity and reliability. The service quality of the product or service produced by the company greatly affects customer satisfaction and relationship commitment. Because recertification is indirectly influenced by service quality. If customers have the intention to recertify, it is not influenced by customer satisfaction based on service quality but is influenced by relationship commitment. Ongoing communication is an essential factor in maintaining relationship commitment between the company and the client.
Keywords: service quality; customer satisfaction; relationship commitment; recertification
JEL: D18; L84; M21; M31

Maria Suryaningsih, Supriatiningsih, Susi Susilawati, Samukri, Rizki Novianti

THE EFFECT OF GREEN ACCOUNTING IMPLEMENTATION AND CORPORATE SOCIAL RESPONSIBILITY ON COMPANY PROFITABILITY

This study was conducted to determine how the implementation of green accounting and corporate social responsibility affects company profitability. The independent variables are green accounting and corporate social responsibility and the dependent variable is company profitability. Companies listed on the Indonesia Stock Exchange that are members of the Jakarta Islamic Index 2017-2021 group are the research population. The sample obtained was 8 companies or 40 observations for 5 years of observation. The approach in selecting samples is called purposive sampling. Multiple linear regression analysis was performed in this study using e-views 12 statistics. The results showed that green accounting and corporate social responsibility (CSR) have an influence on company profitability. In the 2017-2021 period, green accounting and corporate social responsibility together had a significant effect on the profitability of companies included in the Jakarta Islamic Index.
Keywords: Green Accounting; Corporate Social Responsibility; Profitability
JEL: G32; G02; M1; G34; Z1

Submit Article THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND INDUSTRY IN G20 EMERGING MARKET COUNTRIES: A PANEL DATA EVIDE

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Dear Senior Editor in Chief,
Economic Studies (Ikonomicheski Izsledvania) journal

I am Ariodillah Hidayat from Universitas Sriwijaya, Indonesia.
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Looking forward to your comments and response.
Thank you.

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THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND FINANCIAL STABILITY BANKING INDUSTRY IN G20 EMERGING MARKET COUNTRIES: A PANEL DATA EVIDENCE

by Hidayat Ariodillah

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ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ
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THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND FINANCIAL STABILITY BANKING INDUSTRY IN G20 EMERGING MARKET COUNTRIES: A PANEL DATA EVIDENCE[9]

This study aims to identify the effect of the financial inclusion sub-index on financial stability in the banking industry proxied by Bank Z Score. This research uses secondary data in the form of panel data with annual data from 2011 to 2021 and the scope of 5 G20 Emerging Market countries. The analysis technique in this study uses the Fixed Effect Model (FEM). The results showed that the banking penetration dimension had a negative and significant effect, bank availability had a significant positive effect, while bank usage had a positive but not significant effect on banking stability. To achieve better financial inclusion and sustainable banking stability in emerging market countries, collaboration between governments, regulators, financial institutions, and other stakeholders is needed. Effective banking regulation and supervision can be the basis for introducing new financial practices and services that support financial inclusion for all levels of society.

Keywords: Financial Inclusion; Financial Stability; Emerging Market; Banking Industry
JEL: E52; G21

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1. Introduction

In the financial world, maintaining financial system stability is a top priority for all countries (Platonova et al., 2018). Past financial crises, such as the global financial crisis of 2008, have revealed how important it is to pay attention to financial system stability as a precaution against widespread and prolonged economic losses (Bordo, Meissner, 2016). Therefore, the management and maintenance of financial system stability has become a major focus in economic policy and financial regulation. Babar et al. (2019) support the idea that financial stability can be achieved through operational efficiency of the financial system, control of financial risks, and efforts to minimize the impact of systemic crises.

Financial inclusion became an important highlight after the 2008 crisis, considering its impact, especially on those at the lowest levels of society and often do not have access to banking, especially in developing countries (Soederberg, 2013). Although various definitions of financial inclusion have been put forward by the authors, it should be noted that there is a close relationship between financial inclusion and financial stability, especially in the face of global economic challenges. Financial inclusion provides opportunities for individuals and businesses to access financial products and services that are not only useful, but also affordable according to their needs, such as transactions, payments, savings, credit, and insurance (World Bank, 2022). In this context, Bank Indonesia (2011) states that financial inclusion includes circumstances where all adults of working age have effective access to credit, savings, payments, and insurance from formal service providers. This understanding is reinforced by Patwardhan's (2018) view, which explains that financial inclusion is not just a means, but as a key to achieving universal access to financial services at affordable prices.

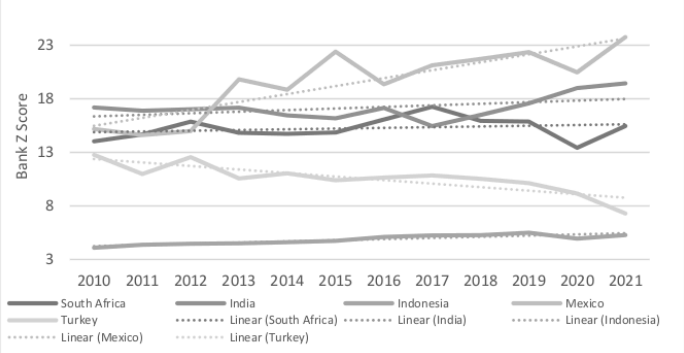
Many emerging market countries have high levels of economic inequality, namely the gap between rich and poor (Nature & Paramatic, 2016). Inequality can affect people's access to and participation in formal financial services (Demir et al., 2022). Financially underserved communities tend to have poorer asset quality and are vulnerable to higher credit risk, which will impact banking stability. Emerging market countries often face challenges in terms of infrastructure and access to technology (Marquis, Raynard, 2015). Technology limitations can also affect banks' ability to manage credit and liquidity risk efficiently (Shair et al., 2021). Emerging market countries are often in complex geopolitical environments and are vulnerable to systemic risks, such as global economic crises or currency fluctuations (Li, Huang, Chen, 2021).

The ongoing COVID-19 crisis has reinforced the need to increase digital financial inclusion. In 2021, additional needs due to the COVID-19 pandemic have increased strong linkages between Emerging Market countries and domestic banks (Feyen et al., 2021). The surge in sovereign debt by domestic banks of Emerging Market countries is a finding revealed in the global financial stability report published by the International Monetary Fund (2022). This phenomenon reflects the significant impact of the pandemic on the financial sector in these countries. In the face of global financial sector weakness and to address the crisis, various organizations and institutions, such as the World Bank, IMF, G20 countries, and the Alliance for Financial Inclusion, have launched initiatives to strengthen the financial inclusion agenda in both developing and developed countries (Čihák, Mare, Melecky, 2016). Global

cooperation within the framework of the G20 has also implemented a financial inclusion action plan since it was agreed in Seoul at the 2010 G20 Summit (Danisman, Tarazi, 2020).

Based on Figure 1, in 2020, most emerging market countries experienced a decline in the value of the Bank Z Score, indicating an increase in the vulnerability of the banking industry to bankruptcy risk (Chiaramonte et al., 2015; Khasawneh, 2016). This is related to the impact of the COVID-19 pandemic that affects the economy as a whole, including declining business performance, declining revenue, as well as increasing credit risk and economic uncertainty. The decline in Bank Z Score reflects significant pressure on the banking industry and indicates potential systemic risks that could disrupt financial stability (Klomp, 2014). However, as we head into 2021, there are signs of recovery and improvement in banking stability in various countries over time. This can be due to policy measures taken by financial and monetary authorities to overcome the negative impact of the pandemic (Elnahass, Trinh, Li, 2021). Among the measures are fiscal and monetary stimulus, liquidity assistance, and regulatory intervention aimed at maintaining the stability of the banking industry.

Figure 1. Bank Z Score (Banking Stability) of G20 Emerging Market Countries



Source: World Bank (2011-2021).

Despite signs of recovery, it should be noted that the situation may vary between different countries and banking sectors in Emerging Market countries. Some countries are experiencing faster recovery and showing more significant improvements in banking stability, while others may still face greater challenges in coping with the impact of the pandemic on their banking industries. Thus, careful monitoring of the stability of the banking industry and an in-depth assessment of the vulnerability of the banking industry amid the COVID-19 pandemic remain important priorities (Siregar, Gunawan, Saputro, 2021).

Some measures in measuring financial inclusion include bank penetration, bank availability bank, and bank usage dimensions. With wider access, more equitable distribution, and active

public participation in formal financial services, credit and liquidity risk can be better managed (Hassan, Khan, Paltrinieri, 2019). Strengthening banking stability can have a positive impact on sustainable economic growth and overall public welfare (Sharma, 2016). Therefore, efforts to improve these three dimensions must be the focus in the design of financial inclusion policies and initiatives to achieve a strong and highly resilient banking system.

In previous studies, it was mentioned that the lack of financial inclusion can potentially lead to ongoing systemic crises (Čihák, et al., 2016). However, the literature also highlights a positive correlation between increased financial inclusion and increased financial stability, especially in the banking sector (Ahamed, Mallick, 2019; Alvi et al., 2020; Anarfo et al., 2019; Wang, Luo, 2022). In addition, increasing the number of domestic savers can help reduce dependence on external sources of funds that tend to be less stable in developing countries (Feghali, et al., 2021).

Although many studies have explored the impact of financial inclusion on banking stability, there is still debate in the literature. For example, Wu et al., (2017) investigated financial stability in developing countries, and Mulyaningsih et al. (2015) examined the effect of financial inclusion in the Indonesian banking industry. Both studies show that financial inclusion can improve banking stability. Mader (2018) argues that broader financial inclusion allows more individuals and businesses to access a variety of financial products and services. In addition, Renn et al., (2022) imply that financial inclusion can reduce systemic risk by distributing financial risk more evenly among various economic stakeholders. However, Vučinić (2020) research indicates the potential negative impact of high financial inclusion on banking stability, such as increased systemic risk or adverse competitive influences.

The importance of discussing and understanding the relationship between financial inclusion and financial stability is the purpose of this study. Further in-depth research is needed to investigate the effect of the financial inclusion subindex on banking system stability in developing countries that are members of the Group of Twenty (G20). In examining the relationship between financial inclusion and financial stability in the banking industries of G20 emerging market countries, this study makes an important contribution to investigating how smart and adaptive banking regulation and supervision supports the introduction of new financial practices and services, and the development of financial inclusion in a sustainable and stable manner in these countries. The choice of the G20 as the focus of research on emerging market countries, even though they have differences in financial systems, can be explained by considering the high diversity of economies and financial systems. This allows research to explore the impact of financial inclusion on financial stability by considering diverse economic contexts. Emerging market countries are major actors in the global economy and have a strategic role in the dynamics of international finance. The novelty of this research lies in the panel data approach used to analyse the relationship between financial inclusion and financial stability in the banking sector of G20 emerging market countries. The use of panel data provides advantages in overcoming endogeneity and heteroscedasticity problems, so that analysis results can be more robust and accurate. Therefore, this research does not only focus on local aspects, but also has implications for global policies and strategies in achieving better financial stability.

The series of structures for this research are as follows. After the introduction in Part 1, the researcher reviews relevant literature and formulates a hypothesis which is explained in Part 2, the data and research methodology are explained, then continued in Part 3, the researcher presents the analysis of variable movements, estimation results and discussion. Section 4 explains the conclusions and recommendations for emerging markets.

2. Research Methods

The data used in this research comes from various sources, including the International Monetary Fund (IMF) and the World Bank. This research focuses on five Emerging Market countries that are members of the G20, with data ranging from 2011 to 2021. The variables used in this study include Bank Z Score, Bank Penetration, Bank Availability, and Bank Usage.

This study uses quantitative analysis techniques using calculation methods with regression estimation techniques of Ordinary Least Square (OLS) panel data in analyzing the effect of financial inclusion on financial system stability. Where the financial inclusion sub-index is used as an independent variable and financial stability as a dependent variable, the functions of this study are formed as follows:

$$\mathbf{BZS} = \mathbf{f(PTT, AVB, USG)} \quad (1)$$

From the above function, a regression equation can be formed for this research model, which is as follows:

$$\mathbf{BZS_{i,t}} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 PTT_{i,t}} + \boldsymbol{\beta_2 AVB_{i,t}} + \boldsymbol{\beta_3 USG_{i,t}} + \mathbf{e_{it}} \quad (2)$$

BZS is the dependent variable, β is the coefficient of the independent variable, PTT is banking penetration, AVB is the bank availability dimension, USG is the bank usage dimension, it is time series and cross-section, and e is the error standard.

Table 1. Variable and Data Source Description

Variable	Notation	Variable Description	Formula	Data Sources
Bank Z-Score	BZS	Data Bank Z-Score Data		World Bank
Bank Penetration	PTT	Number of deposit accounts per 1000 adults in a commercial bank	$Di = wi\frac{Ai - mi}{Mi - mi}$	International Monetary Fund (IMF)
Bank Availability	AVB	Number of commercial bank branches per 100,000 adult population		International Monetary Fund (IMF)
Bank Usage	USG	Outstanding loans + Deposits from commercial banks as a percentage of GDP		International Monetary Fund (IMF)

Source: World Bank and International Monetary Fund (IMF), 2023.

Where: Di presents the dimensional value of the financial inclusion indicator, wi is the value weight, Ai is the actual value of the i-th dimension indicator, mi is the lowest value of the i-th dimension and Mi is the highest value of the i-th dimension.

3. Data Trend Analysis

3.1. Trend of Bank Penetration Dimensions in G20 Emerging Market Countries

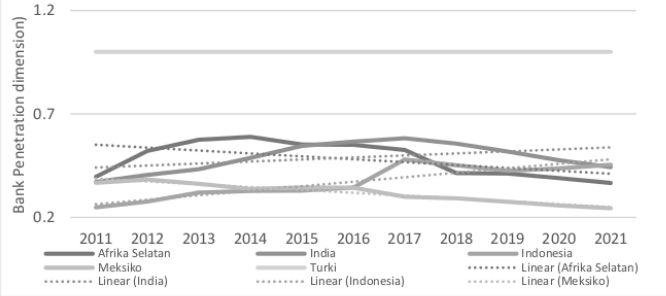
The bank penetration dimension is one of the key aspects in measuring financial inclusion, as banks as formal financial institutions play a central role in providing various financial services to the public (Sharma, 2016). In measuring financial inclusion, the bank penetration dimension includes various indicators such as the number of bank accounts, per capita bank account penetration, and the level of community participation in rural and urban areas. Information on the use of digital banking services also provides insight into the adoption of financial technology by the public, which can be key in increasing financial inclusion in the digital age (Aziz, Naima, 2021). The dimension of bank penetration in India is important given its large population and diverse income levels (Goel, Sharma, 2017). The dimension of bank penetration is also key to overcoming geographical differences in Mexico, Indonesia, and Turkey. High economic inequality in South Africa makes the bank penetration dimension critical in facing these challenges (Tchamyou, Asongu, Odhiambo, 2019).

The downward trend in the movement of bank penetration dimensions occurred in South Africa and Mexico. South Africa faced significant economic challenges during the period 2011-2021, including slow economic growth, high unemployment, and rising inflation (Blecher et al., 2017). Such economic instability can reduce public confidence in the banking industry and hinder participation in banking services (Han, Melecky, 2013). Income inequality can affect people's access to banking services, as most people do not have enough income to open a bank account or use banking products and services (de Haan and Sturm, 2017). The downward trend in bank penetration movements in Mexico was caused by economic instability during 2011-2021, including currency exchange rate fluctuations, high inflation, and fluctuating economic growth (Hsing et al., 2020; Baharumshah et al., 2017). Economic instability can reduce public confidence in the banking industry and cause uncertainty in using banking services.

Based on Figure 2, Turkey has the highest dimension of banking penetration among other countries. Turkey has the highest score with a score of one in the banking penetration dimension, making it the only country to achieve a high category of financial inclusion among the five countries studied. That is, Turkey has succeeded in providing its people with wide access to banking services (Yorulmaz, 2013; Atkinson & Messy, 2014). This success was able to contribute to the improvement of the stability of the Turkish financial system.

The Turkish government has successfully implemented active policies in promoting financial inclusion and increasing public access to banking services. Turkey has also successfully launched programs such as the Financial Literacy and Inclusion Program and Turca-style Microcredit aimed at improving financial literacy and expanding people's access to banking services (Güngen, 2017; Atkinson, 2017). This has enabled new approaches to providing financial services, such as digital banking and electronic payments. The adoption of this technology facilitates people's access to banking services through digital platforms, which in turn increases the penetration rate of banking in Turkey.

Figure 2. Trend of Bank Penetration Dimensions in Five G20 Emerging Market Countries

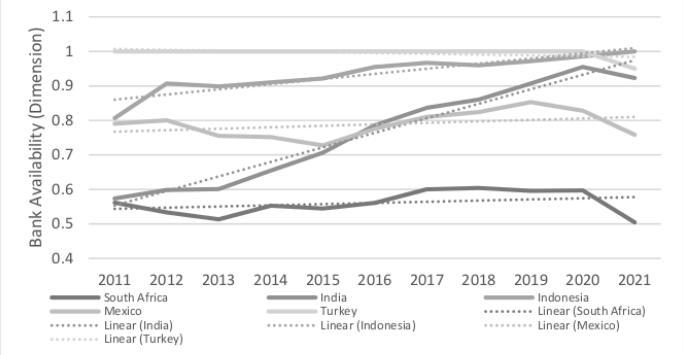


Source: International Monetary Fund (IMF) (2011-2021).

3.2. Trend of Bank Availability Dimensions in G20 Emerging Market Countries

The bank availability dimension is one of the important aspects in measuring financial inclusion, which reflects the level of availability and accessibility of formal financial institutions, especially banks, to the public (Sharma, 2016). The availability of bank branches is a key factor in ensuring public access to formal financial services (Iqbal, Sami, 2017). In Emerging Market countries such as India, Indonesia, and South Africa, bank availability becomes very important due to the large geographical area and diverse levels of settlement (Tang, Yao, 2018). Thus, the dimension of bank availability is an integral component in realizing an inclusive and resilient financial system at the global level. Based on Figure 3, in all countries studied there has been a downward trend since 2020. The COVID-19 pandemic has had a significant impact on the global financial sector, including in emerging market countries (Raza et al., 2022). To control the spread of the virus, many countries implemented lockdown policies and physical restrictions (Hoon, Wang, 2020; Han et al., 2020). This resulted in the temporary closure or reduction of bank branch operations. Lack of direct access to branch offices can hinder the physical availability of banks for the public. In response to physical restrictions, many banks are upgrading and expanding their online and mobile banking services (Kwan et al., 2020).

Figure 1. Trend of Bank Availability Dimensions in Five G20 Emerging Market Countries



Source: International Monetary Fund (IMF) (2011-2021).

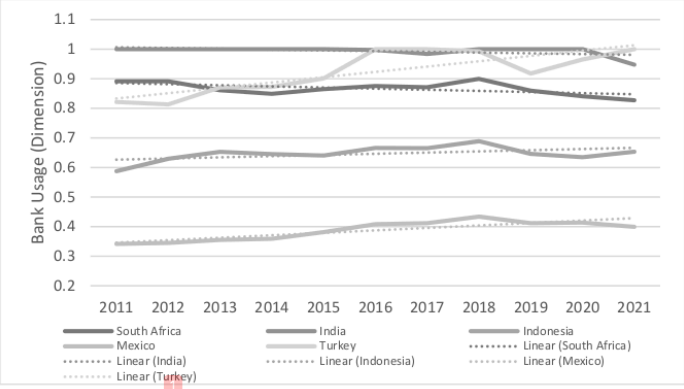
The COVID-19 pandemic has caused uncertainty, making banks reluctant to provide new loans (Didier et al., 2021). Uncertainty about the future of the business as well as economic conditions make banks more cautious in taking credit risk (Chi, Li, 2017). The COVID-19 pandemic has driven instability in global financial markets (Ibrahim, 2020). Volatility and a decrease in asset value make it difficult for banks to obtain the liquidity needed to finance loans (Gornall, Strebulaev, 2018). This decrease in liquidity can affect banks' ability to expand credit and offer a wider range of financial services. In an effort to overcome the economic impact of COVID-19, governments in emerging markets adopted stricter policies and regulations related to the banking industry (Miroslav, Usman, Tariq Sahyouni, 2021).

During this period, the banking industry in India experienced significant growth and expansion. Many private banks as well as state-owned banks, opened new branches in various parts of India (Acharya et al., 2013; Cooper et al., 2007). The Indian government has increased financial inclusion by launching programs such as the Jan Dhan Yojana (Winn, Koker, 2013; Singh, Ghosh, 2021). The program aims to expand access to financial services for the entire population, especially the unbanked. So, there is an increase in the number of bank accounts and an increase in the availability of banking services as a whole. The Indian government has also encouraged the development of banking networks in remote and rural areas. Through programs such as Pradhan Mantri Jan Dhan Yojana, banks are encouraged to open branches as well as ATMs in areas that have not been well served before (Barua, Kathuria, Malik, 2016). It aims to increase the accessibility and availability of banking services.

3.3. Trend of Bank Usage in Five G20 Emerging Market Countries

The Bank Usage Dimension is an important dimension for measuring financial inclusion, reflecting the extent to which people use formal financial services provided by banks (Camara, Tuesta, 2017). The use of banks is an important benchmark in evaluating the extent to which financial services have been adopted and utilized by people to meet their financial needs (Ali et al., 2020). High bank utilization can create diverse sources of funding for banks, encouraging a reduction in the risk of dependence on certain sources of funds (Neaime and Gaysset, 2018). Based on Figure 4, Turkey shows a fluctuating trend in bank usage dimensions with the highest decline occurring in 2019. In the period 2018-2019, Turkey experienced a financial crisis involving the weakening of the currency exchange rate (turkey) and high inflation. This crisis resulted in significant economic instability, making people lose confidence in the banking system and choose to reduce the use of banks. High economic uncertainty can also be a factor in decreasing bank usage. During the period, the unstable economic situation made people hesitant to deposit their money in banks or use banking services. High inflation rates can also affect bank usage. High inflation reduces people's purchasing power and discourages them from keeping money in banks that may not provide enough returns to fight inflation.

Figure 2. Trend of Bank Usage in Five G20 Emerging Market Countries



Source: International Monetary Funds (IMF) (2011-2021).

The downward trend in bank usage occurred in South Africa during the 2011-2021 period. South Africa has one of the highest levels of income inequality in the world (Solt, 2016). This inequality impacts financial accessibility and inclusion for a large part of the population. For some people with low incomes, banking services may be unaffordable or not easily

accessible. This factor can hinder the growth of bank usage among people with weaker economies. In addition to economic and infrastructural factors, changing preferences and adoption of technology also play an important role. Along with the development of fintech and digital financial services, some people in other countries in emerging markets have switched to digital banking services or non-bank alternatives. However, in South Africa, the adoption of this technology has not reached the same level due to the infrastructure and accessibility challenges faced by a large part of the population (Akpan, Udoh, Adebisi, 2022).

India has the highest dimensional level of bank usage (Figure 4). India has launched various strong financial inclusion initiatives and the adoption of innovative financial technologies such as UPI (Unified Payments Interface) and e-wallets has also helped increase the use of banks in India (Sharma, 2018; Gochhwal, 2017). Steady economic growth and increased financial literacy have also contributed to the high level of bank usage in the country. However, in 2020 there was a decline in the trend of bank usage in India. The COVID-19 pandemic caused a significant decline in economic activity in India (Debata, Patnaik, Mishra, 2020). Many businesses face temporary closures or operational reductions, resulting in a decrease in banking transactions related to those businesses.

4. Results and Discussion

4.1. Descriptive Statistics

Statistical descriptions for each of the variables used in this investigation are compiled in Table 2. The variables studied include Bank Z score which was influenced by the financial inclusion sub-index in G20 Emerging Market countries for eleven years from 2011 to 2021. In the table obtained, the mean, median, maximum and minimum values and standard deviation with the sum of all observations is 55.

Table 2. Descriptive Statistics of Five G20 Emerging Market Countries (2011-2021)

	BZS	PTT	AVB	USG
Means	13.55164	0.532512	0.808706	0.763353
Median	14.85629	0.443034	0.828195	0.859631
Maximum	23.75342	1.000000	1.000000	1.000000
Minimum	4.370431	0.244652	0.504340	0.341559
Std. Dev.	5.594071	0.252509	0.167975	0.226216
Observations	55	55	55	55
Cross sections	5	5	5	5

Source: Output EViews 9 (2011-2021).

Financial stability in the banking sector can be reflected by the bank Z score variable which shows how much the level of bank solvency is in facing the crisis. The average Bank Z Score for 11 years in the G20 Emerging Market was 13.55% and the highest Bank Z score occurred in Mexico in 2021 at 23.75%. However, the lowest bank Z score occurred in Indonesia in 2011 with a value of 4.37%.

In this study, all three dimensions of the financial inclusion index (banking penetration, banking availability, and banking usage) were associated with financial inclusion. A comprehensive financial system requires wide consumer penetration. The proportion of individuals who have bank accounts is used to calculate banking penetration. Based on Table 2 it is seen that between 2011 and 2021, the variable of banking penetration in the G20 emerging markets had an average value of 0.53, with Turkey having the highest value of 1 for all annual periods and Mexico having the lowest value of 0.24.

Financial services must be accessible to all residents of the country to be part of an inclusive financial system. So, the dimension of accessibility of bank services, which has an average value of 0.80 and the highest value of 1 in Turkey, is one of the indications used to calculate the financial inclusion index. In 2021, Indonesia will have the highest score, while South Africa will have the lowest score. Furthermore, the average score of 0.76 belongs to the dimension of bank service use with a maximum score of one achieved by India and Turkey while the lowest score is owned by Mexico in 2011 of 0.34. The level of access to banking services is used as an indicator to create the Financial Inclusion Index because some groups of individuals are still unable to take advantage of the availability of financial services.

4.2. Econometric Analysis

In the selection of regression models used in this study, the best model testing was carried out including the Chow test which gave results that the Fixed Effect Model was better than the Common Effect Model or Pooled Least Square seen from a p-value of less than 0.1. Then a Hausman test is carried out which gives a p-value result smaller than 0.1 so that the model chosen from the Hausman test is a fixed effect model better than the random effect model. As an alternative model selection according to determining the method whether Fixed Effect Model or Random Effect Model is better in research can also be seen from, if the number of time series periods is large and the number of cross-section units is small, there will likely be small differences in the estimated parameter values between FEM and REM then choosing FEM or REM depends on convenience, however, FEM models are better to use. Based on this, it is known that the number of time series is 11 years and the cross-section unit used is small as many as 5 countries, so the model used in this study is the Fixed Effect Model (FEM). The fixed effects model has the advantage of including individual fixed effects for each unit in panel data analysis, allows control of variables that do not change over time, overcomes the problem of omitted variables, and provides robustness to constant factors over time, as well as controlling for overall differences between units, so it is effective in identifying the influence of the independent variable on the dependent variable without being influenced by factors that do not change over time.

The results of the estimated model test using the Fixed Effect Model (FEM) are as follows:

$$BZS_{i,t} = 10.16672 - 6.927524PTT_{i,t} + 6.372205AVB_{i,t} + 2.516103USG_{i,t} + e_{i,t} \quad (3)$$

From the equation above, it is known that the results shown are bank penetration seen from the probability of less than α=10% having a negative and significant effect as well as the variable bank availability which has a significant effect with a positive direction seen from

the probability of less than α=10%. In contrast to the variable bank usage which does not have a significant effect on financial stability in the banking sector because the probability is more than α=10%. Then when viewed from the value of the coefficient of determination of 0.93 shows that the three independent variables can describe the effect of bank penetration, bank availability and bank usage on the financial stability of the banking sector by 93% and the remaining 7% explained by other variables. Then looking at the F-statistical probability below α=1% shows that the three independent variables together affect the banking financial sector.

Table 3. Estimated Output

Variable	Coefficient	T-Statistics	Probability
C	10.1667	2.0508	0.0459
PTT	-6.9275	-1.9252	0.0603*
AVB	6.3722	1.9912	0.0523*
USG	2.5161	0.4493	0.6553
R-squared	0.9328		
Prob(F-statistic)	0.0000***		
Chow Test	0.0000		
Hausman Test	0.0000		
Country	Intercept		
SOUTH AFRICA	2.7748		
INDIA	3.0217		
INDONESIA	-10.2576		
MEXICO	5.9928		
TURKEY	-1.5317		

*Note: *, **, and *** indicate significance levels at levels of 10%, 5% and 1%*
Source: Output EViews 9 (2011-2021)

From the intercept value of each country presented in Table 3, South Africa, India and Mexico have positive intercept values, while Indonesia and Turkey have negative intercept values. Positive intercept scores in South Africa, India, and Mexico indicate that when the independent variables (Bank Penetration, Bank Availability, and Bank Usage) have a value of zero (or when there is no influence from the independent variable), then Bank z-scores (banking stability) in these countries have a value higher than zero. This can mean that these countries have naturally quite good basic banking stability, before considering the impact of factors measured by independent variables. The negative intercept values of Indonesia and Turkey indicate that when the independent variable has a value of zero, then banking stability in these countries has a value lower than zero. This can mean that these countries have relatively lower basic banking stability or may face greater challenges in terms of banking stability, without considering the influence of independent variables.

4.3. Bank Penetration Relationship to Banking Stability

The banking penetration has a significant effect with a negative correlation to banking stability. Banking penetration refers to the level of public access and participation in using banking services. The negative correlation between the banking penetration and the stability

of the banking system indicates that the higher the banking penetration, the lower the stability of the banking system. The more individuals or businesses that have access to banking facilities, the more likely there is a demand for credit. This can lead to increased credit risk for banks that have to evaluate and lend to large numbers of debtors. If the quality of credit provided is not properly supervised, the risk of default and deterioration in the quality of bank assets may increase, which in turn reduces the stability of the banking system. With more customers and funds circulating in the banking system, banks may face challenges in managing liquidity. If not managed properly, this increase in liquidity can lead to unstable short-term financing risks. Banks may struggle to meet customer withdrawal requests or face uncontrollable liquidity pressures. A high banking penetration index can also mean that more customers have access to a wide range of financial products and instruments. If a customer's financial education and understanding of the product and associated risks is low, they may be more vulnerable to abuse or inadequate risk-taking. This can lead to increased risk and a deterioration in the asset quality of the bank.

In India, low levels of financial inclusion and limited infrastructure in some rural areas have resulted in a low banking penetration. The negative impacts include an increase in the risk of non-performing loans as many people use informal loans and high-risk sources of funds. This situation can threaten the stability of the banking system and the overall financial health. On the other hand, Indonesia faces challenges in inequality of access to financial services between urban and rural areas. More advanced infrastructure in urban areas supports higher levels of financial inclusion and better banking penetration indexes. However, rural areas that still have limited infrastructure experience a low banking penetration index, which has the potential to create inequality in banking system stability. South Africa, with its more advanced infrastructure and technology, supports higher levels of financial inclusion. However, low levels of financial literacy and economic inequality issues may cause some groups of people to remain financially underserved. This can affect the bank's asset quality and increase credit risk, which impacts the stability of the banking system. Mexico, on the one hand, faces differences in infrastructure and financial inclusion between metropolitan areas and rural areas. More advanced infrastructure in metropolitan areas supports an increase in the banking penetration dimensions, while rural areas may experience limited access. The negative impact that may arise is inequality in the stability of the banking system in various regions. Meanwhile, Turkey enjoys strong economic growth overall, supporting better financial inclusion rates and a higher banking penetration index among other countries. However, Turkey has challenges in managing liquidity risk and regulatory changes that may affect the stability of the banking system in the future. These results are in line with research by Quisumbing et al., (2014); Camara & Tuesta (2017); Ghosh, (2015).

4.4. The Relationship of Bank Availability to Banking Stability

The dimension of bank availability has a positive and significant effect on banking stability. The bank availability dimension refers to the level of presence of banks in a banking system, which can be measured by the number of banks operating or the level of geographical presence of banks in a particular region. The positive and significant correlation between the dimensions of bank availability and banking system stability shows that the higher the level

of bank availability, the higher the stability of the banking system. With more banks operating, the risks faced by the banking system can be more diversified (Meslier, Tacneng, Tarazi, 2014). If a bank is experiencing difficulties or facing certain risks, the presence of other banks can help reduce its overall impact. In other words, risk diversification can help protect the banking system as a whole from vulnerability to external pressures (Dionne, 2013). High bank availability also means that people have better access to banking services. It can promote financial inclusion, where more individuals and businesses can use banking products and services to store and manage their money. With increased access to banking services, people can reduce dependence on the informal financial sector which may be more vulnerable to risk.

The difference in bank availability levels between urban and rural areas is a major challenge in countries like India and Indonesia which have populations spread across different geographical regions. In urban areas, there are more bank branches and ATM machines with better access to technology. Conversely, in rural areas, access to banking services is limited due to long distances between villages, lack of bank branches, and lack of technological facilities. Despite such challenges, Indonesia and India have experienced positive improvements in the Bank Availability Dimension. Some banks have partnered with microfinance institutions (MFIs) to reach communities in rural areas. MFIs have strong networks at the local level and can be a conduit for providing banking services to smaller groups of people. As it did in India, Indonesia has also implemented an inclusive finance program to bring banking services to previously underserved segments of society. These programs include low-cost bank account opening, financial literacy training, and financial assistance for the poor. Banking services through banking applications, e-wallets, and fintech platforms have become an alternative to providing financial services in hard-to-reach areas.

South Africa, as an upper middle-income country, has a relatively developed and diversified banking sector. Strong bank availability in major cities supports wide access to banking services. However, challenges include financial inclusion issues among people with low-income levels and in rural areas. Financial inclusion policy and the development of banking infrastructure in remote areas are priorities to increase bank availability equally. Meanwhile, Mexico, as a middle-income country, faces challenges in addressing regional inequalities in bank availability. Large cities have good access to banking institutions, but rural and remote areas may have limited access. Banking infrastructure in remote areas needs to be improved to achieve better financial inclusion and improve overall banking stability. On the other hand, Turkey, as an upper-middle-income country, tends to have a more advanced level of technological availability and extensive internet connections. This enables the rapid development of digital banking and fintech services, which contributes to the increasing availability of banks nationwide. Nevertheless, currency fluctuations pose a challenge to banking stability in the country. This is in line with research by Akhisar et al. (2015), Alvi et al., (2020) and Villarreal (2017).

4.5. The Relationship of Bank Usage to Banking Stability

A positive but not significant correlation between dimensions of bank usage and banking stability suggests that there is a positively likely relationship between public use of banks and banking system stability, but this relationship is not strong enough to be considered statistically significant. The positive correlation between bank usage and banking system stability can be explained by the presence of several other factors that have a greater influence on banking system stability. For example, factors such as good regulation, strict supervision, appropriate monetary policy, and strong banking governance can have a more significant impact on the stability of the banking system than the level of bank usage. The use of banks by the public can be influenced by behavioural factors as well as individual preferences. It is possible that the high level of use of banks by some people does not necessarily have implications for the stability of the banking system as a whole. Some individuals tend to prefer to use non-bank financial services or have other preferences in managing their finances. In addition, Turkey's highly fluctuating state data and large variations from year to year can cause the influence to be insignificant.

India has the highest bank usage dimension value among other countries. The widespread adoption of banking technology and the growing accessibility of banking services are able to contribute to banking stability. Mexico and Indonesia tend to be stable in their bank usage dimensions, but experience relatively low growth. This means that there are challenges in achieving more significant growth in bank availability and access to banking services for people in these countries. The decline in the dimension of bank usage in South Africa shows the challenges in achieving bank availability and accessibility of banking services for the public. South Africans such as rural areas and low-income communities are numerous, unable to open and maintain bank accounts due to the associated costs and difficulty of meeting requirements. Although the results showed a positive relationship between dimensions of bank usage and banking stability in these five countries, the relationship was not always significant. That is, there are other factors beyond the dimension of bank usage that also affect banking stability, such as aggregate economic conditions, banking regulation, and political stability. These results are in accordance with the findings of Hallam and Ahlem (2022), Feghali et al. (2021), Fabris (2018) and Merhi et al. (2019).

5. Conclusion

Banking penetration is negatively correlated and significantly affects banking stability. This is due to several risk factors that have not been managed properly, including increased credit risk, uncontrolled liquidity risk, and the risk of abuse or inadequate risk-taking by customers. To overcome this, the government needs to adopt policies that can strengthen banking regulation and supervision, as well as improve credit and liquidity risk management. The dimension of bank availability is positively correlated and significantly affects banking stability. This indicates that risk diversification and better financial inclusion can contribute to strengthening banking system stability. Emerging Market countries can achieve this by encouraging the growth of the banking industry, the implementation of financial inclusion programs, the development of banking networks, and the adoption of technology that

facilitates the accessibility of banking services. There is also a positive but not significant correlation between the dimensions of bank usage and the stability of the banking system. This shows that there are other factors that are more dominant in influencing the stability of the banking system, such as regulation, supervision, monetary policy and individual preferences towards financial management. Active financial inclusion policies, digital technology development, and efforts to improve accessibility can increase bank penetration rates.

India experienced a significant increase in the dimension of bank availability due to the growth of the banking sector, financial inclusion programs, banking network development, and several programs that support the enhancement of financial inclusion. On the other hand, Turkey achieved the highest banking penetration rate due to the active adoption of financial inclusion policies, the development of digital technologies, and efforts to improve accessibility. Taking these findings into account, emerging market countries need to design holistic and balanced policies. The importance of effective banking regulation and supervision lies in its role as a solid foundation for introducing innovative financial practices and services that support financial inclusion for all levels of society. Given the different characteristics and challenges in each country, a tailored approach needs to be applied to improve bank availability and accessibility of banking services. The importance of the role of government policies and regulations cannot be overlooked either, as they play a central role in creating an environment that supports the introduction of new financial practices and services. Thus, well-coordinated collaborative efforts between various relevant parties are required to ensure that effective banking regulation and supervision are key drivers for the advancement of financial inclusion and banking stability at the national level.

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