

## **A DIRECT SURVEY ON SHADOW ECONOMY AND ITS CAUSES: THE CASE OF NORTH MACEDONIA**

**Abdylmenaf Bexheti<sup>1</sup>, Luljeta Sadiku<sup>2</sup>, Shpresa Alija<sup>3</sup>, Murat Sadiku<sup>4</sup>**

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### ***Abstract***

*The goal of this research paper is to assess the magnitude of the shadow economy and identify its main causes by a direct survey approach. The survey is designed to extract information needed to estimate the shadow economy by assessing the main types of economic activities that are carried out in the parallel economy based on the responses of the owners/managers, considering that they are most acquainted with the informal economic activities in their industry. The obtained results show that the magnitude of shadow economy in North Macedonia is about 21%. The index exposes that the shadow economy is relatively high, but it is lower compared to previous estimates using the indirect methods of estimation. The findings also reveal that bribery and corruption, the low quality of public services, the burden on social security contributions and the lack of sound policies to support small and medium businesses are the main factors that continue to lie at the roots of shadow economy in North Macedonia.*

**Keywords:** *shadow economy; direct method; magnitude; causes.*

**JEL Codes:** *H26, H32*

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### **Introduction**

Research on the shadow economy and informal economic activities began to attract attention around the beginning of the 1960s. However, in the last two decades, economic

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<sup>1</sup> Full Professor at Faculty of Business and Economics; South East European University and Full member of Macedonian Academy of Sciences and Arts; [a.bexheti@seeu.edu.mk](mailto:a.bexheti@seeu.edu.mk), ORCID ID: 0009-0003-9737-7647

<sup>2</sup> Associate Professor at Faculty of Economics and Administrative Sciences, International Balkan University; [l.sadiku@ibu.edu.mk](mailto:l.sadiku@ibu.edu.mk), ORCID ID: 0000-0003-1794-078X

<sup>3</sup> Assistant Professor at Faculty of Business and Economics; South East European University; [sh.alija@seeu.edu.mk](mailto:sh.alija@seeu.edu.mk), ORCID ID: 0000-0003-1898-8072

<sup>4</sup> Full Professor at Faculty of Business and Economics; South East European University; [m.sadiki@seeu.edu.mk](mailto:m.sadiki@seeu.edu.mk), ORCID ID: 0000-0003-0209-4197

researchers express more interest in estimating it, for both developing and developed countries (see estimates of Schneider et al. 2010; Medina and Schneider, 2018; Elgin et al. 2021). Statistical data and estimates at the world level show that the shadow economy is becoming a real socio-economic phenomenon of modern times. Thus, there is common agreement among the research community and economic policy makers that the share of economic activities that take place outside the official economy is significantly large, so that the presence and prevalence of the shadow economy is a reality throughout the world. Moreover, Sadiku et al. (2015) point out that shadow economies are an integral part of most countries of the world, regardless of their respective level of development. However, in developing and transition countries, the informal economic sector is almost institutionalized, thus there is a qualitative difference between the informal economic sector of developed countries and the informal economic sector of less developed economies. Gërxhani (2004) provides a comprehensive study on differences between the shadow economy in developed and developing countries.

Based on the recent estimates of Medina and Schneider (2018), the shadow economy has reached high proportions at the world level, in an average value of 31.9% of GDP over 1991 to 2015, including 158 countries. However, Europe is characterized by a decline of the level of shadow economy, from about 25.79% of GDP over 1991-1999, to about 20.20% of GDP over 2010-2015 period.

As for the Republic of North Macedonia, which is the focus of this research, according to Elgin et al. (2021), is characterized by a high degree of shadow economy of about 33.6% of the official GDP in 2018. While, according to other recent research by national institutions and authors, estimates vary depending on the used estimation approach, from 20%-45% of GDP for different time periods. Unanimously, studies show that the main causes of the shadow economy of North Macedonia are bribery and corruption, taxes and social contributions, the intensity of regulation, bureaucracy, and the high unemployment.

The shadow economy is a complex phenomenon, determined by numerous economic, institutional, regulatory, social, and cultural factors. These factors generally influence individuals and firms in deciding whether to remain formal or informal. Moreover, the activities carried out in the shadow economy have serious economic, social, and political implications, that include, among others, the following: lower tax revenues from economic activities, inadequate penetration and slower growth of the official banking sector, inadequate economic planning based on incomplete information, unfair competition, lack of protection of workers' rights, and perverse synergy of the shadow economy with other illegal activities (Sadiku et al. 2015). Also, the large shadow economy represents a serious problem for public finances, and as a result, negatively affects the

provision and quality of public goods (Johnson et al. 1997). Moreover, the large presence of the shadow economy in a country causes enormous difficulties in the process of designing and implementing national economic policies, so it is very important to estimate its size to avoid disturbing the balance of the economy. Therefore, due to its multidimensional and complex nature, research on the shadow economy presents a huge challenge to the research community trying to assess its size through the various approaches available in the literature (see Schneider and Buehn, 2016). While there are several multinational studies involving the Republic of North Macedonia, very few domestic researchers have attempted to estimate the size of the shadow economy. Despite the economic, social, and political importance of the problem, so far there is a very limited number of research articles on this phenomenon. As a result, the main goal of this paper is to offer interested readers and policy makers an insight into the magnitude and causes of the shadow economy based on the direct method.

### **Literature Review**

In recent years, the interest in estimating the size of the shadow economy for the Republic of North Macedonia is starting to grow. It contributed to gradually alleviate the lack of literature on this topic, which characterized the previous period. The previous research produces different estimates, even for the same year depending on the used method. But without doubt, despite different estimates, the shadow economy of the country is large, at least by European standards, and it fluctuates between 26%-35% of GDP. Among the multinational studies of a group of countries in which North Macedonia is included is that of Schneider, Buehn and Montenegro (2010), in which the shadow economy in 2007 was estimated at about 35% of the official GDP. Surprisingly, Elgin and Oztunali (2012) arrive at the same figures for the same year, but through a different approach. Observing in their results, the size of the shadow economy changes in minimal percentages during the years 2000-2008. The most recent estimates of shadow economy conducted by Elgin et al. (2021) suggest a slight decrease of the same, being 33.6% of GDP.

Regarding the national studies, it has been used both the indirect and direct estimation approaches. Based on indirect approaches, Nikolov (2005) tries to estimate the size of the shadow economy through the method of electricity consumption for the period 1996-2004. He first estimates the shadow economy as a percentage of GDP, and then uses these estimates to estimate informal employment. The obtained results show that the shadow economy is declining from 40.3% of GDP in 1996 to 35.5% in 2004. Using the obtained results and under the assumption that unofficial economic output (added value) and unofficial employment have the same percentage share in the economy, which is

equivalent to the assumption that productivity is identical in the official and unofficial sectors. In this way, the author comes to the results that in 2004 in North Macedonia there were 109,300 people employed in the informal sector. This allows him to recalculate the unemployment rate, and gets it to be 24% for 2004, instead of the official unemployment rate of 35.3% for the same year.

Sadiku (2015) estimates the size of the shadow economy of North Macedonia for the period 1998-2014 through the indirect methods of the monetary approach and MIMIC method. The results show that the shadow economy was large in the period 1996-2003, but it decreased afterwards, reaching about 30% of the official GDP in the period 2010 - 2014. This was confirmed by both methods of the monetary approach and MIMIC method. The paper concludes that this reduction was attributed to the simplification of the tax system, regulatory reforms to start new business, customs reforms, and an improved transition index.

Garvanlieva, Andonov and Nikolov (2012) use two indirect methods for estimating the shadow economy of North Macedonia, that is, the method of electricity consumption and the method of multiple causes and multiple indicators (MIMIC) for the period 2000-2011. They get remarkably different results, even contradictory, between one approach and another. The electricity consumption method shows a decrease in the shadow economy after 2003, while the MIMIC method produces results with an increasing trend.

The most recent research by Bexheti, Sadiku and Alija (2021) provides evidence to interested readers and policy makers into the dynamics of the shadow economy of the Republic of North Macedonia, through a rigorous assessment using the MIMIC method and the latest data starting from 1998 to 2020. They found that during 1998-2002, the average value of the shadow economy was estimated to be about 42% of GDP, from 2003-2007 the average value was about 38%, from 2008-2012 about 33%, while from 2013-2017 about 31% of GDP, estimates for the last period 2018-2020 amount to about 31.5% of GDP, so in the last period the shadow economy recorded a slight increase of 0.5%.

Other research has been conducted by direct methods and are mainly concentrated on sectoral analysis of the shadow economy, such as the informal sector and undeclared employment, as well as other experiences of firms and households in informal economic activities.

For instance, Ristevski (2009) conducted research through the direct approach of the craft shadow economy, where 85 households from Skopje and other 10 largest cities of the country were surveyed. The purpose of the paper was to estimate how much households spend annually without receiving a fiscal bill, and that in nine different services, such as: education, cleaning services, car repairs, home maintenance, shopping at the green market, hairdressing services, software and hardware services, firewood cutting and fortune tellers.

The research showed that households spend about 23% of their income in the "handicraft" shadow economy, of which 10.6% is spent on the green market to buy fruits and vegetables from unregistered traders. While in other types of services, households spend less than 4% of their income.

The research of Stankovic and Stankovic (2012) is based on primary data collected through a direct survey of 1200 respondents nationwide, on a representative sample including: gender, ethnicity, age and regional distribution of the population. The survey was conducted directly with the respondents on a "door to door" basis. The purpose of the research was to evaluate the attitude of citizens towards undeclared work and its consequences. The results show that 14% of respondents had experience with undeclared work. Respondents were also asked what they would do if they were employed in the shadow economy, 48% percent said they would keep quiet to keep their job, 20% would report the employer and only 15% would quit their job.

Novkovska (2013) using the Labor Force Survey (LFS) conducted by the State Statistics Office, presents the results of the size of informal employment in the agricultural sector. The author emphasizes that the share of informal employment in the agricultural sector is significant and ranges between 86.1% and 82.4% of total agricultural employment in the period 2008-2012. The data show that the trend is decreasing and that women are more involved in agricultural informal employment, from about 90% of the total employees in the agricultural sector, while the informal employment of men ranges between 76.5% and 81.4%. In addition, the author presents the level of undeclared work in non-standard employment (part-time, fixed time and self-employed).

Nenovski (2012) using qualitative data through descriptive analysis and comparative methodology, tries to locate the main causes, consequences, and extent of the shadow economy in North Macedonia. The author tries to shed light on the basic characteristics of the country's shadow economy to propose well-founded recommendations for its reduction.

Dzekova et al. (2014) provide a detailed report of the available literature and various records regarding the size and nature of the shadow economy (the undeclared economy as they call it) of North Macedonia, from existing sources. They also analyse the institutional actors involved in dealing with the phenomenon, their political measures, and approaches.

Petreski and Petreski (2022) conduct research on unregistered micro – performers of business activity in North Macedonia, namely the reasons of staying informal. The survey research was performed on 151 unregistered micro-enterprises and included questions about the costs of being formal, the benefits from formalization and the costs for staying informal.

This study differs from the ones briefly summarized above for two reasons: first, it provides an assessment of the magnitude of shadow economy based on business

perceptions; secondly, apart from estimating the shadow economy, it identifies what are its main causes based on the opinions of the business owners and managers, considering that they are most acquainted with the informal economic activities in their industry.

### **Research Methodology**

In this part, the methodology of research and assessment of the magnitude of shadow economy of the Republic of North Macedonia is elaborated, which is based on the direct survey approach. The direct approach has not been used extensively until recently (Reilly and Krstic, 2019). Hence, there are a small number of studies that use this approach, especially analysing enterprises and businesses that are partially or fully involved in the shadow economy. Also, an earlier study of Williams (2006) emphasizes the absence of direct survey evidence on shadow economy, even those that exist are small-scale direct surveys of localities, sectors, or occupations. His research relies on the survey on business perceptions of the prevalence of the shadow economy, namely the Small Business Service's (SBS) 2004/2005 for UK. The most recent research using the direct method is conducted by the authors Putniņš and Sauka (2016) for the Baltic countries, who estimate the index of shadow economy from 2009 to 2015 for Estonia, Latvia, and Lithuania, based on data collected through surveys in each year. Also, the same approach was used to assess the shadow economy of Serbia by the authors Krstic and Schneider (2015), in Kosovo by the Reinvest Institute (2013) and in Bulgaria by "The Center for the Study of Democracy" (2016).

The scarce use of the direct methods is attributed to the underestimation of the share of shadow economy because they do not cover all its aspects and dimensions. So, given the difficulties in estimating the shadow economy, researchers are increasingly faced with several limitations of estimation methods. Particularly, survey research is subject to serious shortcomings, primarily due to budget limitations for providing a representative sample. Also, the collected quantitative estimates of the shadow economy depend on the willingness of the respondents to cooperate and provide accurate information about hidden economic activities.

The scope of this study is limited to selected components of the shadow economy. The two sectors included in this research cover the productive activities carried out in the hidden and informal sectors. While illegal activities, as well as domestic production for own use, are ignored in the estimates. As a result, in this research the shadow economy is defined as all legal economic activities, which are not included in national official data (or measured GDP). This is a narrow definition of the shadow economy because it is focused on productive activities that are carried out in an unofficial way to avoid paying taxes.

The first part mainly includes undeclared employment, where entrepreneurs do not report employees or part of them or declare only part of their wages to avoid or reduce the tax burden. Among other economic sectors, this is more characteristic of manufacturing, service sector, construction, agriculture, and retail trade. According to Schneider (2009), this part amounts to an average of two thirds of the shadow economy. The other category of under-reporting or non-reporting refers to skimming (absorption), that is, to unreported or insufficiently reported income by companies. The same research by Schneider (2009) reveals that this part covers one third of the shadow economy.

### **Survey Design**

The survey of this research consists of the opinions of managers and entrepreneurs, considering that the managers or owners of the enterprises surveyed are the most familiar with the hidden economic activities in their sector (Reilly and Krstic, 2017). Therefore, the survey allows us to explore the shadow economy from a business perspective, unlike some surveys that are based on surveys of households or workers. According to our knowledge, this is the first attempt to assess the shadow economy of the Republic of North Macedonia through this approach. Namely, the survey is designed to extract information needed to measure the shadow economy by assessing the main types of economic activities that are carried out in the parallel economy based on the responses of the owners/managers.

The survey was conducted on a sample of 100 business entities, of which 64 responded positively. Self-completion questionnaires were used as a research instrument. The questionnaires were sent to the respondents in the period of March 2021. The main limitation is that the response rate is low at only 64%. However, through the collected data, we develop the shadow economy index, which includes several components: the percentage of underreported income by enterprises (subjective perceptions of business representatives about their sector), the percentage of underreported employees and the percentage of underreported employee wages. It should be noted that these types of surveys with the owners or higher-level management are difficult to be realized. In this course, Baruch (1999) states that most academic studies involving owners and representatives of highest level of management, it is reasonable to have a return rate of 35%.

The questionnaire is mainly designed according to the questionnaire used by Putnins and Sauka (2015) for the Baltic States with little change and contains four main parts: (i) characteristics of business entities; (ii) governance factors; (iii) government policy and size of informal economic activities; and (iv) managers' or entrepreneurs' attitudes about tax evasion. To increase the response rate and truthfulness of responses, the questionnaire begins with non-sensitive questions about satisfaction with government and tax policy, before addressing more sensitive questions about hidden economic activities. Putnins and

Sauka (2015) explain that this "gradual" approach is recommended by several methodological studies on survey design in the context of tax evasion and the shadow economy, such as Gërxhani (2007) and Kazemier and Van Eck (1992).

The first part of the questionnaire contains general questions regarding the characteristics of business entities such as year of establishment, number of employees, region, operating profit, change in net profit, sales turnover, and total employment.

The second part of the questionnaire consists of questions related to governance factors where respondents are asked to express their satisfaction with public revenue administration, tax policy, business legislation and government support for entrepreneurs. The questions use a five-point Likert scale, from "1" ("very dissatisfied") to "5" ("very satisfied").

The third part contains questions about the size of informal economic activities where managers or entrepreneurs are asked to estimate the degree of underreporting of business income (net profit), underreporting of the number of employees, underreporting of wages paid to employees and the percentage from the revenues that companies pay as bribes.

Questions are asked indirectly to entrepreneurs by asking them about firms in their industry rather than their firm. This approach is discussed and justified by Gërxhani (2007) as a method to obtain more true answers and has been used by many authors to estimate the shadow economy through the direct approach such as (Sauka, 2008; Reinvest, 2013; Putnins and Sauka, 2015; Krstic, 2015; Reilly and Krstic, 2017).

In addition to questions related to informal economic activities, a question related to unregistered firms is also included, meaning owners/managers of registered firms are asked about their knowledge regarding the percentage of total production by unregistered enterprises in their industry. Putnins and Sauka (2015) assume that they are experts in their industry and probably know approximately how many unregistered firms operate in their industry. So registered companies are in competition with unregistered companies and therefore they should be aware of such companies.

## **Results and Discussion**

This section initially provides a general overview of the surveyed business entities, to provide a descriptive profile of the firms that are subject of our study. We note that to obtain reliable survey results, only owners or executive managers were surveyed. This allowed us to obtain relevant information about the current state of the firms and the industries in which they operate.

Most of the surveyed business entities were founded after the independence of the state (in the early 1990s, the Republic of North Macedonia was established as a sovereign

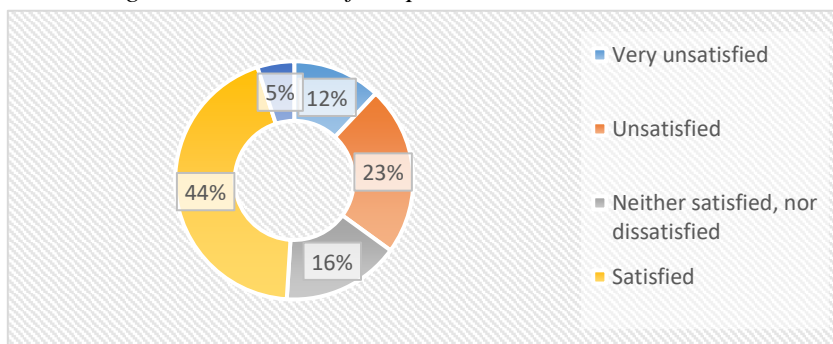


and independent state), so about 18% were founded in the first decade of the transition, 60% of the companies were founded in the period 2000-2019, while 22% of the surveyed companies were founded before 1990.

Given the nature of the sample selection, most surveyed firms for the purposes of this study were from the manufacturing sector at around 30% and the service sector at 27%, while retail 14%, wholesale 8%, agriculture 5%, construction 6% and the rest are other activities. According to a Eurostat survey (2011), the manufacturing sector has the largest share in the shadow economy, followed by retail and wholesale trade, construction, and transport.

Inefficient tax administration is considered by many authors and experts to be the most responsible for increasing tax evasion and the shadow economy. For this reason, a question was asked to the respondents about the satisfaction with the work of the public revenue administration. According to the obtained results, only 5% of the respondents are very satisfied and 44% are satisfied, while 12% of the owners/managers are very dissatisfied, and 23% of them are dissatisfied, this means that about 35% of the respondents are dissatisfied (Figure 1). From this it follows that the simplification of the tax regime - laws and administration are of special importance for the country. In this direction, the World Bank (2015) suggests segmenting taxpayers and adapting the administration to serve each specific segment. In addition to providing multiple, convenient ways for taxpayers to file and pay taxes. At the same time, it is emphasized that it is very important for the tax authority to develop cooperative relations with institutions from the private sector and to help develop an understanding that working in hidden economic activities has a negative impact on the economy and on the quality and delivery of public services.

*Figure 1. The work of the public revenue administration*

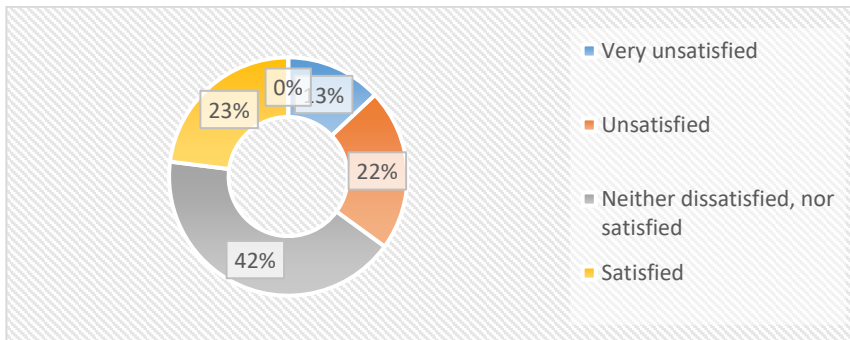


Source: Authors' calculations based on survey results

As for the question of satisfaction with the government's tax policy, only 1% of respondents are very satisfied and 30% are satisfied; 36% are neutral, i.e., neither dissatisfied nor satisfied, while 14% are very dissatisfied and 19% are dissatisfied (Figure 2). This means that about 33% are not satisfied with the tax policy. In this context, the high tax burden on labour, especially with low earnings, is the key reason for the shadow economy, mainly due to high social security contributions. As a result of high taxes, companies and workers often face the problem of "trade off" between compliance and survival, and the same is more present in less developed and poorer countries.

In most empirical research, the increase in the tax burden and social contributions are considered the main causes of the shadow economy (Friedman et al. 2000; Schneider, 2000; Schneider et al., 2010; Schneider, 2015; Schneider and Enste, 2000). The tax burden of North Macedonia was significant during progressive taxation, namely 23%, 27% and 35% until 2000, and 15%, 18% and 24% until 2006. High tax rates were the main driver of tax evasion. The introduction of the proportional tax of 12% in 2007 and 10% in 2008 was one step towards a more neutral tax system. This reduced the tax burden on employers for hiring the factors of production, i.e., the workforce. Also, this method of taxation is easy to apply and leads to relatively smaller distortions of economic activities.

Figure 2. Tax Policy



Source: Authors' calculations based on survey results

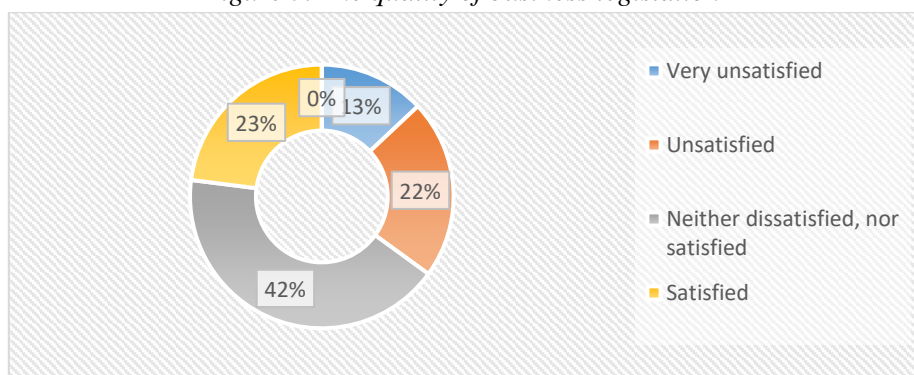
After the introduction of the proportional tax, the following years saw lower tax revenues compared to the previous period, so in 2019 the progressive taxation of personal income (previously the personal tax) was introduced again. Although the reform contributed to an increase in public revenues, it is stated that the additional revenues achieved could have been higher by a certain percentage, if there had been no changes in the behaviour of taxpayers due to the introduction of progressive taxation. The analysis indicated the possibility of avoiding tax obligations and increasing tax evasion. Based on

the assessment, starting from January 1, 2020, the Government of the Republic of North Macedonia decided to put this tax reform on hold for a period of 36 months, during which time the application of the flat tax of 10% for all types of income, except for the income obtained from games of chance, where the tax rate remains 15% (Strategy for the reform of the tax system, 2021-2025). Eilat and Zines (2000) argue that it is very difficult, even impossible, to eliminate the shadow economy, but certain reforms can contribute to its reduction. However, despite the low tax burden, the high cost of labour (social security contributions) is considered among the main causes of the tax evasion in the country that directly affects the magnitude of shadow economy. At the other side, Tanchev and Yakova (2018) empirically have evidenced that countries with higher taxes and higher redistributive share as a percentage of GDP have more efficient public expenditure and resource allocation.

In addition to this, the respondents provided an opinion on whether tax avoidance is a common behaviour in the Republic of North Macedonia. A large percentage of respondents of about 47% agree with this statement, while 30% disagree and 23% percent of respondents are neutral.

The questionnaire contains a question about the quality of business legislation and the business environment, and according to the results, none of the respondents are very satisfied, while only 23% are satisfied, and the majority of respondents have a neutral opinion, i.e. 42%, while 22% are dissatisfied, and 13% are very dissatisfied (Figure 3).

*Figure 3. The quality of business legislation*



*Source:* Authors' calculations based on survey results

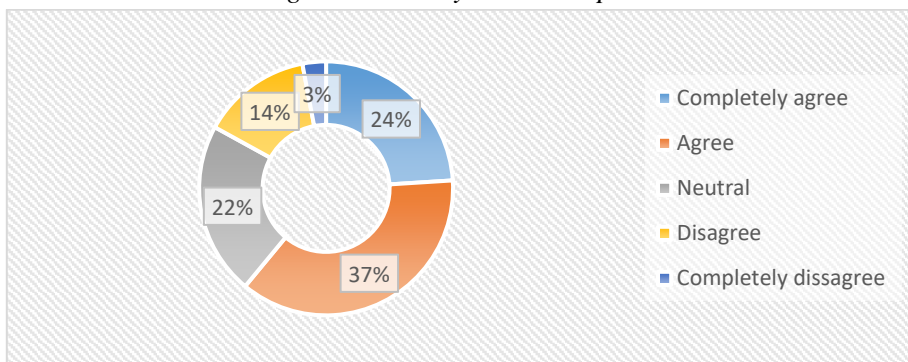
In addition to the tax burden, the intensity of regulations has a key impact on the size of the shadow economy, even some authors claim that regulations are more influential than taxes, such as the study by Johnson et al. (1997).

Regulatory obstacles for starting and running a business are minimized and are the lowest in the region, which should therefore influence the reduction of the shadow economy. However, according to the studies of Mojsoska-Blaževski (2012) and Stankovic and Stankovic (2012), the reforms to improve the business climate did not contribute significantly to the reduction of the shadow economy. Dzekova et al. (2014) claim that in R. North Macedonia considerable efforts have been made to improve some aspects of the business environment, but other aspects have been neglected, such as contracting, resolving insolvency, reducing export barriers and others, so yes, it is necessary for the authorities to address the efforts in other areas of business life and not only in isolated aspects.

In addition to this, the survey provides the opinion of the respondents about bribery and corruption, namely 37% of the respondents agree that bribery is a common behaviour in the Republic of North Macedonia and 24% completely agree, while only 3% completely disagree, 14% disagree, and 22% are neutral (Figure 4). It follows from this that bribery is at a high level in the country, as about 61% of respondents answered affirmatively.

Schneider (2007) argues that bribery and corruption are treated as a special type of taxation and regulation that lead many entrepreneurs to move partially into the shadow economy. The research also concludes that the relationship between the shadow economy and corruption differs between low-income and high-income countries. In doing so, Çule (2004) empirically shows how corrupt tax inspectors affect the incentives of companies to cheat on taxes, and how the shadow economy in turn creates opportunities to sustain corrupt practices. The report of the Macedonian Center for International Cooperation (MCMS, 2014) emphasizes that the shadow economy creates bribery (to prevent the payment of fines from inspections), but also provides cash for another type of bribery (contracts for public procurement, shaping laws, etc.). Which means that these two destructive phenomena are closely related to each other.

*Figure 4. Bribery and Corruption*



Source: Authors' calculations based on survey results

North Macedonia belongs to the countries with a relatively high level of bribery and corruption. This phenomenon is constantly counted among the key problems of the country by the public, and is also among the most prominent remarks, by the relevant international institutions and the European Commission. According to Transparency International (2020), in 2020, the corruption perception index for North Macedonia was 35 points (points range between 100 very clean, and 0 very corrupt).

In the conducted survey we also obtained the opinion of the respondents about the percentage of the income (turnover), which is paid by the companies in unofficial payments to "get things done". From the obtained results, we find that on average about 14% of the income, companies pay to complete certain works.

In the following, the indicators of the shadow economy are analysed, i.e. under-reported income by enterprises (subjective perceptions of business representatives about their sector), under-reported employees and under-reported salaries of employees. Through which the index of the shadow economy is then calculated.

*Table no.1 - The perceptions of the respondents regarding the participation of companies from their industry in the shadow economy*

***Subjective attitudes of respondents about participation of companies from the same sector in the shadow economy***

	<b>2019</b>	<b>2020</b>
<i>% of workers without formal contracts</i>	15.45	18.40
<i>% of workers with formal contracts but without full reported salaries</i>	19.18	20.82
<i>% of underreported income</i>	19.30	24.8
<i>Shadow economy magnitude</i>	19.98	21.34

*Source:* Authors' calculations based on survey results

According to the obtained results, the participation of workers without formal contracts in the total number of workers is 15.45% in 2019, while 18.40% in 2020, which means that it has seen an increase of about 3%, which is most likely attributed to the health crisis COVID-19. As for the percentage of workers with formal contracts but without fully reported salaries, it is 19.18% in 2019, while 20.82% in 2020. In addition to this, the share of insufficient reported income was also estimated, amounting to 19.30% in 2019, and 24.8% in 2020. Also, these indicators see an increase in 2020, especially the increase is significant in underreported income (Table 1). The shadow economy index is obtained as an average of the above sub-indices and is about 20% in 2019 and 21.34% in 2020. Krstić and Radulović (2015) obtain somewhat larger estimates for Serbia using the same

approach, i.e. the subjective views of entrepreneurs/managers on the participation of firms from the same industry in the shadow economy.

(Table 2) shows the correlations between the above indicators that show a pronounced correlation between the different types of informal economic activities as stated by the surveyed business entities: in other words, the results show that when the business entity is involved in informal cash transactions, i.e. undeclared income, there are also undeclared workers as well as undeclared salary payments. Pearson's correlation coefficients reveal a pronounced association between the indicators and statistically significant.

*Table no. 2 - Correlation between different types of informal economic activities*

	<i>% of workers without formal contracts</i>	<i>% of workers with formal contracts but without full reported salaries</i>	<i>% of underreported income</i>
<i>% of workers without formal contracts</i>	1	-	-
<i>% of workers with formal contracts but without full reported salaries</i>	0.775	1	-
<i>% of underreported income</i>	0.594	0.589	1

*Source:* Authors' calculations based on survey results

In addition to registered companies, there are also unregistered companies, which do not report any of their activity to the authorities. According to the knowledge of the respondents, on average, about 14.5% of the total production/sale of goods/services are carried out by unregistered enterprises.

Respondents were also asked to give a general perception of the intensity of tax controls (inspections). The results reveal that the approximate probability of being detected if they underreport their income, i.e., evade taxes, is only 45%, while the remaining 55% of the probability is that entrepreneurs/managers believe that they can easily get away with it if they decide to evade taxes. As for the probability of a firm being detected if it underreports the number of employees, it is only 41%. These alarming levels of perception towards audits provide a general picture of the mechanisms implemented to detect and punish firms that underreport their income. The low level of "fear of being found out" is an

important determinant of the general behaviour towards paying taxes and social contributions for undeclared employees in the Republic of North Macedonia.

Regarding the question if a firm in the same industry was found to have deliberately misreported revenue, employees, or wages, which was usually the consequence for that firm, most respondents at around 48% believed that only a small fine was paid, and 19 % believe that nothing serious was taken, while about 33% think that a serious fine was implemented. However, according to the tax literature, the more severe the penalties, the greater the risk of negligent behaviour. A high level of fine may backfire if businesses feel that the penalty is not appropriate, therefore it may influence the growth of corruption.

Concerning the question of what the main causes of the shadow economy are in North Macedonia, about half of the respondents 48.4% think that corruption is the main reason, 20.3% think that the low quality of public services is the main reason, about 11% believe that it is about survival, 11% think that the high tax burden affects, 4.7% think that it is the culture and 4.7% think that the reason is the bureaucracy.

Previous studies also identify causes that are also related to economic factors such as, for example, insufficient growth in employment and jobs, insufficient economic growth, and continued poverty. Especially youth unemployment is at a high level that spurs their involvement in shadow economic activities. Even though youth unemployment is becoming increasingly pressing issue at European and regional level (Vutsova and Arabadzhieva, 2021). In addition to economic factors, institutional factors, such as, politicized state and public administration, politicized judiciary, insufficient respect of rules and laws, politically privileged companies have a great influence on shadow economy (see Bexheti et al. 2022; Nenovski, 2012; CEA, 2008). For some institutional aspects, North Macedonia has low marks from the international annual reports, and quite a few remarks in the reports of the European Commission. This is reflected in the fact that the politicized state and public administration, as well as the judiciary, have a direct influence in the "amnesty" of certain economic agents that do not respect the rules and laws, and this negatively affects other companies and individuals in losing confidence in the institutions.

### **Regression Results**

In this section are presented the regression results on the causes of the shadow economy. Three regressions were performed where, as dependent variables are the percentage of underreported income, non-reported workers, and underreported salaries, respectively. Independent variables are considered tax policy, business legislation, corruption and bribery, probability that the company will be found out if it underreports the number of employees, percentage (%) of revenue (turnover) do companies pay in informal payments to "get things done". Besides these variables were also considered some other

variables related to shadow economic activities but they resulted statistically insignificant and were omitted from the models. Tax policy, business legislation and corruption and bribery are qualitative variables with ordinal measurement, whereas probability of discovery and informal payments are quantitative variables with ratio scale of measurement.

*Table no. 3 - Regression analysis of causes of shadow economy*

Independent Variables	Dependent Variable		
	Percentage of underreported income	Percentage of non-reported workers	Percentage of underreported salaries
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Tax policy	-0.1024** (0.025)	-0.2462** (0.048)	-0.0731** (0.042)
Business Legislations	0.0922** (0.040)	0.4224* (0.075)	0.1632* (0.064)
Corruption and Bribery	0.3965*** (0.003)	0.4416*** (0.001)	0.6721 (0.142)
Probability of discovery	0.1873* (0.057)	0.1508** (0.023)	0.1838*** (0.001)
Informal payments to “get things done”	0.6914* (0.061)	-0.0871* (0.055)	0.5391 (0.273)
Constant	-3.2721 (0.359)	-0.9222 (0.940)	1.5741 (0.293)
F-Statistic	5.122	7.153	4.17
R-Squared	0.44	0.67	0.52

\*, \*\*, and \*\*\* represent the rejection of null hypothesis in the level of significance of 10%; 5%; and 1%, respectively

*Source:* Authors' calculations

The regression results are displayed in Table 3 above, which indicate that tax policy, business legislations, corruption and bribery are significant determinants of shadow economy of North Macedonia, as their coefficients are statistically significant. Despite dearth responses, these findings are of great importance, as this is among the few studies that empirically inspects the causes of shadow economy in North Macedonia. Thus,



identifying the root causes of shadow economy is essential for creating effective mechanisms for its suppression.

### **Conclusion**

The main goal of this research was to collect primary data on shadow economic activities and to assess the magnitude of shadow economy based on perceptions of owners/managers of companies. An attempt is also made to identify its nature and its main causes. The direct approach gives an estimate of the shadow economy index for 2019 and 2020, which is 20% and 21.34%, respectively. The disadvantage of direct methods is that they underestimate the share of the shadow economy because they do not cover all its aspects and dimensions. However, through survey research, we obtained relevant information based on the opinions of entrepreneurs and managers about the most significant factors affecting the growth of the shadow economy, considering that they are the most familiar with the hidden economic activities in their industry.

The Government of the Republic of North Macedonia promotes serious mechanisms to formalize and suppress the shadow economy. However, our research recommends that efforts would fail if the root causes of the shadow economy are not addressed, such as cracking down on bribery and corruption, substantially improving the quality of public services, strengthening mechanisms to prevent tax evasion as well as developing sound policies to support small and medium businesses to not face with survival problems.

Although most of the results reflect reality, the estimates are subject to relevant limitations. It is extremely difficult to obtain reliable estimates of the shadow economy due to its nature and the serious shortcomings of the direct method. Calculations on the shadow economy, and especially those based on the direct method, have been subject to serious criticism for several previously stated reasons, thus the results should be taken with some caution.

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