

Modeling the Shadow Economy. Why Does the Bulgarian Carry out Undeclared Employment?

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Abstract

The shadow economy is a complex phenomenon that impacts all aspects of one country's economic system. One theory explaining the emergence of the shadow economy holds that it results from the breach of the civil contract and serves as the individual's response to the inefficiency of the state's institutions. On its part the shadow economy has a negative impact on the state budget and is able to distort basic indicators such as growth, unemployment, real GDP. That's why it is important for policy makers to know what the reasons for such behavior are. Using information from a survey of people in all areas of Bulgaria, conducted in early 2020, this article explores the primary causes of Bulgarians' participation in shadow economic activities, specifically in undeclared labor. Via linear and afterwards probit binary regression the article ascertains each respondent's inclination to participate in set activities based on their responses to a question asking why they believe some persons in their sector of employment opt to get some of their payment "in hand." The findings are in favor of

authorities and managers, because knowing the main drivers of the shadow economy, they can take measures aimed directly at the causes of such behavior.

Keywords: shadow economy, tax morale, undeclared work, tax evasion

JEL: O17, H26, C01, C21

Introduction

The shadow economy is a complex socio-economic phenomenon that affects every facet of a nation's system of economic ties and institutions. However, assessing the shadow economy is challenging because there is no indicator that can precisely determine how much is paid in "envelope" payments, secret taxes, unissued receipts, etc. But on that note, the possibility of participating in the shadow economy increases as civic morale declines, and the opposite is also true.

The main determinant of a nation's competitiveness is its economic development, which is influenced by a variety of factors. Some of them, including investments, business-friendly environments, advantageous legislative frameworks, etc., foster economic development, whereas others, such low labor

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productivity, inadequate staff qualifications that don't satisfy the labor market, etc., slow down the pace of economic development. Economic progress is seen to be adversely affected by the "shadow economy" phenomena. Different countries from distinct regions deal with different manifestations of the shadow economy depending on their level of development and cultural-historical characteristics (Kelmanson et al. 2019). The shadow economy is a non-alternative form of activity that causes noticeable issues in some developing nations and necessitates the implementation of more specialized methods from governments and society to its treatment and control.

The shadow economy is naturally linked to the official one – its size and trends in its development depend to a large extent on the state and development of the official (formal) economy (Schneider and Medina 2018). In addition, entrepreneurs operating in the shadow sector use to one degree or another the services of the state, respectively its material, organizational and personnel resources.

The 'shadow economy' is often defined as including both undeclared work and the criminal economy (EC 2018). Undeclared work raises political challenges because it is a form of tax evasion which undermines the sustainability of public finances and fiscal stability. It also dampens growth prospects by lowering job quality (e.g. by preventing workers from engaging in lifelong learning) and through distortions in competition among firms resulting in productive inefficiencies: informal businesses typically avoid access to formal services and lack adequate access to credit. In social terms, it is characterized

by: poor working conditions - deficits in terms of health and by safety requirements or lower incomes - no social security. These shortcomings result in social dumping and poorer social outcomes.

This article will explore the main reasons why individuals choose to become part of the undeclared labor. The conclusions are based on a database of a survey prepared and conducted at the beginning of 2020 by the Association of Industrial Capital in Bulgaria, in partnership with the Confederation of Independent Trade Unions in Bulgaria, with the Ministry of Labor and Social Policy and with the institutions of the labor market, in the implementation of a project "Improving access to employment and the quality of jobs by limiting and preventing undeclared employment".

The article is structured as follows: in the second part, a literature review is made, in the third part, the methodology and main results of the study are presented, and the last part is a conclusion.

Literature review

In Bulgarian and foreign academic practice, there are numerous articles describing the main reasons for shadow economic practices such as undeclared labor written on the basis of surveys. Among the main sources are: Chengelova (2012) with her study "The shadow economy in the perception of employers - approaches and main results". This article describes the experience of one of the Bulgarian teams working in the field of measuring unregistered economic activities. The article reveals the methodological approaches, tools and techniques for researching the image of the shadow economy among employers from

Bulgaria¹. In the article, a distinction is made between the many concepts used to describe unregistered economic activities, and it offers its own definition for the phenomenon of “shadow economy”. On this basis, a system of empirical indicators and a toolkit for researching the image of the hidden economy among employers in Bulgaria has been developed. The results of the research are presented in a synthesized form, with the emphasis placed on the fundamentally important problems from a sociological point of view. The dominant assessments and ideas of employers about the shadow economy as a phenomenon were examined and trends in the scope and manifestation of shadow practices were identified. Special attention is paid to employers’ motives for working in the shadow sector. The article also aims at clarifying the role of the state as a regulator of the activity of economic subjects, in order to limit the shadow sector in the national economy.

Another article by the same author is “Shadow economy in the perceptions of Bulgarian society (2014). The article sheds light on two of the aspects in public opinion about “the economy in shadow”: firstly, what are the perceptions of the Bulgarian society about the relative share of the “shadow economy” in the national economy and secondly, what are the dominant models for evaluating and perceiving the “shadow economy” in public opinion. On the basis of a system of empirical sociological research realized in the period 2010-2013, findings were made about the scope, trends and manifestations of the “shadow economy”. It is shown that different actors in socio-economic

relations value shadow practices differently, which is a function of both the specific place in the system of production relations and a reflection of the immediate benefits and harms that different actors of gray practices experience.

The Dine Policy Institute (2017) investigated shadow practices among the Navajo people. In their article “Navajo Nation informal economy: Survey results from flea markets” Dine Policy Institute conducts a survey in flea markets in Navajo Nation territory. Each trader is perceived as a representative of small business. The task of the survey is to find out how big a role the market plays in the life of sellers. An income question was asked to find out how many vendors rely on the flea market as their main source of income and whether the income from the market supports their families. The survey creators leave the interpretation of the word “family” up to each participant. Interviewees are asked if there are any challenges facing their business. The latest questions revolve around what local and central government can do to help businesses.

For its part, Rockwool Foundation Research Unit (2003) publishes “The Shadow Economy in Germany, Great Britain and Scandinavia. A measurement based on questionnaire surveys”. The survey was conducted through telephone interviews in Denmark, Great Britain, Germany, Norway and Sweden. The design of questions across countries meets two conditions: that the questions be comparable across countries; take into account the tax laws of the countries so that only gray activities which

¹ The research was conducted within the framework of the project “Restriction and prevention of the informal economy”, implemented by the Association of Industrial Capital in Bulgaria (AIKB), with the financial support of the Operational Program “Development of Human Resources” 2007 - 2013, co-financed by the European Social Fund of The European Union and the Republic of Bulgaria.

are taxable according to the tax laws of the different countries are measured. Overall, the discussion of taxable activities in the five countries showed that there are no major differences between Norway, Sweden and Denmark. In Germany, on the other hand, more activities are considered non-taxable, since to be taxable there must be a binding agreement between the parties if the payment is not in cash. The UK differs from other countries in that it is not easy to determine whether an activity should be taxed or not. The decisive criterion for taxation is that an activity must have been carried out for economic purposes.

In 2015, the Lithuanian Free Market Institute published their article, "Shadow Economies in the Baltic Sea Region". This study is based on representative population surveys² in Lithuania, Latvia, Estonia, Poland, Sweden and Belarus. The main purpose of the surveys is to gather public perceptions of the shadow economy, actual participation in shadow economic activities and opinions on certain shadow practices. The survey was conducted from May 22 to June 15, 2015. The target audience included residents aged 18 to 75, with a total sample size of 6,035 across all six countries. The surveys were conducted based on the CAWI (Computer Assisted Web Interview) method using a standardized questionnaire.

Phillips Consulting (2014) explored the informal sector in Nigeria and published their findings in the article, named "Informal Economy in Nigeria" survey. The informal economy (also known as the informal sector) is a major part of the Nigerian economy and provides goods and services to millions of Nigerians. It is also a major provider of employment, especially for those who cannot

secure employment in the formal sector. Despite the importance of the informal sector, it is often overlooked and misunderstood. In order to gain a better understanding of activities within the shadow economy, as well as to assess public perception of its relevance and overall impact, an online survey was conducted in September 2014, collecting a total of 1,177 responses. The main findings of the survey are as follows: The majority of respondents (56%) indicated that the informal sector had an impact on their organization, with many indicating that this effect was positive. Sector impact varies from one industry to another, e.g. survey respondents indicated that agriculture (73%) gained more from informal sector activities than the ICT sector (48%). Most organizations are familiar with the activities of informal establishments and even use their products and services (52%); only a few respondents (5%) stated that they had no ties to the informal sector. Many (23%) believe their organizations patronize retail, food (e.g. catering) and utilities (e.g. electricity and water) service providers the most. However, people are more likely to patronize suppliers of food (48%), fashion (46%) and transport (34%) in the informal sector.

In our western neighbor the authors Krstić, G, et al. (2013) came about with the article "The Shadow Economy in Serbia. New Findings and Recommendations for Reform". The main objective of the survey of enterprises and entrepreneurs working informally in Serbia is to assess the different forms of the informal economy in this sector, as well as to analyze the forms of the gray economy according to the relevant characteristics of economic entities. In addition, the study provides an opportunity to gain insight into the reasons

² The surveys were developed by The Lithuanian Free Market Institute and its partner organizations and experts and were conducted by the market and public research company Spinter Research

and motivations for the activity of enterprises in the shadow economy, which can be relevant in the preparation of recommendations for moving businesses from the shadow to the formal economy. The sample consisted of 1,251 business entities (enterprises and entrepreneurs) and the survey was conducted between October 16 and 22, 2012 throughout Serbia. The main reasons for the development of the gray economy are the relatively high fiscal burden on labor; complex and expensive tax procedures; complex and non-transparent tax system; poorly organized, insufficiently staffed and insufficiently equipped tax administration; poor quality of public services; and high tolerance for the shadow economy. As regards the characteristics of the labor market, several factors particularly important for the promotion and maintenance of the informal economy can be singled out among a wider range of issues. These are: a high fiscal burden on labor for lower wage earners; a social security system that effectively prevents people in formal employment from being entitled to social benefits and other transfers; high minimum wage; and certain provisions governing statutory employment protection, working hours, unemployment benefits and the pension system. There are many other institutional and economic factors that contribute to a large extent to the shadow economy. Due to low productivity, the business models of many enterprises are such that they can only operate at a profit if they avoid paying taxes. The economic crisis and widespread liquidity problems have forced even more productive enterprises to shift some of their operations to the informal sector, and ineffective enforcement and exit mechanisms have encouraged informal sector enterprises to remain there. Among other reasons that have a significant impact on the extent of the

shadow economy are the high administrative burden on doing business; low quality of the regulatory environment; and legal uncertainty. In addition to these regulatory reasons, the decision to go informal is also influenced by widespread corruption and low tax morale. The most important financial factors are the large share of cash operations in the total volume of payments; informal financing; and unregistered remittances of migrant workers.

In 2012 Hudson et al. presented their article "Evaluating the Impact of the Informal Economy on Businesses in South East Europe: Some Lessons from the 2009 World Bank Enterprise Survey". The purpose of this article is to assess the impact of the informal economy on business and labor relations in Southeast Europe. For this purpose, the results of the 2009 World Bank Enterprise Survey are used, in which 4,720 enterprises located in South-Eastern Europe were interviewed. The finding is not only that the large informal sector reduces wage levels, but also that there are significant spatial differences in the adverse impacts of the informal economy in this European region. Small, rural and local enterprises producing for the domestic market and the transport, construction, clothing and wholesale sectors are most likely to be adversely affected by the shadow economy. The paper concludes by calling for similar research in other global regions and for a more targeted approach to tackling the shadow economy.

For their part, Putniņš, T, Sauka, A (2017), published an article named "Measuring the shadow economy using company managers". This study develops a method using data from company managers to measure the size of the shadow economy. The survey method is based on the premise that company managers are most likely to know how much business

income and wages go unreported because of their unique position in dealing with both types of income. The authors combine estimates of misreported business income, unregistered or hidden employees, and undeclared wages to construct an index by which to estimate the size of the shadow economy as a percentage of GDP.

Research methods and results

In a Ted talk³ on the shadow economy, one of the creators of The Shadow Economy Index For The Baltic Countries, Professor Arnis Sauka, explains that at the beginning of his academic research, he was convinced that no business representative would share with him the extent of his participation in the shadow economy, but also makes the assumption that economic subjects would be willing to talk about the activities of others. Therefore, collecting data for his dissertation, Professor Sauka conducted interviews with business representatives, asking them in the sector in which they operate, on average, in their opinion, what is the share of the gray economy. A year later, he repeated the interviews, this time asking his question in the following way: "Do you remember that last year you told me that you were evading "X"% of taxes in your company. Is the situation still the same?" To his credit, very few of the entrepreneurs interviewed guessed that a year earlier they were answering a question about the entire sector, not just their company. The rest have confirmed the numbers.

A similar approach is adopted in this paper. Using a linear and afterwards to further confirm the findings a probit binary regression, based on respondents' answers to a question asking why they think some in their field choose to

receive part of their remuneration "in hand", I will try to determine the propensity of each respondent to participate in the shadow economy, as part of undeclared employment.

In the survey I am analyzing, a two-stage nested sampling model was chosen. At the first stage, the nests are selected - these are 600 enterprises selected according to the following three criteria: 1) economic activity, 2) size of the enterprise and 3) populated place. At the second stage, between one and five workers are selected in each enterprise, and the specific number of employees to be interviewed is determined by the size of the enterprise. The following logic scheme is introduced for selecting a specific number of employees from those 600 enterprises. The finale sample is composed as it follows:

- In 325 enterprises with a staff of up to 9 people, the online survey is completed by one worker;
- In 166 enterprises with a staff between 10 and 49 people, the online survey is completed by three workers each;
- In 82 enterprises with a staff between 50 and 249 people, the online survey is completed by four workers each;
- In 27 enterprises with a staff of over 250 people, the online survey is completed by five workers each.

So I have the answers of 1283 people all over Bulgaria. When the online survey is completed by only one worker, the scheme of alternation of a worker with higher and with secondary and lower education is followed in his selection. When the survey is completed by three workers, two of them have a university degree and the third has a secondary or lower education. When the questions were

³ The shadow economy: it's not all black and white | Arnis Sauka | TEDxRiga: https://www.youtube.com/watch?v=yrQOKwxBW88&ab_channel=TEDxTalk

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being answered by four workers each, two of them have a university degree and two have a secondary or lower education. When the online survey is completed by five workers each, two of them have a university degree and three have a secondary or lower education. In the selection of workers, the principle of proportional selection of persons of both sexes is also observed, taking as a basis the ratio in the enterprise.

The comparison between the sample and the data on the country's population from the NSI shows that the responses are representative when it comes to gender and education. There is a certain discrepancy in the age structure of the sample and the population of Bulgaria for the group 15-24, but that can be explained by the fact that a lot of people in this age category devote their time to education. Bigger differences are noticeable in the place of residence, with over 90% of the persons in my sample living in a regional city or capital in comparison with about 41% nationally. In order not to distort the further analysis, I assume that the data I have are representative only of the big cities.

As the dependent variable in my model, I use respondents' tax morale, since undeclared employment is directly related to tax and social security evasion. The definition for undeclared labor is set at the EU level as any paid activities that are lawful as regards their nature but not declared to public authorities. As the Prohibition and Prevention of Unregistered Activities Act (Official Gazette, 2011) states, 'unregistered activity' is any type of legal work conducted by individuals or firms without complete and valid documentation and required permissions. The assumption made here is that persons with high tax morale will declare their employment, while respectively those with low tax morale will choose to be part of the undeclared employment.

To find respondents' tax morale, I use a set of questions revealing respondents' attitudes toward certain manifestations of the shadow economy, such as someone working and receiving unemployment benefits at the same time, for example. Respondents rate eight different situations on a scale from 1 to 10, with a score of 1 meaning "absolutely unacceptable behavior" and a score of 10 meaning "absolutely acceptable behavior."

Table 1. Reasons for undeclared work

1.	Higher incomes are obtained
2.	Easier to find work
3.	There are no other options in the town where I live
4.	Due to family complications (sick, unemployed, low income)
5.	This is better for both the employer and the employee
6.	Bureaucracy and paperwork are too much and too complicated
7.	There is no fear that such violations will be detected
8.	There is no fear that if such violations are found, the sanctions for them will be substantial
9.	Taxes and social security are too high
10.	The state does nothing in the social sphere anyway, it does not need to collect more money
11.	Another reason

Source: Questionnaire

First, to avoid survey error, I calculate Cronbach's alpha, for which I got a score of 0.81, which makes the conclusions very reliable. I then sum each respondent's answers for the eight situations to obtain respondents' tax morale scores on a scale of 8 to 80, with 8 being high and 80 being low.

As dependent variables in the model, I used the answers to the question: "In your opinion, what are the reasons in the industry in which you work, for such practices as working without a contract or receiving additional remuneration 'on hand' to exist?" The answers respondents can choose from are shown in table 1.

Each response was coded as a binary variable with a value of 0 if it was not selected and a code of 1 if it was specified.

When we run a linear regression with those dependent and explanatory variables, we can see that the model shows that

among the main reasons for participating in the shadow economy are higher incomes, easier finding a job due to complications in the family such as illness or inability to find formal employment, high taxes and insurance, and lack of concern that such activities will be detected and punished (see Figure 1.).

To further confirm our findings, we are using a probit binary regression. Several characteristics of the dependent variable prompted the use of a binary model. The observations for the dependent variable are derived from discrete responses of the respondents, but more important it is bounded in the interval between 8 and 80, making it unsuitable for analysis as a dependent variable in a linear regression model. Also, the answers for some points of the scale are very few or even zero. Thus, employing the data without any transformations may lead to unreliable results. For that reason I create a

Figure 1. Why do Bulgarians engage in undeclared work?

Model Summary (SE)					
R	R Square	Adjusted R Square	Std. Error of the Estimate		
,22	,05	,04	,44		

ANOVA (SE)					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	12,02	10	1,20	6,34	,000
Residual	241,13	1272	,19		
Total	253,15	1282			

Coefficients (SE)					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,69	,02	,00	28,98	,000
c7_1	-,09	,03	-,10	-3,63	,000
c7_2	,04	,01	,08	2,92	,004
c7_3	,00	,01	,01	,43	,669
c7_4	,03	,01	,10	3,29	,001
c7_5	,00	,01	-,02	-,62	,533
c7_6	,01	,01	,03	,92	,360
c7_7	,01	,00	,05	1,74	,082
c7_8	,00	,00	,01	,29	,769
c7_9	,01	,00	,10	3,65	,000
c7_10	,00	,00	-,03	-1,16	,246

Source: Author's calculations

binary variable that takes the value 0 for the people with the highest tax morale of 8 points and 1 for everyone else. The assumption here is that people with high tax morale do not want to be part of the undeclared employment.

The model (see Figure 2.) also shows that with an accuracy of 72.7% we can predict who will take part in gray practices. Moreover, a look of the classification table shows that the model predicts correctly 99.6% of the cases when people engage in set shadow economic activities. On the other side, the predicted cases of engagement in the undeclared employment are more than what the data anticipates, but as they say "better be safe than sorry".

In other words, higher incomes when performing undeclared employment and,

respectively, the feeling of an excessive tax and insurance burden are one of the main arguments for the existence of shadow economy. This is because when they do not pay insurance on the full amount of their remuneration, economic agents feel effectively richer. However, this is a double-edged sword, as reduced or no insurance is a prerequisite for poverty at retirement age and/or exclusion from the health care system upon loss of health rights.

The difficulty of finding a job in the formal sector because the person does not meet the needs of the market or due to illness are problems that can be targeted at the central level by the Employment Agency bodies or municipalities through qualification and re-skilling training in order to reduce

Figure 2. Why do Bulgarians engage in undeclared work?

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1432,92	,05	,07

Classification Table

Observed			Predicted		
			SE		Percentage Correct
			no SE	SE	
Step 1	SE	no SE	1	346	,3%
		SE	4	932	99,6%
Overall Percentage					72,7%

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1						
c7_1	-,48	,13	12,41	1	,000	,62
c7_2	,22	,07	8,86	1	,003	1,24
c7_3	,02	,06	,11	1	,741	1,02
c7_4	,16	,05	11,43	1	,001	1,18
c7_5	-,02	,03	,29	1	,587	,98
c7_6	,03	,03	,96	1	,327	1,03
c7_7	,05	,03	3,30	1	,069	1,05
c7_8	,01	,02	,13	1	,717	1,01
c7_9	,07	,02	13,17	1	,000	1,07
c7_10	-,02	,02	1,26	1	,262	,98
c7_11	,03	,11	,07	1	,788	1,03
Constant	,79	,13	38,17	1	,000	2,20

Source: Author's calculations

structural unemployment or programs aimed at people with reduced working capacity. A good example in this regard is the Law on the Integration of People with Disabilities.

Of course, this model is a static picture and we cannot be sure that it is going to always reflect the dynamics of real life. Reasons for engaging in shadow economic activities can vary from person to person and from time to time. However, these findings are in line with those of other authors like Chengelova and Angelova (2021), who prove that when commenting on the employment contract, the workers categorically bring to the fore the questions about the labor remuneration, about the bonuses, about the method of payment and the frequency of payment of the basic labor remuneration, about the working hours, about the social benefits. In the initial negotiation of terms of employment between employer and employee, both parties are primarily concerned with financial matters, as well as other non-financial tangible benefits offered. Along with this, their research confirmed the hypothesis that the negotiation of labor remuneration, bonuses and non-financial material benefits most often become a reason for the occurrence of undeclared employment practices.

The results are also in line with the findings of Williams (2020), who using the labour input method, and he confirmed that undeclared work is higher in EU member states with lower levels of GDP per capita, less modernised systems of government, higher levels of corruption, social transfers are less effective at reducing poverty, and there are lower levels of public expenditure on labour market interventions to protect vulnerable groups.

Conclusion

Knowing the main drivers of the shadow economy, control authorities and managers can take measures aimed directly at the causes of such behavior. A useful approach would be to shift policy away from the conventional low 'hard' policy approach through strict rules, strict oversight and monitoring, prescribed procedures and centralized structures. Instead, the desired change in the behavior of economic entities can be initiated at the organizational level through a "soft" political approach with high trust and high commitment of state institutions in creating an environment of partnership between individuals, the state and business, which fosters self-regulation through internalized commitment.

In order to achieve this, it is necessary to make a stronger commitment to the digitization of public services, increase administrative efficiency, improvement of the transparency of public procurement, respect for the rule of law and others. Creating a culture of voluntary tax compliance is complicated without structural changes aimed at increasing the efficiency of public administration and trust in the government. Control mechanisms need to be put in place to reduce the chances of misapplication.

The shadow economy has a negative impact on the state budget and is able to distort basic indicators such as growth, unemployment, real GDP. This entails a series of important political decisions in the public sector that reflect on the social environment and civic morality. So, one way to fight against gray practices is through an information campaign to make economic subjects aware of the harms of the shadow economy.

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