

# **Drivers of shadow economy in transition countries during the post-crisis period: The results of structural model**

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*Abstract: During the recent years the problem of the shadow economy is becoming more prominent, especially in transition countries that are faced with the numerous structural imbalances inherited from central-planning period. The emergence of the global economic crisis emphasized the necessity of solving this problem, given that widespread shadow economy reduces the amount of available budget funds for the implementation of anti-crisis measures. Having that in mind, the aim of this paper is to assess the role of wealth or living standards, market openness, political environment and tax system in the emergence and development of the shadow economy in the European transition economies during the period 2009-2014, using PLS-SEM model. The conducted research enabled authors to suggest recommendations and guidelines that policymakers should include in their long-term strategy for fighting the shadow economy.*

*Keywords: shadow economy, transition countries, PLS-SEM model, global economic crisis, economic development*

## **1. Introduction**

The interest of economists and policy makers in shadow economy is not dying down. On the contrary, an increasing number of them is trying to define shadow economy as precisely as possible and to determine its size in the economy. Precise defining of the shadow economy concept is one of the key preconditions for a high-quality and comprehensive analysis of the factors which create favourable environment for its emergence and expansion in the economy, but it also helps in defining recommendations and guidelines for the battle against this negative social phenomenon.

There are numerous activities which are considered to be shadow economy. On one side, there are activities which are illicit (such as racketeering, drugs and

firearms trafficking etc.), and on the other one, there are activities which may be either legal or illegal depending on the risks and benefits of not reporting them [1]. Therefore, authors often use different terms as synonyms for the shadow economy, such as the "underground (illegal) economy" and "informal economy". However, it should be kept in mind that these terms are not synonymous and that the definition of the term shadow economy requires a precise definition of the activities it encompasses. The underground or illegal economy encompasses income generated through economic activities based on the violations of law which strictly defines a wide range of legal forms of trafficking. Participants in this segment of the economy are engaged in the production and distribution of prohibited goods [2]. On the other hand, the informal economy includes the individuals engaged in the production of goods and services whose primary goal is to generate income and employment for themselves. These activities are legal and usually the individuals who carry them out do not have neither a deliberate intention to avoid paying taxes or social security contributions nor to violate labour laws or other legal regulations [3]. Figure 1 clearly shows that the shadow economy includes part of these activities, but that the abovementioned three terms cannot be synonymous.

Perhaps the most precise definition of shadow economy has been given by Schneider [5] who pointed out that shadow economy encompasses the whole market-based legal production of goods and services, which is intentionally hidden from state authorities for the following reasons:

1. to avoid paying taxes on income, VAT and other taxes,
2. to avoid payment of social security contributions,
3. to avoid the obligation to meet certain statutory labour market standards, such as minimum wages, maximum working hours, workplace health and safety standards, etc.
4. to avoid meeting certain administrative obligations, such as filling out statistical questionnaires and other administrative forms.

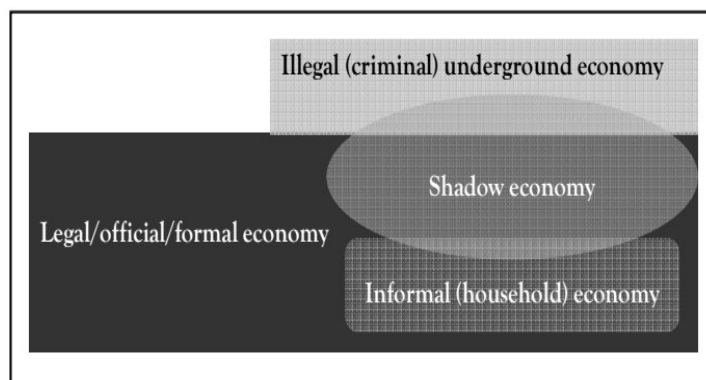


Figure 1.

Legal/official/formal, shadow, illegal/underground and informal economy [4]

Generally speaking, the shadow economy includes economic transactions and non-formal activities which are: not recorded in official documents, not controlled by the government and not included in the system of national accounts [6,7,8].

Insufficiently effective fight against shadow economy has numerous consequences on the functioning of formal sector and, ultimately, on the performance of the national economy. A high level of shadow economy in the national economy can induce policy makers to make decisions which are not based on realistic information. In such conditions, so-called "positive indicators" (those to be maximized), such as GDP and industrial production indices, are underestimated, while "negative indicators" (those to be minimized) like, for example, inflation and unemployment, are overestimated. Hence, economic policy makers strive to include measures aimed at fighting the shadow economy in long-term strategies of economic growth and development, since by reducing its size, their decision on measures of economic policy will be made on relevant facts. The significance of the struggle against the shadow economy is especially evident in the conditions of the crisis, since this type of activity reduces the volume of available resources which are necessary for the economy in order to get out of the crisis [9]. This is particularly true for transitional economies, which, in most cases, besides the lack of resources, do not have a sufficiently developed institutional and regulatory environment to overcome the crisis, which additionally complicates the problem.

Hereof, the aim of this paper is to identify the causes of shadow economy in transition economies in the post-crisis period (2009-2014) and the direction of their action, to explore the differences between the factors that stimulate the shadow economy in 20 transition economies and thus to define recommendations and guidelines for fighting against this negative phenomenon.

## 2. Literature review

As the consequences of the shadow economy in the post-crisis period were becoming more pronounced and the crisis exit was becoming more unreachable, an increasing number of authors strived to identify the concept, determinants and the size of the shadow economy more precisely, by applying different methods and models. Depending on the way of defining the shadow economy and the characteristics of the area in which the research was carried out, the authors used different indicators of the shadow economy and the causes of its emergence and expansion in the economy. Particularly suitable ground for investigating shadow economy factors are the former command economies, primarily owing to the legacy of the period of real socialism when corruption and the shadow economy were almost institutionalized. In most of these countries, public institutions, such as social security, for example, still lack credibility. The same applies to the institutions which regulate the financial market, where property rights are weak, competition is limited and investment transparency is low. Therefore, the absence or inconsistent implementation of all necessary market reforms, creates a large number of constraints on the establishment and development of companies, so potential entrepreneurs will operate in the "shadow economy" area, and the already existing companies will try to avoid paying the state taxes.

In the initial phases of transition, the existence of shadow economy in the former socialist economies has been neglected and treated as an absorber of poverty and social chaos [10]. Some authors point out that in transition economies, shadow economy has some positive effects [11,12], since it leads to economic and social balance by stimulating economic growth, boosting competition, providing people with living resources and the like. However, such an insight cannot be considered justified, since it would mean that illegal economic activities represent a prerequisite for the survival of business entities on the market, while on the other hand, the behaviour of citizens and the government is only sporadically regulated by legislation, which is contrary to the fundamental purpose of existence of the country - preservation and development of human capital as well as the increase of prosperity [13]. Bearing in mind the specificity of the transition economies, it is realistic to expect that significance and direction of actions of certain factors on the emergence of shadow economy will be different from the ones which are acting in market economies.

Since most transition economies, in spite of the implemented economic and political reforms, have not realized the expected growth rates for many years, Pathak et al. [14] examined factors which have influenced the development of entrepreneurship as a potential driver of growth in these economies. They proceed from the assumption that ethnic fractionation along with the level of shadow economy determine the entrepreneurial initiative of every individual in these economies. And while ethnic fractionation increases the number of newly established entrepreneurial firms, the high level of shadow economy reduces them.

Hence, they state that ethnic diversity in transition economies can be one of the key drivers of the entrepreneurship development.

Besides the influence on economic growth, a large number of authors focused also on the analysis of the shadow economy in the labour market [12,15]. Thus, Cichocki and Tyrowicz [16] focused on the labour market in Poland as one of the transition economies. They state that the shadow economy appears due to two imperfections in the labour market in transition economies. On one hand, taxation disorders on the formal labour market lead to the fact that it is not rational for certain workers to be reported (the tax evasion hypothesis), while on the other hand, engaging in formal sector is unattainable for some workers due to either the high cost of reporting or restrictions in demand for labour force, which leads them to engage themselves in the informal sector in order to earn any kind of income (the market segmentation hypothesis). On the basis of the survey, they examined which of these two hypotheses is being confirmed on the labour market in Poland. They have come to the conclusion that undeclared workers have had higher expenditures and lower incomes than reported, which have led them to conclude that the market segmentation hypothesis is applicable in Poland, i.e. that some individuals are engaged in the informal sector because they have no other choice. Colin [17], however, states that in transition economies, the high level of tax rates and significant regulation as well as intervention of the government, reduce the number of employees in the informal sector and that in the future it is necessary to intensify control and increase taxes in order to reduce the number of employees in the informal sector as much as possible.

Generally speaking, the majority of authors used the so-called MIMIC (Multiple Indicator and Multiple Cause) model for examining shadow economy determinants and estimating its size in the economy of a particular country or group of countries [18,19,20]. However, it is often stated in the literature that there are certain disadvantages of this method, such as, [20,21] it:

1. allows estimation of the shadow economy only in relative, and not in absolute terms, so it is necessary to use additional procedure in order to determine the size of the shadow economy in absolute term;
2. uses some ad-hoc econometric specifications which leads to certain errors in the measurement of the shadow economy;
3. does not provide appropriate conclusions at the microeconomic level;
4. requires a large set of data to fulfil the condition of stationing and normality,
5. uses a subjective choice of variables where certain indicators (such as the unemployment rate) can be used both as the cause and as the indicator of the shadow economy.

In this paper, due to all above stated, the PLS-SEM model for analysing the shadow economy determinants in the observed European economies was applied

due to its serious advantages. It is very convenient in situations where the sample is very small (less than 100), like in the case of this one. Also, many authors have noted that it should be used in situations where the needs of work exceed the capabilities of the standard SEM model, especially when the number of indicators per latent variable becomes too large. So these are the main reasons why the authors have chosen this particular method.

### **3. The Shadow Economy Determinants**

The shadow economy determinants in this paper are divided into four groups: wealth, open market, tax system and political environment. Each group consists of several latent variables which describe the situation in that area. The following indicators of the shadow economy were used: the share of household consumption in GDP, tax revenues as % of GDP and the unemployment rate.

*The wealth* of a country, viewed through the standard of the citizens and their satisfaction with living and working conditions, in general, is one of the very important factors of the shadow economy. Quintano and Mazzocchi have concluded in their research that wealth has a negative influence on the shadow economy, i.e., a higher level of social welfare in the economy is associated with a lower level of shadow economy. It certainly makes sense, because the economy and citizens in such conditions have no reason to involve themselves in the informal sector [22]. Apart from the wealth, an unequal distribution of income in society and the level of social development greatly influence the emergence of the shadow economy. Empirical research has shown that a greater level of inequality in society certainly encourages the emergence of shadow economy and that insufficient social development is linked to a higher level of shadow economy [23]. Bearing all this in mind, the wealth of the country in this paper is presented through GDP per capita (as an indicator of the standard of the citizens), the Gini coefficient (as an indicator of equality in the distribution of income) and the HDI index (as a synthetic indicator of living and working conditions).

*The open market* is another very important determinant of the shadow economy, especially for transition economies. By analysing 69 national economies, Friedman [24] and his associates have come to the conclusion that highly regulated economies have a greater share of the shadow economy in the national economy. In open, fast-growing economies, people have many chances to earn extra earnings in the formal economy, so they have no interest in engaging in the informal sector. On the other hand, in a closed, regulated, autarchic economy which faces a recession or slow growth, people try to make additional income in the informal sector. Therefore, a large number of authors who analysed the link between the level of liberalization and the level of shadow economy in developing countries have stressed the importance of reducing regulation of economic flows

for an effective fight against the shadow economy [25,26,27]. This determinant is shown by the Index of Economic Freedom in a great number of countries which publish Heritage Foundation annually: freedom of business, freedom of investment, freedom in the labour market, monetary freedom and trade freedom.

The level of the shadow economy and the motivation of both citizens and the economy to engage in the informal sector are directly dependent on the characteristics of the country's tax system. The acting of the economy and citizens in the shadow economy sector is tightly connected with the taxes evasion [28]. At the same time, not only the level of tax burden, but also the tax administration should be taken into account, as the overly complicated procedure of preparing documentation and paying taxes creates the risk of tax evasion. One of the US Senators Max Baucus pointed out that "the complexity of tax procedures is a kind of a tax itself" [29]. It often happens that companies show unrealistic losses at the end of the fiscal year in order not to pay taxes. Besides the fact that this is a criminal offense, it also has a bad influence on other companies which are doing business in accordance with the law, because their competitiveness on the market is decreasing comparing to the companies which have evaded taxes [30]. A similar effect has the evasion of other types of taxes. Non-payment of the labour tax reduces the costs of doing business, which entails a lower cost price and a selling price compared to the competition, while the evasion of VAT payment directly affects the selling price. This behaviour depends on the perception of the taxpayer on the relationship between the benefits generated by non-payment of taxes and expenses for penalties if the tax inspection finds that they have been doing business illegally. This perception is determined by the frequency of control, the amount of penalty and, in general, the efficiency of the legislative, regulatory and institutional environment defined by the last determinant which is included in this research. Bearing all this in mind, this determinant is described by the amount of income tax, labour tax, value added tax and the time necessary for the preparation of documents and tax payment.

The emergence of shadow economy is certainly connected with the polity, the level of democracy, the quality of regulation and, in general, the political and regulatory environment. Bearing in mind that political and economic development is closely connected and mutually conditioned, the importance of public management in transition economies is reflected in finding the optimal relationship between the government and the market, having in mind that their acting is complementary. Teobaldelli and Schneider [31] have come to the conclusion that democratic countries have fiscal policy measures formulated to reflect the attitudes and preferences of citizens, and therefore the level of shadow economy in such economies is lower. The greater confidence of citizens in the government and state institutions, according to D'Hernoncourt and Méon [32], results in a reduction in the size of the shadow economy in the national economy. However, the level of this trust depends on the quality of the government. One of the very important aspects of the quality of government, which directly affects the

level of the shadow economy, is the efficiency of the government in collecting taxes [33]. The best examples are the countries of northern and western Europe where, despite high tax rates, the shadow economy is at a relatively low level due to strict and efficient tax collection control. At the other end are the countries of Eastern Europe, among which the best example is Bulgaria, whose, despite relatively low tax rates, have been struggling with the shadow economy for years. This further brings also the problem of increasing the budget deficit and public debt, which further stimulates the growth of the shadow economy [9,30]. Due to the decline in the country credit rating and, thus, the worsening of the macroeconomic situation, the situation of the citizens and the economy is deteriorating as well (especially since in such conditions, as a rule, the austerity measures are implemented), so they are increasingly engaged in the activities in informal sector. The political environment is explained by World Bank Governance Indicators (WGI) related to the government efficiency, regulatory quality, rule of law, political stability and voice and accountability.

#### **4. Methodology**

In recent years, researchers have used different methodologies for measuring the degree of shadow economy [34,35,36]. This research uses the PLS-SEM procedure. SEM\_PLS analysis was used to analyse the relationship that exists between data which represent the factors which influence the emergence of the shadow economy in the observed countries and the degree of the shadow economy in that particular country. Although there is a serious debate on the validity of using SEM\_PLS analysis versus standard SEM analysis, its serious advantages are that it is very convenient in situations where the sample is very small (less than 100), as it is in this case. Also, many authors have noted that it should be used in situations where the needs of study exceed the capabilities of the standard SEM model, especially when the number of indicators by the latent variable becomes too large and these are the main reasons why the authors have decided to use this particular method.

In Europe, the number of researchers in the field of management, who are using the SEM-PLS method, is increasing, as many have managed to recognize the benefits of this method, primarily thanks to study published by Hair [37]. However, its overall possibilities are not yet fully utilized, primarily due to certain limitations. Henseler and his collaborators [38] have indicated that the PLS method represents a good compromise between the theoretically oriented covariance-based approaches, such as LISREL, and the predictive power of the Artificial Neural Networks (ANNs). In their researches, Reinartz [39] and his associates have concluded that PLS offers greater precision during the assessment



compared to LISREL, in cases where there are less than 250-500 samples, which is a very usual situation in econometrics [33].

The PLS method focuses on maximizing the variance of the dependent variable explained by an independent variable instead of creating the covariance matrix. Like any SEM, PLS consists of the structural part which shows the relationship between the latent variables, the measuring component, which shows that the latent variable and its indicators are connected, and the third component, the weight links, which are used to estimate the value of the latent variables [40].

## 5. The Results and Discussion

In order to examine the direction of determinants which influence the emergence and expansion of the shadow economy in transition economies, by applying the PLS-SEM model, the structural model was created - shown in Figure 2.

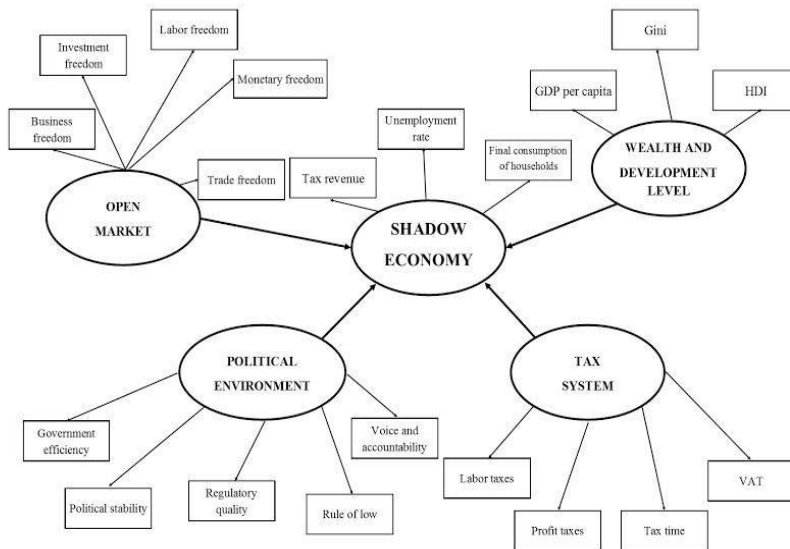


Figure 2  
Structural model

The analysis used data on determinants and indicators of the shadow economy in the period from 2009 to 2014 for 20 transition economies (Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Montenegro, Estonia, Croatia, Armenia,

Latvia, Lithuania, Hungary, Macedonia, Poland, Romania, Russia, Slovakia, Slovenia, Serbia, Turkey and Ukraine) in order to determine the degree and direction of latent variables on the shadow economy as a dependent variable in the post-crisis period. Table 1 shows the results of the structural model.

Table 1.  
Results of PLS-SEM

	<b>Original Sample (O)</b>	<b>Sample Mean (M)</b>	<b>Standard Deviation (STDEV)</b>	<b>T Statistics ( O/STDEV )</b>	<b>p Values</b>
<b>Wealth and development level-&gt; Shadow economy</b>	-0,234	-0,303	0,182	1,285	0,199
<b>Open makret -&gt; Shadow economy</b>	-0,315	-0,244	0,140	2,256	0,025
<b>Political environment -&gt; Shadow economy</b>	-0,057	0,072	0,246	0,233	0,816
<b>Tax system -&gt; Shadow economy</b>	-0,242	-0,168	0,280	0,864	0,388

Based on the results shown, it can be noticed that the only link between open market and shadow economy is statistically significant. In addition, this determinant has the highest coefficient of regression of -0.315 and shows a negative relationship between the achieved degree of the economy openness and the shadow economy. The greater openness of the economy, i.e. the lower regulation of economic flows by the government, has the influence on the reduction of shadow economy, since in such conditions the economy and the citizens do not have a strong enough motivation to engage themselves in the shadow economy, which is in accordance with the neoliberal approach of the economy development. Although the debate on the validity of the neoliberal concept of development was launched after the global economic crisis, with the majority of authors emphasizing the negative side of this concept, this model proves that a high degree of regulation of the economy creates a favourable ground for the development of the shadow economy. This does not mean it is necessary that the government completely withdraws from economic life, but it means that the government should strengthen its role as guarantor that the market laws will function properly.

A somewhat lower but also negative regression coefficient (-0.242) was obtained for the tax system, indicating that higher tax rates and longer taxation procedures result in a lower level of shadow economy. Also, we should point out the already mentioned fact that even the most restrictive tax system will not have a widespread shadow economy if there is an effective, consistent and rigorous control over the submission of documentation, calculation and collection of taxes.

The negative regression coefficient  $-0,234$ , which shows the link between the wealth and the underground economy, indicates that higher economic development as well as higher social well-being have a lower level of shadow economy. This can be justified by the fact that firms and the citizens in the more developed transition economies will be less interested in taking actions in the shadow economy zone since they have high enough incomes and sufficient conditions for living and working in formal sector. Finally, the lowest, but also a negative coefficient ( $-0,057$ ), was obtained in the area of influence of the political environment on the shadow economy. This value of the coefficient indicates that if the quality of the political environment is higher, implying greater rule of law, better regulation, more efficient state administration as well as higher level of democracy and political stability, the level of the shadow economy will be lower.

### **Conclusions**

Shadow economy is not a problem that only transitional economies are facing, it is a global problem. Almost every country faces it more or less. Observed at the global level, the shadow economy began its "takeoff" in the 1960s, but it boomed in 2008, with the escalation of the global economic crisis. In the former socialist countries, inadequate and inconsistent implementation of transitional processes created an additional space for its emergence and expansion in the economy. The phenomenon of the global economic crisis has only further encouraged both the citizens and business entities in these countries to engage in the informal sector. Its level in certain economies has reached worrisome proportions.

The consequences have been very damaging and reflected in: ill-gotten wealth, social stratification, reduction of public revenues, unfair competition, slowdown in the growth of economic activities in the formal sector, and so on. On the other hand, if something positive can be said about the shadow economy at all, it is that it contributes to the reduction of social tensions, through a certain improvement in the living standard of the poorest layers of the population, and from an economic point of view, the prevention of the fall of the profit rate.

The causes of the emergence of the shadow economy are also numerous and diverse. Many authors have tried to systematize all the causes which condition its phenomenon, but there is still no consensus on this. In this paper, the wealth, open market, the tax system and the political environment are the determinants of the shadow economy as the most commonly cited causes of the emergence of the shadow economy. The defined PLS-SEM model have indicated that all observed determinants negatively affect the shadow economy, whereby only the connection between the open market and the shadow economy is statistically significant. Bearing in mind that in a large number of transition economies, there are still some restrictions on the conduct of economic activities and that, in this regard, the liberalization process is not fully completed, it is not surprising that such results have been obtained.

Since the shadow economy is not only an economic phenomenon, but due to its complexity it has all the attributes of a political, sociological, psychological, legal phenomenon, the fight against this negative phenomenon requires a multidisciplinary approach. Each country, within its activities, undertakes a whole "arsenal" of various measures and instruments to reduce the shadow economy to an acceptable extent as well as to create a long-term sustainable system of fighting against this phenomenon. In transition economies, these measures and instruments largely coincide with the reform processes, which these economies need to implement on the way to the establishment of the market system, in relation to:

- improvement of the business environment, which will be, on one hand, stimulating for business and on the other, discouraging for business entities from acting in the informal sector,
- creating conditions for improving the market economy, increasing the independence of business entities and reducing the influence of the government,
- introduction of an adequate tax system that will stimulate tax payers to socially responsible behaviour, i.e. using the broader scope, lower tax basis and lower tax rate,
- modern organization and functioning of the labour market,
- creating conditions for accelerated employment, primarily through the development of entrepreneurship, and the granting of certain privileges, especially for vulnerable categories of the population,
- affirmation of some forms of modern business that are in the function of reducing the shadow economy - transparency, legal security, property protection, non-cash payments, reducing bureaucratic procedures and the emergence of bribery and corruption (black economy).
- responsible work and full implementation of the law by the competent state institutions - inspection services, customs, police, prosecution, courts with the aim of suppressing illegal business.

Given that this is a complex and delicate phenomenon, the shadow economy should be the subject of continuous monitoring, viewing and analysing which would lead to the establishment of the system for the effective, long-term fight against this unwanted phenomenon.

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