

Effect of Regulatory Burden on Black Economy in Selected Countries Group

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Abstract

Regulatory Burden implies the part where government policies that increase or decrease market activity those terms of two sub-indices, the strength of enterprises and financial institutions and market size is measured. In this regard, the rules are explicit, they are easier to implement. With the multiplicity and complexity of regulations, provisions will be faced with the more problems which will lead to negative consequences such as corruption and bribery, the expansion of informal activities in the black economy. The main aim of this article is to investigate the relationship between the theoretical and the impact of Regulatory Burden of the black economy in selected countries OECD. The results of the model, fixed effects group selected countries for 2013-2002 period show that Regulatory Burden had significant negative impact on the black economy group selected countries.

JEL Classification: I18; I12; E24

Keywords: Black Economy, Regulatory Burden Implies, Fixed Effects Method.

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Introduction

Business and investment in any country involves a secure and appropriate institutional environment. Capital owners would invest their capital in countries where signs of economic security are clearly observable. Policy makers and planners of any society must continuously measure and control the status and conditions of economic security and investment in that society and, then, based on the results of these measurements, provide the arrangements for absorbing foreign capitals and preventing capital flight. Economic growth involves investment. If in a society investment is not does not occur sufficiently, then the economic growth will be slow or stopped; consequently, social welfare will be reduced. Investment will be realized if a secure and appropriate environment for investment is provided (Hosseinizadeh Bahreini, Malekossadati, 2010). Compilation of appropriate regulations can be achieved through using the instruments for current evaluations and assessments or suggesting the improvement of regulatory burden. These instruments include administrative simplification, actions for improvement of clarity (transparency), and communications, regarding and implementing the rules and regulations, and some other instruments for protecting and supporting the administrative justice and accountability. Improvement of regulatory burden is the principal objective for correcting the governmental sector management and the fundamental performance of the economy and society; besides, it improves the citizens' life quality and increases the concentration on the productivity quality, which is crucial for the approach of providing better services.

In this regard, the present paper investigates the manner and amount of the effects of regulatory burden on the size of black economy in the OECD selected countries group during 2003-2012 period, in SPD (static panel data) and DPD (dynamic panel data) framework, and test the following hypothesis:

The regulatory burden has negative and significant effect on the size of black economy in the selected countries group.

The information required for this research was gathered from published statistics and reports, foreign information resources, international websites such as WDI on address (www.worldbank.org), and the black economy estimation section taken from Freidrich Schneider's article. Statistical society of the study is a group of OECD selected countries. It must be noted that we have selected countries about whose the variables' statistical data during the research period was accessible. The selected countries group included Australia, Belgium, Turkey, Czech, Denmark, Sweden, Canada, Ireland, Hungary, Switzerland, Luxemburg, Portugal, France, England, Netherland, Finland, Norway, Greece, Poland, and Germany. In following sections, after examination of the research's theoretical fundamentals and backgrounds, we will introduce and estimate the model's structure and then make conclusion and present our suggestions.

Theoretical basics

According to Chen (2007), there are at least three schools of thought on link between shadow and formal economies: *dualism*, *structuralism*, and *legalism*. The “dualists” argue that shadow activities have few linkages to the official economy but, rather, operate as a separate sector. This approach is based on the neoclassical hypothesis that rigidities in the official sector, introduced through legislation or negotiation, segment the market (Harris and Todaro, 1970). The dualist hypothesis asserts that these two sectors are subsidiaries through common factors that lead to the flow of workers and activities from formal to the shadow economy. The “structuralists” consider the shadow and formal sectors as intrinsically linked. Formal enterprises promote informal production and employment relationships with subordinated economic units and workers to reduce their input costs (Chen, 2007). According to this approach, both informal enterprises and informal wage workers are inclined to meet the interests of increasing the competitiveness of regular firms, providing cheap goods and services. Consequently, growing official economy boosts unofficial production. The “legalists” direct their interest on the relationship between shadow activities and the formal regulatory environment, not formal firms (Chen, 2007), which is attributed to the fact that the capitalist interests collude with government to set the formal “rules of the game” (de Soto, 1989). Another viewpoint to examine the economic consequences of shadow economy on official economy is based on the analysis of the nature of this relationship. It means that the interest of economist is to know if substitution effects prevail on complementary ones. When the complementarities between unofficial and official economy overcome the substitution effects, larger shadow economy should stimulate the official growth.

Most authors trying to measure the shadow economy face the difficulty of how to define it. One commonly used working definition is all currently unregistered economic activities that contribute to the officially calculated (or observed) Gross National Product¹. Smith (1994) defines it as „market-based production of goods and services, whether legal or illegal that escapes detection in the official estimates of GDP. “Or to put it in another way, one of the broadest definitions of it, includes...” those economic activities and the income derived from them that circumvent or otherwise government regulation, taxation or observation”².

Studies on black economy started with Kigan’s paper on America’s economy. Since then researchers such as Tanzi, Frey, Feige, and others tried to develop methods of measuring the black economy. In these researches have been performed in three fields including micro, macro, and inter-course studies each one of which has its own advantages and disadvantages. In fact, the researchers’ supposition of black economy largely influences choosing the research method and its domain.

¹ . This definition is used for example, by Feige (1989, 1994), Schneider (1994a, 2003, 2005) and Frey and Pommerehne (1984). Do-it-yourself activities are not included. For estimates of the shadow economy and the do-it-yourself activities for Germany see Karmann (1986, 1990).

² . This definition is taken from Del’Anno (2003), Del’Anno and Schneider (2004) and Feige (1989); see also Thomas (1999), Fleming, Roman and Farrell (2000).

Johnson, Kaufmann, and Lobaton (1998), have investigated and measured the black economy's share of GDP in OECD, in-transition, and Latin American countries. The results indicate that high level of legal authorities for government can pave the ground for bribery, rent, and various kinds of corruption in the unofficial sector; besides, excessive rules and regulations have been introduced as factors which affect the expansion of black economy's size. Schneider and Enste (2000) have investigated the roots and origin of the black economy in the world. In this research, the economic activities of the society are categorized into two parts, that is, legal activities and illegal activities. Moreover, they have estimated the black economy's share of GDP in developing and in-transition countries during 1990-1993 period. According to the previous studies and statistics, three countries including Nigeria, Egypt, and Thailand, having estimated black economy size of more than three fourth of the whole economy, have got the highest ranks among the countries. Also, it must be noted that high tax burden has been introduced as one of the main causes of black economy. Schneider (2002), has calculated the black economy's size in four countries, including Italy, France, Germany, and Britain, and concluded that in recent years, besides black economy, the crime activities (which are considered as symbol of black economy) have grown in most of the western countries. Therefore, discovering and reducing the financial crimes of the terrorist organizations, which is the main cause of the black economy's growth in these countries, by the governmental officials is recognized as a crucial requirement. In this paper, using the MIMIC method, the writer has calculated the black economy in these four countries and, then, using the same method, has measured the financial flows of the terrorist groups. Schneider has distinguished about 25 different organizations and concluded that the size (volume) of the financial flows of these terrorist organizations is mostly outstanding and remarkable.

Schneider (2006), in a study titled "shadow economies and corruption in the whole world's economy: how much do we know?" has estimated the black economy in 145 OECD countries during 1999-2003 period. Increase of tax burden, social security aids, and status of job market are among the most important factors which affect the size of black economy in these countries. Also, Janco et al (2006), in a study titled "regulation and economic growth", have investigated the labor regulations and rules in 135 countries during 1993-2002 period. The findings of this study show that countries with better regulations have got faster growth and their annual growth reaches to 2.3%.

Schneider, Buehn, and Montenegro (2010), using MIMIC method, have estimated black economy in 21 in Eastern Europe and Central Asia and 25 high-level-income OECD countries in 2007. Their results show that the lowest amount of black economy is 1.8% and the highest amount is 5.63% in the year 2007 which belong to Switzerland and Bolivia, respectively. Baron and Cingano (2011), in a research titled "regulatory services and growth; OECD member countries", have investigated whether the OECD member countries with anti-competition regulations have better in productive industries. Their findings show how the regulations related to various services providing affect the economic performance of the lower-hand productive industries. Besides, these findings indicate that having less regulations has positive effect on the added value, productivity, and exportation rate's growth.

Schneider (2012), in a study titled "black economy in European countries", using the measured data of black economy in the European countries, has estimated this index for

the year 2013. In most of these countries, based on the estimated data, the size of black economy has been reduced compared to previous years. Averagely, the black economy's size in European countries comprises 18.5% of total size of the economy. Sayn, Chandra, and Mohammad (2012), in a research titled "comprehensive growth, institutions, and underground economy", have investigated the roots and origin of black economy in the society emphasizing on the role of institutions and rule of law. The analyses show that among the most important and principal reasons for tendency toward activities in black economy are the taxes, low quality of the regulations' implementation, and the regulations' insufficiency. They have used MIMIC method for measuring the black economy's size in all the countries around the world.

Schneider (2014), in a research titled "black economy and underground workforce: a case study in recently developed countries", has investigated the factors affecting the black economy in Germany using MIMIC method. As examples of these factors, he has mentioned taxes, regulatory quality, and unemployment rate. Among these variables, the coefficient of effectiveness of unemployment rate on black economy is more than other variables.

Mansournezhad, Hassanvand, and Akbarzadeh (2014), in a study titled "black economy and globalization: a comparison between GMM deviations and GMM system findings", have investigated the effect of globalization on black economy in developing countries and in-transition countries during 1999-2009 period. Their results indicate the advantage of GMM system compared to GMM deviations method. These results also show that there is an inverse relationship between globalization and black economy's size (volume).

Model specification and estimation

In the present study, based on the studies of Schneider (2014) and Sayn & Chandra & Mohammad (2012) and with regard to different variables which affect the black economy, we have used Formula (1) for investigating the effect of the regulatory burden on the black economy in the selected countries group¹.

$$SHE_{it} = \beta_0 + \beta_1 RQ_{it} + \beta_2 LGNI_{it} + \beta_3 TB_{it} + \beta_4 SES_{it} + \beta_5 UN_{it} + U_{it} \quad (1)$$

In this equation, SHE is black economy's size, RQ is regulatory burden, $LGNI^2$ is logarithm of gross domestic income per capita, SES is secondary education enrolment

¹ . In this paper, in addition to the variables in Formula (1), we have used other variables including PL the above 15-year-old male workforce participation rate as the index of physical workforce or employment, OP the ratio of total imports and exports to gross domestic production with constant price of the year 2000 as the index of economy openness, INF as the inflation rate, POP the population variable, but these variables have been eliminated from the model due to inappropriate econometric results. Besides, the models have been estimated using the generalized momentums method but were eliminated due to inappropriate results in terms of economic theory and significance.

² . In econometrics, for showing the relationship between two variables, when the number of a one variable is small and the number of another one is relatively bigger, the logarithm of the bigger variable is calculated in order to show the relationship between them more actually. In pooled data method, by observing the statistics such as Durbin-Watson and adjusted determination coefficient, we can find out the efficiency of logarithm calculation.

gross rate as indicator of human capital, TB is tax burden, UN is unemployment rate, and the U, I, t indices indicate the error term, country, and time period, respectively. As the next step, we have investigated the staticness or non-staticness of the variables using the panel unit root test. The obtained results are presented in Table (1). These results, using Levin et al method, show that all the variables are static in the level, thus the hypothesis-zero stating the existence of unit root is rejected. Therefore, the sustainability of the data used in this study is confirmed before model estimation.

Table 1. Examination of staticness and non-staticness of variables in selected countries group (Source: researcher's calculations)

Regression Type	SHE	RQ	UN	TB	SES	LGNI
Test Levin, Lin & Chu t in level (<i>P - value</i>)	-6.64389 (0.0000)	-4.01573 (0.0000)	-2.91019 (0.0000)	-5.28243 (0.0000)	-11.38980 (0.0000)	-8.40865 (0.0000)
Result	I ₀	I ₀	I ₀	I ₀	I ₀	I ₀

In order to estimate the Formula (1), first it is necessary to determine the type of estimation method for the specific type of the panel data, thus we have used F-statistic for determining the existence (or non-existence) of the intercept for each country. With regard to the value of the calculated F-statistic in Table (2) with confidence level above 99%, the hypothesis-zero stating the use of ordinary least squares method is rejected. Therefore, the bound regression (ordinary least squares) is not valid and thus various intercepts (random or fixed effects method) should be regarded in the model. Then we used Hausmann test for testing whether or not we should use the random or fixed effects method for model estimation. This test was done using EVIEWS.8 software. Regarding the value of χ^2 obtained from calculations for this regression in Table (2), the hypothesis-zero stating the use of random effects method is rejected with 99% probability; thus, use of the fixed effects method for model estimation is confirmed.

Table 2. Results of estimation of regulatory burden's effect on black economy's size using fixed effects method in OECD selected countries group, Dependent variable: (researcher's calculations)

Variables	Coefficients	t. Item (<i>P - value</i>)
C	49.07725	13.72060 (0.0000)
RQ	-7.914535	-9.807077 (0.0000)
SES	-0.038459	-1.820551 (0.0000)
TB	0.202726	4.763546 (0.0000)
LGNI	-2.290394	-6.664290 (0.0000)

Variables	Coefficients	t. Item ($P - \nabla value$)
UN	0.193252	2.346281 (0.0201)
R^2	0.755021	
D-W	0.446703	
F_{test}	F(19,157) = (73.309333) P-Value =(0.0000)	
H_{test}	ChISQ(5)=65.468646	

The results obtained from the estimation of Formula (1) in the OECD selected countries group using fixed effects method in table (2) show that:

- Regulatory burden (RQ) has negative and significant effect on black economy's size; in other words, a unit increase of the regulatory burden (the regulatory burden calculated by Kaufmann et al ranges from 2.5 to -2.5 so that the bigger and the closer to 2.5 the index, the better and the more appropriate the country's status in terms of regulatory burden; in other words, the country has less excessive regulations, and vice versa) results in an average 7.914535 reduction in the black economy's size. Thus, the hypothesis stating the negative and significant relationship between regulatory burden and black economy's size in the selected countries group cannot be rejected. From Bouev's point of view, increase of the regulations' intensity (which is usually measured by the number of the established rules and regulations) is one of the main causes of reduction of freedom and individual choices in official economy. Regulations of the labor market, trade limitations, and other limitations can be regarded as some of the examples of regulatory intensity. Excessive regulations can result in remarkable increase of the costs of working in the official economy. Since a large part of these costs is imposed on the workers and clerks, this can motivates working in black economy. From viewpoint of Kaufmann et al (1998), countries with more public regulations have bigger black economies, so that 1% increase in the amount of regulations can results in 8.1% increase in the black economy's size. Inappropriate regulations disturb the borders between the useful and harmful economic activities and cause the economic activists' tendency toward the sectors with fewer regulations. As common examples of these regulations we can mention labor market regulations, obstacles of trading, and working limitations for foreigners. These are commonly related to the labor market which is one the four main markets of economy. In general, increase of the regulations leads to increase of the workforce's costs on official economy. But when a main part of these costs in official economy is transferred from the employer to the employee, the motivation for presence in the black economy is doubled.
- Tax income's share of GDP as the tax burden index has positive and significant effect on black economy's size. In other words, a unit increase in the regulatory burden results averagely in a 0.202726 unit increase in the black economy's size. Decreeing the taxes and charges in different forms by government, depending on

the coherence and efficiency of the tax system, paves the ground for accomplishing the current tax culture of the society, tax rate and received charges, and hiding the economic activities in order to evade paying the taxes and charges (Frey & Wook, 1984). The tax burden of pure effects of the changes in tax policies and increase of this effect indicate the necessity of stricture in this field. Schneider & Enste (2000) believe that tax rate affects choosing the leisure amount and providing the workforce in black economy or in the tax-free part of the economy, because if the gap between the official and unofficial sectors in terms of the costs paid by the corporations to the workforce (that is, more tax is taken) or if the corporations pay more share for social security, then both the corporations and the workforce will have more motivation for activities in the hidden sector. Boeri & Garibaldi (2001) believe that increase of the cost of financing through tax, social costs, and government's excessive interventions, in addition to the labor market's limitations, are factors which affect the unofficial activities' growth. Furthermore, findings of Gils & Tedds indicate that 10% reduction in the ratio of tax to gross domestic production results in 2% reduction in the size of black economy in Canada. When tax is increased, a smaller part of the realized income remains for the individuals, thus they are encouraged to turn toward those activities in which they can achieve tax evasion. As a result, by increase of the tax burden, the amount of tax evasion and consequently the size of black economy are increased.

- Secondary education enrolment gross rate (SES) as the indicator of human capital has negative and significant effect on black economy's size. In other words, a 1% increase in the secondary education enrolment gross rate results averagely in 0.038459 unit reduction of the black economy's size; therefore, it can be said that one way to control the black economy's size is to increase the level of scientific education and social awareness of the society. Evidently, the more the presence of expert, educated, and professional individuals in the administrative structure of the society, the more possibility of changing the traditional status to modern status. Otherwise, in a traditional and inefficient and nontransparent environment, there will be more possibility of occurrence of activities in black economy.
- Unemployment rate has positive and significant effect on black economy's size. In other words, a 1% increase in the unemployment rate results averagely in 0.193252 unit increase of the black economy's size; therefore, one way to control and halter the black economy's size is to control or halter the unemployment. High rates of unemployment can cause expansion of the black sector, especially in developing countries. It is better to say; lack of official job would pave the ground for compulsory or willingly entrance of the individual to the hidden sector. Presence of high rates of unemployment in developing countries have caused that the individuals seek to find unofficial jobs for providing their families lives. In fact, lack of sufficient jobs, on one hand, and high costs of life, on the other hand, persuade the individual to perform activities in the hidden sector. In many countries, compulsory reduction of official working hours and the effect of unemployment rate on the increase of black economy's size are clearly observable. For example, in many of the OECD countries, unemployment has been created due to high costs of workforce which, itself, causes the increase of black economy's size. Compulsory reduction of official working hours in many

countries such as France and Germany is done in order to reduce the unemployment rate. The idea behind this action is that the volume of working in economy is limited and this limited volume must be redistributed among the individuals of the society in order to create job opportunities; but it is ignored that this compulsory reduction of official working hours and pre-term retirement results in the increase of the working hours in black economy (Riebel, 1983).

- Logarithm of gross domestic income per capita has negative and significant effect on black economy's size. In other words, a 1% increase of the income per capita results in 2.290394 unit reduction in the black economy's size.

The value of the determination coefficient in the model shows that more than 70% of the variance of black economy's size in the selected countries group is explained by the independent variables of the model.

Based on the obtained results the following suggestions are proposed. In order to reduce the size of black economy activities, we propose the following suggestions:

- Improving the tax system (reduction of tax burden is sought specifically in the lower income deciles);
- Existence of sufficient penal and supervisory regulations;
- Reducing the unemployment;
- Haltering the inflation;
- Reducing the trade limitations;
- Improving the education level;
- Paying more attention to compilation of high quality regulations and filling the regulatory gaps;
- Imitating the successful countries in terms of adjusting the policies required for improvement of regulatory quality;
- The last point is that in order to reduce the black economy's size, the governments should consider incentives for motivating the economic activists to move from black economy toward official economy.

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