The Impact of Tax Evasion on Public Deficit of Countries in V4 Region

ĽUDMILA PAVLIKOVA [1], ANDREA KRALIK [2]
[1] *Technical University of Košice, Faculty of Economics, Department of Banking and Investments*
[2] *Technical University of Košice, Faculty of Economics, Department of Finance*
Němcovej 32, 042 00 Košice
Slovak Republic
ludmila.pavlikova@tuke.sk, andreakralik@yahoo.com

Abstract

In the recent years, most of the European governments fight with their public deficits not only by decreasing their expenses, but also by increasing their incomes. It is inevitable that the tax evasion and the shadow economy in general, negatively influence the final amount of received state incomes. The assumption is that the tax evasion has a direct impact on the public deficit and their correlation is clear and solid – with the increased level of tax evasion, the public deficit grows. In this paper we analyze the public deficits and the tax evasion levels of the countries in V4 region and also the functionality between these two indicators individually by each country, as well as together as their average figures. Obtained results are proved by example which explains possible effects.

Key words: Public deficit, tax incomes, governments' expenses, tax evasion.

JEL Classification: E26, H26, H62, O17

1 Introduction

The purpose of this paper is to provide an overview of the functionality between the tax evasion and the public deficit in the countries of V4 region, by comparing the figures for the period from 2004 until 2013, individually by each of these 4 countries.

The public deficit is generally defined as a difference between the money that the government takes in, called receipts, in the form of taxes, fees and etc., and the money that government spends, called outlays, as social security, healthcare, interest payments on debts, etc., during a certain period of time, usually one year. When the government spends more money than it brings in, we talk about deficit (indicated by a negative number). If it spends less than it brings in, it is a surplus, indicated by a positive number.

Most of the European countries have been reporting the public deficit in the recent years. Due to the economic crisis, this deficit increases and the countries are balancing at the boundaries of its sustainability. The basic equation of this balance offers two primary options of decreasing the public deficit, which is increasing the governments' incomes or decreasing its expenses. In this paper we concentrate on the side of governments' incomes, more specifically in the area of tax incomes.

The incomes coming from taxes represent in the budget of the Slovak Republic around 80% of all incomes. From this point of view, taxes are certainly important part of the governments' incomes and therefore provide an effective tool for balancing the governments' budgets.

Tax evasion, as already described by its name, stands for activity of evading key taxes, which leads to the lower amount of taxes collected by a country and therefor to the lower public incomes. The question is, if this effect is so significant that at the end it influences also the public deficit. To study this correlation we applied the analysis of comparison and synthesis. The panel data on the public deficit were taken from OECD's Economic Outlook No. 92 from December 2012 and the data on tax evasion, also referred to as shadow economy, were from the reports of Friedrich Schneider.

2 Tax Evasion, Public Deficit and Their Correlation in the Czech Republic, Hungary, Poland and the Slovak Republic

In the last years many European governments realized that the "grey" side of their incomes, represented by shadow economy, plays an important part in the amount of incomes received from taxes. From a macro-economic perspective – legal consideration apart – tax avoidance and tax evasion have similar negative effects on the national budgets and both are based on the same desire to reduce the tax burden. Tax avoidance refers to an attempt to reduce tax payments by legal means, for instance by exploiting tax loopholes, whereas tax evasion refers to an illegal reduction of tax payments, for instance by underreporting income or by stating higher deductions. Since tax avoidance and tax evasion have at the end the similar effects, economists suggest not to differentiate between them but to analyze their effects jointly.

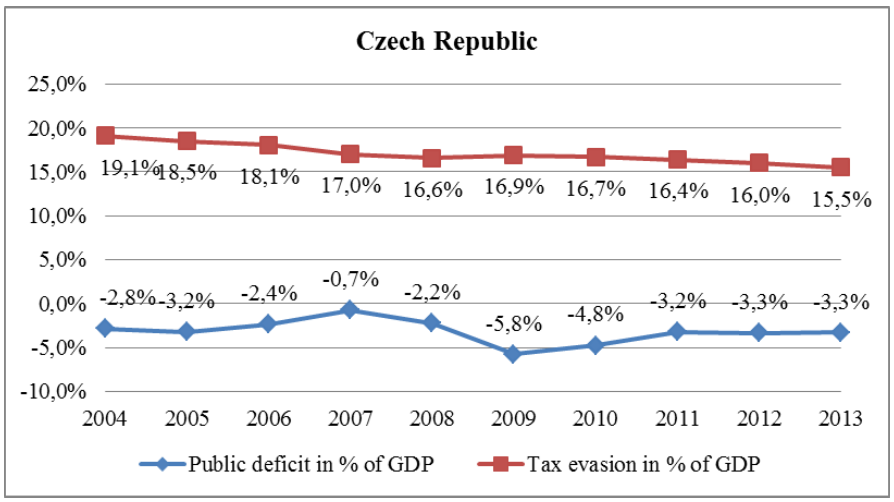
Tax evasion and tax avoidance have the tendency of reducing the potential revenue of a government and thereby constraining her expenditure outlays. Just like tax holidays and concessions, avoided and evaded taxes serve as an indirect public expenditure. From this point of view, there is a logical relationship between the tax evasion/tax avoidance and public deficit. Further in this paper we refer to correlation between tax evasion and public deficit, but taking in consideration above said, the effects of tax avoidance and tax evasion are inseparable and therefore we include under the terminology of tax evasion both phenomenon.

At the theoretical level, whereas Roubini and Sala-i-Martin (1995) argue for a positive relationship between tax evasion and economic growth, Cabelle and Penades (1997) and Chen (2003) have however suggested a negative association. Eichorn (2004) on the other hand argued that tax evasion has no impact on economic growth.

As already mentioned above, it is generally assumed that the countries with high levels of tax evasion will have a larger public deficit, as tax evasion decreases governments' incomes and therefore provides wider options for public deficit. The aim of this paper is to analyze the relationship between tax evasion and public deficit by using the panel data for the V4 countries – the Czech Republic, Hungary, Poland and the Slovak Republic.

The data on the size of tax evasion (generally presented as the size of shadow economy) applied in this study are the result of Schneider’s MIMIC (Multiple Indicators Multiple Causes) approach. The model represents the output of the tax evasion in the position of a latent variable or index, which has causes and effects that are observable but cannot be directly measured. Therefor the model uses two kinds of variables and that would be “causal” and “indicator” variables and they are connected by one unobserved index. The fitted index is interpreted as a time-series estimate of the magnitude of the underground economy. This method to measure the site of tax evasion has been used by more authors, e.g. Zellner (1970) or Goldberger (1972), with different variables, but the results of Schneider are considered to be the most valuable, used even by the World Bank.

We track the public deficit and tax evasion (both measured as a percentage of the country’s GDP) for each of the stated countries for the period of last 10 years, i.e. from 2004 until 2013. We explain the individual data and relationship between them by country (in alphabetical order) and at the end we summarize reported data as an average for all V4 countries.

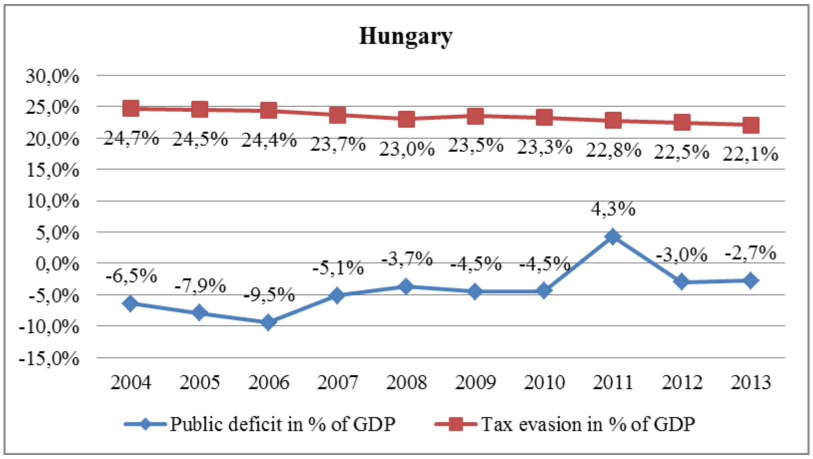


Graph 1 Public deficit and shadow economy of the Czech Republic in 2004 – 2013 in % of GDP

Source: Own elaboration based on OECD statistics and calculations from F. Schneider

Tax evasion in the Czech Republic had a decreasing trend over the last 10 years, when it went from 19.1 % of GDP in 2004, down to 15.5 % in 2013. On the other hand, the public deficit has not followed the linear trend and while during the first 4 years it has decreased down to -0.7 % of GDP in 2007, in 2008 it fall back to -2.2 % and in 2009 it reached its highest of -5.8 %. In consequent years it decreased to -3.3 % in 2013.

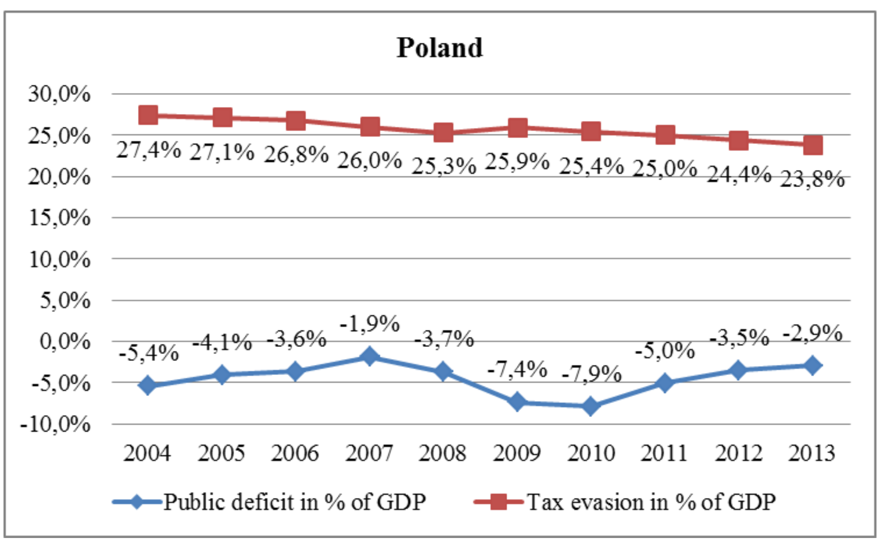
Based on the above, the expectation would be that public deficit in the Czech Republic would decrease with the decreasing tax evasion over the tracked years, which is not true. Only by comparing data from the first and the last year, it is clear, that the expected assumption of relation between the tax evasion and the public deficit cannot be applied in the condition of the Czech Republic, as the tax evasion in 2004 was at 19.1 % and the public deficit at -2.8 %, but in 2013 the tax evasion went down to 15.5%, however the public deficit increased to -3.3 % of GDP.



Graph 2 Public deficit and shadow economy of Hungary in 2004 – 2013 in % of GDP
Source: Own elaboration based on OECD statistics and calculations from F. Schneider

The size of tax evasion in Hungary has not changed a lot over the last 10 years, as average tax evasion was at 23.45 %, with the starting value in 2004 at 24.7 % and ending in 2013 at 22.1 %. Generally we can consider the shadow economy in Hungary, measured by the size of the tax evasion, as flat.

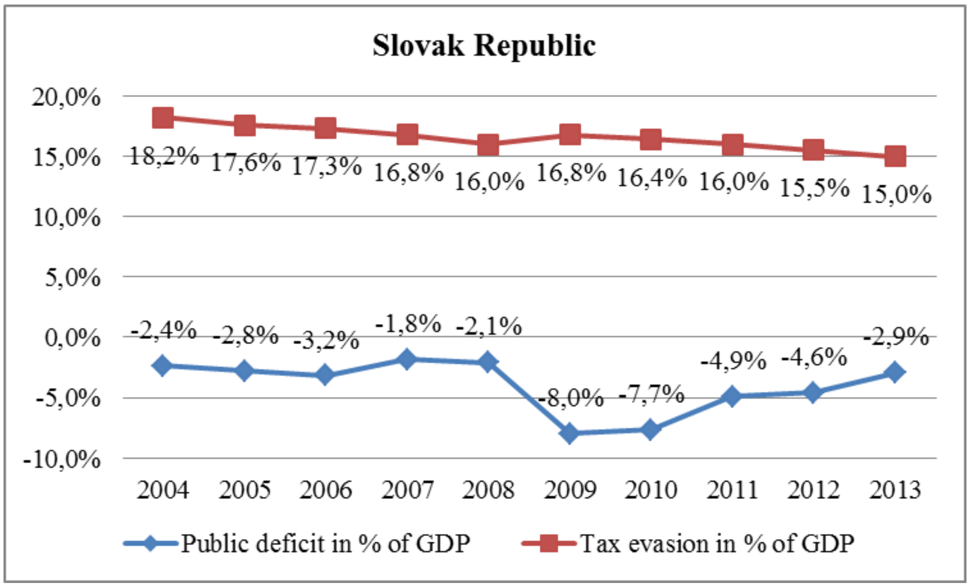
On the other hand, Hungary's public deficit was very volatile, when it ranged from -9.5 % in 2006, up to the public surplus in 2011 at 4.3 %, so the total scope of 13.8 %. In 2013 the public deficit ended at -2.7 %. Graph 2 does not show any functionality between the size of tax evasion and public deficit/surplus in Hungary. In 2004, when the tax evasion is the highest out of all tracked years, at 24.7 %, the public deficit is -6.5 %, which is definitely not the highest deficit (the lowest value) during the years 2004 – 2013. Also, when the size of tax evasion is the lowest, which was in 2013 at 22.1 %, the public deficit was at -2.7 %, which is not the lowest deficit or the highest surplus that the country achieved during those years.



Graph 3 Public deficit and shadow economy of Poland in 2004 – 2013 in % of GDP
Source: Own elaboration based on OECD statistics and calculations from F. Schneider

The curve of shadow economy in Poland is relatively linearly decreasing, with a little increase in 2009 and 2010, when it went from 25.3% in 2008, up to 25.9 % in 2010 and to 25.4 % in 2010. The highest size of the tax evasion is however in the first year at 27.4 % and the lowest in the last tracked year 2013 at 23.8 %.

During the first four years from 2004 until 2007, the public deficit in Poland gradually decreases with decreased tax evasion, when it goes from -5.4 % in 2004 down to -1.9 % in 2007. But in 2008, even though the tax evasion still declines, the public deficit falls to -3.7 % and in following two years even lower to -7.4 % and -7.9 %, which is the bottom value of the public deficit during the tracked years. However, in the last four years 2010 – 2013, the public deficit decreases from -7.9 % to -2.9 %, with the decreased size of tax evasion from 25.4 % to 23.8 %.



Graph 4 Public deficit and shadow economy of the Slovak Republic in 2004 – 2013 in % of GDP
Source: Own elaboration based on OECD statistics and calculations from F. Schneider

The trend of the tax evasion in the Slovak Republic had a declining tendency over the years 2004 - 2013, going from 18.2 % in 2004, down to 15 % in 2013. In 2009 and 2010 the decreasing trend was discontinued, when the tax evasion of 16 % in 2008, climbed to 16.8 % in 2009 and then 16.4 % in 2010. In consequent years it followed again the declining trend.

The public deficit of the Slovak Republic ranged from -8 % in 2009 up to -1.8 % in 2007. The biggest fall of almost 6 % from -2.1 % in 2008 to -8 % in 2009 was accompanied by the increase of the size of shadow economy in Slovakia, when it jumped from 16 % up to 16.8 %. From 2009 until the end of tracked period, the public deficit was decreasing with the declining tax evasion. With that said, generally we can summarize that the size of tax evasion had an assumed impact on the public deficit of the Slovak Republic in the period from 2008 until 2013, where it is clear from the Graph 4 that the curves of tracked indicators are opposite. However, for the period of years 2004 – 2007, the declining tax evasion is followed by increased public deficit.

Summarizing the Graphs 1 to 4, it is clear that the size of the shadow economy of these four countries slightly differs, the trend is very similar. The highest level of tax evasion is observed in

Poland, with the average size over the last 10 years of 25.71 %, followed by Hungary with 23.45 % and then the Czech Republic with 17.08 % and the Slovak Republic with 16.56 %.

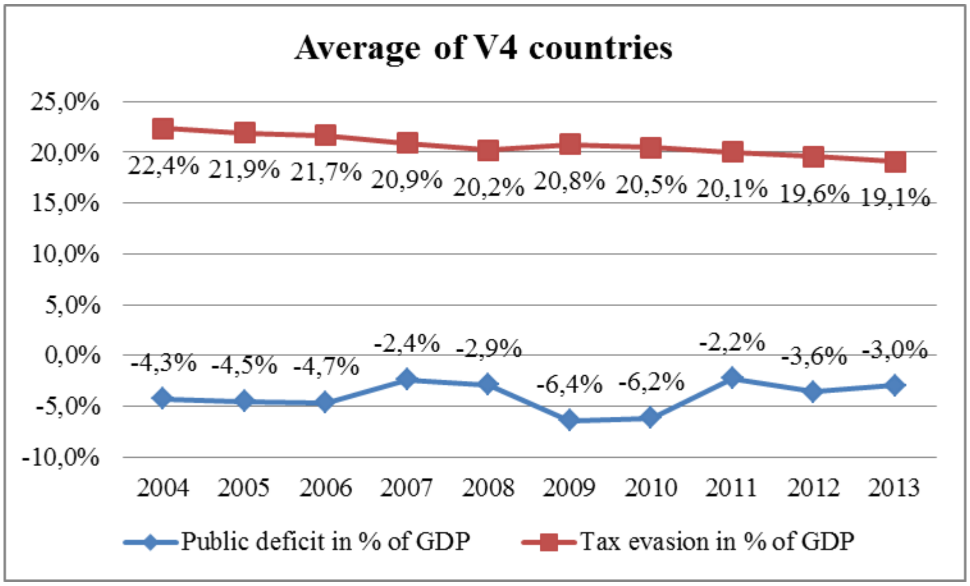
In all four countries the size of tax evasion decreased over the tracked period and in all of these countries the linear decline was discontinued in 2009 when the value jumped up compared to the value in 2008 and then in 2010 decreased, but was still higher than in 2008. In 2011 the tax evasion in all V4 countries is again at the level of 2008 or even lower and decreases during the following years.

The story of the public deficits is however completely different. Assuming that the tax evasion negatively impacts the level of public deficit, which means that higher tax evasion causes higher deficit, with the above stated trend of the tax evasion in V4 countries, the public deficits should have been declining from 2004 to 2013, with a short break in 2009 and 2010. Looking at the previous graphs, a comparable trend can be seen for the Czech Republic and the Slovak Republic, where the public deficits achieved their lowest levels in 2007, the grew until 2009, when they reached the highest level (represented by the lowest negative figures) and in consequent years they followed the declining trend, but they did not reached the lowest public deficit from 2007. Public deficit in Poland had a similar progress, reaching its lowest level in 2007, but the highest deficit was in 2010. The curve of Hungary's public deficit is completely different, with growing deficit from 2004 until 2006, decreasing until 2008, staying unchanged in 2009 and 2010 and then achieving public surplus of 4.3 % in 2011 – as the only country out of V4, getting into positive figures during the years 2004 – 2013. Then the deficit in 2012 and 2013 fell back to negative numbers.

Based on the above it is clear that even these 4 countries followed the similar trend in tax evasion over the years, the trend in public deficits is basically incomparable and definitely does not prove the assumption that the decreased tax evasion is impacting the deficit by lowering its size. However, what is visible from the above graphs is the worsen development of both indicators in 2009, which was caused by emerging economic crisis. In all four countries the crisis significantly influenced the trend and it took 1-2 years, in terms of results reflected in these indicators, to get both the tax evasion as well as the public deficit back on track.

In the following Graph 5 we summarized the trends in tax evasion and public deficits based on their average values together for the Czech Republic, Hungary, Poland and the Slovak Republic, to get a final overview on the impact of tax evasion on the public deficit.

As the Graph 5 shows, the trend of tax evasion is, as expected, declining, with the discontinuation in 2009 and 2010. The average public deficit of the Czech Republic, Hungary, Poland and the Slovak Republic grew from 2004 until 2006, then decreased in 2007, grew to its highest level (represented by the lowest negative figure) in 2009, then decreased to its lowest level in 2011 of -2.2 % and then decreased in 2012.



Graph 5 Public deficit and shadow economy as an average of V4 countries in 2004 – 2013 in % of GDP
Source: Own elaboration based on OECD statistics and calculations from F. Schneider

With the assumption of the impact of the tax evasion on the public deficit, the average deficit of these countries should have been continually decreasing (achieving lower negative figures or higher positive figures), with a short jump in 2009 and 2010, when the tax evasion in all 4 countries increased.

3 Conclusions

The analysis executed above (on Graphs 1-5) does not show the direct correlation between the size of tax evasion and the public deficit of a given country, but also does not deny it. Therefor we can conclude that the existing impact of tax evasion on the public deficit is not as definite or as strong, as assumed. Obviously there are other factors that impact the public deficit stronger than the tax evasion or which cumulative effect outperforms the effect of tax evasion. The tax evasion or shadow economy in general, definitely lowers the incomes of state budgets, but the final difference between the incomes and expenses of governments does not show the direct, solid and sole impact of tax evasion. This functionality can be denied for example by the situation when the government can dramatically increase its expenses due to different reasons and then no matter what the size of the shadow economy is, the expenses are simply higher than the incomes and the state reports the public deficit. The impact could be more visible by analyzing the public incomes of the countries separately from the public deficit, as they are directly dependent on the size of the tax evasion.

There are many authors that deal with the topic of tax evasion (e.g. Orviská, Lackó, etc.), but their approach is concentrated more on different methods of measuring the size of tax evasion and its effects on fiscal economy in general (government debt, economic growth, etc.). Also from the geographical point of view, most of the studies are performed on EU as a unit, possibly OECD countries, etc., with the results proving the relation between the tax evasion and public deficit, but indirectly, mainly through proving the direct correlation of the tax evasion with the public incomes.

References

BÁNOCIOVÁ, A., PAVLIKOVÁ, Ľ. 2014. Share of shadow economy on GDP of selected continents and countries around the world. In: *Transactions of the Universities of Košice.* No.1. pp. 12-17

CABELLE, J., PENADES, J. 2007. Tax Rates, Tax Evasion and Growth in a Multi-period Economy. Hacienda Pública Espanola/Revista de Economía Pública.

CHEN, B. L. 2003. Tax Evasion in a Model of Endogenous Growth. In: *Review of Economics Dynamics 49.* No. 3.

EICHORN, C. 2004. The Implication of Tax Evasion for Economic Growth. In: *Journal of Public Economics 38.*

GOLDBERGER, A. S. 1972. Structural equation methods in the social scineces. Econometrica: Journal of the Econometric Society, 1972, p. 979-1001.

KIRCHLER, E., MACIEJOVSKY, B., SCHNEIDER, F. 2001. Everyday representations of tax avoidance, tax evasion and tax flight: Do legal differences matter? In: *Discussion Papers, Interdisciplinary Research Project 373.* No. 2001, 43.

ORVISKÁ, M., HUDSON, J. 2003. Tax evasion, civic duty and the law abiding citizen. In: *European Journal of Political Economy.*

ROUBINI, N., SALA-I-MARTIN, X. 1995. A growth model of inflation, tax evasion and financial repression. In: *Journal of Monetary Economics 35.2*. pp. 275-301.

SCHNEIDER, F. 2013. The size and development of the shadow economies of 31 European and 5 other OECD countries from 2003 to 2013: A further decline.

SCHNEIDER, F., ENSTE, H., D. 2013. The shadow economy: An international survey. Cambridge University Press.

ZELLNER, A. 1970. Estimation of regression relationships containing unobservable independent variables. International Economc Review, 1970, p. 441-454.

http://stats.oecd.org