Relationship between taxation of labor and employment in the European Union: mathematical simulation

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***Abstract*—** The paper deals with a relationship between taxation of labor and employment. When taxes on labor are introduced the tax wedge between labor costs paid by employer (gross wage) and net wage received by employee appears. The paper is focused on characteristics of labor taxation and its effects on the labor market, the level of employment or unemployment especially. The paper also analyzes and compares total tax wedge in European Union countries (original EU-15 Member States and Visegrád Group countries – Czech Republic, Hungary, Poland and Slovakia). We found that EU Member States could be classified into two groups of countries – with high tax wedge or low tax wedge. The paper also tries to identify the relationship between the tax wedge and the employment rate in Visegrád countries. The main research method was a panel data regression model over the period 2000-2009. Some basic methods were applied: (i) the constant coefficient model; (ii) the fixed effects model and (iii) the random effects model. The empirical estimates have shown that an increase in the tax wedge decreases the employment rate.

***Keywords*—**Employment, European Union, Panel data, Regression analysis, Taxation of labor, Tax wedge, Visegrad group.

I. Introduction

THE most pressing economic problem in the European Union (EU) is apparently endless surge in unemployment [1],[19] and [20]. High labor costs are often blamed for being responsible for this situation. So there exist some calls for reducing labor costs by restructuring taxes and particularly by reducing them. However, this reduction can be accompanied by a fall in government revenues. This paper explores the link between tax policy and labor market performance. The tax wedge is the difference between what employees take home in earnings and what it costs to employ them. In some countries, the tax wedge increases as employee income increases. This reduces the marginal benefit of working therefore employees will often work less hours than they would if no tax was imposed. Some argue that the tax wedge on investment income will also reduce savings, create less innovation, and ultimately lowers living standards.

The objective of this study is to assess the size of the tax wedge in the EU countries as well as to analyze the impact of the tax wedge on employment and/or unemployment.

The paper outline is as follows. Section 2 presents overview of relevant literature. Section 3 looks at the empirical evidence. Section 4 provides empirical estimates of the relationship between the taw wedge and employment and Section 5 concludes the paper.

II. Theoretical Concept and Literature Review

Taxes on employment refer to both sides on labor market – labor supply (labor force pay income taxes) on the one hand and labor demand (employers, who pay payroll taxes) on the other side. Economists created so-called tax wedge which expresses overall taxation of labor. In addition, indirect taxes are paid by the economic subject. As is stated in [7] impacts of indirect taxes are easier to analyze. This is because these taxes are levied on particular transactions with goods and services and their impact on pricing and, consequently, buyers' decision seems to be immediate.

Labor taxation extends the wedge between employer´s costs and employee´s income [6]. If taxis are transferred on employers then employment costs rise and eventuality is that labor demand will fall. If firms compensate this additional costs by lower wages than the wage/price of product ration will not change. Indeed, the consumption wage/price of product ratio declines. Then more households can obtain social benefits and their incentive to work is reduced. Hence, rising labor taxes have a negative impact on employment. Daveri and Tabellini [8] controvert this argumentation on the basis of Scandinavian countries – they ask why unemployment is so low while high labor taxation evokes high unemployment in continental Europe. One possibility how to make clear this contrast is connectedness of high degree of centralization and co-ordination, which can reduce wage claims.

According to [4] the tax wedge means that real take-home pay is lower than pre-tax real wage. If that tax wedge increases, than implicitly consumption grows more slowly. Authors make reference to tax wedge changes may affect not only the bargaining stance of unions but also individual labor – supply decisions. This holds if generous unemployment

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benefits exist.

Some authors argue that (i) the impact of taxation on employment appears stronger than the impact on the labor force; and (ii) the impact of labor taxation on unemployment is smaller because the reduction in the labor force partially offsets the decrease in employment [10]. Employment taxes do not appear to have any long-term effect on unemployment and are borne entirely by labor. There may be some short-term effects, but it is not clear that there would be any fall in inflationary pressure if taxes on polluting products were raised at the same time as taxes on employment were lowered [13].

If taxes are progressive, then the labor force with higher incomes will pay proportionately higher taxes than the low-income labor force. It also seems that the progressive tax system has wage-moderating effects, thus stimulating employment. It is generally suggested, that progressive taxation can be justified by reason of income equality (which is followed by redistribution of income). For this reason, then there exists a trade-off between equality and efficiency of labor taxation. In imperfect competitive labor markets, however, progression also increases the efficiency of the working of labor markets so that from the society point of view it may be justifiable even without income distribution considerations [14]. Moreover, increasing tax progression has a positive effect on employment because it reduces incentives to increase wages [16]. The positive employment effects of progressive taxation in imperfectly competitive labor markets stands in sharp contrast to the effects in perfectly competitive labor markets where progressive taxes distort labor supply decisions and reduce employment [17].

Justification of the suitability of progressive taxation in imperfect competitive labor markets is based on the idea that it's just second-best solution: additional distortion in the economy can mitigate the harmful effects of existing distortions. This argument does not support [3], which shows that the optimal tax progression depends on the incentives underlying the choice of work hours. The argument also becomes weaker if the union is able to directly affect the hours of work. The reason is that if the union chooses the hours of work for its members, it will recognize that an increase in the hours of work tends to reduce employment.

Changes in labor taxation should be extended in relation to income during work and income while unemployed, where an individual has access to sources of income which are not taxed, or because there are important leisure values associated with unemployment – than equilibrium unemployment is altered with changes in labor taxation. Koskela [14] suggests these conclusions: (i) the tax-revenue neutral rise in labor tax progression – either in terms of income tax rate or in terms of payroll tax rate – will moderate negotiated wages, decrease the outside option for workers and thereby lead to lower equilibrium unemployment; (ii) in terms of employment effects of income taxation levied on workers, what matters is the relative tax rates of income employed and unemployed, respectively. If the tax rates are the same, tax rate changes will have no wage effect, so that equilibrium unemployment will remained unchanged, but government budget deficit will increase; (iii) the structure of labor taxation matters as well. By shifting taxation towards narrower tax base due to tax exemption will increase total tax progression and will thereby boost employment.

Bell and Nickell [5] in their paper reflect on the issue of reducing taxation of unskilled labor force and job creation subsidies for this group of workers. The aim of these measures is mainly increasing demand. This potentially leads to a reduction in unemployment in this group, the net wage increases and, ultimately, these actions have an impact on reducing total unemployment.

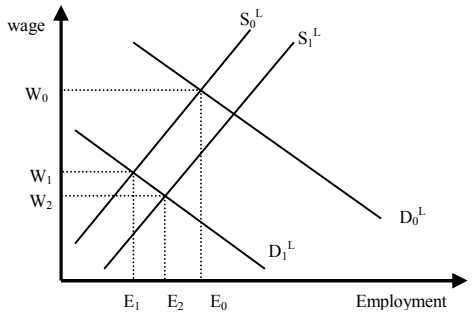


Fig. 1: Simple demand and supply model
Source: [12]

Figure 1 presents a simple demand and supply model of the labor market which depicts the potential effects of payroll taxation. The horizontal axis measures the level of employment; the vertical axis measures the wage. The upward-sloping relationship S_0 represents the supply of labor by workers in a world without taxation; the downward-sloping relationship D_0 represents the demand for labor by firms in the no-taxation world. The no-tax equilibrium is achieved at E_0, W_0. A payroll tax levied on the firm reduces the demand for labor by raising the after-tax cost of employees. The demand curve shifts to D_1, reducing the wage that workers are paid to W_1, and reducing employment to E_1. This is the disemployment cost highlighted by opponents of payroll taxation. The magnitude of the disemployment affect will be a function of the elasticities of labor demand and supply. But we have to take into account that payroll tax revenues are often used to finance programs which benefit workers only, such as retirement benefit or compensation for workplace injuries. It means that the tax is buying them some benefits. Workers are therefore willing to work harder for a given money wage, shifting labor supply outwards to S_1. As a result, employment falls only to E_2, while the wage falls further to W_2; there is more shifting to wages. That is, since workers value the benefits that they are buying with their payroll taxes, they will accept lower wages, and this leads to a smaller net rise in compensation costs and thus less dis-employment.

III. EMPIRICAL RESULTS

We used OECD data for an analysis. We have narrowed the group of EU Member States from 27 to 16 countries, which shows the distribution of two key groups: (i) the original Eurozone members (12 countries); and (ii) the new Member States (four countries) that joined the EU in 2004 and they are also members of the informal Visegrád group.

Table 1 represents total tax wedge and its components. The tax wedge is expressed through the use of percentage rate of overall labor costs. The individual components of tax wedge differed significantly – V4 countries had the lowest income taxes (except Hungary) and its percentage rate was almost half in comparison with EU-15 average (12.3%). In V4 countries with historically low income from employment, the high cost of social protection offsets the lower tax income [15].

Eurozone countries like Finland, Germany or Belgium had the highest income tax. We can see significant differences in the percentage rates of social security contribution too - workers in Germany, Poland, Netherlands or Austria paid the highest amounts while workers in Ireland, Spain or Finland paid remarkable lower amount. If we look at employer´s social security contribution rates, employees in France, the Czech Republic, Hungary, Italy and Spain had the highest rates among analyzed countries. The lowest contributions existed in Ireland or Netherlands (see Table 1).

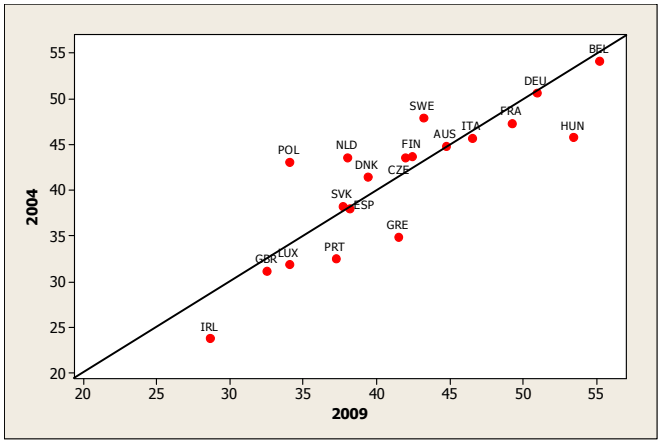
Table 1 Total tax wedge (as % of labor costs)

			Social security contributions		
Country	Total tax wedge[3]	Income tax	Employee	Employer	Labor costs*
	(1)	(2)	(3)	(4)	(5)
Luxembourg	34.0	12.7	10.9	10.3	58 358
Austria	47.9	11.4	14.0	22.6	57 954
Germany	50.9	17.3	17.3	16.3	57 207
Belgium	55.2	21.1	10.7	23.3	56 816
Netherlands	38.0	15.1	13.8	9.1	56 487
France	49.2	9.9	9.6	29.7	51 325
Finland	42.4	18.6	5.1	18.7	48 686
Ireland	28.6	12.9	6.0	9.7	47 026
Greece	41.5	7.1	12.5	21.9	43 533
Spain	38.2	10.3	4.9	23.0	41 381
Italy	46.5	15.0	7.2	24.3	40 691
Portugal	37.2	9.1	8.9	19.2	30 840
Czech Republic	41.9	8.3	8.2	25.4	25 542
Hungary	53.4	15.9	12.8	24.6	24 267
Poland	34.0	5.6	15.5	12.9	20 641
Slovak Republic	37.6	6.3	10.6	20.8	20 480

Note: Data for a single individual without children at the income level of the average worker
* dollars with equal purchasing power
Source: OECD Taxing Wages 2009

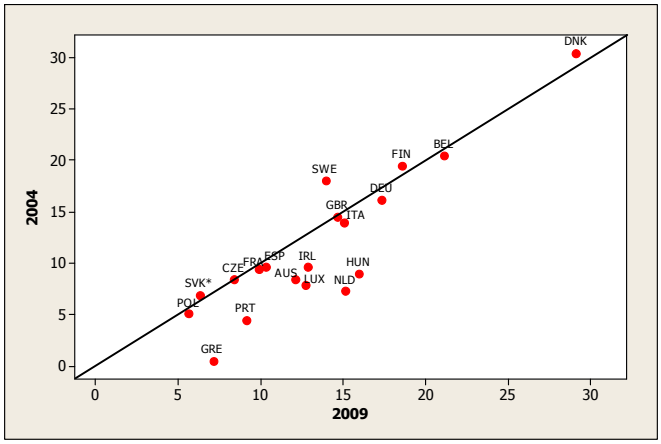
We can find some comparative advantage in the last column. This column represents labor costs in US dollars with equal purchasing power. The tendency is that labor costs in new Member States convergence to EU average. It is evident that this comparative advantage will not last forever. We have to look at other indicators to determine long-term criteria of competitive strength on the basic of the future outlook. This alternative indicator could be the total tax wedge. If we look at this indicator we can see that comparative advantage will disappear. Only two of V-4 countries (Poland and Slovakia) had significantly lower total tax wedge in comparison with EU average (42.3%). Hungary had remarkably higher total tax wedge (53.4%). We argue that foreign investors can make decision on the basic of the total tax wedge (because total labor costs of EU new Member States converge in long-term period) which it may subsequently end in that they can prefer countries with lower rate of the total tax wedge.

Figure 2 shows changes in the total tax wedge between 2004 and 2009. EU Member States can be classified into three basic groups: (i) the first group is characterized by the decrease of the total tax wedge (Sweden, Denmark, Finland, Poland, Netherlands and the Czech Republic); (ii) the second one is characterized by the increase of the total tax wedge (Greece, Portugal, Hungary, Ireland, United Kingdom and Luxembourg); and (iii) the third group is characterized by a stable level of the tax wedge (Slovakia, Spain, Austria, Germany and Italy).



Source: OECD Taxing Wages 2009
Fig. 2 Total tax wedge in 2004 and 2009

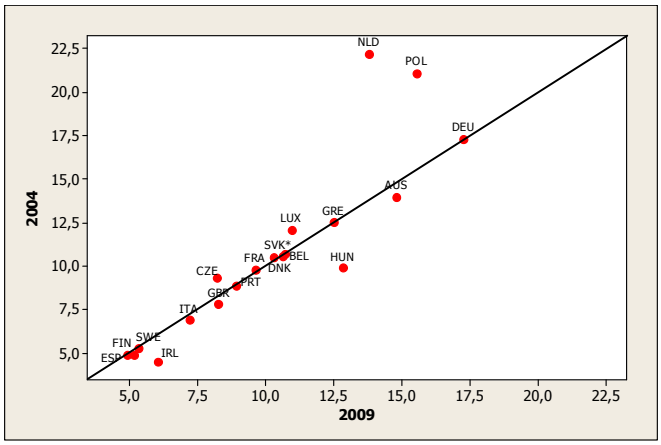
In addition to the total tax wedge, it is necessary to look at the changes of its components (see Figure 3, 4 and 5). Figure 3 shows changes in the income tax between 2004 and 2009. EU Member States can be classified into three basic groups: (i) the first group is characterized by the decrease of the income tax (Sweden, Denmark and Finland); (ii) the second one is characterized by the increase of the income tax (Greece, Portugal, Hungary, Ireland, Netherlands, Austria, Italy, Germany, Spain and Luxembourg); and (iii) the third group is characterized by a stable level of the tax wedge (Poland, Slovakia, the Czech Republic, France and United Kingdom).



Source: OECD Taxing Wages 2009

Fig. 3 Income tax in 2004 and 2009

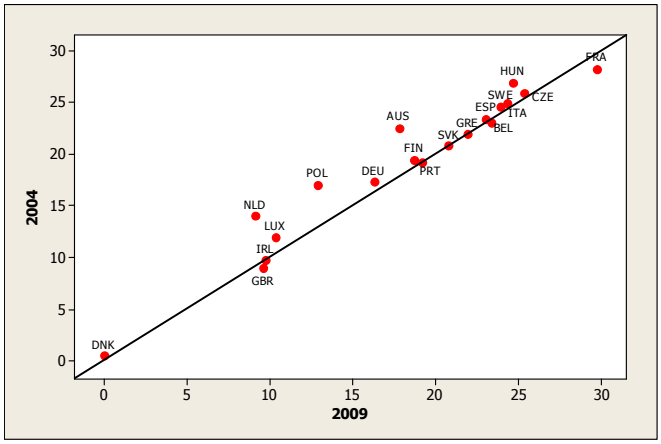
Figure 4 shows changes in employee´s social security contributions (SSC) between 2004 and 2009. This component of the total tax wedge appears to be very stable and only few countries deviates – we can see the significant decrease of this component in the case of Netherlands and Poland. On the other side were Hungary and Ireland, where employee´s SSC have increased.



Source: OECD Taxing Wages 2009

Fig. 4 Employee´s social security contributions in 2004 and 2009

Figure 5 shows changes in employer´s social security contributions between 2004 and 2009. As in the previous case, this component of the total tax wedge appears to be very stable in most countries and only some countries deviates – we can see the minor decrease of this component in the case of Netherlands, Poland, Austria and Hungary.



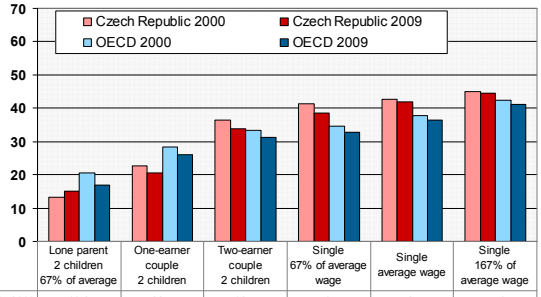
Source: OECD Taxing Wages 2009

Fig. 5 Employer´s social security contributions in 2004 and 2009

If we look at V-4 countries we can see, except Hungary, minimal differences between two observed groups. If we look more precisely we find out some differences between countries – e.g. Czech Republic applied notably higher level of employer´s social contribution rates, but in Poland employees paid higher contributions than employer.

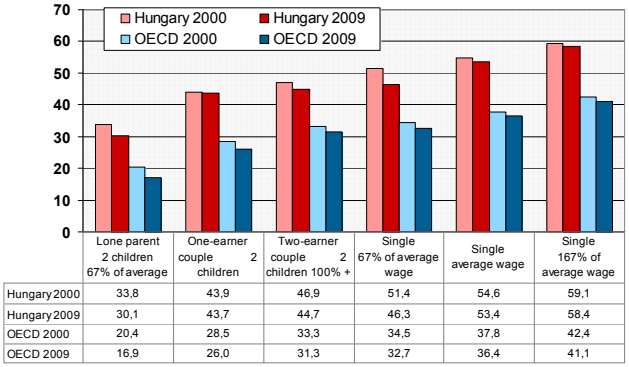
The tax unit is the individual in the Czech Republic. The possibility of joint taxation, which was introduced in 2005, has been abolished since 2008. Moreover, a progressive system of taxation was replaced by a single rate of 15% in this year. Compulsory contributions of 11% (health insurance 4.5% and social insurance 6.5%) of gross wages and salaries are paid by all employees into government operated schemes. As seen from Figure 6 slight reduction in taxation of labor has occurred in the Czech Republic.

The tax unit is, in all cases, the separate individual in Hungary. Hungary is the OECD country that levies the highest taxes and social security contributions on the labor income of married couples. Also single taxpayers are taxed at very high rates. Single taxpayers at average earnings take home less than 47% of what they cost to their employer ("total labor costs"); taxpayers at high earnings take home even less than 42% (see Figure 7).



	Lone parent 2 children 67% of average	One-earner couple 2 children	Two-earner couple 2 children	Single 67% of average wage	Single average wage	Single 167% of average wage
Czech Republic 2000	13,2	22,7	36,5	41,4	42,7	44,9
Czech Republic 2009	15,0	20,5	33,9	38,6	41,9	44,6
OECD 2000	20,4	28,5	33,3	34,5	37,8	42,4
OECD 2009	16,9	26,0	31,3	32,7	36,4	41,1

Source: OECD Taxing Wages 2009
Fig. 6 Tax wedge (in % of labor costs): Czech Republic

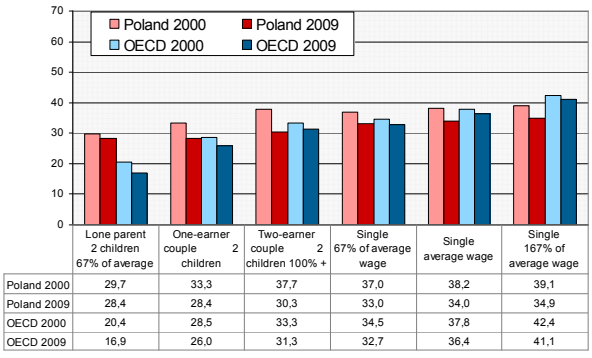


	Lone parent 2 children 67% of average	One-earner couple 2 children	Two-earner couple 2 children 100% +	Single 67% of average wage	Single average wage	Single 167% of average wage
Hungary 2000	33,8	43,9	46,9	51,4	54,6	59,1
Hungary 2009	30,1	43,7	44,7	46,3	53,4	58,4
OECD 2000	20,4	28,5	33,3	34,5	37,8	42,4
OECD 2009	16,9	26,0	31,3	32,7	36,4	41,1

Source: OECD Taxing Wages 2009
Fig. 7 Tax wedge (in % of labor costs): Hungary

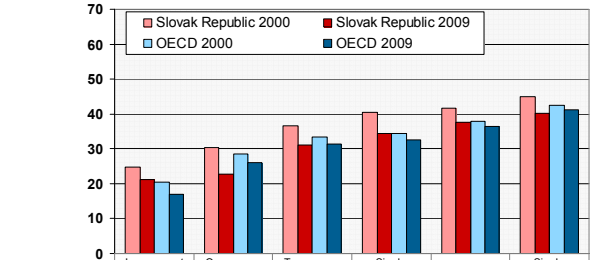
Individuals are taxed on their own income in Poland, but couples married during the whole calendar year can opt to be taxed on their joint income. Recent cuts in the tax wedge (see Figure 8), welcome as such, were, however, not totally compensated and thus initially procyclical. Since they tend to boost employment, though the tax wedge remains larger than the EU average and progressivity remains relatively low.

The Slovak Republic has strongly decreased the tax burden over the past 10 years. The average tax wedge (average income taxes plus employee and employer social security contributions minus cash transfers as a percentage of total labor costs) is now very close to the OECD average for almost all families (see Figure 9).



	Lone parent 2 children 67% of average	One-earner couple 2 children	Two-earner couple 2 children 100% +	Single 67% of average wage	Single average wage	Single 167% of average wage
Poland 2000	29,7	33,3	37,7	37,0	38,2	39,1
Poland 2009	28,4	28,4	30,3	33,0	34,0	34,9
OECD 2000	20,4	28,5	33,3	34,5	37,8	42,4
OECD 2009	16,9	26,0	31,3	32,7	36,4	41,1

Source: OECD Taxing Wages 2009
Fig. 8 Tax wedge (in % of labor costs): Poland



	Lone parent 2 children 67% of average	One-earner couple 2 children	Two-earner couple 2 children 100%	Single 67% of average wage	Single average wage	Single 167% of average wage
Slovak Republic 2000	24,7	30,4	36,7	40,5	41,7	45,0
Slovak Republic 2009	21,2	22,7	31,1	34,3	37,6	40,1
OECD 2000	20,4	28,5	33,3	34,5	37,8	42,4
OECD 2009	16,9	26,0	31,3	32,7	36,4	41,1

Source: OECD Taxing Wages 2009
Fig. 9 Tax wedge (in % of labor costs): Slovakia

IV. Regression Analysis

In order to explain the characteristics of the tax wedge and the employment rate in the Visegrad group countries, we apply simple descriptive statistics. We conducted panel data regression analysis. Panel data estimation is often considered to be an efficient analytical method in handling econometric data. According to [2] panel data estimation can offer some considerable advantages: (i) the sample size can be increased considerably by using a panel and hence much better estimates can be obtained; (ii) under certain circumstances the problem of omitted variables which might cause biased estimates in a single individual regression may not occur in a panel context.

A panel data set is formulated by a sample that contains N cross-sectional units that are observed at different T time periods. Consider for example a simple linear model with one explanatory variable as given by:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$$

Where the variables Y and X have both I and t subscripts for i=1,2,…,N sections and t=1,2,…,T time periods. If our sample set consist of a constant T for all cross-sectional units, or in other words if we obtain a full nest of data both across countries and across time, then the data set is called balanced. Otherwise when observations are missing for the time periods of some of the cross-sectional units the panel is called unbalanced. If we have different countries in our sample, we can expect differences in their behavior. Thus our model can be formally written as:

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it}$$

Where y_{it} depends on a set of K explanatory variables x_{it} and the constants are specific to the i-th unit (country) at time t, at the same time but are constant.

In this paper, we used three different methods: (i) the common constant model; (ii) the fixed effects model and (iii)

the random effects model.

1) *The Constant Coefficients Model* (also called the pooled OLS model) is the type of panel model that has constant coefficients, referring to both intercepts and slopes. In the event that there is neither significant country nor significant temporal effects, we could pool all of the data and run an ordinary least squares regression model. Although most of the time there are either country or temporal effects, there are occasions when neither of these is statistically significant.

2) *The Fixed Effects Model (FEM)* is another type of panel model that would have constant slopes but intercepts that differ according to the cross-sectional (group) unit—for example, the country. Although there are no significant temporal effects, there are significant differences among countries in this type of model. While the intercept is cross-section (group) specific and in this case differs from country to country, it may or may not differ over time. This model can be written [2]:

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + ... + \beta_k X_{kit} + \varepsilon_{it}$$

The fixed effect model is a very useful basic model to start from; however, traditionally, panel data estimation has been mainly applied to datasets where N is very large and in this case a simplifying assumption is sometimes made which gives rise to the random effects model.

3) *The Random Effects Model (REM)* is also called a regression with a random constant term. One way to handle the ignorance or error is to assume that the intercept is a random outcome variable. The random outcome is a function of a mean value plus a random error. But this cross-sectional specific error term v_i, which indicates the deviation from the constant of the cross-sectional unit (in this example, country) must be uncorrelated with the errors of the variables if this is to be modeled. The time series cross-sectional regression model is one with an intercept that is a random effect.

Hence the variability of the constant for each section comes from the fact that:

$$\alpha_i = \alpha + v_i$$

where v_i is a zero mean standard random variable.

The random effects model therefore takes the following form (Asteriu – Hall (2007):

$$Y_{it} = (\alpha + v_i) + \beta_1 X_{1it} + \beta_2 X_{2it} + ... + \beta_k X_{kit} + \varepsilon_{it}$$

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + ... + \beta_k X_{kit} + (v_i + \varepsilon_{it})$$

Given a model and data in which fixed effects estimation would be appropriate, a Hausman test tests whether random effects estimation would be almost as good. In a fixed-effects kind of case, the Hausman test is a test of H0: that random effects would be consistent and efficient, versus H1: that random effects would be inconsistent. The result of the test is a vector of dimension k (dim(b)) which will be distributed chi-square(k). So if the Hausman test statistic is large, one must use FE. If the statistic is small, one may get away with RE.

According to [11] if it is assumed that ε_{it} and the X´s are uncorrelated, REM may be appropriate, whereas if ε_{it} and the X´s are correlated, FEM may be appropriate.

In the next part of this section, we provide empirical results which were obtained from EView 7.

Table 2 Common Constant Model Statistics

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	62.54607	5.104302	12.25360	0.0000
TAW_?	-0.072173	0.116137	-0.621443	0.5380
R-squared	0.010061	Mean dependent var		59.40472
Adjusted R-squared	-0.015990	S.D. dependent var		4.443963
S.E. of regression	4.479353	Akaike info criterion		5.885541
Sum squared resid	762.4548	Schwarz criterion		5.969985
Log likelihood	-115.7108	Hannan-Quinn criter.		5.916073
F-statistic	0.386191	Durbin-Watson stat		0.057828
Prob(F-statistic)	0.538019			

First we run the OLS statistics. The results suggested very small negative correlation between a level of the tax wedge and the employment rate. However, this correlation was statistically not significant because the null hypothesis was proved (p-value 0.538019 > 0.05) based on f-statistics (see Table 2).

The second used method was the fixed effects model statistics. It shows (see Table 3) that there are some other factors, which are not included in the previous model. This problem is solved by each economy to shape their own constant, the slope remains the same.

Table 3 Fixed effects model statistics

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	90.46410	6.175370	14.64918	0.0000
TAW_?	-0.713590	0.141789	-5.032772	0.0000
Fixed Effects (Cross)				
CZ--C	6.350200			
HU--C	4.435157			
PL--C	-7.889949			
SK--C	-2.895408			
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.911480	Mean dependent var		59.40472
Adjusted R-squared	0.901364	S.D. dependent var		4.443963
S.E. of regression	1.395688	Akaike info criterion		3.621121
Sum squared resid	68.17811	Schwarz criterion		3.832231
Log likelihood	-67.42242	Hannan-Quinn criter.		3.697452
F-statistic	90.09816	Durbin-Watson stat		0.992497
Prob(F-statistic)	0.000000			

Then we obtain these equations for individual countries:

EMR_CZ = 6.35019961794 + 90.4641009629 - 0.713590381256*TAW_CZ

EMR_HU = 4.43515715378 + 90.4641009629 - 0.713590381256*TAW_HU

EMR_PL = -7.88994868021 + 90.4641009629 - 0.713590381256*TAW_PL

EMR_SK = -2.89540809151 + 90.4641009629 - 0.713590381256*TAW_SK

The relationship between the tax wedge and employment rate can be interpreted as follows: if the tax wedge increases by 1%, then the employment rate decreased by 0.7%.

The FEM model is statistically significant (see coefficient in Table 3).

The last used technique was the random effects model. Like the previous case, we found negative correlation (coefficient was -0.65) between the tax wedge and the employment rate (see Table 4).

Table 4 Random effects model statistics

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	88.10402	6.574341	13.40119	0.0000
TAW_?	-0.659367	0.136071	-4.845772	0.0000
Random Effects (Cross)				
CZ--C	6.342708			
HU--C	3.887930			
PL--C	-7.520916			
SK--C	-2.709723			
Effects Specification			S.D.	Rho
Cross-section random			5.690957	0.9433
Idiosyncratic random			1.395688	0.0567
Weighted Statistics				
R-squared	0.376717	Mean dependent var		4.593270
Adjusted R-squared	0.360314	S.D. dependent var		1.764460
S.E. of regression	1.411221	Sum squared resid		75.67870
F-statistic	22.96746	Durbin-Watson stat		0.839571
Prob(F-statistic)	0.000025			
Unweighted Statistics				
R-squared	-0.655898	Mean dependent var		59.40472
Sum squared resid	1275.378	Durbin-Watson stat		0.049819

Then we obtain these equations for individual countries:

EMR_CZ = 6.34270847447 + 88.1040189047 - 0.659367407179*TAW_CZ

EMR_HU = 3.88793010448 + 88.1040189047 - 0.659367407179*TAW_HU

EMR_PL = -7.5209155188 + 88.1040189047 - 0.659367407179*TAW_PL

EMR_SK = -2.70972306015 + 88.1040189047 - 0.659367407179*TAW_SK

As the last step, we conducted the Hausman test, which demonstrated the significance of the REF model, on the basis that the p-value (0.1737) was greater than 0.05 which means that we accept the null hypothesis.

Table 5 Hausman test

Correlated Random Effects - Hausman Test
Pool: RANDOM_EMR
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.850510	1	0.1737

V. CONCLUSION

In the case of labor taxation as one of the institutional aspect, which has an influence on labor market performance, it is very difficult to follow evidence of this causality: high labor taxation increases unemployment. According to the author, in this case similar to those of the EPL – the high tax wedge increases the rigidity of the labor market, thereby increasing labor costs and force employers to weigh the pros and cons of creating a new job. Moreover, it is necessary to look at this institutional aspect from an international perspective. If employers´ decision about creation new jobs is based on minimizing production costs, then the high tax wedge plays a negative role in this process. It can mean both the brain domestic employers abroad, as well as reducing the inflow of foreign direct investment and, implicitly, it can cause a decrease in employment. This institutional aspect is also one of the most complex aspects, particularly due to its close linkages with the government budget and the social system. The reform is usually contingent on a number of partial system changes, which are unrelated to the labor market at first sight. The observed data shows that labor taxation among Visegrad group countries was highest in Hungary. OECD generally recommends reduction of tax burden in this area and to focus on other types of taxes. The next step should be reduction of tax burden on the low-wage labor force, both the employee and the employer contributions. Considerable modifications of this institutional aspect will be but very problematic. To a large extent this relates to the state of public finances, but requires a sustainable position. It is clear that reducing the total tax wedge is more likely for high-income groups of the population, which consists of fraction of the total labor force. Even so, it will be interesting, as they become available international statistics in the future to make further analysis on labor and to assess the position of the Visegrad group countries within the EU and within the limits of tax competition. The empirical estimates have shown the negative relationship between the tax wedge and the employment rate, more precisely, that an increase in the tax wedge decreases the employment rate.

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