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Study of the Tax Wedge in EU and other OECD Countries, Using Cluster Analysis

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Abstract

Our paperwork seeks to analyze the difference between the labor cost and the net wage (representing labor tax wedge) in correlation with the unemployment rate and employment rate, as the idea that a high labor cost produces distortions in the labor market is widely accepted. With this purpose in mind, we used the hierarchical cluster analysis on a sample of 41 countries (being about OECD and EU countries). Following this analysis, we concluded that the countries can be divided in two big categories based on the unemployment rate, employment rate and the difference between the labor cost and the net wage (labor tax wedge). For countries characterized by a large gap between labor costs and net wage and which also present a high level of unemployment there is a need to adopt fiscal measures for reducing labor cost.

Keywords: tax wedge; tax burden; employment; unemployment; labor taxes

1. Introduction

There are many opinions arguing that the high costs of work are responsible for high unemployment rate in several countries. It is about the following studies: Trpeski & Tashevska 2012, Urban 2009, Azemar & Desbordes 2009, Morawski & Myck 2007, European Commission 2014. Consequently, in order to diminish unemployment on

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the long run, many countries started to adopt some measures for reducing labor cost. But the financial crisis from recent years and the large fiscal deficits due to it make very difficult to solve these issues.

Tax wedge has long been identified as one of the significant factors behind the rapid increase of unemployment levels in Europe since the 1960s and also one of the major reasons for which the decrease of unemployment has proved so difficult (Morawski & Myck, 2007, p. 2). Tax wedge measures the burden of tax and social security contributions relative to labor cost (Wages and labor costs, 2015, p. 1).

In fact, this tax wedge is calculated by adding all the social contributions paid by the employer and employee, with the income tax, then this amount is divided by the total cost of labor of the employer. Therefore, we can say that the tax wedge represents the difference between the labor costs and the net salary.

Therefore, the tax wedge components are the income tax and the social contributions, thus, in order to reduce the tax wedge, measures that will reduce either the personal income tax or the social contributions (especially at the employer's level) are needed. Decreasing the tax wedge would lead to less unemployment as well as more jobs.

In the OECD and EU countries labor tax wedge is the most important indicator for measuring tax burden on labor, especially because it affects both the employers and the employees.

Therefore, in many countries it would be necessary to introduce fiscal measures to diminish labor taxes, and this can be achieved by shifting the tax burden from labor to other tax bases. This would have positive consequences on economic growth and on jobs, stimulating demand and labor supply.

Our paper has a double purpose. First, we propose to analyze the level of labor tax wedge in Romania, while comparing it with its values within the developed countries (from EU and other OECD countries). We also mention that in other studies concerning tax wedge (e.g Trpeski and Tashevska, 2012), the authors first presented the level of the tax wedge in that country and then compared it to that of other developed countries - the EU and the OECD. The purpose is to see whether the tax wedge level in this country is similar to that in/of developed countries, higher or lower. If its value is higher than in other developed countries, we can conclude that in that country it is necessary to adopt measures for its diminution, as is the case of Romania, since a high tax wedge can cause distortions in the labor market. Secondly, we intend to perform the cluster analysis for 41 countries, focusing on labor tax wedge. Therefor we will analyze this tax wedge in correlation to unemployment rate and employment rate in EU countries and other OECD countries, dividing countries according to the level of tax wedge, employment rate and unemployment rate.

2. Literature review

There are many studies that deal with the labor taxation issue and especially the tax wedge, these being important and current aspects. The level of labor taxes has consequences on unemployment rate and on employment rate.

Social contributions in OECD countries have as purpose to finance social security programs, but these programs tend to be very expensive, especially in the European countries. Therefore, in most countries a high tax wedge on labor is due to high social security contributions. However, Pomerleau (2014, p. 1) showed that the tax burden on families with children is lower than for a single person without children, with similar income.

Piketty & Saez (2012, p. 8) brought into discussion the issue of optimal taxation of labor income, stating that a more equal distribution of income will generate greater social welfare. Thus, as a result of income redistribution through progressive taxation and generous transfers, high-income individuals contribute to the economic welfare of those less fortunate.

Trpeski & Tashevska (2012, p. 576) mentioned within their analysis that reforms in Macedonia realized for reducing the cost of labor helped the employers during the financial crisis, they had an effect on the employment rate, by causing the growth of the net wage, they diminished the degree of informal economy and they improved the tax compliance. The rates of the corporate tax and the personal income tax have reached 10%, Macedonia making part of the countries with the lowest income tax rates.

Another study brings into question the fact that in countries that present a high tax burden on labor and a low level of employment, attention should be given to measures that diminish the tax burden on labor, giving a special attention to certain groups of people, especially to low skilled workers, and women. We should keep in mind the fact that in the case of low skilled workers unemployment rate is high. However, these measures should also aim at shifting the tax burden from labor to other tax bases (Tax reforms in EU Member States, 2011, p. 93).

There are also empirical studies that have found a positive correlation between tax wedge and unemployment rate, and a negative correlation between tax wedge and employment, in the OECD countries. Also for analyzing the impact of the tax wedge on unemployment and employment we can use the panel regression technique or the cluster analysis (Trpeski & Tashevska, 2012, p. 574).

Hutsebaut (2013, p. 9) remarked that in order to boost the employment level of individuals with low income, governments in many countries often reduced the tax wedge for low skilled workers. Thus, for workers having 2/3 of the average income, the tax wedge was reduced during 2000-2010 with 3 percentage points, in average, in the EU countries, from 39% to 36%. The most consistent cuts, of over 6 percentage points took place in: Sweden, Netherlands, Hungary, Finland, Slovakia and Bulgaria.

Other studies talk also about the fact that shifting the tax burden from labor should be a priority for some EU countries, in order to increase labor supply and employment. They emphasize the fact that the levels of employment for individuals with low income and second earners are low, but in their case the labor supply and demand are generally more flexible. So, there is the need to reduce the labor costs for employers (Tax burden on labour, European Commission, 2014, p. 3).

The international economical institutions have recommended reducing labor taxes in favor of other types of taxes, especially in the countries in the Euro zone. There are empirical studies showing that income taxes are generally associated with a lower economic growth than the taxes on wealth and consumption. Then according to another study, the reduction of tax for the lowest income would mostly lead to economic recovery, as this would stimulate demand, increasing labor supply and reducing income inequality (Eugène, Bisciari & al., 2013, p. 30).

Urban (2009, p. 1) has the same opinion. She argued that reducing the tax burden on labor will significantly reduce the unemployment figures and the number of those employed in the non-official economy.

Then, this question arises: who supports the additional tax burden, generated by the growth of labor taxes, employers and employees? Azemar & Desbordes (2009, p.19) show in their study that in countries where wage bargaining is not well coordinated, the growth of labor costs leads to a higher unemployment level, the employers supporting 45% of the increased tax burden. Instead, in the countries with a high coordinating system, the growth of the tax burden is transferred entirely to the employees, the employment level remaining unchanged.

3. Methodology and data

In this paper we used the data from the OECD and EU database. First we made a descriptive analysis of the size of labor tax wedge and its components in Romania. Then we made an international comparison of the tax wedge for 2009 and 2013 (for EU and other OECD countries) using the basic descriptive statistics. Then we analyzed the tax wedge and its relations with the employment rate and unemployment rate using descriptive analysis and cluster analysis. We have used the hierarchical and the k-means cluster analysis in order to find some similarities between countries in terms of labor tax wedge, employment and unemployment rate. We mention that 2013 was the last year for which data were available for all EU countries.

4. Results and discussions

First we aim to analyze the tax wedge evolution in Romania in the past three years, as well as its components. We mention that the data refer to an employee that is single, with average wage.

Table 1 presents the level of the tax wedge in Romania between 2013 and 2015.

As we can see, tax wedge in our country was situated around the value of 44.6% between 2013 and 2014, and in 2015 it shows a slight decrease, getting to 42.53%. This was due to a decrease in the employers' contribution to the social insurance by 5 percentage points. We mention that the average of the tax wedge in the EU countries in 2013 was 41.1%, thus in Romania the level of tax wedge was more than 3% higher than the EU average. This shows that in our country the tax burden on labor has quite a high level compared to other well-developed countries. We also mention that the OECD average of tax wedge in 2013 was of 35.7%, while in Romania the tax wedge was of 44.6%. From this results a difference of almost 9 percentage points between the level of tax wedge in Romania and the OECD average. Only in 6 of the OECD countries the tax wedge exceeded 44%.

Table 1. Labor tax wedge in Romania between 2013 and 2015, %, (for a single worker with average wage)

	2013	*2014*	*2015*
Average Gross income	2223	2298	2415
Total employee social contributions	366	378	398
Income tax	281	293	310
Total employer social contributions	622	643	555
Income tax + employee SSC + employer SSC	1269	1314	1263
Net wage	1576	1627	1707
Labor costs	2845	2941	2970
Tax wedge	**44,60%**	**44,68%**	**42,53%**

Source: authors' calculations (see also Radu, Dumiter & Opreț, 2015, p. 11)

Figure 1 presents the tax wedge structure in Romania, during 2013-2015, for a single worker, with average wage.
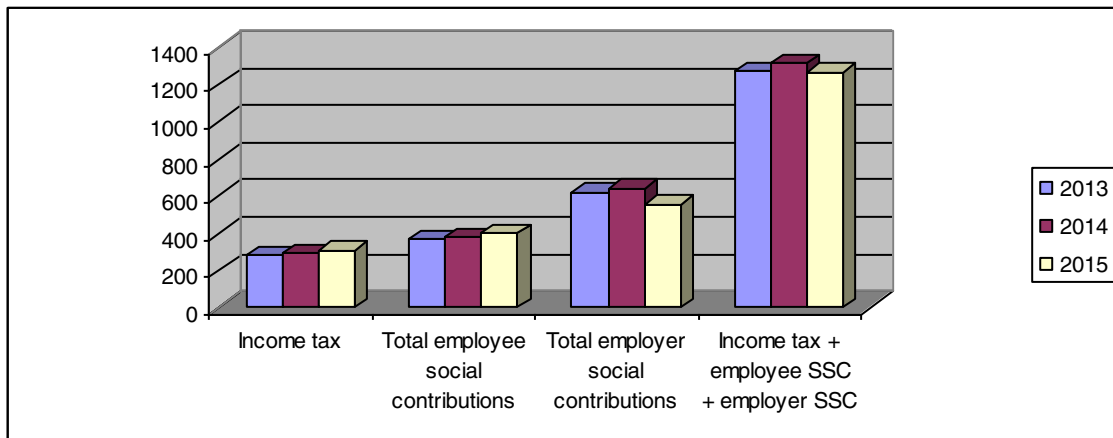

Fig. 1. Structure of labor tax wedge in Romania between 2013 and 2015. Source: authors' construction

Then, the income tax slowly grew in the analyzed period, as well as the total social contributions of employees. The total social contributions of employers slowly grew from 2013 to 2014, while in 2015 it recorded a reduction from 643 lei to 555 lei, that's because of the decrease of the employers' contribution to social insurance with 5 percentage points.

Next we will analyze the labor tax wedge in the OECD and EU countries in correlation with the unemployment and employment rate.

Table 2 presents the level of tax wedge, employment rate and unemployment rate in OECD and EU countries for 2009 and 2013. We mention that 2013 was the last year for which data concerning the tax wedge was available for all EU countries.

As we can observe in Table 2, there are certain differences between the analyzed countries concerning both the tax wedge and employment and unemployment rate. Because the data are heterogeneous we will use hierarchical cluster analysis in order to find some more homogeneous groups within the EU and other OECD countries regarding the tax wedge, employment and unemployment rate.

Table 2. Labor tax wedge, employment rate and unemployment rate in OECD and EU countries, % (for a single worker with average wage)

Country	Employment rate		Unemploy-ment rate		Tax wedge		Country	Employment rate		Unemploy-ment rate		Tax wedge	
	2009	2013	2009	2013	2009	2013		2009	2013	2009	2013	2009	2013
Australia	72,1	72	5,6	5,7	26,7	27,4	Mexico	59,8	60,8	5,4	4,9	15,3	19,2
Austria	70,3	71,4	5,3	5,3	47,9	49,2	Netherlands	77	73,6	3,4	7,2	38	37
Belgium	61,6	61,8	7,9	8,4	55,7	55,7	New Zealand	72,8	72,8	6,1	6,2	18,1	16,9
Canada	71,4	72,4	8,4	7,1	30,5	31	Norway	76,4	75,4	3,1	3,4	37,3	37,3
Chile	56,1	62,3	9,7	5,9	7	7	Poland	59,4	60	8,2	10,3	34,1	35,6
Czech Republic	65,4	67,7	6,7	7	42	42,5	Portugal	66,1	60,6	9,4	16,2	36,5	41,4
Denmark	75,4	72,6	6	7	39,5	38,2	Slovak Republic	60,2	59,9	12	14,2	37,7	41,1
Estonia	63,8	68,5	13,5	8,6	39,2	39,9	Slovenia	67,5	63,3	5,8	10,1	42,2	42,4
Finland	68,7	68,9	8,2	8,2	42,5	43,1	Spain	60	54,8	17,9	26,1	38,3	40,7
France	64,1	64,1	8,7	9,9	49,8	48,9	Sweden	72,2	74,4	8,3	8,1	43,2	43
Germany	70,3	73,5	7,7	5,2	50,8	49,2	Switzerland	79	79,6	…	4,4	22	22,1
Greece	60,9	48,8	9,6	27,5	41,3	41,6	Turkey	44,2	49,5	12,6	8,7	37,4	37,6
Hungary	55,1	58,1	10	10,2	53,1	49	United Kingdom	69,9	70,5	7,5	7,5	32,4	31,4
Iceland	78,3	81,1	7,2	5,4	30,5	34,1	United States	67,6	67,4	9,3	7,4	30,1	31,4
Ireland	61,9	60,5	12	13	24,7	27,1	Bulgaria	68,8	63,5	7,9	8,4	33,8	33,6
Israel	59,2	67,1	7,5	6,2	21,3	20,4	Croatia	64,2	57,2	9,1	10,3	…	39,5
Italy	57,4	55,5	7,7	12,1	46,8	47,9	Cyprus	75,3	67,2	7,7	12,1	…	…
Japan	70,5	71,7	5,1	4	29,2	31,6	Latvia	66,6	69,7	5,4	15,9	42,2	43,9
Korea	62,9	64,4	3,7	3,1	19,5	21,3	Lithuania	67,0	69,9	17,5	11,9	40,7	41,1
Luxembourg	65,2	65,7	5,1	5,8	33,9	37,2	Malta	59,0	64,8	10,0	10,2	22,3	25,3
							Romania	63,5	64,7	10,7	16,4	44,4	44,6

We find from Table 2 that the highest level of the tax wedge appears in Belgium (55.7%), and the lowest level in Chile (7%). Then the highest unemployment rate in 2013 was in Greece (27.5), and the lowest one in Korea (3.1%). The highest employment rate in 2013 was in Switzerland (79.6%) and the lowest one in Greece (48.8).

Next we will use cluster analysis on a sample of 41 countries and the analyzed variables are: tax wedge at 100% average wage level, employment rate and unemployment rate. We also use the Squared Euclid distance and Ward's method.

The linear correlation between the six input features ranging from "employment-rate 2009" (ER-2009) until "tax wedge 2013", respectively, is depicted in the following correlation matrix:

The few bolded red correlation coefficients indicate a high correlation modulus which may indicate some redundancy in variables. However, the dominance of the number of low (black bolded) and medium valued correlation coefficients does point towards a possible information gain from further analyses like, e.g., **country clustering** (grouping).

	ER-2009	ER-2013	UR-2009	UR-2013	TW-2009	TW-2013
ER-2009	+1.000	+0.848	-0.450	-0.332	-0.013	-0.028
ER-2013	+0.848	+1.000	-0.420	-0.611	-0.127	-0.163
UR-2009	-0.450	-0.420	+1.000	+0.578	+0.122	+0.141
UR-2013	-0.332	-0.611	+0.578	+1.000	+0.302	+0.344
TW-2009	**-0.013**	**-0.127**	**+0.122**	+0.302	+1.000	+0.986
TW-2013	**-0.028**	**-0.163**	**+0.141**	+0.344	+0.986	+1.000

Note: ER – employment rate, UR – unemployment rate, TW – tax wedge

In order to use clustering analysis, we have to fix the clustering method and the method of computing pair-wise country distances. For the latter we choose the widely used Euclidean distance for points in (linear) vector space. We refrain from displaying the full 41 x 41 matrix of distances. Instead we depict the **sorted unique pair-wise distances** found in this matrix.
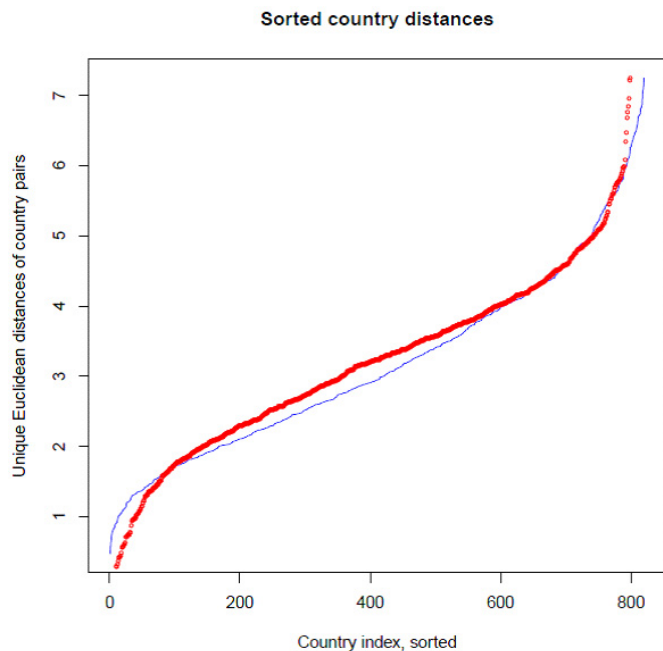

Fig. 2. Sorted country distances (dots) compared with a normal distribution (line). Source: authors' construction

The distribution of the sorted distances computed from the country data (the continuous blue curve) is a slight departure from a simulated normal distribution (the red dots - with their mean and standard deviation of taken identical to that of the empirical distance data). Hence it empirical data which warrants the use of further analysis.

Finally, a total hierarchical clustering (from a 2-clusterization down to an *n*-clusterization, with *n* being here the 41 countries) is computed by using the **hclust()** function from the powerful and versatile statistical platform R-CRAN (www.r-cran.org). The result of this computation is depicted in the following cluster-tree:

The hierarchical clustering method is **Ward-D** and the distance function is the Euclidean distance as stated above. Furthermore, the few occurring missing values (a total of five) were replaced by the respective column means of the data computed on the non-missing data. Transforming the data into their z-score variant, i.e. **($x[i,j]$-mean($x[,j]$))/stdev($x[,j]$)** for all **$i=1,…,31$** and **$j=1,…,6$,** the original entries with missing values assume now the value of exactly zero.
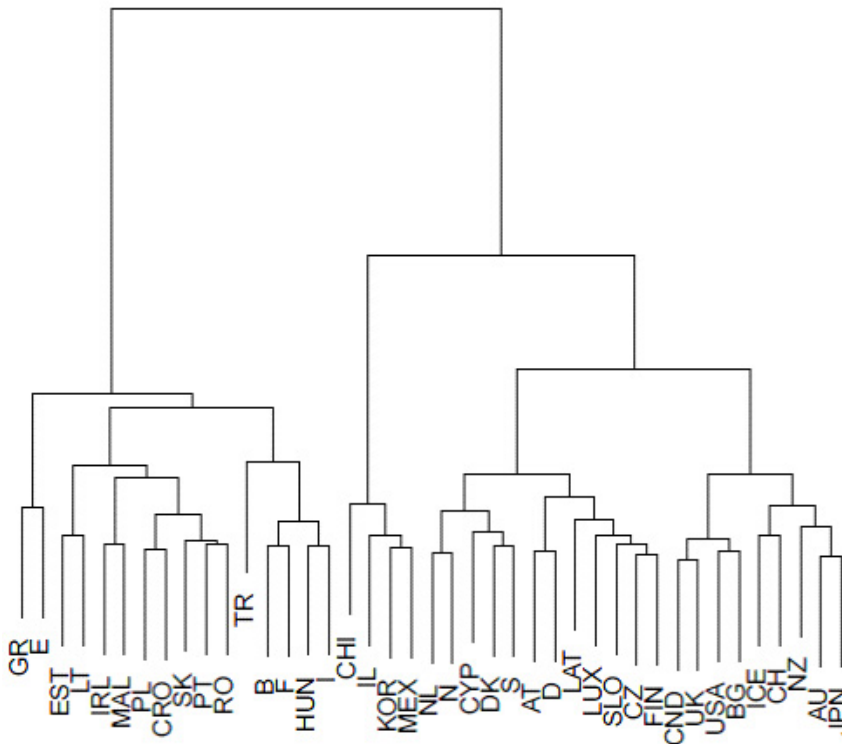
Fig. 3. Dendogram using hierarchical clustering of countries. Source: authors' construction

The list of abbreviations for each country used in the clustering program is the following:

("Australia","AU"))   ("Austria","AT"))   ("Belgium","B"))   ("Canada","CND"))   ("Chile","CHI")) ("Czech Republic","CZ"))   ("Denmark","DK"))   ("Estonia","EST"))   ("Finland","FIN")) ("France","F"))   ("Germany","D"))   ("Greece","GR")) ("Hungary","HUN"))   ("Iceland","ICE"))   ("Ireland","IRL"))   ("Israel","IL"))   ("Italy","I"))   ("Japan","JPN")) ("Korea","KOR"))("Luxembourg","LUX"))   ("Mexico","MEX"))   ("Netherlands","NL"))   ("NewZealand","NZ"))   ("Norway","N"))   ("Poland","PL"))   ("Portugal","PT"))   ("SlovakRepublic","SK"))   ("Slovenia","SLO"))   ("Spain","E"))   ("Sweden","S"))   ("Switzerland","CH")) ("Turkey","TR")) ("United Kingdom","UK")) ("United States","USA")) ("Bulgaria","BG"))   ("Croatia","CRO"))   ("Cyprus","CYP"))   ("Latvia","LAT")) ("Lithuania","LT")) ("Malta","MAL"))   ("Romania","RO"))

From the above cluster tree we detect two main groups and some important sub-groups of countries. According to this grouping we have a big cluster **C1** containing the countries NL, N, CYP, DK, S, AT, D, LAT, LUX, SLO, CZ, FIN, CND, UK, USA, BG, ICE, CH, NZ, AU, and JPN, i.e. mainly (but not exclusively!) the **most developed countries** and in cluster **C2** the countries GR, E, EST, LT, IRL, MAL, PL, CRO, SK, PT, RO, TR, B, F, HUN, and I, i.e. mainly smaller, or **more mono-industrialized** countries, or such, which have **employment-related structural problems**. Note that, otherwise developed countries like I, F share substantial youth unemployment challenges with E, GR, PT.

A third small outstanding cluster **C1-1** containing the countries CHI, IL, MEX, and KOR, may be identified by being composed of **emerging (developing) dynamic economies**.

Romania (RO) is situated in a hierarchical sub-cluster of **C2** namely in **C2-2-1** together with EST, LT, IRL, MAL, CRO, SK, and PT. As far as the data for RO are valid indeed (i.e. not underreported, etc.), it is the biggest country with employment-income characteristics otherwise more typical for much smaller countries.

In order to verify the robustness of the above clustering obtained by the standard hierarchical clustering used above we subjected the data of all the 41 countries to another clustering procedure, namely **k-means**, a different standard clustering procedure (using the same statistical platform R-CRAN, see above) with the number of required clusters set to **k=2.** We then compare the two clusterings of top level **hclust** and **k-means** containing *Romania*, respectively. The two clusters do not differ much in both size and country composition:

- The respective clusters from both methods containing Romania are composed of: Belgium, Estonia, France, Greece, Hungary, Ireland, Italy, Poland, Portugal, Spain, Turkey, Croatia, Lithuania (and Romania).
- A country which is contained in the **k-means** cluster only is the Slovak Republic.
- Countries which are contained in the respective top level **hclust** cluster only are Malta and Slovenia.

All the other countries are in the respective opposite clusters of the two clustering methods. This underlines the robustness of the clusterization into two country groups.

Concerning all the countries we observe an inverse relationship between tax-wedge and employment alone. We illustrate this with both the plain linear dependence and the robust (linear) dependence between the two variables, using Employment in 2013 as a function of the tax wedges of 2009 and 2013 respectively.
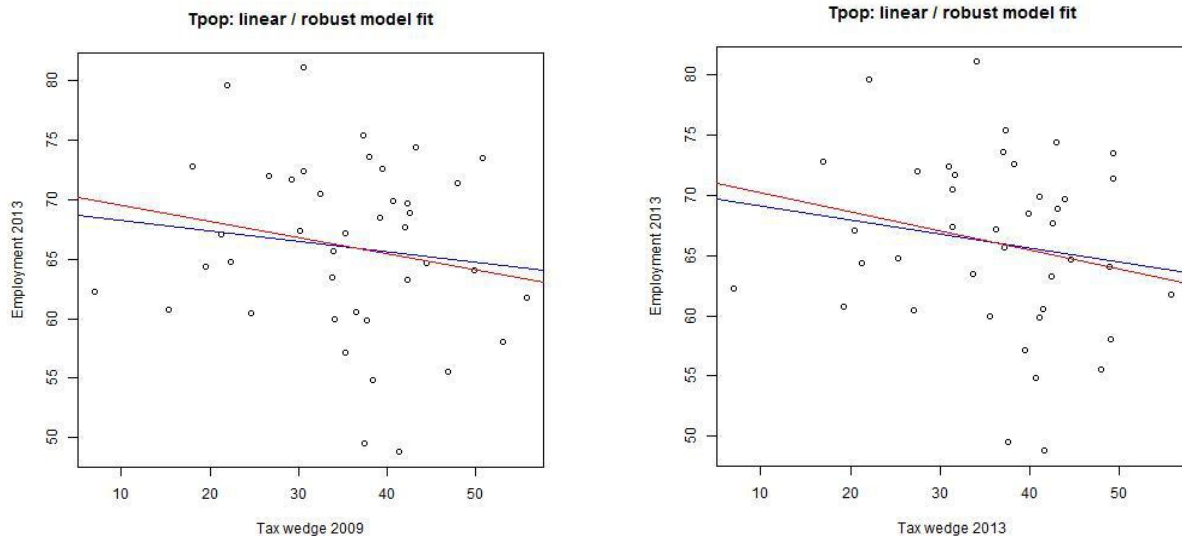

Figure 4: Linear fits between tax wedge and employment. Source: authors' construction Lines with bigger slope are the robust linear fits

Figure 4 depicts these fits indicating a slight decrease of unemployment if the tax wedge increases. The fits are computed by the *lm()* and the *line()* functions of the named R-CRAN platform. Next, we determine how this relation changes for the data restricted to the two main top-level clusters (we use those of the **hclust** variant in the following).

As it is evident from the two country data of the clusters the relationship *tax wedge → employment* depicted in figures 5 and 6 changes in multiple ways compared to that of figure 4 (computed on all countries).

In the case of figure 5 computed on cluster C1 (mostly rich countries) the slopes of the plain linear and the robust linear fit are reverting compared to those of figure 4. In case of figure 6 computed on cluster C2 (including Romania) the slopes of the plain linear and the robust linear   fit are contradicting.

Should there be any relationship which supports the hypothesis of lowering tax wedges in order to strengthen (improve) employment, then it is certainly **level dependent**, as only the higher average level of the tax wedge in the C2 cluster leads to the expected effect. The lower average level of the tax wedge in C1 cluster clearly supports the opposite relation (increasing the tax wedge improves expected employment).
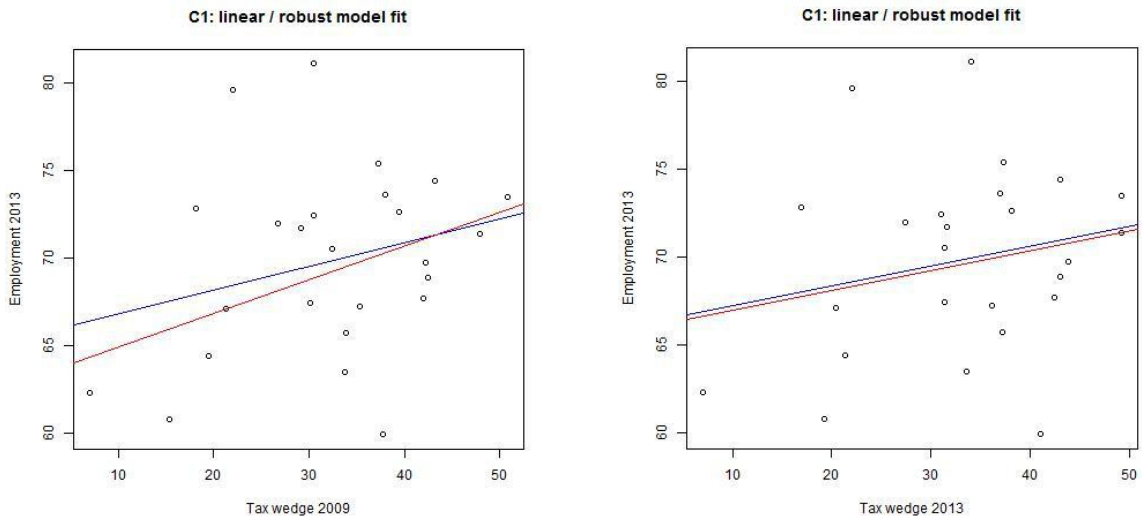
Figure 5: Advanced countries C1 -- linear fits between tax wedge and employment. Lower lines are is the robust linear fits
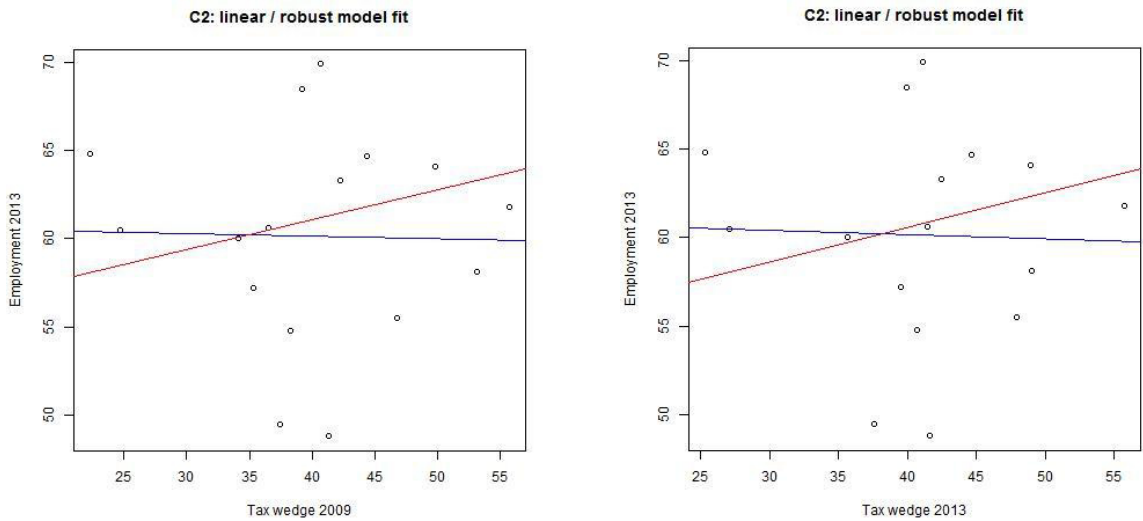

Figure 6: Countries C2 -- linear fits between tax wedge and employment. Lines with bigger slope are is the robust linear fits

Future work will analyze if and in which way new data, i.e. extensions of the empirical data base will stabilize or revise these cluster structures.

5. Conclusions

Following the hierarchical and the k-means cluster analysis we divide the analyzed countries into two main categories. The first cluster is formed mainly from the most developed countries, being characterized by better labor market incomes. The second cluster belongs mainly to the newer EU countries, including Romania, which tend to present employment-related structural problems like a major mismatch between existing qualifications and demand

for qualifications by effective job offers or high youth unemployment rates (a problem often encountered within the richer of the C2 cluster members).

On average, over all countries, a lower tax wedge tends to be associated with higher employment. However, this is exclusively supported in a cluster of mostly (but not exclusively poorer) C2 countries which has an average tax wedge much higher than that of a complementary C1 cluster of the (mostly) richer countries. In addition, countries from the C2 are on average characterized by lesser labor-market discipline (i.e. they include Greece, Italy, Spain but also Belgium and France, which tend to be rigid on granting rights to workers).

In countries characterized by a large gap between labor costs and net salary and which present a high level of unemployment there is a need to adopt fiscal measures for reducing labor cost.

Also, in Romania the tax burden on labor has quite a high level compared to other well-developed countries, and this is mainly due to the high level of social contributions. We mention that the average of the tax wedge in the EU countries in 2013 was 41.1%, thus in Romania the level of tax wedge was more than 3% higher than the EU average. Also, the OECD average of tax wedge in 2013 was of 35.7%, while in Romania the tax wedge was 44.6%. From this results a difference of almost 9 percentage points between the level of tax wedge in Romania and the OECD average. Only in 6 of the OECD countries the tax wedge exceeded 44%.

Therefore, in countries from sub-cluster **C2-2-1** (including Romania) it would be necessary to implement measures that have the effect of reducing the tax wedge. This should mainly refer to reducing the social contributions paid by the employer. Hopefully such a measure would indeed increase the propensity to further employ by introducing a perceptible relief on the cost side of companies.

However, we should take into consideration that besides labor tax wedge there are many other factors contributing to the poor performance of the labor market, such as the flexibility of labor markets, demographic pressures, some political and institutional factors, international developments etc.

References

Azemar, C., & Desbordes, R. (2009). Who Ultimately Bears the Burden of Greater Non-Wage Labour costs?, http://etpf.org/papers/44SSC.pdf, accessed on July 20, 2015.

Eugène, B., Bisciari, P., Nautet, M., Stinglhamber, P., & Van Meensel, L. (2013). Trends in tax systems in the EU, http://www.nbb.be/doc/oc/repec/ecrart/ecorevIII2013_H2.pdf, accessed on September 10, 2015.

European Commission, Tax reforms in EU Member States, (2011), http://ec.europa.eu/economy_finance/publications/european_economy/2011/pdf/ ee-2011-5 en.pdf, accessed on October 10, 2015.

European Commission, Tax burden on labour, (2014), http://ec.europa.eu/europe2020/pdf/themes/21_tax_burden_on_labour.pdf, accessed on October 10, 2015.

European Commission, Tax and benefits indicators database, (2015), http://ec.europa.eu/economy_finance/db_indicators/tax_benefits_indicators /index_en.htm, accessed on October 10, 2015.

European Commission, Wages and labour costs, 2015, http://ec.europa.eu/eurostat/statistics-explained/index.php/Wages_and_labour_costs accessed on October 17, 2015.

Hutsebaut, M. (2013). Taxation policies from a European perspective, http://perc.ituc-csi.org/IMG/pdf/taxation_policies_from_a_european_ perspective_martin_hutsebaut_cle07eebf.pdf , accessed on September 21, 2015.

Morawski, L., & Myck, M. (2007). `Klin'-ing up: reforming taxes on labour in Poland, seminar.wne.uw.edu.pl/uploads/Main/klin_paper_11DecEN.pdf, accessed on July 20, 2015.

OECD, Taxing Wages: tax burden trends between 2000 and 2014, (2015), www.oecd.org, accessed on October 17, 2015.

OECD, Employment rate (indicator), (2015), doi: 10.1787/1de68a9b-en, accessed on September 21, 2015.

OECD, Unemployment rate (indicator), (2015), doi: 10.1787/997c8750-en accessed on September 21, 2015.

Piketty, T., & Saez, E. (2012). Optimal labor income taxation, https://ideas.repec.org/p/nbr/nberwo/18521.html accessed on July 19, 2015.

Pomerleau, K. (2014). A Comparison of the Tax Burden on Labor in the OECD, http://taxfoundation.org/article/comparison-tax-burden-labor-oecd, accessed on July 19, 2015.

Radu, C.F., Dumiter, F., & Opreț, A. (2015). Labour taxation – A comparative study, Studia Universitatis „Vasile Goldiş" Arad, Economics Series, Volume 25, Issue 1, pp. 1-15.

Trpeski, P., & Tashevska, B. (2012). Labour tax wedge in the republic of Macedonia – Trends and international comparison, http://oeconomica.uab.ro/upload/lucrari/1420122/24.pdf, accessed on September 21, 2015.

Urban, I. (2009). The tax burden on labour in Croatia, http://ijf.hr/eng/newsletter/47.pdf , accessed on October 17, 2015.