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FISCAL IMPACTS OF ENVIRONMENTAL TAX REFORM IN SELECTED EU MEMBER STATES

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ABSTRCT: The purpose of the article is to analyse if – according to environmental tax reform assumptions – there occurs an increase in environmental taxes and a concurrent reduction of other taxes (especially personal and corporate income taxes) in the selected EU member states. The group of countries was chosen basing on more significant changes in the tax structure as well as "old" and "new" EU membership. The research is based on the European Commission data and covers the period 2003 to 2015 due to the data availability. The significance of changes in taxation structure has been analysed by means of structural change degree measure. The direction of these changes has been examined using structural changes monotonicity measure. A weak trend to shift slightly from income taxes to the environmental ones has been observed only in three out of ten analysed member states.

KEY WORDS: environmental policy, fiscal policy, tax shift

Introduction

Environmental taxes are a primary economic instrument of environmental policy and are widely used in many countries including the European Union (EU) member states. They minimize the total cost of pollution abatement, provide a constant incentive for pollution reduction and are a source of government revenues (Ekonomia środowiska..., p. 231). The cost-effectiveness of environmental taxes is similar to that of tradeable emission allowances and higher than the cost-effectiveness of emission standards.

Environmental taxes, through providing disincentives to consumption, are sometimes called taxes which destroy their own base. According to the European Commission (2018, p. 266-267), environmental taxes are selected by analysing their tax base which has a negative impact on the environment. As a consequence, such taxes should influence prices and costs of products and activities which have a harmful effect on the environment. They are divided into four groups in the category of indirect taxes (excluding VAT, which is selected as a consumption tax in general): energy, resource, pollution and transport (excluding fuels) taxes. The division is conventional as some of the taxes could be classified in two or more groups.

Environmental tax reform (ETR), visible on a larger scale in the 1990s in countries such as Denmark, Finland, Sweden, the Netherlands, Germany and the UK, involves gradual changes in the national tax system, where the fiscal burden shifts from economic functions such as labour (personal income tax), capital (corporate income tax) and consumption (VAT and other indirect taxes) to activities that lead to environmental degradation and the use of natural resources (Withana et al., 2014). Furthermore, environmental tax reform can be defined as the action of state authorities to increase the role of environmental taxes in the tax system of the country.

The purpose of the article is to analyse if – according to ETR assumptions – an increase in environmental taxes and concurrent reduction of other taxes are observed in the EU member states. Conducted research based on selected examples of EU Member States is to lead to general conclusions on the further role of environmental taxes in tax systems.

The environmental tax reform differs from the environmental fiscal one. The latter is a broader term encompassing additionally the removal of environmentally harmful subsidies (Dresner et al., 2006, p. 896). The analysis focuses on environmental tax reform as part of wider measures, i.e. environmental fiscal reform, which also includes public spending to protect the environment, and those contributing to further deterioration of the environment (energy subsidies, environmentally harmful subsidies and wasteful government expenditures). Environmental tax reform is a part of a fiscal reform

package to response to budgetary necessities or to support wider economic, environmental and social objectives (Withana et al., 2014). To date only some member states adopted a real environmental tax strategy while others only minor changes in tax policy.

General assumptions concerning environmental tax reform

The ETR that increases or introduces new environmental taxes is based on three principles (Deroubaix, Lévèque, 2006, p. 940-949; Cottrell et al., 2016, p. 2):

1. tax neutrality connected with shifting the tax burden mainly from personal income tax (or, more broadly, labour costs, i.e. also social insurance contributions paid by the employer) to environmental taxes and, as a result, rewarding the contribution of top earners and boosting low-income employment,
2. the polluter pays principle – through the internalization of external effects in the form of environmental pollution which results in significant costs for society, it contributes to more fairness by pricing in the negative externalities of polluting or other damaging activities and helps to incentivise behavioural change,
3. double dividend – favourable effects from the environmental and economic perspective visible in the improved quality of the environment, economic growth and increased employment (revenues from environmental taxes could be used to reduce distorting taxes on capital and labour and thus reduce the excess burden of the tax system, with positive consequences for employment, investment and innovation).

Environmental policy in the EU is implemented, among others, by supporting market-based instruments (MBI) such as: subsidies, grants, indirect taxes, tradable emission rights. The EU has set clear policy objectives in the areas of energy and climate change and is committed to achieving ambitious targets with respect to energy savings, reductions of greenhouse gas emissions and deployment of renewable energy sources by 2020. Kosonen and Nicodème (2009) note that the main advantage of MBI in relation to regulatory instruments is efficiency. The shift from taxes with a broader tax base to those with narrower tax breaks creates the danger of or rather the need for increasing taxes. As a result, double dividend effect (higher employment and more effective environmental protection) may not occur. It may also be worthwhile to point out the opposite effect of ETR, when a decline in environmental tax revenue is observed due to less environmentally-damaging activities (a tax base will decrease).

Research on the negative consequences of ETR, that is, on income distribution between the households and on the international competitiveness of enterprises, shows that the effect is rather neutral (Kosonen, Nicodème, 2009, p. 7-9). In the COMETR project, authors proved, using mainly macroeconomic modelling and case studies, that in seven EU countries (Denmark, Germany, Netherlands, Finland, Slovenia, Sweden and UK) the shift towards carbon-energy taxes had a positive impact on selected energy-intensive industries.

It should be stressed that the effects of double dividend are quite modest and depend on the specifics of the reforms in a given country (Bosquet, 2000; Patuelli, Pels, Nijkamp, 2002). When ETR is constituted by shifting of the tax burden from conventional taxes to environmental ones, attention should be paid to the issue of social inequalities and possibilities of tax preferences for the poorest taxpayers (Cottrell et al., 2016, p. 2). Social compensation mechanisms should aim to stimulate ecological behaviour, for example by financing the acquisition of low-emission, energy-saving or resource-efficient technologies, such as solar stoves, and exploiting the synergies and benefits of social and environmental policies.

ETR differs in the EU member states also with respect to the use of the environmental tax revenues (ten Brink, Mazza, 2013). Three approaches can be observed (Clinch, Dunne, Dresner, 2006, p. 960-970; Garnier, György, Heineken et al., 2014): first, recycling all the revenue through tax reductions elsewhere, second, using part of the revenue to support environmental initiatives, and the last one, consolidating public finance by reducing a general government deficit. Consequently, in the tax reform, three options can be considered:

- allocation of all additional income to reduce personal income tax (an equivalent decrease in labour taxes, resulting in no overall change in the tax burden),
- earmarking leading to expenditure on environmental protection,
- the choice of an indirect solution, i.e. a partial reduction of personal income tax and a partial allocation for environmental purposes.

The transfer of taxes from labour to environmental or consumption taxes remains a political recommendation of the European Commission at the end of each European semester (country-specific recommendations) cycle, although some member states choose opposing fiscal solutions to increase or reduce environmental taxes (Garnier et al., 2014).

In the literature, there is an increase in social acceptance of raising taxes for environmental protection or other environmental reasons, e.g. improving energy efficiency and developing renewable energy (earmarking). However, a generally accepted view in public economics is that the allocation of income

is a source of potential ineffectiveness in tax decisions (Cottrell et al., 2016). Requiring that environmental tax revenues are earmarked for a given purpose would mean that the amounts spent for these purposes would change over time in line with the trend in environmental tax revenues rather than in line with the cost-benefit estimates associated with the allocation of income.

According to Cottrell et al. (2016) therefore, such taxes should be assessed to a lesser extent on the basis of their specific environmental impact (although they are obviously still valid), and more on their ability to provide public income in the most effective and socially acceptable way. The effectiveness of large taxes related to environmental protection should be less compared to the environmental performance of other environmental regulation instruments, and more so with the effectiveness of income from other types of taxation.

Research methods

The following EU member states were chosen for the analysis of the presumptive shift from income to environmental taxation: Bulgaria, Croatia, Cyprus, Denmark, Estonia, Greece, Italy, Netherlands, Poland and Slovenia. These states were selected by taking into consideration more significant changes in the tax structure and basing on "old" and "new" EU membership. The research is based on the European Commission (Eurostat) data and covers the period 2003 to 2015 due to the data availability.

The significance of changes of taxation structure in the periods t and t -1 has been analysed by means of structural change degree measure $\varepsilon_{t,\,t-1}$ (Kukuła, 1986):

$$\varepsilon_{t,t-1} = \frac{\sum_{i=1}^{k} \left| \alpha_{it} - \alpha_{i(t-1)} \right|}{2}, \tag{1}$$

where:
α_i – share of structure component i.

The more diversified structures, the higher the value of structural change degree measure.

The direction of these changes has been examined using structural changes monotonicity measure, η_m (Kukuła, 1986):

$$\eta_m = \frac{\varepsilon_{m,1}}{\sum_{t=2}^{m} \varepsilon_{t,t-1}} \; . \tag{2}$$

If η_m equals zero, the structure in the period m is identical with the structure in the starting (first) period. If the ηm equals one, the shares of all structure components form monotonic sequences and the structure evolves in the steady direction.

Results of the research

The share of environmental taxes in total taxation in the EU member states in 2003-2015 is diversified and varies from 4.5% to 10.1% on average (figure 1). France, Belgium and Spain belong to the states with the lowest share and Croatia, Bulgaria and Malta have the highest share in the EU. The share of environmental taxes in total taxation in "new" EU countries is slightly higher than in the "old" ones (8.1% and 7.2% on average respectively).

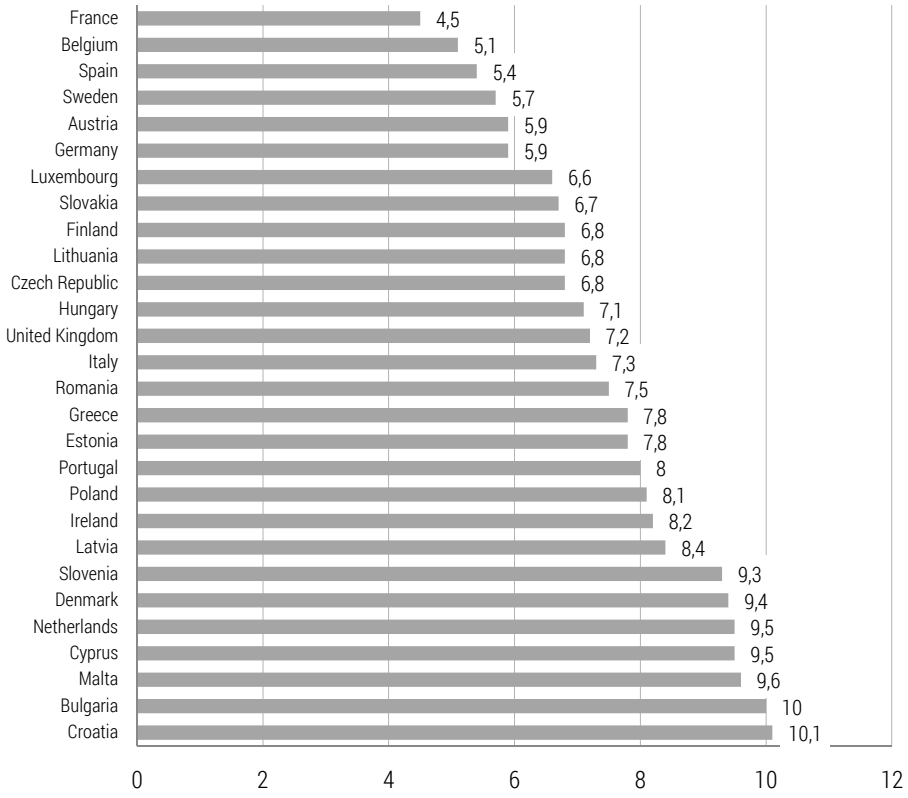

Figure 1. The average share of environmental taxes in total taxation in the EU member states in 2003-2015 [%]

Source: authors' own work based on European Commission (2017).

The detailed data on taxation structure (broken down by personal income, corporate income, environmental and other taxes) in ten selected EU member states are presented in table 1. The revenues from personal income taxes are higher than those from the corporate income ones except for Cyprus. Denmark distinguishes itself from other analysed countries by the high PIT share in taxation structure exceeding 50%.

The share of environmental taxes in total taxation in the particular member states was changing during the years 2003-2015 (table 1). Taking into account the first and the last year of the analysed period, we can distinguish six countries with a growth in the share of environmental taxes (Greece, Estonia, Slovenia, Bulgaria, Poland and Italy, by 3.6, 2.0, 1.9, 0.5, 0.5 and 0.4 percentage points, respectively) and four countries with a decrease in this share (Cyprus, Denmark, Netherlands and Croatia, by 3.0, 1.9, 0.5 and 0.2 percentage points, respectively).

In order to determine if the shift from income taxes to the environmental ones took place in the analysed EU member states, a two-element taxation structure was analysed using the $\varepsilon_{t,\,t-1}$ and ηm measures. The results are presented in table 2.

Significant changes of income and environmental taxation structure were observed in:

- Bulgaria in the period 2006/2007 ($\varepsilon_{t,\,t-1}$=0.075, structure change in favour of income taxes) and in the next period 2007/2008 ($\varepsilon_{t,t-1}$=0.054, in favour of environmental taxes),
- Croatia in the period 2009/2010 ($\varepsilon_{t,t-1}$=0.059, in favour of environmental taxes) and in the next period 2010/2011 ($\varepsilon_{t,\,t-1}$=0.040, in favour of income taxes),
- Cyprus in the period 2003/2004 ($\varepsilon_{t,t-1}$=0.055, in favour of environmental taxes) and in the next three periods ($\varepsilon_{t,t-1}$=0.055, $\varepsilon_{t,t-1}$=0.051, $\varepsilon_{t,t-1}$=0.045 respectively in favour of income taxes),
- Estonia in the period 2008/2009 ($\varepsilon_{t,t-1}$=0.054, in favour of environmental taxes),
- Greece in the period 2009/2010($\varepsilon_{t,t-1}$=0.063, in favour of environmental taxes),
- Slovenia in the period 2008/2009 ($\varepsilon_{t,t-1}$=0.053, in favour of environmental taxes).

Table 1. Taxation structure in selected EU member states

Taxes	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bulgaria													
PIT	10.2	9.5	8.7	8.4	9.5	9.0	10.2	10.9	10.7	10.7	10.2	11.3	10.6
CIT	8.9	7.8	5.9	6.8	13.1	9.8	8.8	7.4	6.9	6.3	7.3	7.1	7.3
Environmental	9.5	9.8	9.6	9.5	10.1	10.7	10.5	10.6	10.6	10.0	9.9	9.6	10.0
Other	71.4	72.9	75.9	75.4	67.3	70.6	70.5	71.1	71.8	73.0	72.6	71.9	72.1
Croatia													
PIT	9.8	10.1	9.6	9.8	10.5	10.4	10.6	9.6	9.8	10.3	10.6	10.6	9.6
CIT	5.2	5.0	6.3	7.7	8.3	7.9	7.0	5.4	6.6	5.6	5.6	4.8	5.0
Environmental	11.1	11.0	10.6	10.2	9.9	9.3	9.3	10.1	9.4	8.9	9.6	10.5	10.9
Other	73.9	73.9	73.5	72.3	71.3	72.3	73.1	74.9	74.2	75.3	74.2	74.0	74.5
Cyprus													
PIT	12.8	9.7	9.9	11.9	14.8	12.3	10.4	10.8	11.0	11.2	8.8	8.0	8.3
CIT	13.7	11.5	13.4	15.4	17.0	18.4	18.5	17.4	19.5	18.1	20.5	19.1	17.9
Environmental	12.0	12.3	10.6	9.6	8.7	8.7	8.8	8.7	8.7	8.2	8.7	9.2	9.0
Other	61.5	66.5	66.1	63.0	59.5	60.6	62.4	63.1	60.8	62.5	62.0	63.7	64.8
Denmark													
PIT	53.5	53.7	53.6	51.7	52.0	53.7	55.7	55.3	55.3	55.1	56.0	58.9	56.8
CIT	6.2	6.3	7.2	8.0	6.8	5.7	4.2	5.0	4.8	5.7	6.0	5.7	5.6
Environmental	10.5	10.8	10.3	10.1	10.2	9.3	8.9	8.9	8.9	8.7	8.9	8.1	8.6
Other	29.8	29.3	29.0	30.3	31.0	31.3	31.2	30.7	31.0	30.5	29.1	27.3	29.0
Estonia													
PIT	20.9	20.1	18.4	18.1	18.4	19.5	16.0	15.9	16.1	16.4	17.2	17.6	17.2
CIT	5.1	5.3	4.7	4.8	5.1	5.1	5.2	4.0	3.8	4.4	5.5	5.4	6.2
Environmental	6.1	6.7	7.6	7.2	7.0	7.4	8.4	8.8	8.6	8.6	8.1	8.3	8.1
Other	67.8	67.9	69.3	69.9	69.5	68.0	70.4	71.4	71.4	70.5	69.2	68.7	68.4
Greece													
PIT	12.9	13.4	13.7	14.0	14.2	14.3	14.5	12.4	14.1	19.5	16.7	16.4	14.9
CIT	8.7	8.9	10.2	8.2	7.2	6.7	8.2	7.9	6.1	3.1	3.2	5.2	5.9
Environmental	6.7	6.9	6.5	6.3	6.3	6.0	6.3	7.9	8.2	9.0	10.0	10.2	10.3
Other	71.6	70.8	69.6	71.5	72.3	73.0	71.1	71.8	71.5	68.4	70.0	68.1	68.9
Italy													
PIT	25.5	25.7	26.0	26.2	26.3	27.5	27.0	27.4	26.9	27.4	27.5	27.8	28.3
CIT	5.6	5.8	5.8	7.1	7.6	7.1	5.7	5.5	5.3	5.4	5.8	5.0	4.7
Environmental	7.5	7.2	7.4	7.1	6.6	6.2	6.7	6.7	7.4	8.0	7.9	8.3	7.9
Other	61.4	61.2	60.8	59.6	59.5	59.2	60.6	60.4	60.5	59.2	58.8	58.9	59.1
Netherlands													
PIT	17.5	16.0	17.5	17.7	18.7	18.1	22.0	21.4	20.7	19.3	18.7	18.6	20.4

Taxes	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
CIT	8.1	8.8	9.7	9.5	9.5	9.1	6.1	6.4	6.1	5.9	6.0	6.9	7.2
Environmental	9.5	9.8	10.1	10.0	9.4	9.6	9.9	9.8	9.6	9.1	9.0	8.9	9.0
Other	64.9	65.3	62.7	62.9	62.3	63.3	62.0	62.4	63.6	65.6	66.3	65.6	63.4
Poland													
PIT	12.8	12.4	13.0	13.7	14.9	15.5	14.5	13.8	13.6	13.9	14.0	14.3	14.4
CIT	5.4	6.1	6.5	7.1	7.9	7.9	7.2	6.2	6.3	6.5	5.5	5.5	5.7
Environmental	7.7	8.5	8.1	7.9	7.9	7.7	8.0	8.7	8.3	8.1	7.6	8.1	8.2
Other	74.1	72.9	72.5	71.3	69.3	68.9	70.3	71.3	71.8	71.6	72.9	72.2	71.7
Slovenia													
PIT	15.0	15.0	14.3	15.0	14.7	15.7	15.6	15.0	15.2	15.3	13.9	13.8	13.9
CIT	4.6	5.0	7.2	7.7	8.6	6.7	4.9	5.0	4.5	3.3	3.3	3.9	4.0
Environmental	8.7	8.7	8.3	7.9	8.0	8.1	9.6	9.7	9.4	10.3	10.7	10.6	10.6
Other	71.8	71.3	70.3	69.4	68.8	69.5	69.8	70.3	70.9	71.1	72.1	71.7	71.4

Source: authors' own work based on European Commission (2017).

Table 2. Changes in income and environmental taxation structure in selected EU member states

Taxes	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bulgaria													
PIT&CIT [%]	66.7	64.0	60.3	61.6	69.1	63.7	64.5	63.3	62.4	63.0	63.9	65.7	64.2
Environ. [%]	33.3	36.0	39.7	38.4	30.9	36.3	35.5	36.7	37.6	37.0	36.1	34.3	35.8
$\varepsilon_{t,t-1}$	-	0.027	0.037	0.013	0.075	0.054	0.008	0.012	0.008	0.005	0.009	0.018	0.015
η_m	-	1.000	1.000	0.656	0.155	0.148	0.104	0.151	0.182	0.155	0.113	0.037	0.088
Croatia													
PIT&CIT [%]	57.4	58.1	59.9	63.0	65.3	66.2	65.6	59.6	63.6	64.1	62.8	59.5	57.2
Environ. [%]	42.6	41.9	40.1	37.0	34.7	33.8	34.4	40.4	36.4	35.9	37.2	40.5	42.8
$\varepsilon_{t,t-1}$	-	0.006	0.019	0.031	0.023	0.009	0.006	0.059	0.040	0.005	0.013	0.033	0.023
η_m	-	1.000	1.000	1.000	1.000	1.000	0.865	0.144	0.320	0.336	0.255	0.086	0.007
Cyprus													
PIT&CIT [%]	68.8	63.3	68.8	73.9	78.5	77.9	76.7	76.5	77.9	78.2	77.2	74.6	74.4
Environ. [%]	31.2	36.7	31.2	26.1	21.5	22.1	23.3	23.5	22.1	21.8	22.8	25.4	25.6
$\varepsilon_{t,t-1}$	-	0.055	0.055	0.051	0.045	0.006	0.012	0.002	0.014	0.004	0.010	0.026	0.002
η_m	-	1.000	0.000	0.317	0.466	0.428	0.351	0.338	0.375	0.384	0.330	0.208	0.199
Denmark													
PIT&CIT [%]	85.0	84.8	85.6	85.6	85.2	86.4	87.1	87.1	87.1	87.5	87.4	88.8	87.9
Environ. [%]	15.0	15.2	14.4	14.4	14.8	13.6	12.9	12.9	12.9	12.5	12.6	11.2	12.1
$\varepsilon_{t,t-1}$	-	0.002	0.008	0.000	0.004	0.012	0.007	0.000	0.000	0.004	0.001	0.014	0.009
η_m	-	1.000	0.603	0.608	0.167	0.572	0.659	0.662	0.642	0.685	0.651	0.745	0.487

Taxes	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estonia													
PIT&CIT [%]	81.0	79.1	75.4	76.2	77.1	77.0	71.5	69.2	69.7	70.8	73.7	73.5	74.2
Environ. [%]	19.0	20.9	24.6	23.8	22.9	23.0	28.5	30.8	30.3	29.2	26.3	26.5	25.8
$\varepsilon_{t,t-1}$	-	0.019	0.037	0.008	0.009	0.001	0.054	0.023	0.005	0.010	0.029	0.002	0.007
η_m	-	1.000	1.000	0.746	0.530	0.538	0.732	0.773	0.713	0.609	0.371	0.376	0.328
Greece													
PIT&CIT [%]	76.2	76.4	78.5	77.8	77.1	77.8	78.2	71.9	71.1	71.5	66.6	67.9	67.0
Environ. [%]	23.8	23.6	21.5	22.2	22.9	22.2	21.8	28.1	28.9	28.5	33.4	32.1	33.0
$\varepsilon_{t,t-1}$	-	0.002	0.021	0.008	0.007	0.007	0.004	0.063	0.008	0.004	0.049	0.014	0.010
η_m	-	1.000	1.000	0.509	0.235	0.352	0.404	0.387	0.428	0.381	0.557	0.442	0.469
Italy													
PIT&CIT [%]	80.5	81.3	81.0	82.3	83.8	84.7	83.0	83.0	81.4	80.3	80.8	79.8	80.8
Environ. [%]	19.5	18.7	19.0	17.7	16.2	15.3	17.0	17.0	18.6	19.7	19.2	20.2	19.2
$\varepsilon_{t,t-1}$	-	0.008	0.003	0.013	0.015	0.010	0.017	0.000	0.016	0.011	0.005	0.010	0.010
η_m	-	1.000	0.491	0.770	0.859	0.888	0.383	0.380	0.105	0.025	0.023	0.071	0.022
Netherlands													
PIT&CIT [%]	72.9	71.6	73.0	73.2	74.9	74.0	73.9	74.0	73.5	73.5	73.2	74.0	75.5
Environ. [%]	27.1	28.4	27.0	26.8	25.1	26.0	26.1	26.0	26.5	26.5	26.8	26.0	24.5
$\varepsilon_{t,t-1}$	-	0.013	0.014	0.002	0.017	0.009	0.001	0.001	0.004	0.001	0.003	0.008	0.014
η_m	-	1.000	0.041	0.097	0.437	0.196	0.169	0.182	0.097	0.087	0.042	0.152	0.291
Poland													
PIT&CIT [%]	70.1	68.5	70.5	72.5	74.3	75.1	72.9	69.8	70.6	71.5	72.0	71.0	70.9
Environ. [%]	29.9	31.5	29.5	27.5	25.7	24.9	27.1	30.2	29.4	28.5	28.0	29.0	29.1
$\varepsilon_{t,t-1}$	-	0.017	0.021	0.019	0.018	0.008	0.022	0.032	0.008	0.009	0.005	0.011	0.001
η_m	-	1.000	0.106	0.408	0.550	0.595	0.265	0.029	0.031	0.091	0.119	0.049	0.046
Slovenia													
PIT&CIT [%]	69.3	69.8	72.1	74.3	74.5	73.5	68.3	67.2	67.6	64.3	61.5	62.5	62.8
Environ. [%]	30.7	30.2	27.9	25.7	25.5	26.5	31.7	32.8	32.4	35.7	38.5	37.5	37.2
$\varepsilon_{t,t-1}$	-	0.005	0.023	0.022	0.002	0.010	0.053	0.011	0.004	0.033	0.028	0.010	0.003
η_m	-	1.000	1.000	1.000	1.000	0.687	0.092	0.172	0.133	0.309	0.411	0.338	0.321

Source: authors' own work based on European Commission (2017).

According to the value of η_m measure, the changes of income and environmental taxation structure in favour of environmental taxes show a weak (in case of Greece) or a very weak (in case of Estonia and Slovenia) tendency to keep a steady direction. On the contrary, the evolution of the observed structure in Denmark evinces a weak trend to decrease in the share of environ-

mental taxes. In other six analysed member states incidental fluctuations of tax shares in the long period do not lead to consequent changes against the structure of the first period.

Conclusions

In recent years, countries have implemented some forms of ETR unilaterally according to their own needs, capabilities and political benefits of governments. Only in some cases it existed coordinated action in the European Union, positive inspiration or reaction on negative behaviour of other states.

The environmental tax reform can be defined as the action of state authorities to enhance the role of environmental taxes in the tax system of the country. It consists in increasing environmental taxes and reducing concurrently other taxes. In this study the significance of changes in taxation structure in selected EU member states has been analysed by means of structural change degree measure. The direction of these changes has been examined using structural changes monotonicity measure. A weak trend to shift slightly from income taxes to the environmental ones has been observed only in three out of ten analysed member states. It can therefore be concluded that ETR has not been implemented so far in sufficiently satisfactory terms to fully assess its effects. In general, reductions in rates for payroll taxes and the introduction of new tax credits or extension of the existing ones have only been partially offset by a transfer to other forms of taxation. The average level of environmental taxation in the EU remains at a similar level in relation to GDP or to total taxes as compared to 2003.

It should be emphasized that this study focuses on examining the relationship between specific types of taxes. Due to the limited scope of the study, the broadly understood fiscal instruments related to environmental protection have not been included, i.e. subsidies and tax expenditures such as tax credits and allowances in income taxes. It focuses closely on specific types of taxes.

The implementation of ETR requires the emphasis on both fiscal and environmental purposes to focus public discussions on key themes, such as the advantages and disadvantages of environmental taxation, as compared to other types of taxation and the relationship between general taxation and expense demands. ETR and, more broadly, the EFR must be implemented prudently, without succumbing to pressure from the business or industrial lobby and not in order to derive political benefits. Otherwise, the effects of the reform will be destroyed by arbitrary rebates and tax exemptions, as well as subsidies granted to energy-pressure industries at the expense of low-income households.

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The contribution of the authors

Justyna Dyduch – 50% (conception, literature review, acquisition of data, analysis and interpretation of data).

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