

COULD ENVIRONMENTAL TAXATION PROMOTE CIRCULAR ECONOMY OBJECTIVES? - A SHORT PERSPECTIVE

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Abstract

In contemporary capitalist economies, the environmental taxation contributes significantly in shaping a more responsible environmental behavior, both in case of the companies and of the population. Applying a well-proportioned tax policy in the field of environmental protection can also stimulate the achievement of specific circular economy objectives by suppressing production patterns that do not take into account the re-introduction of recycled raw materials and awarding of those who promote environmental friendly production. The main aim of this paper is to analyze the role of environmental taxation in promoting circular economy objectives, by taking into consideration some of the specific indicators.

Key words: environmental protection, circular economy, taxation, fiscal revenues.

Introduction

Contemporary society and the economy have experienced an irreversible process of transformation, imposed not only by the rarity and limitation of resources, but also by the confrontation with globalization and enhancing its global conflicts. Promoting the circular economy is a necessary and a mandatory step to limit the negative effects of classical linear economy based on a linear process and attracting secondary resources to the economic process.

The application of fiscal policy measures encourages the development of the circular economy mechanism, limiting or sanctioned the waste of raw materials and materials. For the economy, the tax policy appliance and the

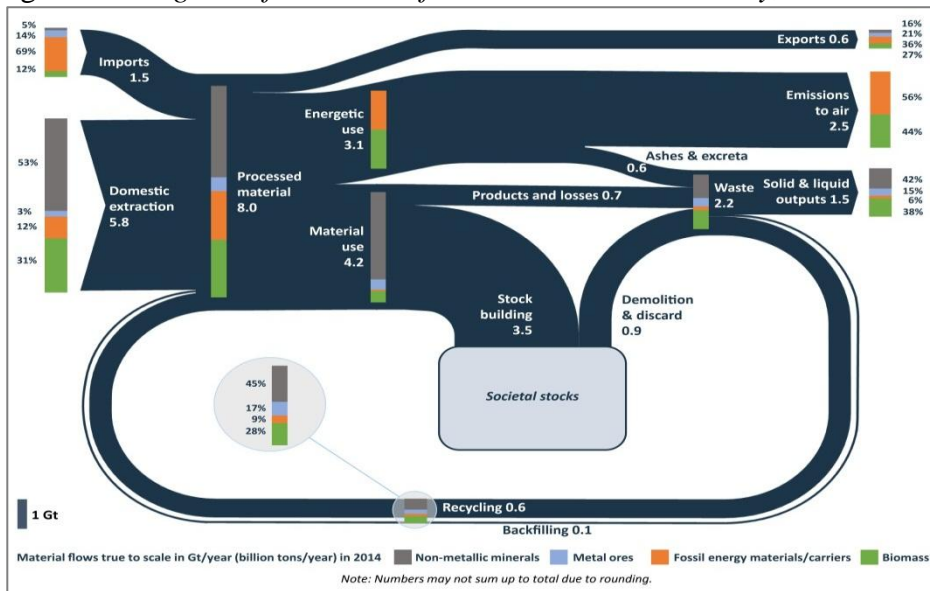
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taxation represent not just an instrument in collecting revenues, and assuring state functionality, but depending on its application, it could become a functional tool in promoting economic competitiveness and assuring sustainable economic growth. Taxation and environmental tax could stimulate employment rate and development of new technologies and new types of economy.

The model of circular economy brings into question the need to reconnect and reconstruct the economic, natural and social capital from a revolutionary perspective - of the regeneration of natural systems and the reuse and maintenance of raw materials and finished products alike. Although the idea of circularity in the economy is older, the need to apply it to contemporary economies is more evident. In the fig.1 is presented a Sankey diagram, according to (Eurostat, 2018), which shows the flows of materials as they pass through the EU-28 economy and are eventually discharged back into the environment or re-fed into the economic processing. (Eurostat, 2018).

Fig.1: The diagram of material's flows in the EU28 economy, 2014



Source: Eurostat, (2018)

Environmental taxation is one of the major responsibilities of governmental authorities in the field of environmental protection, who can sustain by applying a dynamic level of taxation the objectives of the

circular economy, taxing those products and services that are more difficult to re-use in the economic circuit, or have low efficiency or utility. In the contemporary economies, taxation has become a useful economic tool in shaping the economic behavior of society as a whole. Climate change and other societal major trends have imposed a major rethinking of the fiscal policy in order to develop a more environmental friendly society. As it is argued in literature (Femke, 2016), “today, 51 percent of globally collected taxes are derived from labour taxation, while environmental (or consumption) taxes – energy, transport, pollution and resources-represent only 6 percent.”(Femke, 2016).

Environmental taxation may represent a lucrative economic instrument in the transition process to a circular economy which denotes not only the amount of all necessary adjustments aimed at reducing the negative impacts of the linear economy. A direct connection between these two elements represents a systemic shift that generates long term resilience, new business models based on fiscal measures. The environmental taxes, which limit inefficient resource consumption and generate pollution, emphasizing the need to promote a circular economy, may generate environmental and societal benefits on a larger scale. The economic and financial instruments are widely used both in designing responsible economic behaviors and in promoting efficient production systems. The fiscal policies applied in the environmental field contribute in achieving and rearranging the domestic economic structure on a new basis, where the unenvironmental processes are supplementary taxed. Designing and applying a well efficient taxation instrument in this field requires a more versatile approach.

Environmental taxation implies the realization of a certain behavior that is responsible for the environment, which can stimulate the process of recasting the resources already used in the economy. The level of taxation can stimulate the level of recycling and reintegration in the recycling circuit of recycled material. In this context, rethinking the approach of environmental policy through fiscal instruments can contribute to the achievement of the exigencies of a real functional circular economy in the Europe. As is considered in (Eurostat, 2018a), “the environmental taxes have been increasingly used to influence the behavior of economic operators, whether producers or consumers.” (Eurostat, 2018a). Also the increasement of the environmental taxation is due to the fact that the fiscal instruments provides in a greater measure than the more innovative financing tools, a more efficient and cost-effective reinforcement of the

environmental friendly production technology and could stimulus also the circular economy mechanisms.

The paper is structure in two separated but interlinked sections, analyzing a possible influence of environmental tax policy effects on promoting and developing circular economy. First section consists of a short analysis on the level of environmental and pollution taxation evolution, with deepening on energy taxes and the environmental taxation on agriculture, forestry and fishing, and the second part is addressing to the circular economy specific aspects. In this article is broken down into the following domains as: private investments, jobs and gross value added related to circular economy sectors (value added at factor cost - percentage of gross domestic product (GDP) and the employment generated by the circular economy by taking into consideration the persons employed as percentage of total employment.

Aspects on environmental tax` evolution as a potential indicator of circular economy development

The transition to a circular economy and the achievement of its objectives in the Europe requires, not only a deep correlation with the fiscal policy in the field of the environment, but also a rethinking of the classical economic paradigm. In this order, achieving a climate-resilient economy that, at the same time will capitalizes the principle of circularity leads to the strengthening of fiscal policy in the field of the environment protection by applying a relatively high level of specific taxes. As (Barrios et al., 2013) argues “the economic distortions provoked by labour taxes are significantly larger than for green taxes. (...) our results suggest overwhelmingly that should tax increases be considered in EU countries, energy taxes represent a better candidate than labour taxes.”(Barrios et al., 2013).

Evolution of the environmental taxation may be a sign of government interest in promoting a cleaner and less polluted environment. Environmental taxes are addressing to those aspects that proven to have specific negative impact on the environment and any increasement of them could contribute in shaping an environmental friendly behavior for all involved in the field. In the Table 1 is presented the evolution of the total environmental taxes in some European countries during 2008-2015.

Table 1: *Total environmental taxes in some European countries, 2008-2015 -Million euro-*

Country	2008	2009	2011	2013	2014	2015
Bulgaria	906.24	698.28	666.45	742.37	730.29	787.53
Czech Rep.	2,984.01	2,743.29	3,106.31	2,635.97	2,585.52	2,626.53
Estonia	245.06	265.16	310.36	342.45	389.09	408.04
Latvia	351.32	317.8	350.69	488.98	548.56	570.71
Lithuania	265.33	266.51	278.93	309.99	314.79	350.9
Hungary	1,111.37	1,027.76	1,093.06	1,522.15	1,592.31	1,720.18
Poland	7,279.79	5,865.56	7,140.92	6,372.53	7,358.38	7,393.38
Romania	1,400.57	1,277.5	1,518.32	1,717.98	2,259.56	2,788.73
Slovenia	351.22	356.46	398.78	514.18	515.27	569.32
Slovakia	750.31	810.73	956.16	919.53	943.37	977.85
Serbia	558.04	617.52	659.25	701.8	800.73	846.75
<i>Average</i>	<i>1,473.02</i>	<i>1,295.14</i>	<i>1,498.11</i>	<i>1,478.90</i>	<i>1,639.81</i>	<i>1,730.90</i>
<i>Min</i>	<i>245.06</i>	<i>265.16</i>	<i>278.93</i>	<i>309.99</i>	<i>314.79</i>	<i>350.90</i>
<i>Max</i>	<i>7,279.79</i>	<i>5,865.56</i>	<i>7,140.92</i>	<i>6,372.53</i>	<i>7,358.38</i>	<i>7,393.38</i>

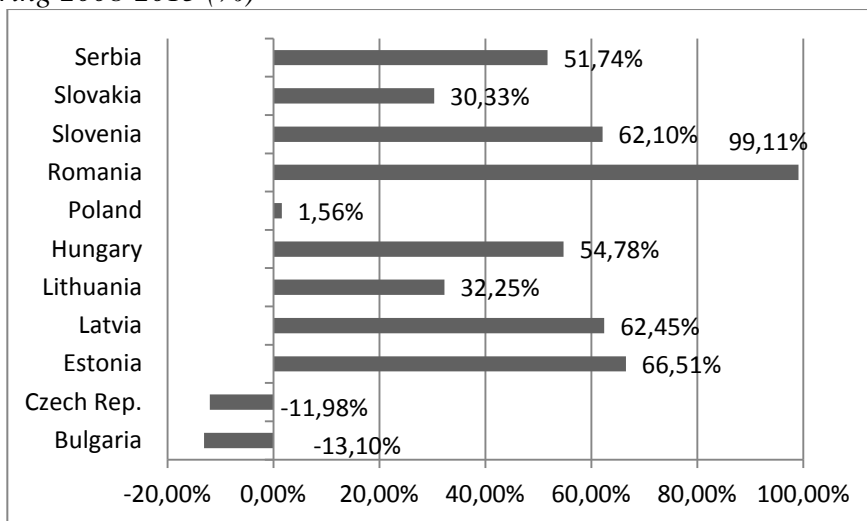
Source: *authors based on Eurostat database, 2018*

The evolution of the total environmental taxes during the period considered in analysis reflects different levels of taxation and two different periods of evolution. If in 2008 the average environmental taxes were 1,473.02 mil. euro at the end of the period, increased with 257.88 mil.euro, reaching the value of 1,730.90 mil.euro. Also, the minimum and the maximum levels of total environmental taxes have registered increases. If in 2008 the minimum value was 245.06 mil.euro in case of Estonia and the maximum 7,279.79 mil euro in case of Poland, but seven years later, in 2015, the minimum value was registered in Lithuania (350.9 mil.euro) and the maximum in Poland (7,393.38 mil.euro). As is argued in literature (ILO, 2011), “environmental taxes and charges are the most widely applied market-based instruments EU governments have imposed”. (ILO, 2011). In this context, the level of total environmental taxes and the evolution rate develops an increasing trend during the period, being an important part of the governmental fiscal policy instrument in developing a sustainable environment.

The evolution of max values shows a highly level of environmental taxation in Poland and Hungary and a more relax taxation for the remained countries presented in the analysis. In order to obtain a cleaner picture of the environmental taxation, in fig.2 is presented the percentage

change of total environmental taxes evolution in some European countries during the 2008-2015.

Fig.2: *Total environmental taxes evolution in some European countries during 2008-2015 (%)*

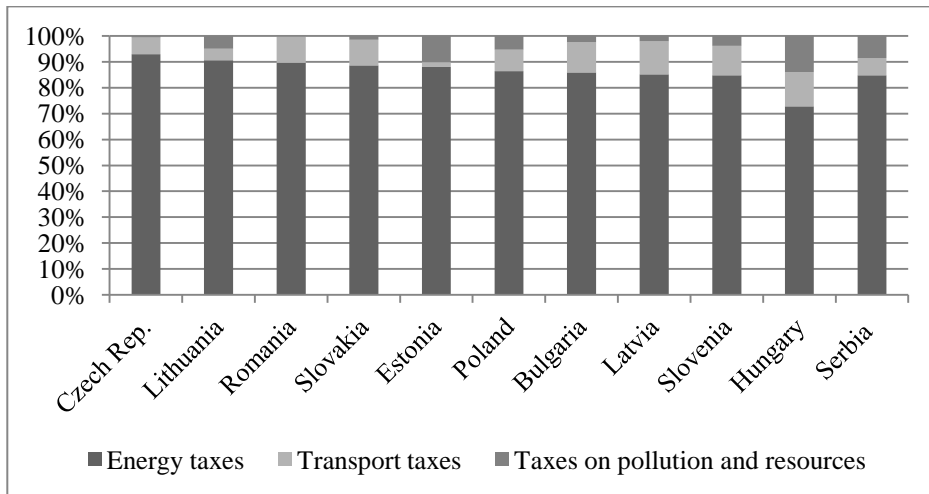


Source: *authors own computations based on Table 1*

As in fig.2, the total environmental taxes have been substantially increased during the period, due to a large influence of both of the economic operator's behavior and the developing of a new business patterns, whether the producers or consumers imposed this trend.

The large increasement has been registered in Romania (+99%), where the total environmental taxes have almost doubled in a seven years period. The smallest positive increasement is registered in Poland (+1%), due the fact of maintaining a highly environmental taxation. Still, in some cases – Bulgaria (-13.1%) and Czech Rep. (-11.98%), it could be remarked a negative evolutions of these taxes. In order to understand properly the evolution of total environmental taxes, in fig.3 is presented the evolution of environmental taxes structure, by tax category, in 2016.

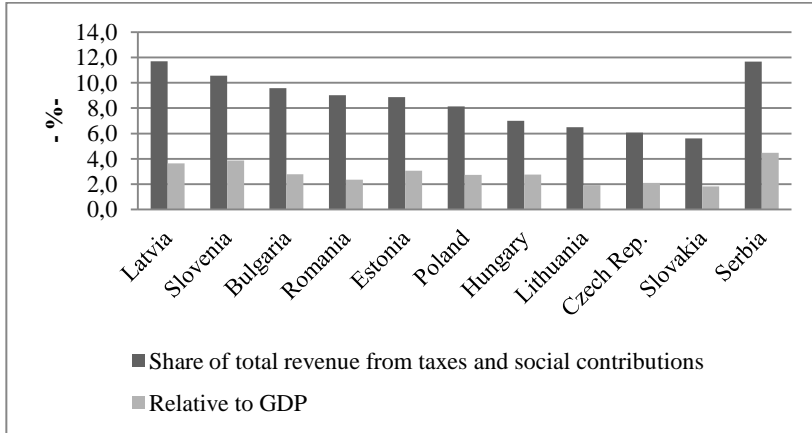
Fig. 3: *The environmental taxes structure by tax category, in some European countries 2016*



Source: *authors` own computations based on (Eurostat, 2018a)*

The environmental tax structure highlights a focus on energy taxation and less on pollution and resources taxes or on transport taxation. In order to promote a circular economy model, the fiscal policy should be orientated to pollution and resource taxation, for stimulating there-introduction of recycled materials in production system and rewarding businesses that promote environment-friendly production processes. From this perspective, the environmental taxation could be redesigned and appreciated more effective if it turns to stimulate the resource wasting by increasing the resource taxation and subsidizing the environmental friendly production process. Also, as it is remarked in literature (Eurostat, 2018a), the environmental taxes generate revenues that can potentially be used by government to increase its expenditure on environmental protection or efficient management of natural resources. (Eurostat, 2018a). In fig.4 is presented the total environmental tax revenue in some European countries, in 2016, both as share of total revenue from taxes and social contributions and relative to GDP.

Fig.4: *The share of total environmental tax revenue in some European countries, 2016*



Source: *authors` own computations based on (Eurostat, 2018a)*

As regarding the share of total environmental tax revenue in relative GDP, as it could be remarked from fig.4, Serbia stands out with a ratio of 4.5 % environmental tax revenue-to GDP, much higher than other countries as Latvia, Slovenia or Bulgaria. Despite the fact that environmental tax revenues represent an important category of governmental financial resources, the share of these taxes in GDP varies from 5.6% (Slovakia) to 11.7% (Serbia)

As in fig.4 and Table 1, the environmental taxation defines a great potential in generating supplementary revenues for government which could be used in achieving sustainable economic development. The existing potential for revenue generation by applying supplementary environmental taxes reviles a determination of the public policies in promoting an extended fiscal policy in the field. The potential the revenues that could be derived from the taxes leave the possibility of an expansion and diversification of the forms of taxation. Numerous studies in the field (Kosonen and Nicodème, 2009; EEA, (2013); Andersen et al., 2015), argues the need for a comprehensive reform of the environmental tax system and making it to a more sustainable and reliable.

Private investments and jobs related to circular economy sectors

After analyzing some of the aspects related to the environmental taxation evolution, the second section of the paper is addressing to the possibility of developing circular economy in the considered European countries, in

correlation to the topic. In this context, it was chosen two specific indicators - value added at factor cost and the employment related to circular economy sectors.

Circular economy and circular economy sectors have earned a major traction in European policymaking during the analyzed period, and it is perceived as a positive, solutions-based approach in generating and achieving sustainable economic development within increasing environmental constraints. The circular economy development involves developing new models of business-to-consumer and business-to-business transactions, more environmental friendly and easy to implement, based on freely accessing specific services rather than owning products. As is pretend in literature (Ghisellini et al., 2016), the goal of circular economics, essentially, is to uncouple economic growth from environmental pressure and create gross value added in a more environmental friendly business, despite the fact that “any production system will always involve the use of resources” as (Tukker, 2016) already remarked. In table 2 is presented the evolution of value added at factor cost related to circular economy sectors in some European economies during 2008-2015, as percentage of gross domestic product.

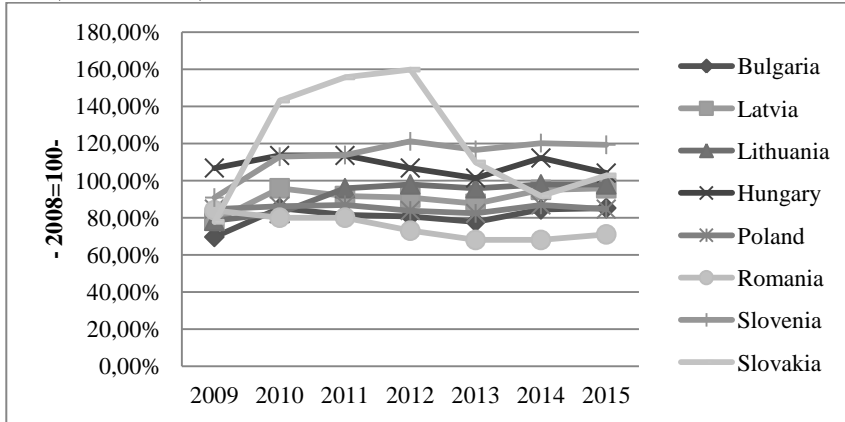
Table 2: *Value added at factor cost related to circular economy sectors -percentage of gross domestic product (GDP)-*

Country	2008	2009	2010	2011	2012	2013	2014	2015	Δ2015/2008
Bulgaria	1.35	0.94	1.15	1.1	1.09	1.05	1.14	1.15	85.19%
Latvia	1.2	1.21	1.21	0.98	1.14	1.01	1.02	0.99	82.50%
Lithuania	0.97	0.76	0.8	0.93	0.95	0.93	0.95	0.95	97.94%
Hungary	0.74	0.79	0.84	0.84	0.79	0.75	0.83	0.77	104.05%
Poland	1.3	1.1	1.12	1.13	1.09	1.07	1.13	1.1	84.62%
Portugal	0.77	0.78	0.77	0.73	0.71	0.7	0.73	0.75	97.40%
Romania	1	0.84	0.8	0.8	0.73	0.68	0.68	0.71	71.00%
Slovenia	1.09	0.99	1.23	1.24	1.32	1.27	1.31	1.3	119.27%
Slovakia	0.72	0.56	1.03	1.12	1.15	0.79	0.66	0.74	102.78%

Source: *authors based on (Eurostat, 2018b)*

The evolution of value added at factor cost related to circular economy sectors, during the 2008-2015, shows a descending trend in the majority of all analyzed countries with some minor exception as: Hungary, Slovenia and Slovakia. In fig.5 is presented the evolution of this indicator reported against the year of 2008 which is considered the base year.

Fig.5: Evolution of value added at factor cost related to circular economy sectors (2008=100)



Source: authors` own computations based on Table 2

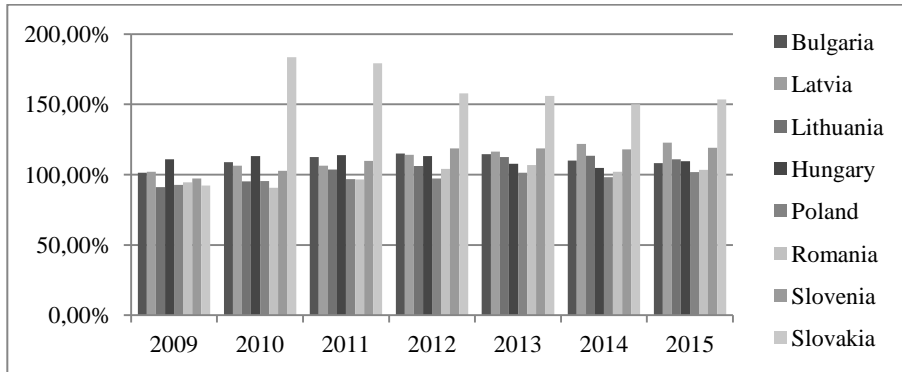
The importance of the circular economy sectors in the classical economy's structure has increasing during the analyzed period. Promoting the circularity in the current economic paradigm implies making the circuits of materials and goods circular, not redesigning the macroeconomic processes which are already circular. From this perspective, the new value added produced during this process, improves significantly the degree of utilization and capitalization of resources in the productive circuit. Also, the employment related to circular economy sectors, has a great impact on developing this new model of economy. In table 3 and fig.6 is presented the evolution of the employment related to circular economy sectors in some European countries during the same period of time.

Table 3: Persons employed related to circular economy sectors - percentage of total employment-

Country	2008	2009	2010	2011	2012	2013	2014	2015	$\Delta 2015/2008$
Bulgaria	1.59	1.61	1.73	1.79	1.83	1.82	1.75	1.72	108.18%
Latvia	2.33	2.38	2.48	2.48	2.66	2.71	2.84	2.86	122.75%
Lithuania	2.46	2.24	2.34	2.55	2.61	2.77	2.79	2.73	110.98%
Hungary	1.66	1.84	1.88	1.89	1.88	1.79	1.74	1.82	109.64%
Poland	2.17	2.01	2.07	2.1	2.11	2.2	2.13	2.21	101.84%
Romania	1.49	1.41	1.35	1.44	1.55	1.59	1.52	1.54	103.36%
Slovenia	1.83	1.78	1.88	2.01	2.17	2.17	2.16	2.18	119.13%
Slovakia	1.16	1.07	2.13	2.08	1.83	1.81	1.74	1.78	153.45%

Source: authors based on (Eurostat, 2018b)

Fig.6: *Evolution of employment related to circular economy sectors (2008=100)*



Source: *authors` own computations based on Table 3*

Developing of the circular economy implies a long process of attracting new labour resources in the field and restructuring the old linear economy employment. The transition and realization of the circular economy objectives also requires a remodeling and rethinking of the labor market structure. The potential to create new jobs within the cyclical economy is high and it can withstand the variations in the classical economic cycle, which are specific to linear economies. Circular economy is at the same time both a challenge and a major challenge for the labor market, generating new jobs in competitive sectors with redistribution in the use and allocation of resources, but decreasing the employment in the energy - intensive and resource-intensive. Some existent literature in the field (The Club of Rome, 2016; Green Alliance, 2015) argues a positive impact of the transition from the linear to circular economy and the new job creation process. The evolution of employment related to circular economy sectors implies creation of numerous new jobs for the currently unemployed persons and developing new economic branches.

As is shown in Table 3 and in fig.6, the circular economy sectors have started to become employers for the economy. The persons employed related to circular economy sectors computed as percentage of total employment during the analyzed period has registered a crescent trend during the period. The highly values are registered in Latvia, Lithuania and Poland. The increasing employment trend could be the result of the government specific policies in the field and could explain in the same time the shift of the traditional economic paradigm to the green economy. Promoting circular economy and transformation of the classical

production systems into less polluting and more resource efficient lead to major structural changes in the old fashioned linear economy. The evolution of employment related to circular economy sectors argues the future sustainability of job creation process in these sectors, defining a new employment structure in the economy. As is shown in (OECD,2017), “dynamic labour markets with sufficient flexibility are therefore crucial to manage the labour market during the green growth transition and reduce the costs of transitioning to green growth”(OECD, 2017).

Conclusions

Environmental taxation may represent a sustainable instrument in promoting and developing green economic growth. Taxation could stimulate or reduce the intensity of business cycles in order to design a more environmental friendly production process. Circular economy may use the environmental taxation to achieve its objective by creating resource effectiveness usage and penalizing those economic sectors that waste material resources. Analyzing the role of environmental taxation in promoting circular economy objectives, by taking into consideration some of the specific indicators, it could be remarked some direct connections between the evolutions the taxation and the circular economy implementation during the considered period. Taking into consideration the analysis carried on in this study, it could be argued that, between environmental taxation and circular economy development exist direct and significant relations. Taxation could be appreciated as a stimulating instrument in designing the circular economy paradigm, supporting the shift form the traditional linear economy tom this new type of economy.

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МОЖЕ ЛИ ЕКОЛОШКО ОПОРЕЗИВАЊЕ ПРОМОВИСАТИ ЦИЉЕВЕ ЦИРКУЛАРНЕ ЕКОНОМИЈЕ? - КРАТКА ПЕРСПЕКТИВА

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Апстракт

У савременим капиталистичким економијама, опорезивање животне средине значајно доприноси обликовању одговорнијег еколошког понашања, како у случају предузећа тако и од становништва. Примјена добро пропорционалне пореске политике у области заштите животне средине такође може стимулисати постизање специфичних циљева у циљу кочења тако што ће потиснути производне обрасце који не узимају у обзир поновно увођење рециклираних сировина и додјеливање оних који промовишу производњу у складу са околином. Главни циљ овог рада је да анализира улогу еколошког опорезивања у промовисању циљева циркуларне економије, узимајући у обзир неке од специфичних индикатора.

Кључне речи: заштита животне средине, кружна економија, порез, фискални приходи.

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