

Transfer Pricing System of EU Countries: An Analysis in the Context of SDGS

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Abstract

Considering that the base erosion and the profit shifting practiced by multinationals could deprive governments of their fair share in taxes and, as a consequence of the financial resources needed to achieve the sustainable development goals ('SDGs'), governments have started to be interested in the implementation of transfer pricing regulations. The objective of the paper is to analyze the transfer pricing regulations and practices adopted by the EU countries that record a good progress in terms of SDGs vs. EU countries that record a moderate progress in this respect.

The results of the study show that the strictness of the transfer pricing system influences the progress regarding the achievement of the SDGs. More exactly, the countries which record a good progress in achieving SDGs have, in general, a stricter transfer pricing system. In order to increase the strictness of the transfer pricing system and the progress in terms of SDGs, countries could implement regulation which envisage: the preparation of an annual transfer pricing documentation; the preparation of a documentation on three levels according to BEPS 13; the adoption of certain measures in order to increase the number of APAs, MAPs and transfer pricing audits; imposing of penalties.

Keywords: sustainable development goals, transfer pricing system, European Union, comparability analysis.

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1. Introduction

According to Mensah and Casadevall (2019), actions performed by a man on the earth have implications on the economy, environment, and society and therefore on the well-being and continued existence of the human race. Going further, Taylor (2016) sustained that the economic growth, environmental protection, and social equality are the three issues of the sustainable development. In this context, Cerin (2006) considered that, in fact, sustainable development means the ability and sustaining of the natural system in order to provide the natural resources needed by the society and the economy.

As a consequence of the social tensions and environmental degradation registered in the last decades, concerns for sustainable development have become discussed on a global level. An important step taken for the protection of the environment and the improvement of human lives was recorded in 1992 when more than 178 countries adopted a plan of actions for the building of a global partnership dedicated to sustainable development. After this, other important steps were represented by the elaboration of the Millennium Development Goals (in 2000) and the Sustainable Development Goals (in 2015).

The Sustainable Development Goals ('SDGs') are an improvement of the Millennium Development Goals ('MDGs') and according to Pedersen (2018), the SDGs were necessary because the 'MDGs were not going to solve all new major global challenges occurred during the time'.

SDGs were adopted by 193 countries and contain a set of 17 main goals which envisage the economic growth, environmental protection and social progress. The goals should be achieved by 2030, and for the achievement of each goal, certain actions (targets) are mentioned to be followed. During the period until 2030, progress in achieving the goals and implementing the targets is measured annually for each country involved. In this regard, the Inter-Agency and Expert Group on Sustainable Development Goal Indicators developed a global indicator framework. Based on this framework certain methods for measuring the performance of the SDGs were developed at the country level (e.g., the distance until the achievement of the goal; the percentage in which a goal is achieved), the most prominent being the following three methods: the Sustainable Development Goals Index developed by the Bertelsmann Stiftung and the Sustainable Development Solutions Network ('SDSN'); the OECD's Distance measure; Progress measures based on the Eurostat's report (Miola and Schiltz, 2019). The differences among methods are determined by factors like the data source used for the computation of the indicators, the statistical tools used, etc.

Regarding the achievement of the SDGs, there are concerns that taxation contributes to this (Mensah and Casadevall, 2019). In the report of the 'First global conference of the platform for the collaboration on taxation' published in 2018, it is mentioned that 'taxation is a significant factor in 10 of the 17 SDGs' (OECD, 2018). This affirmation is based on the connection between SDGs and taxation which is represented by the following points: the Government activities performed for the achievement of SDGs are financed by funds generated through taxation; the people's behavior is influenced by taxes (for e.g., taxes related to alcohol, tobacco); the economic growth of a country is influenced by taxation.

Therefore, in order for governments to achieve the SDGs there are necessary resources to be generated by taxation. When there are insufficient taxes in order to finance the public expenses (needed for the achievement of SDGs) the governments can register deficits (Tsindeliani *et al.*, 2019); in this situation, the sustainability of the fiscal policy is threatened. Going further, this does not mean that if a country taxes more, it will have more financial resources. The idea is not to tax more (through a high level of the tax rates), but to tax better. A good taxation system involves, inter alia, strong rules related to the tax base, tax laws up to date, an efficient tax administration, tax inspectors having the necessary knowledge to audit multinational companies, improvement of tax compliance, and curbing of tax evasion.

Going further, base erosion and profit shifting practiced in the last years by multinational companies could deprive governments of their fair share in taxes (Neighbour, 2002) and, as a consequence, of the financial resources needed to achieve the SDGs. In this context, governments have started to be interested in implementing transfer pricing regulations in the local tax laws.

Given all the above, it could be assumed that strong transfer pricing regulations could contribute to the combating of the base erosion and profit shifting between multinationals, and therefore to an increase of the tax base which translates into a better taxation, an increase in the financial resources and an increase in the progress regarding the achieving of the SDGs. This idea could be sustained by a study performed by Beer and Loeprick (2013) who concluded that transfer pricing regulations determined the decrease of the phenomenon regarding the profit shifting and base erosion.

Following the above context, the main research question is: 'Do countries with a good progress regarding the achievement of the SDGs have a stricter transfer pricing system compared with the countries with a moderate progress in this respect?'

To respond to the research question, the objective of the present paper is to perform a comparability analysis of the transfer pricing regulations and practices implemented at the level of the EU countries. The scope of the comparability analysis is to determine the differences between the regulations and practices adopted by countries that recorded a good progress with respect to the achievement of SDGs vs. countries that recorded a moderate progress. The main aim is to observe if there are characteristics specific to the two categories of countries. The study could be useful for countries with a moderate progress in the achievement of the SDGs in order to observe and implement the characteristics of the transfer pricing systems of the other categories of countries.

2. Literature review

2.1. Previous studies regarding the relationship between SDGs and taxation

Considering the fact that tax revenues provide governments with the necessary resources to invest in development, to reduce poverty, and to deliver public services, it could be noted that tax revenues represent a critical point in terms of sustainable development. One

of the challenges faced by countries in order to increase their tax revenues is represented by the taxation of multinational enterprises (OECD, 2014).

Nerudová *et al.* (2019) sustained that tax systems have an important contribution to sustainable development in the social, economic, and environmental dimensions. Furthermore, Pirlot (2019) found the following three main interactions between taxation and SDGs: taxation provides the revenue needed in order to support activities related to the achievement of SDGs; taxation can encourage positive behaviors (for example, environmental tax incentives encourage environmental behaviors); taxation can encourage negative behaviors (for example, tax incentives granted for the company cars could determine negative effects on the environment).

Waris and Kohonen (2016) discussed how taxation could be used to register progress in relation to the achievement of the MDGs in Africa. The authors assumed that the tax revenues correlated with the public expenditures represent the main way through the achievement of the MDGs.

Regarding the transfer pricing concept, it represents the prices charged between affiliated entities (e.g., multinational entities belonging to the same group of companies) for various transactions developed (e.g., acquisition/sale of goods, provision of services). According to Sundaram (2012), considering the fact that transfer pricing means allocating values to transactions, there is the risk that entities allocate values that do not reflect the real economic arrangements in each country involved. Furthermore, the author mentioned that this situation determines the registration of fewer revenues (or more expenses) in a country where, in fact, more revenues (or fewer expenses) should have been reported. In this case, the taxable profits, respectively the corporate income taxes recorded by the group entities in that country will be negatively affected. In other words, as the author noted 'if the transfer pricing does not reflect the true profits earned by an entity in that country, the country is unfairly deprived of revenue' and as a consequence 'a country's ability to mobilize domestic resources for development is hampered', the provision of water, healthcare, food, energy, and education being negatively affected (Sundaram, 2012).

Asongu, Udiji and Okolo-Obasi (2019) affirmed that the transfer pricing concept is 'associated with schemes that deprive developing countries of the capital essential for investment in health, education, and development programs'. The authors also noted that when taxes are fair they help the funding of essential public expenses.

Moreover, Asongu (2016) noted that a reduction in taxable income (as a consequence of unfair transfer pricing) needed by countries to provide public services leads to the underdevelopment of countries. In this context, Fofack and Ndikumana (2010) mentioned that over the past decade transfer pricing-related activities determined capital losses at the level of states and estimated that if these losses had been reinvested in Africa, the GDP would have increased by at least 19%.

Going further, as Neighbour (2002) mentioned, base erosion and profit shifting practiced in the last years by multinational companies through transfer pricing, could deprive Governments of their fair share in taxes. In order to combat this issue some researchers (Yao, 2013; Ito and Komoriya, 2015) affirmed that countries adopted transfer pricing

regulations. Given this, it was found interesting to investigate the transfer pricing regulations and practices in countries with a good progress regarding the achievement of the SDGs vs. in countries with a moderate level.

2.2. Studies regarding the comparison across the transfer pricing systems

Rathke and Rezende (2016) analyzed the transfer pricing rules from 2014, across 44 countries, using in this respect a set of 54 variables specific to the transfer pricing system. These variables were included in the following nine principal categories: implementation of a transfer pricing system; related-party definition and transactions; transfer pricing methods; provisions in relation to the cost-sharing agreements and internal services; disclosure of transfer pricing information; statute of limitation; transfer pricing penalties; advance price agreement ('APA'); competent authority procedures. The authors identified similarities between regulations and grouped countries in the following categories:

- in the first category countries such as Brazil, Argentina, and Ecuador are included: these countries have a rigid transfer pricing system with regulations stated through regulatory provisions that are not consistent with the OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations (OECD TP Guidelines);
- in the second category are included Russia, Slovenia, Norway, Slovak Republic, Hungary, and Finland: these countries follow the principle of the OECD TP Guidelines, requirements related to the transfer pricing documentation being implemented in recent years, and the full transfer pricing documentation being provided to the tax authorities only upon the request within a very short deadline. Also, these countries did not implement a special statute of limitation for cases of non-compliance and do not have a rich experience with advance price agreements ('APA') or mutual assistance procedures ('MAP');
- in the third category are included the countries that follow the OECD TP Guidelines, with experience in APA and MAP.

Marques and Pinho (2016) analyzed the strictness of the transfer pricing framework for 33 countries, considering the 2001–2009 period and building in this respect an index. In order to build the index, the authors considered attributes related to both the regulations and the enforcement mechanism in their study. The attributes related to the regulations envisaged the existence of statutory rules for transfer pricing (i.e., the implementation in the national law of the arm's length principle and of regulations regarding the application of this principle) and the transfer pricing documentation requirements. In terms of enforcement mechanism, the authors considered the following attributes: the existence of requirements for the disclosure of transfer pricing information in the annual corporate income tax return; the existence of a specialized transfer pricing team that performs the tax audits; the practice to perform a tax audit targeting specifically the transfer pricing; the existence of tax audit procedures which envisage specifically the transfer pricing subject; the introduction of penalties at the level of taxpayer (i.e., penalties for failure to comply with the transfer pricing documentation requirements; penalties regarding the adjustments of

taxable income; penalty interests). At the end, the index was built assigning value 1 when an attribute was met within a country and 0 otherwise, but also considering weighting of that attribute (based on a survey with transfer pricing experts). The results of the study performed by Marques and Pinho (2016) show that ‘tightening the transfer pricing framework is capable of dissuading multinational companies from shifting profits from higher- to lower-tax countries’.

Nicolay, Dudar and Nusser (2016) conducted a study in which they measured the strictness of the transfer pricing system across certain countries, comparing in this respect attributes such as the implementation of transfer pricing documentation requirements and the presentation of this documentation either upon the request of the tax authorities or together with the corporate income tax return. The authors used only attributes related to the transfer pricing documentation, as they considered this aspect a ‘crucial element for increasing transparency of transfer price determination’. However, for future research, the authors take into consideration the inclusion in the attributes list factors such as the existence of penalties for non-compliance with the transfer pricing rules and the possibility of applying for an APA.

Beuselinck, Deloof and Vanstraelen (2015) examined the transfer pricing systems across 19 countries, considering the 1998–2009 period, and analyzed attributes such as the requirements for the disclosure of related party transactions, the tax audit risk, the regime applicable to the holding structures of multinational enterprises, the double tax treaties, the thin capitalization rules and the rules related to the losses carry-forward.

Lohse and Riedel (2012) analyzed the transfer pricing system across 26 countries in Europe comparing in this respect characteristics such as the existence of a transfer pricing legislation and the transfer pricing documentation requirements (analyzing the requirements to submit the documentation within a tax audit, upon the request of the tax authorities or together with the annual corporate income tax return). The two authors considered that when analyzing the transfer pricing system other characteristics may be included (penalties for non-compliance with the rules, the transfer pricing methods applied, and the possibility to apply for an APA).

On the other hand, Lohse, Riedel and Spengel (2012) analyzed the transfer pricing regulations from 44 countries, considering the 2001–2009 period and including in the analysis factors such as the existence of a transfer pricing legislation, the related-party definition, the transfer pricing methods, requirements for the transfer pricing documentation, deadlines for the transfer pricing documentation, transfer pricing penalties, statute of limitations and the possibility to apply for an APA.

Lohse and Riedel (2013) performed a study in order to observe if the transfer pricing rules are effective in terms of reducing the profit shifting between multinationals and in this context they analyzed the transfer pricing regulations in 26 European countries. The attributes used by these authors are the transfer pricing documentation requirements, penalties for incomplete or missing documentation, penalties for the wrong determination of the taxable income, the possibility of applying for an APA and the transfer pricing methods.

2.3. Hypotheses development

In order to find a response to the research question, there were developed the following hypotheses which were tested and validated: hypothesis 1 (H1): ‘The strictness of the transfer pricing system implemented at the level of a country influences the progress regarding the achievement of the SDGs recorded by that country’.

In order to quantify the strictness of the transfer pricing system, respectively to compare the transfer pricing system specific to the countries from the sample, a transfer pricing index was designed at the level of each country (as it is detailed in section 3 of this paper).

The progress regarding the achievement of the SDGs is measured at the level of each country from the sample through the Europe SDG Index. This index should be interpreted as follows: if a country records a score of 100, this means that the respective country has achieved all the SDGs. Hypothesis 2 (H2): ‘The implementation by a country of BEPS 13 (covering rules for the master file, local file, and country-by-country file) influences the progress regarding the achievement of the SDGs recorded by that country’.

3. Research methodology

3.1. Target population, analyzed sample, and data source

The target population is represented by all EU countries. The analyzed sample includes data related to the Europe SDG Index recorded by each country and data related to the elements included in the design of the transfer pricing index.

For the identification of the progress recorded by the EU countries in achieving all 17 SDGs, the Europe SDG Index published in the ‘2020 Europe Sustainable Development Report’ was used. This index is built on the methodology developed by the Bertelsmann Stiftung and SDSN and does not reflect the impact of COVID-19. It was chosen after reviewing other similar reports. Therefore, the reason for choosing this report is that it was considered easier to follow and understand, and also due to the fact that it presents a SDG Index dedicated to the EU countries (i.e., the target sample of the present research). The Europe SDG Index used measures of a country’s total progress towards achieving all 17 SDGs (i.e., the percentage of SDG achievement).

In order to analyze each element component of the transfer pricing index the used data was gathered as follows:

- the elements included in categories II, III, VI, VII (excluding the rules for intangibles)—from the ‘EY worldwide Transfer Pricing Reference Guide 2019–2020’;
- the elements from categories I and VII (only the rules for intangibles)—from the ‘Transfer Pricing Country Profile’, published by OECD on the following link: <https://www.oecd.org/tax/transfer-pricing/transfer-pricing-country-profiles.htm>;
- the elements from category IV—from the ‘Statistics on APA’s in the EU at the End of 2019’, published by the European Commission on the following link: https://ec.europa.eu/taxation_customs/system/files/2021-04/apas_2019.docx.pdf;
- the elements from category V—from the ‘Mutual Agreement Procedure Statistics for 2019’, published by OECD on the following link: <https://www.oecd.org/ctp/dispute/mutual-agreement-procedure-statistics.htm>.

The information extracted from the above sources is that which is not influenced by the COVID-19 related tax regulations, representing information updated until the date of these regulations. In this way, it maintained the comparability in terms of time with the SDG Index which does not reflect the impact of COVID-19.

3.2. The transfer pricing index

The transfer pricing index was designed by grouping the elements considered in the analysis into 7 categories, as presented in Table 1 below. It is important to mention that when designing the transfer pricing index, the value 1 was assigned for the existence of an element in the transfer pricing system of the analyzed country and 0 otherwise.

Below are presented certain considerations regarding the reasons for choosing the transfer pricing categories and elements mentioned above when designing the transfer pricing index:

- Related party definition—this category of characteristics was also analyzed by Rathke and Rezende (2016) and Lohse, Riedel and Spengel (2012). According to Lohse, Riedel and Spengel (2012) a lower threshold used in order to determine the affiliation relationship determines stricter transfer pricing regulations. In this context, a strict regulation was also considered the determination of the affiliation relationship based on the exercise of an effective control;
- Transfer pricing documentation and disclosure of related-party transactions information—this category of elements was included within the study as it was observed that in the literature most researchers—such as Marques and Pinho (2016), Nicolay, Dudar and Nusser (2016), Rathke and Rezende (2016), Lohse and Riedel (2013), Lohse and Riedel (2012), Lohse, Riedel and Spengel (2012)—used characteristics from this category to assess the strictness of a transfer pricing system considering the transfer pricing documentation a crucial aspect in this respect;
- BEPS 13—taking into account that BEPS 13 includes requirements related to the transfer pricing documentation, it was considered that the implementation of it also involves stricter transfer pricing regulations;
- APA—some studies from the literature (Rathke and Rezende, 2016; Lohse and Riedel, 2013; Lohse, Riedel and Spengel, 2012) analyzed only the possibility of applying for an APA. In addition to this, other elements were also considered as they are presented in Table 1 above, this being an original contribution of this paper to the existing literature. Moreover, these elements related to the APA were included in this study as it was considered that countries that obtain value 1 to most of the elements are those that encourage taxpayers to apply for an APA (a situation that contributes to the increasing of transparency between the tax authorities and taxpayers and a reduction of the profit shifting phenomenon);
- MAP—the expertise of the tax authorities in the MAP area is an important step in avoiding double taxation, an element that could be found attractive by companies when performing investments in a country. The elements included in this category were not met in previous studies, from this point of view, the present study contributes to the existing literature. The elements included in this category envisage only MAPs related to the transfer pricing cases;

Table 1: The elements of the transfer pricing index

Elements	Observations

Elements	Observations
V. Mutual Agreement Procedure ("MAP")	
Possibility to request a MAP	
The average time to close a MAP for cases started as of January 1, 2016 lower than 19 months	The term of 19 months represents the average time needed to close a MAP for transfer pricing cases at the EU level.
Cases started from January 1, 2016, including those started in 2019 greater than 115	The number of 115 cases represents the average number of cases at EU level.
VI. Transfer pricing penalties	
Penalties for non-compliance with the rules for the transfer pricing documentation submission/ preparation	
Penalties for transfer pricing adjustments	
Interest charged on penalties	
VII. Other elements	
	For the likelihood of a transfer pricing audit, the following values were assigned for the purposes of the transfer pricing index:
The likelihood of transfer pricing related audits	<ul style="list-style-type: none"> • 1 for a high likelihood; • 0.5 for a medium to high likelihood; • 0 for a medium or a low likelihood.
Local guidance specific to the pricing of controlled transactions involving intangibles	

Source: Authors' own processing

- Transfer pricing penalties—this category of elements was also analyzed by other researchers (Marques and Pinho, 2016; Rathke and Rezende, 2016; Lohse and Riedel, 2013; Lohse, Riedel and Spengel, 2012) and was included in the present study, as based on these previous researchers the existence of penalties involves a stricter transfer pricing system;
- Other elements—given the fact that the threat of a transfer pricing audit, together with the possibility of penalty imposition can discourage taxpayers from activities that engage transfer misprices, it was considered opportune to include in this study also information related to the likelihood of a transfer pricing audit. Furthermore, considering that firms could increase their aggression in terms of transfer pricing through intangible assets (Richardson, Taylor and Lanis, 2013) it was analyzed if countries from the sample have specific transfer pricing rules for controlled transactions involving intangibles.

Other categories of elements (e.g., transfer pricing methods, comparability analysis, benchmark study, etc.) were not considered relevant for the purpose of the present research, as these elements do not differ significantly across countries.

Moreover, in order to build the transfer pricing index, it was used a percentage of importance, considering the following importance of the elements:

- the most important elements: all the elements from Category VI and the first element from Category VII. These elements were considered the most important as their effect in terms of strictness is more palpable compared with the other elements (i.e., it is obvious that implementation of penalties and performance of tax audits contributes to a stricter transfer pricing system);
- important elements: all the elements from Category II and Category III. These categories of elements were considered important as it was observed that in the literature most researchers used only aspects related to the transfer pricing documentation in order to assess the strictness of a transfer pricing system considering these aspects crucial in this respect;
- the less important elements: the elements which were not mentioned above.

Going further, in order to determine the percentage of importance, in Table 2 below was rated the importance of elements based on a scale from 1 to 3 (where 1 represents the less important category and 3 the most important category). In the end, based on the rating process the percentage of importance was determined as follows.

Table 2: The percentage of importance (pi)

Category Rating/ pi	The most important elements	Important elements	The less important elements
Rating	3	2	1
$pi (=rating/(3+2+1))$	50%	33%	17%

Source: Authors' own processing

Therefore, in order to measure the strictness of the transfer pricing regulations there was developed an index based on the below formula. A high value of the transfer pricing index translates into a strict transfer pricing system, while a small value of the index involves a less strict transfer pricing system.

$$TP_{SI} = \left(\sum_{i=1}^m e_i \right) * pi \tag{1}$$

where:

TP_{SI} = transfer pricing strictness index;

e_i = elements presented in Table 1. We assigned the value 1 if an element was included in the transfer pricing regulations of the country analyzed and 0 otherwise;

m = number of elements; and

pi = percentage of importance.

3.3. Models proposed for analysis

Regarding the testing of the research hypotheses, the following linear regression models were used:

$$H1: \text{SDG Index} = \beta_0 + \beta_1 \times TP_{SI} + \varepsilon \tag{2}$$

$$H2: \text{SDG Index} = \beta_0 + \beta_1 \times BEPS + \varepsilon \tag{3}$$

where:

TP_{SI} = Transfer pricing strictness index;

$BEPS$ = 1 if a country implemented BEPS 13 covering rules for all the three files and 0 otherwise;

β_0 = the constant;

β_1 = the coefficient of regression; and

ε = error.

The used computer software are SPSS and Microsoft Excel.

4. Results and interpretation

A detailed presentation (at the level of each country) of the SDG Index and of the transfer pricing index, including the value assigned for each element can be found in Appendix 1.

4.1. The regression analysis and the H1 testing

Table 3 presents the Summary Model from SPSS used for the correlation analysis.

Table 3: Summary Model H1

Model	Multiple R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.5564	0.3096	0.28194	5.5304

Source: Authors' own processing in SPSS

There is a direct correlation between the SDG Index and TP_{SI} , as the results show that 30.96% of the SDG Index variance can be explained by the evolution of TP_{SI} .

Going further, we checked the validity of the regression model. In this respect, we used the ANOVA Model, presented in Table 4 and we applied the F-test.

Table 4: ANOVA model H1

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	342.8217	1	342.8217	11.2089	.0026
1	Residual	764.6212	25	30.5849		
	Total	1107.443	26			

Source: Authors' own processing in SPSS

For the analyzed sample, we considered a confidence level of 95% and a significance threshold of 5% (100%–95%). Based on the ANOVA table we find that the significance threshold (Sig. = 0.0026) is less than 5% and the value of F statistic is $11.2089 > 4.24$ (the critical value). Therefore, the regression model is valid.

The results of the applied regression model on our sample are presented in Table 5 below.

Table 5: Results H1

	Coefficient	Std. Error	T Stat	P-value
(Constant)	54.4646	4.5389	11.9995	0.0000
TP_{SI}	3.7497	1.1199	3.3479	0.0026

Source: Authors' own processing in SPSS

In order to test the validity of H1 the ‘t-test’ was applied. Given that the value of t test for TP_{SI} is higher than the value of t critical, H1 was accepted, this meaning that the strictness of the transfer pricing system implemented at the level of a country influences the progress regarding the achievement of the SDGs recorded by that country.

4.2. Data interpretation

After the validation and the acceptance of H1, it was analyzed how the elements of TP_{SI} are changing over the countries. For this purpose, the average SDG Index for EU countries was calculated and, on this basis, the following two categories of countries were defined:

- countries that recorded a SDG Index higher than the average were included in the category of countries with a good progress towards achieving the SDGs (i.e., Category 1);
- countries with a SDG Index smaller than the average were included in the category of countries with a moderate progress toward achieving the SDGs (i.e., Category 2).

As it could be observed from Appendix 1, the highest values of TP_{SI} were recorded by countries included in the Category 1, while the lowest values were recorded at the level of

the second countries category. Moreover, TP_{SI} recorded by most of the Category 1 countries is situated above the average EU transfer pricing index (i.e., 3.94), while TP_{SI} recorded by the Category 2 countries is situated below this average. However, there are some exceptions from this observation, as countries from the first category such as the Czech Republic and Belgium recorded a TP_{SI} lower than the average, and countries from the second category such as Hungary, Spain, Portugal, and Greece recorded a higher value than the average.

Figure 1 presents below, for each element of TP_{SP} , the percentage of countries from the Category 1 vs. the percentage of countries from the Category 2 that included the respective element within the transfer pricing system.

Considering the elements that recorded the most significant differences across the two countries categories, the following aspects could be implemented at the level of Category 1 countries in order to increase the strictness of the transfer pricing regulations and its SDG Index:

- the implementation of requirements regarding the preparation of an annual transfer pricing file and also of requirements regarding the preparation of a master file (most of the countries from Category 2 require only the preparation of a locale file and of the CbCR);
- the implementation of certain practices in order to encourage the taxpayers to apply for an APA (e.g., the granting of certain tax facilities for taxpayers that obtain an APA; the training of the tax authorities in order to obtain significant competencies in the APA process; the nomination of a specialized team in resolving the APA cases);
- the assurance of sufficient and specialized personnel for the MAP cases. Similar to APAs, a high number of cases together with a reasonable time for closing them could contribute to a certain environment for both the taxpayers and the tax authorities;
- the increase in the transfer pricing audits performed.

Other elements identified as making the difference between the first of countries and the second one are as follows:

- all the countries with a good progress in achieving the SDGs take into consideration the effective control when determining the affiliation relationship;
- the most of the Category 1 countries request the disclosure of information regarding the related-party transactions within a special tax return or within the corporate income tax;
- the most of the Category 1 countries impose all types of penalties applicable for transfer pricing cases.

4.3. The regression analysis and the H2 testing

Given the above results, it was analyzed how the implementation by a country of BEPS 13 (covering rules for all the files: master file, local file, and CbCR) statistically influenced the evolution of the SGD Index. This element of TP_{SI} was selected to be analyzed separately because it recorded the highest difference across the two categories of countries. Table 6 presents the Summary Model from SPSS used for the correlation analysis.

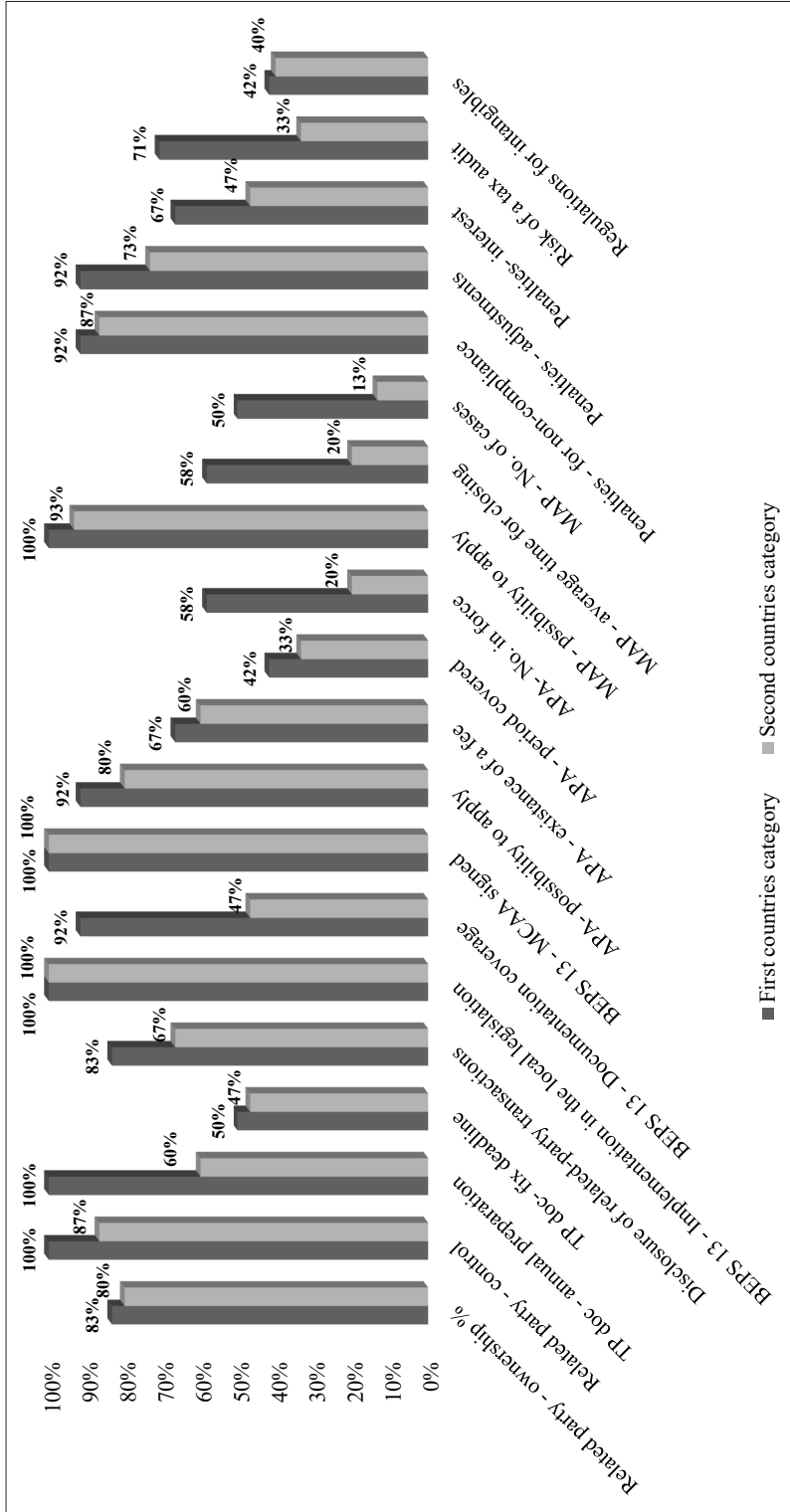


Figure 1: Presence of each element of the transfer pricing index along the countries categories

Source: Authors' own processing

Table 6: Summary Model H2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.5942	0.3530	0.3272	5.3534

Source: Authors' own processing in SPSS

There could be observed a direct correlation between the SDG Index and the implementation of BEPS 13, the results showing that 35.30% of the SDG Index variance can be explained by the variable related to BEPS 13. Going further, it was checked the validity of the regression model. In this respect, it was used the ANOVA Model, presented in Table 7 and it was applied the 'F-test'.

Table 7: ANOVA Model H2

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	390.9646	1	390.9646	13.6419	.00108
1 Residual	716.4783	25	28.6591		
Total	1107.443	26			

Source: Authors' own processing in SPSS

For the analyzed sample, we considered a confidence level of 95% and a significance threshold of 5% (100%–95%). Based on the ANOVA table we find that the significance threshold (Sig. = 0.00108) is less than 5% and the value of F statistic is $13.6419 > 4.24$ (the critical value). Therefore, the regression model is valid.

The results of the regression model applied to our sample are presented in Table 8 below.

Table 8: Results H2

	Coefficient	Std. Error	T Stat	P-value
1 (Constant)	63.8555	1.7844	35.7839	0.0000
1 BEPS	8.0722	2.1855	3.6935	0.0011

Source: Authors' own processing in SPSS

In order to test the validity of H2 't-test' was applied. Given that the value of t-test for BEPS is higher than the value of t critical, H2 was accepted, this meaning that the implementation by a country of BEPS 13 (covering rules for all the files: master file, local file, and CbCR) influences the progress regarding the achievement of the SDGs recorded by that country.

5. Conclusion, limits, and future research

Considering the fact that tax revenues provide governments with the necessary resources to invest in development, reduce poverty, and deliver public services, it could be noted that tax revenues represent a critical point in terms of sustainable development. One of the

challenges faced by countries in order to increase their tax revenues is represented by the taxation of multinational enterprises. In this regard, a tax policy that envisages at least the mitigation of this issue should include proper transfer pricing regulations.

In this context, based on the present study, it was observed that the strictness of the transfer pricing system implemented at the level of a country influences the progress regarding the achievement of the SDGs recorded by that country. In general, countries that recorded a good progress in achieving the SDGs have a stricter transfer pricing system compared with countries that have a moderate progress in this respect.

Therefore, translating the results of the study in terms of public administration means that a tax policy focused on stricter transfer pricing regulations contributes to the necessary financial resources needed to finance the actions/expenses involved in the achievement of the SDGs. This affirmation is strengthened by previous results from the specialized literature, according to which stricter transfer pricing regulations may discourage multinationals from shifting profit in low tax jurisdictions, and, in this context, these regulations may contribute to an increase of the tax base which translates in a better taxation, an increasing in the financial resources and an increasing in the progress regarding the achievement of the SDGs.

In the above-described context, the results of the study may be considered by decision-makers as a reason/motivation to (re)design the tax policy, targeting in this respect the strengthening of the transfer pricing regulations/guidelines. Therefore, through this study, the decision-makers are encouraged to increase the strictness of the transfer pricing system, including in the tax policy the following measures:

- adoption of regulations for an annual preparation of the transfer pricing file and for the preparation of a three-level documentation according to BEPS 13; In relation to this subject, the results of the present study show that 92% of the Category 1 countries apply BEPS 13, requiring multinational entities to prepare a documentation on three levels (local file, master file, and CbCR), while only 47% of the Category 2 countries adopted this regulation. In this context, the regression model shows that only the implementation of BEPS 13 on three-level documentation increases with 35% the progress regarding the achievement of SDGs. This result sustains the work of the OECD regarding the scope of the BEPS Actions Plan.
- implementation of a strong legislative framework in order to encourage taxpayers to apply for an APA or a MAP (e.g., the granting of certain tax facilities) together with well-prepared tax authorities in this respect;
- adoption of rules that encourage a high likelihood for the performance of transfer pricing audits;
- implementation of a strict definition for related parties (considering also the effective control);
- implementation of rules for the disclosure of information regarding the related-party transactions (e.g., through the corporate income tax return or the financial statements); and
- imposing penalties for non-compliant transfer pricing cases.

In conclusion, if the decision-makers from the countries with a moderate progress in achieving the SDGs (re)design the tax policy in order to increase the strictness of the transfer pricing system (considering the above-mentioned aspects), an increase in the financial resources needed for the achievement of the SDGs and a favorable evolution regarding the progress of the SDGs from those countries can be recorded.

The limit of our research is represented by the small analyzed sample and therefore, a future research direction may involve the analysis of a greater sample of countries, but also the identification of other transfer pricing elements being included in the computation of TP_{SI} .

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Appendix 1: Transfer Pricing Index

Country category	Country	Related party			TP doc	BEPS 13			APA			MAP			Penalties			Other elements			TP _{SP} Index	SDG Index
		Ownership	Control	Annual preparation		Fix deadline	Disclosure of related-party transactions	Implementation in the local legislation	Documentation coverage	MCA signed	Possibility to apply	Existence of a fee	Period covered (years)	No. in force	Possibility to apply	Average time for closing	No. of cases	For non-compliance	Adjustments	Interest		
	Finland	0	1	1	0	1	1	1	1	1	0	0	1	1	0	1	1	1	1	0	4.5	81.1
	Sweden	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	0.5	0	4.43	81
	Denmark	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	5.17	80.1
	Austria	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	4.52	77.4
	Germany	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	5.51	74.6
	Slovenia	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	0	0	1	4	74
	France	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	5.34	73
	Czech Republic	1	1	1	0	1	0	1	1	1	1	1	1	0	0	0	1	0	0	0	3.01	72.7
	Estonia	1	1	1	0	1	1	1	1	0	0	0	1	0	0	1	1	1	1	0	4.16	71.8
	Belgium	1	1	1	0	1	1	1	1	1	0	1	1	0	0	1	1	0	0.5	0	4.59	71.7
	Netherlands	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0.5	3.75	71.7
	Poland	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	5.17	69.6

Category 1

Country category	Country	Related party			TP doc			BEPS 13			APA			MAP			Penalties			Other elements			SDG Index
		Ownership	Control	Annual preparation	Fix deadline	Disclosure of related-party transactions	Implementation in the local legislation	Documentation coverage	MCAA signed	Possibility to apply	Existence of a fee	Period covered (years)	No. in force	Possibility to apply	Average time for closing	No. of cases	For non-compliance	Adjustments	Interest	Risk of a tax audit	Regulations for intangibles	TP _{st}	
	Slovakia	1	1	0	0	1	1	1	1	1	1	0	0	1	1	0	1	1	1	0	0	3.84	68.8
	Hungary	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	3.68	68.7
	Ireland	1	1	0	0	1	1	1	1	1	1	1	0	1	0	0	1	1	1	0	1	4.34	68.7
	Latvia	1	0	1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	0	0.5	0	3.91	68.3
	Spain	1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0.5	0	4.25	67.8
	Portugal	1	1	1	1	1	1	0	1	1	1	0	1	1	0	0	1	1	1	0	1	4.34	67.5
	Italy	0	1	0	0	1	0	1	1	1	0	0	1	1	0	1	1	0	0	1	0	2.51	67.1
Category 2	Croatia	0	1	1	0	1	0	1	1	1	0	0	0	1	0	0	1	0	0	1	1	3.17	66.4
	Lithuania	1	1	1	1	1	1	1	1	1	0	0	0	1	0	1	1	1	0	0	1	3.83	64.4
	Luxembourg	1	1	1	0	1	0	1	1	1	0	0	1	1	0	0	1	1	0	0	0	2.84	64.2
	Malta	1	1	0	0	1	0	1	0	1	0	0	0	1	0	0	1	0	0	0	0	1.67	62.4
	Greece	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	0	4.83	62
	Cyprus	1	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2	60.3
	Romania	1	1	1	0	1	0	1	1	1	1	0	0	1	0	0	1	1	0	1	1	3.84	58.3
	Bulgaria	1	1	0	0	1	0	1	0	0	0	0	0	1	0	0	1	1	1	0	1	3.17	55.8

Source: Authors' own processing