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An Effective Average Tax Rate as the Deciding Factor in Tax Competitiveness in the Context of Foreign Investment Influx

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Abstract

A higher tax burden in individual countries need not always deter investors from investing profitably. Countries use tax burden levels in the form of changes in tax rates to attract foreign investment. The main objective of this study is to examine the tax competitiveness of the Slovak Republic compared to European Union (EU) countries (EU-27) and to evaluate the origin, extent, and form of investments from foreign investors in tangible and intangible assets in the Slovak Republic. To meet this objective, we first calculate the average tax rate for specific cross-border investments coming to Slovakia from all EU countries. To determine tax competitiveness, we compare the calculated effective average tax rate (EATR) with the EATR in individual EU countries. Finally, we perform an analysis of EATR and foreign direct investment (FDI) using cluster analysis, which categorises EU countries and evaluates their tax competitiveness. The analysis and comparison of values are conducted for the year 2019, while the countries are divided into old (EU-15) and new (EU-12) EU member countries. The article concludes that the calculated Slovak EART for cross-border investment is more profitable for old EU member countries and is, thus, more tax-competitive versus investors' countries of origin. We can further state that the tax burden is among the most important indicators for investors and, thus, a lower EATR value than that in an investor's country of origin contributes to the inflow of equity participation of FDI in Slovakia.

Keywords: tax competitiveness, effective average tax rate, inflow of foreign direct investment, cross-border investment, intangible and tangible assets
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1. INTRODUCTION

The selection of a suitable country for capital allocation in investment decision-making is influenced by tax burden (Mihoková et al., 2018; Habima, 2021; Delgado et al., 2019). The level of tax burden depends on the policies of individual countries. Countries aim to increase competitiveness by lowering tax rates to attract foreign investors. Investors compare tax rate

expenses to find out in which country they could achieve the lowest possible expenses with the highest possible profit. Therefore, they invest in countries offering a low tax burden (Delgado et al., 2019). In addition to the statutory tax rate, investors also focus on the value of the effective average tax rate (EATR), which has a higher informative value because it includes write-off policies, tax relief, and the extent of tax stimuli.

Foreign direct investment (FDI) inflow represents the capital that foreign investors provide to other foreign companies (UNCTAD, 2020). Foreign direct investment is significant because it creates an increase in the productivity of businesses, creates new jobs, and allows the introduction of new technologies and manufacturing processes, which increases the level of competitiveness and has a positive effect on public investments (Grela et al., 2017). Foreign direct investment is responsible for the more developed economy in Slovakia, as well as in another middle- and eastern-European Union (EU) countries. According to Peciar & Wittemann (2019), foreign companies in Slovakia are more productive than those with owners from Slovakia. Foreign investors choose Slovakia mainly because of its geographic location, which allows them easier access to other business centres where they can undertake other business activities. Other reasons for investing are economic and political stability, labour productivity, EU membership, and the common euro currency (Šikulová, 2015).

The main objective of this study was to examine the tax competitiveness of the Slovak Republic compared to EU countries and to evaluate the origin, extent, and form of investments from foreign investors in tangible and intangible assets in the Slovak Republic.

This study aimed to verify the profitability of foreign investments in the Slovak Republic and their profitability, both according to individual classes of assets and sources of financing. Research conducted in this way can serve as a guide not only for potential foreign investors in individual asset classes but also for domestic investors from the point of view of obtaining FDI. The intention is to help Slovak entrepreneurs determine which EU countries they should look to when identifying investors for FDI. This is purely a view of the tax burden and its advantages and disadvantages through the EATR. This is also a limitation of this study, as other determinants were not considered. It is appropriate to state that, from the point of view of both domestic and foreign literature, this view concerning the EATR is missing, and there is a need for such research, specifically for the assessment of the tax competitiveness of the Slovak Republic vis-à-vis other EU countries.

Based on the set objective, the article is divided into two parts. The first part focuses on evaluating the tax competitiveness of Slovakia using the calculated EATR for a specific cross-border investment coming from EU member countries to Slovakia, as well as its comparison with the EATR in individual EU member countries. The result is a finding about which investors gain a tax advantage in Slovakia versus their country of origin. The second part of the article examines the EATR and equity participation of FDI coming from EU member countries to Slovakia, where cluster analysis is used to categorise EU countries for the purpose of tax competitiveness evaluation.

2. THEORETICAL BACKGROUND

The gradual connection between individual countries' economies has made the issue of taxes and tax policies a deciding factor in competitiveness (Sosnowski, 2020). Each country's economy is significantly influenced by the tax burden, which is a valuable tool for a country's economic policy. The level of the tax burden expressed through the statutory tax rate is considered among the tools of tax competitiveness (Devereux et al., 2008; Haufler & Stähler, 2013; Schultzova & Rabatinova, 2014). Tax competitiveness should drive tax policies while countries try to use tax rates to improve the investing environment (Nerudová, 2008). The looseness of capital flows in recent years has increased the influence of corporate taxes on FDI. The inflow of foreign investment is sensitive to a country's tax burden. The tax rate for corporations may decrease their return on investment and may even decrease wages (Pomerleau, 2016). Fernández-Rodríguez et al. (2021) conducted an inspiring study analysing the determinants of effective tax rates in emerging economies. Their study showed that both business variables and institutional factors have a significant effect on the tax burden for firms in emerging countries. Stamatopoulos et al. (2019) also show that effective corporate tax rates increased after the beginning of the financial crisis.

Each investor or company should act rationally to achieve the most effective results from their activities. Before investing in a specific country, foreign investors make decisions based on examining various indicators in the country (Novák & Šustr, 2009). One of these indicators is the tax burden, that is, the EATR, which informs about the real tax burden in the country (Kubátová, 2011) and simultaneously influences the level of FDI. Djankov et al. (2010) and Abbas & Klemm (2013) examine the relationship between FDI inflow and the tax burden in the country. Their examination showed a negative correlation, that is, an increase in tax rates decreases the inflow of FDI. This negative correlation between tax rate and investment was also affirmed by Schwellnuss & Arnold (2008) and Arnold et al. (2011). As stated in Gries et al. (2012) and Karpenko et al. (2022), investors' investment decision-making is influenced by the EATR, as well as the legal tax base. If the values of the given indicators convince the investor to invest in a country, the investor also uses them to decide the amount, allocation, and form of the investment. However, according to Gechert & Heimberger (2022|), the influence of FDI on the effective tax rate is minimal. Karpenko et al. (2022) also analyse international tax competitiveness and the level of the shadow economy. As they show, there is a negative connection between the two variables.

The gradual development of effective tax rate levels is, to a certain extent, influenced by tax competitiveness. Podviezko et al. (2019) claimed that an increase in tax competitiveness among EU member countries was caused by a decrease in tax rates after adding new member countries (EU-13). If a country has a higher tax burden, this may result in an investment being transferred to a country with, among other things, a more beneficial tax environment (Bunn & Asen, 2020). Foreign investors strive to increase their profits and often transfer their tax bases to countries with a lower tax burden. The subjects attempt to minimise or completely avoid taxation, and countries respond with a gradual decrease in tax rates. In such an environment, tax competitiveness can influence the investment environment and attract foreign investors (Clausing, 2011). Haufler & Stähler (2013) also claim that a tax burden that is too low does not always represent a profitable

allocation of capital in the country. However, a lack of tax competitiveness may lead to a situation in which countries excessively increase tax rates (Zeng & Peng, 2021). Therefore, some effects of tax competitiveness can be perceived as beneficial for the economy (Szarowská, 2011). For the purposes of this article, tax competitiveness can be considered as the process of decreasing effective tax rates, through which countries attempt to attract foreign investors. Consequently, this may lead to an increase in FDI, leading to higher economic growth in the country.

When deciding to allocate capital, an investor may use effective tax management to influence the final tax they will pay by selecting an appropriate asset for their investment (Rego & Wilson, 2012; Graham et al., 2016). An investor will, through a calculation, that is, the method of perspective micro insight, set the tax rate on the investment. The method was expanded by Devereux & Griffith (1999, 2003), whose evaluation of the tax burden also includes the calculation and evaluation of specific assets and their financing sources. This method is currently used internationally to set the tax rate, that is, the EATR.

3. RESEARCH OBJECTIVE, METHODOLOGY, AND DATA

The main objective of this study was to examine the tax competitiveness of the Slovak Republic compared to EU countries (EU-27) and to evaluate the origin, extent, and form of investments from foreign investors in tangible and intangible assets in the Slovak Republic. In other words, which are the preferred assets for investment and how should they be financed from the point of view of resources. For this reason, we need to analyse the EATR in the database for cross-border investments from EU countries to Slovakia. We monitored the EATR in 2019.

Another objective was to discover whether the inflow of foreign investments is influenced by tax competitiveness and, thus, whether it is influenced by a change in the EATR. In the analysis, the countries were divided into old (EU-15) and new (EU-12) EU member countries, as discussed in detail below.

Methodologically, the research was performed using the following steps:

- Collection of data and calculation of EATR;
- Analysis and comparison of tax competitiveness through the calculated EATR for a specific cross-border investment directed into Slovakia from EU countries;
- Analysis of the EATR and equity participation of FDI from EU countries using cluster analysis;
- Evaluation of the results of the research and a discussion.

We worked with EU countries and compared them to the Slovak Republic. We divided specific EU countries based on their date of entry into the EU. Therefore, we divided the countries into a group of old member states (Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden, and the United Kingdom), which joined the EU before 2004, and new member states (Bulgaria, the Czech Republic, Estonia, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia, and Slovakia), which joined the EU after 2004.

Based on a survey of the literature on tax burden and to confirm the stated objectives, we considered the following research questions:

Research Question 1: Is investing in Slovakia from the point of view of the tax burden more advantageous for old EU member countries than for new EU member countries?

Research Question 2: Is the inflow of FDI into Slovakia influenced by the EATR calculated for cross-border investments versus the investor's country of origin?

The basis for the analysis of both Research Questions 1 and 2 is the calculation of the indicator of the EATR in Slovakia for EU member countries in line with the methodology in Devereux & Griffith (1999, 2003). This calculation methodology was also applied in the Centre for European Economic Research (ZEW) (Spengel et al., 2019). The ZEW publishes an annual document, which includes important parameters of the tax systems of EU member countries. These are necessary for the calculation of the EATR, as well as its estimations based on the types of assets and forms of financing. Investors also use them to decide where to allocate their capital. Calculations were performed based on the given parameters and procedures for 2019.

Source data for calculating the EATR for cross-border investments are taken from the ZEW database (Spengel et al., 2019). From this database, we obtained data on the EATR in individual EU member countries. The FDI values were taken from the database of the National Bank of Slovakia (2019).

The selected method for calculation based on Devereux & Griffith (1999, 2003) was determined in other studies by Schwellnuss & Arnold (2008), Djankov et al. (2010), Kubátová (2011), Arnold et al. (2011), Gries et al. (2012), and Abbas & Klemm (2013). They examined the influence of the EATR on investors' investment decision-making, as well as FDI inflow.

Based on this methodology, the calculation of the EATR includes parameters that can be divided into economic and tax aspects.

The economic parameters are tax depreciation, expected inflation, returnability of investment, and real interest rate. The calculation also includes variables, namely, the nominal tax rate and the discount rate of the shareholder, which must be determined. The ZEW defines these parameters identically in all countries to achieve comparable results for each EU member country. Furthermore, there are tax parameters specific to Slovakia, as we want to determine the EATR for investors from EU countries who want to invest in Slovakia.

The tax parameters are the effective statutory tax rate for corporate income tax, valuation of inventory, the effective tax rate for real property tax, and tax write-offs. The above-mentioned parameters were calculated for 2019. The calculation also includes tax parameters related to individual EU countries. The parameters are determined for the year 2019 for each EU country individually.

Table 1 includes the values of the economic parameters and their signs, the values of tax parameters of the subsidiary company in Slovakia for 2019, and their signs with a defined lower index s, as well as the sign with the lower index p for the tax parameters of the parent company within EU member countries.

Tab. 1 – Signs and names of economic and tax parameters in the calculation. Source: own

Economic parameters	Sign	2019
Average value of tax write-offs (%)	δ	
Intangible property		15.35%
Industrial buildings		3.10%
Machinery		17.50%
Expected inflation rate (%)	π	2.00%
Return rate before taxation for EATR (%)	p	20.00%
Real interest rate (%)	r	5.00%
Nominal interest rate (%)	i	7.10%
Discount rate for shareholders (%)	ρ	7.10%
Tax parameters of a subsidiary company in the SR	Sign	2019
Effective statutory income tax rate for juridical persons (%)	τ_s	21.00%
Method for valuing inventory	V_s	0.5
Effective tax rate on real estate (%)	e_s	0.35%
Tax write-offs (%)	φ_s	
Intangible property (T=5)		20.00%
Industrial buildings (T=20)		5.00%
Machinery (T=6)		16.66%
Tax parameters of a parent company in EU countries	Sign	2019
Effective statutory income tax rate for juridical persons (%)	τ_p	Values set independently for each EU country
Withholding tax rate on dividends from Slovakia (%)	w^D	
Withholding tax rate on interest from Slovakia (%)	w^I	
Taxation of foreign intercompany dividends	σ	
Taxation of foreign intercompany interest payments	ω	

When calculating the EATR specifically for cross-border investment, it is important to determine the problem of double taxation of foreign dividends returned from the subsidiary company and foreign intra-company interest rates. The EU member countries take steps to prevent this through bilateral and multilateral treaties. To prevent double taxation, treaties precisely stipulate methods, such as the exemption or credit methods. The exemption method states that as long as the taxpayer paid tax abroad, in their country of origin, they simply inform about the tax paid and their given income is exempt from tax. In the calculation, parameter σ represents the taxation of foreign dividends returned from the subsidiary company, where the significant element is the withholding tax on dividends w^D. If a situation arises with a 95% partial exemption, then

$$\sigma = 0.05\tau_p + w^D \tag{1}$$

The credit method calculates the total tax pursuant to domestic legislation, where the tax base includes income incurred from abroad as well as domestically. Subsequently, the calculated tax is reduced by a portion which has already been paid abroad. Foreign dividends are paid within the

parent company, and the parameter is calculated as follows:

$$\sigma = max\left[w^D, \frac{\tau_p - \tau_s}{1-\tau_s}\right] \tag{2}$$

The taxation of foreign intra-company interest payments is, in the calculation, represented as the parameter ω. As interest is taxed in the parent company, it can be subtracted at the subsidiary company level. The inclusion of a foreign tax is possible within limitations, where:

$$\omega = max[\tau_p; w^I] - \tau_s \tag{3}$$

Defining important parameters can lead us to calculate the EATR, which is derived from the relationship:

$$EATR = \frac{R^* - R}{p/(1+r)}, \tag{4}$$

The values of the parameters p and r are listed in Table 1. To determine the EATR relationship, it is necessary to calculate the economic rent before taxation, represented by the valuable R* and defined by the following formula:

$$R^* = \frac{p-r}{1+r} = \frac{0.2-0.05}{1+0.05} = 0.1429 \tag{5}$$

The current economic rent is 14.29% since the rent arising from the project before taxation is set as the difference between the 20% required returnability rate of the investment and the 5% real interest rate. This difference is then discounted using the 5% real interest rate.

The following, still undefined variable is R, which represents the economic rent after taxation and can be determined from the relationship:

$$R = \frac{\gamma_p(1-\sigma)}{1+\rho_p}\{(p+\delta)(1+\pi)(1-\tau_s) - v_s\tau_s\pi - [\rho_p + \delta(1+\pi) - \pi](1-A_s) - (1+\rho_p)e_s\} + F_s^{NE} + F_s^D \tag{6}$$

From this relationship, clear tax parameters are noted in the lower index s, as well as economic and tax parameters for individual EU countries. A new variable is tax discrimination, with the sign γ and a value of 1, as the calculation does not include the taxation of physical persons. Another variable is the depreciation tax shield with sign A, where multiplying the net current value of tax depreciation for each type of asset φ and the tax parameter τ creates its value. The variable A can be determined from the following relationship:

$$A = \tau\varphi\left\{\left(\frac{1}{(1+\rho)}\right) + \left(\frac{1}{(1+\rho)}\right)^2 + \cdots + \left(\frac{1}{(1+\rho)}\right)^T\right\} \tag{7}$$

This article addresses the calculation of the EATR for cross-border investment conducted in Slovakia. Since the methodology in line with the ZEW defines the application of the depreciation rules of Slovakia regardless of the seat of the parent company, the depreciation tax shield is calculated as follows:

$$A_s = \tau_s\varphi_s\left\{\left(\frac{1}{(1+\rho)}\right) + \left(\frac{1}{(1+\rho)}\right)^2 + \cdots + \left(\frac{1}{(1+\rho)}\right)^T\right\} \tag{8}$$

The final variable is F, which defines additional costs for obtaining financing sources and is expressed as net current cash flows. This arises when an investment is financed through a new deposit or loan. Financing an investment through undivided profit means that the variable F=0. If the investment is financed through a new deposit, variable F is expressed as:

$$F_s^{NE} = -\frac{\rho_p\gamma_p\sigma(1+e_s)}{1+\rho_p} \tag{9}$$

For investments financed through debt, the calculation of the variable is determined by the relationship:

$$F_s^D = -\gamma_p \sigma(1 + e_s) + \frac{\gamma_p(1+e_s)[\sigma(1+i(1-\tau_s))-i\omega]}{(1+\rho_p)} \quad (10)$$

Based on a simple comparative analysis of differences, we can answer positively or negatively to Research Question 1, stating that investing in Slovakia from the point of view of the tax burden is more advantageous for old EU member countries than for new EU member countries. Therefore, the analysis of the effective taxation of foreign investors in Slovakia is based on a comparison of differences in the EATR calculated values in Slovakia for EU member countries and the values of the EATR in individual EU member countries for 2019. At the same time, we determine the specific type of asset that the investor should invest in, as well as the resources of financing. We use formulas 4-6 (for the EATR) and 9-10 (for the funding resources) to obtain inputs for the comparative analysis.

Specifically, to answer positively Research Question 2, which states that the FDI inflows in Slovakia are influenced by a lower calculated EATR for a cross-border investment than in the investor's country of origin, we categorise EU countries for 2019 through cluster analysis. Based on the calculated EATR in Slovakia and data on the equity participation of foreign investments from EU member countries in Slovakia, we create clusters of countries. Cluster analysis was performed using Ward's clustering method, which is considered a hierarchical agglomeration method. It is connected with the Euclidean distance method, represented by the relationship (Kudla, 2010):

$$d_E(x_k, x_l) = \sqrt{\sum_{j=1}^{p}(x_k - x_l)^2} \quad (11)$$

4. RESULTS AND DISCUSSION

The results are presented in this part from the point of view of setting research questions. Specifically, in the first part, the analysis and comparison of tax competitiveness through the calculated EATR for a specific cross-border investment directed to Slovakia from EU countries is carried out. In the second part, we analyse the EATR and equity participation of FDI from EU countries using cluster analysis.

4.1 Analysis and comparison of tax competitiveness through the calculated EATR for a specific cross-border investment directed to Slovakia from EU countries

The EATR represents the tax criterion that investors use when investing in a country. The calculation of the rate includes the statutory tax rate (formulas 4-6), type of asset and financing method (formulas 9-10), tax base, and costs, which are important for making a specific investment. As the calculation of the EATR includes a large number of variables, it is considered a sufficient indicator of the tax burden. This subsection answers Research Question 1, stating that investing in Slovakia from the point of view of the tax burden is more advantageous for old EU member countries than for new EU member countries.

The tax burden expressed through the EATR of individual EU member countries was compared to the calculated tax burden of the Slovak Republic for 2019 (Table 2). A difference in the values

indicates whether it is suitable and competitive for a foreign investor to invest in Slovakia or whether it is more profitable to invest in their country of origin, thus showing against which countries Slovakia is competitive. Slovakia is classified as one of the new member countries, which typically have a lower tax burden and are, thus, more competitive than old member countries (Kubátová, 2009; Crabbé & Vandenbussche, 2013; Mihóková et al., 2018). Based on this, we assume that Slovakia is more suitable and competitive for investors from old member countries.

The comparison of differences is shown in a graph (see Figure 1 – 3), where the difference between the compared values may be negative or positive. Considering the simple comparative analysis, negative values show that the calculated EATR in Slovakia is higher than that in individual EU member countries, which means that it is more profitable for investors to invest in Slovakia than in their country of origin. Positive values show that the calculated EATR in Slovakia is lower than that in EU member countries, and Slovakia is more profitable for investors and, thus, also competitive. When investing, the investor strives to make a profit, which can be achieved through an appropriate choice of specific assets (Pakšiová & Kubaščíková, 2015). Therefore, the comparison of the EATR is performed based on a specific type of asset, which is the most profitable for the investor. Assets are divided into intangible properties, industrial buildings, and machinery. Simultaneously, we determine the financing method, specifically through undivided profits, new deposits, or debt.

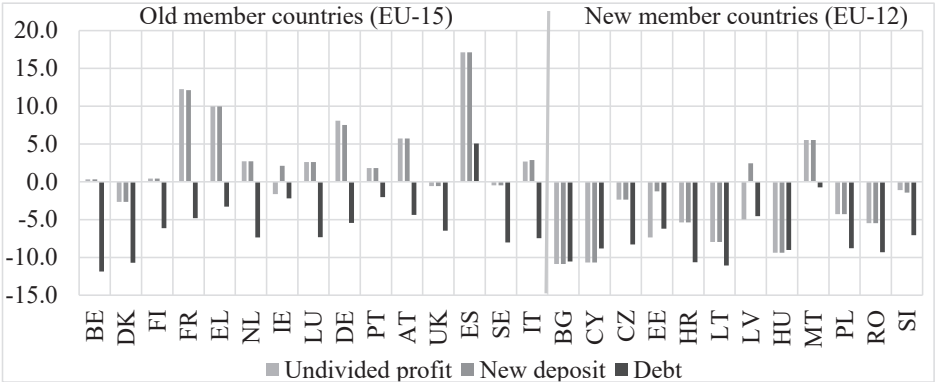

Fig. 1 – Difference between the EATR in Slovakia and the EATR in EU member countries investing in intangible property for 2019 in %. Source: own research

First, we determined the investors for whom it is profitable to make their investment in Slovakia in the intangible property (Figure 1). When dividing countries into old and new EU member countries, we found that for 12 out of 15 old member countries, it is profitable to make their investment in Slovakia in intangible property. For ten old member countries (Belgium, Finland, France, Greece, the Netherlands, Luxembourg, Germany, Portugal, Austria, and Italy), it is profitable to invest through undivided profits or new deposits. This financing is most useful for Spain because the value of the EATR is 17.1% lower, 12.2% lower in France, and 10% lower in Greece. For Ireland, it is profitable to invest through a new deposit, with the EATR being 2.2%

more profitable, and for Spain, all three investment methods are profitable. Conversely, for two new member countries, namely Latvia and Malta, it is profitable to make their investment in the intangible property only. For Latvia, it is profitable to invest in a new deposit that has a 2.5% lower EATR. For Malta, financing through undivided profits or new deposits, that is, from their own sources, is 5.5% more profitable. For all 14 member countries, Slovakia offers a better tax environment for investors than their country of origin, which means that it is more competitive. This list of 14 countries can help Slovak entrepreneurs looking for new foreign investors to invest in intangible property. Specifically, for Spain, it is most profitable to invest in Slovakia, as the EATR is 17.1% lower with investments from their own sources.

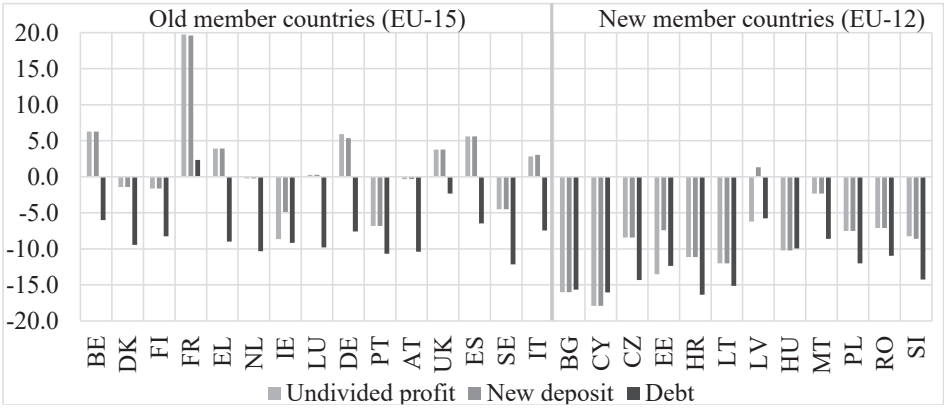

Fig. 2 – Difference between the EATR in Slovakia and the EATR in EU member countries investing in industrial buildings for 2019 in %. Source: own research

Second, we determined the investors for whom it is more profitable to invest in industrial buildings in Slovakia than in their country of origin (Figure 2). For investors from the eight old member countries, it is more profitable to invest in Slovakia. In Belgium, Greece, Luxembourg, Germany, the United Kingdom, Spain, and Italy, it is profitable to invest through undivided profits or new deposits. From the countries mentioned above, it is most profitable to finance from their own sources for France, with an EATR of 19.7% lower. France is also profitable to finance through debt, with an EATR of 2.4% lower. Conversely, the difference with Luxembourg is almost negligible, with an EATR of only 0.3% lower. Meanwhile, among new member countries, only Latvia sees profitable investment in industrial buildings financed through new deposits, which showed an EATR that is 1.3% lower. Slovakia is competitive with the nine member countries mentioned above if the investor decides to invest in industrial buildings.

Third, we examined from which EU member countries it is more profitable for investors to invest in machinery in Slovakia (Figure 3) than in their country of origin. As with intangible property and industrial buildings, Slovakia is a more suitable country for allocating capital to investors from old EU member countries. Financing through undivided profits and new deposits is profitable for Belgium, Denmark, France, Greece, the Netherlands, Germany, Austria, Spain, and Italy. For Italy, investing in machinery is 0.8% more profitable with financing through new

deposits. Investing in machinery is most profitable for France, where the EATR in Slovakia is 11.5% lower with financing through their own sources. With Luxembourg, there is no difference in the EATR, which means that it is profitable for investors to invest in Slovakia, as well as in their country of origin. Placing their capital in machinery in Slovakia is profitable for investors from two new EU member countries. In contrast, for Latvia, financing through a new deposit is more profitable, the EATR being 1.4% lower, and for Malta, the EATR being 1% lower when investing through a new investment and undivided profit. With investment in machinery, Slovakia is competitive against the above-mentioned 12 countries, meaning that it provides a more profitable EATR than investors' countries of origin.

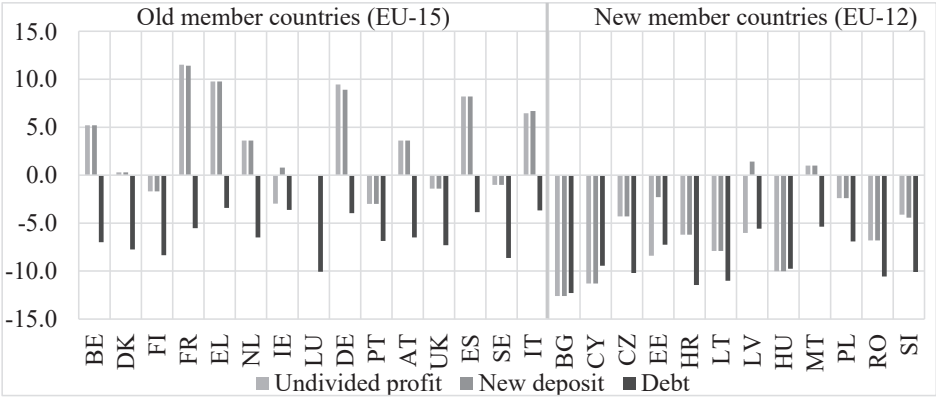

Fig. 3 – Difference between the EATR in Slovakia and the EATR in EU member countries investing in machinery for 2019 in %. Source: own research

By calculating the EATR for a specific cross-border investment coming to Slovakia from EU countries and comparing the values of EATR in EU member countries, we determined the foreign investors for whom Slovakia is a profitable country for investment. Thus, we found against which member countries Slovakia is competitive.

Based on a simple comparative analysis, we compared the differences among EU countries (except Slovakia) and the Slovak Republic (for more details, see Figures 1, 2, and 3 and the discussion above). We came to a conclusion that confirms the hypothesis formulated within Research Question 1, stating that a larger number of investors come from old member countries, for whom investing in Slovakia is more profitable than investing in their country of origin, even considering the perspective of investing in all three assets (intangible assets, industrial buildings, and machinery).

The reason for this is the significantly higher effective tax rate in individual old member countries (Table 2). Slovakia offers them a tax advantage, which means that it is competitive in cases where a foreign investor makes their investment in a specific type of asset. This is in line with Arulampalam et al. (2012), who state that large countries, that is, old member countries, such as Germany, Spain, or France, have significantly higher EATRs than small countries, which include new EU member countries. Eastern European countries, that is, new EU member countries, can attract foreign investors with looser corporate tax systems (Husman & Brezeanu,

2018). New member countries reach significantly lower tax rates, which they use to attempt tax competitiveness to retain domestic investors and attract foreign investors.

Table 2 shows individual types of assets (intangible assets, industrial buildings, and machinery), their financing methods (retained earnings, new shareholders' contribution, foreign resources in the form of debt), and, simultaneously, compares the calculated EATR in individual EU countries and the Slovak Republic. Since Slovakia is among the new EU member countries, the calculated EATR in Slovakia can be attractive and competitive for only two new member countries, namely Latvia and Malta. The countries from which it is profitable to invest in Slovakia are shown in grey in Table 2. If we look at the financing method, it is more profitable for most investors to make their investments in Slovakia through their own sources. Only Spain and France are profitable when financing through debt, whereas the remaining countries reach higher values with the given financing methods, which shows an unprofitable investment; however, financing through other sources is commonly used in practice. The results indicate that the correct choice of assets and financing methods allows investors to influence the amount of tax paid, which is in line with Rego & Wilson (2012) and Graham et al. (2016). The results of the analysis can be used by foreign investors and Slovak entrepreneurs who need investment for their businesses. As stated by Devereux et al. (2008), old member countries with a higher tax burden are influenced by changes in the tax burden in another country. Based on these results, Slovak entrepreneurs can approach specific EU member countries and suggest types of assets in which it would be most profitable to invest.

Tab. 2 – The EATR values in 27 EU countries investing in Slovakia and the EATR values in 27 EU countries investing domestically for 2019 in %. Source: own research

Code	Intangible property						Industrial building						Machinery					
	UP		ND		D		UP		ND		D		UP		ND		D	
	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR
Old member countries (EU-15)																		
BE	21.0	20.7	21.0	20.7	11.8	23.7	33.1	26.8	33.1	26.8	23.8	29.8	26.9	21.7	26.9	21.7	17.7	24.7
DK	18.0	20.7	18.0	20.7	10.3	21.0	25.4	26.8	25.4	26.8	17.7	27.2	22.0	21.7	22.0	21.7	14.3	22.0
FI	21.1	20.7	21.1	20.7	14.2	20.3	25.2	26.8	25.2	26.8	18.2	26.5	20.0	21.7	20.0	21.7	13.0	21.4
FR	33.1	20.9	33.1	21.0	21.1	25.9	46.7	27.0	46.7	27.1	34.4	32.0	33.4	21.9	33.4	22.0	21.4	26.9
EL	29.6	19.6	29.6	19.6	19.8	23.1	30.1	26.2	30.1	26.2	20.3	29.3	30.5	20.7	30.5	20.7	20.7	24.1
NL	23.4	20.7	23.4	20.7	14.7	22.1	26.6	26.8	26.6	26.8	17.9	28.2	25.3	21.7	25.3	21.7	16.6	23.1
IE	13.2	14.8	13.2	11.1	8.9	11.1	13.0	21.6	13.0	17.9	8.7	17.9	13.0	16.0	13.0	12.2	8.6	12.2
LU	23.3	20.7	23.3	20.7	14.7	22.0	27.1	26.8	27.1	26.8	18.4	28.2	21.7	21.7	21.7	21.7	13.0	23.1
DE	29.6	21.5	29.6	22.1	19.9	25.3	33.5	27.6	33.5	28.1	23.8	31.4	32.0	22.5	32.0	23.1	22.4	26.4
PT	22.5	20.7	22.5	20.7	22.3	24.3	20.0	26.8	20.0	26.8	19.8	30.5	18.7	21.7	18.7	21.7	18.5	25.4
AT	26.4	20.7	26.4	20.7	17.7	22.1	26.5	26.8	26.5	26.8	17.8	28.2	25.3	21.7	25.3	21.7	16.6	23.1
UK	20.1	20.7	20.1	20.7	13.5	20.0	30.6	26.8	30.6	26.8	23.8	26.1	20.3	21.7	20.3	21.7	13.7	21.0
ES	37.8	20.7	37.8	20.7	29.1	24.0	32.4	26.8	32.4	26.8	23.7	30.2	29.9	21.7	29.9	21.7	21.2	25.1
SE	20.2	20.7	20.2	20.7	12.8	20.8	22.3	26.8	22.3	26.8	14.8	27.0	20.7	21.7	20.7	21.7	13.2	21.8
IT	24.1	21.4	24.8	21.9	16.4	23.9	30.3	27.5	31.0	28.0	22.5	29.9	28.9	22.4	29.6	22.9	21.2	24.9

Code	Intangible property						Industrial building						Machinery					
	UP		ND		D		UP		ND		D		UP		ND		D	
	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR	OC	SR
New member countries (EU-12)																		
BG	9.8	20.7	9.8	20.7	6.3	16.8	10.8	26.8	10.8	26.8	7.3	23.0	9.1	21.7	9.1	21.7	5.6	17.9
CY	10.0	20.7	10.0	20.7	8.9	17.7	8.9	26.8	8.9	26.8	7.8	23.8	10.4	21.7	10.4	21.7	9.3	18.7
CZ	18.3	20.7	18.3	20.7	11.7	20.0	18.4	26.8	18.4	26.8	11.8	26.1	17.4	21.7	17.4	21.7	10.8	21.0
EE	13.3	20.7	19.4	20.7	13.3	19.5	13.3	26.8	19.4	26.8	13.3	25.6	13.3	21.7	19.4	21.7	13.3	20.5
HR	15.3	20.7	15.3	20.7	9.0	19.6	15.7	26.8	15.7	26.8	9.4	25.8	15.5	21.7	15.5	21.7	9.2	20.7
LT	12.7	20.7	12.7	20.7	7.5	18.6	14.8	26.8	14.8	26.8	9.6	24.7	13.8	21.7	13.8	21.7	8.6	19.6
LV	15.0	20.0	22.0	19.5	15.0	19.5	20.0	26.2	27.1	25.8	20.0	25.8	15.0	21.0	22.0	20.6	15.0	20.6
HU	11.3	20.7	11.3	20.7	8.2	17.2	16.6	26.8	16.6	26.8	13.4	23.3	11.7	21.7	11.7	21.7	8.5	18.3
MT	26.2	20.7	26.2	20.7	24.8	25.5	24.5	26.8	24.5	26.8	23.1	31.7	22.7	21.7	22.7	21.7	21.2	26.6
PL	16.4	20.7	16.4	20.7	11.2	20.0	19.3	26.8	19.3	26.8	14.1	26.1	19.3	21.7	19.3	21.7	14.1	21.0
RO	15.2	20.7	15.2	20.7	9.6	18.9	19.7	26.8	19.7	26.8	14.1	25.1	14.9	21.7	14.9	21.7	9.4	20.0
SI	20.1	21.2	20.1	21.5	13.5	20.6	19.0	27.3	19.0	27.6	12.4	26.6	18.1	22.2	18.1	22.5	11.5	21.6

Note: UP, undivided profit; ND, new deposit; D, debt; OC, original country; SR, Slovakia; Grey cells, profitable investment in Slovakia vs. the investor's country of origin

4.2 Analysis of EATR and equity participation of FDI coming from EU countries using cluster analysis

If a foreign investor has already decided to allocate capital in the target country, in our case, Slovakia, this represents an inflow of FDI to the given country. Almost 93.5% of FDI (reinvested profit and equity participation) in Slovakia comes from EU countries (National Bank of Slovakia, 2019). Foreign investments represent significant value for Slovakia because they are especially meaningful for economic growth, assuring the development of technologies, introduction of new manufacturing processes, know-how, creation of new jobs, and, at the same time, increasing the effectiveness of domestic companies and their competitiveness (Grela et al., 2017).

Using cluster analysis and the Ward clustering method, as mentioned in the methodology section of the paper (see Section 3), we determined whether a lower EATR influences FDI inflow in Slovakia. In the analysis, we used data from 22 EU member countries, such as the Czech Republic, Ireland, Malta, Finland, and Sweden were excluded from the analysis due to extreme values or confidential data. Based on the calculated values of the EATR in Slovakia and equity participation of FDI from EU member countries in Slovakia for 2019, we categorised five clusters of EU countries. The results of the analysis take the form of a dendrogram, as shown in Figure 4.

The first cluster comprises four new EU member countries: Hungary, Bulgaria, Cyprus, and Latvia. The values of EATR range from 21.78% to 22.11%, with a minimum difference of 0.33% between the values. This cluster has the lowest average EATR value (21.97%) of all the clusters. As far as the average value of the inflow of equity participation of FDI is concerned, it represents the value of EUR 2,782,000 and is, thus, the third highest value of inflow of FDI of all the clusters.

The second cluster comprises nine EU member countries, among which the United Kingdom, Denmark, and Greece are old EU member countries and Slovenia, Lithuania, Romania, Poland,

Estonia, and Croatia are new EU member countries. The values of EATR range from 22.36% to 23.46%, with a difference of 1.1% between the values. The cluster has the second lowest average value of EATR (22.84%), as well as the second lowest average value of the inflow of equity participation of FDI (EUR 170,000). Despite the lower value of EATR in the second and first clusters, the value of FDI remained low.

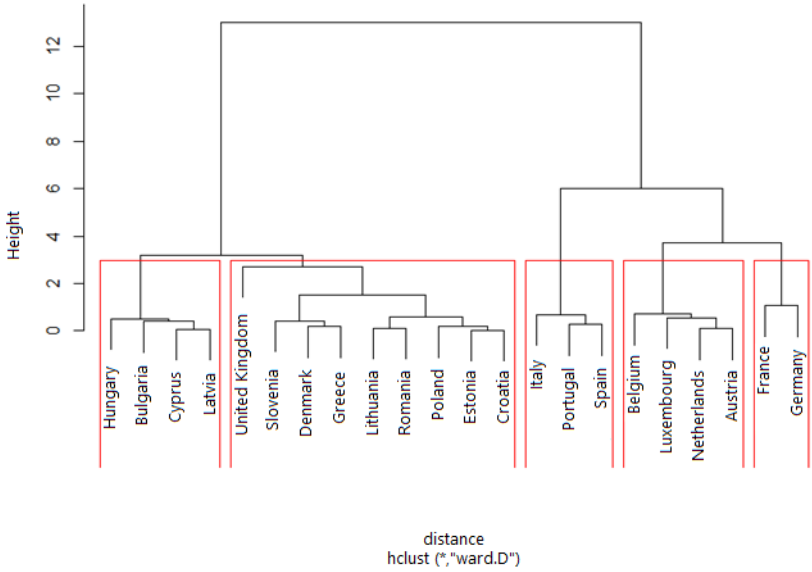

Fig. 4 – Clusters of EU countries - dendrogram. Source: own research

The third cluster comprises three old EU member countries: Spain, Portugal, and Italy. The EATR values range from 24.18% to 24.76%, with a difference of 0.58% between the values. Among all the clusters, this cluster has the second-highest average value of EATR (24.41 %). This cluster reached a zero-average value in the inflow of equity participation of FDI, which suggests that Slovakia received no investment from investors from these three countries.

Four old EU member countries, namely Belgium, Luxembourg, the Netherlands, and Austria, comprise the fourth cluster of countries. The values of EATR range from 23.52% to 24.06%, which indicates a difference of 0.54% between the values. The average EATR value is 23.66%. This cluster reached the second highest average value of the inflow of equity participation of FDI among the clusters, which means that, in 2019, Slovakia received an average of EUR 35,725,000 from the given countries.

The fifth cluster comprises two old member countries: France and Germany. The values of EATR reached the highest, ranging from 24.71% to 25.34%, with a difference of 0.63% between the values. The average value of the EATR reached 25.02%. This cluster reached the highest value even for the inflow of equity participation of FDI, with an average value of EUR 61,246,000. Investors from these countries make the most investments in Slovakia among all the countries, even though the values of calculated EATR in Slovakia are the highest. These results are not in line with those of Schwellnuss & Arnold (2008), Arnold et al. (2011), Farah et al. (2021), or Abbas

& Klemm (2013), who report a negative correlation between the EATR and FDI values. Based on the calculated EATR for the fourth and fifth cluster countries, Slovakia is more profitable for investors than their country of origin, which was confirmed by cluster analysis.

5. CONCLUSIONS

The largest portion of the inflow of FDI in Slovakia comes from EU member countries. Based on this, we decided to evaluate the real tax burden on investors coming from given countries in Slovakia. The attractiveness of Slovakia and, thus, its tax competitiveness versus EU member countries was determined based on the calculated EATR for specific types of assets for investors from EU countries who wish to make their investments in Slovakia. Comparing the values of the calculated EATR for a cross-border investment directed to Slovakia from EU countries and the EATR in EU member countries positively answered Research Question 1, that is, investing in Slovakia from the point of view of the tax burden is more advantageous for old EU member countries than for new EU member countries. Placing their investment in Slovakia in intangible property would be profitable for 12 old (BE, FI, FR, EL, NL, LU, DE, PT, AT, IT, IE, and ES) and two new (LV and MT) member countries. Investment in an industrial building is profitable for investors from eight old (BE, EL, LU, DE, UK, ES, IT, and FR) and one new (LV) member country. An investment in machinery would be profitable for ten old (BE, DK, FR, EL, NL, DE, AT, ES, IT, IE, and FR) and two new (LV and MT) member countries. The results of the cluster analysis show that countries obtaining higher calculated values of EATR, which are still lower than those in the country of origin, achieve higher values of equity participation of FDI. This positively answers Research Question 2, namely, that the inflow of FDI in cases of the calculated cross-border investment is influenced by the lower value of the EATR than in the investor's country of origin.

For investors from large EU countries, such as Germany, France, or the Netherlands, the tax burden is an important determinant for choosing a country for investment. Investors choose a country that allows a more profitable tax rate. The conclusion of the article is that for a large number of investors coming from old member countries, Slovakia is a profitable country for allocating their capital because the EATR is lower than in their country of origin. Slovakia, which is one of the new member countries, provides a lower tax burden on old member countries and is, thus, more competitive than investors' countries of origin. It is beneficial for these countries to use financing investments primarily from their own sources.

This study was conducted to verify the competitiveness of foreign investments in the Slovak Republic and their profitability, both according to individual classes of assets and sources of financing. The research results may be used as a guide not only for potential foreign investors but also for domestic investors from the perspective of obtaining FDI. The analysis is based on the view of the tax burden and does not consider other aspects. This should also be considered a limitation of this study. However, we are actively working with other economic and non-economic determinants, which we also see as a perspective for future research.

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