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INVESTORS´ DECISION ON THE CONTEXT OF THE EFFECTIVE TAXATION OF AGRICULTURAL COMPANIES

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ABSTRACT

The analysis of the effective taxation combines two different effective tax rates which are crucial for placement and monitoring of the investment amount in the particular country. Both of these tax rates are important for investors who make a decision on the benefits, as well as the risks of corporate taxation in the country. The contribution deals with the problem of the effective taxation through effective average tax rates (EATR) and effective marginal tax rates (EMTR). Especially, it focuses on agricultural production companies. The effectivity of taxation was observed for selected intangible and tangible assets for a period of 2004 and 2018. Our analysis evaluated the influence of the change in the statutory tax rates (and the other taxes and indicators, as well) on the change in effective average tax rates on capital in the agricultural companies. Based on the results, the lowest EATR, ranging from 20.79% to 25.25%, reported agricultural lands in both reference periods and for both ways of financing. Analyzing EMTR we found out that the lowest value reported investments in intangible assets that have crucial significance for investors. Our results definitely made it clear that in the EATR ↔ EMTR relationship, a form of financing investments is decisive. This relationship is used when an investor decides between several mutually exclusive locations or types of investment in a given country. In equity financing, the most effective capital is investing in intangible assets, and when we consider financing from external sources it is investment into stocks. An increase in the statutory tax rate of 2% resulted in a 12% increase in effective average tax rates.

Keywords: tax; effectiveness; company; asset; agriculture

INTRODUCTION

The structure of tax systems is one of the factors that significantly affect the economic growth of countries. For this reason, it is important to look at individual taxes not only as a possible source of budget revenue, but also in terms of their impact on economic growth. As the structure of tax systems is diverse, it is appropriate to focus in particular on monitoring effective tax rates, which closely examine the tax bases and provide sufficient information not only for investors, but also for governments who create tax legislation and modify the structure of tax systems. In decision-making process, effective tax rates does not only serve investors, but also other entities such as politicians and economists who seek to create favorable conditions for foreign capital inflow into the economy. It is particularly effective tax rate that can increase the attractiveness of the country. **Castro and Ramírez Camarillo (2014)** and **Martin-Mayorales and Uribe (2010)** confirm that tax rates that aggregate the economic aspect which expresses the real rate of capital taxation is effective. Similarly, **Baker (1999)** and **Barrios, Nicodème and Sanchez Fuentes (2014)** claim that effective tax rates have a higher informative value than the statutory tax rates which are legally given. On the other hand, **De Laet and Wöhlbier (2008)** have evaluated that using the statutory tax rate to measure and compare the tax burden across countries is inaccurate and misleading. Since the first studies focusing on effective tax rates by **Jorgenson (1963)**, **Hall and Jorgenson (1967)**, **Mura et al. (2017)** was found, economists have become more interested in analyzing the impact of corporate income taxation on cost of capital. This approach is based on detailed data on the taxation of capital investments, taking into account the marginal revenue on the last unit invested of new investment projects at the same level as the project's marginal costs, including future taxation. **Jorgenson and Yun (1991)**, **Jorgenson and Gollop (1992)**, **Auerbach (1979)**, **King and Fullerton (1985)** in the empirical research have broadened the founding studies and in their analysis included other corporate and non-corporate tax rates, as well as source of financing and assets. This approach has led to the development of those indicators which define the placement and scale of investments.

The first indicator that has decisive role for location of the investment is effective average tax rate (EATR). The second one is an effective marginal tax rate (EMTR) which aims to capture the extent of the investment used in a given country. The effective corporate tax rates are used as a measurement of impulses, and they are obtained from various sources of corporate tax systems on a regular basis,

segmented by industry **(ZEW, 2018)**. A huge amount of empirical studies such as **McKenzie, Mintz and Scharf (1997)**, **Barrios, Nicodème and Sanchez Fuentes (2014)**, **Devereux and Griffith (1998)**, **(Devereux and Griffith, 2003)**, **Kubátová and Říhová (2009)**, **Devereux, Griffith and Klemm (2004)**, **Ključnikov, Mura and Sklenár (2019)** deal with the impact of effective corporate tax rates on the economic behaviour of enterprises, including their placement, choice of investment opportunity and profit spillover.

In the taxation of the agricultural sector, it is necessary to observe differences which are specific for this economic sector, mainly because of the use of the various elements of the tax base. **Felis (2015)**, **Darabos (2016)**, **Okanazu (2018)** considers that the effectiveness of agricultural tax also depends on the specific tax rate, which is set as the cash equivalent of the crop. The level of agricultural tax is a result of the change in specific tax rates, depending on the purchase price of the crop. However, this price was a subject to frequent fluctuations, leading to substantial changes in the level of the tax burden.

Severini, Tantari and Rocchi (2014) analyzed taxation of agricultural households and stated that the tax burden is not influenced by the level of actually produced income. Ironically, the taxation of agricultural income has a regressive effect, favoring farmer families where agriculture represents a large proportion of family income. In analyzed farmer families is relative average level of taxation (i.e. rate of corporate income tax to Gross Farm Income – GFI) approximately 13.3%. Therefore, agricultural incomes may be less tax burdened than non-agricultural incomes. The impact on agricultural investment, management and production decisions are often influenced by federal tax laws. Farmers benefit from a federal policy on income tax and real estate tax on agriculture. These provisions put pressure on the value of agricultural land and help to support an increasing number of very small and large farms. Tax credits for investments were used in large quantities, however the majority of these credits were eligible and included assets, such as machinery, equipment, livestock purchased for dairies, draught, breeding or sports animals, crop storage facilities and dedicated agricultural structures. The combined effect of tax credit on investment and Accelerated Cost Recovery System (ACRS) has led to negative tax rates in most agricultural machinery and equipment. Negative effective tax rates was an impulse for an increase of investment into agricultural capital and they occur for tax credits and deductions. However, the availability of investment with a negative effective tax rates is limited. As **Durst and Monke (2001)** state, negative effective tax rates can offset all income from a given investment along with additional income from other sources.

Scientific hypothesis

For a potential investor, the amount of the EATR is important to know in which country to place the investment. EMTR says about how much the investment should be. Basic hypothesis is: Is it more important for the investor to monitor EATR and EMTR or their relationship?

MATERIAL AND METHODOLOGY

The aim of this contribution is to analyze and evaluate the efficiency of taxation of selected types of intangible and tangible assets of agricultural companies on the basis of accounting and tax legislation in the Slovak Republic (SR). In the paper, we construct the EATR model and we take into account a period of the year 2004 (when the Slovak Republic became a Member State of the EU) and the year 2018.

In our model, the assets were classified into seven categories of intangible and tangible assets (i.e. intangible assets, agricultural buildings, machinery for agriculture and forestry, basic herd and the draught animals, permanent crops, land, and inventories). The basic herd and the machines have the identical results because there is the same classification in the depreciation, and the taxation is the same, as well. The design of the EATR model takes into account the discounted value of multiplying of the variability of tax discrimination, and the difference between the revenues and the costs of the investment project. The revenues were taxed at the required rate of return and accounting depreciations without the impact of inflation. The costs reflected the shareholder's discount rate, accounting depreciation and inflation, and they are expressed through the formula (1 – NPV tax depreciation shield), which expresses the tax savings from the depreciations.

The capital funding sources were divided into three groups, weighted by the OECD weights **(OECD, 1991)**, and processed according to the OECD long-term statistics averages as following:

1. undistributed profit (55%);
2. new deposit (10%);
3. debt (35%).

Table 1 below shows input data used in our analysis. The volume of corporate tax and the revenues from the interest deduction, that highlight the differences between the different ways of funding, are positively correlated.

Table 1 Input data for analysis.

Asset	Accounting depreciation ZEW (δ)	Recalculated life	Tax depreciation ($\emptyset$)
I. Intangible assets	15.35% = 0.1535	5 years	100/5 = 20%
II. Agricultural buildings	3.1% = 0.031	20 years	100/20 = 5%
III. Agricultural and forestry machinery	17.5% = 0.175	4 years	100/6 = 25%
IV. Basic herd and draught animals	17.5% = 0.175	4 years	100/6 = 25%
V. Growing units of permanent crops	4.5% = 0.045	12 years	100/12 = 8.33%
VI. Estates	x	x	x
VII. Inventory	x	x	x

Note: Source: own processing based on **ZEW (2018)**.

In the model, we also consider some additional input data, such as:

(r): Real rate of return determined as 5% of the alternative investment;

(p): Required rate of return before tax determined at the 20% level;

(π): Inflation rate (at the level of 2%);

(δ): Accounting depreciation rate determined by **ZEW (2018)**;

(τ): Effective statutory tax rate (22%);

(e): Effective real estate tax rate determined from the statutory real estate rate (n) 0.25%, reduced by the corporate tax rate (21%). Since the **ZEW** model **(2018)** considers a market value that does not share in all countries with a purchase price, it determines a uniform and optimal basis to capture the market value of 0.36%.

(v): Valuation of inventory loss which may use three methods:

- *FIFO method*: this method is used for valuation of inventory loss when the first inventory increase valuation price is used as the first price for inventory loss valuation (v = 1).
- *LIFO method*: is used for inventory valuation when the last inventory increase valuation price is used as first to evaluate the inventory loss. In the Slovak Republic (SR) this method is not allowed (v = 0). The weighted arithmetic mean is determined from actual purchase prices as the share of inventory in stock value, and the total inventory in stock state in the quantitative units, at least once per month (v = 0.5).
- *Predetermined Inventory Price*: this is the price for fast-moving inventories (mostly used in agriculture), in case of which we often do not yet know their price at the time of placing in storage (v = 2).

($\emptyset$): Tax depreciation for tangible assets. It will be used in a straightforward or accelerated manner in accordance with the **Law no. 595/2003**. Intangible assets are depreciated in accordance with this Act for a maximum of 5 years up to their acquisition price.

(i): Nominal interest rate that would increase with the increase of inflation rate and an increase in the real interest rate.

(ρ): Shareholder's discount rate.

(γ): Variability of the shareholder's tax discrimination, which reflects the ratio of the funds from the investment to the alternative investment funds. If we eliminate the personal income tax at this value, then a value of 1 is set, as the shareholder will not be discriminated against when deciding for the investment, but for the possibility of depositing of his funds in the bank.

Calculation methods that monitor the effective tax burden on hypothetical investment projects aim to estimate future burdens based on the existing legal framework. A marginal investment is expressed as an investment which the present value of the pre-tax return is zero. It means that the net present value of the investment income is equal to the present value of the investment cost **(Vítek, 2011)**. According to **ZEW (2018)**, the effective marginal tax rate, that expresses tax burden, is defined as a proportion of a difference of marginal investment pre-tax return $p^{\sim}$ and investment return rate after taxation s to marginal investment return $p^{\sim}$. In other words, we can describe it in the following form:

$$EMTR = \frac{p^{\sim} - s}{p^{\sim}} \qquad (1)$$

The $p^{\sim}$ value represents the real return rate before taxation that is necessary to achieve a nul economic income after taxation (capital cost is the initial investment). From a shareholder´s point of view, the s value represents the real rate of return after taxation. Based on the facts stated above, the effective marginal tax rate includes a wide range of indicators, which go beyond the statutory corporate tax rate, such as the elements of tax base, the method of financing the investment (i.e. through debt, undistributed accounting profit, or new capital funds) and the depreciation rules or level of inflation rates. However, when we speculate about taxation, the return on investment changes. The optimal return on investment requires the same return on different investments at the given margin. The $p^{\sim}$ value called also capital costs is necessary calculate for each investment type depending on a form and investment funding source.

The intangible assets, agricultural buildings, agricultural and forestry machinery, basic herd and draught animals, growing units of permanent crops, because it is depreciated assets, there have to be included depreciation rate in the formula. Also, we have to add to formula coefficient e, which expresses a property tax and which will increase the amount of investment in buildings. The property tax on buildings is calculated as following: *Tax rate + (number of floors * charge for floor) * building area*

Since it is a direct cost, the formula is in the following form:

$$\tilde{p}_{1-5} = \frac{(1-A)}{(1-\pi)*(1-\tau)}\{\rho + \delta * (1+\pi) - \pi\} - \delta * e \qquad (2)$$

The next tangible assets in our model is estate, which belongs to non-depreciated assets. When we adjust the formula (2) to reduce tax depreciation, where $\delta = 0$, and add the property tax on estates e (calculating as *tax rate* * *estate area* * *estate value*), we can write the formula as:

$$\tilde{p}_6 = \frac{1}{(1-\pi)*(1-\tau)}\{\rho - \pi + 1 * \tau * \pi * e\} \quad (3)$$

For inventories, *e*: the property tax is excluded from the equation (2), and the whole formula is reduced by the multiplication of the tax rate, the inflation rate, and the inventory valuation method. If the company decides for the *LIFO* method (the cost also includes the increase in the price level) we will insert 0 instead of $v$and so it will reset the whole expression. In case of the *FIFO* method, $v = 1$, while in the method of the weighted arithmetic mean $v = 0.5$. Last, in case of the method of predetermined inventory price, we will use the $v = 2$ (which we have set as the basis, since it represents the agricultural fast-moving inventories).

$$\tilde{p}_7 = \frac{1}{(1-\pi)*(1-\tau)}\{\rho - \pi + 1 * \tau * \pi * v\} \quad (4)$$

It is also important to deal with the investment financing sources. In practice, there are three basic ways to finance investment: financing from own sources, i.e. through undistributed profit or new shareholders´ contributions, and from external sources such as debt financing. In a case, there is no personal income taxation $\gamma = 1$, then debt financing will always be nul and capital costs for investments financed by new contributions and investments financed by undistributed profit will be equal. However, in the case of debt financing, companies optimize capital structure in order to have costs as low as possible. Corporate tax is the cost of equity financing and often exceeds equity cost in the form of tax-deductible interest, and thus causes tax shield (i.e. reduction of the tax base).

If we choose debt financing, the formula for individual asset types need to be added as follows:

(i) Intangible assets, agricultural and forestry machinery, basic herd and draught animals, growing units of permanent crops, estates and inventories:

$$\tilde{p}^{DE} = -\frac{(\rho - i(1-\tau))}{(1+\pi)(1-\tau)} \quad (5)$$

(ii) Agricultural buildings: firstly, it is necessary to adjust the formula (5) and add expression $(1 + e)$, where e expresses the property tax:

$$\tilde{p}^{DE} = -\frac{(1+e)(\rho - i(1-\tau))}{(1+\pi)(1-\tau)} \quad (6)$$

If we choose financing from own sources through new shareholders´ contribution or from undistributed profit, we will use the following formula:

$$\tilde{p}^{NE} = \frac{\rho(1-\gamma)(1+e)}{\gamma(1+\pi)(1-\tau)} \quad (7)$$

;As we can see, the effective marginal tax rate includes a wide range of elements. If we compare the impact of taxation on expected return on investments while the investment would be realized in various countries, then we can conclude that those countries which have higher capital costs or higher level of EMTR are less attractive for investors.

The second indicator used to assess the attractiveness of the location or economic industry and simultaneously calculates rates for hypothetical investment projects, is the effective average tax rate (EATR). The EATR is defined by the ratio of the present value of taxes paid to the net present value of income flows. However, we have to emphasize that EATR does not include the initial cost of investment. Usually, the procedure for setting EATR is in proportionate reduction of the economic income generated by the investment as a result of taxation. In other words, it has the following form:

$$EATR = (R^* - R)/R^* \quad (8)$$

The main drawback of this method is that it does not determine investment projects without taxation $R^* = 0$. Therefore, **Devereux a Griffith (1998)** suggested an approach, which calculates the difference between R^*, and they define coefficient R as a proportion of the net present value of return on investment before taxation $p/(1 + r)$. Simultaneously, there is also included the influence of personal effective marginal tax rates from capital revenues (defined by King and Fullerton) **(King and Fullerton, 1985)**. This variable has the following formula:

$$EATR = \frac{\frac{R^* - R}{p}}{\frac{}{(1+r)^t}}, \quad (9)$$

where R* is the economic income flows from the project without tax and expresses the difference between the required rate of return before tax and the real interest rate from the next investment. To determine the present value of the project's profit, it is necessary to discount it with the real interest rate:

$$R^* = \frac{p-r}{1+r} \quad (10)$$

The evaluation tracks the different assets and the equation is adjusted (i.e. reduced or increased) by the individual indicators. Intangible assets, machinery for agriculture and forestry, basic herd, and the draught animals were calculated using the equation in the basic form:

$$R_{1,3,4} = \frac{\gamma}{1+\rho} * \{[(p + \delta) * (1 + \pi) * (1 - \tau)] - [\rho + \delta * (1 + \pi) - \pi] * (1 - A)\} \quad (11)$$

For agricultural buildings and permanent crops, equation (10) was reduced by e − the property tax (on buildings and on land), and this tax is the direct cost to this type of asset:

$$R_{2,5} = \frac{\gamma}{1+\rho} * \{[(p + \delta) * (1 + \pi) * (1 - \tau)] - [\rho + \delta * (1 + \pi) - \pi] * (1 - A)\} - e \quad (12)$$

In case of the land, accounting and tax depreciations are excluded from equation (5), i.e. δ = 0, (1 - A) = 0 (the land constitutes a specific group of undepreciated assets):

$$R_6 = \frac{\gamma}{1+\rho} * \{[p * (1+\pi) * (1-\tau)] - [\rho - \pi]\} - e \quad (13)$$

For inventories, the property tax e is excluded from the equation (12), and the whole formula is reduced by the multiplication of the tax rate, the inflation rate, and the inventory valuation method. If the company decides for the *LIFO* method, we will insert 0 instead of v, that will reset the whole expression). In case of the *FIFO* method v = 1, while in the method of the weighted arithmetic mean v = 0.5, and in case of the method of predetermined inventory price we will use the v = 2 (which we have set as the basis, since it represents the agricultural fast-moving inventories).

The equation has the form:

$$R_6 = \frac{\gamma}{1+\rho} * \{[p * (1+\pi) * (1-\tau)] - [\rho - \pi]\} - v * \tau * \pi \quad (14)$$

The investment was financed from own funds (i.e. through undistributed profit and the new contributions) and from the external resources (i.e. debt financing). In the absence of personal taxes, γ = 1, the last indicator will always be zero, and capital costs for investments funded by new capital and investments funded by undistributed profit will be equal. The difference is only in financing in the form of debt. To keep costs as low as possible, the companies optimize their capital structure. Corporate tax is the cost of equity financing, and often this cost is higher than other costs, such as this in form of interests is a tax-deductible item, what cause a reduction in the tax base, so called interest tax shield. Therefore, the economic rent of the project with taxation should be increased by the ratio of the discounted value of the difference between the discount rate of the shareholder and the nominal interest rate, and by the interest tax shield. It is necessary not to forget the effective rate of property tax paid in the period of direct investment activity $(1 + e)$. Formula for debt financing has the form:

$$F^{DE} = \frac{\gamma * (1+e) * (\rho - i + i * \tau)}{1+\rho} \quad (15)$$

Formula for financing through a new capital contributions has the form:

$$F^{NE} = -\frac{\rho(1-\gamma)(1+e)}{1+\rho} \quad (16)$$

When we adjust formulas above, we can write a relationship between EATR ↔ EMTR. This correlation is used to investment decision making and it assesses location as well as the amount of the investment. EATR expresses the proportion of effective average level of taxation to level of investment rentability. It also reflects the real cash-flows and tax burden. However, the more appropriate indicator for investment decision making is EMTR because it better explains savings impulses and investing. The relationship between marginal and average effective tax rate can be then written as follows:

$$EATR = \frac{\tilde{p}}{p} EMTR + \frac{p - \tilde{p}}{p} \tau, \quad (17)$$

where τrepresents statutory corporate tax rate.

The result of investment selecting depends on tax rate of marginal investment, which expresses effective average tax rate. As **Kubátová (2011)** states, EMTR and EATR are tax wedge, expressing return rate of investment before and after taxation. Both tax rates are used to evaluate the impact of taxation on investment decision making.

Statistic analysis

For the calculation of EATR, EMTR and their relationship for agricultural companies in the Slovak Republic we use the method from **Devereux and Griffith (2003)**. Calculations were based on this methodology and modified for the conditions of Slovakia. The calculation is extensive and the individual sub-calculations were given in the previous paragraph.

RESULTS AND DISCUSSION

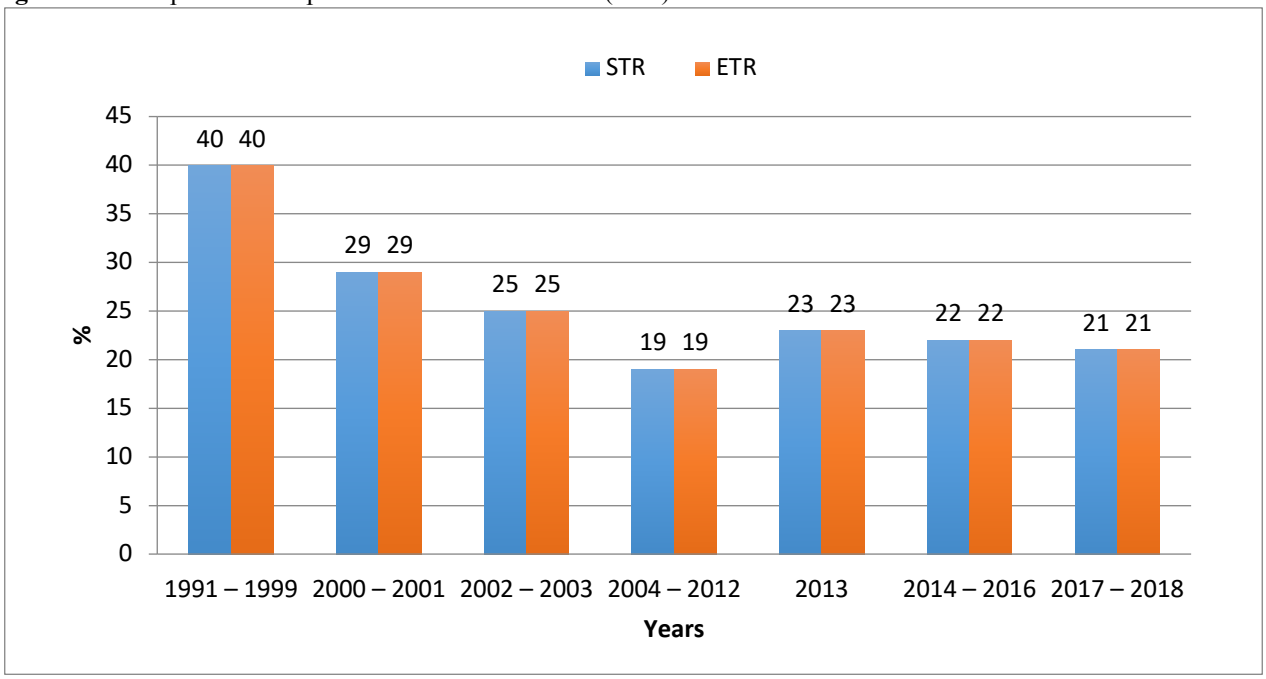
In our analysis, EATR for agricultural companies was monitored within the years 2004 and 2018. We selected these two years because in 2004 Slovakia became a Member State of the European Union, and in that time EATR was at the level of 19%. Since this period, the statutory rate has increased up to the current 22% (which we used in our analysis). Note that 23% tax rate in 2013 represents the only change since 2004. Figure 1 shows the development of corporate tax rate since 1991, which is connected to the formation of the Slovak Republic.

To determine the tax base, it is necessary to estimate tax depreciation. In 2015, there was a significant change in Tax law, which increased depreciation groups from 4 to 6 and extended the depreciation period for individual groups. Table 2 shows depreciation groups in detail.

For the straight-line method of depreciation, the share of the entry price and depreciation period was used. This method takes only a fraction of the annual depreciation, depending on the number of months since the property was put into use. In the last year, the remaining months of the year are counted. The tax and accounting depreciation rates for the monitored assets are mentioned in the methodology of the work. The property tax (on land and buildings) is a local tax and is imposed by a city or municipality.

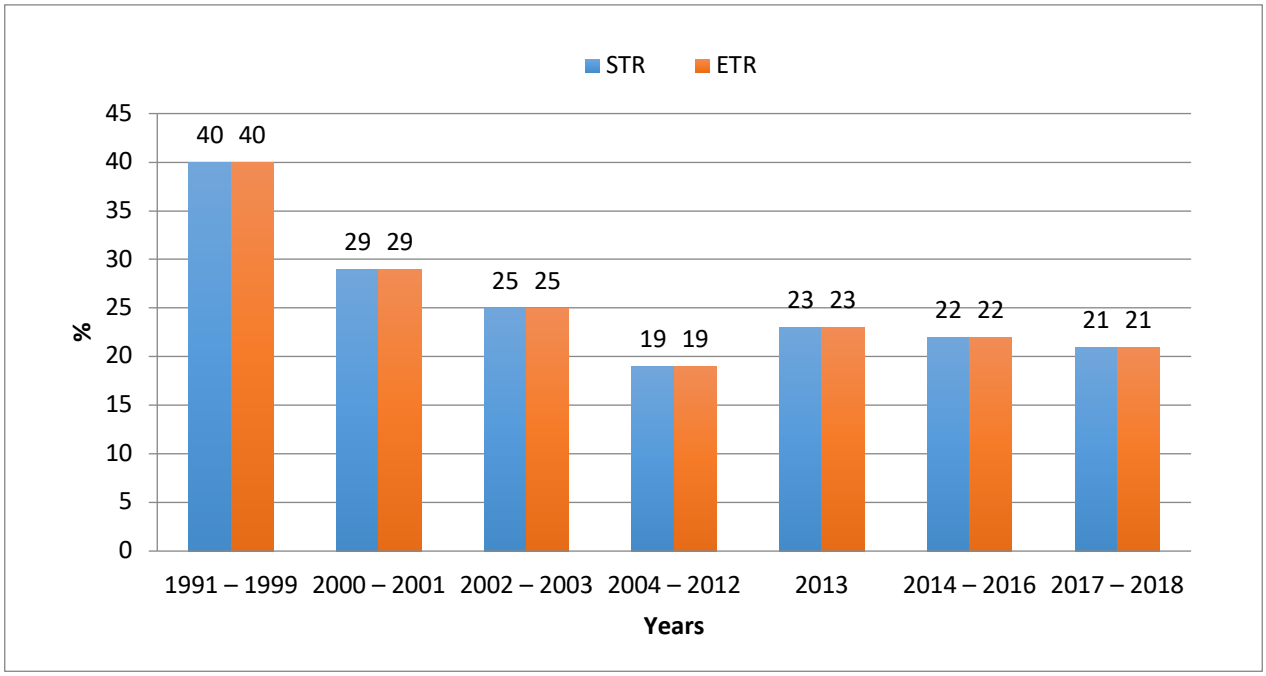
The property tax on land was determined by multiplying the land area in m^2 and the corresponding value per 1 m^2. The property tax on buildings was determined by the area of the built-up area in m^2 and the tax rate determined in the generally binding regulations. **ZEW (2018)** calculates the tax on invested capital in buildings (real estate) by an indirect method. Figure 2 shows a four-fold increase in the level of the nominal property tax base since 2005. In the effective property tax, the amount has been distributed with the direct correlation since 1991, when it increased by 0.01% up to the year 2005. After this period, there was also a single four-fold increase.

Figure 1 Development of corporate tax rates in Slovakia (in %).



Note: Source: own processing according to **(ZEW 2018)**.

Figure 2 Development of property tax rates in Slovakia (in %).



Note: Source: own processing based on **ZEW (2018)**.

Table 2 Depreciation period for tangible assets.

Group	Years	Assets
1.	4	agricultural and forestry machinery, basic herd and draught animals
2.	6	-
3.	8	-
4.	12	basic herd and draught animals
5.	20	agricultural buildings
6.	40	-

Note: Source: own processing based on **ZEW (2018)**.

Table 3 The values of EATR and EMTR from our model (2004 – 2018).

Title	Values	
	Tax depreciation rate	Accounting depreciation rates
Intangible assets	20%	15.3%
Agricultural buildings	5%	3.1%
Agricultural and forestry machinery	25%	17.5%
Basic herd and draught animals	25%	17.5%
Growing units of permanent crops	8.33%	4.5%
Estates	-	-
Inventories	-	-

Table 4 Relationship between EATR and EMTR.

Economic rent after tax	Retained earnings		Equity contribution		Debt	
	2004	2018	2004	2018	2004	2018
Intangible assets	0.0666	0.0564	0.0666	0.0564	0.0792	0.0710
Agricultural buildings	0.0874	0.0794	0.0874	0.0794	0.1000	0.0940
Agricultural and forestry machinery	0.0630	0.0518	0.0630	0.0518	0.0756	0.0664
Basic herd and draught animals	0.0630	0.0518	0.0630	0.0518	0.0756	0.0664
Growing units of permanent crops	0.0826	0.0741	0.0826	0.0741	0.0952	0.0887
Estates	0.1033	0.0976	0.1033	0.0976	0.1159	0.1122
Inventories	0.0996	0.0924	0.0996	0.0924	0.1122	0.1070
EATR (in %)	**Retained earnings**		**Equity contribution**		**Debt**	
	2004	**2018**	**2004**	**2018**	**2004**	**2018**
Intangible assets	40.06	45.41	40.06	45.41	41.32	46.87
Agricultural buildings	29.14	33.34	29.14	33.34	30.40	34.08
Agricultural and forestry machinery	41.95	47.83	41.95	47.83	43.21	49.29
Basic herd and draught animals	41.95	47.83	41.95	47.83	43.21	49.29
Growing units of permanent crops	31.66	36.12	31.66	36.12	32.92	37.58
Estates	20.79	23.78	20.79	23.78	22.05	25.25
Inventories	22.73	26.51	22.73	26.51	24.00	27.98
EMTR (in %)	**Retained earnings**		**Equity contribution**		**Debt**	
	2004	**2018**	**2004**	**2018**	**2004**	**2018**
Intangible assets	10.49	12.70	10.49	12.70	-26.48	-28.96
Agricultural buildings	18.45	20.46	1845	20.46	-11.15	-12.72
Agricultural and forestry machinery	12.56	14.72	12.56	14.72	-22.38	-24.60
Basic herd and draught animals	12.56	14.72	12.56	14.72	-22.38	-24.60
Growing units of permanent crops	16.10	18.18	16.10	18.18	-15.55	-17.36
Estates	22.19	24.11	22.19	24.11	-4.31	-5.54
Inventories	24.97	27.10	24.97	27.10	0.62	0.17
EATR ↔EMTR (in %)	**Retained earnings**		**Equity contribution**		**Debt**	
	2004	**2018**	**2004**	**2018**	**2004**	**2018**
Intangible assets	16.62	18.75	16.62	18.75	20.48	22.54
Agricultural buildings	18.83	20.44	18.83	20.44	17.24	19.16
Agricultural and forestry machinery	17.16	19.31	17.16	19.31	19.69	21.72
Basic herd and draught animals	17.16	19.31	17.16	19.31	16.96	21.72
Growing units of permanent crops	18.14	20.22	18.14	20.22	18.25	20.22
Estates	20.03	22.19	20.03	22.19	15.48	17.33
Inventories	20.99	23.09	20.99	23.09	14.06	15.70

Note: Source: own processing.

The funding methods that were processed during the analysis were oriented to financing from undistributed profit, new shareholders´ contributions and debt financing. However, in the analysis, there is an absence of personal taxes because our analysis follows commercial companies and their dividends are not taxed in Slovakian conditions. Capital costs for investments financed by a new contributions and investments financed by undistributed profits will be equal.

Thanks to our analysis, we found out the values of effective average tax rate and effective marginal tax rate, their differences and the economic income of the project including taxation, which means financial benefit from the investment project.

The analysis combines two effective tax rates (Table 3 and Table 4). The first one was EATR, which has a decisive impact on the placement of the investment (i.e. which country is appropriate for investing), and the second one was EMTR, which measures the extent of the investment in the country (i.e. the investment value). When we combine these two indicators, we got the relationship between EATR ↔ EMTR, which is crucial to make a decision on the investment realization, as well as evaluates the most advantageous relationship between the location, size and way of investment financing. EATR indicator includes the economic income of the project with taxation and expresses the size of the financial benefit of the project with the taxation aspect. The highest value of economic income is simultaneously the lowest level of EATR. The highest value of economic income in compared period reported estates (0.0976 in 2018 financed through own sources; 0.1159 in 2004 financed from external sources). For land, the level of EATR was at 20.79% in 2004, respectively 25.25% in 2018. On the other hand, the lowest value of economic income was reported by agricultural and forestry machinery, basic herd and draught animals in both analyzed years (values ranged from 0.0518 to 0.0756 that was financed through external sources). EATR for these assets was 41.95% in 2004 and 47.83% in 2018 for financing from own sources, and 43.21% and 49.29% for external financing. When deciding on the location of investments in Slovakia, the best option would be investment in land and inventories. On the other hand, the worst decision for an investor would be to invest in tangible assets in agricultural and forestry machinery, basic herd and draught animals and in intangible assets. Differences occurred in the assessment of individual periods, as it was a 2% increase in the statutory rate for reference period. In addition to the tax rate increase, the depreciation period for tangible assets changed, while intangible assets change did not affect. For buildings, the depreciation period increased from 20 years to 40 years, and for machinery and equipment from 4 years to 6 years. This change increased the tax base, and also had an impact on the overall 12% increase in EATR over the reporting period.

The second analyzed tax rate is EMTR. It expresses conventional way of measuring the impact of corporate tax on the level of investment capital. The basic idea of EMTR is that the investor will invest financial sources until the marginal capital value is equal to the cost of capital. It is clear that the marginal product is declining, resulting in a profit-maximizing income level. The higher EMTR, the higher cost of capital, and so it reduces capital inflow (or increases capital outflow).

When compared to the reference years, EMTRs increased by approximately 11.7%. The lowest rates and hence the most efficient investment options were at intangible assets, at 10.49% and for 2004 and slightly increased to 12.70% (2018), with own funds. The second effective investment appeared in tangible assets (agricultural and forestry machinery and basic herd and draught animals), which were between 12.56% and 14.72%. The most critical were investments of stocks, with rates exceeding 20% of the optimum value and reaching 24.97% and 27.10% for 2018 in 2004. The land plots were similar (22.19% and 24.11% respectively). The negative values reported by EMTRs in external financing (debt) were due to a 5% real rate of return on alternative investment, which reduced the cost of capital to negative rates. In other words, from the point of view of an investor wishing to carry out an investment project at the cost of capital considered, these negative rates are advantageous as they express savings over the optimal rate of return on an alternative investment, which is determined on average. Debt financing was most beneficial for intangible assets, with rates ranging from -26.48% to -28.96%. During this period, the cost of capital was 4.1% for 2004 and 3.8% for 2018, while the rate of return on alternative investment was 5%. The last measured variable is the relation EATR ↔ EMTR, by which we determine the impact of the tax on a hypothetical investment project. Given the specific structure of tax-legislative and business-policy conditions in individual countries, it is not easy for an investor to make the right decision to ensure the highest profit for him. It is by comparing these relations of the two rates that we find out to what extent the pre-tax profit is reduced by taxation. The results have shown that in this relationship the way of financing the investments is decisive. Although the most efficient placement and scale of investment appeared for intangible assets, but only for own-funded financing, rates in this item were 16.62% in 2004 and increased by 12% by 2018. What is interesting, however, when financing from external sources, these rates are the highest in the range of 20.48% to 22.54%. On the other hand, inventories (20.99% to 23.09%) showed the highest rates of financing from their own resources, while in financing from external sources they fell by 15% and appeared to be the most effective. Therefore, it is crucial for the investor to make these investments definitely from his own resources. Compared to the reference years 2004 and 2018, EMTR increased by approximately 11.7%. The lowest and simultaneously the most effective tax rates for investment conditions were reported in intangible assets (10.49% in 2004, 12.70% in 2018), while it was investments financed through own sources. The second most attractive investment, according to our analysis, was investment in tangible assets (i.e. agricultural and forestry machinery, and basic herd and draught animals) with values range from 12.56% to 14.72%. The most discerning investment represents inventories where effective tax rate exceeded 20% (24.19% in 2004, respectively 27.10% in 2018). Similarly, estates also had effective tax rate above 20% (22.19% in 2004, 22.11% in 2018). Negative values of EMTR in external debt financing were due to a 5% real rate of return

on alternative investment. It means that if an investor wants to realize investment project at the level of considered costs of capital, negative rates are favourable as they represent savings over the optimal rate of return on an alternative investment. The most beneficial for intangible assets was debt financing, with rates ranging from -26.48% to -28.96%. During the period, cost of capital was 4.1% for 2004 and 3.8% for 2018, while the rate of return on alternative investment was 5%.

The last analyzed variable, which can explain the impact of taxation from a hypothetical point of view, is a relationship EATR ↔ EMTR. Since a specific structure of tax-legislative and business-political conditions in individual countries, for investor is very hard to make a decision about investment. Comparing this relationship, we found out how much pre-tax profit is reduced by tax. Results showed that there is a decisive way of investment financing in this relationship, as well. The most effective investment location from tax rate view was in intangible assets (16.62% in 2004, and until 2018 an increase by 12%), however only if investment is financed by own sources. We found interesting that when external financing is used, tax rates are the highest and range from 20.48% to 22.54%. On the other hand, inventories reported also the highest tax rates in financing through own sources, while in financing from external sources there was reported a reduction in tax rate by 15%. Therefore, it is crucial for investors to make a decision about investment financing through own sources.

In summary, we can state that overall the lowest tax rate have location and investment amount. It is tax rate which takes into account economic conditions, as well as costs of capital, accounting and tax depreciations, inflation rate and nominal interest rate (so called "shareholder discount rate"). When investors take into consideration all of these tax rates, then the investment decision is the most effective and most optimal.

In literature, the effect and impact of differences in tax rates on investment decisions was analyzed by **Arachi and Biagi (2005)**, **Hanlon and Heitzman (2010)**, **Feld and Heckemeyer (2011)**. Also **Devereux, Griffith and Klemm (2002)** states that with different forms of EATR and EMTR monitoring, capital can be financed from different sources, including debt financing, as our analysis showed.

According to **Blechová (2015)**, the impact of the taxes on the return of planned investments (in case of their implementation in different countries) was negatively correlated. It means the higher was the indicator of effective average taxation, the less attractive were these countries for potential investors. In our case, the rate was based on the type of capital, and the land and inventories were the most attractive investments for investors. In case of capital location and investment amount, the most attractive investments were in agricultural and forestry machinery and basic herd and draught animals.

Devereux, Griffith and Klemm (2004) claim that the placement of investments is clearly affected by differences in tax rates. EATR and EMTR as well as statutory tax base are crucial indicators to make a decision about placement and amount of investment. **Vegh and Vuletin (2012)** states that it is also decisive to take into account various specifics of tax politics of individual countries. In general, an increase in statutory tax rate will lead to lower investment, and thus to a reduction in the returns from production factors other than capital.

Reduction of agricultural taxable income is possible due to various reliefs and specificities of the country's tax system, which governments provide mainly to small farmers **(Andersen et. al., 2002)**. The fair taxation in agriculture is lacking, especially in developing countries. in these rural areas, poverty reduction through support for agriculture is very challenging **(Khan, 2005)**. The amount of the agricultural tax is closely associated with the specific tax rate, which is linked to specific crops. However, its changes depend on the purchase price of the crop and, therefore, there are often changes at the level of the agricultural tax burden **(Felis, 2015)**. In comparison to non-agricultural incomes, agricultural income may be less burdened by taxation, as the tax burden is not affected by the amount of income actually generated. **Severini, Tantari and Rocchi (2014)** claim that regressive effects of agricultural taxation are mainly felt by households. **Durst and Monke (2001)** point out the occurrence of negative effective tax rates is only temporary and it should not be relied on by farmers in the long-term period. The negative effective tax rates in the agricultural sector are influenced mainly tax credits and deductible items that compensate for investment income. In the analysis, negative tax rates for effective taxation were found only in external financing, which was affected by a 5% real rate of return on alternative investment.

CONCLUSION

Effective tax rates play a crucial role in the allocation of investments, and also in determining the amount of investments that will generate future profits. In our analysis, we focused on the impact of effective taxation on costs of capital in determining the net present value of the specified investment project. Based on the level of effective marginal tax rate and effective average tax rate, we identified the optimal selection of investment projects and investor´s support in decision making about the amount and location of investment. EATR included economic income that reported the lowest value of agricultural and forestry machinery and basic herd and draught animals during the period, while the value ranged from 0.0518 to 0.0756, with a higher value calculated on external financing. The lowest value of economic income shows the highest value of EATR, and the rate of these assets was at the level of 41.95% in 2004, respectively 47.83% in 2018 for own funds, and 43.21% in 2004 and 49.29% in 2018 for external financing.

According to the analysis we found that the lowest EATR was reported by land in both reporting periods and for both financing methods. When deciding on the location of investments in Slovakia, the most advantageous option is investment in land, followed by stocks. Over the reference period, EMTR increase by approximately 12%. The lowest and the most effective tax rate for investment conditions were reported in intangible assets (10.49% in 2004, 12.70% in 2018), while it was investments financed through own sources. Negative values of EMTR in external debt financing were due to a 5% real rate of return on alternative investment. It means that if an investor wants to realize investment project at the level of

considered costs of capital, negative rates are favourable as they represent savings over the optimal rate of return on an alternative investment. Differences also occurred in the assessment of individual periods, as this was a 2% increase in the statutory rate for the reference period. In addition to the rate increase, the depreciation period for tangible assets changed, while the intangible assets did not affect.

The last monitored variable was the relation EATR ↔ EMTR, which is decisive on the location and investment amount. Our results proved and made it clear that in this relationship the way of financing investments is also very crucial. Intangible assets, whose rate was 16.62% (2004) and increased by 12% by 2018, were decisive for the investor's own funding. In financing from external sources, stocks were most effective, with rates ranging from 14.06% to 15.70% over the reporting period. Our results definitely confirm that the relationship EATR ↔ EMTR is decisive for investors. In summary, we can conclude that Slovakia is certainly an interesting and challenging country from the tax point of view and has a lot to offer to foreign investors.

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