Indicators of the Corporate Income Tax Burden in Macedonia

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Abstract

This article represents an extensive analysis of the reliable tax burden indicators on corporate income in the Republic of Macedonia (RM). It is obvious for the majority of European Union (EU) countries that the already developed tendencies of increased tax rates as an appropriate answer for the ongoing economic crises and the enlarged public debt are not working. On the other side, Macedonia is one of the few countries that has managed to keep its tax policy relatively unaffected and unchanged by the actual crisis. The purpose of this paper is to establish and analyze the most important corporate income tax (CIT) burden measures in the domestic economy. They include the general indicators of the CIT burden, such as the statutory tax rate, tax revenue structure and the CIT/GDP ratio, as well as the measurements of effective tax rates. The last group of indicators commonly consists of the cost of capital, the effective marginal tax rate (EMTR) and the effective average tax rate (EATR) which in this paper are calculated according to the widely accepted Devereux-Griffith methodology. The results of the analysis will clearly show that the implemented domestic tax policy reforms have transformed this country into one of the most, if not the most favorable tax country for investment in Europe.

JEL Classification Numbers: H25, H32, D92

Keywords: corporate income tax**,** cost of capital, effective marginal tax rates, effective average tax rates, Republic of Macedonia

Introduction

The Corporate Income Tax System in the Republic of Macedonia has always been subject of continuous reforms and additional improvements, especially in the period after the country became a candidate for EU membership in 2005. Like most transition countries, since it experienced a deficit of capital in the period after its independence, Macedonia has chosen to develop a consumption-based corporate income tax. Practically this means that the tax burden of corporate income is excessively targeted to its shares that are intended mostly for consumption, while the parts of income whose purpose is to be saved or reinvested are generally levied with lower tax burden or eventually exempted from taxation (Rose & Wiswesser, 1998). A major shift in the concept of taxation started in 2006 when a flat tax rate was introduced and lowered at the same time (from 15% in 2006 to 12% in 2007 and to 10% in 2008) and culminated in 2009 when the split rate corporate tax system was implemented.[1] Despite the fact that the economic crisis gained in intensity in the following years, the government did not change its tax policy course; no other significant tax code alterations have been done after 2009.

The aim of this article is to evaluate the effect of the implemented tax code derogations as well as the tax policy relevance in Macedonia in the period from 2006 to 2012, by using of some of the most reliable effective tax burden measures. According to the European Commission recommendations, the standard methodology is based on the Devereux-Griffith approach (1999). Measurements of the effective tax rates on domestic investment include: the cost of capital, the effective marginal tax rate (EMTR), as well as the effective average tax rate (EATR). After the literature review, this article will analyze the general tax burden indicators, such as the statutory tax rate, tax revenue structure and the CIT/GDP ratio. Secondly, the paper contains short elaboration and practical application of the proposed methodology in the case of RM, as well as the full analysis of the estimated results. The comparative approach of the estimated effective tax rates aims to confirm the thesis that Republic of Macedonia has achieved and maintained low corporate tax burden and has promoted itself as a favorable investment location.

[1] In Macedonia, corporate profits are only taxed at a rate of 10%,if they are distributed. This measure, which was originally called "Tax exemption on undistributed earnings", was basically intended to create strong incentives for reinvestment of retained profits. A similar concept was implemented in Estonia.

Literature review

The growing need for assessment of the impact of taxation on investment, employment and the overall economic performance has resulted in creation of some alternative tax burden measures over the last decades. Some of the most commonly used measures available to the modern tax policy analysis are the following: nominal (statutory) tax rates, tax-to-GDP ratios, average effective tax rates and the marginal effective tax rates (OECD, 2000). Since nominal tax rates and tax-to-GDP ratios have certain limitations concerning the ability for appropriate evaluation of the effective tax levels, the international organizations give more credibility to the last two measures.

According to Mervyn A. King and Don Fullerton[2] (1984), the measurement of effective tax rates may not be straightforward, but since the incentive for additional investment is a function of the marginal tax rate, this requires a precise definition of the margin involved. The definition of the marginal investment is established as: "a small increase in the level of real investment in the domestic nonfinancial corporate sector, financed by an increase in the savings of domestic households" (King & Fullerton, 1984: 8), thus implying that the investment does not generate rent over time. The authors propose the effective marginal tax rate as a ratio between the tax wedge and the pre-tax rate of return $(p^{\sim} - s) / p^{\sim}$, where the first term (the tax wedge) represents the difference between the pre-tax rate of return on investment $p^{\sim}$ and the post-tax rate of return on savings s. Constructed as shown, the EMTR actually determines the share of return on a marginal investment which is cut by taxation.

Unlike the METR, "the effective average tax rates (EATR) reflect the percentage reduction of the net present value of a profitable, infra-marginal investment that is caused by taxation" (Overesch, 2005: 56). The concept of EATR, which was developed by Michael P. Devereux and Rachel Griffith[3] (1999), assumes that the investment project on a specific location, must generate a rate of return

[2] The basic study on marginal effective tax rates was performed by the authors King and Fullerton (1984), which was originally based on the papers of Jorgenson (1963), Hall and Jorgenson (1967), and King (1974), and essentially represents a natural extension of the cost of capital approach. The study of King and Fullerton: *"The taxation of income from capital: A comparative study of the United States, the United Kingdom, Sweden and Germany"* is the first to compare METR for different countries using a unified methodology.

[3] The methodology of the authors Devereux and Griffith (1999), was proposed in the work*: "The taxation of discrete investment choices"* and it extended the already existing concept proposed by King and Fullerton. During the following years (2002, 2003) they refined their approach, which resulted in a standardized methodology accepted by most of the economic organizations and institutions.

above the cost of the capital (or in other words, economic rent). When companies are faced with the choice between mutually exclusive investment projects, they will always accept the most profitable one. Since location choices for affiliates of the multinational corporations are generally associated with the choice of the alternative project with the highest post-tax net present value, the level of EATR could be a crucial determinant during the decision process. Additionally, "the EATR is an important indicator for the attractiveness of a location, whereas the cost of capital indicates the optimal size of an investment" (Overesch, 2005: 57).

In order to develop an effective average tax rate, Devereux and Griffith had to scale the difference in the net present value of the project in the presence and absence of tax by the net present value of the economic rent (which is equivalent to the net present value of the project in absence of tax). This means that the EATR is an expression of the level of tax burden for a different level of profitability. They argue, that if the project yields a rate of return p equal to the cost of the capital $\tilde{p}$, than EATR = EMTR, which means that the marginal tax rate is the dominant factor influencing the effective tax burden. In this case, the elements that constitute the marginal tax rate (e.g. tax depreciation allowances) might be relatively important for the project. On the other hand, as the profit rate increases and exceeds the cost of capital, the more the EATR converges to the adjusted statutory corporate tax rate T. This indicates that for a very profitable investment, the statutory corporate tax rate becomes the predominant indicator of the effective tax burden. In this scenario, the elements such as the treatment of expenses and depreciation allowances are less important for the investor. This relation between the cost of capital, EMTR and the EATR is formulated by the following expression (Devereux and Griffith, 2002: 112):

$$[1] \qquad EATR = \left(\frac{\tilde{p}}{p}\right) EMTR + \left(1 - \frac{\tilde{p}}{p}\right) T$$

Consequently, the differences in corporate taxation among the countries might influence two major corporate decision concerns: first, the concern about the location of real investment project and second, the concern of the location of the profit declaration for tax purposes. Consequently, the tax authorities might be able to exploit the behavior of the multinational corporations stated above, and implement an appropriate strategy for reduction of the statutory corporate tax rates. Eventually, this approach in the tax policy could create a "tax favorable investment environment" designed to attract highly profitable international investment projects.

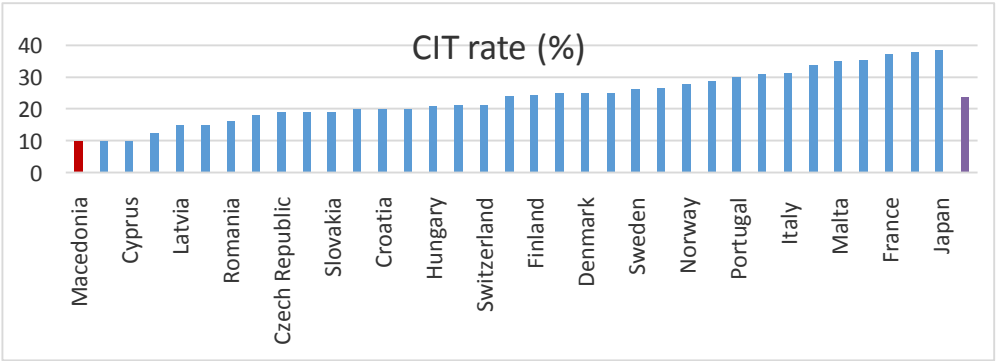
Basic CIT burden indicators

The actual CIT system in Macedonia was introduced in 2006 as a part of the government's new tax policy reform. Except for the harmonization of the tax rules, the other priorities were to maintain a tax structure that would enable relatively simple and easy administration, and at the same time would provide a comparatively lower effective tax burden. Simply put, the development of programs had to create more a stable and much safer investment environment through improvements of system's transparency. We will analyze the basic elements, which determine the tax burden level such as: the statutory CIT rate, tax structure and the CIT-to-GDP ratio.

Although the ***CIT rates*** are not a relevant presentation of the effective tax burden levels, some experts still consider them as one of the simplest and most transparent indicators for the purpose. "The fact that the level of CIT rate actually does represent a significant incentive instrument is clearly demonstrated by the constant lowering of tax rates among transition countries, i.e. their so called - race to the bottom-" (Šimovic, 2009: 4). And Macedonia is not immune to that process, as demonstrated in Table 1 from the appendix below.

Table 2 from the appendix, compares the statutory CIT rates among European countries as well as Turkey, Canada, USA and Japan. These countries are divided in three groups: countries that implement relatively low CIT rate (below 20%); a middle group with CIT rates between 20% and 30%; and a group with relatively high CIT rate (above 30%). As we can see, Macedonia is one of the countries with the lowest mandatory CIT rate of 10%, together with Bulgaria and Cyprus. This is an extremely low rate, which is 2,37 times lower than the average CIT rate. The previous is illustrated in Figure 1

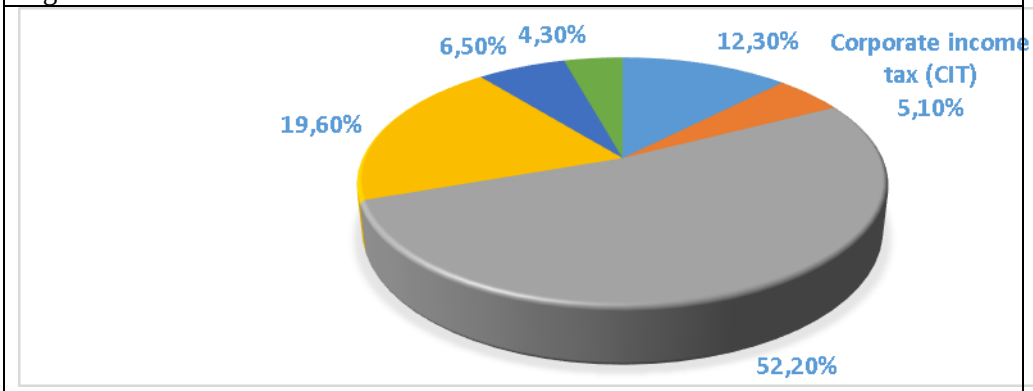
Figure 1: Statutory CIT rates in 2012



Source: ZEW (2012)

When a ***tax structure*** is observed, it can serve as a general indicator for the significance of the different types of tax revenues. Nevertheless it is considered as a primary indicator of the tax burden as well, but essentially a backward-looking one. Table 3 (see the appendix below) represents the tax revenue structure of RM in 2010. It is clearly shown, that CIT is the least significant contributor with 5,1% participation in the overall tax revenue structure. Figure 2, illustrates the same.

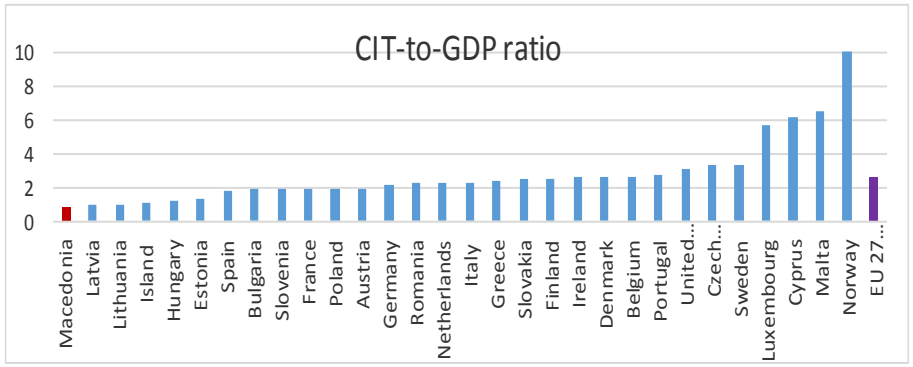
Figure 2: Tax revenue structure of RM in 2010



Source: Ministry of finance 2011

Figure 3 shows the ***share of CIT in the GDP*** in EU-27 countries and Macedonia. Again, the share of CIT in the GDP in Macedonia is the lowest compared to all 27 EU countries. In 2010, CIT-to-GDP ratio was only 0,9 percentage points, exactly 3 times lower than the arithmetic average. This condition is similar to the countries with consumption-based system such as Latvia, Lithuania, Ireland, Hungary, and Estonia. On the other hand, Luxembourg, Malta, Cyprus and especially Norway are the countries with the highest share of CIT in the overall GDP (for example, Norway had 10,1% CIT-to-GDP ratio in 2010), which indicates the fact that the more the country is developed, the higher the CIT burden is.

Figure 3: CIT-to-GDP ratio in EU (%)



Source: Eurostat (2012)

The proposed methodology in the case of Macedonia

According to Devereux & Griffith (1999, 2002, 2003), the model assumes a hypothetical investment project undertaken by a corporation in the manufacturing sector. The corporation can invest in 5 different assets weighted equally: 1. buildings – or industrial buildings; 2. Equipment or machinery; 3. intangibles-especially patents; 4. financial assets; and 5. inventories. True economic depreciation rates assumed for the assets are: buildings 3,1%, equipment 17,5%, intangibles 15,35%, financial assets 0% and inventories 0%. The financial strategy of the hypothetical investment project consists of three different sources of finance, which are also weighted equally: 1. debt from external lenders; 2. new equity capital; and 3. retained earnings. EATR is calculated by assuming a pre-tax real rate of return of 20%, real interest rate of 5%, and inflation rate of 2%. The calculation of EATRs in this article considers only the taxes at the corporate level (taxes at shareholders level are ignored). This assumes all personal tax rates to be zero. The structure of the corporation is assumed to be without a controlling company as well. Table 4 from the annex below, summarizes the relevant economic parameters assumed for the purpose of calculation and Table 5 contains the essential elements of the Macedonian tax code.

General expression for the EATR in absence of personal taxes is constructed as:

[2] $$EATR = \frac{R^* - R}{p/(1+r)}$$

where

[3] $$R^{*} = \frac{p-r}{1+r} = \frac{0,2-0,05}{1+0,05} = \frac{0,15}{1,05} = 0,1429$$

is the economic rent of the project in the absence of taxes, and p is the assumed pre-tax real rate of return proposed to be 20% or 0,2. If we take this into consideration, the EATR can be rewritten as:

[4] $$EATR = \frac{0,1429-R}{0,2/(1+0,05)} = \frac{0,1429-R}{0,1905}$$

Term (R) from the equation is the economic rent of the project in the presence of taxes, measured as:

[5] $$R = \frac{\gamma}{1+\rho}\{(p+\delta)(1+\pi)(1-t) - vt\pi - [\rho+\delta(1+\pi)-\pi](1-A) - (1+\rho)e\} + F^{NE} + F^{DE}$$

where δ is the true economic depreciation rate, π is the inflation rate, r real interest rate, p is the pre-tax real rate of return, i represents the nominal interest rate found from the expression $i = (1 + r)(1 + \pi)$ - 1, and yields value of 0,071 or 7,1%. The term ρ is the shareholder's discount rate. In the case of the calculation of EATR at the corporate level only, personal taxes are assumed to be 0, hence, the shareholder's discount rate is identical with the nominal interest rate $\rho = i$ = 7,1 or 0,071. Symbol t, represents the nominal corporate income tax rate and e the real estate tax rate, both payable in the period in which the investment is undertaken. We must notice that the real estate tax rate (or the property tax rate) in the Republic of Macedonia, is usually applied only in the case of investment in buildings, with a rate of 0,1%.

One of the most important variables is the tax discrimination variable γ, which is used to measure tax discrimination between new equity and distributions. If we consider m^d to be the personal tax rate on dividend income, z the effective personal tax rate on capital gains and c the tax credit rate allowed for dividends paid, then:

[6] $$\gamma = \frac{(1-m^{d})}{(1-z)(1-c)}$$

In the absence of personal taxes, since $z = m^d = 0$, the equation automatically yields $\gamma = 1$. This was the case in the period from 2006-2008. In 2009, the implementation of a split rate system generated a different value for γ. Since retained profits are not taxed (t = 0) and corporate profits are taxed at a 1% rate only when they are distributed (t^d=0,1), the tax discrimination variable in 2009 is calculated as:

$$[7] \qquad \gamma^{2009} = \frac{(1-t^d)}{(1-t)}\gamma^{2008} = \frac{(1-0{,}1)}{(1-0)}1 = 0{,}9$$

A special attention should be given to the term $vt\pi$. Actually, it reflects the cases of taxation of inventories and financial assets and it depends largely on the method of valuation for tax purposes. In the case when these assets are valued on FIFO basis, then $v = 1$, in the case of LIFO, $v = 0$, and if the average cost method is used, then $v = 0{,}5$. In the Republic of Macedonia, the treatment of financial assets implies $v = 1$, and since the average cost method is in force for the treatment of inventories, in this case $v = 0{,}5$.

Parameter A represents the net present value of tax depreciation allowances for the different assets. Although the Macedonian tax code recognizes all of the standard depreciation methods and gives an opportunity for the specific functional method, the Ministry of Finance restricts the choice to the straight-line method as the only relevant depreciation method. Depending on the method of depreciation (declining-balance method, inclining balance method or straight-line depreciation method), parameter A generates different values. Here, we give the general expression for the NPV of tax depreciation allowances only for the straight-line depreciation method, since it is the official depreciation method:

$$[8] \qquad A = t\phi\left\{\left(\frac{1}{1+\rho}\right)+\left(\frac{1}{1+\rho}\right)^2+\ldots+\left(\frac{1}{1+\rho}\right)^L\right\}$$

or alternativelly:

$$[9] \qquad A = t\phi\frac{(1+\rho)^L-1}{\rho(1+\rho)^L}$$

where L is the length of the depreciation period (expressed in years) and φ is the depreciation rate for the different assets allowed for tax purposes. In RM, the tax depreciation rate for the buildings is taken to be 5%, for the equipment (machinery) 14,28% and for the intangibles 20%, calculated as an equally weighted average rates in each asset depreciation group. Consequently, translated in years, the lengths of depreciation periods are 20, 7 and 5, respectively. For the other two assets (financial assets and inventories), depreciation rates are logically 0.

The financial constraints of investment depend largely on the source of finance (Devereux & Griffith, 1999). For example, in the case of reinvestment of retained earnings, the project is financed by a reduction in dividend payments in the current period *n*, hence debt and equity issues are unaffected. This implies F^{RE} to be zero. When there is a case of new equity finance, than the firm issues new equity in the current period *n* of $1\text{-}\varphi t$. This means that a physical investment of 1 can be

covered since an immediate tax allowance of φt can be claimed. The financial constraints for the new equity issues F^{NE} are expressed as:

[10] $$F^{NE} = -\frac{\rho(1-\gamma)(1+e)}{(1+\rho)}$$

where the negative prefix indicates that the company repurchases the new equity in the follwing period n+1 at the original price. In the case of debt finance investment the company borrows 1-φt in the curent period n, and must repay the debt includind the interest i in the next period n+1, hence the financial constraints F^{DE} of the project are calculated as:

[11] $$F^{DE} = \frac{\gamma(1+e)(\rho - i(1-t))}{1+\rho}$$

The absence of personal taxes, since $\gamma = 1$, implies that $F^{NE} = 0$. From 2009 to 2012, when the split rate system is in force, $\gamma = 0{,}9$, hence F^{NE} yields a different value, presented below in Table 6.

The effective marginal tax rate is defined identically as previously mentioned:

[12] $$EMTR = \frac{\tilde{p} - s}{\tilde{p}}$$

where $\tilde{p}$ is the cost of capital (pre-tax rate of return on investment) defined as:

[13] $$\tilde{p} = \frac{(1-A)\{\rho + \delta(1+\pi) - \pi\} + \nu t\pi + (1+\rho)e}{(1+\pi)(1-t)} - \frac{F(1+\rho)}{\gamma(1+\pi)(1-t)} - \delta$$

while s represents the post-tax rate of return on savings:

[14] $$s = \frac{[(1-m^i)i - \pi]}{(1+\pi)}$$

Because the personal tax rate on interest income is zero ($m^i = 0$), the post-tax rate of return s is identical with the real interest rate r ($s = r = 0{,}05$). Table 6 summarizes the derived input parameters used for calculation of the EATRs in period 2006-2012.

The cost of capital, EMTR and EATR in Macedonia

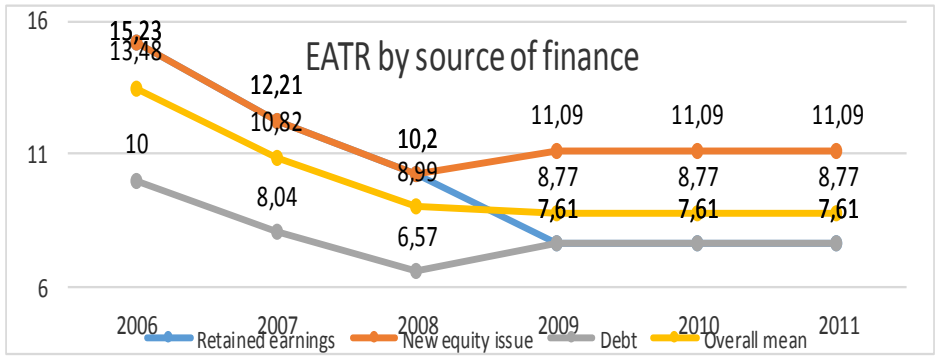
Table 7, from the appendix below, shows the estimated values of the ***cost of capital*** in Macedonia in the period 2006-2012. The results indicate that in every case of investment financed with retained earnings and new equity issue, the cost of capital is higher or equal to 5%, which is the level of the real rate of return. The highest value of 5,93% is measured in 2006, while the lowest of only 5,02% was in the period 2009 to 2012. In case of investment financed with external debt, the values are mostly lower than the real rate of return, ranging from 4,70% to 5,02%. As a general rule, this means that the domestic tax system subsidizes investment financed with debt compared to the other types of investments. On the other hand, the analysis of the results for the cost of capital on investments by the different type of asset, points to the fact that the investments in intangibles and buildings have the lowest minimum rate of return. Investments in inventories and especially in financial assets represent the group of assets with the opposite conclusion.

Estimated values of the ***effective marginal tax rates*** are presented in the appendix in Table 8. The significance of this measure is seen in the fact that the allocation efficiency of the system depends largely on the effective marginal tax burden levels. Therefore, EMTR is appropriate for measuring the extent of the available incentives built in the system. Concerning the results of the EMTR, we can generalize similar condition as in the previous case. Basically, investments with retained earnings and new equity issue generate positive values of EMTR, the highest of 15,58% in 2006, and the lowest of only 0,39% from 2009 to 2012. Positive values of EMTR indicate that the cost of capital for these investments is higher than the real rate of return, meaning that in these cases there is a positive taxation on the marginal unit of investment. On the contrary, the EMTR on investments covered with external debt shows negative values in the period from 2006 to 2008, with the highest negative value of -6,57% registered in 2006. After that, a small positive value of 0,39% is measured in the period 2009 to 2012. The negative prefix in the first period indicated the presence of positive incentives that resulted in values of the cost of capital lower than 5%, automatically subsidizing the marginal investment financed with debt. Positive values from the second period demonstrate the beginning of a more restrictive approach in the tax policy, concerning the debt type investments.

Table 9 from the annex below, summarizes the estimated values of ***effective average tax rates*** in Macedonia, calculated with assumed pre-tax real rate of return of 20%. The analytical value of the EATR arises from its ability to indicate the part of the corporate income that is being effectively cut by taxation, but, unlike EMTR, the EATR indicates the effective reduction of the net present value of a profitable, infra-marginal investment. It is a very useful instrument during the decision making process for evaluation of location specific discrete investment choices.

The results of the *EATR by source of finance* (see details in the appendix, Table 10) explicate again that investments financed with retained earnings and equity issues have the highest values of EATR. Precisely, EATR on investment financed with retained earnings range from 15,23% in 2006 to 7,61% in 2009-2012, while EATR on investment financed with new equity issues vary from 15,23% in 2006 to 11,09% in 2009-2012. Investments financed with debt, again demonstrate the lowest values ranging from 10,00% in 2006 to 7,61% in 2006-2012. In conclusion, the implementation of the split rate tax system resulted in lower tax burden on investments financed with retentions (since retained profits are exempt from taxation) and higher burden on investments covered with equity issues (since distributions of profits are taxed). The aim of this strategy was to generate strong incentives for reinvestment of retained profits, and reduce the chances for their consumption in a form of dividend distributions. As a result, the system actually discriminates new equity in favor of retained earnings, although the overall burden remains even lower. Additionally, an interpretation can be given that this measure puts the old mature companies in a superior position, as they possess more abundant accumulated reserves, as opposed to the young emerging enterprises. The previous trend is illustrated in figure 4.

Figure 4: EATR by source of finance in RM, 2006-2012 (%)



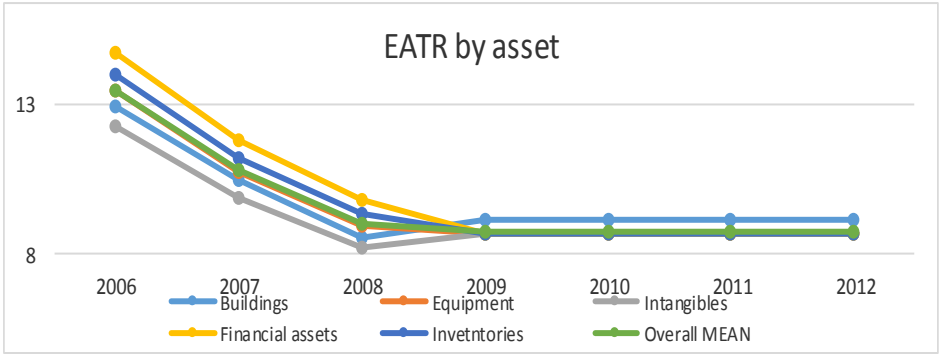
Source: Author's calculations

The *EATR range by the asset composition* is similar to that previously mentioned. In more detail (see Table 11 from the annex below), the EATR on investment in buildings[4] vary from their highest value of 12,94% in 2006 to their

[4] Buildings enjoyed relatively high tax privileges at the beginning of the observed period, since construction is considered as one of the sectors with the highest priorities for the Macedonian government. In the following years the government's support for the construction sector was realized more in a form of direct economic measures (such as

lowest of 9,15% in 2009-2012, investments in equipment have a slightly higher EATR with a range of values from 13,46% to 8,68%, the EATR on investment in inventories vary from 14,01% to 8,68%, financial assets are the least tax favorable investment option with EATR varying from 14,75% to 8,68, and finally intangibles represent the other extreme investment option as they enjoy the highest privileges of the tax system. Generally, this categorization is determined by the tax treatment of depreciation allowances for each asset group. This is presented below in Figure 5, which illustrates the process of convergence of the EATR as a result of the implementation of the split rate system. The small difference in the value of EATR occurs only for the buildings in the same period, from 2009 to 2012, as a result of the real estate tax rate applied only for this specific asset category.

Figure 5: EATR by asset in RM, 2006-2012 (%)



Source: Author's calculations

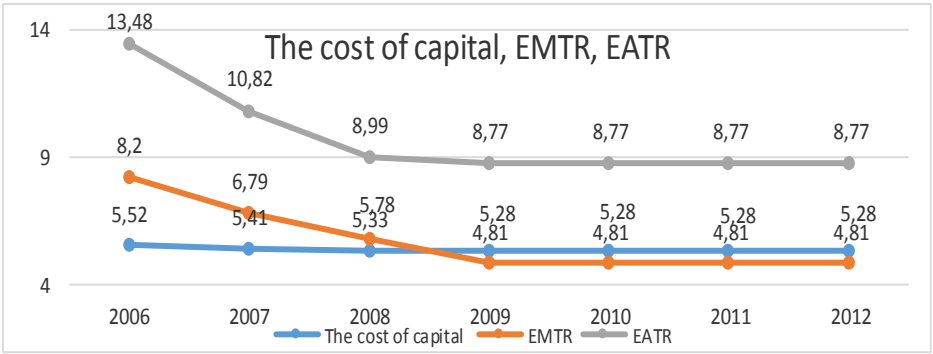
In the following section we pay attention on the *trend analysis of the relevant tax burden indicators* in the observed period. These trends are presented in Table 12 and illustrated in Figure 6. It is clearly shown that the trend lines for the three indicators are downward sloping, meaning that there have been decreasing tendencies of their values in the period 2006 to 2012. For example, the overall mean value of the cost of capital has decreased from 5,51% to 5,28%, the overall EMTR from 8,2% to 4,81% and the overall mean EATR from 13,48% to 8,77%. It is necessary to mention that these values are extremely low compared to the other countries, especially in the period 2009 to 2012. This is mainly due to the lowering of the CIT rates in the relevant period, and particularly due to implementation of the

direct investment in infrastructure and buildings) in exchange for the tax incentives which are a typical indirect form of measure. As an example, we refer to the government's project "Skopje 2014" which was developed for revitalization of the Macedonian capital.

split rate tax system. The decreasing values of the indicators represent a clear picture of the tax policy reforms undertaken for improvement of the overall investment environment in Macedonia in the observed period from 2006 to 2012.

Table 13 from the appendix below, compares the *effective rates of the presented countries according to their estimated levels.* Similarities can be found as in the case of the CIT rate, as they are classified in three groups of countries: countries with EATR below 20%, countries with EATR between 20% to 30%, and countries with EATR above 30%. Macedonia, Bulgaria, Cyprus, Latvia, Lithuania, Ireland and Romania are the countries with the most tax favorable investment environments, while Malta, Spain, France, and especially USA and Japan represent the group with the highest levels of EATR. Economists argue that extremely high effective rates, similar to those from the third group of countries, may disrupt the investment environment, ultimately driving the foreign investors abroad.

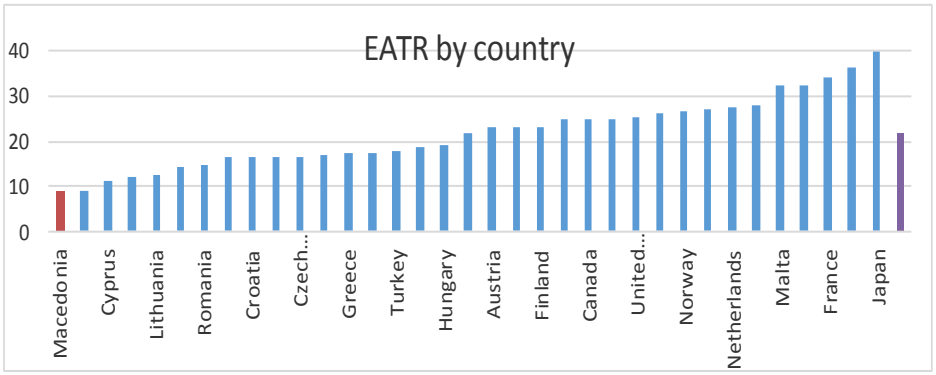
Figure 6: The cost of capital, EMTR and EATR (Overall mean) (%)



Source: Author's calculations

Finally, the analysis of the *EATR by country*, undoubtedly demonstrates the comparative advantages of the Macedonian tax system. The data shows (see Table 13 and Figure 7), that in 2012 Macedonia had the lowest overall EATR with a value of 8,8%. From the aspect of the level of the EATR, it is a clear indication that RM offers an extremely favorable investment environment. The treatment of investments, especially if they are financed with debt and retained earnings, makes this country the leader in the observed group from the perspective of tax favorability and economic performance. Therefore, we may conclude that Macedonia represents an exceptionally favorable and attractive location for investment compared to the other observed countries.

Figure 7: EATR by country



Source: ZEW (2012), author's calculations

Conclusions

The aim of this article is to analyze the reliable tax burden indicators on corporate income in Republic of Macedonia. Measurements of the effective tax rates on domestic investment include: the cost of capital, the effective marginal tax rate (EMTR), as well as the effective average tax rate (EATR).

Estimated values of the ***cost of capital*** in the period 2006-2012 indicate that investment financed with retained earnings and new equity issue have the highest values. In case of investment financed with external debt, the values are mostly lower than the real rate of return. This means that the domestic tax system subsidizes investment financed with debt compared to the other types of investments. Concerning the results of the ***EMTR***, we can generalize conditions similar to the previous case of the cost of capital. Basically, investments with retained earnings and new equity issue generate positive values of EMTR, while investments covered with external debt show negative values of EMTR, automatically subsidizing the marginal investment financed with debt.

The analytical value of the ***EATR*** arises from its ability to indicate to the part of the corporate income that is being effectively cut by taxation. The results of the *EATR* by source of finance again show that investments financed with retained earnings and equity issue have the highest values of EATR and investments financed with debt demonstrate the lowest values. In the period from 2009 to 2012, the implementation of the split rate tax system resulted with lower tax burden on investments with retained earnings and higher burden on investments covered with equity issues. This means that the actual tax system discriminates new equity in

favor of retained earnings, although the overall burden remains even lower. The *EATR* range by the asset composition indicates that financial assets are the least tax favorable investment option while intangibles represent the other extreme investment option. The trend analysis of the tax burden indicators in the observed period clearly shows that the trend lines for the 3 (three) indicators are downward slopping, meaning that there have been decreasing tendencies of their values in the period 2006 to 2012. This is mainly the result of lowering of the CIT rates in the relevant period, and particularly due to implementation of the split rate tax system. The decreasing value of the indicators represent a clear picture of the tax policy reforms undertaken for improvement of the overall investment environment in Macedonia in the relevant period from 2006 to 2012. The analysis of the *EATR by country*, undoubtedly demonstrates the comparative advantage of the Macedonian tax system with its lowest overall EATR of 8,8% in 2012.

At the end we may conclude, that from the aspect of the level of EATR, as well as from the other significant indicators, that Macedonia offers an *extremely favorable investment environment* and represents an *exceptionally attractive location for investment* compared to the other countries.

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Appendix:

Table 1: CIT rates in Macedonia in the period 1993-2012

Period	Statutory CIT rate
1993 - 1995	30%
1996 - 2006	15%
2007	12%
2008	10%
2009 - 2012	0% on undistributed profits (10% on distributions)

Source: CIT code (1993- 2009)

Table 2: Statutory CIT rates (ranged values)

Below 20%	CIT Rate	Between 20%-30%	CIT Rate	Above 30%	CIT Rate
Macedonia	**10,0**	Greece	20,0	Portugal	30,0
Bulgaria	10,0	Croatia	20,0	Germany	31,0
Cyprus	10,0	Turkey	20,0	Italy	31,3
Ireland	12,5	Hungary	20,8	Belgium	34,0
Latvia	15,0	Estonia	21,0	Malta	35,0
Lithuania	15,0	Switzerland	21,2	Spain	35,3
Romania	16,0	United Kingdom	24,0	France	37,1
Slovenia	18,0	Finland	24,5	USA	37,9
Czech Republic	19,0	Austria	25,0	Japan	38,6
Poland	19,0	Denmark	25,0		
Slovakia	19,0	Netherlands	25,0		
		Sweden	26,3	**Average:**	**23,7**
		Canada	26,5		
		Norway	28,0		
		Luxembourg	28,8		

Source: ZEW (2012)

Table 3: Tax revenue structure in Macedonia, 2010

Taxes	**Revenues (million €)**	**Structure (%)**
Personal income tax (PIT)	144,3	12,3
Corporate income tax (CIT)	60,0	5,1
Value added tax (VAT)	612,9	52,2
Excise duties	229,9	19,6
Import taxes and customs duties	76,6	6,5
Other	49,5	4,3
Total	**1.173,2**	**100**

Source: Ministry of finance (2011)

Table 4: Assumed economic parameters

Parameters:	**Symbol**	**Value**
True economic depreciation rate	δ	
- industrial buildings		3,1%
- equipment (machinery)		17,5%
- intangibles		15,35%
- financial assets		0%
- inventories		0%
Real interest rate	r	5%
Inflation rate	π	2%
Pre-tax rate of return	p	20%

Source: Devereux & Griffith (2002)

Table 5: Tax code parameters

Relevant domestic tax parameters:	**Symbol**	**Value**
Capital allowances (straight-line method): - industrial buildings (L=20 years) - equipment (machinery) (L=7 years) - intangibles (L=5 years) - financial assets (L=0 years) - inventories (L=0 years)	φ	 5% 14,28% 20% 0% 0%
Treatment of inventories (average cost method)	v	0,5
Treatment of financial assets	v	1
Corporate tax rate (2006, 2007, 2008, 2009-2012)	t	15%, 12%, 10%, 0%
Split corporate tax rate on distributions (2009-2012)	t^d	10%
Personal tax rates (assumed to be 0): - on interest income - on dividend income - on capital gains	 m^i m^d z^*	 0% 0% 0%
Imputation tax credit rate on dividends paid	c	0%
Real estate tax rate (property tax rate)	e	0,1%

Source: CIT code and Nomenclature of depreciation (2006-2012)

Table 6: Derived input parameters, 2006-2012

Parameter	**Symbol**	**2006**	**2007**	**2008**	**2009/2012**
Post-tax rate of return	s	0,05	0,05	0,05	0,05
Shareholder's discount rate	ρ	0,071	0,071	0,071	0,071
Tax discrimination variable	γ	1	1	1	0,9
Financial constraints variable	F				
- retained earnings	F^{RE}	0	0	0	0
- new equity issue	F^{NE}	0	0	0	-0,00663
- debt	F^{DE}	0,00995	0,00796	0,00663	0
Allowances	A				
- buildings	A^{bui}	0,0788	0,0631	0,0526	0
- equipment (machinery)	A^{equ}	0,1151	0,0920	0,0767	0
- intangibles	A^{int}	0,1227	0,0981	0,0818	0
- financial assets	A^{fin}	0	0	0	0
- inventories	A^{inv}	0	0	0	0

Source: Author's calculations

Table 7: The Cost of capital in Macedonia, 2006-2012 (%)

Cost of capital ($\tilde{p}$)	**2006**	**2007**	**2008**	**2009/2012**
Buildings (mean)	*5,39*	*5,32*	*5,28*	*5,36*
- retained earnings	5,80	5,64	5,54	5,10
- new equity issue	5,80	5,64	5,54	5,88
- debt	4,57	4,69	4,77	5,10
Equipment (mean)	*5,51*	*5,40*	*5,32*	*5,26*
- retained earnings	5,92	5,72	5,58	5,00
- new equity issue	5,92	5,72	5,58	5,77
- debt	4,69	4,76	4,81	5,00
Intangibles (mean)	*5,24*	*5,19*	*5,15*	*5,26*
- retained earnings	5,65	5,51	5,41	5,00
- new equity issue	5,65	5,51	5,41	5,77
- debt	4,42	4,55	4,64	5,00
Financial assets (mean)	*5,82*	*5,63*	*5,51*	*5,26*
- retained earnings	6,23	5,94	5,77	5,00
- new equity issue	6,23	5,94	5,77	5,77
- debt	5,00	5,00	5,00	5,00
Inventories (mean)	*5,64*	*5,50*	*5,40*	*5,26*
- retained earnings	6,05	5,82	5,66	5,00
- new equity issue	6,05	5,82	5,66	5,77
- debt	4,82	4,86	4,89	5,00
Retained earnings (mean)	*5,93*	*5,73*	*5,59*	*5,02*
New equity issue (mean)	*5,93*	*5,73*	*5,59*	*5,79*
Debt (mean)	*4,70*	*4,77*	*4,82*	*5,02*

Source: Author's calculations

Table 8: Effective marginal tax rates in Macedonia, 2006-2012 (%)

EMTR	**2006**	**2007**	**2008**	**2009/2012**
Buildings (mean)	*6,06*	*5,36*	*4,89*	*6,29*
- retained earnings	13,79	11,34	9,74	1,96
- new equity issue	13,79	11,34	9,74	14,96
- debt	-9,41	-6,61	-4,82	1,96
Equipment (mean)	*8,16*	*6,71*	*5,61*	*4,45*
- retained earnings	15,54	12,58	10,39	0,00
- new equity issue	15,54	12,58	10,39	13,34
- debt	-6,61	-5,04	-3,95	0,00
Intangibles (mean)	*3,29*	*2,89*	*2,47*	*4,45*
- retained earnings	11,50	9,25	7,58	0,00
- new equity issue	11,50	9,25	7,58	13,34
- debt	-13,12	-9,89	-7,75	0,00
Financial assets (mean)	*13,16*	*10,55*	*8,90*	*4,45*
- retained earnings	19,74	15,82	13,35	0,00
- new equity issue	19,74	15,82	13,35	13,34
- debt	0,00	0,00	0,00	0,00
Inventories (mean)	*10,32*	*8,43*	*7,02*	*4,45*
- retained earnings	17,35	14,09	11,66	0,00
- new equity issue	17,35	14,09	11,66	13,34
- debt	-3,73	-2,88	-2,25	0,00
Retained earnings (mean)	*15,58*	*12,62*	*10,54*	*0,39*
New equity issue (mean)	*15,58*	*12,62*	*10,54*	*13,66*
Debt (mean)	*-6,57*	*-4,88*	*-3,75*	*0,39*

Source: Author's calculations

Table 9: Effective average tax rates in Macedonia, 2006-2012 (%)

EATR	2006	2007	2008	2009/2012
Buildings (mean)	*12,94*	*10,46*	*8,56*	*9,15*
- retained earnings	14,68	11,85	9,96	7,99
- new equity issue	14,68	11,85	9,96	11,48
- debt	9,45	7,67	5,78	7,99
Equipment (mean)	*13,46*	*10,77*	*8,98*	*8,68*
- retained earnings	15,20	12,17	10,14	7,52
- new equity issue	15,20	12,17	10,14	11,00
- debt	9,97	7,99	6,66	7,52
Intangibles (mean)	*12,31*	*9,86*	*8,21*	*8,68*
- retained earnings	14,05	11,25	9,37	7,52
- new equity issue	14,05	11,25	9,37	11,00
- debt	8,82	7,07	5,89	7,52
Financial assets (mean)	*14,74*	*11,80*	*9,84*	*8,68*
- retained earnings	16,49	13,19	11,00	7,52
- new equity issue	16,49	13,19	11,00	11,00
- debt	11,23	9,02	7,52	7,52
Inventories (mean)	*14,01*	*11,22*	*9,35*	*8,68*
- retained earnings	15,75	12,61	10,51	7,52
- new equity issue	15,75	12,61	10,51	11,00
- debt	10,53	8,43	7,03	7,52
Retained earnings (mean)	*15,23*	*12,21*	*10,20*	*7,61*
New equity issue (mean)	*15,23*	*12,21*	*10,20*	*11,09*
Debt (mean)	*10,00*	*8,04*	*6,57*	*7,61*

Source: Author's calculations

Table 10: EATR by source of finance in Macedonia, 2006-2012, (%)

Source of finance	2006	2007	2008	2009	2010	2011	2012
Retained earnings	15,23	12,21	10,20	7,61	7,61	7,61	7,61
New equity issue	15,23	12,21	10,20	11,09	11,09	11,09	11,09
Debt	10,00	8,04	6,57	7,61	7,61	7,61	7,61
Overall mean	**13,48**	**10,82**	**8,99**	**8,77**	**8,77**	**8,77**	**8,77**

Source: Author's calculations

Table 11: EATR by asset in Macedonia, 2006-2012 (%)

Assets	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Buildings	12,94	10,46	8,56	9,15	9,15	9,15	9,15
Equipment	13,46	10,77	8,98	8,68	8,68	8,68	8,68
Intangibles	12,31	9,86	8,21	8,68	8,68	8,68	8,68
Financial assets	14,74	11,80	9,84	8,68	8,68	8,68	8,68
nventories	14,01	11,22	9,35	8,68	8,68	8,68	8,68
Overall mean	**13,48**	**10,82**	**8,99**	**8,77**	**8,77**	**8,77**	**8,77**

Source: Author's calculations

Table 12: The cost of capital, EMTR and EATR in Macedonia (Overall mean), 2006-2012 (%)

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
The cost of capital	5,52	5,41	5,33	5,28	5,28	5,28	5,28
EMTR	8,20	6,79	5,78	4,81	4,81	4,81	4,81
EATR	13,48	10,82	8,99	8,77	8,77	8,77	8,77

Source: Author's calculations

Table 13: EATR by country, 2012 (%)

Below 20%	**EATR**	**Between 20%-30%**	**EATR**	**Above 30%**	**EATR**
Macedonia	**8,8**	Denmark	22,0	Malta	32,2
Bulgaria	9,0	Austria	23,0	Spain	32,4
Cyprus	11,2	Sweden	23,2	France	34,2
Latvia	12,2	Finland	23,3	USA	36,5
Lithuania	12,7	Luxembourg	24,9	Japan	40,1
Ireland	14,4	Canada	25,0		
Romania	14,8	Italy	25,1		
Slovenia	16,4	United Kingdom	25,2		
Croatia	16,5	Belgium	26,3	**Average:**	**21,7**
Estonia	16,5	Norway	26,5		
Czech Republic	16,7	Portugal	27,1		
Slovakia	16,8	Netherlands	27,5		
Greece	17,5	Germany	28,2		
Poland	17,5				
Turkey	17,9				
Switzerland	18,7				
Hungary	19,3				

Source: ZEW (2012), author's calculations