ISSN 1821-2573

No. 3-4/2014

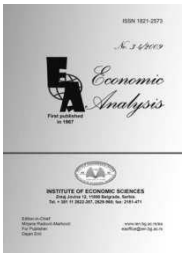
Economic Analysis

First published in 1967

INSTITUTE OF ECONOMIC SCIENCES
Zmaj Jovina 12, 11000 Belgrade, Serbia
Tel. + 381 11 2622-357, 2629-960; fax: 2181-471

Editon-in-Chief:
Mirjana Radović-Marković
For Publisher:
Dejan Erić

www.ien.bg.ac.rs
eaoffice@ien.bg.ac.rs



Vol. 47 No. 3-4
Twice a Year Scientific Journal
ISSN 1821-2573 = Economic Analysis
UDC 33,33
COBISS.SR-ID 169576460
First Published 1967

PUBLISHER
Institute of Economic Sciences
12 Zmaj Jovina str 11000
Belgrade, Serbia
www.ien.bg.ac.rs

EDITOR-IN-CHIEF
Mirjana Radović-Marković
Institute of Economic Sciences, Belgrade, Serbia

ASSOCIATE EDITOR
Srdjan Redžepagić
Institute of Economic Sciences, Belgrade, Serbia

INTERNATIONAL EDITORIAL BOARD
João Sousa Andrade, Universtiy of Coimbra, Portugal
Claude Berthomieu, University of Nice Sophia Antipolis, France
John Board, ICMA Center, University of Reading, United Kingdom
Horst Brezinski, Technische Universität Bergakademie Freiberg, Germany
Carlos Carreira, University of Coimbra, Portugal
Jean-Paul Guichard, University of Nice Sophia Antipolis, France
Giuseppe Dutto, University of Torino, Italy
Driss Guerraoui, University Mohammed V, Rabat-Agdal, Morocco **Vasileios Kallinterakis**, University of Durham, United Kingdom
Bassem Kamar, University of Monaco, Monaco
Salem Kanoun, University Manouba, Tunis
Krum Krumov, University „St. Kliment Ohridski", Bulgaria
Matthieu Llorca, University of Bourgogne-Dijon, France
Jelica Minić, Regional Cooperation Council - Sarajevo, Bosnia and Herzegovina
Brahmi Mohsen, Department of Business Administration IAE G. Pau Institute Campus Scientific Gf.
Stéphane Ngomai, University of Nice Sophia Antipolis, France
Jagadees S. Pandi, Govt Arts College, Tamilnadu, India
Almir Peštek, Economic Institute, Sarajevo, Bosnia and Herzegovina
Saša Popović, University of Podgorica, Montenegro
Antonio Portugal, University of Coimbra, Portugal
Xavier Richet, University of Paris 3 Sorbonne Nouvelle, France
Adnan Rovčanin, University of Sarajevo, Bosnia and Herzegovina
Marianna Siničáková, Technical University of Košice, Slovakia **Aidin Salamzadeh**, University of Teheran, Iran
Marta Simões, University of Coimbra, Portugal

Johannes Stephane, Technische Universität Bergakademie Freiberg, Germany
Paulino Teixeira, University of Coimbra, Portugal

Nikola Vukmirović, University of Banja Luka, Bosnia and Herzegovina
Jovan Zafiroski, Ss. Cyril and Methodius University in Skopje, Macedonia

LOCAL EDITORIAL BOARD
Slobodan Aćimović, University of Belgrade, Belgrade
Aleksandra Bradić~Martinović, Institute of Economic Sciences, Belgrade
Drago Cvijanović, Institute of Agricultural Economics, Belgrade **Ivana Domazet**, Institute of Economic Sciences, Belgrade
Božo Drašković, Institute of Economic Sciences, Belgrade
Mališa Đukić, Belgrade Banking Academy, Belgrade
Jelena Minović, Institute of Economic Sciences, Belgrade **Petar Đukić**, University of Belgrade, Belgrade
Dejan Erić, Institute of Economic Sciences, Belgrade
Mirjana Golušin, University EDUCONS, Sremska Kamenica
Zoran Grubišić, Belgrade Banking Academy, Belgrade
Hasan Hanić, Belgrade Banking Academy, Belgrade
Marko Malović, Institute of Economic Sciences, Belgrade
Olja Munitlak Ivanović, University EDUCONS, Sremska Kamenica
Slavica Penev, Institute of Economic Sciences, Belgrade
Živka Pržulj, Belgrade Banking Academy, Belgrade
Boban Stojanović, Univesity of Niš, Niš
Ivan Stošić, Institute of Economic Sciences, Belgrade
Vlastimir Vuković, Institute of Economic Sciences, Belgrade
Gordana Vukelić, Belgrade Banking Academy, Belgrade
Radoje Zečević, Alfa University, Belgrade
Branko Živanović, Belgrade Banking Academy, Belgrade

BUSINESS SECRETARIES
Duško Bodroža
Saša Milivojević
Institute of Economic Sciences, Belgrade eaoffice@ien.bg.ac.rs

PRINTED BY
Čigoja štampa, Belgrade
100 copies

EA is involved in the Directory of Open Access Journals (DOAJ) is hosted and maintained by Lund University Libraries, Sweden: http://www.doaj.org/doaj?func=loadTempl&templ=about&uiLanguage=en

Our journal is indexed in international databases such as: **EBSCO** Publishing Inc, **GESIS Leibniz-Institute for the Social Sciences** and **Ullibe University, DOAJ**, **PECOB**, **Cabell's Directories of Publishing Opportunities and Google Scholar.**

The Journal is approved by the Ministry of Education, Science and Technological Development Republic of Serbia. Since 2013 it has been in category M52.

Manuscripts are understood to be substantially new and have not been previously published in whole (excluding conference preceding). Publisher has the copyright to all published articles

Copyright© 2014 by Institute of Economic Sciences Belgrade, All rights reserved.

C O N T E N T S

UDC: 336.226.14
005.52:330.143
JEL: H25, H32, D92 COBISS.SR-ID 211785228
ORIGINAL SCIENTIFIC PAPER

Corporate Taxation and Investment: The Case of the Split Rate Corporate Tax System in Macedonia

Gruevski Ilija[1], Gaber Stevan[2], "Goce Delcev" University, Faculty of Economics, Stip, Macedonia

ABSTRACT *– The majority of experts agree that taxes are distortionary in nature. This is relatively true for all of the different groups of taxes, but for the corporate taxes is exceptionally obvious. The existence of the corporate tax system can affect the company's behavior in number of ways and one of the most criticized is the ability for distortion of the choice of the sources of finance. In the following article, we explore the effects from corporate taxation on investment, through the methodological frame of the effective marginal tax rates. The objective is to analyze the investment decision in the case of isolated implementation of corporate taxes which means that the effects from the so-called "double taxation", induced by the personal taxes are not taken in consideration. We hope to prove that these conditions generate "uneven" distribution of the burden across the projects covered with different sources of finance. Also, we intend to test and explore the properties of some alternative corporate tax systems which are widely known as neutral, such as: the comprehensive business income tax system (CBIT), the imputation corporate tax system (ICT), the full imputation corporate tax system (FICT), the allowance for corporate equity tax system (ACE) and the split rate corporate tax system (SRCT). In addition, we support our findings with a practical example: the case study from the implementation of the split rate corporate tax system in Macedonia*

KEY WORDS: *corporate income tax, taxation, cost of capital, effective marginal tax rate, corporate tax system, source of finance, debt, new equity issues, retained earnings*

Introduction

Corporate taxation is very complicated matter if we consider the fact that the corporate tax base (i.e. the corporate income) cannot be limited only at the corporation observed as a form of a legal entity. Usually, after the initial taxation at corporate level, corporate profits are distributed to the shareholders in a form of dividends, capital gains or interest payments, and are subject to additional taxation at personal level. Consequently, the effects from corporate taxation, very often depend on the cross-effects from the personal taxation. But, regardless the interaction with the personal income tax, the process of corporate taxation on

[1] ilija.gruevski@ugd.edu.mk.
[2] stevan.gaber@ugd.edu.mk.

itself, might result with some interesting effects that can be described as distortive in nature (Gruevski, 2013).

It is very difficult to define tax distortion because of its complex nature, therefore it is desirable to be explained with reference to a neutral tax system.Theoretically, a neutral tax system generates equal tax burden across the economic agents, without any tendencies to change the relative prices between factors of production. However, the overall implications of these distortions depend on the response of economic agents: a given tax system will have large distortionary effects on the economy (i.e. high deadweight losses or excess burden) when the elasticities of substitution are high and small distortionary effects when the elasticity of substitution is low (Leibfritz, Thornton,Bibbie, 1997, pp. 91). There is strong evidence that all taxes are potentially distortive, but the majority of experts agree that the corporate tax has an exceptionally strong impact on the relative price of the capital, and therefore on the corporate firm's finance and investment decisions.

The corporate tax system can affect the company's behavior in a number of ways. First, it influences the choice of the sources of finance. Empirical studies confirm that high corporate tax rates could increase the cost of equity-financed investment because of the treatment of the interest payments as a deductible item on the tax base. Consequently, that will reduce the total amount of equity-financed investment of the firm. Also, there is evidence that certain types of taxation create a preference to more frequent use of retained earnings as a source of finance instead of equity (e.g. preferential tax treatment of capital gains over dividends; or taxation of capital gains upon realization). Secondly, if the corporate tax system generates excessively high tax burden, than it can depress the overall investment activities in the domestic economy. In international context, corporations might trigger tax planning activities to shift taxable income from affiliates in high tax countries to affiliates in low tax countries. Next, corporate tax can seriously affect market dynamics on mergers and acquisitions as well as the legal organizational form chosen by the firm. Except these, there are many other examples of corporate tax influence on the company's behavior.

The focus of our analysis is the possibility of the system to create distortions of the choice of the different sources of finance. For example, it is commonly accepted that debt has privileged treatment as a source of finance, as a result of the usual and widely excepted treatment of the interest expenses. Normally, since interest payments are tax deductible from the corporate tax base, the system subsidizes the debt source investment by reducing the discount rate. So, debt is considered as tax preferred as compared to equity. The last triggers unfavourable behaivour of the company, to use more borrowed capital, thus increasing the risk of bankruptcy and insolvency of the firm. Similarly, retained earnings are more preferred to new equity issues since capital gains are usually taxed upon realization or eventually exempted from taxation when reinvested. This puts the old mature companies in superior position as they possess more abundant accumulated reserves, on the contrary to the young emerging enterprises (Gruevski, 2013).

There is some solid evidence that particular corporate income tax (CIT) systems could relieve the corporate tax differences, as well, and produce a higher neutrality between debt and equity as opposite to the previous examples. According to the OECD (2007), the following tax systems are considered as neutral with abilities to effectively eliminate the difference between debt and equity: the full integration tax system (FIT), the dual income tax system (DIT), the allowance for corporate equity tax system (ACE), the allowance for shareholder

equity tax system (ASE), the comprehensive business income tax (CBIT) etc. For example, the FIT system treats the corporation as a pass through entity and allocates all the corporate profit at shareholder level, where it is subject to taxation under the personal income tax. For the CIT already paid on distributed profits, the stockholders will be granted with a tax credit in amount of the tax liabilities paid at corporate level. As a result, tax treatment between debt and equity will be ultimately equalized. Another great example is the CBIT system. This regime successfully eliminates the need for integration between the corporate and personal taxes on equity by restricting the possibility for deduction of the interest expenses. In fact, interest expenses are no longer deductible from the corporate income tax base and at the same time are exempt from taxation at personal level. The result is neutrality and indifference between debt and equity. Similar effects are determined within the other tax systems mentioned above (OECD, 2007).

"There are a variety of approaches that countries have adopted to try and alleviate this "double" taxation through the integration of the personal and corporate income tax systems" (Devereux ,Griffith, 1999, pp. 48). They are summarized in 3 different categories: imputation systems, classical systems and split rate system. Essentially, the purpose of the imputation tax system is to effectively offset a portion (partly integrated tax system) or the entire corporate income tax (fully integrated tax system) levied on distributed profits against the shareholders tax liability. This could be realized in a form of tax credit of alternatively, in a form of tax exemption. Under the classical tax system, distributed profits are taxed at corporate level and again at personal level, which means that there are no tax reliefs available. The third option is the split rate system, which implements two different (split) mandatory tax rates, one to distributed earnings, and the other to retained earnings. Usually, there are 2 known different strategies concerning the split rate system. First, is the strategy to apply a lower rate on distributed profits which will serve to compensate for the personal tax paid on dividend income. This approach in the policy might restore neutrality between debt and external equity. The other strategy is to levy a lower split rate on retained accumulated earnings instead on distributed profits. The aim of this strategy is to generate incentives for reinvestment of retentions, and therefore, reduce the chances for their consumption in a form of dividend distributions. It is very common to the countries with consumption-based CIT systems, for example, such as Estonia and Macedonia, as it stimulates savings and investment in corporations. Across the system's ability to equalize the treatment of debt and retained earnings, this strategy will additionally create preferences to retentions over external equity.

The integration of corporate income tax and personal income tax could be found at the dividend relief system (alternatively, the dividend deduction system), which can take 2 forms: the dividend relief system at shareholder level; and the dividend relief system at corporate level (Cnossen, 1993). The first one resembles to the imputation tax system, and it's designed for reduction of the burden on equity-financed investment for the resident shareholders. The second concept permits partial or full deduction of the gross dividends paid from taxable corporate profits (the corporate tax base). This will have strong impact on the foreign investors as it leaves them to escape from taxation in the source country. As a result, foreign investors benefit from the dividend relief system at corporate level, ultimately inducing foreign investment in the host country (OECD, 2007).

In the following text, we explore the potential (theoretical) effects from corporate taxes on investment through the methodological frame of the effective tax rates. Since the research is

more focused on the allocation criteria, it is recommended that the measurements should be expressed at marginal level and should include the methodology of the effective marginal tax rate. The general intention is to analyze the investment decision in the case of isolated implementation of the corporate taxes, which implies a condition of total abstraction of the personal taxes[3]. We hope to prove that these conditions generate "uneven" distribution of the burden across the projects covered with different sources of finance. Also, the intention is to analyze the effects from the implementation of previously mentioned corporate tax systems. Here we consider the following: the comprehensive business income tax system (CBIT), the imputation corporate tax system (ICT), the full imputation corporate tax system (FICT), the allowance for corporate equity tax system (ACE) and the split rate corporate tax system (SRCT). Hopefully, this will contribute to the full picture of the effects from the process of taxation on investment at corporate level (Gruevski, 2013).

Basic methodological framework

Most of the authors agree that the best way to evaluate the effects from taxation on investment is through measurement of the effective marginal tax rate (EMTR). The measurements of effective tax rates may not be straightforward, but since the incentive for additional investment is function of the marginal tax rate, thisrequires a precise definition of the margin involved (King,Fullerton[4], 1984). In that context,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 and Fullerton, 1984, pp. 8). They propose the effective marginal tax rate as a ratio between the tax wedge and the pre-tax rate of return:

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

Constructed as it's shown, the EMTR determines the share of return on a marginal unit of investment which is cut by taxation. Actually, EMTR represents a relevant indicator of the system's efficiency properties as it determines the extent of the available incentives built in the system. The most important component of the EMTR is term ($p^{\sim} - s$) which is also called "tax wedge" and it is an expression of the difference between the preference to invest and the preference to save. This term (the total tax wedge) can be divided into 2 parts: a) the investment tax wedge and b) the savings tax wedge. (Leibfritz, Thornton and Bibbie, 1997). The second term is measured as ($r - s$) and it represents the effective tax burden on the saver's income. The first term which is crucial for our analysis is measured as a difference between the investor's rate of return before taxes (the cost of capital) and the real interest rate ($p^{\sim} - r$) and it's an expression for the effective tax burden on the investor's (or company's) capital income.

---

[3] This condition ignores the effect from the "integrated - double" taxation. As a result, measurements of the effective corporate tax burden are expressed usually, at corporate level.

[4] Thebasicstudyonmarginaleffectivetaxrateswas performed byKingandFullerton (1984). Because of its explicit theoretical foundations it's considered as a pioneer methodology in this field.

Depending on the relation between p^- and r, we can distinct 3 different conditions. The first condition is when the effective tax burden is positive ($p^- > r$) and as a result of that, the tax system depresses the investment activities.The second one is when the effective tax burden is equal to 0 ($p^- = r$), when the tax system is neutral to the investment decision. The third and the most preferrable condition from the investor's point of view is when the effective tax burden is negative ($p^- < r$), when the tax system supports the overall investment. In perfect economies without presence of taxes, the cost of capital is identical with the real interest rate ($p^- = r$) and the economic agents are completely indifferent between the investment decision and the decision to save. The existence of the national tax system diverges the difference between the cost of the capital and the interest rate and therefore creates a positive tax wedge ($p^- > r$).

Identical concept of the EMTR is also advocated by Devereux and Griffith (1999, 2002, 2003). The methodology developed by Devereux and Griffith extended the already existing concept proposed by King and Fullerton, which resulted in a standardized methodology accepted by the most economic organizations and institutions.The effective marginal tax rate on corporate income is defined identically as previously mentioned, where $p^-$is the cost of capital (pre-tax rate of return on investment) defined as:

$$\sim p = \frac{(1-A)\{\rho+\delta(1+\pi)-\pi\}}{(1+\pi)(1-t)} - \frac{F(1+\rho)-\delta}{\gamma(1+\pi)(1-t)} \qquad (2)$$

where:

- symbol t is the corporate income tax rate;
- symbol ρ is known as the shareholders discount rate, which in absence of personal taxes generates value equal to the nominal interest rate ($\rho = i$); - symbol π is the inflation rate in the curent period;
- symbol A is the net present value of tax depreciation allowances;
- symbol δ is the economic (true) depreciation rate;
- symbol γ is the tax discrimination variable developed 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:

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} \qquad (3)$$

Under the condition of absence of the personal taxes, and if the tax credit rate is zero ($z = m^d = c = 0$) this variable yields of 1 ($\gamma = 1$); and,

- symbol F from the expression above represents the financial constraints variable and its value depends from the source of finance. According to Devereux and Griffith (1999), if the project is financed by reinvestment of retained earnings, the financial constraints variable F^{RE} will always generate value of zero ($F^{RE} = 0$). If the project is financed through new equity issues, than the financial constraints variable F^{NE} is measured as:

$$F_{NE} = -\frac{\tau(1-\tau)}{(1+\rho)} \quad (4)$$

but since the value of tax discrimination variable is 1, this implies also that $F^{NE} = 0$ ($F^{NE} = F^{RE} = 0$). If the firm borrows external debt (bonds or bank loans) to finance its project, than, in that case the financial constraints variable F^{DE} is measured as:

$$F_{DE} = \frac{\tau[\tau - i(1-t)]}{(1+\rho)} = \frac{\tau - i(1-t)}{(1+\rho)} \quad (5)$$

In order to simplify the calculation for the purpose of better illustration of the effects, we propose some simple, but very useful assumptions. For example, if the net-present value of depreciation allowancess is asumed 0 ($A = 0$), there is no inflation in the economy ($\pi = 0$, $\rho = r$), the rate of economic depreciation is assumed to be 0 ($\delta = 0$) and there is always positive real interest rate ($r > 0$), than expression [2] for the cost of capital will automatically transform to:

$$\sim p = \frac{r - F(1+r)}{(1-t)} \quad (1-t) \quad (6)$$

and expression [5] for the financial constarints variable F^{DE} will obtain value of:

$$F^{DE} = \frac{r - r(1-t)}{(1+r)} = \frac{r - r + rt}{(1+r)} = \frac{rt}{(1+r)} \quad (7)$$

In the following section we use these analytical components to calculate and investigate the effects from the implementation of corporate taxes on the economic performance of the firm. (Gruevski, 2013).

Theoretical effects of corporate taxes on investment

It must be noticed once again, that the measurements of the effective tax ratesare expressed only at corporate level, under the assumption of ignorance of the personal taxes. First, the usuall, common treatment of investment will be presented, in order to determine the effects from the most common tax practicies. Than, the effects from the implementation of the comprehensive business income tax system (CBIT), the imputation corporate tax system (ICT), the full imputation corporate tax system (FICT), the allowance for corporate equity tax system (ACE)and the split rate corporate tax system (SRCT) will be analyzed additionally.

The usuall, most common treatment

Debt. Lets analyze the case of debt finance investment. For example, if the project is financed with debt, than the most common practice allows the corporation to deduct the interest payments from its corporate tax base. This means that the value of financial constraints variable F^{DE} from expression [7] will occur in expression [6] for the cost of capital:

$$\frac{rt}{(1+r)}$$

$$= \frac{(1-t)}{(1-t)} = r\frac{(1-t)\,(1-t)\,(1-t)\,(1-t)\,(1-t)\,r(1-t)}{} \tag{8}$$

From here, it is easy to determine the value of the investment tax wedge:

$$\sim p - r = r - r = 0 \tag{9}$$

$$\sim p = \frac{r}{} - \frac{}{} = \frac{r}{} - \frac{(1+r)}{} = \frac{r}{} - \frac{rt}{} F\,(1+r) =$$

This indicates on the fact, that when the investment project is financed with external debt, the corporate tax system is neutral to the investment decision.

New equity issue and retained earnings. Since the tax discrimination variable γ is equal to1, this implicates identical values of the financial constraints variables in the cases when the project is covered with new equity issues and retained earnings ($F^{NE} = F^{RE} = 0$). This will result with elimination of the second term of expression [6], thus generating value for the cost of capital of only:

$$\sim p = \frac{r}{(1-t)} \tag{10}$$

If term [10] is integrated in term [9], than the investment tax wedge will generate value of:

$$\sim p - r = \frac{r}{(1-t)} - \frac{r = r - r\,(1-t)}{(1-t)} = \frac{r - r(1-t)}{(1-t)} = \frac{r - r + rt}{(1-t)} = \frac{rt}{(1-t)} \tag{11}$$

The result implicates that there is a positive tax burden on corporate income in every case of equity financed investments. Actually, this is the exact reason why, it is thought for the corporate income tax to be a "tax on the return on equity". Simply, since interest payments are in fact tax deductible from the corporate income tax base, debt source of finance is

considered as tax preferred as compared to the equity source of finance. The key factor influencing this condition is called „tax shield" effect seen in term *rt* from expression [7]. Actually, the system subsidizes the debt source investment by reducing the cost of capital in proportion of the value of this previousely described effect. The value maximizing firm will frequently tend to use more borrowed capital as part of its strategy for optimization of the capital structure, but in terms of the economic efficiency, this is a classical distortion because it increases the risk of bankruptcy and insolvency of the firm (Gruevski, 2013).

Comprehensive business income tax system (CBIT)

The question which is raised here is: "What might the authorities do, to eliminate this equity-debt related distortion and to equalize the treatment between debt and equity". One of the answers is to implement the so-called "Comprehensive business income tax system - CBIT". Actually, this system successfully eliminates the need for integration between the corporate and personal taxes on equity by restricting the possibility for deduction of the interest expenses. In fact, interest expenses are no longer deductible from the corporate income tax base. "The corporation is therefore indifferent between debt, newly issued equity and retained earnings as source of finance of its investment under the CBIT" (OECD, 2007, pp. 89). Since deductions of interests are not allowed, all the positive effects are effectively eliminated from term [6]: $rt = 0$. As a result, the value of F^{DE} will generate value of zero ($F^{DE} = F^{RE} = F^{NE} = 0$), thus equalizing the tax treatment between the different sources of finance. (Gruevski, 2013).

Imputation corporate tax system (ICT)

Another great example for neutral corporate tax system is the so-called "Imputation corporate tax system - ICT". Basically, "with an imputation system of corporation tax, part of the company's tax bill is imputed to the stockholders" (King and Fullerton, 1984, pp. 22). If c is considered to be the tax credit rate (or the rate of imputation), than the tax discrimination variable in absence of the personal taxes will be rewritten as:

$$\gamma = \frac{1}{(1-c)} \tag{12}$$

This will have certain implications on the other relevant variables, such as the cost of capital, where in expression [6], the tax discrimination variable γ will reappear:

$$\tilde{p} = r - \frac{F(1+r)}{(1-t)\,\gamma\,(1-t)} \tag{13}$$

Now, let's analyze the effects on the different alternative investments.

Debt source of finance. The financial constraints variable for the investments financed with external debt under the conditions of the imputation tax system is calculated as:

$$^{DE}\gamma\,[r - r(1-t)]\,\gamma\,[r - r + rt]\,\gamma\,rt$$

$$F = \frac{}{(1+r)} = \frac{}{(1+r)} = \frac{}{(1+r)} \tag{14}$$

If term [14] is imputed in expression [13], the result for the cost of capital will be:

$$\sim p = \frac{r}{(1-t)} - \frac{\gamma rt}{\gamma(1-t)} \frac{}{(1+r)} = \frac{r}{(1-t)} - \frac{rt}{(1-t)} = \frac{}{(1-t)} r(1-t) = r \tag{15}$$

From here, if the investment tax wedge is calculated, it is obvious that the ICT system does not generate any other signifficant effect for the investments covered with debt:

$$\sim p - r = r - r = 0 \tag{16}$$

New equity issues: Since γ has value different from 1, the financial constraints variable in case of investment supported with new equity issues is measured as:

$$F^{NE} = -\frac{r(1-\gamma)}{(1+r)} \tag{17}$$

Inserting the term [17] in the expression [13], the cost of capital will generate value of:

$$\sim p = r - \frac{-\frac{r(1-\gamma)}{(1+r)}(1+r)}{(1-t)\gamma(1-t)} = r - \frac{-r(1-\gamma)(1-t)}{\gamma(1-t)} = \frac{r\gamma - r(1-\gamma)}{(1-t)\gamma} = \frac{r\gamma + r - r\gamma}{(1-t)\gamma} = \frac{r}{(1-t)\gamma} \tag{18}$$

For the value of the tax discrimination variable from expression [12], the cost of capital will transform to:

$$\sim p \frac{}{(1-t)} \frac{1}{\frac{(1-t)}{(1-c)}} \frac{}{\frac{(1-t)}{(1-c)}} \frac{}{(1-t)} = r = r = r(1-c) \tag{19}$$

And the investment tax wedge to:

$$\sim p - r = \frac{}{}r(1-c) - r = r(1-c) - r(1-t) = r - rc - r + rt =$$

$$= \frac{(1-t)(1-t)(1-t)(1-t)rt - rc\,r\,t(-c)}{(1-t)} = \frac{}{(1-t)} \quad (20)$$

This means that the corporate tax burden on the investments financed with new equity issues, under the conditions of this system depends from the interrelation of the corporate income tax rate t and the rate of imputation c. Also,it indicates on the negative correlation between the tax burden and the imputation rate. As a conclusion, corporate systems with higher degree of imputation will support investments covered with new equity issues.

Retained earnings. It is very interesting that in this particular case, the imputation tax system does not generate any additional effect. Because, the financial constraints variable for the alternative financed with retentions is always zero ($F^{RE} = 0$), the result for the investment tax wedge is identical as the one from expression [11]. If the last three 3 alternatives are compared, it can be noticed that the imputation system is effective only for the second one. So, it is especially designed for alleviation of the burden for the projects primarily financed with equity issues (Gruevski, 2013).

Full imputation corporate tax system (FICT)

In theory, this system treats the corporation as a pass through entity and allocates all the corporate profits at the shareholder level, where it is subject to taxation under the personal income tax. "Under full integration (full imputation), all corporate earnings – distributed dividends, retained profits and interest payments – are allocated to shareholders and bondholders and are taxed at the personal level at the personal income tax rate" (OECD, 2007, pp. 86). Actually this system represents another variant of the imputation corporate tax system, where the imputation rate c (or the available tax credit rate) is equal to the tax liabilities paid at corporate level t ($c = t$):

$$\gamma = \frac{1}{(1-c)} = \frac{1}{(1-t)} \quad (21)$$

It is already mentioned that these systems (the imputation systems) do not affect the investment financed with debt and retentions. Consequently, the results for these investment alternatives are the same as in the previous section. Yet in the following paragraph we present the analytical proof only for the alternative with new equity issues.

New equity issues. If the conditions for the FICT ($c = t$) are implemented, the investment tax wedge from expression [19] will become:

$$\sim p - r = \frac{r\,t(-c)}{(1-t)} = \frac{r\,t(-t)}{(1-t)} = 0 \quad (22)$$

This implies on the conclusion that the FICT system effectivelly removes the tax differences between external equity (new equity issues) and debt and at the same time favours external equity instead of retentions (Gruevski, 2013).

Allowance for corporate equity tax system (ACE)

Another alternative is the allowance for corporate equity tax system proposed by Michael Devereux andHarold Freeman (1991) and by the Institute for Fiscal Studies (1991). "Under the ACE system companies are allowed to deduct an imputed normal return on their equity from the corporate income tax base, parallel to the deduction for interest on debt"(Michael Devereux and Peter Birch Sorensen, 2006, pp. 34). This „symetric" approach in corporate taxation, should ultimetelly ensure neutrality between debt and equity. The experts suggest that prefferably, the allowance on the corporate income tax base should equal the nominal interest rate. According to them, this should allow for the normal return on equity to remain tax free, while the pure rents and exstra profits should stay within the channels of taxation. For example, it is very interesting that Croatia has already tested this form of corporate income tax in practice, in the period from 1994 to the beginning of 2001. „The imputed rate of return to equity, denoted as „protective interest" (PI), was equal to 5 per cent plus the rate of increase of industrial product prices" (Devereux and Sorensen, 2006, pp. 36). In the following text, the effects from the implementation of this system are explored.

Debt. When the investment project is financed with external debt, the corporate tax system under the ACE regime remains neutral to the investment decision. This means that the investment tax wedge will generate value of 0, since interest payments are deductible from the tax base.

New equity issue and retained earnings. It was already mentioned that the usuall, normal treatment of the return on equity, always results in a positive value of the investment tax wedge, as presented in expression [10]. With the introduction of the ACE system, companies will be allowed to deduct (or reduce) the normal return on equity from their corporate profit tax base. It is thought that the nominal interst rateis a true representation of the normal return on equity, but in our case, that would be the real interest rate *r*, since the inflation rate is assumed to be 0. So, the process of deduction of *r* from the corporate base decreases the corporate tax liability of the firm for the value of *rt*.[5] If the shareholders discount rate (in this case r) is adjusted for the value of the generated tax benefit, it can be measured as: r – rt = r(1 – t), and if this is integarted in expression [9], for the cost of capital it could be written:

$$\sim p = \frac{r(1-t)}{(1-t)} = r \tag{23}$$

once again producing a value for the investment tax wedge of zero.

To conclude: introducing the ACE system effectively removes the tax differences among debt and equity, and produces neutrality similarly to the CBIT system. But, unlike the CBIT system which lifts the smaller, zero wedge of debt finance, equilizing it with the higher positive one of equity finance, the ACE system does the aleviation in reverse direction.

[5] As it can be seen, this benefit for the company is similar to the previous "tax shield" effect, but unlike the case of debt finance investment, where its presence is in the financial constraints variable, here in the case of equity finance investment, it occurs directly within the cost of the capital, through the shareholder's discount rate.

Actually, it lowers the positive wedge of equities, bringing it to zero wedge level of debt finance investment.

Split rate corporate tax system (SRCT)

Another option for alleviation of the corporate income tax burden is the split rate corporate tax system – SRCT. "Under a split rate system there are 2 different statutory tax rates, one that applies to retained earnings, the other to distributed earnings" (Devereux, Griffith, 1999, pp. 48). Tax authorities might choose between the 2 different strategies concerning the split rate system. First, is the strategy to apply a lower rate (alternatively zero rate) on distributed profits which will serve to compensate for the personal tax paid on dividend income. The other strategy is to levy a lower split rate (optionally zero rate) on retained accumulated earnings instead on distributed profits. In the following section, the effects from the alternative strategies described above are additionally analyzed.

Taxation of distributions, retained profits exempt from taxation (t_d, $t = 0$). The first option is the strategy of taxation of distributed profits with retained profits exempt from taxation, which implies the condition of (t_d, $t = 0$). The implementation of the terms of this condition generates value for the tax discrimination variable of:

$$\gamma = \frac{(1-t^d)}{(1-t)} = \frac{(1-t^d)}{(1-0)} = (1-t_d) \tag{24}$$

And adequatelly, different value for the cost of capital:

$$\sim p = \frac{r - F(1+r)}{\gamma} = \frac{r - F(1+r)}{(1-t)} = r - \frac{F(1+r)}{(1-0)}(1-t) = r - \frac{F(1+r)}{(1-t_d)}(1-t_d) \tag{25}$$

In practice, Republic of Macedonia and Estonia already have an experience with this variant of split corporate tax system. The aim of this strategy is to generate strong incentives for reinvestment of retained profits, and reduce the chances for their consumption in a form of dividend distributions. Now the effects on the different investment alternatives are compared, to see if the previous thesis can be properly confirmed.

Debt. The financial constraints variable for investments financed with debt under the conditions of the split tax system (t_d, $t = 0$) is calculated as:

$$F_{DE} = \frac{\mathcal{L}[r - r(1-t)]}{(1+r)} = \frac{\mathcal{L}[r - r(1-0)]}{(1+r)} = 0 \tag{26}$$

For the cost of capital as:

$$\sim p = r - \frac{F(1+r)}{(1-t_d)} = r - \frac{0(1+r)}{(1-t_d)} = r - 0 = r \tag{27}$$

And for the investment tax wedge:

This is an obvious confirmation that even the split rate system that allows taxation of distributed profits and at the same time exempts the retained profits, will not affect the neutral position of the external debt as a source of finance.

Retained earnings ($F^{NE} = F^{DE} = 0$). Since $F^{NE} = 0$, then the result for the investment alternative financed with retained earnings is identical with the case of debt finance investments.

New equity issues. Similarly, since γ has value different from 1, the financial constraints variable in case of investment financed with new equity issues is measured as:

$$F^{NE} = -\frac{r(1-\gamma)}{(1+r)} \tag{29}$$

If the value of tax discrimination variable from expression [24] is considered, than:

$$F^{NE} = -\frac{r(1-\gamma)}{(1+r)} = -\frac{r[1-(1-t)]}{(1+r)} = -\frac{r(1-1+t)}{(1+r)} = -\frac{rt_d}{(1+r)} \tag{30}$$

By inserting it in expression [25], the cost of capital will obtain value of:

$$\tilde{p} - r = \frac{r}{(1-t_d)} - r = \frac{r - r(1-t_d)}{(1-t_d)} = \frac{r - r + rt_d}{(1-t_d)} = \frac{rt_d}{(1-t_d)} \tag{31}$$

$$F(1+r) = -(1+r) = -rt_d =$$

And the investment tax wedge:

$$\tilde{p} - r = \frac{r - r(1-t_d)}{(1-t_d)} = \frac{r - r + rt_d}{(1-t_d)} = \frac{rt_d}{(1-t_d)} \tag{32}$$

An interpretation can be given to the previous that this variant of the split rate system (t_d, $t = 0$), generates a positive tax burden on the investment financed with external equity which depends generally from the corporate tax rate applied on distributed profits t_d. With this

approach in the tax policy, the authorities try to "convince" the investor not to distribute the profit, but to reinvest it, since the tax burden for the second alternative is significantly lower. Also, this approach in the policy restores the neutrality between debt and retained earnings.

Taxation of retained profits, distributions exempt from taxation (t_d = 0, t). The second option is the strategy of taxation of retentions (retained profits) with profit distributions exempt from taxation, which in this case implies the condition of (t_d = 0, t). The implementation of the terms above, generates value for the tax discrimination variable of:

$$\gamma = \frac{(1-t^d)}{(1-t)} = \frac{(1-0)}{(1-t)} = \frac{1}{(1-t)} \tag{33}$$

And once again, adequatelly, there is different value for the cost of capital:

$$\tilde{p} = \frac{r - F(1+r) = r - F(1+r) = r - F(1+r)}{(1-t)\,\gamma\,(1-\frac{1}{(1-t)}\,t)\quad (1-t)(1-t)\quad (1-t)} \tag{34}$$

Many of the developed countries, especially the ones with excessively high tax burden, such as Germany and Japan, very often used or use this variant of split rate taxation, as an appropriate method for compensation of the personal tax levied on dividend income. Additionally, the effects from its implementation are given for every investment alternative.

Debt. The financial constraints variable for investments financed with external debt under the conditions (t_d = 0, t) is measured as:

$$[r - F_{DE}\quad \gamma\frac{[r-r(1-t)]}{(1+r)} = \frac{(1-t)}{(1+r)}\frac{[r-r(1-t)]}{(1-t)} = \frac{1}{(1+r)}\,r(1-t)] ==$$

$$= \frac{\frac{[r-r+rt]}{(1-t)}}{(1+r)} = \frac{rt}{(1-t)(1+r)} \tag{35}$$

By integrating the value for F^{DE} in expression [34] for the cost of capital, the result will be:

$$\tilde{p} = \frac{r - F(1+r) = r - rt\ (1+r) =}{(1-t)\ (1-t)(1+r)\ (1-t)}\ r - rt = (1-t)$$

$$= \frac{r(1-t)}{(1-t)} = r \tag{36}$$

And for the investment tax wedge:

$$\sim p - r = r - r = 0 \tag{37}$$

Once again, it has been proved that the neutral position of the external debt as a source of finance is unaffected by the process of corporate taxation in absence of personal taxes, regardless the implemented type of corporate tax system.

New equity. If the value of tax discrimination variable from expression [33] is considered for the purpose of calculation of the financial constraints variable F^{NE}, it will result in:

$$F^{NE} = -\frac{r(1-\gamma)}{(1+r)} = -\frac{r\left[1-\frac{1}{(1-t)}\right]}{(1+r)} = -\frac{r\left[\frac{(1-t)}{(1-t)}-\frac{1}{(1-t)}\right]}{(1+r)} =$$

$$\frac{r\frac{}{}}{(1-t-1)-rt(1-t)} = -\frac{\frac{}{}}{(1-t)} = -\frac{-rt}{(1-t)} = \frac{rt}{(1-t)}$$

$$= -\frac{}{(1+r)} \quad \frac{}{(1+r)} \quad \frac{}{(1-t)(1+r)} \quad \frac{}{(1-t)(1+r)} \tag{38}$$

This result from the calculation clearly indicates on the identical values between the financial constraints variable F^{DE} and F^{NE} ($F^{DE} = F^{NE}$). Consequently, a total identity will be established between the values of the investment tax wedge $\tilde{p} - r$, for the investment alternatives financed with debt and new equity issues.

Retained earnings. In this alternative, since $F^{RE} = 0$, then the value of cost of capital will become:

$$\frac{}{(1-t)} \quad \frac{}{(1-t)} \quad \frac{}{(1-t)} \tag{39}$$

And the one for investment tax wedge:

$$\sim p - r = r - r = r - r(1-t) = r - r(1-t) = r - r + rt = rt$$

$$\frac{}{(1-t)} \quad \frac{}{(1-t)} \quad \frac{}{(1-t)} \quad \frac{}{(1-t)} \quad \frac{}{(1-t)} \quad \frac{}{(1-t)} \tag{40}$$

$$\tilde{p} = \frac{r}{} - \qquad F(1+r) = \frac{r}{} - 0(1+r) = \frac{r}{}$$

If a conclusion is made from the implementation of the split rate system with the terms of taxation of retained profits and exemption of distributed profits ($t_d = 0$, t) it will indicate that

this variant generates a positive tax burden on the investment financed with retentions. With this approach in the tax policy, the authorities actually equalize the treatment between debt and new equity with intention to deliver a certain compensation for the excessive tax burden levied on dividend distributions (Gruevski, 2013).

Table 1 from below, presents the summary of the analyzed effects and conclusions.

Table 1. The effects from corporate (business) taxation on investment performance (Only corporate taxes)

The usuall, normal treatment	**Investment tax wedge (p^{-} - r)**
Debt	0
Newequity issues	$\frac{rt}{(1-t)}$
Retained earnings	$\frac{rt}{(1-t)}$
Coprehensive business income tax system (CBIT)	
Debt	$\frac{rt}{(1-t)}$
New equity issues	$\frac{rt}{(1-t)}$
Retained earnings	$\frac{rt}{(1-t)}$
Imputation corporate tax system (ICT)	
Debt	0
New equity issues	$\frac{r\,t(-c)}{(1-t)}$
Retained earnings	$\frac{rt}{(1-t)}$
Full imputation corporate tax system (FICT)	
Debt	0
New equity issues	0
Retained earnings	$\frac{rt}{}$

	$\frac{(1-t)}{}$	
New equity issues	rt_d	**Allowance for corporate equity tax system (ACE)**
	$\frac{(1-t_d)}{}$	
Retained earnings	0	
Taxation of retained profits, distributed profits exempt from taxation (t_d = 0, t)		
Debt	0	*Debt* 0
New equity issues	0	*New equity issues* 0
Retained earnings	rt	
Retained earnings	0	
Split rate corporate tax system (SRCT)		
Taxation of distributed profits, retained profits exempt from taxation (t_d, t = 0)		
Debt	$\frac{0}{(1-t)}$	

Source: Summary and review of authors' calculations

Case study: The split rate corporate tax system in Macedonia

One of the main priorities for the Macedonian tax authorities was the determination to redesign the corporate tax system and to create a consumption-based corporate income tax, which is strategically known to be more developing oriented corporate income tax. Practically, this strategic approach means that the corporate income tax burden 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 burden or eventually exempted from taxation (Manfred Rose and Rolf Wiswesser, 1998). With other words, the purpose was to effectively switch or redirect the tax incidence from the company to the burden of the shareholder.

Motivated by the chronic deficit of capital, the authorities made some very simple, but above all brave solution: they introduced the so-called "split rate corporate tax system – SRCT" in 2009. From all of the European countries at that time, only Estonia and Macedonia were experiencing the same theoretical concept and the same modality of the corporate income tax system: it was the taxation of distributions, retained profits exempt from taxation (t_d, t = 0). Originally, themeasure was called "Tax exemption on undistributed earnings" and it was basically intended to createincentives for reinvestment of the profits. Precisely, all the retentions were exempted from the corporate income tax, while the distributions of the profit were taxed with the regular corporate income tax rate of 10%. We must notice that there were other reforming measures, such as the implementation of the flat tax rates on corporate income and personal income tax base (from 15% in 2006 to 12% in 2007 and to 10% in 2008), but here, we don't give much attention on them, because they are more relevant from the shareholder's point of view.Despite the fact that the economic crisis gained on intensity in the

following years, the government didn't change its tax policy course, and no other significant tax code alterations have been done after 2009.

In the following text we evaluate the effect from the tax code derogations, focused on the introduction of the SCRT system in the period from 2006 to 2013, with the help of the methodology of EMTR. First, we present the effects on the tax discrimination variable, since it's the basic indicator of the tax preference between the external equity and the retentions. Then, we present the calculated values of the cost of capital and the EMTRs according to the sources of finance.[6]

As it is already noted, one of the most important variables is ***the tax discrimination variable*** γ, which is used to measure tax discrimination between new equity and distributions. In 2006, the imputation corporate tax system was in force in Macedonia, allowing a tax credit or alternatively, an imputation rate on dividend distributions in amount of 50% from the personal income tax liability on dividend income. Considering that the adequate tax rate in 2006 was established at 15%, the effective tax credit rate c was equal to 0,075 (0,15 * 0,50 = 0,075). So, the implications on the tax discrimination variable in 2006 are the following:

$$\gamma^{2006} = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-0)}{(1-0)(1-0{,}075)} = 0{,}925 = 1{,}0811 \tag{41}$$

It is obvious that the value of γ is higher than 1, indicating on the generated tax preferences to new equities over retentions.

After that, the imputation corporate tax system was abolished, since the authorities banned the possibility for the tax credit. In the circumstances of absence of personal taxes and the tax credit ($z = m^d = c = 0$), the tax discrimination variable automatically yields value of 1 ($\gamma = 1$).In Macedonia, this was a case in 2007 and 2008:

$$\gamma^{2007,2008} = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-0)}{(1-0)(1-0)} = 1 \tag{42}$$

This means that in this period, the corporate tax system was neutral between the two different forms of equities.

Then, in 2009 the split corporate tax system was introduced, and the value for the tax discrimination variable was altered once again. Since retained profits are not taxed ($t = 0$) and corporate profits are taxed only when they are distributed with 10% tax rate (t^d=0,1), the parameter γ for the period 2009 to 2012 is calculated as:

[6] We must notice that these calculations are made according the assumptions of the Devereux & Griffith approach and the relevant tax code parameters in Macedonia, which include all the elements from expression 2. Therefore, the actual results might differ from the theoretical values, because much of these elements were assumed abstracted during the theoretical analysis.

$$\gamma_{2009-2013} \quad \frac{(1-t^d)}{(1-t)} \qquad \frac{(1-0,1)}{(1-0)} = \gamma_{2008} = 1 = 0,9 \tag{43}$$

The value of the tax discrimination variable, which is less than 1, is confirmation to the fact that the system favors the retentions over the external equity.Now, it's time to compare the facts trough concrete numbers: the values of the cost of capital and the EMTRs for the different financial alternatives.

Table 2 from below, shows the estimated values of ***the cost of capital*** in Macedonia in the period 2006-2013. As a general rule, this indicator is important because it reflects the optimal size of an investment. The results indicate that in every case of investment financed with retained earnings and new equity issues, the cost of capital is higher or equal to 5%, which is the initial assumed level of the real rate of return. In the case of retained earnings, the highest value of 5,93% is measured in 2006, while the lowest of only 5,02% in the period 2009 to 2013. On the contrary, the projects financed with external equity register their lowest value of 5,30% in 2006 and the highest of 5,79% in 2009 to 2013. This "switch" in the tendencies of the cost of capital between new equities and retentions is mainly due to the substitution of the previous imputation tax system with the split rate system. Also, it is clear that in 2007 and 2008, identical values are registered for the cost of the capital for both of the cases, indicating on the neutral position of the corporate system, which is in accordance with the theoretical findings (Gruevski,Gaber, 2013).

Table 2. The Cost of capital in Macedonia, 2006-2013 (%)

The cost of capital (p^-)	**2006**	**2007**	**2008**	**2009/2013**
Retained earnings (mean)	5,93	5,73	5,59	5,02
New equity issue (mean)	5,30	5,73	5,59	5,79
Debt (mean)	4,70	4,77	4,82	5,02
Overall mean:	**5,31**	**5,41**	**5,33**	**5,28**

Source: Authors' calculations

Estimated values of ***the effective marginal tax rates*** are presented in Table 3.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 of the extent of the available incentives built in the system. Concerning the results of *the EMTRs by source of finance*, a similar condition can be generalized as in the previous case of the cost of capital. Basically, investments with retained earnings and new equity issues generate positive values of EMTRs. Positive values of EMTRs 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. For example, for the investments covered with retained earnings, the highest value of 15,58% is registered in 2006, and the lowest of only 0,39% from 2009 to 2013. The projects financed with new equity issues measure their lowest value of 5,58% in 2006 while the highest of 13,66% in 2009 to 2013. Once again, this confirms the change in tax treatment between external equity and retained earnings. Until 2006, a priority was given to the development of the stock market, which was

supported with adequate tax measures. For example, companies were "encouraged" to actively participate in the capital market with the implementation of the imputation tax system. A tax credit on dividend distributions was allowed to effectively lower the corporate tax burden on new equity issues for stimulation of the market expansion. In the next period, the tax policy course was altered once again when the imputation system was abolished in 2006 and the split rate system was introduced in 2009. This time investment and economic growth took more importance because the split rate system stimulates the process of reinvestmentof the profit. In the same context, it is obvious that the marginal tax rates between debt and retained earnings are effectively equalized in the period from 2009 to 2013 (0,39%). Obviously, this effect is once again due to the implementation of the split rate system under the conditions that require taxation of distributed profits and exemption of retained profits. The last fact is prove that theory has found an empirical confirmation in the practice, because this system is known for its abilities for alleviation of the effective tax burden between these two alternative sources of finance (Gruevski, Gaber, 2013).

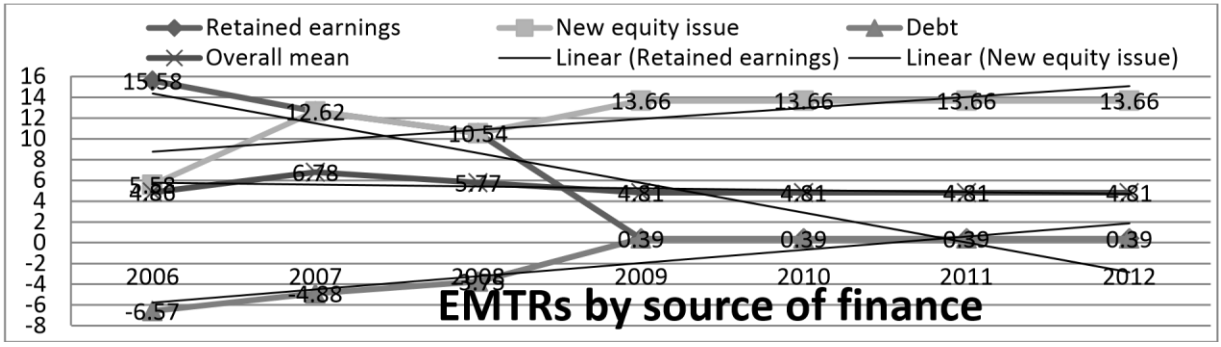
Table 3. Effective marginal tax rates in Macedonia, 2006-2013 (%)

EMTRs	**2006**	**2007**	**2008**	**2009/2013**
Retained earnings (mean)	15,58	12,62	10,54	0,39
New equity issue (mean)	5,58	12,62	10,54	13,66
Debt (mean)	-6,57	-4,88	-3,75	0,39
Overall mean:	**4,86**	**6,78**	**5,77**	**4,81**

Source: Authors' calculations

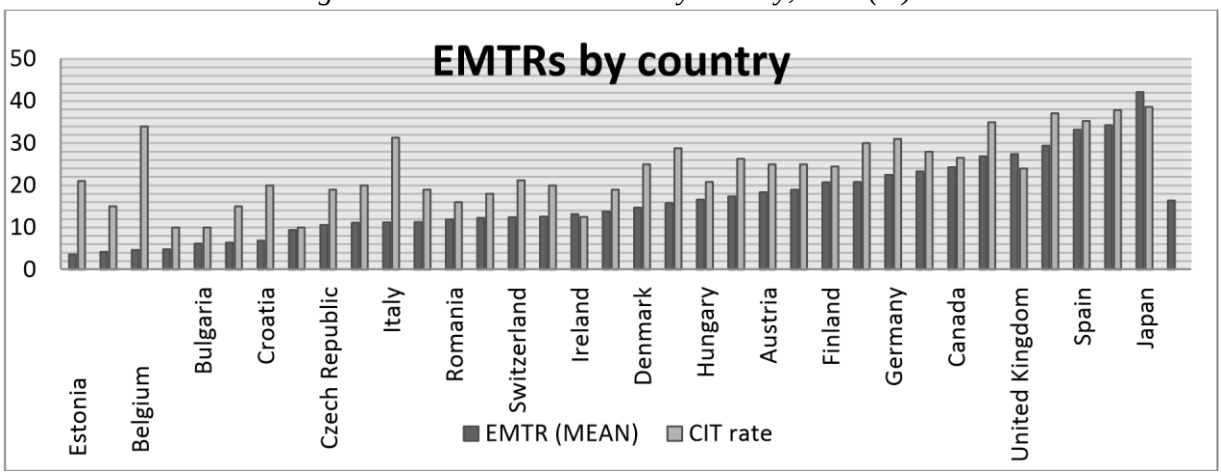
In addition to the basic analysis, we present the trend lines and the international comparison of the EMTRs in the observed period as well. The trends are illustrated in Figure 1, and the comparative analysis in Figure 2.

Figure 1. EMTRs by source of finance in Macedonia, 2006-2012



Source: Authors' calculations

Figure 2. EMTRs and CIT rate by country, 2012 (%)



Source: Authors' calculations, The Centre for European Economic Research (ZEW), 2012

It is clearly seen that the trend lines for debt and external equity are lightly upward slopping while the retentions manifest strong decreasing tendencies. The synergetic effect from this results in a slight downward slopping trend line for the overall EMTR by source of finance, meaning that the overall tax burden is decreasing over time. On the other side, the comparison between the estimated overall values of EMTRs in 2012 shows that Macedonia belongs to the group of countries with extremely low effective marginal tax burden, positioned on the 4th place from the observed group of countries, with EMTR of 4,81%. This means that the statutory corporate tax rate which is officially 10% is more than twice lowered resulting in an effective tax rate of 4,81%. Lower EMTR demonstrate only Belgium with 4,7%, Latvia with 4,2% and Estonia with the lowest 3,6%. The other countries have significantly higher EMTRs mostly ranging from 10% to 20%, and on the bottom of the list, with highest values of EMTRs are positioned Spain with 33,2%, USA with 34,3% and Japan with exceptionally high 42,1%. Decreasing values of the indicator in the observed period, as well as the comparatively low EMTR, represent a clear picture of the determination of the Macedonian tax authorities to improve the overall conditions of the business environment for investment (Gruevski,Gaber, 2013).

Conclusions

This article firstly explores the theoretical effects that arise from the isolated implementation of corporate taxes with the help of the marginal analysis. With an appropriate application of its analytical components, we investigated the investment decision and the economic performance of the firm.

The first step was focused on the usuall, normal treatment of investment. The result implicated that corporate taxes create "uneven" distribution of the burden across the projects covered with different sources of finance. Actually, in the case of equity financed investments there was a positive tax burden on corporate income, while the debt covered investments took neutral position.

In the second step, the effects from the alternative corporate tax systems were analyzed. For example, the comprehensive business income tax system (CBIT) successfully eliminates

the tax differences between debt and equity by elimination of the possibility for deduction of the interest expenses. In the imputation corporate tax system (ICT), part of the company's tax bill is imputed to the stockholders, and the effect from the imputation depends from the interrelation of the corporate income tax rate and the rate of imputation. The full integration corporate tax system (FICT) represents a variant of the imputation corporate tax system, where the imputation rate is equal to the tax liabilities paid at corporate level. Then there is the allowance for corporate equity tax system (ACE), that allows to the companies to deduct an imputed normal return on their equity from the corporate income tax base. Under a split rate corporate tax system (SRCT) there are two different statutory tax rates, one that applies to retained earnings, the other to distributed earnings. The first policy option is the strategy of taxation of distributed profits with retained profits exempt from taxation, which is aimed to generate strong incentives for reinvestment of retained profits. The second option is the strategy of taxation of retentions (retained profits) with profit distributions exempt from taxation, which is usually intended to deliver a certain compensation for the excessive tax burden levied on dividend distributions.

In addition, we support our thesis with a practical example: the case study from the implementation of the split rate corporate tax system in Macedonia. For that purpose the paperevaluates the effective marginal tax rates by source of finance, according to the methodology based on the Devereux-Griffith approach. The measurements found empirical evidence and confirmation of the theoretical thesis.

References

Cnossen, S. 1993. *What kind of corporation tax?.* International Bureau of Fiscal Documentation.

Devereux, M.P., Griffith, R. 1999. *The taxation of discrete investment choices.* The institute of fiscal studies, Warwick University.

Devereux, M.P., Griffith, R., Klemm, A. 2002. "Corporate Income Tax Reforms and International TaxCompetition". *Economic Policy publications*, 35.

Devereux, M.P., Sorensen, P.B. 2006. *The corporate income tax: international trends and options for fundamental reform.* European Commision economic papers, Brussels.

Devereux, M.P., Griffith R. 2003. *Evaluating tax policy for location decisions.* International Tax and Public Finance.

Earnst & Young. 2010. *The E&Y 2010 Worldwide Corporate Tax Guide.*

Elschner, C., Overesch, M. 2007. *Trends in Corporate Tax Levels in Europe.* Intereconomics.

Gruevski, I. 2012. "Corporate tax reform in Republic of Macedonia". Conference Proceedings - 1st International Conference South - East European Countries toward European Integration 20th October 2012 Elbasan – Albania.

Gruevski, I. 2013. "Corporate taxes and their potential effects on investments." *Economic Development*, 153-170.

Gruevski, I. 2013. *"Effective marginal tax rates on corporate income in the Republic of Macedonia"* Economic Development, *Journal of the Institute of Economics* - Skopje, 15 (3/2013): 129 –147.

Gruevski, I. and Gaber, S. 2013. "Indicators of the corporate income tax burden in Macedonia". *Balkan Social Science Review,* 2: 223-251.

Gruevski, I., Gaber, S. and Gaber, V. 2013. "Effective tax burden on investment at corporate level in Macedonia". *Perspectives of Innovations, Economics & Business*, 13 (2): 19-31.

King M.A., Fulerton D. 1984. *The taxation of income from capital: A comparative study of the United States, the United Kingdom, Sweden and Germany".* University of Chicago Press;

King, M.A. 1977. *Public Policy and the Corporation.* London: Chapman and Hall.

King, M.A. 1983. *The relative taxation of capital and labor income.* Consultancy study for the Economics and Statistics Department, An OECD study, Paris.

Leibfritz, W., Thornton, J., Bibbie, A. 1997. *Taxation and economic performance.* An OECD Study, Paris.

OECD. (2000). *Alternative tax burden measures.* An OECD study, Paris.

OECD. (2007). *Fundamental corporate tax reform.* A tax policy studies, Paris.

Rose, M.,Wiswesser, R. 1998. *Tax reform in transition economies: experiences from Croatian tax Reform process in the 1990s.* London: PublicFinancein a Changing World, Macmillan.

Ruiz, F.M.M., Gérard, M. 2007. *Summary, Description, and Extensions of the Capital Income Effective Tax Rate Literature.* Oxford: International Taxation Handbook.

Salanie, B. (2000). *The economics of taxation.* Massachusetts: The MIT Press Cambridge.

The Centre for European Economic Research. 2012. - Zentrum für Europäische Wirtschaftsforschung (ZEW).

Overesch, M. 2005. *The effective tax burden of companies in Europe.* CESifo DICE Report.