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Professional paper

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CORPORATE TAXES AND THEIR POTENTIAL EFFECTS ON INVESTMENT

Abstract

The following article is aimed to explore the potential (theoretical) effects from corporate taxes on investment according to the source of finance. The purpose is to analyze the investment decision in the case of isolated implementation of corporate taxes through the methodological frame of the effective marginal tax rates. It explains that these conditions generate "uneven" distribution of the burden across the projects covered with different sources of finance. Also, some corporate tax systems with abilities to alleviate the burden are additionally presented and adequately analyzed. For example, a special attention is given to the following corporate tax systems, frequently met in the practice: the comprehensive business income tax system (CBIT), the imputation corporate tax system (ICT), the full imputation corporate tax system (FICT) and the split rate corporate tax system (SRCT). Hopefully, this analysis will prove that some corporate tax systems do have theoretical abilities to produce higher degree of neutrality and are effective for elimination of the distortion between the alternative sources of finance.

Keywords: corporate income tax, source of finance, imputation tax system, full imputation tax system, split rate system.

JEL Classification Numbers: H25, H32, D92

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Introduction

Corporate taxation is very complicated matter if we consider the single 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 itself, might result with some interesting effects emerging from its nature.

One of them is the privileged treatment of debt 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 corporation, 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 commonly creates better position for the old mature companies as they possess more abundant accumulated reserves, as compared to their young inferior competitors.

In the following article, I explore the potential effects from the corporate taxes through the methodological frame of the effective marginal tax rates. 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[1]. I 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 the corporate tax systems which have abilities to alleviate the burden, as

[1] 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.

well as, to produce higher degree of neutrality in the process of taxation. They are: the comprehensive business income tax system (CBIT), the imputation corporate tax system (ICT), the full imputation corporate tax system (FICT) 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.

1. The proposed methodology

Most of the authors agree that the best way to evaluate the effects from taxation on investment is through the measurement of the effective marginal tax rate (EMTR). According to Mervyn A. King & Don Fullerton[2] (1984), the measurement of effective tax rates may not be straightforward, but since the incentive for additional investment is function of the marginal tax rate, this requires a precise definition of the margin involved. They established the marginal investment 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). The authors propose the effective marginal tax rate as a ratio between the tax wedge and the pre-tax rate of return:

$$[1] \qquad EMTR = \frac{\tilde{p} - s}{\tilde{p}}$$

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 ($\tilde{p} - s$) 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.

[2] The basic study on marginal effective tax rates was performed by King & Fullerton (1984). Because of its explicit theoretical foundations it's considered as a pioneer methodology in this field.

(Leibfritz, Thornton, 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 ($\tilde{p} - r$) and it's an expression for the effective tax burden on the investor's (or company's) capital income.

Depending on the relation between $\tilde{p}$ and r, we can distinct 3 (three) different conditions. The first condition is when the effective tax burden is positive ($\tilde{p} > r$) 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 ($\tilde{p} = r$), 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 ($\tilde{p} < r$), when the tax system supports the overall investments. In perfect economies without presence of taxes, the cost of capital is identical with the real interest rate ($\tilde{p} = r$) 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 ($\tilde{p} > r$).

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

$$[2] \qquad \tilde{p} = \frac{(1-A)\{\delta + \phi(1+\rho) - \rho\}}{(1+\rho)(1-t)} - \frac{F(1+\delta)}{\gamma(1+\rho)(1-t)} - \phi$$

where:

- symbol t is the corporate income tax rate;
- symbol ρ is known as the shareholders discount rate, which in abcence of personal taxes generates value equal to the nominal interest rate ($\rho = i$);
- symbol γ is the tax discrimination variable developed to measure tax discrimination between new equity and distributions. Under the condition of absence of the personal taxes, this variable has value of 1 ($\gamma = 1$);

- 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; and
- symbol F from the expression above represents the financial constraints variable and its value depends from the source of finance. According to Devereux & 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:

$$[3] \qquad F^{NE} = -\frac{\circ(1-¥)}{(1+\circ)}$$

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, in that case than the financial constarints variable F^{DE} is measured as:

$$[4] \qquad F^{DE} = \frac{¥(\circ - i(1-t))}{(1+\circ)} = \frac{\circ - i(1-t)}{(1+\circ)}$$

In order to simplify the calculation for the purpose of a better illustration of the effects, I 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 ($\pi = 0$, $\rho = r$) and the rate of economic depreciation is also assumed to be 0 ($\delta = 0$), than expression [2] for the cost of capital will automatically transform to:

$$[5] \qquad \tilde{p} = \frac{r}{(1-t)} - \frac{F(1+r)}{(1-t)}$$

and expression [4] for the financial constarints variable F^{DE} will obtain value of:

$$[6] \qquad F^{DE} = \frac{r - r(1-t)}{(1+r)} = \frac{r - r + rt}{(1+r)} = \frac{rt}{(1+r)}$$

2. The effects from corporate taxes on investment

In the following section I use these analytical components to calculate and investigate the effects from the implementation of corporate taxes on economic performance of the firm. It must be noticed once again, that the measurements of the effective tax burden on investment are expressed only at corporate level, under the assumption of ignorance of the personal taxes. First, the usuall, normal treatment of investment will be presented, in order to determine 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) and the split rate corporate tax system (SRCT) will be analyzed additionally.

2.1. The usuall, normal treatment of investment

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 [6] will occur in expression [5] for the cost of capital:

$$[7] \quad \tilde{p} = \frac{r}{(1-t)} - \frac{F(1+r)}{(1-t)} = \frac{r}{(1-t)} - \frac{\frac{rt}{(1+r)}(1+r)}{(1-t)} = \frac{r}{(1-t)} - \frac{rt}{(1-t)} = \\ = \frac{r(1-t)}{(1-t)} = r$$

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

$$[8] \quad \tilde{p} - r = r - r = 0$$

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 to 1, 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 [5], thus generating value for the cost of the capital of only:

[9] $$\tilde{p} = \frac{r}{(1-t)}$$

If term [9] is integrated in term [8], than the investment tax wedge will generate value of:

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

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 r(1 - t) from expression [6]. Actually, the system subsidizes the debt source investment by reducing the discount rate (which in this case in identical with the real interest rate) in proportion of the corporate income tax rate. The value maximizing firm will always tend to use more frequently borrowed capital as a 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.

2.2. 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". This regime successfully eliminates the need for integration between the corporate and personal taxes on equity by creating a restriction on 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: 89). In order to express the effect from the

implementation of the CBIT system, the possibilities for deduction of the interest payment must be eliminated in term [6]: r(1 - t) = r(1 - 0) = r. 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 of debt, new equity issues and retained earnings.

2.3. 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 & Fullerton, 1984: 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:

[11] $$¥ = \frac{1}{(1-c)}$$

This will have certain implications on the other relevant variables, such as the cost of capital, where in expression [5], the tax discrimination variable γ will reappear:

[12] $$\tilde{p} = \frac{r}{(1-t)} - \frac{F(1+r)}{¥(1-t)}$$

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:

[13] $$F^{DE} = \frac{¥[r - r(1-t)]}{(1+r)} = \frac{¥[r - r + rt]}{(1+r)} = \frac{¥rt}{(1+r)}$$

If term [13] is imputed in expression [12], the result for the cost of capital will be:

[14] $$\tilde{p} = \frac{r}{(1-t)} - \frac{\frac{¥rt}{(1+r)}(1+r)}{¥(1-t)} = \frac{r}{(1-t)} - \frac{rt}{(1-t)} = \frac{r(1-t)}{(1-t)} = r$$

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.

[15] $\tilde{p} - r = r - r = 0$

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:

[16] $F^{NE} = -\dfrac{r(1-¥)}{(1+r)}$

Inserting the term [16] in the expression [12], the cost of capital will generate value of:

[17] $$\tilde{p} = \frac{r}{(1-t)} - \frac{-\dfrac{r(1-¥)}{(1+r)}(1+r)}{¥(1-t)} = \frac{r}{(1-t)} - \frac{-r(1-¥)}{¥(1-t)} =$$
$$= \frac{r¥}{(1-t)¥} - \frac{-r(1-¥)}{(1-t)¥} = \frac{r¥ + r - r¥}{(1-t)¥} = \frac{r}{(1-t)¥}$$

For the value of the tax discrimination variable from expression [11], the cost of capital will transform to:

[18] $\tilde{p} = \dfrac{r}{(1-t)\dfrac{1}{(1-c)}} = \dfrac{r}{\dfrac{(1-t)}{(1-c)}} = \dfrac{r(1-c)}{(1-t)}$

And the investment tax wedge to:

[19] $$\tilde{p} - r = \frac{r(1-c)}{(1-t)} - r = \frac{r(1-c)}{(1-t)} - \frac{r(1-t)}{(1-t)} = \frac{r - rc - r + rt}{(1-t)} =$$
$$= \frac{rt - rc}{(1-t)} = \frac{r(t-c)}{(1-t)}$$

This means that the corporate tax burden on 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 [10]. 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.

2.4. 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 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: 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 ($c = t$):

[20] $$¥ = \frac{1}{(1-c)} = \frac{1}{(1-t)}$$

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 I 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:

[21] $$\tilde{p} - r = \frac{r(t-c)}{(1-t)} = \frac{r(t-t)}{(1-t)} = 0$$

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.

2.5. Split rate corporate tax system (SRCT)

Another option for alleviation of the corporate 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: 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.

2.5.1. 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:

$$[22] \qquad ¥ = \frac{(1-t_d)}{(1-t)} = \frac{(1-t_d)}{(1-0)} = (1-t_d)$$

And adequatelly, different value for the cost of capital:

$$[23] \qquad \tilde{p} = \frac{r}{(1-t)} - \frac{F(1+r)}{¥(1-t)} = \frac{r}{(1-0)} - \frac{F(1+r)}{(1-t_d)(1-0)} = r - \frac{F(1+r)}{(1-t_d)}$$

In practice, Republic of Macedonia and Estonia already have an experience with this variant of split corporate tax system.[3] 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 different investment alternatives are compared, to see if the previous thesis can be properly confirmed.

[3] In Macedonia, corporate profits are only taxed, if they are distributed with a 10% tax rate. This measure is which is originally called "Tax exemption on undistributed earnings", was implemented in 2009.

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:

[24] $$F^{DE} = \frac{¥[r - r(1-t)]}{(1+r)} = \frac{¥[r - r(1-0)]}{(1+r)} = 0$$

For the cost of capital as:

[25] $$\tilde{p} = r - \frac{F(1+r)}{(1-t_d)} = r - \frac{0(1+r)}{(1-t_d)} = r - 0 = r$$

And for the investment tax wedge:

[26] $$\tilde{p} - r = r - r = 0$$

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:

[27] $$F^{NE} = -\frac{r(1-¥)}{(1+r)}$$

If the value of tax discrimination variable from expression [22] is considered, than:

[28] $$F^{NE} = -\frac{r(1-¥)}{(1+r)} = -\frac{r[1-(1-t_d)]}{(1+r)} = -\frac{r(1-1+t_d)}{(1+r)} = -\frac{rt_d}{(1+r)}$$

By inserting it in expression [23], the cost of capital will obtain value of:

[29] $$\tilde{p} = r - \frac{F(1+r)}{(1-t_d)} = r - \frac{\frac{-rt_d}{(1+r)}(1+r)}{(1-t_d)} = r - \frac{-rt_d}{(1-t_d)} =$$
$$= r\frac{(1-t_d)}{(1-t_d)} - \frac{-rt_d}{(1-t_d)} = \frac{r - rt_d + rt_d}{(1-t_d)} = \frac{r}{(1-t_d)}$$

And the investment tax wedge:

[30] $$\tilde{p} - r = \frac{r}{(1-t_d)} - r = \frac{r}{(1-t_d)} - r\frac{(1-t_d)}{(1-t_d)} = \frac{r - r + rt_d}{(1-t_d)} = \frac{rt_d}{(1-t_d)}$$

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.

2.5.2. 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:

[31] $$¥ = \frac{(1-t_d)}{(1-t)} = \frac{(1-0)}{(1-t)} = \frac{1}{(1-t)}$$

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

[32] $$\tilde{p} = \frac{r}{(1-t)} - \frac{F(1+r)}{¥(1-t)} = \frac{r}{(1-t)} - \frac{F(1+r)}{\frac{1}{(1-t)}(1-t)} = \frac{r}{(1-t)} - F(1+r)$$

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:

$$[33] \quad F^{DE} = \frac{¥[r - r(1-t)]}{(1+r)} = \frac{\frac{1}{(1-t)}[r - r(1-t)]}{(1+r)} = \frac{\frac{[r - r(1-t)]}{(1-t)}}{(1+r)} = \frac{\frac{[r - r + rt]}{(1-t)}}{(1+r)} = \frac{rt}{(1-t)(1+r)}$$

By integrating the value for F^{DE} in expression [32] for the cost of capital, the result will be:

$$[34] \quad \tilde{p} = \frac{r}{(1-t)} - F(1+r) = \frac{r}{(1-t)} - \frac{rt}{(1-t)(1+r)}(1+r) = \frac{r - rt}{(1-t)} = \frac{r(1-t)}{(1-t)} = r$$

And for the investment tax wedge:

$$[35] \quad \tilde{p} - r = r - r = 0$$

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 [31] is considered for the purpose of calculation of the financial constraints variable F^{NE}, it will result in:

$$[36] \quad F^{NE} = -\frac{r(1-¥)}{(1+r)} = -\frac{r[1 - \frac{1}{(1-t)}]}{(1+r)} = -\frac{r[\frac{(1-t)}{(1-t)} - \frac{1}{(1-t)}]}{(1+r)} = -\frac{r\frac{(1-t-1)}{(1-t)}}{(1+r)} = -\frac{\frac{-rt}{(1-t)}}{(1+r)} = -\frac{-rt}{(1-t)(1+r)} = \frac{rt}{(1-t)(1+r)}$$

This result from the calculation clearly indicates on the identical values between the financial constraints variable F^{DE} and F^{NE} ($F^{DE} = F^{NE}$). As a consequence, 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:

[37] $$\tilde{p} = \frac{r}{(1-t)} - F(1+r) = \frac{r}{(1-t)} - 0(1+r) = \frac{r}{(1-t)}$$

And the one for investment tax wedge:

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

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.

The following Table 1 presents the summary of all analyzed effects and conclusions.

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

The usuall, normal treatment	**Investment tax wedge ($\tilde{p}$ - r)**
Debt	0
New equity 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	$\frac{rt}{(1-t)}$
Split rate corporate tax system (SRCT)	
Taxation of distributed profits, retained profits exempt from taxation (t_d, t = 0)	
Debt	0
New equity issues	$\frac{rt_d}{(1-t_d)}$
Retained earnings	0
Taxation of retained profits, distributed profits exempt from taxation (t_d = 0, t)	
Debt	0
New equity issues	0
Retained earnings	$\frac{rt}{(1-t)}$

Source: *Summary and review of the author's calculations*

Conclusions

This article explored the potential 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, it managed to investigate 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 the implementation of the 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) system represents a variant of the imputation corporate tax system, where the imputation rate is equal to the tax liabilities paid at corporate level. 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.

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