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Other Tax Models That Alleviate the Burden on Equity Financed Investments: Analysis of the Full Integration Tax System, the Dividend Exemption Tax System and the Flat Tax Rate System

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Abstract

In our previous articles, we have explained the distortions from the isolated implementation of corporate taxes on company's investment, a condition that assumes total abstraction of the personal taxes. In this article, we included the personal taxes in our analysis, with intention to explore the investment decision from the shareholder's point of view as well. With other words, the goal of this serial of articles is to analyze the effects from the integrated implementation of both, the corporate and the personal taxes, a phenomenon commonly referred as "double taxation". For that purpose, our basic methodology of effective marginal tax rates is once again modified and extended to express all the newly occurred conditions. The theory refers to many varieties of integrated tax systems that carry some capacities to alleviate the burden targeted exclusively on the external equity investments. From the wide literature, in our two previous articles we narrowed our choice to examine the proposals of the OECD, which included the Comprehensive Business Income Tax system (CBIT), the Allowance for Corporate Equity Tax system (ACE), and the Allowance for Shareholder Equity Tax system (ASE). In this article, we focus our attention specifically on the Full Integration Tax system (FIT), the Dividend Exemption Tax system (DET) and the Flat Tax Rate system (FTR).

Keywords: Full Integration Tax system (FIT); Dividend Exemption Tax system (DET); Flat Tax Rate system (FTR); cost of capital; effective marginal tax rate; Classical Corporation Tax (CCT); debt; new equity issues; double taxation.

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1. Introduction

In our previous articles, we have described and explained the distortions that usually arise from the isolated implementation of corporate taxes, a condition that assumes total abstraction of the personal taxes. In this article, we also include the personal taxes in our analysis, with intention to explore the investment decision, not only from the company's perspective, but from the shareholder's point of view as well. With other words, the goal is to analyze the effect from the integrated implementation of both, the corporate and the personal taxes, a phenomenon commonly referred as "double taxation". This condition is granted to fact that the corporate tax base (i.e. the corporate income) cannot be limited only at the corporation observed as a form of legal entity. Usually, under the Classical Corporation Tax regime, 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. The ultimate consequence of the referred phenomenon is imposition of an additional "extra" burden on total corporate profit expressed integrally from its source to its destination. Taking in consideration that this "excessive" taxation of profit which is considered unfair and could distort the economic activity of firms, the authorities try to construct more appropriate "neutral" tax systems with attributions to effectively tax the economic rents (or the extra profit) and at the same time avoid taxation of the normal return. In addition, we give a brief literature review to some integrated models of corporate tax systems with the desired properties (capacity to alleviate the extra burden on corporate profits and higher degree of neutrality). The following tax systems are protagonists proposals of the OECD (Organization for Economic Co-operation and Development), as a part of the tax reform that was undergone recently. According to the OECD (2007), the following tax systems are considered as neutral with abilities to eliminate the difference between debt and equity. Which in other hand are associated with the classical corporation tax: the Full Integration Tax system (FIT), the Dividend Exemption Tax system (DET), the Allowance for Corporate Equity tax system (ACE), the Allowance for Shareholder Equity tax system (ASE), the Comprehensive Business Income Tax (CBIT) etc. It is a commonly known truth that borrowed capital is a superior source of finance from the taxpayer's point of view, because of the usual and widely excepted treatment of interest payments. In practice, since companies are allowed to deduct interest payments from their corporate income tax base, the system subsidizes the debt source finance in a manner that the action reduces the opportunity cost of the debt-financed investment. This gives a certain advantage to the debt finance, since it is considered as tax preferred in front of equity, which oppositely is fully taxed. The last triggers unfavorable behavior of the company, to use more borrowed capital, thus increasing the risk of bankruptcy and insolvency of the firm. The last presents the most common and typical distortion of the corporate finance, induced by the traditional, "classical" treatment of corporate profit. But, the leading economic organizations such as the OECD, have made a break-through in the sphere of business taxation, proposing some alternative models of hybrid tax systems, that are much or less distinct from the classical approach and have better capacities to allocate the burden across the different sources of finance more evenly. 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 imposing restriction on the possibility to deduct the interest payments. In fact, interest income is no longer deductible from the corporate income tax base and at the same time is exempt from taxation at personal level. The result is neutrality and indifference between debt and equity. Also, the ACE system represents an appropriate solution against the induced distortion on the corporate finance. With the ACE system, companies are allowed to deduct a normal return on equity from the corporate income tax base, which is usually equal to the nominal interest rate, providing an equal, parallel „symmetric" treatment of debt and equity. Differently to the ACE, the ASE allows to the entity to deduct a tax-deductible allowance for the normal return, this time on the shareholder capital income tax base, not on the corporate income tax base, thus establishing neutrality among the alternative finance. Similar effects are determined within the other tax systems mentioned above (OECD, 2007). In this article, we focus our attention specifically on the integrated effects from corporate and personal taxes on company's investment financed exclusively with new equity issues (external equity). As we know from business practice, equities could be found in 2 (two) fundamental forms: external equity (new equity issues), which provides the equity capital for the ongoing projects externally, through issues of the company's shares on the capital market; and retained earnings (retentions of profit), which are formed from the company's accumulated (non-distributed) profit and are usually subject of reinvestment. The models of taxation discussed in this article, could be easily applied in the investment scenario covered with retained earnings as well, of course modified with its specific circumstances. With the purpose to achieve more detailed, systematic approach in exploration of the attributions and specificities of the models, we decided to study them separately, and dedicate this article only for the new equity finance. Other reasons for this are the limited space, minimizing the risk for confusion, and providing a better comparison of the effects. The basic methodology is consisted of the effective marginal tax rates analytical frame (EMTR), which is additionally modified and extended to express all the newly occurred conditions that define "double" taxation of corporate profit. With the adapted methodology of EMTR, we have managed to identify and explain many varieties of integrated tax systems. Here, we present in detail the effects from the Full Integration Tax system (FIT), Dividend Integration Tax system (DET) and the Flat Tax Rate system (FTR), as the other models of integrated systems are already examined in our previous articles.

2. Altering the basic methodological frame

We already mentioned, preferably, that the measurements should be expressed at marginal level, because the focus of this research is put on the allocation criteria. Here, the main purpose is to examine the investment decision in the case of integrated implementation of both, the corporate and the personal taxes. For that reason, the basic methodology of effective marginal tax rate (EMTR), has to be modified once again, because of its capabilities to capture the integrated effect from these taxes. To recall, according to Devereux & Griffith [1,2,3], the effective marginal tax rate is defined as:

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

In order to isolate the pure effects, that arise from the imposition of the code, as well as to simplify the calculation for the purpose of a better illustration of the effects, once again, we suggest the following

assumptions: the net-present value of depreciation allowances is assumed 0 ($A = 0$), there is no inflation in the economy ($\pi = 0$, $\rho = r$), the rate of economic depreciation is assumed 0 ($\delta = 0$) and the real interest rate is positive ($r > 0$). If we consider the previous assumptions and label m^d as the personal tax rate on dividend income, z as the effective personal tax rate on capital gains, m^i as the personal tax rate on interest income and c as the tax credit rate allowed for dividends paid, and then the tax discrimination variable requires the form of:

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} \tag{2}$$

The shareholder's discount rate transforms to:

$$\rho = \left(\frac{1-m^i}{1-z}\right) r \tag{3}$$

And the general form of cost of capital rearranges to:

$$\tilde{p} = \frac{\rho}{(1-t)} - \frac{F(1+\rho)}{\gamma(1-t)} \tag{4}$$

Recognizing the fact that under existence of personal taxes, the financial constraints variable F^{NE} when the project is financed with new equities is measured as:

$$F^{NE} = -\frac{\rho(1-\gamma)}{(1+\rho)} \tag{5}$$

Derives a cost of capital for this alternative investment of:

$$\tilde{p} = \frac{\rho}{(1-t)} - \frac{-\frac{\rho(1-\gamma)}{(1+\rho)}(1+\rho)}{\gamma(1+t)} = \frac{\rho}{(1-t)} - \frac{-\rho(1-\gamma)}{\gamma(1-t)} = \frac{\rho\gamma}{(1-t)\gamma} - \frac{(-\rho+\rho\gamma)}{(1-t)\gamma} = \\ = \frac{\rho\gamma+\rho-\rho\gamma}{(1-t)\gamma} = \frac{\rho}{(1-t)\gamma} \tag{6}$$

While under the same conditions, the financial constraints variable F^{DE} when the project is financed with debt:

$$F^{DE} = \frac{\gamma[\rho - r(1-t)]}{(1+\rho)} \tag{7}$$

Generates a cost of capital for the debt-financed investment of:

$$\tilde{p} = \frac{\rho}{(1-t)} - \frac{\frac{\gamma[\rho - r(1-t)]}{(1+\rho)}(1+\rho)}{\gamma(1+t)} = \frac{\rho}{(1-t)} - \frac{[\rho - r(1-t)]}{(1-t)} = \frac{\rho - [\rho - r + rt]}{(1-t)} = \tag{8}$$
$$= \frac{r - rt}{(1-t)} = \frac{r(1-t)}{(1-t)} = r$$

Before we proceed, we would like to refer to our main analytical tool, and that is, the investment tax wedge coefficient defined as ($p^{\sim} - r$). Depending on the relation between the cost of capital $p^{\sim}$ and the real interest rate r, we can distinct three different conditions. The first condition is when the effective tax burden is positive ($p^{\sim} > r$) and because of that, the tax system depresses the investment activities. In terms of integrated taxation of company‘s income, this means that both, the economic rent and the normal return are effectively taxed. The second condition is when the effective tax burden is equal to 0 ($p^{\sim} = r$), when the tax system is neutral to the investment decision. In other words, under these conditions, the normal return of corporate profit is left from taxation and only the extra profit is being subject to taxation. In addition, the third and the most preferable condition from the investor’s point of view is when the effective tax burden is negative ($p^{\sim} < r$), when the tax system supports the overall investment. Here, the investment is being effectively „subsidized“by the system, enabling the investor to legally escape from taxation a rate of return higher than the normal rate of return. In perfect economies without presence of taxes, the cost of capital is identical with the real interest rate ($p^{\sim} = r$) and the economic agents are completely indifferent between the investment decision and the decision to save. Normally, the existence of national tax system diverges the difference between the cost of capital and the interest rate and therefore creates a positive tax wedge ($p^{\sim} > r$).

3. Recalling the classical corporation tax system (CCT)

Before we move on with the analysis, we would like to recall once again briefly, to the so-called „classical“ approach in corporate taxation, which has been traditionally the most used and widely practiced form of corporate tax. As stated before, the classical system posts a true representation of what is known as „double“ taxation and a classical example of pure separate taxation of corporate income. We remember to it because it serves as a baseline model for comparison of the integrated tax systems discussed later in the paper. Actually, the CCT is a rudimentary form of corporate tax that treats the corporate income in a conservative and fundamental way. It is a taxing system of companies in which the company is treated as a taxable entity, separate from its own shareholders. The profits of companies under this system are therefore taxed twice, first when made by the company and again when distributed to the shareholders as dividends and capital gains. Formally, there is no integration at all between the corporate and personal income tax under the CCT system. In the essence of the Classical Corporation Tax is double taxation of corporate income. Such a tax system discriminates against the incorporation of business ideas, restrains the supply of equity finance necessary for their economic utilization, reallocates resources from the corporate sector to the unincorporated one and thus causes an efficiency loss to the whole economy [4]. The need to eliminate these drawbacks led to tax reforms aimed at integrating the taxation of corporations and their owners [5]. So, how could we express the true nature of this typical form of corporate tax and illustrate the effects from it in terms of the proposed methodology?

Technically speaking "A Classical System makes no allowance for "double" taxation, so that dividend income is subject to corporate income tax and taxed again as personal income" [6]. The authorities impose the corporate tax at the corporate level differently from the personal taxes at the stockholder level and at the same time do not allow any tax credit on dividend distributions (c = 0). Usually, the combination of the levels (percentage points) of the different tax rates falls under discretion of the policy maker. Considering this, we can identify the CCT system as (t, md, mi, z, c = 0).

3.1. CCT in debt-financed alternatives

It is easily recognized that the CCT produces a zero investment tax wedge if we take in account expression (8) that the cost of capital in this alternative is equal to the real interest rate:

$$\tilde{p} - r = r - r = 0 \qquad (9)$$

A conclusion is drawn that, if the overall integrated effect from the corporate and the personal tax is observed, in every case when the investment project is financed with external debt, the system will be neutral to the investment decision, *ceteris paribus.* The introduction of personal taxes do not affect these investments in a different way rather than the case of isolated application of the corporate tax, so it is evident that the „double" taxation effect is not present here.

3.2. CCT in debt-financed alternatives

The implications of the conditions of classical system in this alternative is initially found in parameters γ and ρ*:*

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-m^d)}{(1-z)} \text{ and } \rho = \left(\frac{1-m^i}{1-z}\right) r \qquad (10)$$

Including these in term (6), the cost of capital will become:

$$\tilde{p} = \frac{\rho}{(1-t)\gamma} = \frac{\dfrac{(1-m^i)r}{(1-z)}}{(1-t)\dfrac{(1-m^d)}{(1-z)}} = \frac{(1-m^i)r}{(1-t)(1-m_d)} \qquad (11)$$

Finally, the investment tax wedge will transform to:

$$\tilde{p} - r = \frac{(1-m^i)r}{(1-t)(1-m^d)} - r = r\left[\frac{(1-m^i)}{(1-t)(1-m^d)} - 1\right] \qquad (12)$$

Accordingly, as stated in this case by [7], "The effects from corporate taxation very often depend on the cross-effects from the personal taxation". Expression (12) shows that the investment decision in this basic and most

extended version of taxation of corporate income is determined largely from the inter-relation between the different personal tax rates (m^i and m^d) and the corporate tax rate *t.* It is also self-evident, as we can see from the absence of symbol z, that the effective personal tax rate on capital income is no relevant for the present model of taxation. The effect from „double" taxation is quantified with the term $(1 - m^i)/(1 - t)(1 - m^d)$. Actually, it represents the combined corporate and personal income tax liability of the CCT, which may have variable values depending on different dimensions of the relevant tax rates imposed by the code. For example, if we take the actual situation in Macedonia, where m^i = 0% (0,00), m^d= 10% (0,10) and t = 10% (0,10), the combined tax liability would be 0,2345 or 23,34% and with real interest rate of 10% (0,10) would yield an effective tax rate on investment of 0,0234 or 2,34%. If we assume that an interest income tax of 5% has been introduced lately m^i = 5% (0,05), than the combined tax liability would be 0,1728 or 17,28%, producing an effective tax rate on investment of 0,0172 or 1,72%. On the other hand, if the corporate and the dividend tax are increased on 20% $t = m^d$= 20% (0,20) and m^i= 0% (0,00), it is obvious that the investment tax wedge will additionally increase even on 0,0562 or 5,62%. In the following table, some possible combinations of the relevant tax rates and outcomes are presented and interpreted in terms of the investment tax wedge coefficient. Of course, the Classical System of Corporation Tax could produce in theory some favorable outcomes, despite its infamous reputation. As we can see from Table 1, an *increase in corporate and dividend tax* will generally *increase liabilities and the burden on investment*, while an *increase in interest income tax* will *decrease tax obligations* and *vice versa*. If the combined liability of the corporate and the dividend tax from the denominator is higher than the interest tax liability from the nominator, the investment tax wedge will be positive, with limiting, distortive effects on the equity-financed investment. If this combined liability is equal to the interest tax liability, regardless the level of tax rates, the system will be neutral and indifferent concerning the investment decision. A positive burden can occur even when the relevant tax rates are identical ($t = m^d = m^i$), a situation which is else known as „Flat Tax Rate system" (see Raw 2 from Table 1). In addition, in the third option, every time when the combined liability is lesser than the nominator, with no respect to the level of tax rates, the system will create favorable conditions, stimulating the equity-financed investments trough subsidization of the normal rate of the return. Usually, the authorities avoid the last condition in order to escape any additional refunds. The circumstance that sustains a positive tax burden actually represents a reflection of what is known as a true CCT system. Therefore, the Classical Corporation Tax assumes a positive (non-zero) tax rates with a corporate income and a dividend income tax equal or higher than the interest income tax and a right to the company to deduct the interest payments from its corporate income tax base.

We may conclude that the CCT, as we know it, produces in total, the highest amount of taxes paid on a single unit of corporate profit, entails double taxation, and possess a large distortive potential on corporate finance. However, as mentioned, only if the interest payments are being continuously deductible from the tax base and the tax rates met with the appropriate specifications. Under the conditions of Classical System, the normal return and the extra profit at its source and its destination are effectively streamed by the means of taxing regime. However, if we put aside these limitations, certain advantages open some new frontiers and possibilities for the CCT. For instance, the incorporated principle of CCT for separate and independent taxation of company's income enables the corporate tax from the first stage to act as a withholding barrier for the personal taxes imposed in the second stage. Another positive attribution is the simple tax structure. The CCT's in-build

simplicity without any complex rules for exempting flow-troughs of capital income raised the idea for the Classical Corporation Tax as a global mean of tax harmonization in an international context. These present only a handful of the positive features of CCT acknowledged from the literature [8].

Table 1: Illustration of the possible combinations of tax rates and their effects on investment under the CCT system

Possible combination of tax rates	Example	Investment tax wedge $(\tilde{p}-r)$	Effects on equity – financed investment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
$t = m^d = m^i$	10%,10%,10%	1,11%	limiting	normal return and rent taxed	favors debt	distortive
$t > m^d = m^i$	20%,10%,10%	2,50%	limiting	normal return and rent taxed	favors debt	distortive
$t > m^d > m^i$	30%,20%,10%	6,07%	limiting	normal return and rent taxed	favors debt	distortive
$t > m^d < m^i$	20%,10%,28%	0,00%	indifferent	rent taxed only	indifferent	neutral
$t > m^d < m^i$	10%, 5%,30%	-1,81%	stimulating	subsidized	favors equity	distortive
$t = m^d > m^i$	20%,20%, 10%	4,06%	limiting	normal return and rent taxed	favors debt	distortive
$t = m^d < m^i$	10%,10%,19%	0,00%	indifferent	rent taxed only	indifferent	neutral
$t = m^d < m^i$	10%,10%,30%	-1,36%	stimulating	subsidized	favors equity	distortive
$t = m^d = 0, m^i$	0%, 0%, 10%	-1,00%	stimulating	subsidized	favors equity	distortive
$t = m^d, m^i = 0$	10%,10%, 0%	2,34%	limiting	normal return and rent taxed	favors debt	distortive
$t = m^i, m^d = 0$	10%,10%, 0%	0,00%	indifferent	rent taxed only	indifferent	neutral
$t = 0, m^i = m^d$	0%,10%, 10%	0,00%	indifferent	rent taxed only	indifferent	neutral
$t = m^d = m^i = 0$	0%, 0%, 0%	0,00%	indifferent	rent taxed only	indifferent	neutral

Source: Author's calculations and interpretations

4. Full integration tax system (FIT)

Sometimes, in order to alleviate the corporate's tax burden to some extent, the tax authorities might allow a tax credit on dividend distributions at the personal (shareholder) level in amount of the liabilities paid at corporate level (c = t). The repercussions from this measure, which is called with other words „Full Imputation (Integration) Tax system - FIT", to variables γ and ρ are the following:

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-m^d)}{(1-z)(1-t)} \text{ and } \rho = \left(\frac{1-m^i}{1-z}\right) r \qquad (13)$$

to the cost of capital:

$$\widetilde{p} = \frac{\rho}{(1-t)\gamma} = \frac{\frac{(1-m^i)r}{(1-z)}}{(1-t)\frac{(1-m^d)}{(1-z)(1-t)}} = \frac{(1-m^i)r}{(1-m_d)} \qquad (14)$$

and to the investment tax wedge:

$$\widetilde{p} - r = \frac{(1-m^i)r}{(1-m^d)} - r = r\left[\frac{(1-m^i)}{(1-m^d)} - 1\right] \qquad (15)$$

As we can see from the absence of symbol *t* above, with this approach we have managed to *neutralize the effect from the corporate income tax in whole.* The corporation acts as a pass through entity and all the corporate profits are allocated at shareholder level, where it is subject to taxation under the personal income tax. The system produces preferences that depend in general only from the personal taxes involved in this particular model of taxation: the personal tax rate on dividend income m^d and the personal tax rate on interest income m^i. Note that if $m^d = m^i$, than the tax burden is zero, equalizing the tax treatment between debt and new equity issues. There is even an extreme case of negative tax burden, only possible if $m^d < m^i$, turning the table in favor of this finance compared to debt, which is traditionally thought as the most tax favorable source of finance. In practice, Macedonia experienced this model of corporate taxation until the end of 2006, when a priority was given to the development of the stock market, supported with adequate tax measures. Companies were "encouraged" to participate in the market with implementation of the imputation corporate tax system. In fact, the Macedonian model was not a FIT system, but rather a Partly Integrated Tax system (PIT). A partial tax credit on dividend distributions in amount of 50% of the corporate income tax liability was allowed to the entitled companies for stimulation of the stock exchange. For example, the factual tax rates m^i = 0% (0,00) and m^d= 10% (0,10) under the conditions of the former PIT system would produce a tax liability of 0,1696 $(1 - m^i)/(1 - c)(1 - m^d) = (1 - 0)/(1 - 0{,}05)(1 - 0{,}10)$ or 16,96%, and with interest rate of 10% an effective tax rate of 0,0169 (1,69%). For comparison, if we assume the propositions of the FIT instead of the PIT system, and implement the same rates, the results show that the difference in the burden is apparently evident: tax liability of 11,11% and an investment tax wedge of 1,11%.

If the goal is to achieve neutrality in taxation, the Macedonian authorities should set identical personal income tax rates ($m^i = m^d$). Therefore, if m^i = 10% (0,10) and m^d= 10% (0,10), that would result with zero percent (0%) tax liability and zero percent tax wedge, which is completely identical with the scenario of the debt financed investment.

Table 2: Illustration of the possible effects of FIT on investment

FIT variants	Example	Invest-ment tax wedge $(\tilde{p} - r)$	Effects on equity –financed invest-ment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
t, $m^i = m^d$, $c = t$	10%, 10%, 10%	0,00%	indifferent	rent tax only	indifferent	neutral
t, $m^i > m^d$, $c = t$	10%, 20%, 10%	-1,11%	stimulating	subsidized	favors equity	distortive
t, $m^i < m^d$, $c = t$	10%, 10%, 20%	1,25%	limiting	normal return and rent taxed	favors debt	distortive

Source: Author's calculations and interpretations

5. Dividend exemption tax system (DET)

Another famous measure used for alleviation of the corporate tax burden for investments financed with external equity is the so-called „Dividend Exemption Tax system - DET". A similar form, proposed by Cnossen [9], is the dividend deduction tax system (the dividend relief system) which incorporates certain deductions on the company's or alternatively, the shareholder's capital income tax base. In our case, rather than deduction, the relief is more in a form of exemption exclusively on the shareholder's capital income tax base. Technically speaking, with this measure tax authorities actually allow a full exemption from personal tax on the received dividend income by every shareholder in the corporation ($m^d = 0$).

5.1. DET system with no tax credit available (c = 0)

First we will analyze the scenario of the dividend exemption system if there is no additional tax credit available (c = 0). If the conditions are as mentioned, than the implications for γ and ρ are the following:

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-0)}{(1-z)(1-0)} = \frac{1}{(1-z)} \text{ and } \rho = \left(\frac{1-m^i}{1-z}\right) r \qquad (16)$$

for the cost of capital from term (11), the implications are:

$$\tilde{p} = \frac{\rho}{(1-t)\gamma} = \frac{\frac{(1-m^i)r}{(1-z)}}{(1-t)\frac{1}{(1-z)}} = \frac{(1-m^i)r}{(1-t)} \qquad (17)$$

and for the investment tax wedge (expression 11):

$$\tilde{p} - r = \frac{(1-m^i)r}{(1-t)} - r = r\left[\frac{(1-m^i)}{(1-t)} - 1\right] \qquad (18)$$

The result from term (18), explains that in case of investment covered with new equity issues, the dividend exemption system creates a wedge that mostly depends from the relation of the corporate tax rate t and the personal tax rate on interest income m^i. Differently to the FIT, this system effectively removes the effect from the personal tax on dividend income in general, rather than the effect from the corporate income tax (residence based tax). Similarly, three (three) conditions can be identified here: first, the condition of positive taxation on corporate income when $t > m^i$ (favors debt source investment); second, the condition of a neutral taxation when $t = m^i$ (equalizes the treatment between debt and equity); and third, the condition of negative burden on corporate income when $t < m^i$ (which favors equity source investment). As we can see, to achieve neutrality, this system demands equalization of the corporate income tax rate and the personal tax rate on interest income.

Table 3: Illustration of the possible effects of DET (with no tax credit available) on investment

DET variants	Example	Invest-ment tax wedge $(\tilde{p} - r)$	Effects on equity –financed invest-ment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
$t = m^i$, $m^d = 0$, $c = 0$	10%, 10%, 0%	0,00%	indifferent	rent tax only	indifferent	neutral
$t > m^i$, $m^d = 0$, $c = 0$	20%, 10%, 0%	1,25%	limiting	normal return and rent taxed	favors debt	distortive
$t < m^i$, $m^d = 0$, $c = 0$	10%, 20%, 0%	-1,11%	stimulating	subsidized	favors equity	distortive

Source: Author's calculations and interpretations

Let's incorporate the previous model fictionary on the domestic tax parameters m^i = 0% (0,00) and m^d= 10% (0,10). The implementation of the DET system would have produced tax liability of $0{,}1111 (1 - m^i)/(1 - t) = (1 - 0)/(1 - 0{,}10)$ or 11,11%, and with interest rate of 10% an effective tax rate of 0,0111 (1,11%). According to this, the effect from this system is similar to the effect from the FIT system, but only coincidently because the corporate income tax rate t is the same as the dividend income tax rate m^d. If they were different, say t = 20% (0,20) and m^d= 10% (0,10), the effect from the FIT would not change, but the effect from the DET system would be significantly different generating tax liability of 0,25 $(1 - m^i)/(1 - t) = (1 - 0)/(1 - 0{,}20)$ or 25%, and an effective tax rate of 0,025 (2,5%).

5.2. DET system with tax credit available (c = t)

In this section, we investigate the effect from the implementation of the DET system with a tax credit available on dividend distributions. This model represents an extreme form of integrated taxation where both of the effects created by the corporate tax and the dividend tax directly cancel each other, creating a negative tax wedge on the capital income. If these assumptions are met, than variables γ and ρ will become:

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-0)}{(1-z)(1-t)} = \frac{1}{(1-z)(1-t)} \text{ and } \rho = \left(\frac{1-m^i}{1-z}\right) r \qquad (19)$$

the cost of capital from term (19) will transform to:

$$\tilde{p} = \frac{\rho}{(1-t)\gamma} = \frac{\frac{(1-m^i)r}{(1-z)}}{(1-t)\frac{1}{(1-z)(1-t)}} = (1-m^i)r \qquad (20)$$

and the investment tax wedge from expression [22]:

$$\tilde{p} - r = (1-m^i)r - r = r - rm^i - r = -rm^i \qquad (21)$$

The negative prefix from expression (21), clearly demonstrates that this combination generates strong incentives for the investments covered with equities, but only in presence of positive tax rate on interest income. If this condition is satisfied, as in the case of many countries, the "tax subsidization" is proportional to the multiplied value of the real interest rate *r* and the personal tax rate on interest income m^i, automatically creating advantages to new equity in front of debt. But if the national code does not incorporate a personal tax rate paid on interest income, such as in the case of Macedonia, than the described effect of tax subsidization will diminish, and the system will remain neutral between the alternative sources of finance *(m^i = 0, r = 0,10* and *$\tilde{p}$ - r = -0,10 x 0,00 = 0).*

Table 4: Illustration of the possible effects of DET (with tax credit available) on investment

DET variants	Example	Invest-ment tax wedge *($\tilde{p}$ - r)*	Effects on equity –financed invest-ment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
t, m^i, m^d = 0, c = t	10%, 10%, 0%	-1,00%	stimulating	subsidized	favors equity	distortive
t, m^i = 0, m^d= 0, c = t	10%, 0%, 0%	0,00%	indifferent	rent taxed only	indifferent	neutral

Source: Author's calculations and interpretations

6. Flat Tax Rate System (FTR)

The next variant of integrated taxation offers another intresting feature for neutralization of the effects from „double" taxation. It is the so-called Flat Tax Rate system - FTR, which requires implementation of „flat", proportional tax rates on the corporate income and the personal income tax base ($m^i = m^d = z = t$).

6.1. FTR system with no tax credit available (c = 0)

First, the model of flat tax rate system without a tax credit is presented, whose conditions require for the variables γ and ρ to obtain values of:

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-t)}{(1-t)(1-0)} = 1 \text{ and } \rho = \left(\frac{1-m^i}{1-z}\right)r = \left(\frac{1-t}{1-t}\right)r = r \qquad (22)$$

the cost of capital $\tilde{p}$ value of:

$$\tilde{p} = \frac{\rho}{(1-t)\gamma} = \frac{r}{(1-t)} \qquad (23)$$

and the investment tax wedge $\tilde{p} - r$ value of:

$$\tilde{p} - r = \frac{r}{(1-t)} - r = \frac{r}{(1-t)} - \frac{r(1-t)}{(1-t)} = \frac{r - r + rt}{(1-t)} = \frac{rt}{(1-t)} \qquad (24)$$

As it is seen from our previous articles, the result of this calculation is the same as the one for the CBIT system with no tax credit available, but only arbitraged against the form of this expression, not actually against the ultimate effect on the investment. Namely, the system of CBIT assumes that the interest rate is not deductible from the tax base when the investment is financed with debt, on the contrary of the FTR system, which means that in essence, their overall allocation criteria is different as presented in the tables bellow.

Table 5: Illustration of the possible effects of FTR (without tax credit available) on investment

FTR Variant	Example	Invest-ment tax wedge $(\tilde{p} - r)$	Effects on equity – financed invest-ment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
$t = m^i = m^d$, $c = 0$	10%, 10%, 10%	1,11%	limiting	normal return and rent taxed	favors debt	distortive

Source: Author's calculations and interpretations

6.2. FTR system with tax credit available (c = t)

The same conclusion can be drawn for the next variant, as well, but from the view of the urge for equalization of the different treatments. Again, it is about the Flat Tax Rate system, but with available tax credit on dividend distributions. The implications of this variant on the tax discrimination variable γ and the shareholders discount rate ρ are the following:

$$\gamma = \frac{(1-m^d)}{(1-z)(1-c)} = \frac{(1-t)}{(1-t)(1-t)} = \frac{1}{(1-t)} \text{ and } \rho = \left(\frac{1-m^i}{1-z}\right)r = \left(\frac{1-t}{1-t}\right)r = r \qquad (25)$$

to the cost of capital $\tilde{p}$:

$$\tilde{p} = \frac{\rho}{(1-t)\gamma} = \frac{r}{(1-t)\frac{1}{(1-t)}} = r \qquad (26)$$

Finally, to the investment tax wedge $\tilde{p} - r$:

$$\tilde{p} - r = r - r = 0 \qquad (27)$$

Table 6: Illustration of the possible effects of CBIT (with no tax credit available) on investment

CBIT Variants	Example	Invest-ment tax wedge $(\tilde{p} - r)$	Effects on equity – financed invest-ment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
t, $m^i = 0$, $m^d = 0$, $c = 0$	10%, 0%, 0%	1,11%	limiting	normal return and rent taxed	indifferent	neutral
t, $m^i = m^d \neq 0$, $c = 0$	10%, 20%, 20%	1,11%	limiting	normal return and rent taxed	indifferent	neutral

Source: Author's calculations and interpretations

We immediately recognize similarity between this result and the one from the CBIT system with a tax credit available, but the effects on corporate finance and the allocation criteria are quite distinctive. Since under these conditions the value of investment tax wedge is zero, the excess of the corporate tax burden in this financial alternative is effectively eliminated, creating indifferent position for investment and saving, just the same as in the case of debt financed investment. To conclude, if the imperative is neutrality, then the condition of $c = t$ must be fully respected for the purpose within the FTR system. At the end of this section, we would like to clear some confusing facts concerning the FTR system. Namely, from the previous we noticed that the basic model of this system creates a positive wedge on a unit of taxable profit, which means that fundamentally, it is not a "perfectly" neutral tax model.

Table 7: Illustration of the possible effects of FTR (with tax credit available) on investment

FTR Variant	Example	Invest-ment tax wedge $(\tilde{p} - r)$	Effects on equity –financed invest-ment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
$t = m^i = m^d$, $c = t$	10%, 10%, 10%	0,00%	indifferent	rent taxed only	indifferent	neutral

Source: Author's calculations and interpretations

We also said that to respect the principle of neutrality, the condition of $c = t$ had to be satisfied. Following this, we could easily conclude that on the contrary, the FTR system is not actually „flat" or „neutral" as it seems.

Truthfully, the expression „flat“ is synonymous terminology widely excepted by the public that refers not to the concept of „neutrality“, but to concept of „equality“ or „proportionality“ among the different tax rates. In the following tables, for a better illustration, we summarize the derived effects from taxation on investment performance according to the observed FRT and CBIT models.

Table 8: Illustration of the possible effects of CBIT (with tax credit available) on investment

CBIT Variants	Example	Invest-ment tax wedge $(\tilde{p} - r)$	Effects on equity – financed invest-ment	Effects on normal return and economic rent	Effects on corporate finance	Effects on efficiency (allocation criteria)
t, m^i = 0, m^d = 0, c = t	10%, 0%, 0%	0,00%	indifferent	rent taxed only	favors equity	distortive

Source: Author's calculations and interpretations

7. Conclusion

At the finishing point, the effects from taxation on investment performance are summarized in Table 9, and the qualitative attributions of the analyzed basic models are given in Table 10.

Table 9: Summary of the effects from taxation on investment performance

Classical Corporation Income Tax System (CCT)	
Debt	0
New equity issues: ***(t, m^i, m^d, z, c = 0)***	$r\left[\frac{(1-m^i)}{(1-t)(1-m^d)}-1\right]$
Full Integration tax System (FIT)	
Debt	0
New equity issues: ***(t, m^i, m^d, c = t)***	$r\left[\frac{(1-m^i)}{(1-m^d)}-1\right]$
Dividend Exemption Tax System (DET)	
Debt	0
*New equity issues: Basic model, without tax credit available (**t, m^i, m^d = 0, c = 0**)*	$r\left[\frac{(1-m^i)}{(1-t)}-1\right]$
New equity issues: Model of DET with tax credit available ***(t, m^i, m^d = 0, c = t)***	$-rm^i$
Flat Tax Rate System (FTR)	
Debt	0
*New equity issues: Basic model, without tax credit available (**t = m^i = m^d, c = 0**)*	$\frac{rt}{(1-t)}$
*New equity issues: Model of FRT with tax credit available (**t = m^i = m^d, c = t**)*	0

Source: Summary and review of author's calculations

Table 10: Summary of the qualitative attributions of basic tax models (aspect of taxation of new equity issues)

Basic model of tax system	Effects on debt finance	Effects on new equity finance	Effects on econo-mic rent	Effects on normal return	Withhold-ing function criteria	Location specific criteria	Overall allocation criteria
(CCT)	favors (in general)	discriminates (in general)	Taxed	taxed	withholds rents and normal return	source & resi-dence-based	distortive
(CBIT)	neutral (predominan-tly)	neutral (predominan-tly)	Taxed	taxed	no withholding function at all	source-based	neutral
(FIT)	discriminates or neutral (in most cases)	favors or neutral (in most cases)	Taxed	exempt	withholds rents	residen-ce based	distortive
(DET)	discriminates or neutral (mostly)	favors or neutral (mostly)	Taxed	exempt	withholds rents	source and resi-dence based	distortive
(FTR)	favors (predominan-tly)	discriminates (predominan-tly)	Taxed	taxed	withholds rents and normal return	source and resi-dence based	distortive

Source: Author's interpretations

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