

# Effect of Corporate Taxation System on Profitability and Market Ratios – the Case of ROE and P/B Ratios

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## Abstract

The impact of a corporate taxation regime on the application of performance indicators of companies is one of the issues receiving inadequate coverage in finance literature. This paper discusses some issues that relate to the use of return on equity (ROE) and price-to-book (P/B) ratios under different taxation regimes. We compare the behaviour of these indicators under distributed profit taxation with that under total profit taxation in order to explain possible differences. Regarding the price-to-book ratio we also investigate the impact of differences in companies' financial leverage. Based on the example of a hypothetical company, we find that both ROE and P/B yield different values depending on the profit taxation scheme (*ceteris paribus*). Suggestions for practical applicability of results are provided at the end of the paper.

JEL classification codes: G35, H25, L25

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# 1. Introduction

With the evolution of corporate finance the development of performance assessment methodologies has also taken place. A few decades ago net profit and earnings per share (EPS) prevailed to measure companies' performance; nowadays, the set of indicators include many sophisticated measures, e.g. EVA™ and CFROI. Different indicators assess a company's performance from different aspects but tend to be flawed in one way or another. Therefore the issue of a company's performance measurement still remains topical.

One of the questions related to the use of a particular indicator concerns the dependence of an indicator's value on external (i.e. non company-specific) factors, e.g. inflation, corporate taxation, seasonality of sales income, different legal acts etc. For the purpose of simplicity and universality most of the performance measurement models do not incorporate the influence of external factors. The aim of this paper is to discuss measurement issues associated with the impact of corporate tax on the use of return on equity (ROE) and price-to-book ratio (also known as price-equity ratio, P/B)<sup>1</sup>. Our main research interest is related to the identification of a possible divergence of these performance indicators under two different taxation regimes, traditional profit taxation (TPT) and distributed profit based taxation (DPT).

The main difference between TPT, which is used in most countries, and DPT (that is presently implemented only in Estonia and Macedonia) is that under the latter system the moment of corporate taxation has been shifted from the period of earning the profit to the period of distributing it. Generally speaking, under such a system dividends paid out are taxed<sup>2</sup>, while retained (i.e. undistributed) profit is not taxed. Such a system clearly simplifies tax accounting for companies (i.e. there is no need for rules concerning tax depreciation, loss carry-forwards or carry-backs, thin capitalisation etc), but also creates some confusion among practitioners about how to use financial models and theoretical recommendations found in corporate finance textbooks<sup>3</sup> (Sander, 2007).

There are a lot of articles dedicated to the study of taxation impact on different aspects of corporate financial management (including capital structure, investment budgeting, payout policy, corporate restructuring etc.), but the number of scientific papers that discuss the impact of different taxation regimes on financial ratios used to assess a company's performance is quite limited.

<sup>1</sup> We focus on ROE and P/B, as ROE is one of the most widespread (accounting-based) value creation measures, and the P/B ratio of a company may characterise value creation from market value dimension. Also, these indicators represent an interesting case because they are sensitive to corporate taxation aspects more than ROCE (return on capital employed) or TSR (total shareholders return). If not taking this into account one may run into false conclusions comparing results of companies. Additionally, it has to be mentioned that ROE and P/B (along with other accounting ratios and valuation multiples) are used as variables in various econometric models and inputs for stock return prediction models (see, for example, Hall and Brummer, 1999; Turk, 2006; Luikme, 2000; Campbell and Shiller, 2001; Fama and French, 1988; Robertson and Trevino, 2002). Many credit default and bankruptcy models (e.g. Altman's Z-score) are based on the use of company value creation measures. The latter necessitates the correct computation of financial indicators, both in the phase of model compilation and in the phase of determination of a company's default risk.

<sup>2</sup> According to the Estonian tax system, both explicit (dividends) and implicit (fringe benefits, expenses unrelated to business, etc.) distribution of profits are taxed at the same rate

<sup>3</sup> For example, the survey conducted among Estonian investment banks and financial advisors has shown no consensus about how to calculate the cost of capital under such a system (Sander 2003).

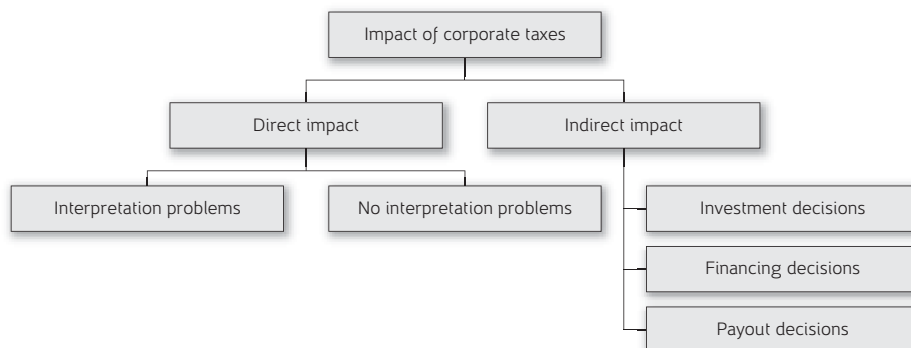
The paper is structured as follows. Section 2 discusses briefly the direct and indirect impact of a corporate taxation system on ROE and P/B ratio. Then in section 3 we discuss the impact of distributed profit taxation on a company's return on equity through the prism of a company's payout policy, due to the fact that under DPT the payout policy and ROE become extremely interconnected. We use the example of a hypothetical company to show how a company's different payout policies under distributed profit taxation influence a company's return on equity and price-to-book ratio. We also focus on the divergence of results caused by two different profit taxation concepts.

## 2. The Direct and Indirect Impact of a Corporate Taxation System on ROE and P/B Ratio

The amount of research investigating the different effects of a distributed profit based tax system is still rather limited. Hazak (2007, 2008, 2009) has investigated the impact of a distributed profit taxation system on the dividend and capital structure decisions of companies. Sander (2005) has studied the tax advantage of debt under the conditions of the Estonian income taxation system. The macroeconomic influence of a distributed profit taxation system has been researched in several papers, including Funke (2002), Funke and Strulik (2003), and Staehr (2005). Different possibilities of declaration of dividend tax payable in corporate financial statements were considered by Lentsius (2005). However none of these papers directly investigated the impact of an income taxation system on the calculation of ROE and P/B ratio. It is especially interesting to compare the effects of distributed profit taxation (although it is not a widespread taxation system) with these of traditional corporate taxation.

The impact of a taxation system on financial ratios can be classified into direct and indirect (see Figure 1). The direct impact on financial ratios is derived from the fact that corporate income tax affects net income (and figures containing net income, such as equity and total assets), free cash flow to equity, and through this all related financial ratios. Hence, the majority of profitability indicators (including ratios, like ROE, net ROA and net margin), various valuation multiples (primarily, price-to-equity ratio and price-to-book ratio), but also dividend payout ratio, total debt ratio, debt-to-equity ratio and equity multiplier depend on applicable taxation rules.

Figure 1. Impact of Corporate Taxes on a Company's Financial Indicators



Source: Authors' illustration

In the case of ROE and price-to-book ratio both the nominator and the denominator are affected. Of course, ratios more sensitive to corporate income tax are those with one dependent component only – the larger the influence of corporate income tax on a particular component (for instance, net income is influenced by the tax rate to a larger extent than equity) the more sensitive the ratio is.

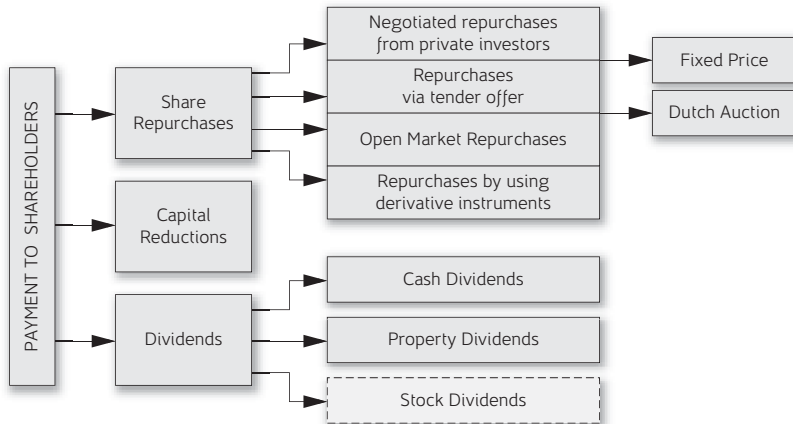
In addition to the direct relationship between taxes and financial ratios, the taxation system impacts them indirectly through managerial decisions. The taxation system influences corporate decision-making, which results in a different set of financial indicators compared to the situation with no influence of tax. Mostly the computation of ratios with indirect effect of taxes needs no adaptations because they reflect decisions actually made in a corporation. However, one has to be very cautious when comparing indicators of companies from countries with different taxation regimes. One should also keep in mind that financial decisions are often interconnected (e.g. larger payouts to shareholders may imply a small investment budget or the need for fund raising).

### 3. The Effect of Distributed Profit Taxation on a Company's Return on Equity

In the case of distributed profit taxation the amount of corporate income tax payable, and hence net income, depends directly on a company's payout policy. This means that ROE is also affected by whether, how much and in which form, the company makes payouts to its shareholders. This is the reason we should cover in brief the different forms of payout to the owners of a company.

A company has several possibilities to make payouts to its shareholders: cash (or non-cash) dividends, repurchase (redemption) of shares or payouts related with share capital reduction (see the following Figure 2).

Figure 2. Possible Forms of Payout



Source: Sander (2008)

Since 2009, the taxation of income related to share repurchase and share capital reduction is brought to a company level; income tax liability related to dividend payout lies with the

payer – a company (Income Tax Act § 50, Section 2)<sup>4</sup>. But still, there is a difference in the calculation of the amount of income tax payable. If in the case of dividends the basis is “paid out net dividends”, to which the tax rate of 21/79 is applicable in 2009, then in the case of shares repurchase and share capital reduction only this part of the payout is taxed that exceeds the shareholders’ depositions into a company (*Ibid.*). Hence the share repurchase is still more beneficial for companies (also, financial ratios are more solid) compared to the payment of cash dividends because it allows for postponement of the formation of income tax liability to some extent.

The amount of the tax payable also depends on a company’s source of payout. If a company pays dividends from the profit originated from the reception of dividends from another company and if a recipient’s ownership in these companies exceeded 10%, then generally these payouts are not taxed (Income Tax Act § 50, Section 11)<sup>5</sup>.

We illustrate the previous statements with the following hypothetical example<sup>6</sup>. We have a company that has been operating for several years, but has not paid dividends to its shareholders. If the company decides not to pay out dividends in the year under consideration then balance sheet and income statement figures would be represented by the following tables.

**Table 1.** Balance Sheet of a Hypothetical Example-Company (‘000 Euro)

	Year ‘00	Year ‘01
Cash and bank reserves	39,000	46,000
Accounts receivable	20,000	25,000
Inventories	20,000	20,000
Total current assets	79,000	91,000
Total fixed assets	60,000	60,000
<b>Total assets</b>	<b>139,000</b>	<b>151,000</b>
Short-term loan	9,000	9,000
Accounts payable	10,000	12,000
Other short-term liabilities	10,000	10,000
Total short-term liabilities	29,000	31,000
Long-term liabilities	30,000	30,000
Share capital	20,000	20,000
Retained earnings	50,000	60,000
Net income for the period	10,000	10,000
Total equity	80,000	90,000
<b>Total liabilities and equity</b>	<b>139,000</b>	<b>151,000</b>

Source: Illustrative figures by the authors

<sup>4</sup> Since distributed profit taxation is implemented only in Estonia and Macedonia we will refer to Estonian legal acts pertinent to the content of the present article.

<sup>5</sup> Payouts are taxed if dividends were received from entities located on territories with a low tax rate, or if dividends were received from companies with a country of origin different from the Contracting Party or Swiss Confederation and the income tax was not paid on dividends or a basic fraction of net income in the country of origin of the company.

<sup>6</sup> The impact of the payout source is not considered in the hypothetical example.

**Table 2.** Income Statement of a Hypothetical Example-Company ('000 Euro)

Sales revenue	120,000
Cost of goods sold	84,000
Labour costs	12,000
Depreciation	5,000
Other costs	7,580
Operating profit	11,420
Financial income	1,700
Financial costs (interest expenses)	3,120
Earnings before taxes	10,000
Income tax	0
Net income	10,000

Source: Illustrative figures by the authors

In the observed year the company is allowed to make payouts in the amount of up to 60 million Euros or, according to the traditional dividend payout ratio definition, the dividend payout ratio may fluctuate from 0% to 600%. Payouts to shareholders either reduce the company's cash reserves, force the company to sell its assets or raise new capital in the form of debt or equity. Currently we assume that to make payments, at first the company uses its cash and bank reserves (rate of return on cash and bank reserves is 4% a year), but the latter cannot be lower than 6 million Euros. If the planned payout is larger, the company raises new short-term loans (with an interest rate of 8%).

In the following table the values of selected profitability ratios are presented in the situation where the hypothetical company decides to retain profit (both under DPT and TPT regimes), and with minimal and maximal values of ratios in the situation of DPT over possible dividend payout ratios and schemes.

**Table 3.** Profitability Ratios of a Hypothetical Example-Company under Different Scenarios

Financial ratio	Value of the ratio when no payments are made		Lowest possible value under DPT	Highest possible value under DPT
	Under DPT	Under TPT		
Profit margin	8.33%	6.56%	-6.90%	8.33%
Net ROA	6.90%	5.47%	-6.62%	7.36%
ROE	11.76%	9.37%	-18.06%	15.38%

Source: Authors' calculations

In the situation where the company does not make payments to its shareholders its profitability ratios are expectedly better (i.e. profitability ratios are higher and risk level is lower) when earnings are taxed at the moment of distribution.

If we assume that tax depreciation equals accounting depreciation and there are no other tax accounting rules that distort net income, then the net income under total profit taxation regime is lower than that under distributed profit taxation regime in all occasions, except when a company distributes more than 100% of its net income as gross cash dividends (the latter case is more of an exception than a rule, since such behaviour is clearly not sustainable).

Differences in financial ratios of two similar companies operating in different taxation systems also arise because of the fact that in the case of distributed profit taxation the moment of taxation is shifted to the period when payments are made to the shareholders. Even if all the profit earned is paid out and this policy is followed consistently, time shift causes difference in financial ratios.

We can illustrate this in our example with the hypothetical company and calculating future ROEs<sup>7</sup>. For this purpose we compiled simplified *pro-forma* financial statements based on three main assumptions:

- Total return on assets (EBIT/Assets): 20%
- Dividend payout ratio: 50%
- Tax rate: 21%

The company's development was modelled under three scenarios: 1) the company operates under TPT; 2) the company operates under DPT keeping the same amount of retained profit as under TPT; 3) the company operates under DPT paying the same amount of dividends as under TPT. Results are presented in Table 4.

**Table 4.** The Dependence of Return on Equity on Sales Growth and Tax Regime in a Hypothetical Example-Company

Profitability indicator (scenario)	Year				
	1	5	10	25	50
ROE <sub>TPT</sub> (1)	15.05%	15.05%	15.05%	15.05%	15.05%
ROE <sub>DPT</sub> (2)	17.05%	17.05%	17.05%	17.05%	17.05%
ROE <sub>DPT</sub> (3)	17.36%	17.44%	17.56%	17.90%	18.14%

Source: Authors' calculations

Under the first two scenarios the company's assets would grow 10% annually. If the company under DPT retains the same amount of profit as under TPT its ROE is higher due to the time shift mentioned previously. This gap remains constant over the time. However, when comparing scenarios 1 and 3, we see that the gap between ROE<sub>DPT</sub> and ROE<sub>TPT</sub> is widening, although its growth would slow down as ROEDPT has an asymptotic value.

One can see that in the case of the company paying out all its earnings as dividends (dividend payout ratio = 100%) the annual growth rate drops down to 0% and return on equity becomes equal under all three scenarios (ROE<sub>TPT</sub> (1) = ROE<sub>DPT</sub> (2) = ROE<sub>DPT</sub> (3) = 15.80%).

With all the above calculations we have to keep in mind companies operating in different taxation systems when comparing their performance ratios. ROE<sub>TPT</sub> (1) is lower than ROE<sub>DPT</sub> (2), which in turn is lower than ROE<sub>DPT</sub> (3), but pre-tax return on equity is the same under

<sup>7</sup> It has to be remembered that ROE can be computed using different approaches. One can use current year equity, last year equity, or average of these two equity indicators in the denominator. As a result, different approaches cause different biases (upward or downward, depending on a company's performance during a year) We used the following formula for ROE:

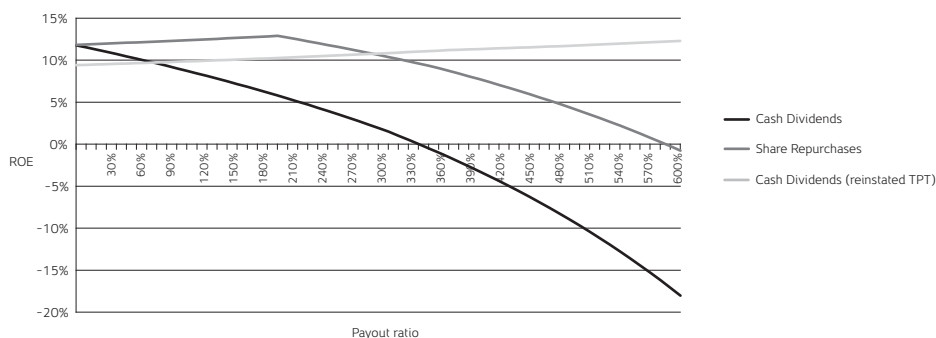
$$ROE_t = \frac{\text{Net income}_t}{\frac{1}{2} (\text{Equity}_{t-1} + \text{Equity}_t)}$$

all three scenarios ( $ROE_{PRE-TAX} = 19.05\%^8$ ). This leads to the suggestion that performance analysis of companies operating under different taxation systems should be undertaken on the pre-tax level.

But problems arise not only when we compare companies operating under different taxation systems. Differences in companies' payout policies make it hard to compare different companies even in the domestic context; also it becomes difficult to interpret various financial ratios.

The ROE of our hypothetical company will be 11.76% if it does not make payments to shareholders during the period under observation. If the company pays out all the net income for the last period, ROE will fall to approximately 9%. If the company decided to pay out all the free equity as cash dividends (in the amount of 60 million Euros), the company would be in a deep loss in the observable period and ROE would fall to -18%. However, the last scenario does not mean that the company operated poorly. The net loss is related to the company's shareholders deciding to take out all the free equity.

**Figure 3.** The Dependence of ROE on Payout Ratio under Different Payout Schemes in a Hypothetical Example-Company



Source: Authors' illustration

If the same amount (60 million) was paid out through shares repurchase, then the company would be able to show a return on equity of 15.38% before the enactment of the changes to the Income Tax Act in 2009, i.e. the payout to shareholders would increase the return on equity quite significantly<sup>9</sup>.

So, not only the decision whether to make payments to shareholders or not, but also the payment scheme affects the financial ratio. In the process of thorough performance evaluation different relationships between figures usually should become apparent. However, profitability indicators are often used in large-sample scientific research, or to rank companies where it is impossible to figure out what is behind the value of one or another financial ratio. In these cases it would be better to use indicators less influenced by tax aspects, such as total return on assets (EBIT/Assets), or pre-tax earnings ratio to equity. In our example, the first

<sup>8</sup> Also it is equal to ROE (i.e. total return on equity in absence of profit taxation). Again, notice the ROE formula currently used.

<sup>9</sup> According to the rules of share repurchase taxation effective since 2009, a similar payout would mean the decrease of return on equity to -0.84%.



indicator varies from 9.05% to 9.86%, that is remarkably less when comparing to ROE – that is why it suits better to characterise the ability to earn profit<sup>10</sup>. Also, the ratio of pre-tax income to equity is considerably less sensitive to payout policy chosen compared to ROE varying in the range of 11.7% to 16.72%.

Of course the utilisation of pre-tax profitability ratios as a solution is not flawless, because a company's income tax does not only depend on the profit distribution policy. For instance, in Estonia, in addition to profit allocation, companies must pay income tax e.g. on fringe benefits (Income Tax Act § 48), on gifts, donations, and costs of entertaining guests exceeding marginal rates fixed by the state (Income Tax Act § 49), on expenses not related to business (Income Tax Act § 51) and on other payments not related to business (Income Tax Act § 52). When focusing on pre-tax profit figures a series of other expenses and costs are frequently out of consideration – in some companies they are of a permanent nature.

#### 4. Price-to-Book Ratio under Different Taxation Regimes

Price-to-book – the ratio of equity market value of a company to its equity book value – belongs to a family of equity-based valuation multiples that stem from the acclaimed Gordon (1959) dividend discount model (see e.g. Damodaran, 2001; Chirkova, 2005):

$$(1) \quad P = \frac{DPS}{k_e - g_n}$$

where *DPS* denotes dividend per share, *k<sub>e</sub>* and *g<sub>n</sub>* denote the cost of equity and dividends growth rate, respectively. According to this model, it is possible to determine stock price (equity value) as a function of a company's dividend growth rate (whereas the dividend growth rate is a function of a company's return on equity and dividend payout ratio), cost of equity and dividend per share – assuming the company's operating infinitely. Consequently, the price-to-book ratio may be represented as a function of company-specific indicators according to the following formula<sup>11</sup> (where *ROE* denotes the company's return on equity<sup>12</sup>):

$$(2) \quad P = \frac{DPS}{k_e - g_n}$$

So, in order to assess whether the ratio of the company's equity market value to the company's equity book value is theoretically sound we need to know its future ROE, dividend growth rate and cost of equity. However, formula (1) and hence, formula (2) themselves give an indication about the model's potential flaws. It assumes no corporate taxation, no financial leverage, no impact of inflation and no transaction costs; also, all the variables are supposedly constant. All these aspects drift the model away from real life: while there are companies using no debt capital, inflation in some countries may be considered insignificant, and

<sup>10</sup> Certainly it would be more sensible to differentiate the return on financial assets and core business related assets.

<sup>11</sup> This relationship was derived singly by the authors. This derivation is available in many sources, e.g. Fernández (2001), Damodaran (2001), Chirkova (2005).

<sup>12</sup> As it can be seen, P/B and ROE are theoretically connected, and thus the joint treatment of these two indicators in the present paper is justified.

companies might achieve a level of a stable growth, the question about the validity of theoretical P/B ratio in the situation where companies' profits are taxed, still remains topical.

In this part of the paper we elaborate a theoretical P/B ratio by incorporating financial leverage and corporate profit taxation. The influence of profit taxation is taken into account for two different cases – total profit taxation and distributed profit taxation. It has to be mentioned that a tax-adjusted P/B ratio is sensitive to a company's payout policy similarly to ROE.

We start with a set of assumptions that can be summarised as follows:

- Values of P/B ratios are developed from an investor's point of view on the basis of discounted future dividends.
- There is no double-taxation, profit is taxed only once. In the case of TPT the whole pre-tax profit is taxed, in the case of DPT only distributed profit is taxed.
- The income tax rate on dividends is equal to the income tax rate on capital gains.
- Equity growth rate depends on a company's profitability and dividend payout ratio (according to a traditional dividend discount model).
- No impact of inflation is incorporated in our model.
- A company maintains a constant level of leverage, i.e. with an increase of its equity the company increases its debt capital. Also, constancies of cost of equity, profitability, interest rate on debt, income tax rate and payout ratio are assumed.
- Last but not least a condition stems from the dividend discount model itself – the company's growth rate must be less than its cost of capital.

We present results of our analysis<sup>13</sup> in Table 5. For better comparison three situations are presented: 1) no taxation and no leverage, 2) leverage and TPT, and 3) leverage and DPT.

Table 5. P/B Ratio under Different Financial Leverage and Corporate Taxation Regimes

Scenario	P/B theoretical value
Traditional approach (no taxation and no leverage)	$\frac{P}{B} = \frac{R_A \delta}{k_a - R_A (1-\delta)}$
Leverage and Total Profit Taxation	$\frac{P}{B_{L,TPT}} = \frac{R_A \delta (1-d) + (R_A - k_a) d - (R_A - r) d t}{[k_a - R_A (1-\delta)] (1-d)}$
Leverage and Distributed Profit Taxation	$\frac{P}{B_{L,DPT}} = \frac{[R_A \delta (1-d) + (R_A - k_a) d] (1-t) - (K_a - r) d}{[k_a - R_A \cdot (1-\delta)] \cdot (1-d)}$

Source: Authors' derivations

Variables:

$k_a$  – cost of capital

$R_A$  – total return on assets (EBIT/A)

$\delta$  – dividend payout ratio (in situations with no taxation and no financial leverage)

$d$  – leverage (D/A ratio)

$t$  – tax rate

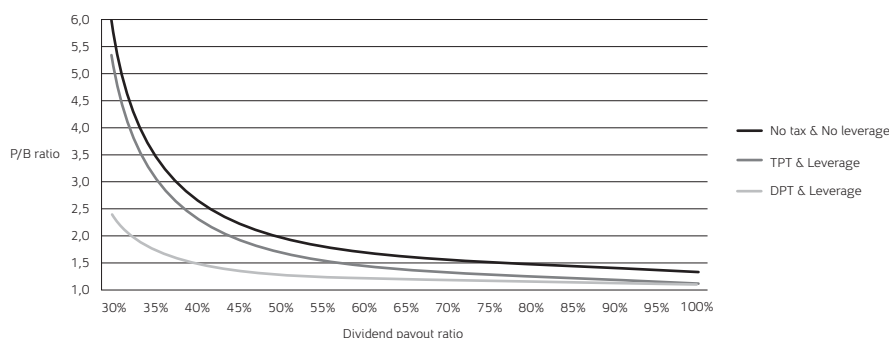
<sup>13</sup> We forego all the mathematical derivations of formulas – they can be provided on request.

In the case of the traditional approach (no financial leverage and the absence of profit taxation) the return on assets  $R_A$  coincides with a return on equity and  $k_a$  is equivalent to  $k_e$ . We also would like to point to the fact that the dividends' growth rate under all scenarios is equal to  $R_A (1-\delta)$ , although actual dividend payout ratios are different due to the impact of financial leverage and corporate tax.

The impact of a taxation regime and leverage on the P/B ratio is illustrated in Figure 4. P/B ratios for different situations were calculated with the following numerical assumptions (figures are arbitrary, but to a large extent follow the previous example of the hypothetical company):

- $R_A$  : 20%
- $k_a$  : 15%
- $r$  : 8%
- $d$  : 20%
- $t$  : 21%

**Figure 4.** The Dependence of the P/B on the Payout Ratio under Different Taxation Regimes in a Hypothetical Example-Company



Source: Authors' illustration

As we can see, there is a significant difference between the three cases: expectedly, corporate taxation decreases the theoretical value of the P/B ratio (while in contrast, the financial leverage increases the theoretical value of the P/B ratio). In the case where  $R_A > k_a$  a company operating under a distributed profit taxation regime should have a higher P/B compared to a company operating under total profit taxation (*ceteris paribus*). Thus, an investor must take into account differences in the taxation of companies (and also leverage), when comparing value creation on the basis of the price-to-book ratio. One can notice that with the increase of the dividend payout ratio, P/B ratios converge to a common value, but obviously a dividend payout ratio higher than 100% is not sustainable in the long-run. One can notice that in case of  $\delta = 100\%$  we have  $P/B_{TPT} = P/B_{DPT}$  (which also means that  $P_{TPT} = P_{DPT}$ ) – if companies under different taxation schemes do not reinvest their net income then the impact of distributed and traditional profit taxation on the companies' value is the same (*ceteris paribus*).

Table 6 is presented in order to distinguish the effect of corporate taxation from the effect of financial leverage in the current example.

**Table 6.** The Impact of Financial Leverage and Corporate Taxation Regime on P/B Ratio under Different Dividend Payout Ratios in a Hypothetical Example-Company

	Dividend payout ratio			Dividend payout ratio		
	30%	50%	100%	30%	50%	100%
	No taxation and no leverage			Dividend payout ratio		
P/B <sub>TPT</sub>	6.00	2.00	1.33	7.25	2.25	1.42
P/B <sub>DPT</sub>	6.00	2.00	1.33	7.25	2.25	1.42
	Taxation and no leverage			Taxation and leverage		
P/B <sub>TPT</sub>	1.80	1.20	1.05	2.42	1.28	1.09
P/B <sub>DPT</sub>	4.74	1.58	1.05	5.36	1.70	1.09

Source: Authors' calculations

Figures in Table 6 follow the expectations. Financial leverage increases the theoretical value of the P/B ratio regardless of the presence or absence of corporate taxation<sup>14</sup>. We see the opposite under scenarios with corporate taxation without financial leverage. However, in the last case,  $P/B_{TPT}$  is affected to a larger extent compared to  $P/B_{DPT}$ . The gap between  $P/B_{TPT}$  and  $P/B_{DPT}$  remains relatively the same when incorporating the effect of financial leverage. This leads to an interesting practical conclusion: companies operating under the distributed profit taxation system should have a higher value of equity (market capitalisation) compared to ones operating under a traditional profit system (*ceteris paribus*). And of course, one can observe that ignoring financial leverage and taxation may lead to the overpricing of the company's equity.

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## Conclusions

There are plenty of financial indicators used to measure companies' value creation. While each indicator is flawed one way or another, all of these are used by different stakeholders in order to assess a company's performance.

Return on equity (ROE) and P/B ratio are used for several purposes, but mainly to assess a company's performance. The literature on performance measurement indicators has not so far considered the impact of different corporate taxation principles on the possible divergence of a company's performance indicators.

Estonia introduced the system of distributed profit taxation (DPT) in 2000 as a result of taxation reforms, and is one of the few countries in the world where such a system exists. Postponing the moment of a company's profit taxation from the date of earning till the date of its distribution results in improving ROE in a majority of the companies (with the level of risk decreasing). ROE is very sensitive to the scheme and amount of payout under distributed profit taxation rules. Adequate conclusions about a company's performance can therefore be made only if we are aware of a company's profit distribution decisions. A common approach is a comparison of the performance of companies operating in different taxation systems or within the same taxation systems, but with different payout policies. One of the alternative

<sup>14</sup> However, if  $RA < ka$  then the impact of financial leverage on the P/B ratio also becomes negative.

solutions would be the construction and utilisation of a financial ratio with a lower level of sensitivity to the selected profit distribution policy, e.g. pre-tax return on equity, total return on assets or capital employed.

In the case of price-to-book ratio, income taxation leads to the decrease of P/B ratio compared to the situation when company's earnings are not taxed. However, P/B under DPT is affected less than P/B under traditional profit taxation. Thus, analysts should take into consideration the tax regime under which a company operates in order to make proper conclusions. Ignorance of profit taxation and financial leverage may lead to overestimation of P/B ratio and consequently to overpricing of the market value of equity.

As a direction for future research we suggest to conduct a survey to determine whether practitioners (investment bank analysts, financial managers, portfolio managers etc.) take into account corporate taxation aspects when measuring companies' performance and assessing their values. This survey would map the situation and its results would be beneficiary for practitioners themselves. Also, to fill the gap in literature, theoretical values of tax-adjusted P/B and P/E (and also price-to-dividend) ratios should be developed as in the present paper we focused only on P/B ratio. These results shall be very interesting and beneficial to practitioners (equity analysts mostly) and financial theoreticians dealing with the topic of equity valuation.

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