Empirical analysis of capital structure and dividend decisions under distributed profit taxation

Aaro Hazak
Tallinn University of Technology
Kopli 101, 11712 Tallinn, Estonia
Phone: (+372) 6 141 800, fax: (+372) 6 141 900, e-mail: aaro.hazak@ee.pwc.com

Abstract

This paper presents an empirical analysis of companies' capital structure and dividend decisions under distributed profit taxation (DPT), the corporate taxation regime of Estonia since 2000. The survey is based on the financial information available from the Estonian Commercial Registry in respect of a sample of 51 thousand Estonian companies. For the purposes of cross-country comparison, the Amadeus database information of 0.7 million companies from the European Union countries is used. The results give support to the hypothesis that the share of external financing in total capital of Estonian companies is lower in the conditions of DPT in comparison to that under the traditional gross profit taxation system. The DPT system has lead companies to distribute lower portions of profit as dividends. The undistributed profits appear to be largely retained as surplus cash, instead of being reinvested into long term productive assets. DPT appears to have a positive impact on companies' liquidity and sustainability, however the downside being the allocation of available funds into potentially inefficient investments. The results of the study may lead to discussions on introducing a similar system in other jurisdictions or on modifying the corporate taxation principles in Estonia.

JEL Classification numbers: G32, G35, K34

Keywords: capital structure, dividend policy, corporate taxation, distributed profit taxation

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1. Introduction

Distributed profit taxation (DPT) denotes a taxation system, whereby corporate income tax is based on the amount of profit distributed (as dividends or any indirect distributions) to the company's owners within the taxation period. In this way DPT differs from the classical gross profit taxation (GPT) system under which corporate income tax is calculated on the basis of a company's profit earned during the taxation period.

All the European Union (EU) countries operate GPT systems with Estonia with its DPT system being the only exception. The general concept of the DPT system is however not new. Similarities can be found, for example, with the investment tax credit system in the United States as well as with the taxation principles of personal investment gains in many countries.

This paper seeks to provide an empirical analysis of the impacts of DPT on companies' capital structure and dividend decisions, testing the assumptions and hypothesis in the theoretical papers on the effects of DPT by Hazak (2007a and 2007b). Companies' capital structure and dividend decisions under DPT are

hypothesised to be significantly different from these under GPT. The results of the study may potentially lead to discussions on introducing a similar system in other jurisdictions or on modifying the corporate taxation principles in Estonia.

The research is based on a sample of 51 thousand companies of Estonia over the period from 1995 to 2004 in a broad range of industries. This sample covers the majority of existing Estonian companies. For the purposes of cross-country comparison, information from the Amadeus database by Bureau van Dijk in respect of 0.7 million companies from the European Union countries is used.

The remainder of this article is structured as follows. Section 2 outlines the DPT system employed in Estonia. Summary overview of key related literature is provided in section 3. Section 4 describes the data and methodology used for the survey and section 5 presents the key results of the analysis. Section 6 concludes.

2. Distributed profit taxation in Estonia

Until 1999 Estonia utilised the traditional GPT system. Starting from 2000, Estonia levies no corporate income tax on retained profits. Income tax is imposed on all distributions (both actual and deemed), including dividends and other profit distributions, fringe benefits, gifts, donations etc. All corporate income is tax exempt when earned, including both active (e.g. trading) and passive (e.g. dividends, interest, royalties) types of income, as well as capital gains from the sale of all types of assets (including securities and immovable property).

From 2000 to 2004 profit distributed as dividends was taxed in Estonia at a flat rate of $26/74^{ths}$. For example, a company that had profits available of 100 units could distribute dividends of 74 units on which it would have had to pay deferred corporate tax of 26 units. In 2005, the income tax was lowered to 24%. In 2006 the tax rate was 23% and it is 22% in 2007. The current Estonian Income Tax Law is expected to reduce income tax rates to 20% (or $20/80^{ths}$ on top of net dividends) by means of a 1% decrease in both 2008 and 2009.

As Estonia has no annual net basis taxation of corporate profits, entities are not subject to tax depreciation, investment tax credit or losses carry forward rules. Dividends can be paid out of the profit which remains after all losses from previous periods are covered. Distributable profits are assessed according to the Estonian accounting regulations (which are in all material aspects in line with the International Financial Reporting Standards). There are no special accounting rules for tax purposes.

Except for special cases that mainly relate to the taxation of foreign investors, the tax effects on different forms of payout (e.g. dividends or share repurchases) are in general equal under the Estonian DPT regime.

Under the EU accession treaty, Estonia may apply its income tax on dividend distributions until 31 December 2008, after which the corporate tax system must fully comply with the EU Parent-Subsidiary Directive, which prohibits taxation of intra-group dividends. It is foreseeable that Estonia will continue to exempt retained earnings from corporate taxation until the end of 2008. The Estonian government has not decided yet about specific measures to align the tax system to the Parent-Subsidiary Directive.

3. Key Related Literature

The impact of taxation on companies' capital structure and dividend decisions has been an area of extensive research for nearly half a century. Studies on the effects of taxes on capital structure start with the early tax-inclusive model of Modigliani and Miller (1963), while the many recent models tend to search for the combined impact of taxes as well as other micro and macro level factors on capital structure. Detailed literature reviews include Graham (2006), Prasad, Green and Murinde (2001), Myers (2001), and Masulis (1988). Optimal dividend policy research spans from the Miller and Modigliani (1961) model to the numerous recent interpretations. Several extensive literature analyses have been written about dividend policy, including Lease et al (1999), Frankfurter and Wood (2002), and Allen and Michaely (2003). However, agreement has been reached neither on the effect of taxation on companies' payout decisions nor on capital structure.

The consequences of distributed profit based corporate taxation have been addressed only in a limited number of scientific articles, including the following.

Hazak (2007a) has studied companies' capital structure under DPT from theoretical perspective. The paper demonstrates that the most important difference between the GPT and DPT systems is the timing of tax payments, whereas in essence the tax base under both taxation regimes is gross profit. Tax payments under DPT occur later (or, at least, not earlier) than in a GPT system as profit cannot be distributed as dividends before it is earned. DPT as opposed to GPT is comparable to the granting by the government of an interest free loan to companies. The government does not collect the corporate tax in the period when the profit is earned, but gives a "tax credit" until the profit is distributed. An important feature of the DPT system is that the timing of dividend payments and thereby tax payments is at the discretion of the investors. The theoretical analysis by Hazak (2007a) shows that for the companies that prefer debt to equity, differences of the taxation systems contribute to lower demand for debt finance under a DPT system. The lower demand for debt is due to the later timing of tax payments and the resulting lower need for finance to cover the tax expense.

Hazak (2007b) presents a theoretical model on dividend policy under DPT, compared to GPT. The paper models a company operating under uncertainty in a binomial framework, including both company and investor level taxes and investor's different consumption levels. Hazak (2007b) shows that company value for the investor under DPT equals to that under GPT, if profits are fully distributed when earned and if tax rates are similar. There appear to be different optimums for the timing of dividends, depending on the investor's consumption as well as the probability of losses, tax rates and interest rates. In general, it appears from this paper that DPT leads to higher retained earnings than GPT. A key outcome of the theoretical analysis however is that though one of the aims of the Estonian corporate tax system is to motivate companies to reinvest the profits earned instead of paying them out, retaining of all the profits in the company may not be the optimal payout policy in many cases. One of the important assumptions that is used in Hazak (2007b) is that companies invest the undistributed part of profits in a risk free asset, whereas no additional business related investments would be made. The argument is that companies have already made all the desired profitable investments as they have had no constraints on using other sources of financing than the additional equity that is retained as a result of the effects of DPT.

Sander (2005) has researched on the tax advantage of debt within the conditions of the Estonian corporate tax system. In his article a two period model is presented. He finds the existence of a "tax shield" to depend on the legal status of the company, mentioning also the impact of dividend policy.

Staehr (2005) has studied the distributional aspects of corporate taxation, including the specifics of the Estonian tax system. Funke (2002) has analysed the investment effects of the Estonian 2000 tax reform. In the paper by Funke and Strulik (2003) the expected impact of the Estonian taxation system on growth and welfare is explored. Sepp and Wrobel (2002) have addressed the related tax competition issues.

None of the papers has however presented an empirical analysis of the impacts of DPT on companies' capital structure and dividend decisions. The present article aims to fill this gap to the extent possible.

4. Data and methodology

The empirical information has been gathered from the Estonian Commercial Registry's company database for the period 1995 to 2004. For the purposes of cross-EU analysis empirical information has been extracted from the Amadeus database by Bureau van Dijk. For every company, the data is included in the sample for these years for which the following criteria were met: (a) the company has been in no other status than "active" during the entire period of 1995 to 2004; (b) all necessary financial information was available in sufficient detail; (c) all components of assets and liabilities were non-negative; and (d) the total of assets did not differ more than 10% from the total of liabilities and equity, in order to exclude observations with evidently inappropriate or insufficient data.

The following financial leverage and liquidity ratios are employed in this survey for the purposes of characterising companies' capital structure and dividend decisions:

- LIABCAP is calculated as total liabilities divided by total capital as at the end of a given financial year. Total capital is defined as the aggregate of the book values of liabilities and equity, being equal to the book value of total assets. In this way, LIABCAP includes the impact of all kinds of external finance (financial services, trade creditors, etc) as well as both short and long term liabilities.
- LOANCAP is computed as loan liabilities divided by total capital as at the end of a given financial year. The difference between LIABCAP and LOANCAP is that the latter reflects only the share of loan liabilities, both short and long term, in total capital employed, thus focusing on the use of financial services.
- LTLICAP is arrived at by dividing long term liabilities by total capital as at the end of a given financial year. LTLICAP indicates the role of long term external financing in total capital employed.
- CASHCAP or cash ratio is cash divided by total capital as at the end of a given financial year. CASHCAP measures the company's ability to cover its liabilities by using the available cash balance only. In the context of this survey, CASHCAP is an indicator of how much of the company's capital is kept as cash (as opposed to being used in the business).
- RETECAP is a ratio of retained earnings to total assets. RETECAP is a combined indicator of past profitability and dividend policy, showing how large is the share of undistributed earnings (and any other equity items besides share capital) in total capital employed.

It has to be noted that the above leverage indicators are based on book values instead of market values. Liabilities as presented in the balance sheet might include a significant amount of accrued non-cash liabilities, thus distorting the capital structure analysis. Also, the balance sheet information does not reflect the maturity structure of assets and liabilities and consequent value implications. Moreover, there tend to be significant differences between companies' book and market values of equity. Market values of debt and equity were however not available for the companies in the sample.

For the purposes of excluding noisy observations from the sample, the following additional inclusion criteria have been used in respect of each observation:

- 0 = LIABCAP < 100,
- 0 = LOANCAP < 100,
- 0 = LTLICAP < 100,
- 0 = CASHCAP = 1, and
- -100 < RETECAP = 1.

The sample includes companies from the following industries only, in order to exclude the financial sector entities, sectors with significant involvement of state financing as well as some exceptional business activities:

- A Agriculture, hunting, forestry and fishing,
- C Mining and quarrying,
- D Manufacturing,
- F Construction,
- G Wholesale and retail trade,
- H Hotels and restaurants,
- I Transport, storage and communication, and
- K Real estate, renting and business activities

As the financial variables are in the form of ratios, the number of employees (EMPL) has been used as a rough company size measure in the study. In order to capture the specifics in companies' financial behaviour during different stages of development, company age (AGE) variable has been included. AGE measures the number of years from incorporation to the observation. Also, a company legal type indicator as a binary variable has been incorporated into the analysis. Type A stands for stock corporations (or public limited liability companies in some countries) and type B stands for limited liability companies (or private limited liability companies in some countries). This grouping seeks to distinguish companies that have positioned themselves as large from these who have chosen the (usually procedurally easier) legal form aimed at smaller companies. Companies of all other legal forms than type A and B (e.g. agricultural unions, non-profit organisations, and private entrepreneurs) have been excluded from the analysis.

After employing all the above inclusion criteria, the sample used for the empirical analysis covers 51 thousand Estonian companies. For cross-EU comparison, the sample based on the Amadeus database comprises 709 thousand companies from other EU countries than Estonia after having applied the above inclusion conditions.

Macro variables used in this research are real GDP growth (GDPGRO) and annual change in the share of private credit in GDP (dCREGDP). The latter is an indicator of the level of development of the financial sector and is used in the study in order to roughly exclude the consequences of the overall development of the Estonian financial sector during the years under review. The macro variables have been extracted from the International Financial Statistics Yearbook (2006) by IMF.

In order to test the hypothesis and assumptions by Hazak (2007a,b), descriptive statistics and panel data regression analysis with consideration of companies' heterogeneity of variance in random effects and employing robust standard errors have been used as the methodology for the research.

5. Results

First, comparative analysis of sample companies' mean average leverage indicators (LIABCAP, LOANCAP and LTLICAP) for the observations from 1995 to 1999 (i.e. under the GPT system) compared to these of the observations from 2000 to 2004 (i.e. under DPT) was performed.

The results in respect of LIABCAP are illustrated on Figure 1. Within the conditions of DPT, as opposed to the years under GPT, there has been a monotonously decreasing trend in the share of liabilities in total capital. Average LIABCAP has decreased from 73% in 2000 to 50% by 2004. This trend is robust on cross-industry basis.

Figure 1. Mean average LIABCAP

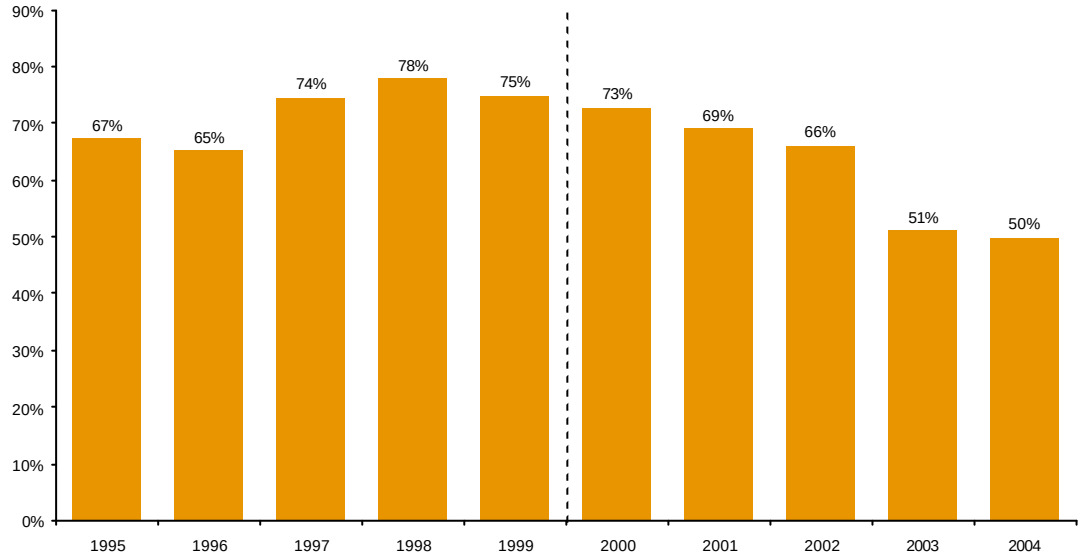

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Figure 2 illustrates the trend in sample companies' utilisation of debt financing. Overall, mean average LOANCAP of the observations exhibits an increasing trend during the GPT period until 1999. Thereafter, under DPT, there tends to be a continuation of the previous trend, which is replaced by a decrease in the share of debt in total capital in 2003 and 2004. These results may be explained by the overall development of the Estonian financial sector and decreased interest rates having an positive impact on the utilisation of debt financing as opposed to the negative impact of DPT. It may be argued that after the introduction of DPT companies have first decreased the share of other external financing in total capital and only thereafter have the impacts of DPT become visible in the utilisation of loans. Also, early termination of loans might be associated with costs that exceed the motivating effects of DPT. However, there are variances in the average LOANCAP analysis in respect of different industries, drawing to the need to substantiate the results with more sophisticated regression analysis.

Figure 2. Mean average LOANCAP

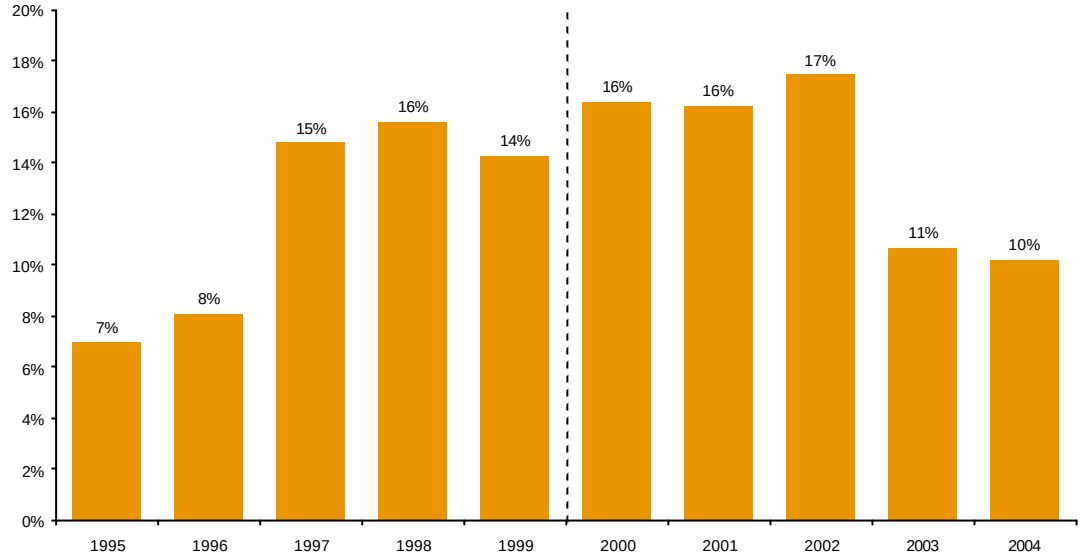

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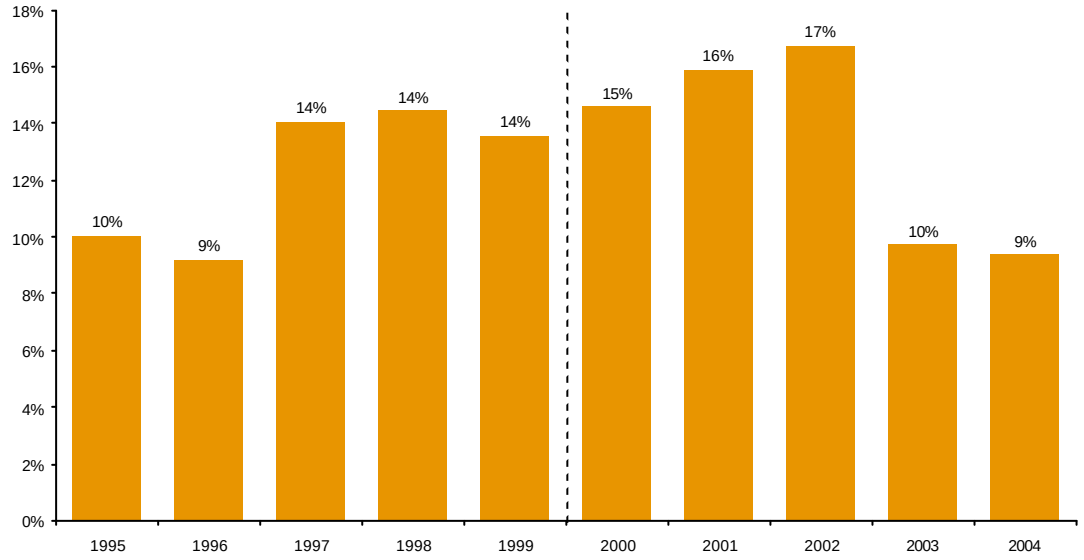
Figure 3 illustrates the results in respect of LTLICAP, showing the impact of DPT on long term external financing. Similarly to the previously discussed effects on LOANCAP, it appears that mean average LTLICAP has, in general, been increasing until 2002 and decreased thereafter. As it would be natural to expect that majority of companies' long term external financing is debt financing, similarity of the results based on LOANCAP and LTLICAP may be considered reasonable. Again, these results are not fully robust on cross-industry basis.

Figure 3. Mean average LTLICAP



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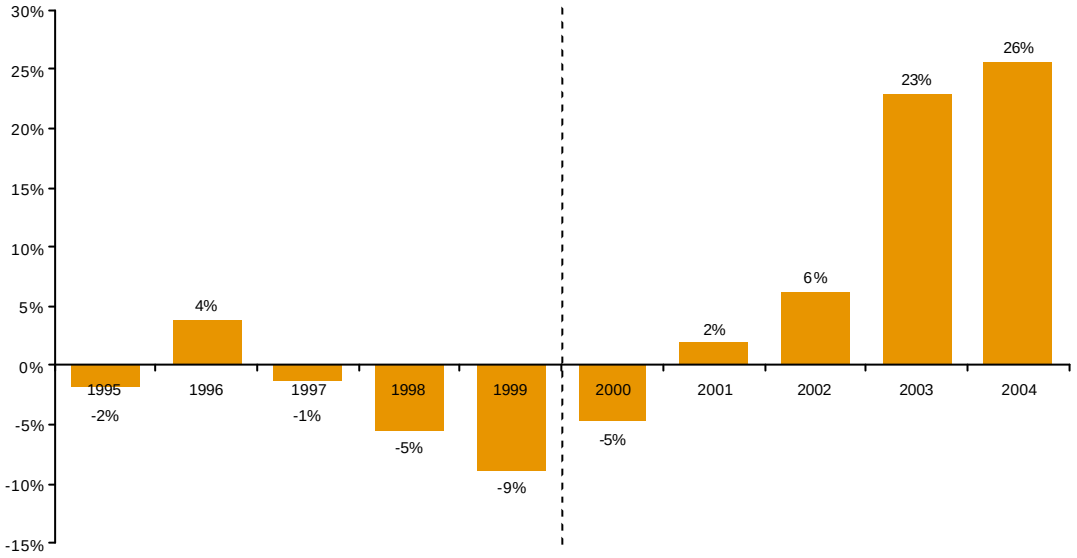
As an initial result, the above analysis gives some support to the hypothesis by Hazak (2007a) that for these companies that prefer debt to equity, the demand for external finance is lower under the DPT system in comparison to the GPT system.

Second, comparative analysis of sample companies' mean average RETECAP as an indicator of dividend policy for the observations under GPT compared to these under DPT was performed. Figure 4 illustrates the results. It can be noted that the average share of retained earnings in total capital exhibited a monotonously decreasing trend under GPT, but turned into a monotonous increase starting from 2000. The results are robust for different industries. Such findings support strongly the hypothesis by Hazak (2007b) that under DPT companies retain more profits undistributed than they would do under GPT.

Figure 4. Mean average RETECAP



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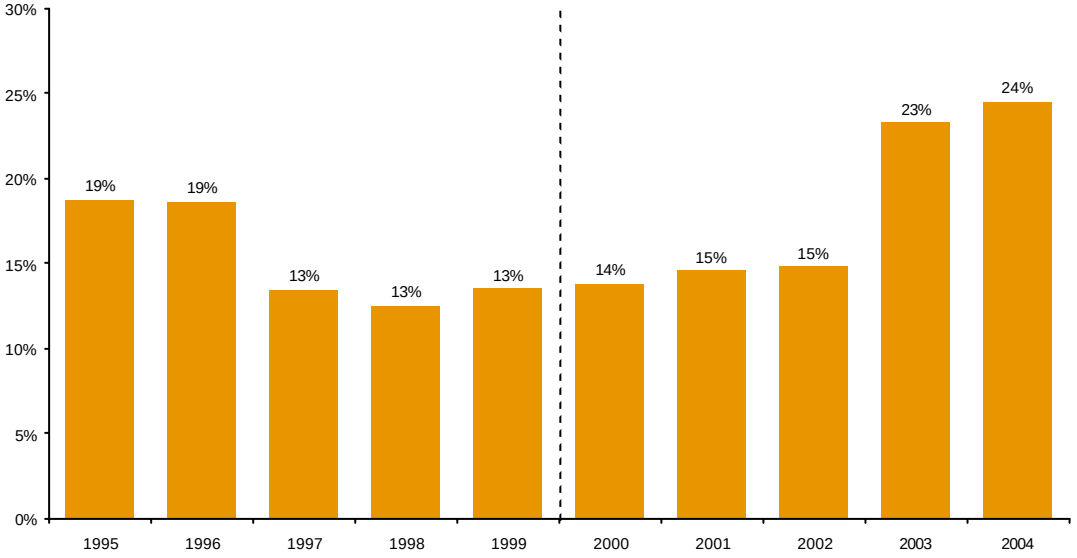
Third, comparative analysis of sample companies' mean average CASHCAP under GPT and DPT was performed. Figure 5 illustrates the results.

Figure 5. Mean average CASHCAP



Author's illustration

Profits retained in the company due to the effects of DPT do not lead to additional business related investments but in the accumulation of liquid assets (risk free investments) is an assumption by Hazak (2007b). One of the indicators capturing these relations is the share of cash in total assets. It appears that the average share of cash in total assets of the sample companies has increased continuously and significantly under DPT from 2000 to 2004, as opposed to the decreasing trend under GPT over 1995 to 1999. The outcome is similar for all the industries concerned. The results may be explained by the tax costs associated with dividend payment, leading companies to retain the profits, and at the same time with the unavailability of acceptable investment opportunities into the business, whereas the profitable investments have been made anyway by using either equity or external finance.

Overall, the hypotheses and assumptions tested have found preliminary empirical support by the results of descriptive statistics. In order to substantiate the results, more complex regression analysis models incorporating control variables were constructed. Outputs of the regression models are summarised in Table 1.

Table 1. Regression models

Variable	**LIABCAP**	**LOANCAP**	**RETECAP**	**CASHCAP**
Tax system	-8.153***	-3.700***	9.674***	3.920***
DPT = 1, GPT = 0	(-18.8)	(-6.0)	(22.7)	(13.1)
Company legal type	-2.570***	-5.643***	-0.475	-8.178***
A = 1, B = 0	(-5.3)	(-9.3)	(-1.0)	(-26.6)
AGE	-1.189***	-1.449***	1.033***	-0.401***
	(-20.7)	(-18.4)	(17.5)	(-9.0)
EMPL	0.005*	-0.009***	0.013***	-0.009***
	(1.7)	(-3.3)	(3.4)	(-2.7)
GDPGRO	0.247***	0.134**	-0.083*	-0.148***
	(5.2)	(2.1)	(-1.8)	(-4.8)
dCREGDP	-1.367***	-0.788***	2.172***	0.549***
	(-20.3)	(-8.5)	(31.9)	(11.9)
Constant	75.354***	54.585***	-3.466***	12.872***
	(75.5)	(44.0)	(-3.4)	(20.2)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Model statistics:				
Chi square	3.628	2,150	5,695	2,618
R square	0.088	0.159	0.115	0.096
No of observations	50,848	17,825	51,126	51,088

*Note: Statistical significance levels marked as *** (a < 0.01), ** (a < 0.05) and * (a < 0.1); t-statistic in brackets*

LIABCAP, LOANCAP, RETECAP and CASHCAP are introduced as dependent variables into respective four regressions models. Tax system (DPT versus GPT) is employed as the key independent variable. The control variables used are legal type of the company, company age, number of employees as a size indicator, annual GDP growth and annual change in the share of private credit in GDP, as well as the industry and year dummies.

Based on the analysis of the sample data, average share of liabilities in total capital appears to be 8.2% lower in the conditions of DPT in comparison to GPT. Compared to GPT, the share of loan liabilities in total capital of the sample companies is 3.7% lower under DPT. The above results exhibit strong statistical significance and give direct support to the hypothesis by Hazak (2007a) that companies utilise less external finance in their total capital under DPT than they would do under GPT. The relatively smaller effect of DPT on debt financing (LOANCAP) in comparison to the impact of the tax system on total external financing (LIABCAP) may be explained by differences in companies preference for debt and equity financing. As theoretically argued in Hazak (2007a), only these companies that normally prefer debt to equity (due to its lower cost) are expected to utilise less debt under DPT, while these companies that prefer equity to debt, do not demonstrate the decrease in debt financing as they would utilise as little debt as possible regardless of the tax system being DPT or GPT. Therefore the empirical finding that LOANCAP is less affected by the tax system than LIABCAP is consistent with Hazak (2007a).

Outputs of the regression model show that there is a significant impact of DPT on companies' dividend decisions. The share of retained earnings in total capital employed is on average 9.7% higher under DPT in comparison to GPT. This result is statistically significant and consistent with Hazak (2007b) finding that under DPT companies retain more profits undistributed than they would do under GPT.

As regards CASHCAP, the regression model demonstrates that average share of cash in total assets is 3.9% higher under DPT compared to GPT. This relation appears to be statistically strongly significant. Such a finding gives support to the assumption by Hazak (2007b) that profits retained in the company due to the effects of DPT lead to the accumulation of risk free assets.

High-level cross-EU comparison of mean averages of some of the financial indicators (LIABCAP, RETECAP and CASHCAP) for the observations from 1995 to 1999 compared to the mean average leverages of the observations from 2000 to 2004 was performed. The results are presented in Appendix 1. It can be noted that under the conditions of DPT, Estonia has undergone significant changes in companies' financial behaviour in the larger context of EU.

6. Conclusions

Estonia employed a traditional gross profit based taxation (GPT) system up to 1999 and has experimentally used a distributed profit taxation (DPT) system since 2000. The empirical analysis presented in the paper is based on a sample of 51 thousand Estonian companies over the period 1995 to 2004.

The study gives strong support to the hypothesis that companies' demand for debt tends to be lower under a DPT system in comparison to the GPT system. Based on the sample data, average share of liabilities in total capital appears to be 8.2% lower in the conditions of DPT compared to GPT. The share of loan liabilities in total capital of the sample companies is 3.7% lower under DPT in comparison to GPT.

The share of retained earnings in total capital employed of the sample companies is on average 9.7% higher under DPT in comparison to GPT, showing that companies tend to retain relatively more profits undistributed under DPT. Profits retained in the company due to the effects of DPT appear not to lead to additional business related investments, but to the accumulation of liquid assets instead. Average share of cash in total assets of the sample companies is 3.9% higher under DPT compared to GPT. The results may be explained by the tax costs associated with dividend payment, leading companies to retain the profits, and at the same time with the unavailability of acceptable investment opportunities into the business, whereas the profitable investments have been made anyway by using either equity or external finance.

Under the conditions of DPT, Estonia has undergone significant changes in companies' financial behaviour in the larger context of EU. These changes are clearly exhibited in the cross-EU analysis based on a sample of 0.7 million EU companies.

Overall, as a result of higher cash balances and lower exposure to risks related to excessive utilisation of loans and other external financing facilities, DPT appears to have a positive impact on companies' liquidity and sustainability. However the downside of this taxation system appears to be the allocation of available funds into cash as a potentially inefficient way of investment.

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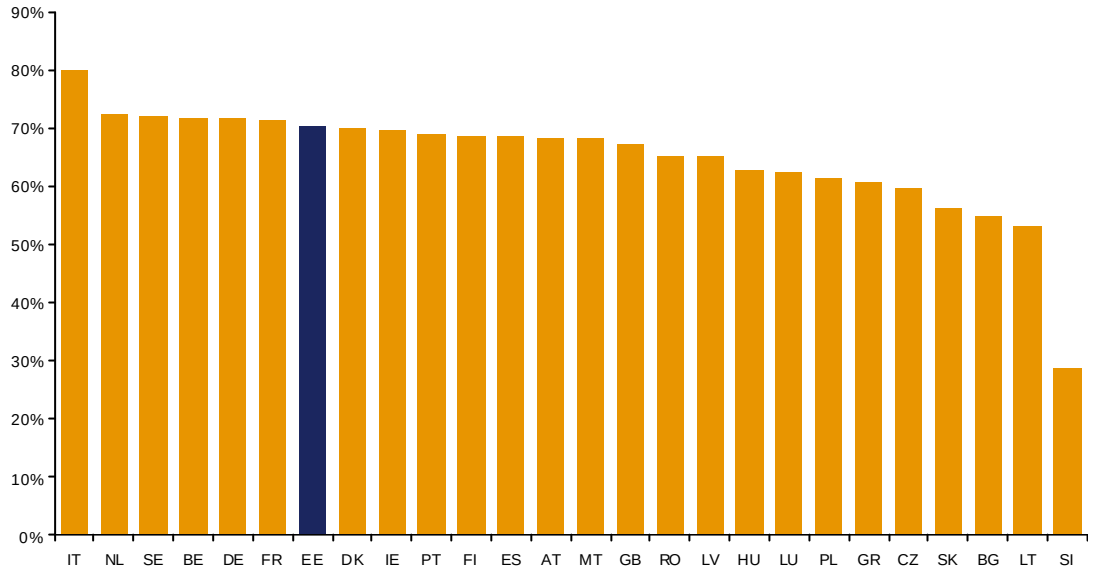
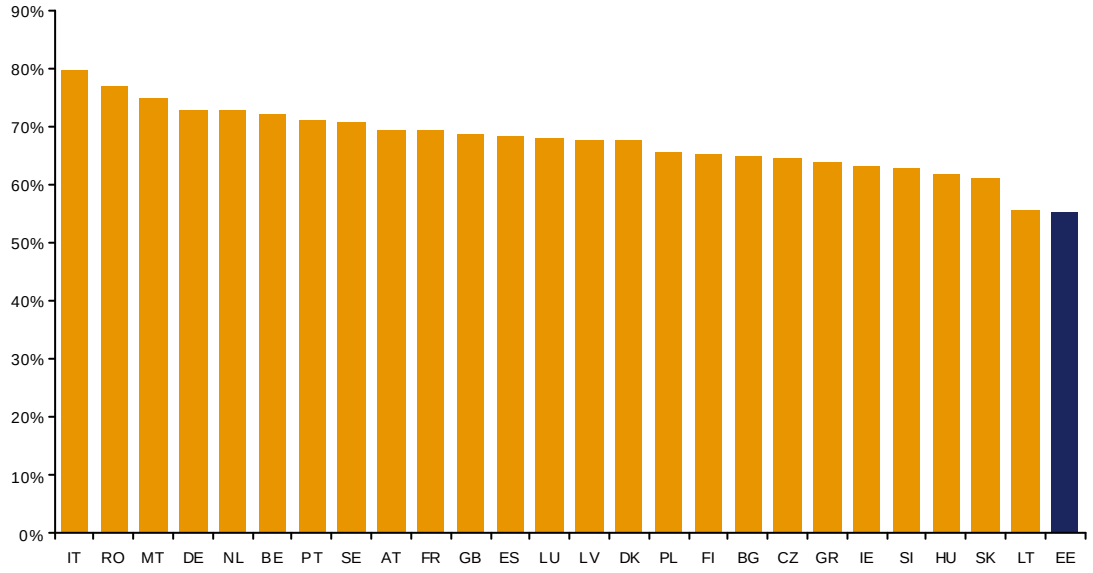
Appendix. Cross-EU comparison of average financial indicators

Mean average LIABCAP from 1995 to 1999



Author's illustration

Mean average LIABCAP from 2000 to 2005



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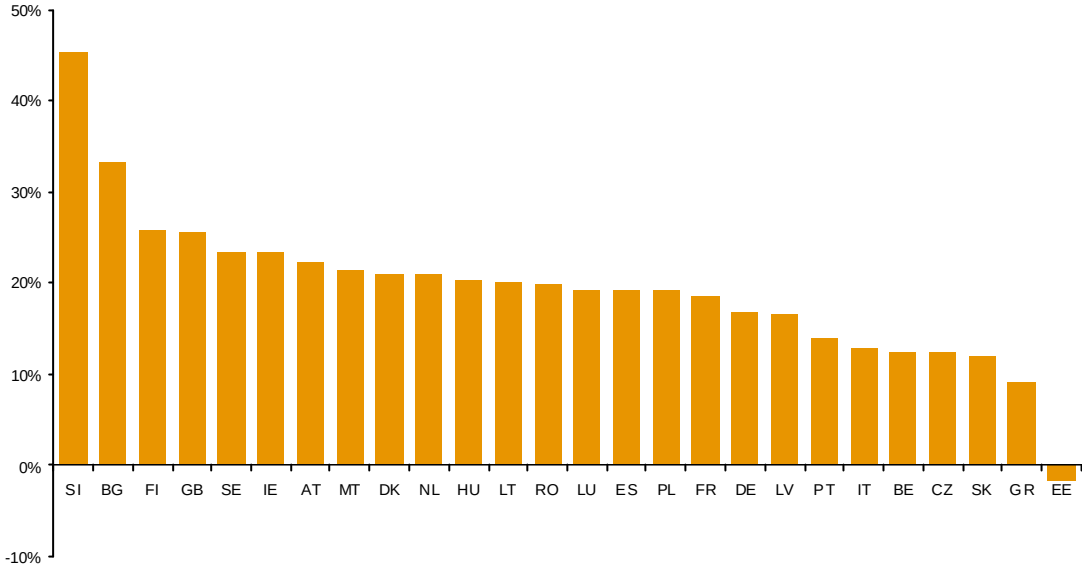
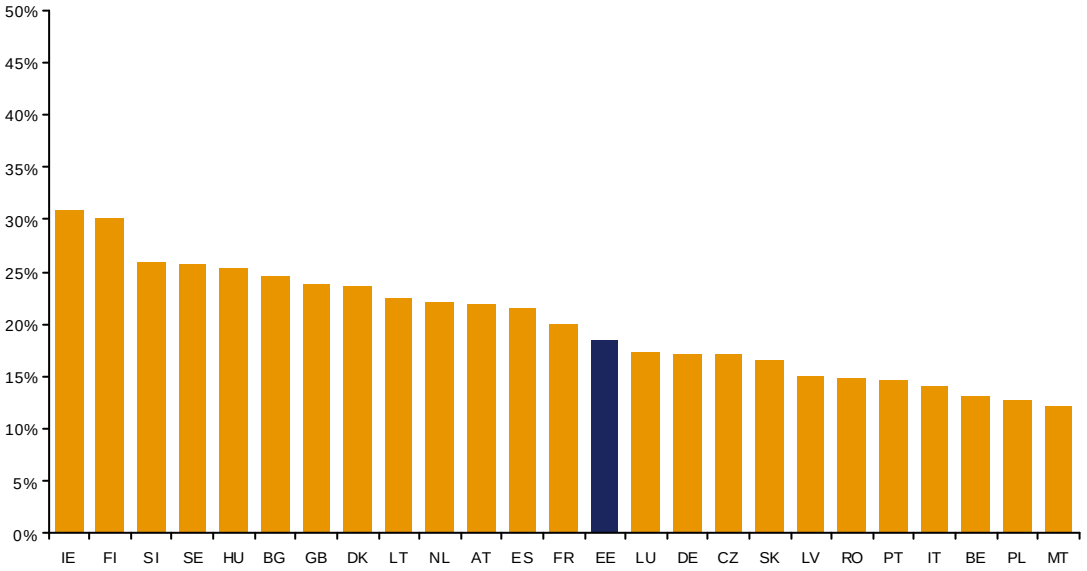
Mean average RETECAP from 1995 to 1999



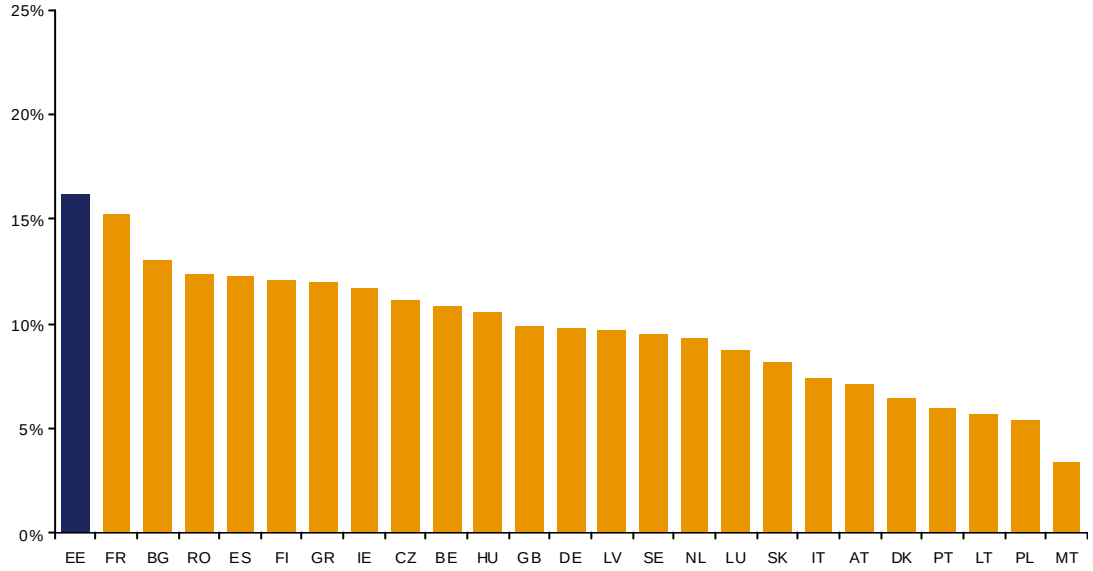
Author's illustration

Mean average RETECAP from 2000 to 2005



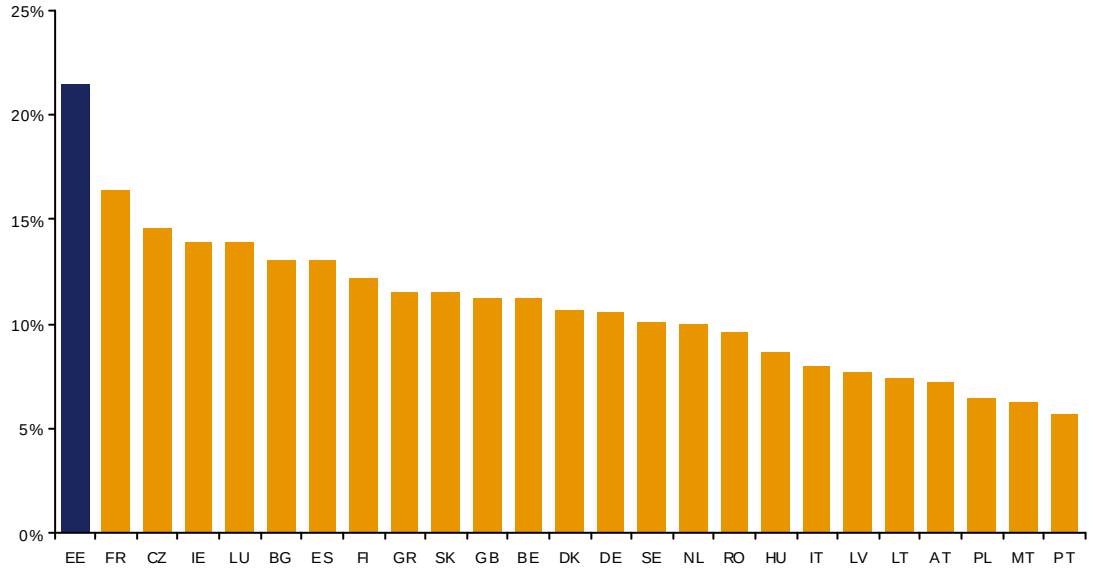
Author's illustration

Mean average CASHCAP from 1995 to 1999



Author's illustration

Mean average CASHCAP from 2000 to 2005



Author's illustration