CORPORATE INCOME TAXATION IN ESTONIA. WHO PAYS THE TAX?

Karsten Staehr[*]
University of Tartu and EuroFaculty

1. Introduction

The taxation of enterprise income in Estonia is due to change in coming years. In 2005, the corporate income tax rate was lowered to 24%, and further reductions can be expected, as other EU countries reduce their corporate tax rates. The Estonian tax exemption of reinvested profits must be removed by 2009. It is important to understand how these changes will affect the Estonian economy.

The topic has already attracted academic interest (Sepp & Wrobel 2002; Rõõm 2003, Raju 2003). None of these studies, however, have explicitly considered the distributional aspects of corporate income taxation. This article discusses the economic incidence of corporate income taxation, i.e. who eventually bear the burden of the tax. The main emphasis is on the functional distribution between capital owners and wage earners.

The article sets up a model of a small open economy in order to examine the incidence of taxes on respectively capital income and labour income. It is (realistically) assumed that labour is internationally immobile. The degree of capital mobility is then of pivotal importance. With no capital mobility and inelastically supplied labour and capital, the economic incidence corresponds to the legal incidence. With perfect capital mobility, the domestic after-tax capital return cannot differ from the international level. In this case, the corporate income tax is fully shifted and will entirely be borne by the workers.

The theoretical model can be used for analysis of the distributional effects of changing the Estonian corporate taxation. A lowering of the corporate income tax is likely to lead to higher wages and thus make the wage earners better off, while the capital owners' situation does not change. This "surprising" result rests on the assumption that Estonia is a small open economy with free international capital movements. The after-tax return on capital in Estonia cannot differ much from the international level, and a lowering of the corporate income tax will therefore lead to higher real wages.

The article is organised as follows: Section 2 gives a brief overview of the Estonian system of corporate income taxation. Section 3 presents selected topics from the theory of corporate taxation. Section 4 discusses the incidence of corporate taxation in a simple general equilibrium model. Section 5 concludes.

2. Enterprise taxation in Estonia

The rules governing the taxation of enterprise income has changed several times since Estonia regained independence in 1991 (Staehr, forthcoming). A tax reform, implemented in 1994, introduced a flat tax equal to 26% on labour income as well as corporate income. Since 2000, Estonia has had a unique system of enterprise taxation where only profits, which are paid out to the owners, are taxable. Reinvested profits are tax-exempt. The corporate income tax rate was lowered to 24% in 2005 along with the personal income tax rate. The corporate income tax is scheduled to be lowered alongside the personal income tax in future years, albeit this rests on continued political support.

One of the requirements for joining the European Union was that Estonia would abolish the tax-exemption of reinvested profits. Estonia was granted a grace period but will have to remove the exemption at latest by 2009.

Table 1 shows the distribution of revenues at all levels of government from 1996 to 2003. The revenue from the corporate income tax is relatively unimportant, contributing 1.7% of GDP or 4.4% of total revenue in 2003. An interesting feature is the fall in corporate income tax revenue in 2000 and 2001. The dip is partly the result of the economic backlash reaching Estonia in 1999 after the Russian crisis, but the main explanation is likely the tax-exemption of reinvested profits, which was introduced in 2000. The tax revenue has picked up in later years.

Table 1. Revenue sources of consolidated government budget, % of GDP

	1996	1997	1998	1999	2000	2001	2002	2003[*]
Social tax	11.4	11.3	11.3	11.2	11	11.1	10.9	11.4
Personal income tax	7.8	7.7	8.0	8.0	7.1	6.8	6.7	7.0
Corporate income tax	*1.6*	*1.8*	*2.4*	*2.0*	*0.9*	*0.7*	*1.2*	*1.7*
Value added tax	9.4	9.8	8.2	7.9	8.8	8.3	8.7	8.9
Excise taxes etc.	3.1	3.5	3.6	3.3	3	3.3	3.4	3.3
Other taxes	0.6	0.6	0.4	0.6	0.9	0.5	1.0	0.6
Non-tax revenue	4.4	5.3	3.8	3.5	4.0	4.7	4.8	5.6
Revenue	38.3	40.0	37.7	36.4	35.7	35.4	36.6	38.5

Source: Statistical office of Estonia. www.stat.ee, Statistical Database, Economy: (i) Government finances, Central and local government tax revenue; (ii) Gross domestic product at market prices. Own calculations. [*] = preliminary data.

It is difficult to compare corporate taxation systems across countries as the rules with respect to deductions and capital depreciation differ widely. Estonia is the only country in the EU where undistributed profits are tax-free. The top statutory tax rate on corporate income in the EU countries varied in 2004 from 12.5% in Ireland to 38.3% in Germany (EU 2004, p. 46-49). The tax rate in the eight accession countries from Central and Eastern Europe was on average 20.1% and the Estonian tax rate of then 26% was the second highest among these countries. The top statutory tax rate

on corporate income was on average 31.4% in the 15 "old" EU members. The corporate income tax rates in both groups have been reduced substantially from the mid-1990s.

The temporary revenue effects after the tax exemption of reinvested profits distort international comparisons of the revenue raised from corporate income taxation. In 2002, the average corporate income tax revenue was 3.1% of GDP for all 25 EU countries and 2.1% of GDP for the eight accession countries (EU 2004, part III). Using this measure, only Germany, Lithuania and Slovenia raised less revenue in 2002 from corporate income taxation.

3. Theories of enterprise taxation

Taxation of enterprises is a complex area within taxation theory. Still, space limitations dictate that we only present selected issues within the field. As always, it is useful to distinguish between positive and normative analysis.

In most countries, corporations act as payers of the bulk of tax revenue. The firms pay, *inter alia*, value-added tax, excise taxes, social tax and corporate income tax and in addition withhold income taxes. The corporations' central role as legal payers of many taxes implies that incidence analysis is an integral part of the *positive* theory of corporate taxation (Myles 1995, ch. 8).

Incidence analysis considers who bears the burden of the different taxes. Clearly, although the firms act as legal payers, they do not actually bear the entire burden of all these taxes listed. The tax burden might be shifted partly, entirely or in some cases more than 100% to other payers than the legal taxpayers. The degree of shifting depends on the elasticities of supply and demand in the market subject to taxation, but also of general equilibrium effects in the rest of the economy (Stiglitz 2000, ch. 18). The case of more than 100% shifting, over-shifting, can result from general equilibrium effects involving sectoral shifts (Myles 1995, ch. 8).

The incidence of corporate income taxation is complicated by the fact that a corporation is a juridical construction, which in itself does not derive utility from its profits. An incidence analysis that uncovers the functional distribution of the tax burden clearly has its limitations. Private enterprises are owned by individuals and societal welfare is likely to depend on the well-being of individuals. The individual incidence of corporate income taxation can be particularly difficult to estimate if profits are not distributed to the owners immediately and if ownership is dispersed. Section 4 discusses the incidence of corporate income taxation in a stylised model.

Turning now to the *normative* analysis, it is important to assert that corporate income is the return on capital invested in corporate firms. Corporate income is akin to returns from other forms of capital investment, such as savings accounts, bonds, real estate etc. There are fairness and efficiency arguments for treating different forms of capital income equally. The efficiency argument asserts that the tax system should

avoid distorting investors' choice between different means capital investment (Bernheim 2002).

These considerations still leave the question, what the socially optimal rate of capital income taxation is. Economic theory recommends that any desired redistribution should take place via taxation of the underlying, innate source of inequality, while taxation based on individuals' choices should be avoided in order to avert additional distortionary losses (Stiglitz 1987; see also Salanie 2003, ch. 5). Thus, if it is possible to tax labour income and windfall wealth gains optimally, the optimal tax rate on capital income is zero. The argument is that any redistribution should take place via taxation of immobile resources, while avoiding distortions of the intertemporal choice (Bernheim 2002, ch. 6). The tax rate on capital income should generally only be positive if political or practical constraints prevent an optimal labour taxation.

It is, however, sometimes argued that a corporate income tax should be higher than other forms of capital income taxation. The government provides public goods like infrastructure and a well-educated workforce, but also property rights, contract laws and other forms of regulation. The corporate income tax could be seen as the enterprise sector's payment for these services (Myles 1995, ch. 8).

In practice, almost all countries tax corporate income. A debate pertains to whether the tax should be levied at the firm level or at the level of the owners of the firm. A corporate income tax levied at the firm level essentially constitutes a withholding tax, but with no possibility for interpersonal redistribution. Firm-level corporate taxation eases the tax administration and increases compliance (Krogstrup 2002).

Compared to a system with immediate taxation of enterprise profits, the Estonian system of only taxing paid-out dividends effectively amounts to the government lending money to profitable enterprises as a risk-sharing partner. One argument for this policy could be that firms are credit constrained, e.g. because of information problems. The effects and the social desirability of this tax exemption are relatively unexplored in the academic literature. Research based on simulations suggests that tax exemption of profits indeed increases the capital stock and production in the long term, but consumption is lower in the short and medium term and the overall effect on discounted welfare might be negative (Funke & Strulik 2003).

4. Incidence in a simple general equilibrium model

In this section, we set up a simple general equilibrium model to determine the incidence of corporate income taxation. The focus is on the distribution of the tax burden between capital owners and workers. We consider two cases, *viz.* a closed economy and a small open economy where capital is internationally mobile. The model builds on Myles (1995, ch. 8) and Krogstrup (2002).

Assumptions

The firms rent capital and employ labour in order to produce a homogenous output good. It is assumed that there are a large number of identical firms and it is thus possible to consider a representative firm without assuming it has market power. The produced output is $K^{\alpha}L^{1-\alpha}$, where K is capital rented from the capital owners, L is employment and $\alpha \in (0,1)$ is a parameter. The Cobb-Douglas technology exhibits constant returns to scale, so the firm's entire revenue is spent on factor payments. The firm's output good is the numeraire good with price $p \equiv 1$. The fixed output price could be the result of international trade in the output good. Purchasing Power Parity, a stable international price and a fixed exchange rate would imply a fixed domestic output price.

The representative capital owner leases capital to the firm and in return receives the capital rent, which is spent on the output good. One can alternatively assume that the capital owner owns the firm and receives the profits stemming from the rents of the capital installed in the firm. The capital owner's capital stock is $\overline{K}$. The return received by the capital owner on invested capital is r.

The representative worker sells labour to the firm and, in return, receives wage income, which is spent on the output good. The worker possesses $\overline{L}$ units of labour, which does not yield any utility to the worker and, accordingly, is supplied inelastically. The wage rate received by the worker is w.

The government can impose taxes on capital income and labour income. The tax rate on capital income is t_K, the capital rent including the capital income tax is $(1+t_K)r$ and the after-tax capital rent received by the capital owner is r. The tax rate on labour income is t_L, the wage including the labour income tax is $(1+t_L)w$ and the after-tax wage rate received by the worker w. For computational ease, it is assumed that the firm withholds both the capital tax and the labour tax, but this is unimportant for the results. The government spends the revenue from the taxes on the domestic output good without affecting the welfare of the capital owner or the worker.

The closed economy

Consider first the case of an economy with no capital movements and no labour movements. The firm rents capital K and hires labour L to maximise profits, i.e. the firm solves the following problem:

$$\max_{K,L} \quad K^{\alpha}L^{1-\alpha} - (1+t_K)rK - (1+t_L)wL \tag{1}$$

The firm's demand functions for capital and labour follow from the first order conditions. The assumption of a closed economy implies that the supply of capital is equal to $\overline{K}$ and the supply of labour is $\overline{L}$. General equilibrium requires that both factor markets clear, in which case the output market also clears, cf. Walras' law. From the

equilibrium conditions the after-tax real capital rental rate and the after-tax real wage rate are found as:

$$r = \frac{1}{1+t_K} \alpha \overline{K}^{\alpha-1} \overline{L}^{1-\alpha} \tag{2}$$

$$w = \frac{1}{1+t_L} (1-\alpha) \overline{K}^{\alpha} \overline{L}^{-\alpha} \tag{3}$$

In this case, with a closed economy and inelastic factor supplies, the economic incidence corresponds fully to the legal incidence. The capital income tax is paid fully by the capital owners without affecting the workers. The labour income tax is paid fully by the workers and does not affect the capital owners.

The results of the incidence analysis can be stated in terms of elasticities of factor payments with respect to tax rates. The semi-elasticity of the after-tax capital rent with respect to capital taxation is $\partial \ln r / \partial t_K = -(1+t_K)$, i.e. a 1 percentage point increase in the capital tax rate leads to a $1+t_K$ percent fall in the after-tax capital rent. The semi-elasticity of the after-tax capital rent with respect to labour taxation is $\partial \ln r / \partial t_L = 0$. The semi-elasticity of the after-tax wage rate with respect to capital taxation is $\partial \ln w / \partial t_K = 0$, and with respect to labour taxation $\partial \ln w / \partial t_L = -(1+t_L)$.

The small open economy

Now consider the case of a small open economy with perfect capital mobility, but still no labour mobility. The small country cannot affect the world rental rate of capital r^*. The firm's problem is the same as in the closed economy, but the supply of capital is now perfectly elastic. The domestic after-tax rental rate must equal the rental rate internationally; in other words, capital flows will ensure that $r = r^*$ holds at any time (Krogstrup 2002).

The firm's demand for capital K is now met partly domestically and partly from external sources, i.e. $K = \overline{K} + \Delta K$, where $\Delta K > 0$ indicates capital import and $\Delta K < 0$ implies capital export. With the exogenous world rental rate r^*, in equilibrium the total capital rented by the firm is:

$$K = \alpha^{\frac{1}{1-\alpha}} \left((1+t_K)r^* \right)^{-\frac{1}{1-\alpha}} \overline{L} \tag{4}$$

It follows readily that a higher tax rate t_K on capital income leads to a lower capital stock K. The intuition is that a higher capital income tax incipiently will reduce the domestic after-tax return and, hence, make it more favourable to invest capital abroad. The capital outflow reduces the domestic capital stock with the result that the marginal productivity of capital increases and hence the return on capital em-

ployed in the firm. The capital outflow continues to the point where the domestic after-tax rate r is equal to the international capital rental rate r^*.

The after-tax wage rate clearing the labour market is:

$$w = \frac{1}{1+t_L}(1-\alpha)\alpha^{\frac{\alpha}{1-\alpha}}\left((1+t_K)r^*\right)^{-\frac{\alpha}{1-\alpha}} \tag{5}$$

We can now undertake an incidence analysis in the case of a small open economy with perfect capital mobility. From the fact that $r = r^*$, it follows that $\partial \ln r / \partial t_K = 0$ and $\partial \ln r / \partial t_L = 0$. The after-tax return on capital does not react to changes in the domestic tax rates. This is a direct consequence of the assumption of perfect capital mobility. If the after-tax return on investments in the small open economy is lower than the rate which can be obtained internationally, capital will flow out until the after-tax domestic return is restored at the level $r = r^*$.

Turning now to the effect of capital income taxation on the after-tax wage rate, we have the semi-elasticity:

$$\partial \ln w / \partial t_K = -\frac{\alpha}{1-\alpha}(1+t_K)r^* \tag{6}$$

An increase in the capital income tax by 1 percentage point reduces the after-tax wage by $[\alpha/(1-\alpha)](1+t_K)r^*$ percent. A higher capital income tax will, ceteris paribus, lead to capital outflow and a reduced capital stock with the effect that the marginal productivity of labour and hence also the wage rate received by the worker decreases. The effect of a changed labour income tax is $\partial \ln w / \partial t_L = -(1+t_L)$ as also found for the closed economy.

Economic policy

The main difference of the incidence analysis in the closed economy and in the open economy is the effect of capital income taxation on after-tax real capital and wage incomes. In the closed economy with inelastic capital and labour supplies, the economic incidence of capital income taxation follows the juridical incidence. In the open economy with perfect capital mobility and no labour mobility, the workers pay the entire capital income tax via depressed real wages while the capital owners do not contribute.[1]

Another difference is that the capital income tax is not distortionary in the closed economy as capital is supplied inelastically; the output is $\overline{K}^{\alpha}\overline{L}^{1-\alpha}$ irrespective the tax policy. With international capital mobility, the corporate income tax is distor-

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[1] The incidence results are fully in accordance with standard theory on tax incidence (Stiglitz 2000, ch. 18).

tionary; the output is $(\overline{K} + \Delta K)^{\alpha} \overline{L}^{1-\alpha}$ where ΔK depends on the capital income tax rate.

The model is useful for distributional analyses of tax policies. In this context, the most important experiment is a reduction of the corporate income tax rate as will expectedly take place in Estonia in future. A reduction of the corporate income tax rate will have no impact on the capital income received by domestic capital owners, but it will increase the (real) wage rate of the workers! Thus, further reductions of the capital income tax rate are likely to tilt the distribution towards labour income.

The complexity of the model has been kept to a minimum. Still, the main result is fairly robust: with perfect capital mobility, capital income taxes must be shifted fully to other tax sources. Thus, allowing some labour mobility would not change anything. However, if capital is only imperfectly mobile, the incidence results could change. The model could be extended to consider the impact on corporate tax incidence of different assumptions with respect to capital and labour mobility. This could be combined with empirical estimates of the mobility elasticities. Other interesting issues, which warrant further research, include the welfare effects of corporate taxation, possibly in an inter-temporal context (see also Funke & Strulik 2003).

The model only considers one country and assumes that the international capital rental rate does not change. The results above, however, suggest that countries might have incentives to lower corporate tax rates to attract more capital. This incentive is essentially the source of tax competition. It has been argued that such tax competition could lead to a "race to the bottom" although this depends on the specifications of the model (Krogstrup 2002, Wilson 1999).

5. Final comments

The background for this article is the vivid debate in Estonia and elsewhere on the taxation of production factors. The article emphasised that the economic incidence of different taxes can be very different from the legal incidence, but paid only little attention to the welfare consequences of different tax policies.

The incidence analysis rested on the assumption that capital is internationally mobile so the domestic after-tax return on capital cannot differ much from the international level. Under such conditions, the corporate income tax is essentially being borne by the workers employed by the enterprises – in the form of lower wages. A reduction of the corporate income tax will thus, *ceteris paribus*, make the workers better off.

This article illustrated how economic theory can provide insights on a highly topical policy issue in Estonia. Theory suggests that the actual distribution of a tax burden might differ markedly from the legal stipulations. The incidence in practice can only be determined by quantitative research employing estimates of supply and demand elasticities in various markets and modelling of the general equilibrium effects (see

e.g. Bellak *et al.* 2005). More theoretical and quantitative research on taxation issues would provide valuable insights for future improvements of the Estonian tax system.

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Kokkuvõte

ETTEVÕTTE TULU MAKSUSTAMINE EESTIS.
KELLEL LASUB TEGELIK MAKSUKOORMUS?

Karsten Staehr
Tartu Ülikool ja EuroFaculty

Lähiaastatel leiavad aset muudatused seoses ettevõtete tulu maksustamisega Eestis. 2005. aastal alandati ettevõtte tulumaksu määra 24 protsendile ning ees seisavad edasised maksumäära langetamised. Hetkel kehtiv reinvesteeritud kasumi maksuvabastus tuleb 2009. aastaks kaotada. Selliste muutuste mõju Eesti majandusele on oluline mõista. Artikkel käsitleb ettevõtte tulu maksustamise maksuintsidentsi, st kellel lasub tegelik maksukoormus. Põhirõhk on maksukoormuse jaotusel kapitaliomanike ja palgatöötajate vahel.

Artikkel kirjeldab ettevõtete tulumaksu süsteemi Eestis, sealhulgas unikaalset 2000. aastast rakendunud reinvesteeritud kasumi maksuvabastust. Ettevõtte tulu maksustamisest laekunud tulu vähenes pärast 2000. aastat, kuid on praeguseks taastunud. Eesti ettevõtte tulumaksu määr on võrreldes 15 "vana" EL riigiga suhteliselt madal, kuid teiste uute liikmesriikidega võrreldes suhteliselt kõrge.

Käsitletakse ettevõtte tulu maksustamise teooriaid, mille juures on olulisel kohal ettevõtte tulumaksu maksuintsidents. Maksuintsidents võib üsna palju erineda õiguslikust intsidentsist, sest maksukoormust saab formaalselt maksumaksjalt üle kanda teisele isikule. Maksuintsidents sõltub turuelastsustest ja üldise tasakaalu efektidest.

Artiklis esitatakse väikese avatud majanduse mudel, uurimaks kapitali ja töise tulu maksuintsidentsi. Seejuures on määrava tähtsusega kapitali mobiilsuse aste. Immobiilse kapitali ning mitteelastse tööjõu- ja kapitalipakkumise tingimustes vastab maksuintsidents õiguslikule intsidentsile. Täieliku kapitali mobiilsuse korral ei saa aga kapitali maksujärgne tulumäär lokaalsel tasandil erineda rahvusvahelisest tasemest. Sellisel juhul kandub ettevõtte tulumaks täielikult üle ettevõtete töötajatele.

Teoreetilist mudelit saab kasutada Eesti ettevõtte tulumaksu muutuste jaotuslike mõjude analüüsimiseks. Ettevõtte tulumaksu alandamine toob tõenäoliselt kaasa kõrgemad reaalpalgad, aidates palgatöötajad paremale järjele, samal ajal kui kapitaliomanike olukord ei muutu. Selline "üllatav tulemus" tugineb eeldusel, et Eesti on väikese avatud majandusega, kus puuduvad kitsendused rahvusvahelise kapitali liikumisele. Kapitali maksujärgne tulumäär Eestis ei saa rahvusvahelisest tasemest palju erineda, mistõttu ettevõtte tulumaksu muudatused kanduvad üle palgakujundusse.