

Comparative approach for corporate tax policy reform modelling

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Abstract— A taxation policy is one of the main instruments which can affect a range of national economy sectors and can support territorial development by special provisions in tax laws. Latvian current tax policy mainly continues the policy that follows after the tax reform of 1995. In general, the goal the tax system was to ensure capital inflow and capital market activities with the aim to increase foreign direct investment and to promote the development of national economy. The paper describes a mathematical model which can assist decision-making of policy makers and investors. The purpose of this article is to study the model which, based on the methodology of comparative economics, can allow supporting corporate tax policy decisions. So the study results in providing recommendation on the model and drawing consequent conclusions. The research is based on a comparative analysis of tax systems and academic literature.

Keywords— corporate tax policy, tax modelling, supporting model on tax policy decision making

I. INTRODUCTION

The corporate tax policy possibly is one of the most studied taxation topics. It has received extensive scientific, political and social attention. As J.M.Mintz argued “The corporation tax is arguably the well-studied tax found throughout the world”. Countless numbers of professionals study the impact of corporate tax law on corporation. Yet, despite considerable resources that are spent on compliance, taxes in many countries generate only a small portion of government revenues [1]. Despite transparency arguments that taxes should be imposed on consumption or on income of individuals, various states continue to tax corporate profits. Generally, the corporate tax is a benefit tax to ensure that corporations pay for public goods and services that improve their profits. The corporate tax also captures the rents earned by owners of fixed factors and serves as an additional tax element for taxation of individuals. [2] All developed countries and the most developing countries operate a form of corporate income tax. While corporate tax rates have fallen over the last three decades as well as the severe drop in revenues from corporate income taxes in 2008-2009 has been halted in 2010, the share of these taxes in total revenues

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remains at 9%. It is somewhat below the 11% share in 2007 and fully corresponds the 8.8% share of total tax revenues in 1965.

The economic globalization issues along with tax systems remaining largely in hands of national governments have led to a number of problems such as tax competition and advanced aggressive tax planning. The theoretical literature [3], [4], [5] provides no indication of a clear consensus on the likely outcome of tax competition, i.e. should we consider this phenomenon as a beneficial or a harmful development for tax system. However, the basic idea that tax revenues will depend on taxes in other jurisdictions is generally accepted. The purpose of this article is to study the model which, based on the methodology of comparative economics, can allow supporting corporate tax policy decisions. So the study results in providing recommendation on the model and drawing consequent conclusions. The research is based on a comparative analysis of tax systems and academic literature.

II. CORPORATE TAX POLICY CONSIDERATIONS

The corporate tax policy issues have raised a substantial researchers' interest in response to the crisis. They become even more important since public finances still continue suffering due to the shrinking tax revenues under conditions of higher unemployment rates and lower company profits. The corporate tax reform seems to be one of the crucial topics for future tax reforms.

Previous studies in the field of corporate taxation also allow to draw the conclusion that, despite different determining factors of corporate tax rates, the governmental policy of tax rates is often best described as a discrete option selection problem. The empirical model shows that governments decide on options that take account of either their own inherited corporate tax rate or the tax rate of neighboring countries. The governmental position on corporate tax regime and implemented tax incentives generally corresponds the tax burden imposed on corporate income relative to geographical neighbors. Probability of rate-cutting tax reforms is also strongly affected by general trends in neighboring countries. Some authors argue that foreign direct investment location choices depend on an effective average tax rate and propose a precise measure of this rate. To sum-up, can state that (i) corporate income tax rates have fallen in last 30 years; (ii) corporate tax revenues have stabilized since the 1990s; (iii) corporate tax rates are important factors for investment

decisions. Empirical analysis [7] estimates whether governments behave strategically when setting corporate tax rates and tax bases, and—if so—how they react to changes in other countries' tax rates and bases. Specifically, [7] estimates the slopes of tax policy reaction functions and examines how marginal changes in trade costs and gross domestic product affect tax policies in the Nash equilibrium. The estimated slopes and comparative static effects can be rationalized in a model where governments compete for foreign direct investments. The analogous analysis for regional (sub-central) competition is conducted in [8]. In this research, the tax competition analysis of public inputs is extended to the case where the number of regions that compete for business investment is endogenous. To determine the number of competing regions, a fixed cost of regional development is introduced into the Zodrow–Mieszkowski model of public-input provision [9]. Other research [10] conducted on corporate tax competition has analyzed tax competition on the micro level. According to Loretz and Moore, firms might not simply minimize their tax burden, but also might consider their competitors' behavior when deciding about tax planning. Empirically, this creates interdependencies in firms' tax planning activities. By introducing the concept of a reputational loss, we show the positive interdependence in a theoretical model and test it in a spatial econometric model [10]. While many aspects of tax reforms and firm behavior have been studied to evaluate their revenue impacts, the firms' income shifts within a given jurisdiction, in expectation of the lower future corporate tax rates, has received little attention in economic literature. This is surprising given that, if income shifting is not considered, the deadweight loss of the corporate tax is likely to be overestimated owing to the fact that income shifting does not reflect permanent changes in firms' behavior with real distortionary consequences, but is a short-term transfer of revenue over time [11].

Reflecting scientific interest on corporate taxation policy, we can summarize that a large number of papers have studied tax competition for foreign direct investment. As a pioneering contribution to this field, Haufler and Wooton [12] and Haufler [13] have developed a tax competition model for foreign direct investment. Their study employed a simple two-country model in which there were no domestic incumbent firms, using two potential host countries with asymmetric market sizes competing with each other to attract a foreign-owned monopolist. This study concluded that a foreign monopolist prefers to be located in a host country with a larger market, even if the government of that country imposes a positive tax rate when the market size is significantly large.

Several studies have attempted to elaborate on the model [12]. For example, Fumagalli [14] examined tax competition for foreign direct investment between two regions that differ in firms' technology levels under the assumption that the regions had the same market sizes. Bjorvatn and Eckel [15] analyzed tax competition for foreign direct investment between asymmetric countries by loosening the market structure of Haufler and Wooton's framework and showed that

differences in market structure influence both welfare implications of tax competition and the location choice of the foreign firm. They also showed that policy competition increases the attractiveness of a small country as an investment location. In [16], a unilateral and coordinated tax policies were analyzed within a union of two regions which compete with a potential host region. Hao and Lahiri [17] investigated passive and active governments in host countries in the location choice of the foreign firm by considering production efficiency among the domestic and foreign firms. Mittermaier [18] studied the role of firm ownership in tax competition for foreign direct investment under asymmetric market sizes in host countries and showed that, in policy competition, the location choice of the foreign firm is affected by ownership conditions of incumbent firms in host countries. Yasuo Sanjo [19] analyzed tax competition for foreign direct investment with country risk using a two-country model with different market sizes. According to [19], the trade-off between a country size as a locational advantage and a country risk as a locational disadvantage affects the location choice of a foreign firm. Given the circumstances, when the foreign firm (while deciding investment location) faces the same probabilities of a country risk in both potential host countries, our analysis shows that if the market size of the high-risk country is sufficiently large relative to the low-risk country, the foreign firm benefits from choosing the high-risk larger country even if the host country's government imposes a lump-sum tax. Given the situation in which the foreign firm faces different probabilities of a country risk in each host country, our results show that the important matter for the foreign firm is whether the host country is a high-cost or a low-cost, rather than whether the host country is a high-risk. However, scientific papers do not analyze a corporate tax policy, from the point of possible tax rates. In this paper, we develop a simple tax competition model for foreign direct investment with two country based on [20] and [21] research with focus on optimal tax rates for the corporate tax in a comparative analysis of two countries.

III. LATVIAN CORPORATE TAX POLICY BACKGROUND FOR ANALYSIS

Latvian corporate tax policy and corporate tax tools have also been discussed in Latvian scientific monographs, devoted to general tax policy issues [22], or detailed analysis on the corporate income tax [23] and taxes for agricultural enterprises, and recommendations for their improvement [24]. As shown in [23], Latvian current tax policy mainly continues the policy that follows after the tax reform of 1995. The tax policy was not targeted on the manufacturing sector. Initially, relatively high profit and property taxes, in combination with high penalties and high overdue tax debt interest ratios, extinguished large manufacturing enterprises. Generally, the system was built according to the decisions made in 1994 - 1995. Tax system, of course, was also influenced by accession to the EU and transposition of the EU tax regulations. From the outset of the tax policy, the main goal was to ensure

capital inflow and capital market activities, with the aim to increase foreign direct investment and to promote the development of national economy. The current tax policy relies on shifting the tax burden from the labor force and entrepreneurship to consumption. The strong decline in the tax to gross domestic product ratio over the last years (see Table I, [25]) has occurred largely owing to two major factors. Firstly, the cut in social contributions; secondly, the cut in the corporate income tax rate from 25 % to 15 %. Recent developments in the tax system have been mainly targeted at abolishing discriminatory and restrictive provisions by extending the relevant exemptions. The proposed general cut of the personal income tax rate from 25 % to 20 % has been abandoned, mainly due to the perceived risk for the public finances and inflation. Nevertheless, the personal income tax rate is planned to be reduced to 22 % as of 1st January 2016. In general, Latvian tax system can be described as low tax burden system.

In the field of corporate income tax (CIT), major reforms occurred twice in the last two decades. Firstly, on 9 February 1995, the Parliament of the Republic of Latvia passed the law "On Corporate Income Tax", the President announced the law on 1 March 1995, and the law came into force on 1 April 1995. Secondly, since the Soviet times, CIT remained unchanged when it called a profit tax. In 1995, the transition to CIT related to avoiding the differentiated and higher tax rates, and setting the flat rate for residents irrespective of the type of business and the form of property ownership. The rates of the profit tax were differentiated as follows: 65%, 45%, 35%, and 25%. The maximum or the so-called special rate of 65% was applied to gambling companies. Other rates of profit tax were applied as follows: 45% - to the banking industry, insurance and commerce, 35% - to state enterprises, and 25% - to other enterprises, reducing the tax burden, and also shifting to the flat tax policy in income taxation. Secondly, in 2002 – 2004, reduction in the statutory rates occurred, also related to changes in the tax base and reforms, according to the EU requirements for corporate taxation. In relation to economic growth, this led to the changes in implicit tax rates and tax burden (Table I).

TABLE I

Development in tax burden and implicit tax rates in Latvia [25]

	1995	2000	2005	2010	2011	2012
Total tax burden in percentage of GDP	33.1	29.7	29.2	27.2	27.6	27.9
Consumption	19.5	18.4	19.9	16.9	17.2	17.4
Labour employed	39.2	36.7	33.2	33.1	32.0	33.0
Capital	19.9	12.3	10.6	7.9	9.5	9.9
Capital and business income	10.0	6.9	7.4	3.9	5.3	5.8
Corporations	55.6	9.0	9.9	4.7	5.9	6.4

In Latvia, the revenues from taxation of capital (also,

corporate income tax revenues) are one of the lowest among the EU countries. In Latvia, the corporate income tax rate is considerably lower than the rate in the EU-15 countries (28.9%, on average). At the same time, in the majority of the member states of the European Union, corporate income tax rates are differentiated, e.g., reduced rates for SME, etc. By differentiating corporate income tax rates, the state, at its disposal, is provided with a mechanism how to stimulate companies, e.g., to promote innovation, production of new products, research, etc. In Latvia, it is difficult to implement the above mentioned tax incentives, keeping the tax rate constant. An essential opportunity to increase revenues from capital taxes is provided by the differentiation of the corporate income tax and the revision of the corporate tax base. Legislation would prescribe a wide range of the tax rate, applying the principal increase of the tax to the services sector. However, the tax increase in the production sphere (agriculture, industrial enterprises) would not essentially affect the costs of entrepreneurs. According to the legal acts that are in force in the EU, member states are not subject to any restrictions regarding the corporate income tax. The EU Member states are authorized to apply different tax rates for different taxpayers, of course, taking into account the EU Code of Conduct in the field of business taxation. In the field of corporate income taxation, Latvian approach seems to be simple and close to classical corporate taxation system – low statutory tax rate of 15%, at the same time, tax exemption on dividends distributed to the companies and 10% tax on dividends distributed to the individual shareholders. Taking into account the EU Parent-Subsidiary Directive provisions, this regime seems to be favourable for tax planning and profit shifting schemes. Since 2013, the improved holding regime was introduced in the corporate income tax by providing the tax exemption from the corporate income tax in combination with the exemption of capital gains for company shares and the abolishment of the withholding tax for dividends paid to non-residents [23].

IV. POLICY DECISION MAKING MODEL

According to [26], the basis for economic and financial modeling and analyses of decision making is focused on mathematical modelling of economic and financial phenomena. The economic or financial modelling can be different (factored by the option of methods, the availability of means etc.). The mathematical, numerical and statistical methods in economic modelling lead to quantitative modelling and simulation based on the so-called deep or shallow way. However, primarily in formulation of a real economic problem, we have to provide a qualitative analysis based on intuition, estimation, experiences and common-sense reasoning with the use of efficient ICT tools.

As initial problem for corporate tax policy evaluation could be mentioned statutory tax rate level and by comparison with other countries adequacy of tax rate could be evaluated.

For the decision making on corporate income tax rates, we

consider a simple tax competition model that consists of two countries A and B with a country risk. These countries have no incumbent domestic firms and compete for a foreign-owned monopolist ("the foreign firm") which wants to invest in one of the two potential host countries. The mathematical model described below can determine the tax rate on corporate income in the country A in relation to the country B so that the country A is attractive for foreign investors and, at the same time, the country A did not sacrifice more tax revenue than necessary. This tax rate can be assumed as an equilibrium rate because it measures the attractiveness of the country. Then both countries A and B have symmetric demand curves. In the country A, the demand is n -times larger than in the country B. The company has to pay transaction costs per unit when exports. The distribution of goods within only one country means that there are no transaction costs. The company has two main options - to place the production to the country A or to place the production to the country B. Therefore, the company decides whether to place production in the country A or B and to assume symmetric transaction costs rather than to decide for a larger country because, in this way, the company will cover a larger market. That is the reason why the model also includes the corporate income tax. The sufficiently high taxes on corporate income can lead to the decision that company would rather establish its production in a small country. It is necessary to take into account the size of country A which is n -times larger than country B and the existence of transaction costs when importing products from the country A to the country B. Model is suggested to attract a foreign monopolist firm (to avoid strategic interactions and relations at the firm level). It means the investor will produce a new item of production that is not offered in the country yet.

The consumer demand function is assumed as (1).

$$Q_i = \frac{\alpha - p}{\beta} \quad (1)$$

Where Q is quantity, p – price, α and β are parameters determining the elasticity of the demand function. For country A and country B consumer demand function will be (2).

$$\left\{ \begin{array}{l} Q_A = \frac{n(\alpha - p)}{\beta} \\ Q_B = \frac{\alpha - p}{\beta} \end{array} \right. , \quad (2)$$

In case that location decision is to produce in the country A and export to the country B, it means that price for consumer in the country B should be increased by transaction costs (C_{tr}).

$$P_B = P_A + C_{tr} \quad (3)$$

For simplification reasons, we assume that transaction costs are symmetric – when exporting from the country B to the country A, transaction costs are equal to C_{tr} .

$$P_A = P_B + C_{tr} \quad (4)$$

The production function is linear and encompasses labor

(L) as variable factor (w) and capital as fixed factor (K) with fixed costs of investment (I).

$$Q_i(P_i) = F(\bar{L}; \bar{K}) = aI + w_i L \quad (5)$$

The amount of wages is different in both countries so that in the country A it is k -times higher than in the country B (6).

$$w_A = k \times w_B \quad (6)$$

The net profit (π_A) in the country A could be expressed as function of demand and price (7), taking into account wages and investment expenditures and applying the linear corporate income tax rate $CIT_A \in [0;1]$.

$$\pi_A = \{[(P_A - w_A)(Q_A(P_A) + Q_B(P_B)) - I]\{1 - CIT_A\}\} \quad (7)$$

Taking into account the assumption that demand in the country A is n -times larger than in the country B as well as the fact that in the country A wages are k -times larger than in the country B, we can obtain (8).

$$\pi_A = \left[\frac{n+1}{\beta} (P_A - k w_B) \left(\alpha - P_A - \frac{C_{tr}}{n+1} \right) - I \right] \{1 - CIT_A\}, \quad (8)$$

Since the firm can change the price, it chooses the price which leads to profit maximizing. By deriving the equation (8) by price we get (9).

$$\frac{d\pi_A}{dP_A} = \left[\frac{n+1}{\beta} \left(\alpha - 2P_A + k w_B - \frac{C_{tr}}{n+1} \right) \right] \{1 - CIT_A\}, \quad (9)$$

As main goal for any business is profit, the expression of price, which leads to profit maximization is first derivation is equal to zero (10):

$$P_A = \frac{1}{2} \left(\alpha + k w_B - \frac{C_{tr}}{n+1} \right) \quad (10)$$

The profit function, containing price P_A could be described as (11).

$$\pi_A = \left[\frac{[(n+1)(\alpha - k w_B) - C_{tr}]^2}{4\beta(n+1)} - I \right] \{1 - CIT_A\}, \quad (11)$$

As assumption for further calculation, we use n – is a number reflecting how many times the country A economy is larger than the country B. Since we need to find the total demand for each country in (14) we use the proportion of number of inhabitants (or consumers) in particular countries. k – is a number reflecting how many times wages in the country A are higher than in the country B; I – a monetary amount of the investments, considering costs of the investments equal to $I = 1$ billion monetary units. α , β - parameters to the demand function. According to [27] the chemical industry, including pharmacy plays a major role in manufacturing of Latvia. The industry exports more than $\frac{3}{4}$ of the production. As possible monopolistic product for modelling purposes, we assume pharmaceutical product. We agree with Arāja [28] that pharmaceutical elasticity is low, so we accept elasticity equal to -0.2 and the demand function parameters are $\alpha = 100$ and $\beta = 5$. C_{tr} - transaction costs of the product import, assuming 10 monetary units per unit of production.

The second alternative could be described in an analogous way of (5)-(11) for decision to place the production and investments to the country B and importing to the country A.

This alternative leads us to (12) profit description:

$$\pi_B = \left[\frac{[(n+1)(\alpha - w_B) - nC_{tr}]^2}{4\beta(n+1)} - I \right] \langle 1 - CIT_B \rangle, \quad (12)$$

If we assume that the corporate tax in the country B aimed at attracting investors in comparison with the other country (country A). It means that, in our case, the profit in the country A and B must be equal (13).

$$\begin{aligned} & \left[\frac{[(n+1)(\alpha - kw_B) - C_{tr}]^2}{4\beta(n+1)} - I \right] \langle 1 - CIT_A \rangle = \\ & = \left[\frac{[(n+1)(\alpha - w_B) - nC_{tr}]^2}{4\beta(n+1)} - I \right] \langle 1 - CIT_B \rangle \end{aligned} \quad (13)$$

When we express from (13), in case of the country B, we obtain the rate CIT_B .

$$CIT_B = 1 - \frac{\left[\frac{[(n+1)(\alpha - kw_B) - C_{tr}]^2}{4\beta(n+1)} - I \right]}{\left[\frac{[(n+1)(\alpha - w_B) - nC_{tr}]^2}{4\beta(n+1)} - I \right]} \langle 1 - CIT_A \rangle, \quad (14)$$

Since parameters (α , β , w and I) are present in both the numerator and the denominator, the main impact within the model is the relation between economies and wages in the country A and the country B.

For model calculation we use neighbor countries (Lithuania, Estonia) and country described as possible location for Latvian pharmaceutical industry with favorable tax regime – Slovak Republic [31]. For modelling purposes in (14) we use European statistical bureau data reflecting number of population [32] and annual average net earning [33]. Substituting appropriate data into (14) we obtain recommended corporate tax rates for Latvia.

TABLE II

Calculation of recommended tax rate in comparison with Lithuania

	2007	2008	2009	2010	2011	2012
Statutory corporate income tax in Latvia	15	15	15	15	15	15
Corporate income tax in Latvia - recommended by model	14.7	14.8	20.7	15.7	15.6	15.6
Corporate income tax in Lithuania	15	15	20	15	15	15

According to table II model recommends corporate tax rate for Latvia above existing 15% rate for 2010 – 2012 that can be explained by annual average wages and number of consumer. Results obtained means that for tax policy reason Latvia have to keep statutory corporate tax rate at the same level as Lithuanian tax rate in order to keep competitive advantages for the industry. Level. At the same time for Estonia and Slovak Republic we have different results for given data and circumstances.

TABLE III

Calculation of recommended tax rate in comparison with Estonia

	2007	2008	2009	2010	2011	2012
Corporate income tax in Latvia	15	15	15	15	15	15
Corporate income tax in Latvia - recommended by model	20.2	20.1	20.5	21.0	20.1	19.4
Corporate income tax in Estonia	21	21	21	21	21	21

Results in table III means that increase of Latvian statutory corporate tax rate by 4 – 5 percentage points still lead to competitive advantage of Latvian system.

TABLE IV

Calculation of recommended tax rate in comparison with Slovakia

	2007	2008	2009	2010	2011	2012
Corporate income tax in Latvia	15	15	15	15	15	15
Corporate income tax in Latvia - recommended by model	16.7	28.7	18.0	18.1	17.7	17.9
Corporate income tax in Slovak Republic	19	19	19	19	19	19

With exception for 2008 year calculated rate, results disclosed in Table IV shows that taking into account differences in number of population and level of wages Latvian statutory tax rate is still competitive. Results of the above mentioned quantitative comparative research for monopolistic firm in pharmaceutical industry corresponds with qualitative comparative tax competitiveness analysis [32].

The choice of quantitative methodology often leads us to use freely available official data provided by multinational organizations. The data are collected in different countries based on the same methodology (e.g. OECD, Eurostat) The advantage is relatively good comparability and easy accessibility. The disadvantage is superficiality that comes from the nature of the data. In this context Lodge [33] and Ježek [34] highlights the limitations of such research. The use of international statistics leads to modification of the model in order to avoid industry specific assumptions.

We propose to modify (14) by following assumptions for model parameters. In (14) n is a number reflecting how many times the country A economy is larger than the country B. Since we need to generalize the total demand for each country in (14) we use the proportion of gross domestic product (GDP) in the country A and the country B.

$$n = \frac{GDP_A}{GDP_B} \quad (15)$$

Parameter k – is a number reflecting how many times wages

in the country A are higher than in the country B;

$$k = \frac{W_A}{W_B} \quad (16)$$

The main purpose is to obtain general model with variables from official statistics. After modification of (14), taking into account assumption on economic disparity (15)-(16), we obtain (17).

Equation (17) shows that the country B can afford a higher corporate income tax when wages in this country (compared to country A) are lower and when corporate income tax in the country A is higher.

$$CIT_B = 1 - \frac{\left[\frac{[(\frac{GDP_A}{GDP_B} + 1)(100 - \frac{W_A}{W_B} w_B) - 10]^2}{20(\frac{GDP_A}{GDP_B} + 1)} - I \right]}{\left[\frac{[(\frac{GDP_A}{GDP_B} + 1)(100 - w_B) - 10 \frac{GDP_A}{GDP_B}]^2}{20(\frac{GDP_A}{GDP_B} + 1)} - I \right]} (1 - CIT_A) \quad (17)$$

Where GDP is gross domestic product (table V), w_B - average annual wage level in country B (table VI), W is the total annual compensation of employees (table VII) and CIT - respective tax rates in Latvia and country Lithuania, Estonia and Slovak Republic for comparison.

When we insert all the necessary data concerning selected countries (tables V; VI; VII; V), we obtain the corporate income tax rate recommended by model for Latvia, in comparison with the other countries.

TABLE V

Gross domestic product for selected countries, mil.US\$, [35]

	2008	2009	2010	2011	2012
Latvia	33'669	25'875	24'009	28'480	28'372
Lithuania	47'252	36'846	36'306	42'872	42'343
Estonia	23'752	19'415	19'044	22'541	22'375
Slovak republic	97'908	87'239	87'077	95'877	91'347

Data for gross domestic product represents scale of national economy and allow comparable research for all chosen countries.

TABLE VI

Average annual wages for selected countries, US\$, [36]

	2008	2009	2010	2011	2012
Latvia	12037.2	10963.2	10070.4	11024.4	10561.2
Lithuania	11000.4	9967.2	9159.6	9897.6	9484.8
Estonia	14560.8	13122.0	12600.0	14014.8	13675.2
Slovak republic	15829.2	15352.8	15314.4	16279.2	15295.2

Data for average annual wages represents demand function for generalized model. For short term analysis wages will be the only variable factor for production function.

TABLE VII

Annual compensation of employees, % of gross domestic product, [37]

	2008	2009	2010	2011	2012
Latvia	50.8	46.7	42.4	40.5	40.5
Lithuania	44.3	44.9	41.4	39.7	39.2
Estonia	50.7	51.2	48.4	46.1	46.3
Slovak republic	36.3	38.3	37.8	37.8	37.9

Since for measuring of national economy in (17) used gross domestic product, for measuring of demand function in (17) annual compensation of employees is used. Whereas table VIII represents statutory corporate tax rates. As shown in [23] proportional and low CIT rate of 15% is set in Latvia compared with other EU Member States. In the EU Member States, the CIT rates are different, and usually are within the range of 12.5% - 33.9%.

TABLE VIII

Statutory corporate tax rates, % [38]

	2008	2009	2010	2011	2012
Latvia	15	15	15	15	15
Lithuania	15	20	15	15	15
Estonia	21	21	21	21	21
Slovak republic	19	19	19	19	19

Table IX represents results on possible corporate income tax rates in Latvia after calculation according to (17) in order to attract investments and production in comparison with each country.

TABLE IX

Calculated corporate tax rates, %

	2008	2009	2010	2011	2012
Latvia v. Lithuania	12,67	16,68	12,56	12,26	12,27
Latvia v. Estonia	30,35	29,74	32,44	33,45	34,68
Latvia v. Slovakia	32,25	36,49	42,91	40,48	38,98

Results depicted in table IX corresponds with modelling results by (14). As for Lithuania comparing Lithuanian statutory rate of 15% with results in table IX it can be concluded that Latvian and Lithuanian corporate tax systems are very similar and can be used for benchmarking. Conversely in comparison with Estonia and Slovak Republic Latvian corporate tax rate could be increased.

Corporate income tax rates recommended by the model is in most recent years higher than it is in the reality. This means that Latvia is attractive country for foreign investors.

Both models show that government could increase rates for corporate income tax without significant damage for competitiveness. However another solution could be recommended - broadening of the tax base and thus increase

of effective corporate tax rates instead of increase of statutory corporate tax rates. Most tax systems contain various exemptions, allowances, reduced rates and other specific regimes, known as tax expenditures. These tax expenditures are not always justified, and they can be inefficient in achieving their intended policy objectives, often, because, they are not well targeted. This is in particular, the case with VAT exemptions and reduced rates, where studies illustrate the welfare gains that could be achieved from base broadening. Overall, the broadening of the tax base and the simplification of the tax system could not only lead to more revenues, but also make paying taxes easier for citizens and businesses and managing them simpler for administrations. Removing inefficient tax expenditures could also offer an opportunity to lower the statutory rates and thus, enhance the growth-friendliness of the tax system. Evaluation of the effectiveness of tax incentives is needed, ensuring that the benefits in short-term and long-term have no negative fiscal impact on the government revenue.

TABLE IX

Implicit corporate tax rates, % [39]

	2008	2009	2010	2011	2012
Estonia	7.9	12.9	7.7	5.8	6.2
Latvia	18.5	8.1	4.7	5.9	6.4
Lithuania	11.1	8.2	3.7	2.6	4.1
Slovakia	21.8	21.8	18.5	17.7	18.2

However additional investigation is needed since implicit corporate tax rates shows different rates in comparison with statutory tax rates and modelled results for both models.

V. CONCLUSION

In comparison with [20]; [21] models to depict scale of national economy population level is replaced with gross domestic product, assuming that the differences in gross domestic product between countries may be more significant than differences in population. For future researches it seems to be reasonable to replace GDP with total consumption level. Tax rates obtained by the model shows approximation of tax rates amongst selected countries. Analysis shows that one of major assumptions in the model linear production function and model's results are limited to the selection of countries with similar productivity - to obtain average wage in country A and B workers perform the same effort.

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