

## DIVERSION OF PERSONAL INCOME TAX CREDITS FOR THE PROFESSIONAL GROWTH OF HUMAN CAPITAL

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**Abstract.** Productivity is one of the main factors for economic growth and competitiveness and is widely used in national performance assessments and international comparisons. Human capital is one of the most important factors in increasing productivity. Investment in human capital is needed to increase productivity. From the government side, this can be achieved through tax policy, which include not only personal income taxes, but also tax rebates and refunds, as well as tax credits. To find the most efficient action model, it is necessary to find a tool to assess the impact of tax initiatives on productivity. The aim of this study is to assess whether and how tax policy could further improve productivity, particularly by development of human capital. The study's authors used multiple non-linear regression method to evaluate impact of tax initiatives to labour productivity. The objective of the study is to assess the impact of taxes on productivity and possible tax credits or other more optimal tax solutions, to assess the potential personal income tax initiatives for professional growth. The study's findings indicate that personal income tax rebates should be modified more economically than socially to encourage the professional development of human capital and increase labour productivity. The results for the Baltic States indicate that by granting a tax credit and lowering taxes by one percent, productivity might increase by two to three percent, while in countries with higher initial productivity levels, the impact is significantly smaller or even neutral.

**Keywords:** human capital, labour productivity, personal income tax, tax credits.

**JEL Classification:** H21, J24.

### Introduction

Human capital can be considered as a collection of abilities, knowledge, and skills for each member of the population and can be evaluated as an outcome of the planned investments. Human capital is regarded as a kind of capital or wealth, as it can be used as a source of profit or for future purposes, and therefore there is significant investment in people's education, health, and skills.

To achieve high and sustained economic growth and equitable income distribution, contributing to the fight against poverty, and achieving the economic, social, and environmental goals of the sustainable development process, countries must prioritize investing in human capital. As the benefits of investment in human capital are realized only in the future, work on human resources acquisition is a form of investment. The advantages that society gains from raising the value of human capital are referred to as the social return on investment in human

capital. These advantages include both monetary gains such as rising productivity levels and economies, and non-financial gains such as declining crime rates and a favorable effect on people's health and birth rates.

The 2030 Agenda for Sustainable Development, which the UN unveiled in September 2015, recognized the importance of investing in human capital development globally, and education as well. Different aspects of education are addressed by the Sustainable Development Goals – to provide inclusive and equal quality education and promote lifelong learning opportunities for all.

The development of human capital is impacted by individual's skills, credentials, education, work-from-home choices, other sustainability indicators, health, social security, and managerial and employee capability, among other factors. It is important to consider ways to improve human capital. The level of education is crucial in this situation. Several studies (Cinnirella & Streb, 2017;

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Kornieieva et al., 2022) have demonstrated that increasing productivity in the human capital sector will lead to changes in the relative use of skilled and unskilled workers and a positive sustained impact on growth rates.

There are several indicators that may be used to assess a company's success, but productivity is the best indicator of growth. Productivity is a key indicator of a company's efficiency in using its resources, it shows if it can generate more revenue with less resources. Productivity is therefore essential for the expansion of sustainable businesses.

Although there are several methods for increasing productivity, tax policy is the most successful method from the government's perspective. Personal income tax could be one of the most significant labour taxes that affect the cost of human capital. A progressive income tax is meant to reduce income inequality, there are also various other tax credits or solutions, including for social needs (Jurušs et al., 2022).

Taxes have an impact on both the efficient use of production resources (people and capital), which lowers business costs, and the outcomes of those operations, which have an impact on income. It is vital to determine whether and how tax policy may enhance corporate growth, particularly productivity. One of the most crucial elements in raising productivity is human capital.

The analysis of the data reveals a substantial correlation between education level and individual income, with individuals with higher education dominating the largest sector of wage earners while persons with lower education dominating the low-wage earners sector. This demonstrates that an employee's income increases with their level of education.

The study's objective is to evaluate the effect of taxes on productivity as well as any potential tax incentives. The study's tasks include examining tax rebates for productivity in other countries and determining if personal income taxes could be used to promote professional growth.

The aim of this study is to assess whether and how tax policy could further improve productivity, particularly by development of human capital.

Research hypothesis: Tax credits, particularly for higher education in STEM fields, enhance human capital competences and increase added value and productivity.

The remainder of the paper is organized as follows. Section 1 analyses the literature on the impact of tax initiatives as a contribution to human capital, which leads to increased productivity and consequently to increased national competitiveness. In Section 2 authors provide analysis on productivity dynamics in the Baltic States and gives an insight into the importance of higher education in boosting productivity. Section 3 discuss authors empirical methodology and results for the multiple non-linear regression method to evaluate impact of tax initiatives to labour productivity. In Section 4 selected results are discussed, and the last section draws some conclusions.

## 1. Literature review

In recent decades, economists have been increasingly analysing productivity-boosting factors to ensure faster growth in the economy and boost the country's competitiveness. Porter (1990) admits that productivity is regarded as one of the most important indicators of a nation's competitiveness. Moreover, raising productivity is the only way to ensure continuous, long-term growth in living standards (Krugman, 1997). In addition, it is noted that labour productivity is one indicator of a nation's competitiveness in terms of human resources (De-gutis & Tvaronavičienė, 2006).

As a result of factors being used more efficiently, which increases productivity, value added labour increases. The term "efficient use of inputs" might apply to a workforce that is more capable and productive, as well as to better equipment, enhanced input material management, or technology developments. Moreover, labour productivity is a reliable indicator of a nation's economic health and competitiveness (Žmuk et al., 2018).

One of the elements causing growing wealth inequality, according to some scientists, is education. According to some authors (Galor & Moav, 2004; Viaene & Zilcha, 2003), equality enhances growth outcomes when human capital replaces physical capital as the primary driver of economic growth. By comparing educational and fiscal redistributions, (Benabou, 2002) concludes that the former promotes growth more effectively. Some empirical research (Burks et al., 2009) emphasizes the growing significance of cognitive abilities in determining economic well-being and wage determination.

High levels of education, encouraging entrepreneurship, and a flexible labour force are important factors in the countries' rising productivity, which has been strongly correlated with wage rise (Lazear, 2006). So, education either makes a worker more capable of doing such tasks or increases their productivity at work, both of which lead to higher income. Accordingly, a growth in an economically engaged population's education and qualification levels boosts labour productivity in the economy (Kornieieva et al., 2022). The levels of education gained and regional economic growth are typically favourably correlated (Chocholatá & Furková, 2017; Kwon, 2009).

The difference between education and many other government-provided goods and services is that welfare is achieved indirectly through increased labour productivity and pay rather than directly through consumption. Although the government cannot directly see individual productivity, it is aware of the distribution of kinds and that it is rising as a result of its education spending (Krause, 2009).

Tax incentives would motivate people to save aside and invest money for further education. Individuals put tax-deferred (or tax-exempt) monies into a savings account that can be used for approved education and training programs in these accounts, which operate similarly to other tax-deferred accounts. The accounts, which are

portable so that the account stays with the employee even if they change employment, could also receive tax-exempt donations from employers (Goolsbee et al., 2019).

The estimated advantage from using the tax incentive on agents' remuneration will increase in proportion to how important it is for businesses to recruit and retain highly trained individuals. We also discover that labour mobility and the degree of knowledge spill overs moderate the relative effectiveness of this tax incentive (d'Andria & Savin, 2018).

Subsidies only improve a company's innovation performance in the short term, but tax credits always improve a company's innovation performance throughout the long and short terms (Zhang & Guan, 2018).

Generic R&D tax incentives have a limited effect on innovation for all businesses but have a positive effect on turnover, the share of new goods and services in turnover, and labour productivity (Mitchell et al., 2020). The promotion of R&D and innovation in a nation or region may be effectively aided by a competitive and stable tax structure. Government plays a significant supporting role in this area by fostering an environment that is favourable for industry, including incentive schemes for R&D that are appropriate and competitive. In many nations, tax incentives are one of the foundational elements of such a strategy (Warda, 1996). Indeed, the economy's ability to enhance productivity through significant technical advancements is a key factor in its long-term economic success (Aristovnik, 2012).

Recognizing the significance of human capital, numerous nations have attempted to measure it efficiently and successfully in order to ascertain its current state and then apply various strategies to enhance it. In light of this, it can be seen that human capital measurement is a crucial tool for recommending different human resources policies. Several academic disciplines' perspectives might categorize the idea of human capital in different ways. The effects of human capital may be divided into three categories: individual, organization, and society (Kwon, 2009).

Investing in human capital makes a significant contribution to growth and development, as well as to increased state tax revenue and, for instance, decreased expenditures of the criminal justice system (McMahon, 2015). Moreover, the development of fundamental human capital was essential for the shift to modern economic growth (Cinnirella & Streb, 2017).

## 2. General analysis

Productivity dynamics in the Baltic States have been quite rapid in recent decades and have exceeded the European Union (EU) average growth rates (see Figure 1).

Nonetheless, this region's productivity levels continue to lag the average productivity in the EU, mainly due to poor overall productivity of factors and considerable differences in the quality of production resources (people and capital) (see Figure 1).

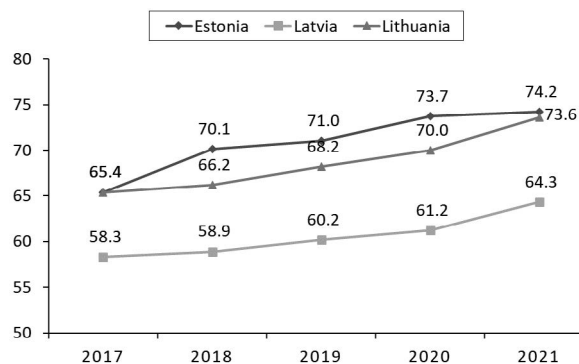


Figure 1. Labour productivity per person employed and hour worked (source: Eurostat, 2023a)

The Baltic States have undergone several substantial tax reforms over the past decades. In 2018, Latvia entirely changed the corporate income tax (Jurušs et al., 2017), introducing a corporate income tax only on distributed profits. One of Estonia's goals in applying this corporate income tax to deferred profits was to increase the financial stability and independence of businesses (Bizņa et al., 2018). The system's main disadvantage, however, is that it does not offer tax credits or other incentives for businesses to invest in innovation and boost productivity. So, further solutions in this direction should be sought.

In contrast, Lithuania in 2018 implemented significant modifications in the area of mandatory state social insurance contributions, reallocating the employer and employee contributions at the same time significantly reducing the total contribution rate. As a result, both the overall tax burden on labour and the competitiveness of labour costs are reduced. Lithuania provided for the redistribution of funding from the state budget as a compensatory measure. Even though it is important to evaluate whether this strategy is sustainable from the perspective of the social system. (Poškutė et al., 2022).

A study of the labour market in the Baltic countries reveals that persons with higher education represent for the smallest proportion of all working people. In addition, the number of students in Baltic region universities and colleges is decreasing every year (see Figure 2). Thus, it further reduces the opportunities to boost productivity by increasing the number of skilled persons in the labour market. Hence, it is essential to alter the current situation and promote the education and further professional development of individuals.

In Latvia are also various tax reliefs: for health, families, persons with special needs, there are also tax reliefs for education and professional qualifications. But they were insufficiently effective because the individual had to find the funds to pay for the tuition fee and then, as an income taxpayer, may request a recalculation of the tax in the post-tax period and wait for the overpayment of tax. Moreover, the relief is only applicable for a certain amount per year. Due to the annual maximum amounts that can be reimbursed,

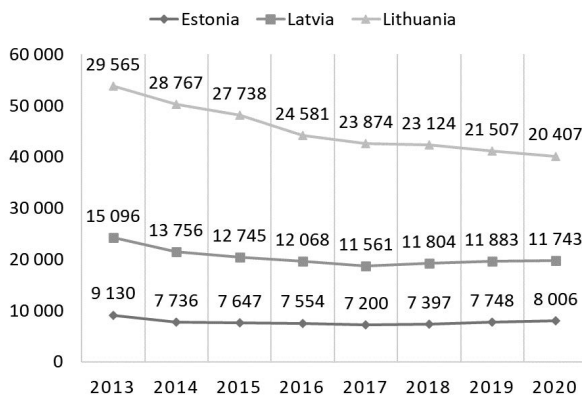


Figure 2. Graduates by education level: upper secondary education (source: Eurostat, 2023b)

it has been demonstrated in practice that people who technically accrue tuition payments over several years do not always receive a complete tax refund. Also, the employer's compensation for the employee's education at a higher education institution is not exempt from income tax.

In many countries, there are various personal income tax relief and credits, which mainly focus on a person's social needs, such as family, health, education, and other social needs. But these issues can also be addressed through benefits and other forms of state support.

Consequently, to boost the competitiveness of the country and to ensure economic growth, it is necessary to increase productivity rates. Investment in human capital is needed to increase productivity. From the government side, this can be achieved most easily through tax policy, which include not only personal income taxes, but also tax breaks and refunds, as well as tax credits. To find the most efficient action model, it is necessary to find a tool to assess the impact of tax initiatives on productivity.

### 3. Methodology and results

Tax incentives and support for investment in human capital can have a positive impact on productivity growth. Human capital education and skills can increase the productivity of a company, which can lead to higher salaries for employees.

It is necessary to look for solutions on how to influence through taxes the growth human of capital, which in turn would boost the company's productivity. This can be achieved through tax incentives for support for investment in human capital. Thus, the following sequential steps can be distinguished:

1. Salary size depends on human capital education and competences.
2. Tax incentives would facilitate access to higher and vocational education – the amount by which the personal income tax is reduced shall be directed to education and professional growth of human capital.

3. Funding for education should be increased in order to promote the professional growth of human capital, which will result in increased productivity.
4. As professional qualifications increase, the company would be able to increase productivity.
5. Increasing the company's productivity means the ability to earn more, and accordingly the opportunity to increase salaries.

If salaries increase, tax base will growth and the state budget revenues will increase, from which support for education can be provided, too.

Skilled employees can often perform their tasks more efficiently and effectively, leading to higher productivity. When a company's productivity increases, it can generate more income, which can be used to increase employee salaries. This creates an incentive for employees to continue developing their competences and education, which can lead to even higher productivity and salaries.

The benefit of a personal income tax credit for investing in human capital can be compared to a company's benefit from deferring corporate income tax to distributed profits. In other words, postponing the corporate income tax increases the availability of financial resources for the development of a company (Bizņa et al., 2018). Similarly postpone the personal income tax or tax credit as state aid in the short term, would lead in future increase of salaries due to productivity.

In summary, tax incentives and support for investment in human capital can create a positive cycle of productivity growth, which benefits both individuals and the economy as a whole.

Measurements of human capital may be closely related to equivalent figures from investments in human capital, changes in quality, and the impact of education. The first – investment in human capital, is concerned with the amount of human capital that is invested within a national boundary. The second quality of that investment is concerned with how that investment is managed and adjusted through an examination of academic performance across borders, and last but not least, the third sub-factor education shows how the return on educational investment is realized after postsecondary education (Kwon, 2009).

Although it should be noted that the potential for productivity gains from changes in the quality is greater rather than quantity component of human capital (Egert et al., 2022), tax initiatives could have more significant impact on investments in human capital. Moreover, the assessment of human capital is related to the main result, namely productivity, so the impact of changes in tax initiatives should be assessed directly on productivity. Therefore, the multiple non-linear regression can be used to evaluate impact of tax initiatives to labour productivity (see Equation (1)).

$$\Delta \ln(y) = \beta_0 + \beta_1 \times \Delta \ln(x_1) + \beta_2 \times \Delta \ln(x_2) + \beta_3 \times \Delta \ln(x_3) + \beta_n \times \Delta \ln(x_n) + \varepsilon, \quad (1)$$

where:  $y$  – labour productivity per person employed;  $x_1$  – investments in education;  $x_2$  – tax rate;  $x_3$  – employment

by educational attainment level;  $x_n$  – impact of other factors (such as quality adjustment, results of education);  $\beta$  – vector parameters; and  $\varepsilon$  – error term.

According to the determined steps of the research methodology, a non-linear regression analysis (see Equation (1)) was performed to determine the effect of factors on productivity. The results of the authors’ analysis are given in Table 1.

Labour costs factor impact to growth of productivity is shown by the analysis of changes in value added and labour costs.

Labour force growth has decreased in recent years, which was also significantly affected by the COVID-19 situation (see Figure 3).

Countries have taken several measures in recent years to reduce the tax burden on labour, but it remains relatively high, especially for low-wage workers (see Figure 4).

The high tax burden also slows down productivity in the sector and contributes to the avoidance of taxes and envelope wages. A high labour tax burden increases labour costs, thus reducing productivity. To promote productivity, the tax burden should be reduced, but with the condition that it is possible.

Non-linear regression (see Equation (1)) was used to estimate the impact of tax credit in the Baltic States. As the object of the study is the impact of human capital

Table 1. Results of multiple regression (dependent variable – labour productivity per person employed – changes annualized by the natural logarithm) (source: Eurostat, 2023a, 2023d, 2023e, 2023f)

	Estonia	Latvia	Lithuania
Intercept	11.2595	7.1543	10.1270
Investments in education	0.2228	0.1785	0.4546
Tax rate	-0.3689	-1.2151	-0.0889
Employment by educational attainment level	-1.2538	-0.0014	-1.2595
R Square	0.8285	0.9305	0.9328
Standard Error	0.03027	0.0197	0.0169

on productivity and the subject of the study is tax credit, other factors (such as quality adjustments, results of education) were not included in the nonlinear regression analysis (see results in Table 1).

The results show that factors chosen for the model have a very close correlation (adjusted R Square is 0.9305) and there is a very small regression standard error (0.0197) (see Table 1). Factors independence was tested by using the Durbin–Watson test (White, 1992). The p-value of the factor “tax rate” is 0.0119, which confirms that there is no autocorrelation.

By using regression analysis estimates suggest that by granting a tax credit and reducing the tax burden by one per cent, productivity could increase by two to three per cent in Latvia, however, it has significantly less impact – almost neutral in Estonia or Lithuania.

#### 4. Discussion

Over the past decade, many economists have turned to empirical studies, analyzing the impact of investment in human capital on productivity and economic growth. Different macroeconomic models (Bournakis & Mallick, 2018) are being used as well as a view from a microeconomic perspective (Cappelen et al., 2012). For the most part, studies recognize that tax credits stimulate the economy through knowledge flows from research and development capital, that a tax credit scheme lowers user costs and gradually increases overall productivity. Results shows that in the long run, output, real wages, and consumption levels are about one percent higher than base value.

For specific countries to select the best course of action for tax policy reforms that would help enhance productivity, a large-scale macroeconomic model needs to be built and applied to the scenario of a small open economy. The authors suggest using the multiple non-linear regression method to evaluate impact of tax initiatives to labour productivity.

To improve productivity in the economy, enterprises need to invest in human capital, that is, mainly in education, since educated people can bring more added value

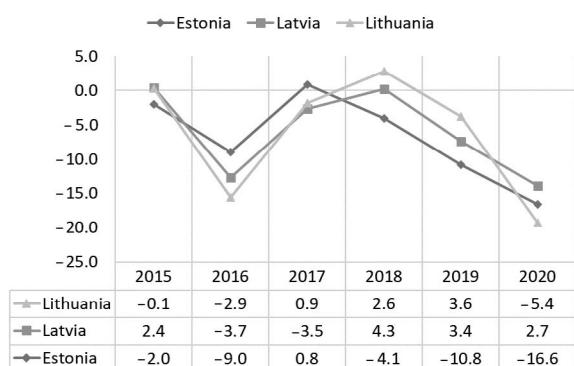


Figure 3. Growth rate of employment (source: Eurostat, 2023c)

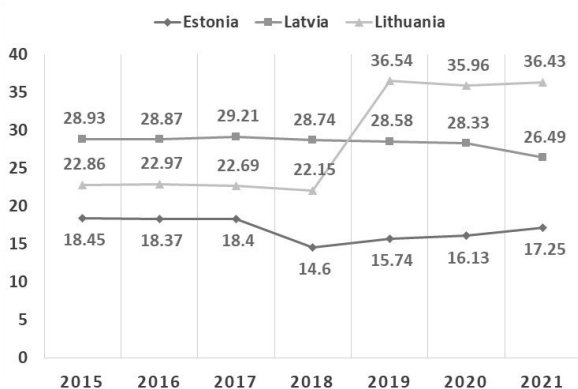


Figure 4. Tax rate (source: Eurostat, 2023d)

to the country's economy. To facilitate this, tax credits for the development of workers' competences and other elements of human capital should be assessed, the better human capital and can increase productivity.

Also important for the human capital aspect are competences, qualifications, entrepreneurship of managers and employees, education, health, social guarantees, including digital skills, remote work opportunities and other indicators of staff sustainability.

The company's support in obtaining education certainly also contributes to the trust, motivation, loyalty, and sustainability of the activities of employees.

Tax credits could maintain an overall limit, allowing the taxpayer himself to choose the most appropriate specific solution.

Besides tax incentives for investment in human capital, there are other ways that income tax credits can boost productivity.

Governments can offer tax credits for companies that invest in research and development. This can incentivize companies to invest in innovation and develop new products or processes, which can increase their productivity (Mitchell et al., 2020).

Tax credits can be given to companies that invest in equipment, machinery, or other capital assets. This can help businesses modernize their operations and improve their efficiency, leading to higher productivity.

Governments can offer tax credits to businesses that invest in energy-efficient technologies or practices. By reducing energy consumption and costs, companies can increase their profitability and productivity.

**Workforce development tax credits:** Tax credits can be given to businesses that invest in training and development programs for their employees. By improving the skills and knowledge of their workforce, companies can increase productivity and competitiveness (Kornieieva et al., 2022).

By incentivizing businesses to invest in areas that improve their operations, governments can help create a more productive and competitive economy.

Promoting the qualifications of individuals through tax credits can be an effective way to boost productivity and support the development of a skilled workforce. This can include both formal training, such as courses or workshops, and informal training, such as on-the-job coaching or mentoring. By incentivizing businesses to invest in training, workers can acquire new skills and knowledge, which can increase their productivity and value to the company.

Governments can offer tax credits to individuals who pursue further education or training, such as college or vocational courses. By making education more affordable, individuals can improve their skills and knowledge, which can lead to better job opportunities and higher productivity (Davenport, 1992).

Governments can offer tax credits to businesses that offer apprenticeships to individuals. By combining

on-the-job training with classroom instruction, apprentices can acquire the skills and knowledge they need to be successful in their chosen field. By offering tax credits to businesses that offer apprenticeships, governments can incentivize more businesses to participate in these programs (Clayton & Evans, 2021).

Governments can offer tax credits to individuals who undergo skills assessments to identify areas where they can improve their skills. By making these assessments more affordable, individuals can identify areas where they need to upskill and invest in training or education to develop those skills.

By promoting the upskilling of individuals through tax credits, governments can help create a more skilled workforce that is better equipped to meet the needs of employers and drive economic growth.

A tax credit for companies that invest in the personal qualifications of their staff can provide significant added value for companies. By investing in the personal qualifications of their employees, companies can improve their productivity, competitiveness, and bottom line.

By investing in the personal qualifications of their employees, companies can improve employee satisfaction. This can save companies the costs associated with recruiting and training new employees, and also help maintain institutional knowledge and experience.

When employees are better trained and have more advanced skills, they are able to perform their jobs more efficiently and effectively. This can lead to higher productivity, which can result in increased profits for the company and raised tax revenues for the country (Ferleger & Mandle, 1993).

By investing in the personal qualifications of their employees, companies can help develop a more innovative and creative workforce. This can lead to new ideas and approaches that can help the company stay ahead of its competitors.

When employees are well-trained and knowledgeable, they are better able to meet the needs of customers. This can lead to higher customer satisfaction, which can result in repeat business and positive word-of-mouth recommendations.

By offering tax credits for investing in the personal qualifications of their staff, governments can incentivize companies to prioritize employee development and improve their overall performance. This can have positive impacts not only for the company, but also for the economy as a whole (McMahon, 2015).

The lack of a qualified workforce may threaten economic growth in the long term. Therefore, it is also important to plan state support and state-paid budget places in those programs that in the future would provide opportunities for graduates to work in industries that bring more added value and productivity.

Research should be continued on how investments in human capital contribute to economic growth, as well as the social well-being of individuals themselves.

## Conclusions

Productivity is one of the main factors for economic growth and competitiveness and is widely used in national performance assessments and international comparisons. Whereas human capital is one of the most important factors in increasing productivity, investments in human capital is needed. From the government side, this can be achieved through tax policy, which include not only personal income taxes, but also tax rebates and refunds, as well as tax credits. To find the most efficient action model, it is necessary to find a tool to assess the impact of tax initiatives on productivity.

The objective of the study was to assess the impact of taxes on productivity and possible tax credits or other more optimal tax solutions, to assess the potential personal income tax initiatives for professional growth. Authors used multiple non-linear regression method to evaluate impact of tax initiatives to labour productivity.

The study's findings indicate that personal income tax rebates should be modified more economically than socially to encourage the professional development of human capital and increase labour productivity. The results for the Baltic States indicate that by granting a tax credit and lowering taxes by one percent in Latvia case, productivity might increase by two to three percent, while in countries with higher initial productivity levels (in Estonia and Lithuania), the impact is significantly smaller or even neutral.

In order to boost productivity growth, new solutions need to be found and the impact of other taxes needs to be assessed, especially for human capital. Competitive labour tax burden, particularly in innovative and export sectors, improves productivity. Tax support (incentives) for the higher education, particularly STEM, and digital skills development enhances human capital skills and gives greater added value and higher productivity.

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