Bachelor Thesis

In(efficiency) lasting over a decade: A case of 2010 Micro Enterprise Tax Regime in Latvia

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Abstract

This Bachelor thesis focuses on the efficiency of Latvia's Micro Enterprise Tax (MET) Reform introduced in 2010. The reform aimed to decrease unemployment caused by the Global Financial Crisis (GFC) of 2008 by allowing certain firms to pay a substantially smaller unified tax than the regular Corporate Income Tax (CIT). The paper aims to estimate the impact of the MET reform on Latvian public finance and economic development by using the Synthetics Control Method (SCM) and comparing the economic indicators of the "synthetic" Latvia with the real one. The paper finds that the MET regime had a positive impact on Real GDP growth and new businesses registered in the early years after its implementation, but its power and effect has since decreased. The paper contributes to the literature by analyzing the efficiency of tax policies focusing on small business taxation.

1. Introduction

Corporate Income Tax (CIT) is an important part of each state's revenue structure. Even though, as later discussed in the paper, its relative proportion to overall tax revenues has diminished within the last decades (Devereux, et. al., 2002), however, it is of vast importance to understand that CIT is the tax that stimulates businesses to grow. Moreover, particular tax policies regarding CIT influence the investors' decisions, both local and foreign. (Boadway, Bruce & Mintz, 1984).

Back in 2010, Latvia came up with a new Tax Reform that mainly focused on decreasing unemployment that the country has been suffering from the Global Financial Crisis (GFC). The reform has introduced a new taxation scheme called the Micro Enterprise Tax (MET). It allowed certain small firms with a turnover not exceeding Ls 70 000 and the number of employees not exceeding 5 people to pay a unified tax which was substantially smaller than the regular Corporate Income Tax, followed by state mandatory social insurance contributions. Although many Organisation for Economic Co-operation and Development (OECD) countries have issued certain tax policies to ease and lift up tax rates for Small and Medium Enterprises (SME), the efficiency of such reforms has not yet been brought to a wider analysis. Thus, with the aim of developing grounds for small businesses in Latvia, we question the efficiency of the Reform by observing negative trends and tightening requirements in the law of Micro Enterprises within the last decade. By shedding more light on the Lativan case in particular, it would also be useful for other countries to compare the efficiency in the context of fiscal policies focusing on small business taxation.

The purpose of this paper is to estimate what results would have been achieved by the state in terms of public finance, economic development and growth if there was no such policy implemented. While we have found many theoretical frameworks used by different authors, we find the results contradictory, leaving the question of tax policies' efficiency open. Thus, we have formulated our main research question as follows:

“How would Latvian public finance be impacted if firms were not able to register as Micro Enterprise Tax payers?”

We acknowledge that the economy is rather a broad and complex subject, and with this study, we aim to capture, in our opinion, the most important areas that definitely shape and have a significant impact on each country's economy. Mainly, we

look at such predictors as Real GDP growth, the rate of unemployment, tax revenues from businesses and new businesses created.

For our analysis, we decided to use the Synthetics Control Method (SCM) introduced by Abadie and Gardeazabal (2003). Using the donor pool of 16 European OECD countries in which the specific tax policy was not implemented, this model creates an untreated "synthetic" country. By comparing the economic indicators of the “synthetic” Latvia and the real one, it is possible to analyze the effectiveness of the proposed tax reform. Although Adhikari and Alm (2013) have applied the same methodology to the Latvian case of Flat Tax Reform in 1997, we reach novelty by evaluating the outcomes of a later, 2010 MET Reform.

By using the SCM model, results show that the MET regime has had a positive impact on Real GDP growth and new businesses registered in the early years after its adoption, but thereafter its power has declined. This is consistent with previously published literature analysing the MET regime both from an empirical and theoretical point of view.

The rest of the paper is organized as follows. Section II describes the literature on Synthetic Control Method. Section III looks at Latvian MET policy changes throughout the last decade. Section IV discusses these changes in MET legislation from an analytical point of view. The hypothesis is stated in Section V. Section VI describes all variables and data used in the SCM model that is described in section VII. Both of the previously mentioned sections are taken into account, making the analysis section VIII. Section IX outlines the limitations of the paper. Section X concludes.

2. Literature Review

2.1 Corporate Income Tax

In Latvia all registered profit-making firms are subject to 2 possible taxation schemes - Micro Enterprise Tax paid by small enterprises that have met particular requirements discussed in the section Institutional Context, and a regular Corporate Tax Regime - subject to Corporate Income Tax (VID, 2022).

It is crucial to note that the special requirements a company needs to fulfil in order to be eligible for paying applicable Micro Enterprise Tax (MET) are revised yearly and changes may vary significantly as mentioned in section 3.2 of this report (see Appendix A; Table 1). We put an emphasis on the fact that if at any time the particular firm fails to meet these requirements, it is stated by the law that it loses its Micro Enterprise status. In the following calendar year, such a company would become subject to a regular CIT regime, it would also have to pay Mandatory State Social Insurance Contributions (Dārziņa, 2020). These objects of the employer's and employee's mandatory contributions are all paid from the income of paid work, from which personal income tax must be deducted, however, non-taxable minimum, tax benefits and justified expenses for which the taxpayer has the right to generate taxable income are non-deductible. An employer needs to pay 23.59% and an employee pays 10.50% (VID, 2022). Thus, in this subsection of the Literature Review, we are going to focus on and analyze outcomes of previous studies on CIT that would allow us to draw parallels between widely used CIT and the topic of our interest - Micro Enterprise Tax.

Corporate Income Tax is one of the direct taxes that by the Latvian legislation starting from January 1, 2018, is paid by the businesses only when the profit is distributed or otherwise transferred to expenses that do not ensure the further operations of the taxpayer. In other words, the CIT occurs only when the profits are distributed furtherly, but not when these were generated. CIT is paid regardless of the amount of income earned during the year, only if the taxpayer declares the profit into dividends or similar costs, makes expenses not related to economic activity, makes increased interest payments, gives loans to related parties, and issues liquidation quota (VID, 2022).

The current CIT tax rate in Latvia is set at 20% of the profits mentioned earlier (Finanšu Ministrija, 2022). Parallels could be drawn with the US, as both Latvia’s and the US revenues from the CIT contribute only to 5% of the total collected tax revenues

(FiscalData, n.d.), with a similar flat tax rate of 21% paid by resident corporations (TRADING ECONOMICS, n.d.).

While these percentages may seem relatively low compared to the other forms of taxation, Boadway, Bruce, and Mintz (1984) claim that CIT is an important source of collecting revenues in developed countries, mainly due to its design and the role of incentives. The authors try to distinguish the optimal way of the appropriate structure of taxable income that fulfils 2 criteria: taxing pure profits and withholding against capital income. They come to the conclusion that most tax regimes in the world fall short of the idea of combining these two aspects.

As Hines (2017) admits, Corporate Income Taxes imposed by the states allow these states to earn revenue to finance their expenditure needs at the cost of discouraging business activity. At the same time, he claims that governments desire to have strong economies, mainly relying on business prospects as a key driver of this growth. By recognizing that US businesses are imposed with the heaviest tax burdens, Hines concludes that business taxes are a less efficient source of getting state revenue compared to other alternative methods that are in the power of the state (Hines, 2017). The author acknowledges the fact that while the US has not made changes in its statutory corporate tax legislation from 1986 until 2017, other developed countries have significantly decreased their rates or even come up with new taxational schemes by introducing tax reforms. Hines suggests that such reforms are capable of improving economic efficiency and making some countries more appealing to foreign businesses. Such countries made their business environments more encouraging both for local and international firms to expand, especially since these incentives are supposed to be the most attractive for businesses after experiencing an economic downturn in mobile international business activity. As an example, here we could mention the Micro Enterprise Tax Reform introduced by the Latvian Government in 2010 as a stimulative intervention for small businesses to evolve after the Mortgage crisis by addressing the vast unemployment concerns (Kaldere, 2018).

Devereux, Griffith, Klemm, Thum, and Ottaviani (2002) noticed that within just 2 decades from the 1980s to the end of the 20th century, the statutory CIT rate in industrialized countries has fallen by 48%. They describe these phenomena as “a race to the bottom” meaning that countries are competing with each other in order to attract more capital. On the other hand, there are policymakers who are concerned about what this race could potentially do with the state revenues, thus making a constraint on

government spending and other activity. In order to address the above-mentioned tendency, the EU has suggested member states to have a minimum CIT tax rate of 30% in 1992, however, during the next decade third of member states had rates below this benchmark.

The authors notice that the CIT regimes across 16 OECD countries had a similar pattern - the rate was cut, but the base was increased. Lower tax rates lead to a lower cost of capital - a higher rate of return on investment, thus more incentives to invest, while lower allowances regarding the tax base decrease these incentives. Thus, it is argued that tax reforms taking place at the end of the XX century mainly focused on 2 polar but mobile factors - capital and taxable income. The authors conclude that these tax reforms led to the decreasing proportion of CIT revenues compared to the total tax revenues since 1965, however, at the same time CIT revenues as a proportion of GDP on average remained stable (Devereux, M. P., Griffith, R., & Klemm, A., Thum M., Ottaviani M, 2002).

2.2 Synthetic Control Method on Tax Policies

In order to be able to analyze the effectiveness of various policies, several models have been used since the end of the 20th century, such as General Equilibrium (Scarf, 1969), Endogenous Growth (Solow, 1956), and other models. One of the most popular tools for analyzing the effectiveness of tax policies after they come into force is the Synthetic Control Method, developed by Abadie & Gardeazabal (2003).This model was developed only at the beginning of the 21st century and helps to analyze a certain policy immediately after its implementation. Firstly, the authors used the model to study terrorism tourism in Spain, however, the most widespread attention to SCM was gained shortly after Abadie, Diamon and Hainmueller published their research on California's Tobacco Control Program back in 2010, and ever since then it became mostly associated with the policy evaluation.

The SCM model can be used not only to analyze the effect of corporate or income tax changes. One of the first studies that used the SCM method was Abadie, Diamond & Hainmueller's (2010) study of the Cigarette Excise Tax introduced in California in 1988. The purpose of the study was to reflect on how the introduction of a 25-cent tax for each packet changes annual per capita sales. In this case, 34 US states were used as a donor pool, in which various measures that could rapidly change the

volume of cigarette packs sold have not been implemented in recent years. After applying the model, compared to synthetic California, the authors show that the amount of annual cigarette packs per capita has decreased by 26 packs. This result is a very significant effect after the introduction of such an excise tax.

However, the SCM model can be used not only in the fields of public health and criminology but also in economics and public policy, which fits the scope of our research.

Using the available data from other countries where such tax policy was not established, the model reflects the "synthetic" country of study. The results obtained from the model show what economic effect would be in the country if such policy was not adopted. Thus, it is possible to compare the current situation with a hypothetical situation if nothing was changed.

Adhikari & Alm (2016) studied the impact of Flat Tax Reform on Eastern and Central European countries as one of the most relevant studies in recent years. The study compares 8 countries, including Latvia, and examines the impact of tax reform between 1994 and 2005, creating a separate model for each country. Countries from the same region are also used as a "donor pool". The results show that this policy had a positive effect on GDP per capita in all countries. In seven out of eight countries, this effect was statistically significant. According to the results of the study, the authors found that five years after the Flat Tax reform implementation in all countries, GDP per capita growth was on average 18% higher than in the control group of countries where this type of policy was not implemented. Before the introduction of the Flat Tax reform, Latvia had a Progressive Tax system until 1995, but a Regressive one until 1997. The model reflects that after the introduction of the Flat Tax reform, Latvia's average GDP per capita was $1,966 higher than that of "synthetic" Latvia. According to the study of Adhikari & Alm (2016), it can be seen that the model accurately reflects the impact of the specific policy, and also shows which factors have been more significant in each country.

Before conducting the previously analyzed study in 2016 Adhikari & Alm (2013) conducted a more detailed study on the impact of the Flat Tax reform on the economic growth of Latvia. This study also uses the SCM model, where the explanatory variable is GDP per capita. Very similar to the aforementioned study, Adhikari & Alm (2013) create a donor pool from seven Eastern and Central European countries, which are very specifically selected. Countries where the Flax Tax reform was implemented

and countries without sufficient data to build an SCM model are not included. This study uses data 4 years before the introduction of the Flat Tax reform and 10 years after. In order for the model to be accurate, the authors improve the root of the mean of the squared prediction error (RMSPE) used by Abadie, Diamond & Hainmueller (2010), which determines how accurately the synthetically created Latvia before the introduction of the Flat Tax reform matches what was in reality. The pretreatment fit index created by Adhikari & Alm (2013) shows very good compatibility between these two for Latvia mentioned above, which predicts a high accuracy of post-treatment data. As a result, the authors have obtained a significant effect and show that both the growth rate of GDP per capita and the overall GDP per capita effect have increased. Thus, after the implementation of the Flat Tax reform in 1997, the model shows that the GDP per capita growth rate is on average by 3.81 percentage points higher, but the GDP per capita is on average by USD 1 526 higher compared to synthetic Latvia.

Comparing the aforementioned studies, it can be seen that the application of the SCM model is a new and efficient way to analyze the effectiveness of various types of tax policies. This method is very suitable for studying tax reforms right after their adoption, comparing the real results of tax policy with those that would have been achieved if the reform had not been adopted.

3. Institutional Context

3.1 Micro Enterprise Tax Policy

Micro Enterprise Tax (MET) is a special form of taxation that was first introduced and accepted by the Parliament of Latvia in 2010 and came into force on September 1, 2010 (LIKUMI.LV, n.d.). Micro Enterprise taxpayer is considered to be a member of a Limited Liability Company that meets the criteria of a Micro Enterprise Tax Law mentioned below in Section 3.2, owner of an individual company, a farmer's or fisherman's farm, a sole trader or another natural person registered within the State Revenue Service as a performer of economic activity (LIKUMI.LV, n.d.). Regardless of the legal status, the MET payer holds (either it is a Limited Liability Company, sole proprietorship, or another natural person), 65% of the collected tax is attributable to the state social insurance mandatory contribution account, while the rest is subject to the personal or Corporate Income Tax (CIT) account, with a separate 0.1% are credited to the business risk state fee account (LIKUMI.LV, n.d.). However, after the 2021 changes in MET legislation, as later discussed in this paper, Micro Enterprise firms must only employ 1 person, who is automatically the owner of the Micro Enterprise Company. While at the same time Micro Enterprise can still have other employees who are subject to tax rules under the general tax regime. Thus, we may refer to MET as a unified tax payment model that includes the following taxes: mandatory state social insurance contributions for the owner of a Micro Enterprise, as well as the income tax of the owner of the Micro Enterprise for the part of the income of the economic activity of the Micro Enterprise (LIKUMI.LV, n.d.).

The period of taxation is set quarterly, meaning that the Micro Enterprise is obliged to report the income every 3 months. However, if any of the requirements (such as the maximum turnover per annum, the number of employees, or their maximum income applicable for the base rate) are not met, the Micro Enterprise loses its status in the following quarter and shall not be eligible to maintain and pay the combined taxpayer model - MET. By losing the MET status, the firms becomes a subject to the general CIT taxation scheme, which may be associated with lower benefits.

3.2 Policy Changes

As it is the main topic of our interest, in the following section all the descriptive characteristics and specifications of this taxation model are drawn and compared starting from the year when it was first implemented - 2010. Current rates, requirements, and limits vary, thus, we are going to discuss changes and how the current setting looks further in this section (LIKUMI.LV, n.d.). The summary of all these changes and modifications can be found in Appendix A, Table 1. Initially, the requirements when the Micro Enterprise Law was just passed in 2010 were set as follows (LIKUMI.LV, n.d.):

- Micro Enterprise Tax rate: 9% of the taxable income (20% for the amounts exceeding the maximum turnover set requirements).
- Maximum Micro Enteprise's turnover: Ls 70 000 (as of September 1, 2010, the exchange rate of Latvian Lats to Euros was 1.41 LVL/EUR, meaning that the annual turnover limit could be expressed as 98 700 EUR) (ExchangeRates.org, n.d.).
- Employees and income: a total number of employees does not exceed 5 whose income does not exceed Ls 500 (as of September 1, 2010, the exchange rate of Latvian Lats to Euros was 1.41 LVL/EUR, meaning that the employees income limit per month could be expressed as 705 EUR) (ExchangeRates.org, n.d.). Moreover, dividends calculated from the Micro Enterprise profits are not considered to be applicable by the MET. Any amount exceeding Ls 500 regarding the employees' income is also subject to an increased applicable tax rate of 20%.

The first major revision of the Micro Enterprise Law came into force in 2014 when Latvia joined the Eurozone (European Commission, n.d.). With the adoption of a new currency - Euros, the maximum yearly turnover for the MET payers was set at 100 000 Euros and the maximum wage was set at 720 Euros. In contrast, the official exchange rate at the time of January 1, 2014, was 1.42288 EUR/LVL, that comparing to the previous ceiling set in Latvian Lats corresponds to 99 601.6 EUR and 711.44 EUR, respectively. Thus, we can say that the newly adopted exchange rate has only slightly lifted up the turnover and wage requirements.

The next adoption followed on January 1, 2015 when the government passed a law that divided the turnover into 2 parts and introduced a new tax rate. For the amount

not exceeding 7 000 EUR it remained the same - 9%, but if the turnover was in the range between 7 000 and 100 000 EUR, it was decided to apply different rates for the following years thereafter:

- for 2015 the taxable rate was 11%;
- for the following year 2016 the rate would be 13%;
- and for the next year of 2017 it would be 15%.

At the same time, neither the maximum wage per employee, nor the maximum number of Micro Enterprise employees was not affected and remained at the same level of 720 EUR and 5 employees, respectively.

May 15, 2015, followed with a new revision which stipulated a 9% tax rate instead of the 11% for 2015 that was initially planned on January 1, 2015. However, the 9% tax rate was only applicable for those companies that registered as a MET payer and their length of operations did not exceed 3 years, otherwise, the applicable tax rate was 12%.

The next implementation of MET Law was on January 1, 2016, when the previously expected future tax rates were cancelled, and regardless of the year, if the turnover did not exceed 7 000 EUR, it remained at 9%. While for the amounts exceeding 7 000 EUR and below 100 000 EUR, it was decided to stick to the plan introduced back in May of the previous year. Mainly, if the company operates for less than 3 years, the tax rate was also 9%, and if it operates for more than 3 years - 12%. Here we can observe an advantage for the new firms registered as a Micro Enterprise Tax payer less than 3 years prior to 2015, for those companies, it did not matter if they exceed the 7 000 EUR turnover level, as the applicable tax rate for those would stay the same - 9%. In our opinion, this date of registration that leads to a different tax rate also raises inequality concerns, which we will further elaborate on in the Reflection section of this paper.

The turnover breakdown discussed above ended in 2017, when on January 1, 2017, the new legislation came into force that somewhat unified the requirements' ceiling, and for all firms registered as MET payers it was decided to set the maximum turnover of 100 000 EUR with a MET set at 15%, regardless of the length of the company's operations or the turnover.

A drastic change followed on January 1, 2019, that lasted until the end of 2020, when the turnover requirement was limited to 40 000 EUR with the same tax rate of 15%. However, the decrease of 2.5 times in terms of the maximum turnover was not the

only negative novelty of the 2019 tax reform. As it also envisaged that any employee could only be employed in one Micro Enterprise and as previously receive a maximum wage of 720 EUR.

Finally, the latest version of the legislation regarding the Micro Enterprise Tax Law that is in force at the date of publication of this paper was adopted on January 1, 2021, and revised on July 12, 2021, when for the turnover not exceeding 25 000 EUR the applicable tax rate is 25% while for the turnover between 25 000 EUR and 40 000 EUR, it is 40%. Moreover, it also states that there could only be one employee per Micro Enterprise with a maximum wage of 720 EUR, which means that it should be the enterprise's owner. However, Micro Enterprise can still have other employees who are subject to tax rules under the general tax regime. Additionally, compared to the previously mentioned initial division of collected Micro Enterprise Tax, currently, 20% of the total collected tax amount is attributable to Personal Income Tax, which can be explained by the fact that only one person - the owner - runs the Micro Enterprise, while the rest 80% are attributable to Mandatory State Social Insurance Contribution account (Dārziņa, 2020).

3.3 Previous reflections on Micro Enterprise Tax

In one of the recent studies about the Micro Enterprise Tax reform in Latvia, Prohorovs & Bistrova (2017) conducted an analysis comparing the tax systems of the three Baltic states and their support for small businesses. After studying the diversity of the laws of each country and comparing it with economic indicators, the authors conclude that the MET Reform had a negative effect in the long run. Comparing the data from 2006 to 2015, it can be seen that the employment rate has slightly increased in all Baltic countries, but in Latvia, it has fallen by 0.8%. Although a special tax for Micro Enterprises has not been introduced in Estonia, in recent years its economy has grown much faster than in other Baltic countries. Estonia has achieved this by not taxing all profits that are further invested in the development of the company. However, there is no other type of discount for companies, so social, corporate, and income taxes must be paid in full, as a result of which employees do not suffer from incomplete social contributions. Prohorovs & Bistrova (2017) conclude that many changes are needed to improve this reform, which could improve both the economic situation and the social protection of people.

In addition to the previously mentioned analysis between all Baltic States, Leibus (2019) has analyzed the pros and cons of the Micro Enterprise Tax regime, looking at the latest changes in regulations. Leibus (2019) also agrees that this tax policy has had its advantages, for example, the number of newly established companies has increased and illegal employment has decreased. Despite these positive aspects, many entrepreneurs use the MET regime precisely because of the low taxes, resulting in unfair competition between companies. Just as Prohorovs & Bistrova (2017) mentioned, Leibus (2019) also believes that employees of the MET regime are exposed to a very high social contribution support risk, which is one of the biggest shortcomings of this tax policy. Although such a policy is pleasant for employers because labor costs are significantly reduced, it can strongly affect the future of employees. Among Micro Enterprises and general tax regime companies, an important factor that characterizes the competitiveness of employees is the increase in wages. Considering the fact that Micro Enterprises have a maximum salary threshold, if the company wants to maintain this status, it is impossible to break this threshold despite the influence of inflation and other external factors. In her study, Leibus (2019) reflects on the changes in wages between 2016 and 2017. It can be seen that between these years, the average salary of an employee of general tax regime companies has increased by 15.03%, and that of MET regime employees by only 2.72%. Looking at Appendix A, Table 2, you can see that in the following years, the average salary of employees of the MET regime is only falling, even decreasing by 6.03% between 2018 and 2019. Such links make us even more convinced that this tax regime needs significant improvements. Finally, in order to improve the efficiency of the MET regime and the financial security of employees, Leibus (2019) makes some recommendations. One of the options is to create a separate social contribution rate, which would be paid from the employee's salary, not the company's turnover. To balance these additional expenses, a lower turnover tax rate would be necessary, but the biggest benefit would be that the employees would be better provided with social contributions.

3.4 Concerns raised

Even though the initial Micro Enterprise law with the specifications mentioned above was first introduced more than 10 years ago, there is still a possibility for entrepreneurs to register their firm as a MET payer even nowadays, however, what has

raised our attention is the drastic change between the requirements and details that are present now compared to 2010 law, when it was first introduced. Ever since then, the law was adjusted multiple times, 12 to be precise, which questions the initial efficiency and what has led to these several adjustments.

The latest changes have also raised our concerns about inequality, as for the firms exceeding 25 000 EUR turnover (that undermines paying a 40% tax rate) the Micro Enterprise status loses its advantages as the tax rate becomes so substantial that it is more beneficial for this firm to register as a regular Limited Liability Company. The only explanation for paying a 40% tax rate could be if the firm wants to maintain the Micro Enterprise status for the future, however, as revealed in this study, it is also subject to further social risks described in the section below (Dārziņa, 2020).

Another disadvantage of the MET regime is that the employees of these companies are modestly compensated with state benefits. When paying taxes under the regular tax regime, general social contributions are calculated from the employee's gross salary, while social contributions for employees of Micro Enterprises, on the other hand, are calculated from the total MET amount (*Tax Rate x Company Turnover*). These social contributions from the MET are distributed to all employees and are therefore much lower than in the general labor tax regime. As, for example, according to the 2015 Tax Law, the social contribution base for an employee of a Micro Enterprise who works in a company with 5 employees and whose annual turnover is 48 000 EUR was 146.58 EUR. Compared to an employee who works in a company under the regular tax regime, their social contribution base, taking into account the maximal Micro Enterprise salary in 2015, was 720 EUR. Thus, it can be concluded that social guarantees for employees of Micro Enterprises are almost 5 times lower than for other employees (Dārziņa, 2015).

3.5 Micro Enterprise Taxpayers' analysis by NACE sectors

We have chosen to divide the tax revenues and characterizing parameters of the Micro Enterprises by The Statistical classification of economic activities in the European Community (NACE) 2nd edition 1st level sections. An explanation of these codes can be found in Appendix B, Table 1. By comparing these sections, you can see which industries were most affected by the introduction of the MET reform.

According to the information shown in Appendix B, Table 2, it can be observed that from 2015 to 2018, government revenue from the MET tax regime increased from

58.8 to 90 million, which is about 53%. Despite the rapid growth during these years between 2015 and 2020, this growth is only around 13%. Such a decrease in MET revenue can be explained by the aforementioned MET regime policy changes. It was in 2018 when stricter benchmarks were introduced to maintain this status, as a result of which the MET revenue also decreased. This trend shows the problems with this tax law.

MET revenues are divided by the State Revenue Service into 20 sectors by NACE codes. From 2015 to 2020, each year approximately 25% of these tax revenues are directly related to section M, which includes "Professional, scientific and technical activities" (found in Appendix B, Table 2). Looking at the table, no outliers are visible, because in the period summarized in the table, in all sectors until 2018, an increase in tax revenue can be observed, but after that tax revenue has fallen sharply. More detailed data by NACE sectors between 2015 and 2021 can be found in Appendix B, Tables 3 - 5. Also in this data, just as MET revenue, a large part of both employers and employees is made up of the M section. Although, there has been a sharp decline in MET employers of this sector in the last 6 years, it still remains the highest sector to employ the largest amount in terms of all employees working under MET regime (Appendix B, Graph 1). According to this division, we can conclude that companies from many sectors have taken advantage of the opportunity to obtain MET payer status. For example, in 2015, there were more than 1000 employers in 12 NACE sectors, which shows that such a tax relief has really had a positive effect in these sectors. However, there are also sectors that have not been addressed by this new tax regime. For example, the maximum number of employers in NACE section B was 22 in 2015, but in 2021 it had dropped to 4 employers. The most labor-intensive NACE sector between 2015-2021 was sector M, moreover, it is impacted by the MET reform the greatest, as there is the largest amount of employees working under MET taxation scheme (Appendix B, Graph 2). This could certainly be explained by the fact that some sectors in general require large investments to start operations and immediately the turnover in that case is very high. As above mentioned section B is directly related to mining and minerals extraction. For such sector, in order to start their operations, need to purchase various equipment, which already constitutes high costs, and in order to make a profit, such companies should also generate a turnover of a similar amount, which would at least cover all costs. On the other hand, employees of some sections, such as section F, which includes various builders and construction specialists, use this opportunity to pay lower

taxes. According to the 2021 data compilation, which can be seen in Appendix B, Table 3, section F was in third place in terms of the number of employers. Again, this relationship can be explained by the fact that many of the employees work individually or in small groups, and to provide construction consulting or minor services, large material investments are not required to begin the work. By exploring the trends across years in NACE sectors, we can see that there has been a shift in the year 2021 in terms of wage (Appendix B, Graph 3). Through the last 5 years, mainly, 2015-2020 the average wage per employee was fluctuating in the range of the maximum threshold of 720 EUR, however, in 2021, when this ceiling was abandoned, there have been various trends across different sectors in terms ofaverage wage per employee.

4. Reflection on Micro Enterprise Tax

4.1 Discussions

While referring to the Micro Enterprise Tax reform, there are pros and cons. Initially, the introduction of a reduced tax rate for companies with the status of a Micro Enterprise created a positive attitude toward its successful application. Both company owners and state authorities felt justified faith in the rapid development of the economy, reducing the unemployment rate and increasing the welfare of society (Kaldere, 2018). However, already in the first years of policy implementation, the number of Micro Enterprises grew very rapidly. It continued to grow until 2016 when these companies made up about 25% of all companies in Latvia. After such a turn, society was divided into two parts, where young entrepreneurs and business supporters promoted this tax reform, but the State Revenue Service considered it a facilitator of tax evasion. Many large companies registered several Micro Enterprises at this time, thus operating several Micro Enterprises pays much less taxes and increases their profits. In order to exclude such schemes and reduce tax revenue losses, the state renewed this reform several times (Kaldere, 2018). Referring to the Latvian State Law, changes in the MET legislation in the years 2017 and 2018 gradually decreased the number of companies that were able to fit into the existing regulations (LIKUMI.LV, n.d.). Observing the existing problems in the tax reform of Micro Enterprises and seeing its ineffective operation during the economic growth period, The Organization for Economic Cooperation and Development (OECD) developed a recommendation for the countries of this

organization to stop the reform (Ķirsons, 2019). Despite the decline in corporate tax rates in recent years, the OECD still recommends not reducing rates rapidly, as corporate income tax is one of the most important types of taxation, as mentioned in the Section 2.1 of this paper(OECD, 2019).

Similarly, the issue of state-granted social insurance for employees of Micro Enterprises has also raised discussions in the past. Since the total tax rate of these companies was much lower, the contribution to the state social guarantees was also lower. In an interview with Māris Ķirsons (2018), the Minister of Health pointed out this problem and called for an increase in the tax rate in order to fully cover the mandatory state social insurance contributions. These are just some of the problems that explain why this tax reform has been hit hard in recent years. Therefore, the mentioned authors in this Discussion section are concerned about whether the implementation of this tax reform has been effective and what consequences it has left on the Latvian national economy since 2010.

Also looking at Nallareddy et. al. (2018) research, it can be observed that the reduction of the Corporate Tax rate leads to an increase in inequality in society. This study used U.S. available state-level data. In order to be able to analyze the impact of the tax cut on inequality, the authors created a regression in which they analyzed how much the income share increases in the highest income strata. After applying the matching approach and understanding in which U.S. states tax cut reforms have taken place in the last six years, the authors got a more effective sample that has more accurately showed changes in inequality due to tax cut reforms. Then, by applying this matched sample in regression, the authors proved that the average share of income of the top 1% group in the U.S. increases by 6.1 percentage points. Thus, this applied model shows that reducing tax by 0.5 percentage points would explain 12.4% of the highest 1% income increase between 1990 and 2010. This Nallareddy et al. al. (2018) result shows that reducing the Corporate Tax increases income for the higher layers, which creates a bigger income gap between the lower layers and increases inequality. Considering these analyzed factors, there are concerns about the effectiveness of the tax reform adopted in Latvia in 2010.

4.2 Room for improvement

Analyzing the above-mentioned papers, it can be concluded that it is possible to effectively analyze tax reforms by clarifying their strengths and weaknesses. In recent years, there have been opposing views on the need for a Micro Enterprise Tax system in Latvia. Also according to the OECD (2019) recommendations, tax systems should not focus on a rapid reduction of rates. Referring to the analysis of Prohorovs & Bistrova (2017), the current tax reform is not beneficial for the national economy, thus there is reason to think that its implementation has a negative effect on the Latvian economy.

In our research we assume that with the adoption of the MET reform in Latvia in 2010, the potential outcomes are independent, being subject to the conditional country-specific characteristics mentioned in the Data section of this paper. The model we are interested in applying is the Synthetic Control Method (SCM), first developed by Abadie and Gardeazabal (2003), as a main model for our research Methodology. We have acknowledged the fact that most of the previous studies were either theoretical or simulation-based, due to the fact that models were lacking estimation precision because of the endogeneity factors that are attributed to the tax reforms. The SCM allows us to more closely satisfy the assumptions of independent variables, however, as Adhikari and Alm (2016) have admitted, even these variables may lead to the potential endogeneity of reverse causation due to further growth expectations.

5. Hypothesis

Although the previous studies have obtained mixed results on the effects of different taxation models, we draw our hypothesis mainly on the OECD recommendation for states to stop implementing the Micro Enterprise Tax reform, mentioned in the Discussion section above. Yet, another fact that supports our proposed hypothesis is the margins set by the government on a year-to-year basis in terms of new requirements of maximum turnover allowed (that decreased throughout the last years) for the firms to be considered and maintain a status of the Micro Enterprise; and the tax rate itself (that has increased). Moreover, in Appendix A Table 2 obtained from the publicly available data from the State Revenue Service (VID) we can see that from 2016 until 2021, the number of employers has decreased by around 58%. Thus, having observed various negative tendencies both quantitative and qualitative, we have formulated the following hypothesis:

An implementation of a Micro Enterprise Tax in 2010 had a negative impact on Latvia's public finance.

6. Data

In the work of Adhikari & Alm (2016), where the Synthetic Control Method was used, the authors relied on the data retrieved from The World Bank. We decided to use the same database, as both their field of study (Flat Tax reform on the macroeconomy of Central and Eastern European Countries) and the methodology is similar to ours. Thus we apply the World Bank (2021) database. This database contains data from 189 countries of the world for the last 62 years. The time horizon of the SCM model is 26 years: 15 years before the treatment year when the tax reform was implemented in Latvia, the treatment year, and 10 years after the reform came into force. The model used in our work consists of European countries included in the Organization for Economic Cooperation and Development (OECD). According to the US Department of State (n.d.), the goal of the organization is to create various policies that would stimulate stable and sustainable economic growth through the cooperation of member countries. These countries were chosen for the study precisely because they are part of the OECD organization. Since our research is based on tax policy evaluation, it is very important to compare these countries according to macro and demographic variables, because apart from the tax policy under the study, other economic policies are also created mainly by applying such parameters. The country under study, Latvia, is a country where the Micro Enterprise Tax was introduced and it is considered a "Treated" unit. To be able to create a synthetic model of Latvia, data from 18 European OECD countries (Estonia, Finland, Sweden, Norway, Iceland, Ireland, Germany, Czechia, Austria, Hungary, Switzerland, Italy, Greece, Denmark, Slovenia, United Kingdom, Spain, Turkey) is needed, in which the MET is not currently implemented, will serve as the “donor pool” for the SCM model (Locher & Asen, 2021). Moreover, it is important to acknowledge that neither MET-alike reforms did not take place in these countries, nor there were any similar policies implemented aimed at reducing the tax burden to businesses. For example, this is the case why Lithuania is not considered in our sample, while Estonia is. Although both countries are part of the OECD and are geographically closest to Latvia, it is due to the fact that in Lithuania there are some corporate tax reductions for certain businesses under specific conditions, while in Estonia there is not. In order to be able to create a SCM model, we need to obtain the necessary variables from all of the above-mentioned countries. Although some of the countries had missing (unavailable) data for particular years, we used the “mice” package in the RStudio

program in order to impute missing values with plausible data. Shkolnikov, et all. (2011) have used the same interpolation method to fill in the missing values for estimating Gini Coefficient. Thus, we decided to also apply this method to our study. Due to the fact that for both Turkey and Spain, there were plenty of missing data for various variables and for multiple years, we excluded these countries from our model. The "donor pool" consists of 16 previously mentioned countries (excluding Spain and Turkey).

We use panel data retrieved from The World Bank (2021). We have obtained 9 variables - Real GDP growth per year (measured in %), unemployment rate per year (measured in %), taxes from businesses per year (measured in numerical terms), new businesses registered within a year (expressed as an absolute number), yearly inflation (measured in %), the population of each year (expressed as an absolute number), population growth per year (measured in %), life expectancy (measured in years), country's density per year (measured in people per square kilometre of land area). Then we divide these variables into 2 categories - dependent and independent variables. Dependent variables are the ones that we make SCM on, mainly, these variables are factors that directly address our main research question in terms of influencing public finance, economic growth and the development of businesses. These dependent variables are Real GDP growth, unemployment rate, taxes from businesses, and new businesses registered.

Other variables are independent variables that, combined together, influence the dependent variables. These independent variables are inflation, population, population growth, life expectancy and countries' density. We have chosen to use these predictors to reflect on country-based macro and demographic variables that would allow us to obtain a more precise synthetic depiction of Latvia. In support of our choice of independent variables, we refer to the paper by Abadie et al. (2010) who used density in their SCM to analyze the effects of California's Tobacco Program in 1988. In addition, Adhikari & Alm (2013) have used inflation and population growth while assessing Flat Tax Reform in 1997, also by using SCM. Additionally, we decided to use life expectancy as even though Abadie et al. (2010) have not directly used this factor, but at the same time they have mentioned the importance of using various demographic factors to assess different policies. As well as we have found evidence that it is used in studies with different methodology, but with the same scope of research as ours. For example, Bruckner et. all (2013) have compared European countries by using life

expectancy as a parameter. We consider life expectancy as a valuable addition to our SCM model, which also results in a novelty for applying this parameter to the existing analysis.

With the set of our chosen independent variables, it is possible to compare the demographics and social factors of the selected countries. Additionally, these variables are solely county-specific and are not directly influencing any of the dependent factors, meaning that we can exclude covariates between factors, to better estimate the results. For example, although many previous studies with different methodologies analyze the growth of the economy purely by relying on GDP growth by using such predictors as, imports and exports, however, if used in the Synthetic Control Model, the results would be biased towards exactly these variables, as Net Exports is one of the GDP's components.

One of the main dependent variables in our case is “Real GDP growth” per year. GDP is a very biased variable, as it is being impacted by many factors, for example, inflation, as a result of which the specific tax policy might not have a real effect on the GDP variable. In order to exclude the effect of inflation, which has been very relevant in the studied period, we use the Real GDP, not the Nominal GDP. Inflation has had an important role, as within the period of observation from 1995 to 2020, there has been the Global Financial Crisis of 2008 and the COVID-19 pandemic. Therefore, in different countries, this indicator can vary considerably. In absolute terms the value of the regular Real GDP differs a lot among different countries, for example, in 2020 Latvia's Real GDP (measured in constant 2015 US dollars) was slightly over 30 billion $, however, in the same year Germany's Real GDP was 3.46 trillion $, which makes it hard to compare so different values. Thus we decided that Adhikari's & Alm's (2016) used GDP per capita variable should be adjusted as a growth measure. In our opinion, in order to obtain the most accurate results in our study, we employ the Real GDP growth variable.

Secondly, we use the “unemployment rate” for each year. As previously mentioned, the GFC has also had a great effect on the unemployment rate. But it is important to use this variable as a dependent variable, because referring to the Literature Review (Kaldere, 2018), one of the main goals of the MET policy was to directly reduce the unemployment rate after the crisis, stimulating it with the opening of new companies, which would result in new job creation.

Additionally, as our dependent variable, we also use “taxes from businesses” on yearly basis. For the convenience of our analysis, we decided to strictly limit whole taxes to only corporate tax revenues by the states. It allows us to make better comparisons across the countries in our study, as well as disregard taxes coming from other activities and fields such as VAT, Excise Duties, Personal Income Tax, Lottery and Gambling Tax and others. In The World Bank (2021) dataset, this variable is reflected as a percent of total taxes while the total taxes are reflected as a percent of GDP. To obtain our dependent variable, the following formula is used:

*Taxes from businesses = taxes on income, profits and capital gains(% of total taxes) * tax revenue(% of GDP) * GDP(current US$)*

Devereux, Griffith, Klemm, Thum, and Ottaviani (2002) have raised concerns about the lowering CIT rates as these lead to diminishing tax revenues. Thus we include the “taxes from businesses” in our dependent variables to analyze the effect on Latvian tax revenues.

Finally for our last SCM model dependent variable is “new businesses registered” per year. In our opinion, this variable is the most suitable variable for analyzing this time period, because compared to other variables, new firm creation has a much smaller impact from the Global Financial Crisis. In turn, the outcomes of the 2008 Mortgage Crisis could open an opportunity window that might be considered as a ground for founding companies and gaining financial benefits from the recovery policies that many states have implemented in order to overcome the negative outcomes of the GFC. Nevertheless, taking into account the fact that this variable is the least affected by the exogenous factors compared to other variables used in our analysis, if a larger number of established companies is observed after the adoption of the policy, it could have a long-term effect on the Latvian economy. This argument goes in line with Kaldere's (2018) statement that just within 6 years after the Reform took place, Micro Enterprise Companies made nearly a quarter of total Latvian businesses. However, we would like to mention the fact that the data for the new businesses registered is available in The World Bank (2021) starting from 2006, thus, we do not include this variable for SCM models on Real GDP growth, unemployment rate, and taxes from businesses.

7. Methodology

In order to address the aim of our research paper, we use the Synthetic Control Method proposed by Abadie & Gardeazabal (2003); Abadie, Diamond & Hainmueller (2010); Adhikari & Alm (2016). This method allows us to evaluate the impacts of the 2010 Latvia's Tax reform and assess whether the implementation of a special taxation scheme was indeed useful in respect of the Real GDP growth, unemployment rate, tax revenue from businesses, and a number of businesses registered.

In the research carried out by Abadie & Gardeazabal (2003), the authors believe SCM to be associated with systematic and transparent methodology, lying the creation of a weighted average of potential comparison units called the “donor pool”. These units in our case are the OECD countries in Europe that lack tax reliefs for small businesses at any level. The SCM makes it possible to make a potential estimation of Latvia's tax revenues from the firms, Real GDP growth, unemployment rate, and the number of newly created firms that would have been achieved if there was no policy implemented in 2010. The model assigns weights to those countries that in sum could reproduce almost the same factors of hypothetical Latvia.

In this model, we compare Latvia's actual performance to so-called "synthetic" Latvia, where no tax reform was introduced. For each of the dependent factors we run a Synthetic Control Model, with the independent factors mentioned in the Data section of this paper, additionally we add the rest of the dependent factors. For example, for the SCM testing Real GDP growth variable (dependent variable), the predictors are population, population growth, inflation, life expectancy and density, as well as taxes from business and unemployment rate. Similarly, as Abadie & Gardeazabal (2003), we assume that J represents the "donor pool" (16 selected countries other than Latvia). Total W(weight) = (w1, … , wJ) without a treated country. None of these weights is negative and the sum of all weights is 1. Each different weight - W forms a different "synthetic" Latvia. We aim to obtain the most accurate result possible for the developed model of a theoretical Latvia. The model in the pre-treatment period must be almost identical to the real Latvian dependent variables mentioned above back in the same period.

We have to closely replicate the vector of pretreatment variables X1 for the “treated” Latvia. To achieve this, we introduce X0 as a matrix consisting of vectors of the same pretreatment variables for each potential donor country.

We use a diagonal matrix V, whose values represent the relative reflection of different possible growth predictors. Each weight $W_j \geq 0$, and their sum is equal to 1.

In order to match the pre-treatment variable units and make identical "synthetic" Latvia before the Micro Enterprise Tax was introduced in 2010, we would arrive at obtaining negative weights for donor pool countries. In this section it is important to acknowledge some specifications of the SCM model.

Firstly, The SCM model only accounts non-negative weights for all variables used in the model. Thus, it is not always the case that the Treated unit perfectly matches the Synthetic unit at pre-treatment period or the year of implementation. Although the lines would be identical both for Synthetic and Real Latvia variables, it would not make sense, as the Synthetic model would consist of some negative weights for some variables. For example, Latvia's pre-2010 unemployment rate dependent variable would be made up by combining weights of the same donor pool variables. Say, Estonia's influence would be negative -0.2 weight as a predictor, which theoretically does not make any sense, as the unemployment can not be negative.

Secondly, if the treated and synthetic units overlap before the treatment year, it suggests that the data used for synthetic control group is not diverse enough to capture the true variation in the data. This can lead to bias in the estimates of the treatment effect and make it difficult to determine the effect of the reform from other factors that might be driving the outcome.

Ideally, the synthetic control group should have some variability in the pre-treatment period, which can help to capture the true underlying variation in the data. This can improve the accuracy of the treatment effect estimates and help to ensure that the results are robust to different specifications of the synthetic control group.

After we have got all the non-negative weights for the "synthetic" Latvia that reflects real Latvia as close as possible, we can conduct the counterfactual path. Then we come up with Y1 to be a vector whose elements are the values of Real GDP growth, rate of unemployment, taxes from businesses and new business created in each year for Latvia during the T time periods. We denote Y0 as a matrix that incorporates the values of the same variables for the control group. Our goal is to approximate our above-mentioned dependent variable paths that Latvia would have experienced without the implementation of the MET reform in 2010. This path is calculated by using the following formulas:

1. Synthetic control unit:

As mentioned before, the synthetic control unit is a weighted average of the outcomes from a set of control units, where the weights are estimated based on the similarity of each control unit to the treatment unit in terms of a set of covariates.

To be more precise, let T be the set of treatment units, C be the set of control units, and I be the set of time periods. The synthetic control unit for the treatment unit j is defined as:

$$Y\_j,t = Sum(w\_i,t * Y\_i,t), \text{ for all } t \text{ in } I \text{ and } i \text{ in } C,$$

Where:

- Y_j is the synthetic control unit
- Y_i is the pre-treatment outcomes of the i-th untreated unit
- Sum represents the sum over all untreated units in the control group
- w_i,t are the weights for each control unit i at time t, and Sum denotes the summation over all control units i.

2. Weights estimation:

The weights are estimated by minimizing the difference between the covariates for the treatment unit and the synthetic control unit. The main formula used in SCM is to calculate the weights for each untreated unit in the control group. The weights are calculated by minimizing the difference between the pre-treatment outcomes of the treated unit and the weighted average of the pre-treatment outcomes of the untreated units in the control group by the following formula:

$$w\_i,t = argmin\ Sum((X\_j,t - Sum(w\_i * X\_i,t))^2)$$

Where:

- w is a vector of weights for each untreated unit in the control group
- X_j is the pre-treatment outcomes of the treated unit
- X_i is the pre-treatment outcomes of the i-th untreated unit
- Sum represents the sum over all untreated units in the control group
- $(X\_j,t - Sum(w\_i * X\_i,t))^2$ represents the sum of squared differences

For all t in I and i in C, subject to the constraint Sum(w_i) = 1, where X_i,t and X_j,t are the vectors of covariates for control unit i and treatment unit j at time t,

respectively. The cost function measures the squared difference between the covariates for the treatment unit and the synthetic control unit, with the objective of minimizing this difference. The constraint ensures that the weights sum to one, ensuring that the synthetic control unit is a weighted average of the control units.

3. Counterfactual outcome:

The counterfactual outcome for the treatment unit in the absence of the intervention is estimated as the synthetic control unit calculated at the time of the intervention. The counterfactual outcome can be expressed as:

$$Y_{j,0} = Y_{j,t},$$

4. Impact Estimation: The impact of the treatment on the outcome variable can be estimated as the difference between the post-treatment outcomes of the treated unit and the synthetic control unit. Mathematically, this can be expressed as:

$$Impact = Y_{1(post)} - Y_{0(post)}$$

Where:

- Y_1(post) is the post-treatment outcomes of the treated unit
- Y_0(post) is the post-treatment outcomes of the synthetic control unit
- for t in T, where t is the time of the intervention and T is the set of treatment units.

Additionally, for our SCM model analysis, we will run simple linear regression and robust linear regression for all dependent variables, to understand how accurate our results are compared to the SCM model. By doing so, we will be able to determine the significance level of each predictor and intercept itself, as well as obtain the t-value from additional regressions.

8. Analysis and Discussion

Further in this section we are going to analyze four Synthetic Control Models that we created during our research and elaborate on obtained results that helped us to answer the main research question. To strengthen our analysis we have run additional linear regression and robustness tests. All our regressions with additional model and robustness checks were made with R programming language for statistical analysis in RStudio. The obtained weights for independent variables (predictors) in respect of each four dependent variables can be found in Appendix C, Table 1 and the obtained weights from the donor pool for each creation of Synthetic unit can be found in Appendix C, Figures 5-8 (graphical illustration) and Appendix C, Table 2 (numerical terms), accordingly.

8.1 Real GDP growth

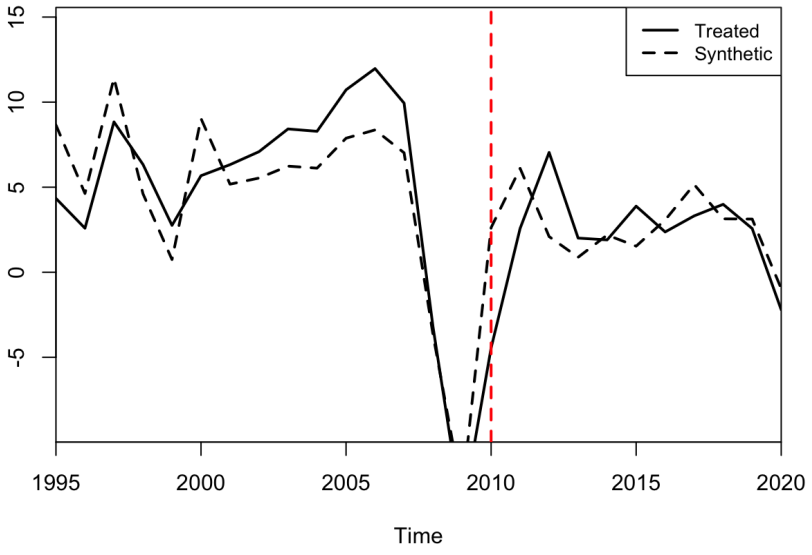

Figure 1: "Synthetic" and Treated Latvia's Real GDP growth comparison; Graph based on the SCM model; Created by authors using R Studio.

After having run a Synthetic Control Method for the Real GDP growth as a dependent variable using the other factors as predictors (described in the Data section) we have obtained the following results:

As we can see from the Figure 1 in Appendix C, the gap between the Treated and Synthetic units is minimal, compared to the other cases with different dependent variables described below. This gap diminishes over the observed time and reaches almost zero in 2020, 10 years after the Micro Enterprise Tax Reform was first introduced. We can also see the similar pattern between the Treated unit and the

Synthetic Latvia which implies that the Real GDP growth follows the same pattern with minor deviations and has not been influenced by the Reform. From this graph we can also observe a vast impact of the Global Financial Crisis and a rapid rise after the 2008 downturn. The slope of recovery from the GFC for the Treated Latvia is higher after the implementation of MET in 2010. This implies that the recovery of Latvia's Real GDP growth had faster rate and dynamics compared to the Synthetic Latvia where the MET reform was not implemented. However, this difference of Real GDP growth parameter was only significant in the short term period and the effect on Real GDP growth between Synthetic and Treated units matched in 2014 and did not differ much onwards with minor fluctuations.

The Synthetic Control Method model has assigned weights for predictors (independent variables)[1] and for 3 countries out of 16 that were in our donor pool[2].

Thus, we have obtained the Synthetic reproduction of Treated Latvia that mainly consists of Estonia and Finland, while Greece has minorly affected the Synthetic unit. Other countries from the donor pool did not affect the Synthetic unit. The main independent factors (predictors) influencing the creation of Synthetic unit regarding the Real GDP growth variable were unemployment rate, inflation and taxes from businesses.

Additionally, we have run a simple linear regression model (Appendix D, Table 1) with Real GDP growth being a dependent variable, while other variables discussed in the Data section of the paper were independent variables. The coefficients in the Appendix D, Table 1 show the estimated effect of each independent variable on the dependent variable. For example, the coefficient for unemployment is -0.300, which means that a one-unit increase in unemployment is associated with a 0.300 decrease in Real GDP growth rate, holding all other variables constant. Moreover, the unemployment rate has the p-value lower than the 1% significance level, implying that the result is considered statistically significant. The significance level means that in 1% cases Type I error appears and the true null hypothesis is rejected.

In order to verify that the results are not driven by one particular method or assumption, we have run a robust linear regression (RLM) for the same linear regression described above (Appendix E, Table 1) . By exploring the sensitivity of the results, we have gained the following conclusions drawn from the analysis:

[1] See weights for predictors in Appendix C, Table 1.
[2] See weights for countries in Appendix C, Table 2.

A robust linear regression model was fit to the data with the response variable Real GDP growth. The coefficients for each of the predictor variables, along with their standard errors and p-values are shown in Appendix E, Table 1. Predictors population and taxes from businesses are not statistically significant. While, intercept (Real GDP growth), inflation, unemployment rate, population growth, density and life expectancy predictors have a significant level lower than 5%.

In order to test sensitivity of the results gained from the SCM model we can compare the significance and how consistent are the obtained variables across simple linear regression and robust linear regression. For the Real GDP growth parameter the greatest impact is the unemployment rate, having the largest weight, as well as 5% and 1% significance levels, from regressions respectively.

8.2 Unemployment rate

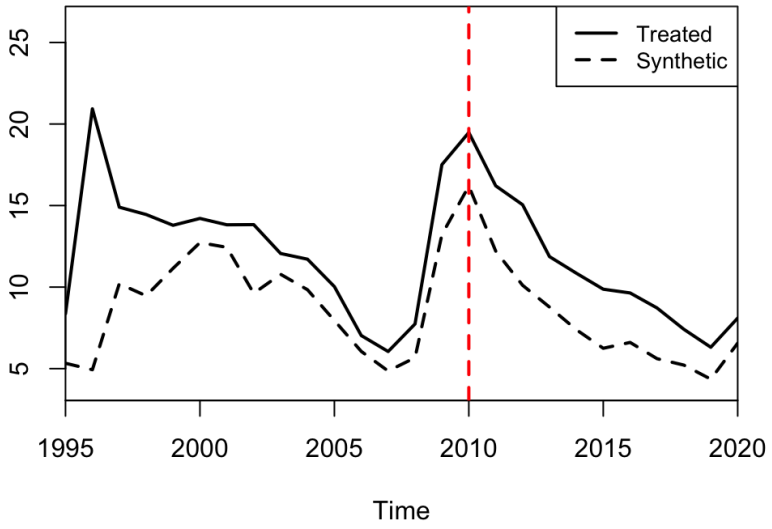

Figure 2: "Synthetic" and Treated Latvia's unemployment rate comparison; Graph based on the SCM model; Created by authors using R Studio.

After having run a Synthetic Control Method for the unemployment rate as a dependent variable using the other factors as predictors (described in the Data section) we have obtained the following results:

As we can see from the Figure 2 in Appendix C, the gap between the Treated and Synthetic units follows the same pattern. It is important to notice that the line of the Treated unit and the line of the Synthetic unit do not match the same starting point in 2010 when the Micro Enterprise Tax Reform was first introduced. The reason for this gap can be found in Methodology section of the paper. We can also see the almost identical pattern between both units which implies that the unemployment rate gap tends to be the same in the following years of observation. During the Global Financial Crisis unemployment rate has increased significantly, peaking right in the year 2010 when the Micro Enterprise Tax was introduced. Nevertheless, in 2010 there is already a gap between both units, it may seem that by passing the MET law Latvian Government has achieved its main target - to decrease unemployment, as the rate of unemployment, indeed, has dropped thereafter. However, if we compare with the Synthetic unit, the tendency of decrease follows the same pattern and in reality the unemployment rate appears to be lower, if the MET was not introduced.

The Synthetic Control Method Model has assigned the following weights for predictors (independent variables)[3] and for 2 countries out of 16 that were in our donor pool[4].

Thus, we have obtained the Synthetic reproduction of Treated Latvia that mainly consists of Estonia and Hungary. The main independent factors (predictors) influencing the creation of Synthetic unit regarding the unemployment rate variable were Real GDP growth and population growth.

Additionally, we have run a simple linear regression model (Appendix D, Table 1) with one dependent variable (unemployment rate) and multiple independent variables, discussed in the Data section. The coefficients in the Appendix D, Table 1 show the estimated effect of each independent variable on the dependent variable. For example, the coefficient for Real GDP growth is -0.153, which means that a one-unit increase in unemployment is associated with a 0.153 decrease in unemployment rate, holding all other variables constant. Moreover, the Real GDP growth rate has the p-value lower than the 1% significance level, implying that the result is considered statistically significant.

A robust linear regression model was fit to the data with the response variable unemployment rate and the predictor variables. The coefficients for each of the predictor variables, along with their standard errors and p-values are shown in Appendix E, Table 1. Predictor taxes from businesses is not a statistically significant predictor since its absolute p-values is more than 10%. While, intercept (unemployment rate), Real GDP growth, inflation, population growth, density and life expectancy predictors have a p-value lower than 5%. Moreover, population growth and density are statistically proven, as both of the variables have the highest significance level of 1% for both tests.

[3] See weights for predictors in Appendix C, Table 1.
[4] See weights for countries in Appendix C, Table 2.

8.3 Taxes from Businesses

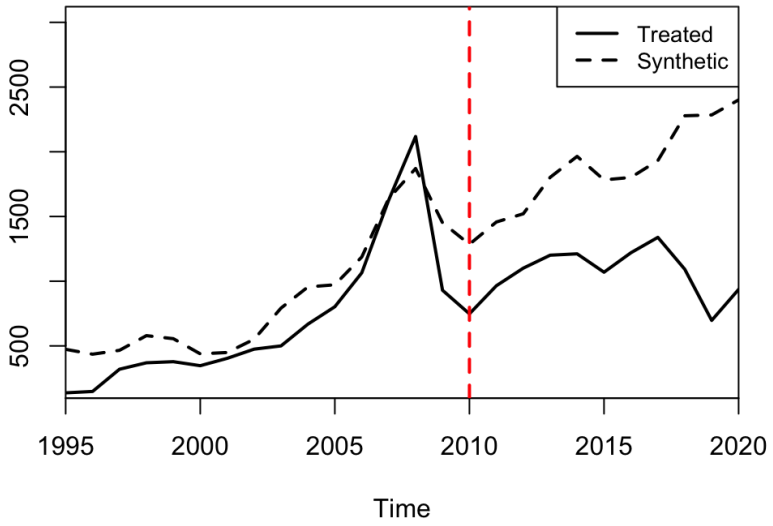

Figure 3: "Synthetic" and Treated Latvia's tax revenue from businesses comparison; Graph based on the SCM model; Created by authors using R Studio.

After having run a Synthetic Control Method for the taxes from businesses as a dependent variable using the other factors as predictors described in the Data section we have obtained the following results:

As we can see from the Figure 3 in Appendix C, the gap between Treated and Synthetic units is substantial, compared to the other cases with different dependent variables described above. Similarly to the previous graph, the lines of taxes collected from businesses have different starting points in the year 2010 when MET was introduced. However, the tendency of these 2 units does not follow the same path. In the first years after the MET came in to the force these units fluctuated similarly, in turn after 2013 the gap between Synthetic and Treated units started to increase, especially after 2017 we can observe inverse dynamics. While the taxes from businesses for Synthetic Latvia were expected to increase, the real Latvia's taxes from businesses, on opposite, fell. In the Literature section of this paper we have already discussed that by decreasing the applicable tax rate for firms, the state loses revenues, that is observable from the SCM for taxes from businesses parameter. Moreover, we put emphasis on the fact that introduction of MET has created uneven circumstances and unfair competition based on certain specifications of the firms, which in result has created a negative slope observable from this graph in the long run.

The Synthetic Control Method Model has assigned the following weights for predictors (independent variables)[5] and for 1 country out of 16 that were in our donor pool[6].

Thus, we have obtained the Synthetic reproduction of Treated Latvia that only consists of Estonia, while other countries from the donor pool did not affect the Synthetic unit. The main independent factors (predictors) influencing the creation of Synthetic unit regarding taxes from businesses variable were population growth and unemployment rate.

Additionally, we have run a simple linear regression model (Appendix D, Table 1) with one dependent variable (taxes from businesses) and multiple independent variables. The coefficients in the Appendix D Table 1 show the estimated effect of each independent variable on the dependent variable. For example, the coefficient for population growth is 2410, which means that a one-unit increase in population growth is associated with a 2410 USD increase in taxes from businesses in monetary terms, holding all other variables constant. Although, the population growth has the p-value higher than the 10% significance level, implying that the result is considered to be statistically insignificant.

A robust linear regression model was fit to the data with the response variable taxes from businesses and the predictor variables. The coefficients for each of the predictor variables, along with their standard errors and p-values are shown in Appendix E, Table 1. Intercept (taxes from businesses), population and life expectancy predictors have a p-value lower than 1%.

[5] See weights for predictors in Appendix C, Table 1.
[6] See weights for countries in Appendix C, Table 2.

8.4 New Businesses Registered

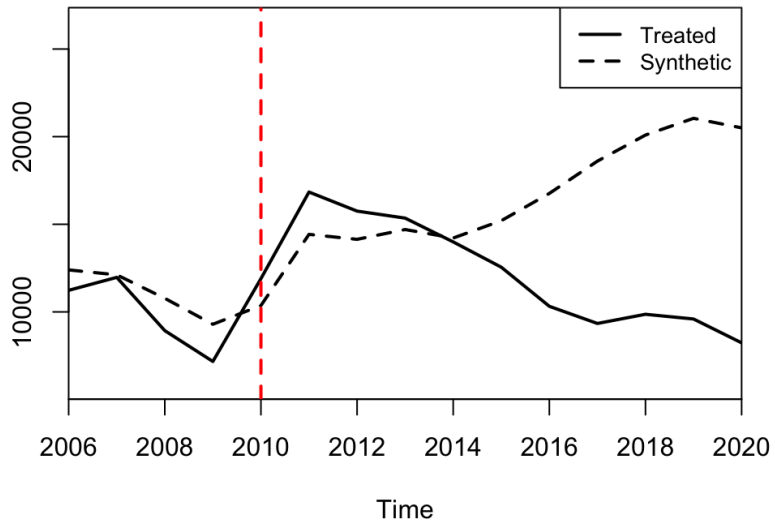

Figure 4: "Synthetic" and Treated Latvia's new businesses registered comparison; Graph based on the SCM model; Created by authors using R Studio.

After having run a Synthetic Control Method for the new businesses registered as a dependent variable using the other factors as predictors (described in the Data section) we have obtained the following results:

As we can see from the Figure 4 in Appendix C, the gap between Treated and Synthetic units is increasing after the 4th year since the policy implementation. Contrary to the Real GDP growth and the rate of unemployment described above, where the gap fluctuated and followed almost the same pattern, new businesses registered variable has opposite tendency in the long run perspective. From this graph we can see that although the introduction of Micro Enterprise Tax Reform had a positive effect in the short run, as, indeed, until 2014 the number of new firms created in Treated unit (Real Latvia) has exceeded the number of businesses registered if there was no such policy introduced. However, this positive effect with the spike achieved in 2011 started to diminish up until the year 2014, when both units would have matched the number of new firms created. We can observe a linear change in gap between these 2 units since 2014 in the time of observation thereafter. This finding goes in line with the previously mentioned arguments in the Institutional Context section of this paper. From the Appendix C, Table 2, we can notice that Estonia has the highest weight for the parameter of new businesses registered (0.967), which implies that Synthetic Latvia is mainly made up using Estonian data. Prohorovs & Bistrova (2017) have compared 3 Baltic States- Latvia, Estonia and Lithuania. The authors have concluded that Estonia where such policy was

not implemented has the most favorable environment for new early-stage businesses. As there are no differences in the applicable tax rate comparing to Latvia, there are no taxes for reinvested earning that results in a significant growth of new businesses registered in the long run.

The Synthetic Control Method Model has assigned the following weights for predictors (independent variables)[7] and for 2 countries out of 16 that were in our donor pool[8].

Thus, we have obtained the Synthetic reproduction of Treated Latvia that mainly consists of Estonia, while Hungary has minorly affected the Synthetic unit and other countries from the donor pool did not affect the Synthetic unit. The main independent factors (predictors) influencing the creation of Synthetic unit regarding the new businesses registered variable were taxes from businesses, inflation, life expectancy at birth and population growth.

Additionally, we have run a simple linear regression model (Appendix D, Table 1) with dependent variable being "new businesses registered" and other determinants being independent variables. The coefficients in the Appendix D, Table 1 show the estimated effect of each independent variable on the dependent variable. For example, the coefficient for unemployment is -1668, which means that a one-unit increase in unemployment is associated with a decrease of 1668 firms in new businesses registered variable, holding all other variables constant. Moreover, the unemployment rate has the p-value lower than the 1% significance level, implying that the result is considered statistically significant.

A robust linear regression model was fit to the data with the response variable new businesses registered and the predictor variables. The coefficients for each of the predictor variables, along with their standard errors and p-values are shown in Appendix E, Table 1. Intercept new businesses registered and taxes from businesses, density and life expectancy predictors have a p-value lower than 1%.

[7] See weights for predictors in Appendix C, Table 1.

[8] See weights for countries in Appendix C, Table 2.

9. Limitations

Our research also has various limitations. One of the limitations is that shortly before the adoption of the tax policy in 2010, the Global Financial Crisis took place. As a result of this crisis, macro variables were strongly affected, including those that we use in conducting the research. As one example is the unemployment indicator. Just before 2010, as a result of the GFC, a very rapid increase in the unemployment rate was observed. Although one of the goals of the tax policy we are studying is to directly reduce the unemployment rate in Latvia, the trend after 2010 has many other factors as well. As the economy recovers, the demand for labor also increases, as a result of which the unemployment rate would naturally decrease.

The same correlation is also with other macro variables, which were strongly affected by the GFC and create a bias when looking at how strong the influence is directly on the SCM model.

It would be logical to make a comparison, not in absolute terms, but rather in relative terms, as the countries used in our SCM model differ a lot, and it is hard to compare such an economy as Latvia with Germany's economy, where the population is more than 40 times larger. However, adding such relative measure as a population to our variables, it would make all the population-associated predictors biased, what we have actually tested in practice. For example, by measuring taxes from businesses per capita, but not in absolute terms of these taxes from business, we obtained such results that 90% of the total variable weights are assigned to population and population growth predictors. These overestimated weights diminish the weight of other factors and make biased results purely based on an initial output of countries' population and further growth, leaving other predictor factors such as unemployment and inflation barely with no significant weight/importance.

Another important limitation is missing data in our dataset. For some of the countries used in the study, data is missing in some years, or the specific variable is available shortly before 2010, which is not suitable for our study and methodology. For example, when creating SCM models with dependent variables "taxes from businesses", "Real GDP growth", "unemployment rate", and “new businesses registered” we cannot use Spain and Turkey, because for both of these countries "Tax revenue as % of GDP" is only available from of 2017 and 2008, respectively. Thus, the number of countries in our donor pool has been reduced from 18 to 16 in these four SCM models.

For unavailable data in some countries for some years we have used the data interpolation method by attaching a “mice” package (using the RStudio program) to our regressions, which might also have created a bias. The mice package in R is used for multiple imputation of missing values in datasets in order to make interpolation method possible. Interpolation in R refers to the process of estimating the value of a function at a point within the range of the function using information about the function at other points. The package implements the "multiple imputation by chained equations" (MICE) algorithm, which involves creating several complete datasets with imputed values based on a given set of imputation models. The imputed datasets are then combined to create a final dataset with estimates of the missing values. We must acknowledge that even though some of the missing variables might slightly change due to the interpolation method applied while running the script multiple times, the change is not reflected in the overall results of the regression. Thus, the method used in this paper can cause minimal deviation in assigned weights, but not in the core results, patterns and plots.

Lastly, we take into account the propagation effect. It has an important role in assessing such type of policy as ours. MET policy that had an effect on Latvia's public finance and macroeconomics may also have caused some spillover effects in other countries. As an example of such externalities, we can consider the adoption of simmilar tax policies as MET Reform in Latvia in 2010 in other countries with a similar aim. We could not account for these countries, as one of the main underlying assumptions of the SCM model is the donor pool that consists purely of untreated states, meaning that there were no policies introduced for easening the taxation for small and medium enterprises. Additionally, propagation effect may also have an effect on our donor pool countries. Due to the fact that Latvia and Estonia are neighbouring countries, any Latvia's implemented policy may effect the economy of Estonia and and vice versa. For example, as Fridrihsone (2016) writes, when companies move their operations to Estonia, taxes must be paid in Estonia, thus Latvia loses tax revenue from the advantages of the company system established in Estonia.

10. Conclusions

After having done the analysis on the influence of Real GDP growth, unemployment rate, taxes from businesses and the number of businesses registered, on Latvian economy between 1995 to 2020 we are able to arrive at a conclusion.

Comparing the previous studies on efficiency of particular tax regimes both in Latvia and foreign countries with our own study, we can conclude that our hypothesis of this paper has been mostly approved - **The implementation of a Micro Enterprise Tax in 2010 had a negative impact on Latvia's public finance**.

Although our analysis does not incorporate all possible factors influencing the growth of a country's economy and public finance, in particular, and it is subject to constraint by sample size and time frame factors, we believe the outcomes of this paper to be significant. The significance of our key variables has been statistically proven in the Analysis section of this report. Nevertheless, we believe that the Micro Enterprise Tax Reform of 2010 had also some positive characteristics in terms of our studied variables, such as Real GDP growth and new businesses created. However, we consider these effects to be helpful and efficacious only in the short run, while in the long run they lose their significance, or even appear to be harmful for the future development of the economy. Our findings are supported both by previous literature findings from the theoretical side and by our own analysis from the empirical side. Moreover, the in(efficiency) of the 2010 Micro Enterprise Tax Reform is also supported by changes in legislation on a yearly basis passed by the Government of Latvia by tightening the requirements, lowering the turnover ceiling and increasing the MET tax rate.

We also ackonweldge that even though SCM is widely used model for tax policy evaluation, it does not fully incorporate all aspects that influence the precise outcomes of a certain reform. The model also has some limitations described in the according section of this paper. It is also crucial to note the parsimony principle, as we refer back to the results of the analysis. From one hand, it may appear that the model is not differentiated enough to capture the true outcome of the MET Reform, as for all dependent variables used in our regressions, the weights assigned for Estonia substantially exceed the weights for other countrie. This theoretically suggests that the “synthetic” Latvia is mostly made by using the Estonian data. It may seem logical to add more variables capturing other macroeconomic and public finance factors, so that the weight share becomes more even and balanced. However, we believe that it would

not make sense to include variables just to increase the weight distribution between donor pool countries. Those countries that have assigned weights in our analysis are the best to compare Latvia with in terms of economic and demographic indicators. Additionally parsimony principle suggests that result should be obtained with the minimal statistically significant number of variables which is the our case. We should not assume more necessary variables to explain the MET reform, because it could decrease the significance and lead to false outcomes.

Although our paper provides significant analysis of the effectiveness of the MET reform, revealing the positive and negative aspects of it would require additional research, with deeper consideration for the different perspectives.

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Regarding the use of any Artificial Intelligence based softwares and websites, we would like to state that no such tools were used in this Thesis.

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Appendix

Appendix A: Summary on Latvia's MET specifications and statistics

	Max calendar year turnover	Tax rate	Maximum wage per employee	Max number of employees
01.09.2010.-31.12.2011 (fundamental)	70 000 Ls	9%	500 Ls	5
01.01.2012.-31.12.2013.	70 000 Ls	9%	500 Ls	5
01.01.2014.-30.06.2014.	100 000 Eur	9%	720 Eur	5
01.07.2014.-31.12.2014.	100 000 Eur	9%	720 Eur	5
01.01.2015.-25.03.2015.	≤ 7 000 Eur	9%	720 Eur	5
	7 000 - 100 000 Eur	2015 - 11% 2016 - 13% 2017 - 15%		
26.03.2015.-12.05.2015.	≤ 7 000 Eur	9%	720 Eur	5
	7 000 - 100 000 Eur	2015 - 11% 2016 - 13% 2017 - 15%		
13.05.2015.-31.12.2015.	≤ 7 000 Eur	9%	720 Eur	5
	7 000 - 100 000 Eur	2015 - 9%* 2016 - 13% 2017 - 15%		
01.01.2016.-31.12.2016.	≤ 7 000 Eur	9%	720 Eur	5
	7 000 - 100 000 Eur	9%*		
01.01.2017.-31.12.2017.	100 000 Eur	15%	720 Eur	5
01.01.2018.-14.08.2019.	40 000 Eur	15%	720 Eur	5**
15.08.2019.-31.12.2020.	40 000 Eur	15%	720 Eur	5**
01.01.2021.-11.07.2021.	≤ 25 000 Eur	25%	720 Eur	1***
	25 000 - 40 000 Eur	40%		
12.07.2021.-... (currently in force)	≤ 25 000 Eur	25%	not set	1***
	25 000 - 40 000 Eur	40%		

*In the 1st, 2nd and 3rd years of operation with micro-enterprise status, the tax rate is 9%, but if the micro-enterprise operates for more than 3 years, then it is 12%.

**Each employee can work in only one micro-enterprise at the same time.

***Owner, with an exception of other employees under the general tax regime.

Table 1: Summary of Micro Enterprise Tax policy changes since 2010; Source: Created by the authors; Information: LIKUMI.LV, n.d

Year	2015	2016	2017	2018	2019	2020	2021
Number of employers	41,827	45,113	39,535	36,477	35,956	33,075	19,103
Yearly change in number of employers, %	-	7.86%	-12.36%	-7.73%	-1.43%	-8.01%	-42.24%
Number of employees*	70,452	74,473	67,084	62,671	56,883	49,114	18,162
Yearly change in number of employees, %	-	5.71%	-9.92%	-6.58%	-9.24%	-13.66%	-63.02%
Average employee salary, EUR	538	551	566	564	530	526	972
Yearly change in average employee salary, %	-	2.39%	2.72%	-0.35%	-6.03%	-0.75%	84.82%

* Number of employees, that have received a salary

Table 2: Summary of the number of employers and employees, and salary in the Micro Enterprises in Latvia; Source: Created by the authors; Information: VID, 2022

Appendix B: Statistics of NACE Sector

NACE 2nd edition 1st level section code	NACE 2nd edition 1st level section code name
A	Agriculture, forestry and fishing
B	Mining and quarrying
C	Manufacturing
D	Electricity, gas, steam and air conditioning supply
E	Water supply; sewerage; waste managment and remediation activities
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Transporting and storage
I	Accommodation and food service activities
J	Information and communication
K	Financial and insurance activities
L	Real estate activities
M	Professional, scientific and technical activities
N	Administrative and support service activities
O	Public administration and defence; compulsory social security
P	Education
Q	Human health and social work activities
R	Arts, entertainment and recreation
S	Other services activities
T	Activities of households as employers; undifferentiated goods - and services - producing activities of households for own use
U	Activities of extraterritorial organisations and bodies

Table 1: NACE 2nd edition 1st level section code names; Source: Created by the authors; Information: European Commission, 2010

NACE 2nd edition 1st level section code	2015	2016	2017	2018	2019	2020
	Micro-enterprise tax revenue, thousands EUR	Micro-enterprise tax revenue, thousands EUR	Micro-enterprise tax revenue, thousands EUR	Micro-enterprise tax revenue, thousands EUR	Micro-enterprise tax revenue, thousands EUR	Micro-enterprise tax revenue, thousands EUR
A	2,075.97	2,364.88	3,117.90	3,879.37	3,622.90	2,932.62
B	33.15	22.78	38.64	51.75	14.23	12.05
C	3,278.36	3,593.50	4,570.40	4,795.74	4,267.74	3,506.91
D	48.20	52.55	71.41	76.58	35.33	35.09
E	104.33	111.12	151.12	164.26	155.97	99.28
F	6,747.56	7,064.34	9,183.48	10,685.80	10,005.45	8,252.48
G	4,846.63	5,346.54	6,575.14	6,856.80	6,009.56	4,345.22
H	2,649.31	2,736.05	3,453.68	3,487.38	2,772.81	2,538.48
I	1,046.80	1,317.17	1,565.54	1,433.07	1,286.18	783.14
J	5,689.77	6,342.28	8,628.05	8,813.06	7,269.32	5,925.93
K	383.60	518.67	752.49	867.09	727.92	631.99
L	2,069.06	2,318.40	2,914.13	3,032.23	2,882.49	2,423.01
M	15,170.78	15,610.40	20,018.97	22,040.72	19,311.40	15,791.46
N	4,126.78	4,703.00	6,428.59	7,263.77	6,961.89	5,900.73
O	62.61	56.80	63.27	73.48	49.42	41.30
P	1,225.00	1,358.88	1,971.45	2,265.21	2,095.46	1,721.38
Q	1,963.92	1,983.90	2,643.60	2,600.22	1,759.10	1,272.07
R	1,604.56	2,019.53	2,954.69	3,461.57	3,494.92	2,620.65
S	3,945.71	4,486.80	5,509.41	6,148.26	6,068.51	5,153.17
T	4.55	16.67	29.14	33.84	32.86	38.85
Micro-enterprise tax revenue not from NACE sectors	1,772.29	1,469.38	1,472.50	1,964.94	2,565.70	2,378.16
Total Country	58,848.95	63,494.61	82,115.30	90,000.04	81,395.76	66,407.76

Table 2: The summary of Micro Enterprise tax revenues by NACE 2nd edition 1st level sections from 2015 until 2020; Source: Created by the authors; Information: VID, 2022

NACE 2nd edition 1st level section code	2015	2016	2017	2018	2019	2020	2021
A	1 705	2 092	1 858	1 731	1 660	1 474	786
B	22	14	15	11	12	11	4
C	2 079	2 337	2 135	2 010	1 856	1 708	877
D	24	24	23	19	16	13	7
E	55	62	56	52	47	39	30
F	4 026	4 334	4 059	3 978	3 744	3 360	1 792
G	3 700	3 930	3 408	3 211	2 823	2 491	1 177
H	1 418	1 526	1 322	1 367	1 350	1 437	649
I	618	734	626	559	507	456	202
J	2 806	2 965	2 858	2 797	2 541	2 312	1 453
K	308	385	367	342	308	280	188
L	1 329	1 507	1 303	1 247	1 139	1 029	606
M	8 284	8 383	7 754	7 613	6 983	6 394	3 905
N	2 460	3 087	2 946	2 961	2 760	2 515	1 511
O	35	35	27	23	18	17	6
P	982	1 120	1 081	1 137	1 167	1 137	758
Q	1 057	1 128	1 013	959	822	746	477
R	1 411	1 741	1 737	1 823	1 829	1 736	1 113
S	5 596	5 894	4 830	4 538	4 219	3 870	2 273
T	9	16	17	21	23	27	18
U	-	1	1	1	2	1	1
Total by Year	**37 924**	**41 315**	**37 436**	**36 400**	**33 826**	**31 053**	**17 833**

Table 3: The number of employers by NACE sections in the Micro Enterprises in Latvia from 2015-2021; Source: Created by the authors; Information: VID, 2022

NACE 2nd edition 1st level section code	2015	2016	2017	2018	2019	2020	2021
A	3 445	3 138	2 774	2 655	2 420	2 023	694
B	31	23	20	11	8	6	3
C	4 314	4 657	4 256	3 721	3 092	2 608	830
D	49	58	58	38	23	19	9
E	138	146	144	127	90	76	35
F	8 082	8 676	8 166	7 530	6 922	6 029	1 632
G	9 876	7 499	6 745	5 934	4 857	3 865	1 161
H	3 098	3 185	2 919	2 462	2 220	2 150	731
I	1 495	1 730	1 460	1 192	997	752	177
J	5 885	6 279	6 242	5 230	4 379	3 833	1 491
K	492	622	617	566	483	446	198
L	2 589	2 871	2 575	2 362	2 080	1 832	687
M	16 366	16 848	16 216	14 182	12 303	10 672	4 165
N	5 782	6 704	6 478	6 065	5 541	4 856	1 784
O	77	70	55	46	34	27	6
P	1 491	1 730	1 709	1 578	1 489	1 299	617
Q	1 873	1 932	1 745	1 453	1 024	870	450
R	2 100	2 592	2 635	2 548	2 442	1 881	746
S	6 782	7 708	6 615	6 036	5 447	4 719	1 807
T	9	27	35	39	34	38	20
U	-	-	2	4	3	2	1
Total by Year	**73 974**	**76 495**	**71 466**	**63 779**	**55 888**	**48 003**	**17 244**

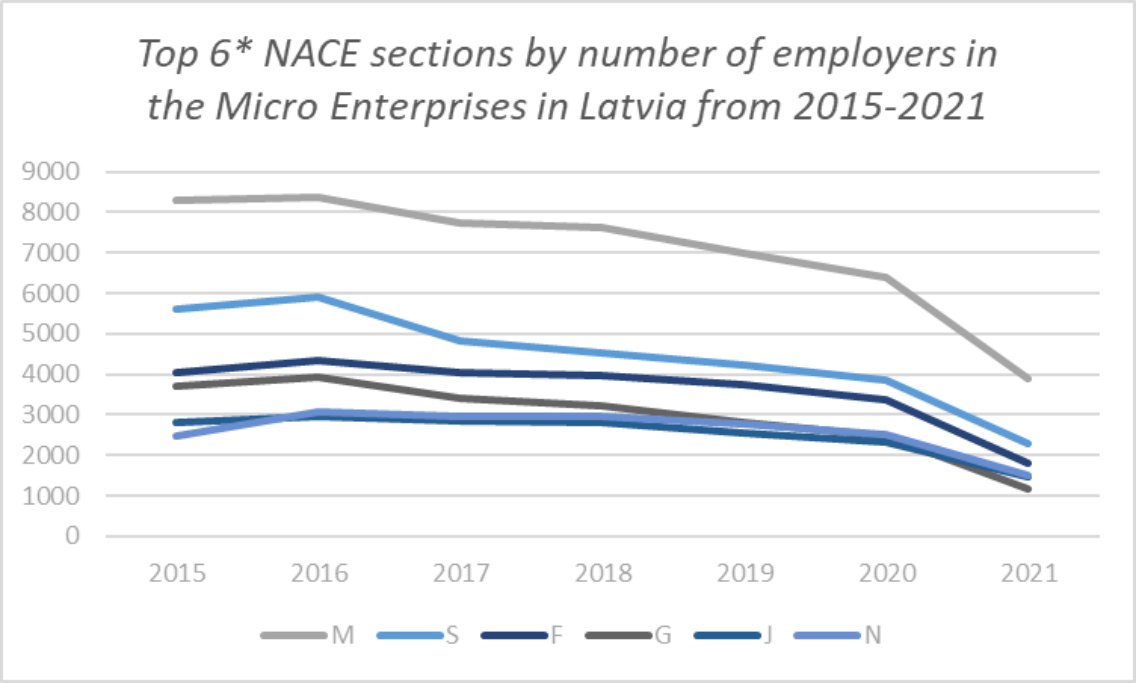
Table 4: The number of employees by NACE sections in the Micro Enterprises in Latvia from 2015-2021; Source: Created by the authors; Information: VID, 2022*

* Number of employees, that have received salary

NACE 2nd edition 1st level section code	2015	2016	2017	2018	2019	2020	2021
A	382	509	517	546	539	548	1 020
B	537	616	579	641	622	674	-
C	463	485	490	498	501	502	898
D	651	626	606	569	560	575	679
E	438	477	487	489	456	475	763
F	565	577	570	595	586	580	1 155
G	383	388	396	409	404	393	683
H	467	475	461	489	466	458	827
I	355	368	392	420	416	391	1 066
J	635	658	630	663	616	614	1 250
K	548	587	591	600	594	599	979
L	527	530	522	534	525	536	1 036
M	598	610	589	633	592	592	1 147
N	508	511	512	523	517	520	916
O	511	513	502	557	555	574	464
P	488	502	510	516	511	506	827
Q	533	529	533	535	504	504	942
R	506	526	531	553	543	521	1 006
S	400	409	425	431	428	421	659
T	443	464	460	462	495	504	678
U	-	-	-	-	-	-	-
Average by year	**497**	**518**	**515**	**533**	**521**	**524**	**895**

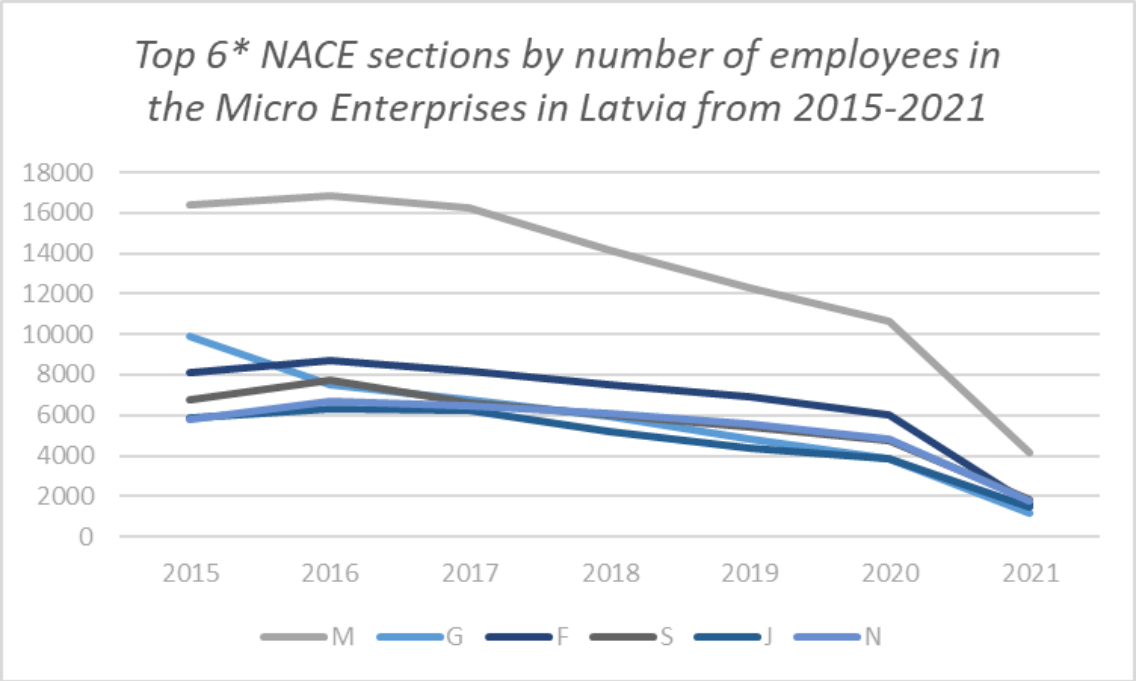
Table 5: The average employees salary by NACE sections in the Micro Enterprises in Latvia from 2015-2021; Source: Created by the authors; Information: VID, 2022*

* According to VID (2022) "To ensure the confidentiality of taxpayer data, if the average number of employers or employees receiving income in the industry is less than or equal to five, information on the average net labor income of employees in the industry is not provided."



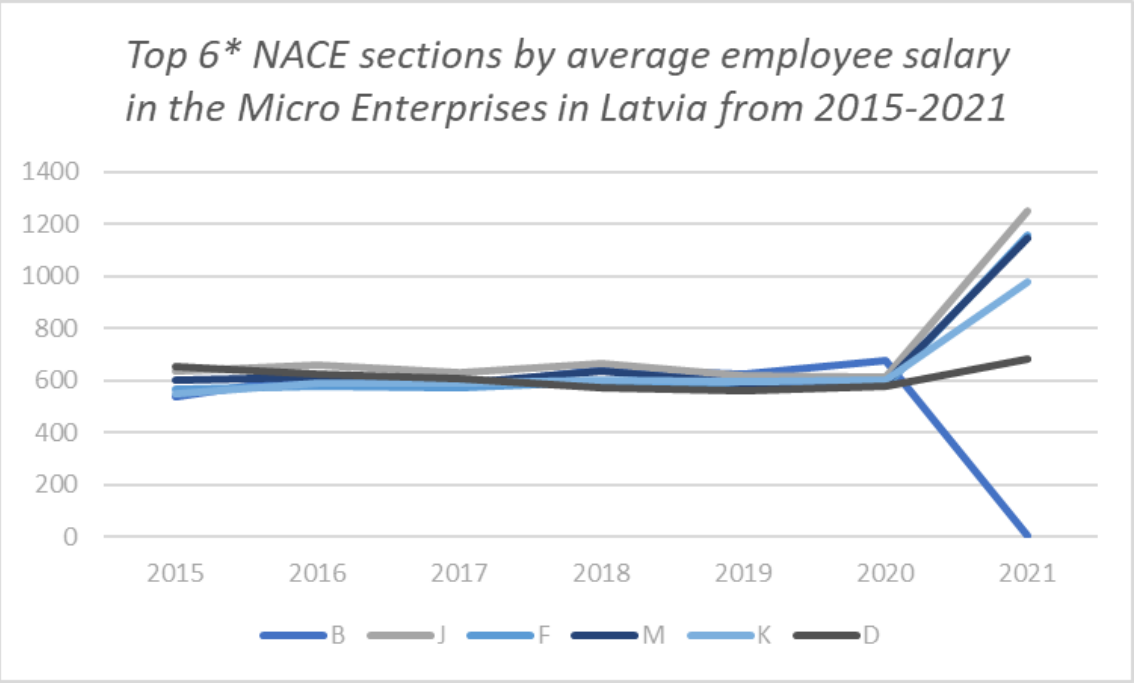
Graph 1: Top 6 NACE sections by number of employers in the Micro Enterprises in Latvia from 2015-2021; Source: Created by the authors; Information: VID, 2022*

* Top 6 sections from 2015 data



Graph 2: Top 6 NACE sections by number of employees in the Micro Enterprises in Latvia from 2015-2021; Source: Created by the authors; Information: VID, 2022*

* Top 6 sections from 2015 data



Graph 3: Top 6 NACE sections by number of employees salary in the Micro Enterprises in Latvia from 2015-2021; Source: Created by the authors; Information: VID, 2022*

* Top 6 sections from 2015 data

Appendix C: Synthetic Control Method

Predictors	Real GDP Growth	Unemployment rate	Taxes from businesses	New businesses registered
Real GDP growth		0.463	0.097	0.052
Unemployment rate	0.592		0.352	0.109
Taxes from businesses	0.043	0.023		0.146
New businesses registered	Not used	Not used	Not used	
Inflation	0.174	0.001	0.028	0.227
Population growth	0.000	0.262	0.378	0.144
Population	0.076	0.038	0.003	0.057
Life expectancy	0.006	0.082	0.005	0.142
Density	0.109	0.131	0.137	0.123
SUM of weights	**1.000**	**1.000**	**1.000**	**1.000**

Table 1: Predictors' weights numerical summary for all SCM models; Source: Created by the authors; Information: From regressions made in RStudio by the authors

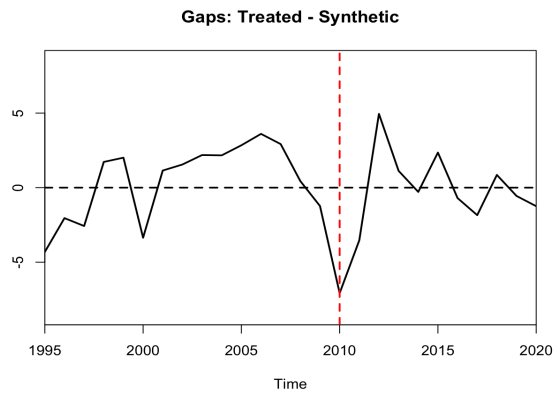


Figure 1: Gap between "Synthetic" and Treated Latvia's Real GDP growth; Graph based on the SCM model; Created by the authors using R Studio.

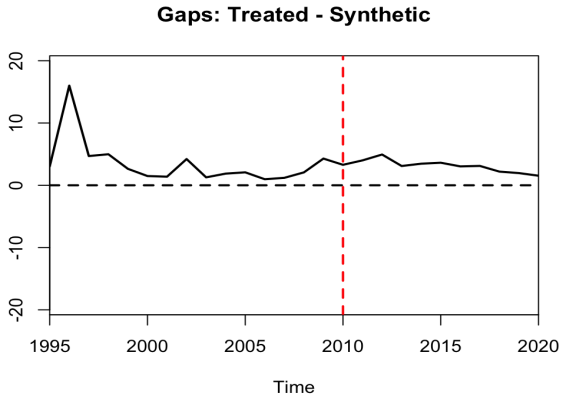


Figure 2: Gap between "Synthetic" and Treated Latvia's unemployment rate; Graph based on the SCM model; Created by the authors using R Studio.

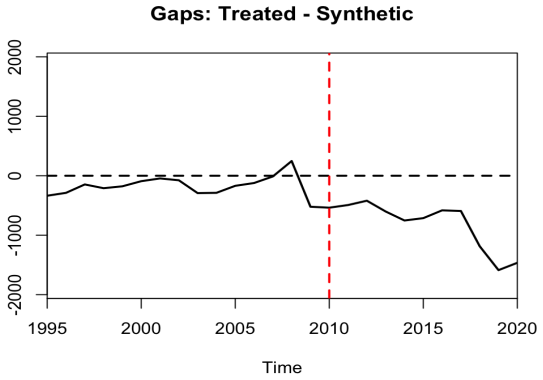


Figure 3: Gap between "Synthetic" and Treated Latvia's taxes from businesses; Graph based on the SCM model; Created by the authors using R Studio.

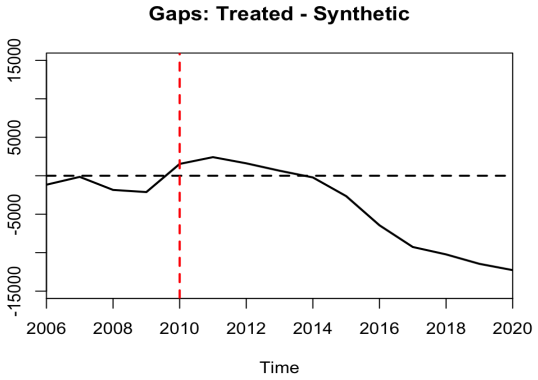


Figure 4: Gap between "Synthetic" and Treated Latvia's new businesses created; Graph based on the SCM model; Created by the authors using R Studio.

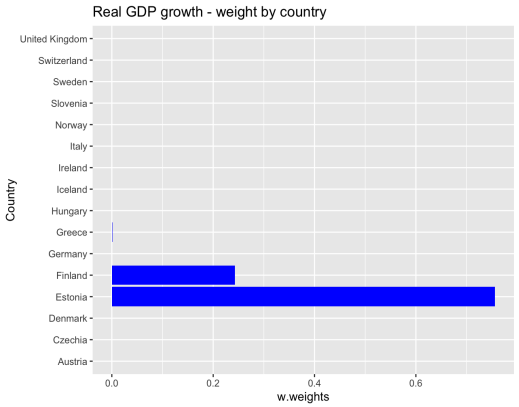


Figure 5: Country weight graphical summary for Real GDP growth SCM model; Graph based on the SCM model; Created by the authors using R Studio.

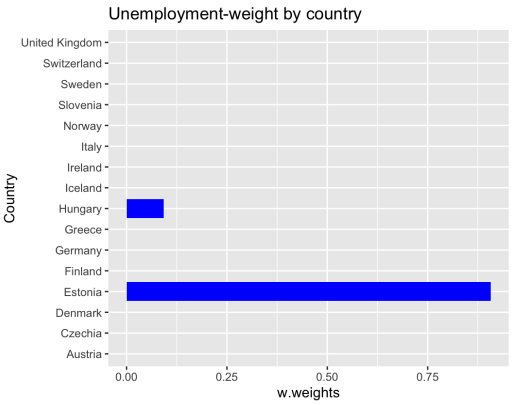


Figure 6: Country weight graphical summary for unemployment rate SCM model; Graph based on the SCM model; Created by the authors using R Studio.

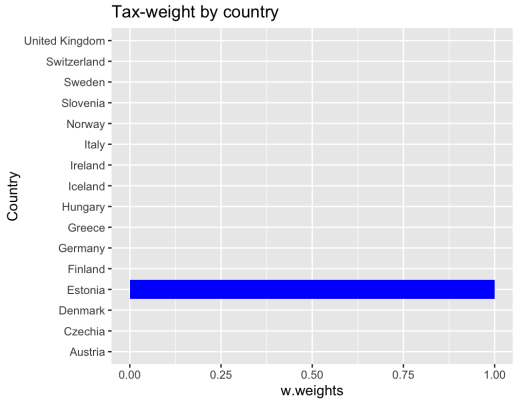


Figure 7: Country weight graphical summary for taxes from businesses SCM model; Graph based on the SCM model; Created by the authors using R Studio.

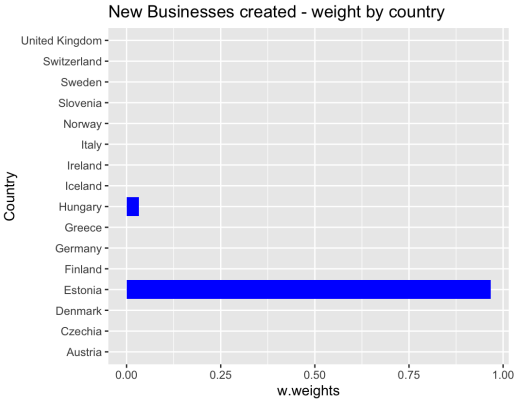


Figure 8: Country weight graphical summary for new businesses created SCM model; Graph based on the SCM model; Created by the authors using R Studio.

Country	Real GDP Growth	Unemployment rate	Taxes from businesses	New businesses registered
United Kingdom	0.000	0.000	0.000	0.000
Switzerland	0.000	0.000	0.000	0.000
Sweden	0.000	0.000	0.000	0.000
Slovenia	0.000	0.000	0.000	0.000
Noway	0.000	0.000	0.000	0.000
Italy	0.000	0.000	0.000	0.000
Ireland	0.000	0.000	0.000	0.000
Iceland	0.000	0.000	0.000	0.000
Hungary	0.000	**0.093**	0.000	**0.033**
Greece	**0.001**	0.000	0.000	0.000
Germany	0.000	0.000	0.000	0.000
Finland	**0.243**	0.000	0.000	0.000
Estonia	**0.756**	**0.907**	**1.000**	**0.967**
Denmark	0.000	0.000	0.000	0.000
Czechia	0.000	0.000	0.000	0.000
Austria	0.000	0.000	0.000	0.000
SUM of weights	**1.000**	**1.000**	**1.000**	**1.000**

Table 2: Country weight numerical summary for all SCM models; Source: Created by the authors; Information: From regressions made in RStudio by the authors

Appendix D: Simple Linear regression output

	Dependent variable:			
	GDPg	unemployment	tnk	newBUS
GDPg		-0.153***	-58.292	-92.035
		(0.035)	(281.345)	(330.914)
unemployment	-0.300***		-881.326**	-1,668.109***
	(0.066)		(387.381)	(554.750)
tnk	-0.00000	-0.00001**		0.025
	(0.00001)	(0.00001)		(0.117)
inflation	-0.135**	-0.238***	663.271*	-1,149.239
	(0.061)	(0.043)	(348.345)	(756.936)
populationg	0.132	-2.440***	2,409.506	-7,546.132**
	(0.453)	(0.304)	(2,593.134)	(3,535.828)
population	-0.00000	-0.00000	0.016***	0.046***
	(0.00000)	(0.00000)	(0.002)	(0.003)
life	-0.679***	-0.301***	3,235.920***	-2,875.363*
	(0.114)	(0.085)	(662.506)	(1,541.412)
density	0.098*	0.145***	-301.658	-761.076
	(0.051)	(0.037)	(292.998)	(576.428)
regionnameCzechia	-3.134*	-5.334***	-46,155.060***	-53,684.770***
	(1.789)	(1.271)	(9,998.313)	(18,541.770)
regionnameDenmark	-5.591**	-5.732***	66,152.670***	182,383.600***
	(2.779)	(2.006)	(15,597.990)	(30,629.470)
regionnameEstonia	3.892	9.133***	76,548.290***	280,545.600***
	(2.578)	(1.809)	(14,271.460)	(28,268.070)
regionnameFinland	8.401**	15.223***	3,261.039	93,572.460**
	(3.832)	(2.687)	(22,010.610)	(42,144.540)
regionnameGermany	21.162	-1.209	-1,061,950.000***	-3,247,267.000***
	(19.365)	(14.032)	(97,546.190)	(204,043.500)
regionnameGreece	4.755**	11.277***	-62,181.210***	-101,253.300***
	(1.970)	(1.335)	(10,918.730)	(19,739.600)
regionnameHungary	-2.271*	-1.352	-37,607.940***	-47,566.430***
	(1.256)	(0.910)	(6,953.896)	(12,914.630)
regionnameIceland	8.107**	14.016***	53,384.190**	318,791.000***
	(3.961)	(2.791)	(22,582.620)	(42,605.900)
regionnameIreland	6.716***	10.168***	40,763.990***	180,659.400***
	(1.796)	(1.215)	(10,248.730)	(16,017.240)
regionnameItaly	15.356	3.610	-605,382.500***	-2,208,897.000***
	(12.611)	(9.147)	(65,626.500)	(146,479.800)
regionnameLatvia	3.294	9.655***	73,573.970***	236,311.500***
	(2.514)	(1.757)	(13,934.270)	(28,547.610)
regionnameNorway	7.521*	12.029***	28,113.770	119,086.400***
	(3.957)	(2.815)	(22,645.710)	(44,286.770)
regionnameSlovenia	-2.325	-0.472	70,063.440***	302,198.800***
	(2.112)	(1.532)	(11,557.140)	(24,566.190)
regionnameSweden	10.285**	14.340***	-61,909.680**	-66,674.500
	(4.403)	(3.135)	(25,118.140)	(49,194.760)
regionnameSwitzerland	-8.759*	-13.960***	9,610.561	126,324.300**
	(4.993)	(3.567)	(28,594.590)	(60,283.230)
regionnameUnited Kingdom	10.194	-6.715	-588,382.900***	-1,927,738.000***
	(12.307)	(8.896)	(64,021.060)	(146,708.000)
Constant	51.471***	18.523***	-321,242.700***	-68,708.190
	(8.448)	(6.340)	(47,972.990)	(119,913.600)
Observations	442	442	442	255
R2	0.253	0.65	0.956	0.978
Adjusted R2	0.212	0.631	0.953	0.976
Residual Std. Error	3.262 (df=418)	2.362 (df=418)	18,588.500 (df=418)	19,555.670 (df=230)
F Statistic	6.145*** (df=23; 418)	33.742*** (df=23; 418)	392.415*** (df=23; 418)	435.895*** (df=24; 230)
Note: *p<0.1; **p<0.05; ***p<0.01				

Table 1: Linear regression output for all dependent variables used in our analysis; Source: Created by the authors; Information: From regressions made in RStudio by the authors

Appendix E: Robust Linear regression output

	Dependent variable:			
	GDPg	Unemployment	tnk	newBUS
GDPg		-0.091**	-45.208	166.434
		(0.038)	(294.966)	(194.994)
unemployment	-0.074**		-200.767	-216.476
	(0.035)		(305.560)	(226.803)
tnk	0.00000	0.00000		0.422***
	(0.00000)	(0.00000)		(0.017)
inflation	-0.130***	-0.179***	54.507	-404.118
	(0.039)	(0.043)	(336.230)	(397.412)
populationg	1.238***	-2.301***	3,930.918*	1,496.727
	(0.246)	(0.254)	(2,183.420)	(1,645.494)
density	-0.008***	-0.014***	15.232	41.424***
	(0.002)	(0.003)	(20.590)	(15.694)
population	0.000	0.00000***	0.003***	-0.0001*
	(0.000)	(0.000)	(0.0001)	(0.0001)
life	-0.529***	-0.137**	1,695.856***	-1,781.889***
	(0.053)	(0.063)	(483.551)	(414.470)
Constant	45.310***	20.085***	-132,567.000***	149,291.100***
	(4.167)	(4.988)	(38,410.500)	(32,833.020)
Observations	442	442	442	255
Residual Std. Error	1.990 (df=434)	2.605 (df=434)	19,036.800 (df=434)	8,468.001 (df=246)
Note: *p<0.1; **p<0.05; ***p<0.01				

Table 1: Robust Linear regression output for all dependent variables used in our analysis; Source: Created by the authors; Information: From regressions made in RStudio by the authors