

IDENTIFYING GROWTH-ENHANCING TAX REFORMS IN ADVANCED COUNTRIES USING WORLD TAX INDEX DATASET

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Abstract

One of the major economic reaction of the European union on Covid-19 was to create a programme called Next Generation EU. Due to the programme, national governments of member states should prepare and approve a set of reforms. Slovak government drafted a document labelled as Modern and successful Slovakia. The document has included a prepared public finance reform which among other things contains tax code changes which are presented as growth-enhancing. It takes basis from believing that some taxes are more growth-reducing than others. These are taxes mostly levied on labour and other productive doing. If there is a change within the structure of taxation, which goes from direct taxes to others, it should promote economic growth according to the arguments using in public debate. The goal of this paper is to identify such tax reforms employing a novel World Tax Index dataset in the cross-country sample in the period from 2000 to 2018.

Keywords

Tax reform, World tax index, Direct taxes, Indirect taxes

I. Introduction

Economic recovery after the COVID-19 pandemic can be a relatively challenging task for many economies and their governments. The Next Generation EU fund is to be a significant help to the member states of the European Union. The Slovak recovery plan called Modern and Successful Slovakia. The plan contains 8 areas, one of which is the reform of public finance. This reform aims to establish the long-term sustainability of public finance (MFSR, 2020). Tax reform will include a mix of measures that should be aimed at supporting economic growth. The consideration of the planned changes is based on the thoughts that some taxes are growth-reducing. The future tax mix should take this into account sufficiently. The former Minister of Finance and the current Prime Minister of the Slovak Republic considers income taxes to be such taxes. According to the information which has been already presented, the intended tax reform should not change the level of the overall tax burden. It was originally thought that the reduction in income taxes would be accompanied by an increase in environmental and property taxes (SME, 2020). At present, however, it is possible to see technical and political problems related to the effort to intervene in property taxation and the focus is shifting to excise taxes (Onuferová, 2021). However, a change in the structure of the tax mix is still being considered without a direct impact on the size of the overall tax quota. At the time of writing this contribution, the reform under preparation is based on shifting part of the tax burden from direct to indirect taxes. A policy that is not at all new for both the theory and practice of public finances see e.g., Barro and Sala-i-Martin (1992), Kneller et al. (1999) or Lee and Gordon (2005). The targeted result of such a change in the tax structure should support economic growth.

Therefore, the main argument for shifting the tax burden from direct to indirect taxes lies in the need to stimulate long-term economic growth (Barro and Sala-i-Martin, 2004). This is further supported by the results of several empirical research studies which suggest a positive correlation between the considered change in the tax mix and economic growth, see e.g., Arnold (2008), Johansson et al. (2008), Gemmel et al. (2011) or Acosta-Ormaechea et al. (2019). One of the most important arguments used in considerations is that direct taxes affect productive activity and have a

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demotivating effect on it. By contrast, indirect taxes, especially excise duties, potentially reduce consumption at the expense of savings through the substitution effect, thereby increasing the investment possibilities of the economy. The most frequently mentioned problem of such a reform may be its potential impact on socioeconomic inequalities in the economy. With rising household income, the share of consumption in disposable income usually decreases. By shifting the tax burden towards indirect taxes, poorer households may be burdened to a greater extent, as indicated by the results of e.g., OECD (2014) or Johansson (2016), or Ciminelli et al. (2019). Thanks to the Covid-19 outbreaks the relative situation of poorest is got even worse. For instance, Crossley et al. (2021) found out that younger with precarious employment from minority ethnic groups bore the most risk of decline in earnings during the first wave of Covid-19 in UK. Showed similar results with insight into distributional changes in consumption in UK. Changes took place even before the first lockdown announcement. Gupta et al. (2020) point out that not only Covid-19 but also the restrictive measures which had been taken by local and federal governments in the US were more harmful to selected groups than others on the labour market. These were workers in non-essential industries, workers without a college degree, and early-career workers.

The disadvantage of the above-mentioned studies, that empirically examines the impact of changes in the tax mix, especially on economic growth, is that their results rather describe the correlation between tax adjustments and economic growth (Angrist and Pischke, 2008). The unambiguous determination of the causal impact of the change in the tax mix in the literature is not yet so numerous. In this spirit, e.g., Hope and Limberg (2020) examine the causal impact of tax reforms that reduce the tax burden on wealthy households on economic growth and income inequality in 18 OECD countries over the past 5 decades. Using a non-parametric generalization of difference-in-difference, they prove that such reforms have not contributed to increasing economic growth or reducing unemployment. In contrast, these reforms have contributed to growing income inequality significantly. In our broader project, we plan to proceed similarly to Hope and Limberg (2020). We want to estimate a causal effect of tax reforms which are primarily based on the thought that a tax shift that goes from direct taxes to indirect taxes is growth-enhancing. The presented paper is a part of the project. The goal of this study is to identify events of such reforms in advanced countries within the last 2 decades. For this purpose, we use a unique dataset of the World Tax Index (WTI), which is an overall multi-criteria indicator of the tax burden. The novel dataset covers all OECD countries in the period from 2000 to 2018. Identifying tax reforms correctly enables us to proceed with the analysis, therefore, the study is a crucial milestone of the broader proposed project.

II. Relative Position of Slovak Tax System

As mentioned in the introduction, the Slovak government plans to change the tax system to change the tax structure. The overall burden is not to be changed. The reform should result in a shift of the tax burden from direct to indirect taxes. Direct taxes can be defined similarly to Kneller et al. (1999) define distortionary taxes. They are thus income and property taxes. We also include social security contributions in this group. Indirect taxes mainly include value-added taxes (general taxes on goods and services) and other taxes on goods and services, for instance, excise duties or taxes on the use of some goods and perform activities. The Slovak recovery plan is strongly influenced by the OECD (2010) study, which provides both policy and factual recommendations for policymakers. Although the plan talks about the need to increase not only indirect taxes but also property taxes. However, two facts hold. The first is that creating a system of so-called price maps, necessary for fair taxation, is politically and technically challenging (Onuferova, 2020). The second is that an actual governing coalition does not seem to be sufficient political support to raise property taxes. Slovak Minister of Economy of the Slovak Republic has demonstrated his preferences not to increase property taxes several times.¹

¹ To our best knowledge the last statement on his position on property taxes, he gave during his interview on the most popular Slovak radio retrieved from <https://www.expres.sk/251776/richard-sulik-sas-bude-plne-respektovat-vysledok-pripadneho-referenda-o-predcasnych-volbach/>.

Because the planned project will deal with specific changes in the tax mix, we decided to examine closely the structure of taxes in Slovakia first, and compare it with the Czech Republic and the OECD average. We performed two simple analyses to specify the Slovak tax structure and its relative position. Data for analyses were retrieved from Global revenue statistics database, and they are categorised using the OECD classification of taxes. We use a percentage share of GDP for the overall tax burden, and for the tax structure, we employ a percentage share of total tax revenues.

Table 1 Average taxes between 2014 and 2018 (5 years average)

	Total taxes	PIT	CIT	SSC	Employees SSC	Employers SSC	Self-empl. SSC	PRO	VAT	OCT
	<i>% of GDP</i>	<i>% of total taxation</i>								
SVK	33.3	9.8	10.3	42.5	9.9	24.6	8.0	1.3	20.5	14.4
CZE	33.9	11.3	10.7	43.3	8.9	27.6	6.9	1.4	21.9	11.4
OECD	33.6	23.3	9.5	25.7	9.5	15.0	2.6	5.9	21.1	11.8
	Total taxes	CIT	PIT	SSC	Employees SSC	Employers SSC	Self-empl. SSC	PRO	VAT	OCT
	<i>difference from OECD average (percentage points)</i>									
SVK	-0.3	-13.5	0.8	16.7	0.3	9.7	5.4	-4.6	-0.6	2.6
CZE	0.3	-12.0	1.2	17.6	-0.6	12.6	4.3	-4.5	0.8	-0.4

Source: own calculation, data retrieved from OECD (2021)

Table 1 shows 5 years averages of taxes and their structure in the last period within the examined time span.¹ We can say that the overall tax burden measured as % of total tax revenues to GDP is similar in all three cross-section units. Nevertheless, the tax structure in Slovakia differs from the OECD average significantly. In contrast to the Slovak and Czech tax structure, where we can conclude that these two systems are very similar. We find only two interesting differences. These are that in the Czech Republic the Employers SSC takes almost 3 percentage points (p. p.) higher share on total taxes than in Slovakia. Second thing is that the Slovak tax system relies by 3 p. p. more on other consumption taxes than Czech.

Last two rows in table 1 show percentage points differences between Slovak (Czech) and OECD average. A bold text highlights differences higher than 2 p. p. in absolute terms. We can say that the major difference lies in personal income tax and social security contributions. While the Slovak share of personal income tax is lower by 13.5 p. b., the average share of social security contributions is higher by 16.7 and even higher in the Czech Republic.²

Interestingly, even the composition of the social security contributions differs across examined samples. We found the following when we calculated the distribution of total social security contribution between employers, employees, and self-employed or non-employed. From table 1 it seems like employees pay similar social security contributions in all three units. However, in terms of relative shares, it is no longer true. The average employee in OECD casts a higher share than in Slovakia or the Czech Republic. The relative share of total social contribution paid by employers is similar in Slovakia and OECD. Nevertheless, we cannot conclude the same in the case of the Czech Republic. Not only the share of employer's social security contribution to total tax revenues is the highest in the Czech Republic, but the relative proportion is also significantly higher than in Slovakia or OECD. While in Slovakia and OECD around 58% of social security contributions is levied on employers, it is almost 64% in the Czech Republic. On the other hand, Slovak self-employed contribute to overall social contributions by almost 19%, but Czech and OECD 16% and 10%, respectively.

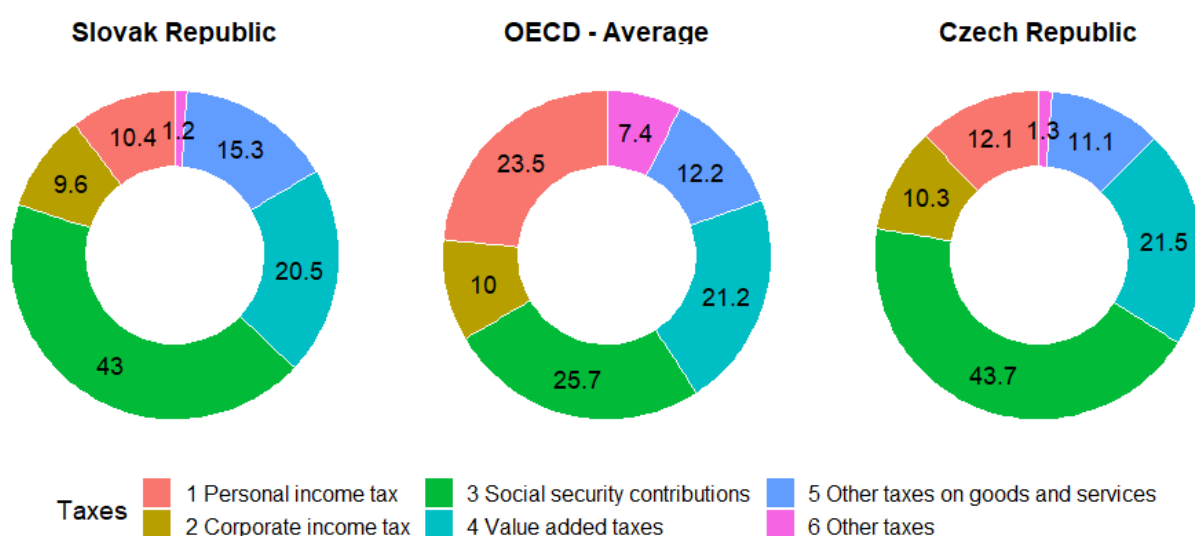
¹ A list of variables is included in appendix A.

² The difference from the OECD average is 17.6.

The last significant difference we want to point out is the share of taxes on the property. These taxes are, let us say, traditionally low in Slovakia and Czech Republic in comparison with the OECD average. As we already stated within the introduction, the Slovak government has been recognizing the fact, although it admits that it is not an easy task both politically and technically. Therefore, the future increase in property taxes in Slovakia might be debatable.

All previous results have been gained from analysis conducted on 5 years averages. To be fair we decided to plot tax structures on the lastly observed complete data, which is the year 2018. Figure 1 presents these plots. There is only one major distinction from variables presented in table 1. To get 100%, we combined property taxes with residuals. Residuals were given after the subtraction of all major categories (CIT, PIT, SSC, VAT, and OTC) into a variable called other taxes. In the case of Slovakia and the Czech Republic, we can say that other taxes are almost identical to property taxes. However, in OECD, there are circa 1.8 percentage points left in residual.

Figure 1 Tax composition in 2018



Source: own calculation, data retrieved from OECD (2021)

Even a simple graphical analysis confirms what is obvious from previous sections. From a global point of view, the Slovak tax composition is similar to the Czech in 2018. We might say that the only significant difference is that in Slovakia, 15.3% of tax revenues are collected from other taxes on goods and services than VAT, while in Czechia only 11.1%. The OECD average is 12.2. Therefore, the idea to shift the tax burden even more towards consumption taxes seems questionable from a macro perspective.

Another thing is that if we look at the tax composition without social security, we realize that the tax burden levied on direct taxes is relatively small both in Slovakia and the Czech Republic. The share of corporate income tax is similar in all three regions and takes around 10% of all taxes revenues. The different story comes from personal income tax. We already know that due to the Czech tax reform from 2020 the actual personal income tax is even lower than in 2018. However, we focus primarily on data from 2018. Slovak personal income tax is 10.4% from all tax revenues, while the Czech is 12.1 and OECD is 23.5%. These differences suggest that there is perhaps small space to reduce income taxes by lowering personal income tax.

On the other hand, the Slovak government wants to shift the tax burden from direct taxes to indirect not only income taxes. If we incorporate social security contributions into the direct taxes, the room for such reform is still small, but we need to emphasize that Slovak and Czech social security contributions are enormous. In Slovakia, a share of all direct taxes together accounted for 64.2% of all tax revenues in 2018. It was 64.8% in OECD and 67.4% in Czechia.

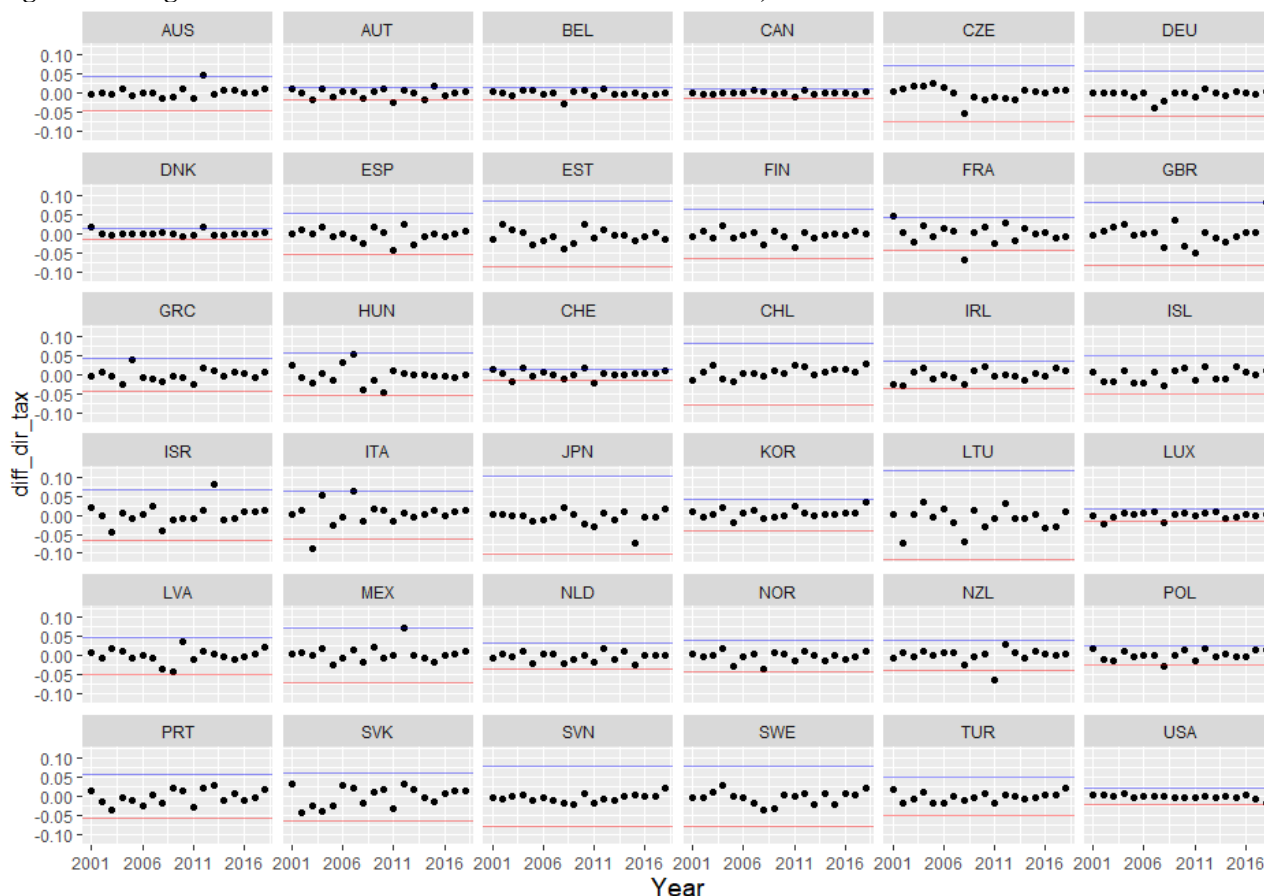
Based on the presented analyses, we identify three major disparities between Slovak and OECD tax compositions. In Slovakia, there is a relatively small portion of tax revenues collecting from personal income tax and property taxes. In contrast with the vast share which goes from social security contributions. It is characterized for both Slovakia and the Czech Republic. Even without any deeper knowledge, it makes sense to lower dependency on social security contributions in Slovakia. The room is there. The share of Slovak social security contributions is almost 1.7 times higher than the OECD. Therefore, we can suggest to the Slovak government to decrease social security contribution while increasing personal income taxes. More importantly, it should not be afraid to increase property taxes. Right now, the Slovak and even the Czech property taxes are low in comparison with the OECD average.

III. Events identification using World Tax Index

To evaluate the effects of changes in the structure of taxes that follow the pattern from direct to indirect taxes, we must first identify such events in the data. We were influenced by Hope and Limberg (2020). The authors wanted to find out whether reforms that reduce the tax burden on the richest affect economic growth and income inequality. Because they deal with the taxes of the richest, for whom there is no easily available time series, they create a latent variable. Our question is much simpler in this regard. In essence, we want to identify such tax treaties that have significantly reduced the share of direct taxes in the total burden at the expense of indirect taxes. The simplest procedure we could choose would be based on a tax quota. However, the tax quota has several significant shortcomings, notably that the size of the tax quota depends not only on the size of the tax burden but also on the progressiveness of the system, the progressivity of a particular tax category and the actual phase of the economic cycle. For these reasons, we decided to employ World Tax Index (WTI). WTI is a combination of hard data weighted by soft data gathered through an online questionnaire survey among tax specialists, see Machová and Kotlán (2013). It measures not just an overall tax burden but can be used as an indicator of the composition of the tax burden. WTI consists of 5 subindices. These subindices namely are corporate income taxes, personal income taxes, value added taxes, other consumption taxes and property taxes. The last methodological updates are listed in Macek and Murín (2020). The latest dataset covers all OECD member countries in the period from 2000 to 2018.

Hope and Limberg (2020) identify major tax reforms. They proceed followingly. They calculate the mean and standard deviation for each country of latent variable they created. In their dataset, the required tax adjustment happened whenever the decline in the latent variable in a given year exceeded twice the standard deviation in absolute terms. We follow this methodology. We calculated the relative share of every subindex of WTI on total WTI. Then we summed shares of subindices for corporate income taxes, personal income taxes, and property taxes together. Doing so we calculated our own latent variable that allows us to track the share of direct taxes on the overall tax burden. As Hope and Limberg (2020) did, we proceeded to identify tax reform which led to shifting the tax burden from direct to indirect taxes by select all cases when the share of direct taxes dropped below 2 times the standard deviation in the particular country. We have done this for every country within the dataset, which involves all OECD members from 2000 to 2018. The result of such analysis is presented in figure 2 and figure 3.

Figure 2 Changes in the share of direct taxes and sizeable tax shifts, 2000-2018



Source: own calculation

Figure 2 shows the year-on-year differences of our quasi-latent variable. Thus, the differences in the share of direct taxes in the total WTI. These are placed between the lines (thresholds), showing an interval equal to twice the given standard deviation. If the difference in the share of direct taxes exceeds the bottom line (threshold from the bottom), it means that there has been such a change in the structure of taxes, which we will consider in the next study as the reforms examined. As we already mentioned several times, we focus on tax reforms that led to significantly reduce direct taxes and proportionally increase indirect taxes (the shift within tax structure). From the figure 2 it is not so easy to identify such reform. For instance, in Italy it is obvious but in case of Austria not so clearly. We can say that there are some identified events in Figure 2, but we are not able to evaluate those which are nearby the threshold in a satisfactory manner.

To have an opportunity to better analyse examined tax changes, we created a binary variable, which is then used for the graphical analysis and events identification. Idea behind the binary variable could be explained well by the following expression:

$$Tax_episodes_{ti} = \begin{cases} -diff_dir_tax_{ti} > 2 \cdot sd(dir_tax_i), & Tax_episodes_{ti} = 1 \\ -diff_dir_tax_{ti} \leq 2 \cdot sd(dir_tax_i), & Tax_episodes_{ti} = 0 \end{cases} \quad (1)$$

where $Tax_episodes$ express dummy variable at time t and country i , $diff_dir_tax$ is a difference in the share of direct taxes on overall WTI, sd is a standard deviation, and dir_tax is the share of direct taxes. Variable $Tax_episodes$ takes 1 if the negative difference is higher than 2 times standard deviation, otherwise 0.

Figure 3 shows the graphical results of the procedure explained above. Blue rectangles present cases when $Tax_episodes$ took 0. Red rectangles show all cases when $Tax_episodes$ took value 1. Therefore, figure 3 basically represents a distribution of identified significant tax shifts from direct taxes to indirect taxes within the OECD countries from 2000 to 2018. We identified 12 such events. 3 of them

was observed in Austria and two were in Luxembourg and Switzerland. All others were observed only once. Namely in Belgium, France, Italy, Poland, and New Zealand.

We believe that we identify tax changes correctly. For instance, the Poland government introduced several intense tax changes in 2008 and 2007 considering taxes on labour, see Morawski and Myck (2010), and accompanied by an increase in VAT rates and changes in the VAT system.¹ Many tax changes and reforms were applied in Italy in 2004 (or very nearly to this date) as well as our identification suggests. For example, decrease in corporate tax burden in 2004, personal income tax reforms were implemented in two steps in 2003 and 2005, and several environmental taxes were proposed (OECD, 2005). As well as Belgium, where government has introduced several tax measures, such increase of tax deductibles, exemptions and etc (European Commission, 2012). All these cases convince us that our identifications are well made. On the other hand, we must be critical to that point, that some of identified events does not met with easy realizing reforms.

Figure 3 Distribution of identified tax shift from direct to indirect taxes, 2000-2018



Source: own calculation

IV. Conclusion

Covid-19 hit the whole world. Measures against Covid spread have been severe for the economy. In particular, those aimed at reducing the mobility of people affected traditional services such as restaurants, clubs, nightclubs, etc. The whole cultural sector will remember the pandemic aftermath for a very long time to come. The consequences of a pandemic will not be small and will not be easy to cover. The world will face a difficult time until it fully recovers, if at all. On the other hand, the pandemic presented several opportunities. It has significantly accelerated the often-painful processes of digitization and automation in some economies. A significant opportunity for the European economy will be its new multiannual financial framework and the associated recovery plan called

¹ For instance see FREE Network (2011).

Next Generation EU. The main principles for releasing these large financial stimuli are that governments must prepare and have the national reform packages approved by the European Commission. Based on the implementation of milestones from the national plans, European funds will be released. This is a revolution in EU funding. The Slovak recovery plan includes, among other things, a reform of public finances aimed at making Slovak public finances sustainable. One of its attributes is also the tax-tax reform, which should be economic growth-enhancing.

The main idea of preparing tax system reform in Slovakia is that some taxes are detrimental to growth and others do not significantly damage the economy. A tax reform that does not change the overall tax burden but shifts the burden from economically beneficial activities to at least neutral ones should deliver the desired results. This ongoing debate is not new at all in the Slovak public space. The last major tax reform before Slovakia's accession to the EU was built on these ideas. For that reason, we decided to estimate the magnitude of such a growth-enhancing tax policy. Our prepared project will do so by using a novel methodology of a nonparametric generalization of the difference-in-differences indicator that implements Mahalanobis matching in panel data analysis. The same approach is used by Hope and Linberg (2020) to evaluate effects of major tax cuts on rich. In this presented study we took the first step of such analysis. The main goal of this paper is to identify tax reforms that shifted a significant share of the tax burden from direct taxes to indirect taxes by employing a novel World Tax Index dataset in the cross-country sample in the period from 2000 to 2018.

By dividing the WTI into the percentage of direct and indirect taxes, we were able to calculate the standard deviation of the share of direct taxes for each country. To identify the case, we monitored the differences in the share of direct taxes. Each time the difference exceeded the lower threshold of two times the standard deviation, we identified the event sought. In total, we managed to identify 12 cases of a significant reduction in the share of direct taxes at the expense of indirect ones in the examined sample. The presented results of the performed analysis will be crucial in the proceeding of our project, which examines the causal impact of such a change on economic growth and income inequality in advanced economies.

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Appendix

Table A: Title

Variable	Description	Source
Total taxes	Total tax revenues according to OECD tax classification	Global revenue statistics database
PIT	Personal income taxes	Global revenue statistics database
CIT	Corporate income taxes	Global revenue statistics database
SSC	Social security contributions	Global revenue statistics database
Employees SSC	Employees social security contributions	Global revenue statistics database
Employers SSC	Employers' social security contributions	Global revenue statistics database
Self-empl. SSC	Self-employed or non-employed social security contributions	Global revenue statistics database
PRO	Taxes on property	Global revenue statistics database
VAT	Value-added taxes	Global revenue statistics database
OTC	Other taxes on consumption	Global revenue statistics database
WTI	World Tax Index (plus subindexes)	https://www.eaco.eu/about-eaco/research/
diff_dir_tax	Difference in the share of direct taxes in WTI	Own calculation
dir_tax	Share of direct taxes in WTI	Own calculation
Tax_episodes	Dummy variable which takes 1 if tax episode, otherwise 0	Own calculation