European Journal of Sustainable Development (2023), **12**, 4, 497-512 ISSN: 2239-5938
Doi: 10.14207/ejsd.2023.v12n4p497

The Role of Tax Policies in Sustainable Economic Growth. Evidence From Dynamic Panel Data Analysis

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Abstract
This paper analyses the role of tax policies in supporting economic growth, based on the dynamic panel data model, for twenty-four Eastern European and Asian countries, divided in EU countries and non-EU countries, for the period from 2008 to 2022. Both, global financial crisis and Covid -19 Pandemic, imposed challenges for optimal tax policies that countries applied. The paper examines the main tax policies changes undertaken to support economic activity and estimates the expected effect on growth.
The study has found evidence of a positive effect of total taxes and indirect taxes on economic growth, strong and significant. Our results do not support the theory that direct taxes are harmful to growth. The impact of direct taxes is positive bot not statistically significant in most of the estimated regressions.

Keywords: Tax structure, sustainable development, panel data.

1. Introduction

The tax policies are one of the main indicators to support public expenditure and contribute to maintain inclusive growth and increase countries competitiveness. They could sustain both growth and equity, (Brys et al., 2016). Integration of the countries in capital market and globalization, has reduced the ability of countries to tax mobile factors (especially mobile capital income), shifting tax burden towards immobile factors such as consumption. In this regard the stage of a country's development and the level of openness, are significant variables for tax policies that the country should undertake. Value added tax is neutral as to where economic activity and income are located, for this reason it does not discourage savings and has only a negative impact, it reduces the real value of the wage. Exported goods are excluded from taxation, but the imported goods are taxed when taxing consumption, contributing to the country's competitiveness. Therefore, the consumption taxes are considered closely to growth.
Tax policies are used to support economic growth, and elevate the impact of global financial crisis, mainly by decreasing the labour taxes, especially personal income tax rate and the corporate income tax rate. During the Covid 19 crisis, all the countries extensively used fiscal policy to alleviate the lock down effects on workers and businesses. The paper is focused only on tax policies used by governments, and their effect on economic growth. The paper examines the main

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changes in the tax code in all the countries under investigation and have evaluated their impact on growth. Following the Covid crisis the governments used more instruments of fiscal policy than during global financial crisis, when fiscal and monetary policy were used almost at the same extent. For this reason, the increase of public debt as percentage of GDP reached the highest levels ever, after Covid 19 crisis. Therefore, in the study is considered not only the effect of taxes on growth but also the public debt as a control variable is included, in the estimations.
In neoclassical growth model (Solow, 1956), the long run growth rate is determined exogenously by technology change and population growth. In the framework of this model, changes in saving rate, do not affect the long run growth rate of the output, only the level of output per person.
Endogenous economic growth models allow for effects of fiscal policy on long term growth. Tax policies affect the economic growth through many channels. Taxes affect the saving rate, work incentives, and investment in both physical and human capital. The level of taxes that countries apply as well as the combination of different taxes, affect the decisions of firms and households to save, invest and create new jobs.
Due to globalization, the impact of tax system on growth of a given country cannot be considered in isolation to other countries, therefore we are relying on the cross-country regression analyse, to examine the role of total taxes, and their composition, direct and indirect taxes in supporting economic growth.
The structure of the paper is as follows. In section 2 is done a selected literature review of the impact of tax structure on economic growth. Section 3 explains data and methodology used is the study. Section 4 examine the main tax changes used by countries following global financial crisis and covid 19 crisis, and their impact on estimated regressions. In the last sections are drawn the conclusion based on the dynamic panel data estimations.

2. Literature review

Growth literature provides evidence of the role of tax policies on sustain and maintain economic growth. Many researchers examined different channels through which tax policies affect economic growth. Barro & Sala -i-Martin (1992), have determined that distortions due to tariffs deter economic growth, more in countries that are more open to foreign trade. Jones et al. (1993), have analysed the effects of optimal taxation, in the framework of endogenous growth model. They concluded that taxation was important for growth, in all the models estimated. Romer & Romer (2007), examined the impact of changes in the level of taxation for the U. S. data. They found very large effects on output of the tax changes. An increase of exogenous tax by one percent of GDP, was followed by a decrease of the real GDP by more than two percent.
Some authors investigated the effects on growth of both fiscal revenues and expenditures. Gale & Samwick (2004), have found that a tax cut financed by immediate cuts in unproductive spending will improve economic growth. According to (Xu, 1994), the direct effect in the long run growth of a tax on income or investment is negative, because it

reduces incentives to invest. The indirect effect on growth could be positive depending on how tax revenues are used.

Taxing capital reduces capital accumulation. Lee & Gordon (2005), provided evidence that statutory corporate tax rates are significantly negatively correlated with economic growth, using cross country data during 1970 -1997. Many authors have found evidence of zero optimal capital income tax, with the aim of supporting the long run economic growth, such as (Chamley, 1986), in the framework of general equilibrium model with infinite lives, (Atkenson et al., 1999), and (Judd, 1999). Acemoglu et al. (2011), support zero long run taxes on capital, in case of the decisions made by a self -interested politician who cannot commit to policies. Aghion & Akcigt (2013), examined optimal capital versus labour tax with innovation lead growth. They confirmed that optimal tax rate on capital is zero when they introduced innovation led growth. Similar conclusion was reached by (Chari et al., 2016), that have done the Ramsey literature review on the optimal taxation of capital. They found evidence that tax on capital should be low and possibly zero.

The empirical literature on taxing capital is not conclusive. Some authors support a positive optimal tax on capital. Langlising (1999), provided evidence that optimal tax on income capital is nonzero for a utility function of capitalist logarithmic and a balanced budget for the government. Straub & Werning (2019), support the positive optimal tax on capital in the case that intertemporal elasticity of substitution is below one. Lu & Chen (2015), concluded that it is optimal to tax capital, when is hold constant the share of government expenditures to output. Gross & Klein (2022), have found evidence that capital should be taxed in the short run, but its marginal product should be paid in the long run.

The way in which different taxes are combined to generate revenues is important for economic growth. Mcnabb (2018), investigated the relationship between tax structure and economic growth for a large panel of one hundred countries. The main finding was that neutral revenue increases in income taxes are associated with lower long run GDP growth. Similar results are found by (Neog & Gaur, 2020), for a panel of 14 Indian states during 1991-2016. Income tax and commodity service tax have a negative effect on growth. Martinez -Vazquez et al. (2011), based on the panel of developed and developing countries, have found that 10 percent point increase in the direct to indirect tax ratio, reduce the economic growth by 0.39. Widmalm (2001) and (Arnold, 2008) examined the impact of the tax structure on economic growth for OECD countries, for the period 1965-1990 and 1971-2004, respectively. They found that income taxes are negatively related to growth. Taxes on capital have the most negative impact. The negative impact on growth of taxes on income and capital, was found for eleven East European transitional countries, during the period of 1945 to 2014, by (Hrnjic & Brankovic, 2017). Balasoiu at al. (2023), based on fixed effect and GMM method, have found negative impact of direct taxes for 27 European countries for the period 2008-2020.

The impact on growth of the shift from progressive income tax to proportional one, is studied by some authors. Erosa & Koreshkova (2007), found that the elimination of progressive taxation increases steady state level of output by 12.6 percent, based on the simulation from the U.S. data. Evidence of negative effect of proportional income taxation on human capital is provided by (Trostel, 1993). The results proved that one percentage increase in the income tax rate causes the long run stock of human capital to decline by 0.93 percent. Taber (2002), investigated the impact of the progressivity of U. S. income

tax to the human capital decisions. The study provided evidence that the long run effects on college enrolment are small, consistently less than 2 percent.
Consumption taxes do not discourage saving and investment, therefore are expected to be closely tied to growth. The empirical evidence on the role of indirect taxes in growth is not conclusive. De Wet et al. (2005), have found evidence that indirect tax collection has no significant effect on growth. Stoilova (2017), for the EU-28 countries during the period 1996-2013, have found evidence of negative impact of VAT on economic growth. Arnold et al. (2011), supports that economic growth can be increased by gradually moving the tax base towards consumption and immovable property. The positive impact of indirect taxes on growth is found by (Phiri, 2016), for South Africa during the period 1990-2015. The results have shown that below a threshold of 10.24 percent, indirect taxes are positively related to economic growth. Luc (2021), proved that the immediate effect increase in VAT is decreasing of growth for South African countries, but this initial effect was followed with an increase in growth rate in the following year. Simionescu & Albu (2016), for five Central and Eastern European countries, for the period 1995-2015, have proved the existence of a positive impact of VAT rate on economic growth. Acosta -Ormaechea & Morozumi (2019), for 30 OECD countries for the period 1970-2016, found that an increase in VAT revenues, financed by a fall in income taxes, promotes growth only when this happens through a rise in C -efficiency, but not when this occurs through a rise in standard rate.
The negative impact of crises on growth is estimated by many researchers. Raz at al. (2012), have found evidence of adverse impact of financial crises of the year 1997 and 2008, on five East Asian countries. Kostarakos & Verthalitis (2020), estimated the effect of global financial crisis, when analysing the relationship between fiscal policy and growth in a panel of European countries for the period 1995-2017. They observed a significant negative effect of global financial crisis, which persisted until 2012. Heimberger, 2022, have found evidence of more countercyclical fiscal policy during Covid 19 crisis than during the global financial crisis and the Eurozone debt crisis.
The effect of tax policies on economic growth could be negative, positive, or zero. Corporate income taxes are the most harmful to growth because they discourage investment, followed by personal income taxes. Consumption taxes are expected to have smaller negative effects on growth.

3. Data and methodology

The panel of countries under investigation, includes twenty-four European and Central Asian countries, Albania, Armenia, Azerbaijan, Bulgaria, Bosnia and Herzegovina, Belarus, Georgia, Kazakhstan, Moldova, North Macedonia, Romania, Russia, Serbia, Turkey, Uzbekistan, Czechia, Estonia, Croatia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia. Two selection criteria were used, first the geographic location because the open countries consider the tax system of other countries to maintain and improve their own competitiveness in global markets, second the countries level of income because different levels of development have different priorities for tax policies. The countries included in this study belong to the upper middle-income group and higher income group, table 1 in appendix.

We relied on the First Difference Generalized Method of Moments proposed by (Arellano & Bond, 1991). The GMM methodology is suited for models when time (T) is smaller than cross -section (N), our study includes 15 years and 24 countries. The countries under investigation are divided in two groups, the EU countries (Bulgaria, Romania, Czechia, Estonia, Croatia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia) and non-EU countries (Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Belarus, Georgia, Kazakhstan, Moldavia, North Macedonia, Russia, Serbia, Turkey, Uzbekistan). For both groups of countries are implemented the same variables in the model to examine if they have significant impact on growth. The dependent variable is the real GDP. The presence of the lagged dependent variable indicates the dynamic nature of growth which is determined by dynamic of real GDP in the previous year. The GMM provides improvements compared to other methods of estimations, such as OLS or two -stages least square, (Wooldridge, 2001).

GMM is a dynamic panel data analysis that deals with the endogeneity problem faced with panel least square method of estimation. The GMM methodology it is broadly used on growth regression.

The estimated regression has the form:

$$Y_{it} = \beta_0 + \beta_1 Y_{it-1} + \beta_2 TAX_{it} + \beta_3 X_{it} + \varepsilon_{it}$$

Y_{it}, is the log of real GDP of a country *i* in the period *t*.

TAX_{it}, are the tax variables. In this work we have used four indicators:

- Indirect taxes on goods and services as percentage of revenue. The expected sign is not defined.
- Taxes on income, profit, and capital gains percentage of revenue. Increase in the direct taxes is expected to decrease incentives to work and invest, therefore is expected to have a negative effect on economic growth.
- Other taxes as percentage of revenues. The main component of other taxes are employer payroll and taxes on property. Theoretically social security and payroll taxes impact negatively on individual savings.
- Total tax revenues as a percentage of the GDP. The ratio is related to the development of countries. Developed counties are expected to have a higher ratio, due to higher services demand from the government. The expected effect on growth is not determined. Gaspar et al. (2016), have evaluated the ratio tax to GDP around 12.88 percent, as growth sustaining.

$X_{i,t}$, is a vector of control variables/ possible regressors. In this paper are included in the panel regression analysis as explanatory variables:

- Employment growth rate. Employment is a key component of economic growth. The increase in income could enhance household saving and investments. The expected impact on economic growth is positive.
- Gross capital formation ratio to GDP is the major component of domestic investment. The expected impact on economic growth is positive.
- Total debt to GDP ratio. Total debt to GDP ratio, has increased in all countries under survey, after the global financial crises and Covid -19 pandemic crisis. Theoretically, high public debt has a negative effect on economic growth, through different channels such as

crowding out of private investment, and the need for higher future distortionary taxes. Empirical estimations have determined the relationship between debt and growth as not linear. Reinhart & Rogoff (2010), have found that the lower levels of debt affect growth positively, but the higher levels of debt, beyond a certain threshold, have a negative impact on growth.

Table 1. Descriptive statistics

Variables	No obs.	Mean	SD	Min	Max	Description
LNGDPR	360	6.131	2.909	2.174	13.440	Log of real GDP
DEBT	360	0.388	0.199	0.032	0.868	Debt to GDP ratio
TAX/GDP	360	0.349	0.071	0.166	0.491	Total Tax to GDP
LNEMP	360	1.095	1.242	-0.565	4.279	Log of employment growth
INV	360	0.246	0.049	0.126	0.438	Gross capital formation to GDP
OTHERTAX	360	0.008	0.015	0.000	0.098	Other taxes to total taxes
DIRECT	360	0.159	0.091	0.013	0.752	Direct taxes to total taxes
INDIRECT	360	0.376	0.098	0.121	0.559	Indirect taxes to total taxes

The data are annually for the period 2008 -2022. Data sources are the world economic outlook database, the world development indicators, and national institutes of statistics. We use a dummy variable, that takes the value of 1 for the years 2008 -2012, to consider the effect of global financial crisis on output growth. We constructed a regression for the period 2020 -2022 to estimate the effect of Covid 19 pandemic crisis. The economic recession following the pandemic was deeper than the financial crisis but shorter in time.

4. Results and Discussion

Fiscal policy is a key instrument used by governments to mitigate the effects of global financial crisis and Covid -19 pandemic. To alleviate the effects of the global financial crisis on the economy, are used by governments both monetary and fiscal stimulus. During Covid -19 pandemic, the governments used fiscal stimulus to support workers and businesses during lockdown. Both crises have increased the public debt of the countries and reduced considerably the fiscal space. The paper is focused on the role of tax policies to promote sustainable growth. Table 2 in the appendix shows the main changes in the tax rates after the global financial crisis, for the countries under investigation. Two countries, Czechia and Albania, have decreased three tax rates PIT, CIT, and social security contribution. Three counties, Estonia, Moldova, North Macedonia have decreased both PIT and CIT. Georgia had an initial increase in year 2008 of PIT, from years 2010 to 2012, PIT has been decreasing, but the tax rate has remained higher than before the global crisis level. The CIT is decreased in Slovenia, Uzbekistan, Russia, and Kazakhstan. Decreasing in PIT are applied in Bulgaria, Hungary, Lithuania, and

Poland. Only in Slovakia is increased PIT. Important changes are on VAT statutory rate. Four countries Czechia, Hungary, Lithuania, and Latvia have increased the statutory rate. This increase of statutory rate was accompanied by decreased on VAT deduced rate only in two country Chechia and Hungary. Increase in VAT registration threshold in two countries Poland and Slovakia. In general, it is noticed that there is a considerable decrease in direct taxes, in all the sample and an increase in VAT statutory rate only in high income countries.

During Covid 19 pandemic, all the countries provided liquidity support to businesses and income support to households. The possibility of countries for decreasing taxes to support the economy was limited by their budgetary position. In table 3 in appendix, are shows the changes in the main tax rates following the Covid 19 pandemic. Only one country Armenia, permanently reduced the CIT in year 2020. There is a decrease in PIT in seven countries. Only two countries Turkey and Latvia have increased PIT progressively. It is noticed an increase in the VAT registration threshold in four countries, Albania, Armenia, Bulgaria, and Belarus. Only one country Czechia, has increased the VAT statutory rate. The countries have applied some temporary reductions in the VAT reduced rate. Changes in tax rate are smaller relative to intervention following global financial crisis, but the countries have continued to decrease the progressivity of their PIT. In this work it is given a special attention, estimation of the effects of tax policies following global financial crisis and Covid 19 pandemic on growth.

The countries are divided into two groups to consider the differences of tax structure and overall tax burden on growth. In the first group are eleven Central and Eastern European countries part of the EU, and in the second group are thirteen upper middle-income non-EU countries. In both groups of countries, following the global financial crisis, governments have lower direct taxation to stimulate consumption and therefore increase the economic growth. The purpose has been to examine if the impacts of the explanatory variables are the same between two groups of countries.

During Covid -19 pandemic, decreases in the tax rate were mainly temporary, therefore the recovery of tax revenues, in the levels comparable with pre crisis level is expected to be shorter. The global financial crisis was followed by a more profound permanent decrease in the tax rates, that involved different taxes. Reaching the pre-crisis levels of tax revenues collected by governments needed several years. The public debt increased in high levels, during the Covid -19 pandemic, passing the levels of public debt after the global financial crisis, imposing a serious restriction for growth.

The effect of tax structure on economic growth is reported in the following table. The first regression, examine the effect on economic growth of direct and indirect taxes, for the EU countries group. The second regression present the findings for the upper middle income non-EU countries group. The third regression examine all the countries under investigation. The impact of the global financial crisis, on output is estimated by a dummy variable. The decline in output, due to Covid 19 pandemic, was much larger than the global financial crisis, therefore, the last regression (iv), covers only the period 2020-2022.

Table 2. Estimated regressions

Dependent variable is the real growth rate LNGDPR

Instruments used for estimations are: lgdpr, direct, indirect, othertax, tax/gdp, inv, debt and lnemp of the lag one.

	GMM (i)	**GMM (ii)**	**GMM (iii)**	**GMM (iv)**
LGDPR (-1)	0.108866 (0.2210)	0.333221*** (0.0000)	0.852361*** (0.0000)	0.097802 (0.1189)
DIRECT	0.026977 (0.9211)	0.037523 (0.5956)	0.023452 (0.2701)	1.024839*** (0.0000)
INDIRECT	0.367992* (0.0329)	0.405895** (0.0131)	0.145430** (0.0184)	0.703580** (0.0193)
OTHERTAX	1.084368 (0.6762)	-0.071289 (0.8750)	-0.062276 (0.7801)	-8.833494** (0.0485)
TAX/GDP	0.161899 (0.6159)	0.174428 (0.4671)	0.292057*** (0.0009)	-0.090086 (0.5972)
INV	0.485417** (0.0083)	0.332355* (0.0531)	0.162747** (0.0074)	0.970920*** (0.0001)
DEBT	-0.301758*** (0.0000)	-0.279914*** (0.0008)	-0.035063*** (0.0013)	-0.320327*** (0.0000)
LNEMP	0.304549 (0.0954)	0.091021 (0.0954)	0.098618 (0.2992)	0.062374 (0.1974)
Dummy (financial crisis)	-0.015062** (0.0044)	-0.031483** (0.0113)	-0.022262*** (0.0000)	
	J-statistic 6.88 Prob(J-st.) 0.13 AR1 0.0774 AR2 0.3434	J-statistic 9.64 Prob(J-st.) 0.14 AR1 0.0359 AR2 0.4453	J-statistic 21.43 Prob(J-st.) 0.12 AR1 0.0024 AR2 0.6660	J-statistic 20.24 Prob(J-st.) 0.20 AR1 0.2997 AR2 0.4783

P -Values are in brackets. Robust standard errors in parenthesis *(α<0.05), **(α<0.01) and ***(α<0.001)

Based on the value of Hansen J -Statistic, we fail to reject the null hypothesis and support the choice of instruments in each regression. The second order serial correlation AR (2) is valid. The error term is serially uncorrelated.

The impact of total tax burden and tax structure on growth for the two groups of countries are quite similar. The results suggest a positive effect of total taxes on economic growth, after the global financial crisis. Tax revenues are the main source of income for governments, necessary for performing its functions. The study supports that total tax revenues as a percentage of GDP did not restrict economic growth, after the global financial crisis. The composition of tax revenues is also important for economic growth. The study provides evidence that indirect taxes affect economic growth positively and have a statistically significant impact, in all the estimated regression. The impact of indirect taxes on growth is stronger in the upper middle income non-EU countries group that rely more in indirect taxes. Our results are in line with (Hakim, 2020) and (Mcnabb, 2018), that based on GMM estimation for a panel of developed and developing countries have found a positive impact of indirect taxes on growth.

Our results do not support the theory that direct taxes are harmful to growth. Lowering the direct taxation in the countries under investigation after the global financial crisis has increased the households' disposable incomes and stimulated economic growth. The

impact of direct taxes is positive but not statistically significant for the most estimated regression. The impact of other taxes on growth is not statistically significant for the period after the global financial crisis, for the two groups of countries and all the countries under investigation. The effect of other taxes on growth is negative except for the first regression. The dummy variable, that captures the effects of global financial crisis on growth, has a negative sign, that is significant and robust in all the estimated equations. Global financial crisis has slowdown economic growth in all the countries. Countries under investigation decreased the CIT and reduced the progressivity of PIT or applied the flat PIT to stimulate the economy, with the except for Slovakia that increased the PIT. There is an increase in statutory rate of VAT, by some countries, table 2, in appendix. Decrease in direct taxes accompanied with an increase in VAT, improve the growth, in in the same line with findings of (Acosta-Ormaechea & Yoo, 2012) and (Yanikkaya & Turan, 2020).

The last regression examines the impact of tax structure and total tax burden on growth for the period 2020 -2022. Economic lock down following Covid 19 crisis had important implications for the public finance. According to the reported data, tax composition but not the total tax to GDP has an important impact on growth. Both direct and indirect taxes, have stimulated growth. Other taxes, such as social security contribution have a negative effect on growth. Decrease in the social security contribution, was more used as counter cyclical fiscal instrument after global financial crisis. Following Covid 19 pandemic, social security contributions are reduced by 2.8 percent in Serbia and by 11.4% in Hungary. The negative impact is in accordance with economic theory.

Two control variables investment, and debt to GDP ratio, are statistically significant in all the estimated regression. Increase in investment have supported economic growth in the countries under investigation. Increase in total debt to GDP following the global financial crisis and Covid -19 crisis have affected growth negatively. After the global financial crisis, consolidating public finance and restoring growth was set a as priority in many countries. The Covid -19 pandemic has caused a considerable deterioration in public finances and increased the debt to GDP. High rate of total debt to GDP could impose threats for future growth. All the countries under investigation must reduce public debt to sustain the long run economic growth. Employment has positive impact on growth, but not robust effect in estimated regression.

5. Conclusions

Taxes are the main source of revenues for government to support public investment and social programs. After the global financial crisis, the tax policies are used to promote economic growth, facing the challenge to consolidate the public finance. The Covid -19 pandemic deteriorated further public finances and increased the total debt to GDP by imposing restrictions to long run economic growth. This paper contributes to examine the relationship between tax policies and growth using recent data, from 2008 to 2022 based on a panel of twenty-four countries, that belong to upper middle-income and higher income group. The study provides empirical evidence of overall tax burden and impact of direct and indirect taxation for a group of eleven Central and Western European Countries part of the EU and a group of thirteen upper middle-income non-EU countries of Eastern Europe and Asian countries.

Tax policies are used by all countries under investigation to support economic activity during the global financial crisis and Covid -19 crisis. Lowering direct taxation has stimulated economic growth, through increasing the disposal incomes, after the global financial crises. Following the Covid -19 crisis, governments used mainly temporary tax reductions and exemptions to support businesses and households.

The study has found evidence of a positive impact on growth, of overall tax revenues after the global financial crisis. Even though tax policies during the years under investigation, have supported the real economic activity mainly by decreasing the CIT rate, PIT and social security contribution, the countries have maintained to keep the tax to GDP ratio, in the levels that support economic growth.

The total debt to GDP, have deteriorated due to expansionist fiscal policy applied by countries to deal with global financial crisis and Covid -19 pandemic. The study has found evidence of negative and significant impact of total debt on economic growth. We do not recommend increase in the VAT rate or PIT, to deal with future higher payments for the government debt. The broadening of the tax base, strengthening tax administration and compliance could sustain growth and help in fiscal consolidation.

Consumption taxes have supported economic growth for the period under investigation. The results of the study are in accordance with growth theories.

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Appendix:

Table 1: The list of countries in analysis

Countries	Level of income	Countries	Level of income
Albania Armenia Azerbaijan Bulgaria Bosnia & Herzegovina Belarus Georgia Kazakhstan Moldavia North Macedonia Romania Russia Serbia Turkey Uzbekistan	upper middle-income group	Czechia Estonia Croatia Hungary Latvia Lithuania Polonia Slovak Republic Slovenia	higher income group

Table 2: The main tax changes after global financial crisis

Country	VAT	CIT	PIT	Social security
ALB	-	Decreased from 20% in 2007 to 10% in 2008	10% in 2007 before progressive tax with the band between 1%-20%	Decease the employer rate from 27.7% in 2007 to 16.7% in 2010
AZE		Decrease the CIT rate from 22% in 2007 to 20% in 2010		
BGR	-	-	From progressive tax rate 0%, 20%, 22%, 24% in 2007 to flat rate 10% in 2008	
CZE	Statutory rate from 19% to 20% in 2010. Reduced VAT rate 9% in 2008 from 5% before. In 2010 the reduced rate 10%	Decrease the CIT rate from 24% in 2007 to 21% in 2008 to 20% in 2009 to 19% in 2010	From progressive tax rate 12%, 19%, 25%, 32% in 2007 to flat tax rate 15%, effective 1st January 2009	Decrease the rate 35% employer, 12.5% employees in 2007 to 34% employer, 11% employees in 2010

EST	-	Decrease in CIT from 22% in 2007 to 21% in 2008 to 19% in 2010	Decrease in PIT from 0%, 22% rate in 2007 to 21%, effective from 1st January 2008	Increase in unemployment insurance from 0.3% employers, 0.6% employees in 2007 to 1.4% employers, 2.8% employees in 2010
GEO	-	Decrease of CIT from 20% in 2007 to 15% in 2008	Increase the flat tax rate from 12% in 2007 to 25% in 2008. Decrease to 20% in 2010, to 18% in 2011 and 15% in 2012.	
HUN	VAT statutory rate increase from 20% in 2008 to 25% in 2010. In 2010 was introduced a reduced rate of 18% despite the previous rate of 5%	-	Decrease of PIT from 18%, 36% in 2007 to 17% and 32% in 2010	Decrease the social contribution for employers and increase for employees. From 33.5% employers, 15.5% employees in 2007 to 28.5% employers, 17% employees in 2010.
KAZ	-	Decrease CIT from 30% in 2007 to 20% in 2009	-	Increase the employer contribution from 13% in 2007 to 15% in 2010
LIT	Increased the VAT statutory rate from 18% to 21% in 2010.	-	In 2008 there are two rates 15%, 25% applied. In 2010, flat rate 15%	Decrease the social contribution from 30.98%, 31.23% or 31.7% in 2007 to 27.98%, 28.1% or 28.7% in 2010, depending on the type of employer
LAT	Increased the VAT statutory rate from 18% to 21% in 2010. Increased the reduced rate from 5% to 10% in 2010	-	-	-
MDA	-	Decrease the CIT from 15% in 2007 to 0% in 2008	Decrease the PIT from 7%, 10%, 20% in 2007 to 7%, 18% in 2008	Increase the social contribution from 25% employers, 4% employee in 2007 to 26.5% employer, 9.5% employees in 2010
MAC	-	Decrease CIT from 12% in 2007 to 10% in 2009	From progressive income tax 5%, 15%, 30% in 2007 to flat tax 10% in 2008	-
POL	Increase the VAT registration threshold from	-	Reduced progressivity of PIT from 19%,	Decrease social contribution from 16.39% /19.86% employer and 15.71% employees in 2007 to

	PLN 39,700 in 2007 to PLN 50,000 in 2008 to PLN 100,000 in 2010		30%, 40% in 2007 to 18%, 32% in 2010	14.93% /17.59% employer, 13.71% employees in 2010
ROU	Implement 5% VAT reduce rate in 2010 despite the previous reduce rete of 9%	-	-	Decrease the social contributions from 29% /32.2% employers, 17% employees in 2007 to 28%/ 28.85% employers, 16.5% employees in 2010
RUS	-	Decrease the CIT from 20%, 24% in 2007 to 16%/20% in 2009	-	-
SVK	Increased the VAT registration threshold from €45,000 in 2007 to €49,790 in 2010	-	Increase PIT from 19% in 2007 to 26% in 2010	-
SVN	-	Decrease the CIT from 23% in 2007 to 22% in 2008 to 21% in 2009 and 20% in 2010	-	-
UZB	-	The base CIT is unchanged 10%. There is a decrease from 17% in 2008 to 15% in 2009 of the rates paid by commercial banks	-	-

Source: Countries tax codes and the worldwide tax guide

Table 3: The main tax changes after the Covid 19 pandemic

Country	VAT	CIT	PIT	Social security
ALB	Increased the VAT registration threshold to ALL 10 million effective from 1st January 2021	-		-
ARM	Increased the VAT registration threshold from ADM 58.35 million to ADM 115 million from 1 January 2020	Reduced the tax rate from 20% to 18% starting 1st January 2020	From progressive tax rate 23%, 28%, 38% in 2019 to flat tax 21% in 2022 and 20% in 2023	-

AZE	-	-	Reduced rate from 1st January 2019, are applied to employees who are engaged in employment for non-oil-gas and non-government sectors are taxed 0% up to AZN 8,000 and 14% above	From 1st January 2019 10% exceeding AZN200 plus AZN6, employees 15% of the amount exceeding AZN200 plus AZN44 employers From 1st January 2022, medical insurance 2% of the salary up to AZN8.000 and 0.5% of the part above
BGR	Reduced the VAT rate from 20% to 9% for restaurants, catering, accommodation, sport facilities. The reduced rate is extended until 31December 2023. Increased the VAT registration threshold to BGN 100.000 starting from 1 January 2023	-	-	-
BLR	From 1 June 2022, implement the registration threshold €10.000, before there was none			
CZE	Increased the VAT statutory rate from 21% increased to 23 % Decrease the VAT reduce rate from 15% to 10% for accommodation sport and cultural activities, from 01 Jul 2020 to 31 December 2020 Increased the VAT registration threshold from CZK 1 million to CZK 2 million, from 1 January 2023			
HRV	Reduced the VAT rate from 25% to 13% on basic food staff	10%, 18%[1] (the standard rate 18% is effective since 1st January 2017; the reduced rate was 12% until	Decreased the progressivity from 24%, 36% in 2019 to 20%, 30% in 2022	

[1] 10% for revenues up to HVR 7.500.000 and 18% for revenues over HVR 7.500.000

		31 December 2020)		
HUN				From 1st July 2020 employers' social contribution tax decreased from 17.5% to 15.5%
LTU			In 2019 progressive rate 20% and 27%. In 2020 the second bracket increased from 27% to 32%	
LVA			Decreased progressivity from 20%, 23%, 31.4% in 2019 to 0%, 23%, 31% in 2022	
POL			Decreased progressivity from 18%, 32% in 2019 to 12%, 32% in 2022	
ROU		Reduction of CIT for the first quarter of 2020, 5% for large taxpayers, 10% for medium - sized taxpayers and 15% for other taxpayers	Microenterprises benefited 10% reduction of their income tax, for the first quarter of 2020	
SRB			Decreased tax rate from 10%, 15% in 2019 to 10% in 2022	Decrease the employer social security from 17.15% in 2019 to 16.67% in 2022
SVN			Decreased progressivity from 16%, 27%, 34%, 39%, 50% in 2019 to 16%, 26%, 33%, 39%, 45% in 2022	
TUR			Increased progressivity from 15%, 20%, 27%, 35% in 2019 to 15%, 20%, 27%, 35%, 40% in 2022	
UZB			Decreased the tax rate for non-residents from 20% for in 2019 to 12% in July 2022.	

Source: Countries tax codes and the worldwide tax guide