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Covid-19 Economic Crises and Factors Hampering Recovery

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Abstract

Covid-19 pandemic caught the world by surprise. On March 11th, 2020 World Health Organization (WHO) announced the global pandemic and governments started to initiate various non-pharmaceutical interventions (NPI) and disease containment measures. NPI measures reduced mobility of population and slowed down business activities. State governments had to come up with viable fiscal support packages for health and economic sectors. Later on it raised issue why in some countries the depth of the crisis (GDP % change in 2020) and speed of recovery from the crisis (attaining the pre-crisis GDP level of 2019) was slower and at the same time the size of fiscal rescue packages larger and public debt increased more. In order to comprehend the complexity of various factors influencing GDP % change in 2020 and attainment of pre-crisis GDP level, this article aims to research economic and other social economic factors affecting the magnitude of GDP change in 2020 and later on hampering the recovery. Research findings indicate that besides stringency of NPI measures and mobility reduction of population, size of pre-crisis public debt level to GDP, quality of institutions, government effectiveness and trust in government are affecting GDP % change in 2020 and attainment of pre-crisis GDP level, recovery from the COVID-19 crisis and efficient use of fiscal resources.

Keywords: Covid-19 crisis, GDP % change, Public Debt, Quality of Institutions, Government, Effectiveness
Jel codes: E44, E62, H62, H63, O43

1. Introduction

Covid-19 caught the world by surprise. On March 11th, 2020 World Health Organization (WHO) announced the global pandemic. Thus, in fact, initiating the imposition of various kinds of non-pharmaceutical intervention (NPI) and containment measures, reducing mobility of population and slowed down business activities.

Since Covid-19 pandemic literally started in "one day" in all countries it provided once in a life time opportunity to compare actions, policy measures of various governments in the time of the COVID-19 crisis, the factors affecting GDP fall in 2020, borrowing and increasing public debt and hampering faster GDP recovery to pre-crisis level.

Great Financial Crisis (GFC) had already substantially increased the public debt of almost all countries. Fiscal space had been substantially reduced and only few of the countries had returned to the precrisis debt to GDP levels. Covid-19 economic crisis required an additional resources and borrowing to weather the storm. Some countries experienced more pronounced negative GDP % change in 2020 and slower recovery than others. Covid-19 pandemic provided new data and angle to analyse the preconditions and factors safeguarding less severe economic downturn in 2020 and speedier GDP recovery and return to the precrisis GDP levels of 2019 later. Thus, allowing countries for more efficient use of the limited fiscal resources and for smaller increase of the public debt.

The author with multi factor linear regression (MFLR) analysed why economic downturn in 2020 (GDP % change in 2020) was in several countries shallower and the recovery to the pre-crisis level of GDP of 2019 was speedier than in the other countries. Hence, increased the outstanding public debt less than other countries. Author analysed the variables which could determine why GDP in 2020 in some countries decreased more and why recovery to the pre-crisis GDP level took longer.

Comprehensive analysis of various dependent and independent variables of 122 countries, provides results which are reflected in statistical relationship that besides NPI measures, the outstanding Public debt, Quality of Institutions, Government effectiveness and Trust in government played an important role in safeguarding smaller GDP decrease in 2020 and faster recovery to the pre-crisis level. Thus, also providing more efficient use of the country's fiscal and financial resources.

2. GDP change, budget deficit and fiscal support package

To contain spreading of COVID-19 pandemic governments implemented non pharmaceutical intervention (NPI) measures. Thus, substantially impairing economic activity, GDP fall prompted fiscal revenue to fall and increase budget deficit and outstanding public debt. Some countries in 2020 witnessed even double digit GDP decrease, encountering even larger budget deficits.

It has been widely established (Atkeson, A. 2020; Ferguson et al., 2020; Flaxman et al., 2020; Giagheddu and Papetti, 2020; Hatchett et al., 2007; Juranek et al., 2020; Deb et al., 2020; Demirguc-Kunt et al., 2020; Herrera et al., 2020; Eichenbaum et al., 2020; Farboodi et al., 2020) that NPI measures slowed down economic activity. However, stringency of NPI measures and mobility reduction of population were not the only factors of slowing down economic activity and reducing GDP growth (Sapir, 2020) and further increasing state budget deficit and outstanding public debt.

Great Financial Crisis (GFC) had substantially elevated the outstanding debt levels of many countries around the world. Only few countries e.g. Malta, Israel, Norway, Sweden and Switzerland (IMF, 2022) in the "peacetime", when GFC was over, from 2011 to 2020, had "returned" to their pre-crisis public debt levels to GDP of 2007. Thus, fiscal space for many countries was not freed for the future crises. Challenges continued to mount and Covid-19 economic crisis increased public debt levels in 2020 further to new elevated levels, which are reflected in Figure 1.

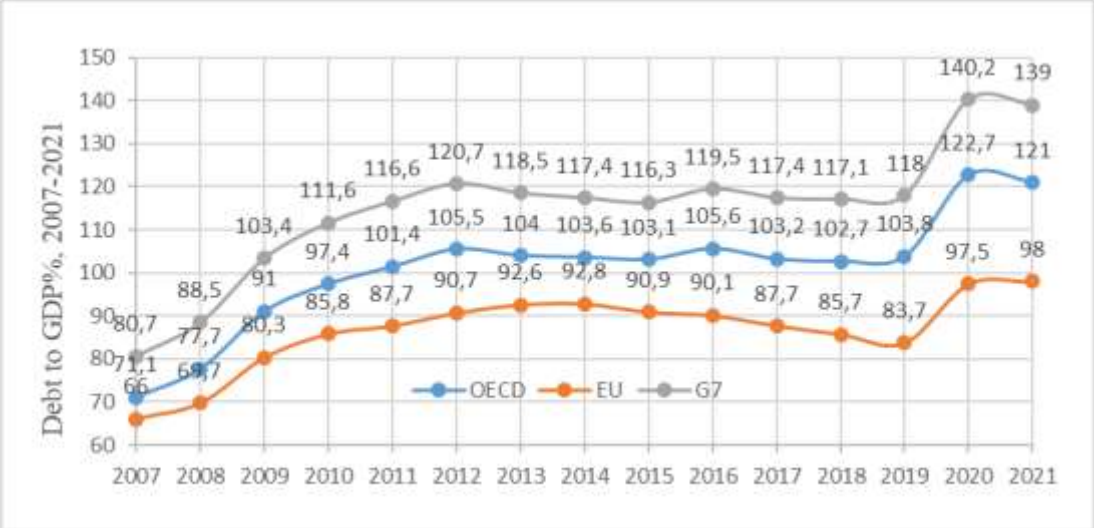

Figure 1. **Debt to GDP% 2007.- 2021.**

Source: IMF (2021); WEO Database October, 2021; author's calculations

Note: Year of 2021 was IMF's WEO projection of October, 2021 Report.

After GFC of 2008-2010, (Reinhart and Rogoff, 2010) claimed that there is certain threshold of public debt to GDP and after reaching 90% debt to GDP level, GDP growth will be impaired and potential future output will be slower. GFC ended and economists and analysts did not arrive at the firm conclusions. Consensus among economists and researchers was not reached. One camp of economists (Afonso and Alves, 2014; Baum et al., 2012; Cecchetti et al., 2011; Chudik et al., 2017; Woo and Kumar, 2015) stressed the importance of the size of

public debt to GDP to the GDP growth once it reaches certain threshold. The other camp (Ash et al., 2017; Herndon et al., 2013; Pescatori et al., 2014) adamantly refused to accept this notion and presented evidence not approving negative influence of high debt to GDP level on the future GDP growth. (Herndon et al., 2013) accused Reinhart and Rogoff for poor quality of data analysis and misleading final conclusions. However, (Panizza and Presbitero, 2012) were less adamant and careful with strict conclusions and only admitted that: "it seems that advanced economies in our sample are still below the country-specific threshold at which debt starts having negative effect on growth."

Additional studies analysed the permanent and transitory effects of the public debt on the economic growth (Abubakar and Mamman, 2020) acknowledging negative effect of the debt effects on GDP growth, but emphasizing that short term rise of the debt to GDP would not be harmful. (Heimberger, 2021) claimed that there is no universal threshold when debt is detrimental to the future growth for all the countries and the 90% is not a "magic" number.

To tackle the challenges of COVID-19 crisis fiscal support to health system and economy required substantial additional borrowing in the financial markets and increased public debt even further. Figure 2 reflects respective budget deficit increase in 2020 due to GDP sudden decrease in 2020 and smaller revenues in OECD countries. Larger GDP decrease increased budget deficit more. Increased budget deficit forced governments to borrow additionaly to satisfy the urgent needs of the crisis.

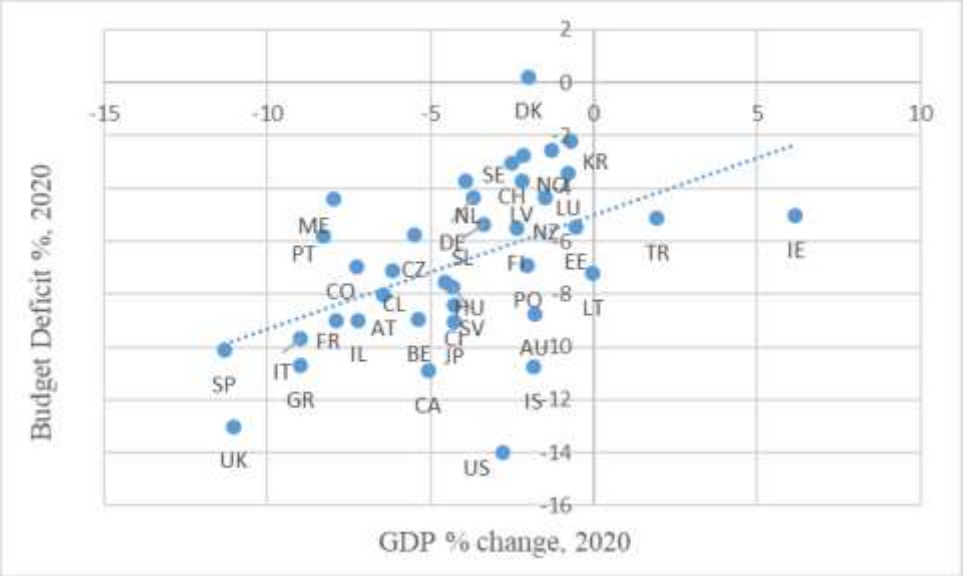

Figure 2. GDP % change and Budget deficit %, 2020.

Source: IMF, (2022); WEO database, October 2022; author's calculations

The discussion whether elevated debt levels to GDP impede future GDP growth remained unresolved. Covid-19 economic crisis provided unique opportunity to revisit the research about debt to GDP level and future growth and conceptualize the notion that higher debt level to GDP, during the crisis makes GDP decreasing more. Thus, requiring larger fiscal support and necessity to borrow and using more financial resources, questioning the usage efficiency of limited fiscal resources. An analysis of the allocation of discretionary fiscal support to overcome the economic crisis results are reflected in Figure 3. These results reflect that among the OECD countries - Germany, Japan, Great Britain, Italy, support in 2020 with discretionary fiscal resources was largest - (39%; 43%; 33%; 42%) respectively.

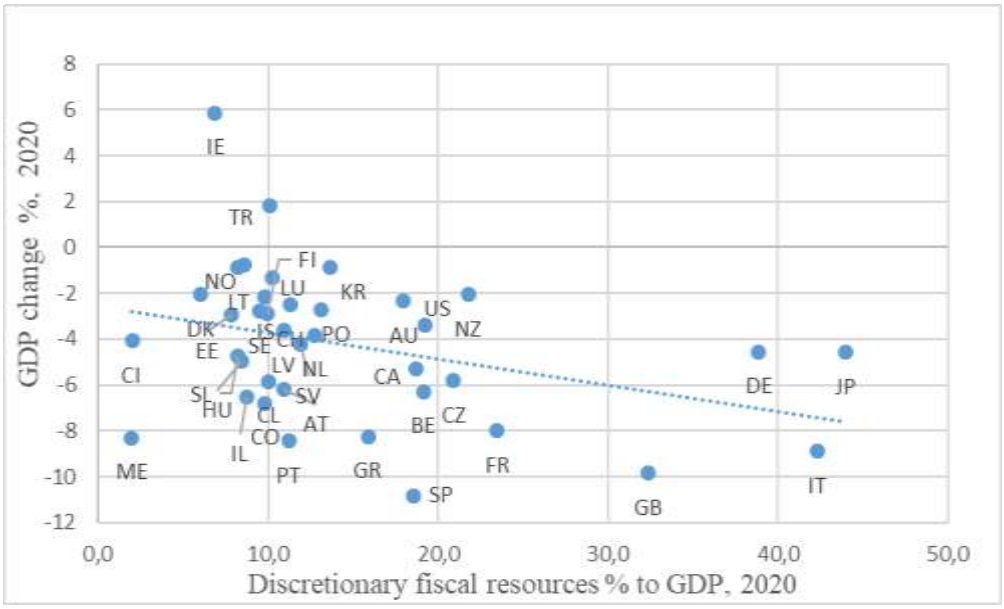

Figure 3. Discretionary resources provided and GDP% change in OECD countries in 2020

Source: IMF (2021), *World Economic Outlook*, October, 2021; author's calculations;

However, this overwhelming fiscal support did not warrant the slowdown and the fall of GDP and the depth of economic crisis in 2020. Thus, allowing to conclude that larger fiscal support does not automatically lead to a smaller fall of GDP in 2020 and sooner recovery to the pre-crisis level.

3. Public debt, GDP % change in 2020 and speed of GDP recovery

Covid-19 economic crisis provided economists with new data and allowed to continue the research and analysis of Reinhart's and Rogoff's hypothesis of debt to GDP relationship to GDP growth. New analysis of the GDP % change in 2020 was conducted by the author, comparing 152 countries using the latest data from World Economic Outlook (WEO), (IMF, 2022), which in Figure 4 demonstrates that the GDP % change in 2020 has close relationship with larger outstanding public debt. Countries with larger public debt at the end of 2019 had more negative GDP% change in the first year of pandemic.

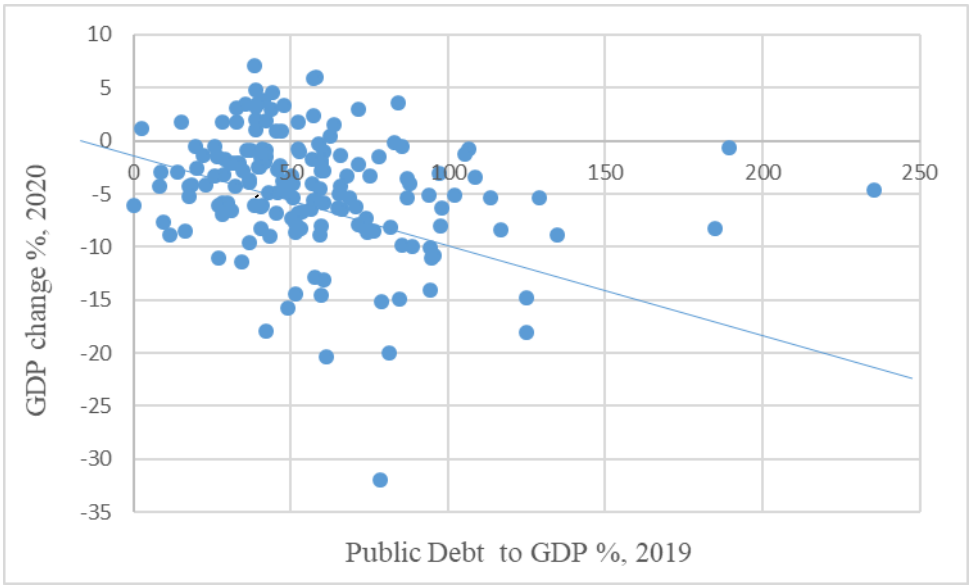

Figure 4. **Public Debt to GDP % in 2019 and GDP% change in 2020 (152 countries)**

Source: IMF (2022); WEO database, October 2022; author's calculations

Figure 5 reflects the evolution of the average public debt and average GDP growth over the period of (2007-2021) in advanced economies and approves the hypothesis that larger public debt has negative correlation with GDP growth.

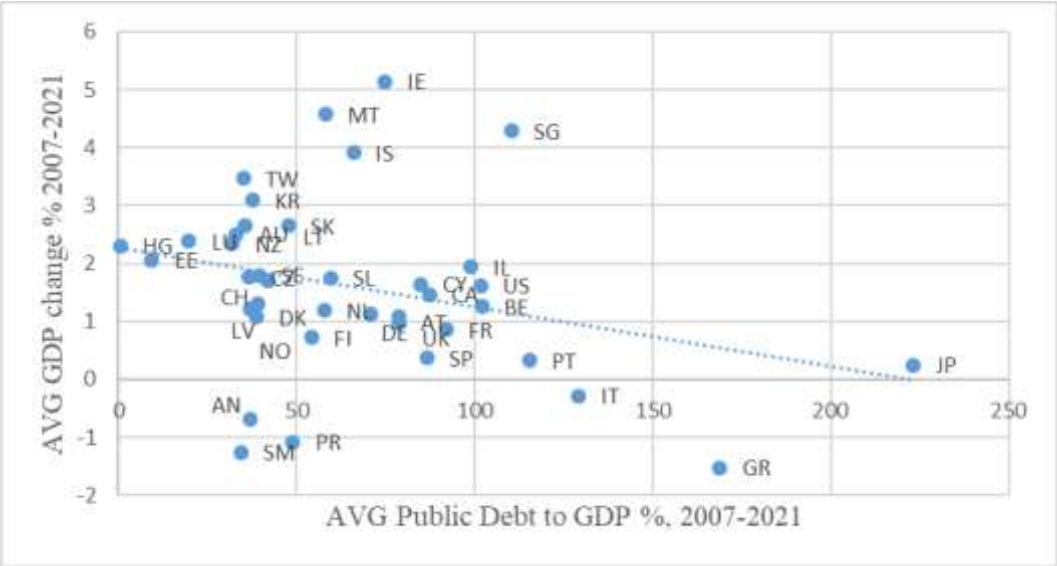

Figure 5. **AVG Public debt to GDP and GDP growth in advanced economies (2007.-2021.)**

Source: IMF(2022); WEO database, October 2022, author's calculations.

Further author explores time required to reach pre-crisis GDP level in the context of the size of the public debt.

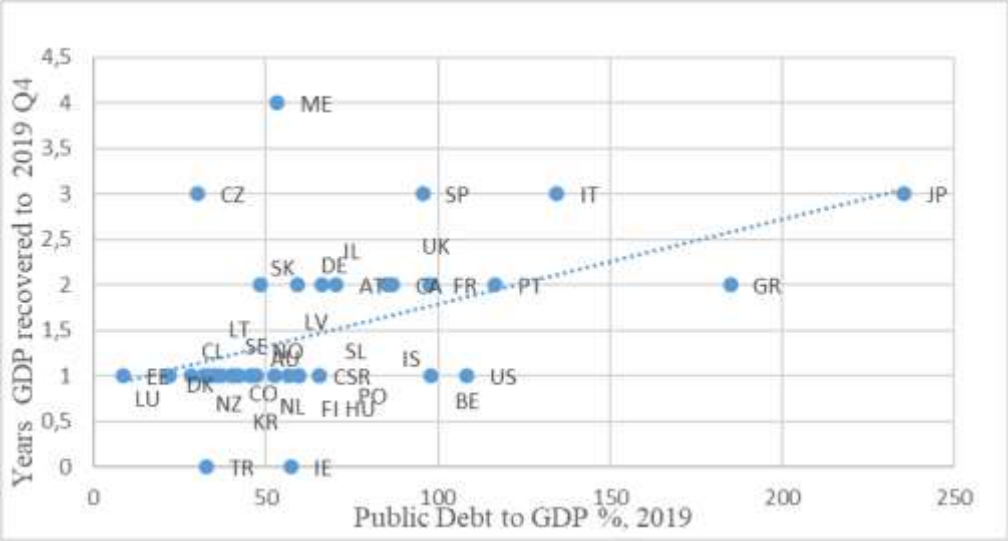

Figure 6. Years GDP recovered to 2019 Q4 level

Source: IMF (2022); WEO database, October 2022; author's calculations

Analysis results, which are reflected in Figure 6 show close correlation between size of the public debt to GDP and time needed to attain the prepandemic GDP level of 2019Q4. In the aftermath of GFC studies did not allowed scientists and economists firmly agree that public debt to GDP, once it reaches particular threshold, is slowing down GDP growth. Covid-19 economic crisis provides an additional evidence in supporting Reinhart's and Rogoff's initial arguments back in 2010 (Reinhart and Rogoff, 2010) and also allows to state the higher debt to GDP levels hamper faster recovery.

The overall conclusion that level of the public debt to GDP has negative effect on the future economic growth raises further question: "whether it is justifiable to continue to borrow and increase further the debt level, knowing that future GDP growth will be impeded and that recovery or the time required to reach pre-crisis GDP levels will be lengthier and costlier", as pictured in Figure 6.

By verifying statistical data on linearity, independence and distribution of residuals, homoscedasticity, multicolinearity and autocorrelation, author selected the sample of 122 countries in order to carry out multi-factor linear regression (MFLR) to also analyze the size of public debt's importance on the GDP fall in 2020. The results are reflected in Table 1.

Table 1. Public Debt and GDP Growth% in 2020.

Dependent variable is GDP growth % in 2020						
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
ln GDP pec capita 2019	-1.159*** (0.330)	-1.058*** (0.323)	-0.989*** (0.320)	-0.944*** (0.310)	-1.952*** (0.510)	-1.414*** (0.510)
Public Debt 2019		-0.037*** (0.010)	-0.037*** (0.010)	-0.037*** (0.011)	-0.037*** (0.010)	-0.037*** (0.010)
Stringency of NPI 2020			-0.074** (0.033)	-0.080** (0.032)	-0.056** (0.033)	-0.104*** (0.034)
Investment % GDP 2019				0.124*** (0.043)	0.124*** (0.043)	0.111*** (0.041)
Quality of Institutions 2019					0.124** (0.050)	0.096** (0.050)
ln Population 2019						0.806*** (0.225)
Constant	7.070** (3.124)	7.942** (3.132)	11.053*** (3.374)	7.744** (3.478)	9.401*** (3.474)	6.714** (3.394)
Determination coefficient	0.10	0.15	0.19	0.24	0.28	0.30

Source: IMF, (2022); author's calculations.

The results in Table 1 allow to conclude that there is statistically import negative probability of more than 99% between the size of the country's public debt and GDP change in 2020.

The results reflected in Table 2 relating to the OECD countries also affirm the results that countries with smaller debt to GDP levels recovered earlier than countries exceeding debt to GDP level of 60%.

Table 2. Public Debt and GDP Recovery projections in OECD countries

	IMF 2020. October forecast	IMF 2021. October forecast	IMF 2023. October forecast	Size of Debt to GDP in 2019
Country	Recovery to precrisis GDP level	Recovery to precrisis GDP level	Recovery to precrisis GDP level	
Ireland	2021	2020	2020	57. 3
Korea	2021	2021	2021	42.1
Lithuania	2021	2021	2021	35.9
Norway	2021	2021	2021	40.9
Poland	2021	2021	2021	45.6
Australia	2022	2021	2021	46.6
Canada	2022	2022	2022	86.8
Chile	2022	2022	2021	28.2
Chezh Rep	2022	2022	2022	30.1
Denmark	2022	2022	2021	33.6
Estonia	2022	2021	2021	8.6
Finland	2022	2022	2021	59.5
Germany	2022	2022	2022	59.2
Hungary	2022	2022	2021	65.5
Israel	2022	2021	2021	59.5
Latvia	2022	2021	2021	36.9
Luxemburg	2022	2021	2021	22.1
Netherland	2022	2022	2021	47.4
NewZealand	2022	2021	2021	32.1
Portugal	2022	2022	2022	116.6
Slovakia	2022	2022	2021	48.2
Slovenia	2022	2022	2022	65.6
Sweded	2022	2021	2021	34.9
Switzerland	2022	2021	2021	39.8

Turkey	2022	2020	2020	32.3
USA	2022	2021	2021	108.5
Austria	2023	2022	2022	70.5
Belgium	2023	2022	2021	98.1
Columbia	2023	2022	2021	52.4
Costa Rica	2023	2022	2021	56.7
France	2023	2022	2022	97.6
Greece	2023	2023	2022	184.9
Island	2023	2022	2022	66.1
Spain	2023	2023	2023	95.5
Great Britain	2023	2023	2023	85.2
Japan	2024	2022	2023	235.5
Mexico	2024	2023	2022	53.3
Italy	2026	2024	2022	134.6

Source: IMF (2020; 2021; 2023), *World Economic Outlook*; author's calculations.

Results in Table 2 also rise further question about effiency usage of the fiscal resources during the crisis (Ghosh et al., 2011).

4. Quality of Institutions, Government Effectiveness and Confidence in Government

NPI measures, Mobility reduction and public debt to GDP are not the only factors influencing the negative GDP change and speed of recovery. World Economic Forum (WEF) database provides data for the Quality of Institutions.

Table 1 allows not only to conclude that in 122 countries was important negative statistical relationship between size of the public debt to GDP and GDP % change in 2020, but also reveals that there was also important negative statistical relationship between Quality of Institutions and GDP % change in 2020. Thus, allowing to conclude that Quality of institutions is another important social-economic factor establishing the depth of the crisis and also speed of recovery from the crisis. Author reveals that Quality of Institutions not only increasing the income and especially increasing the income per capita (Rodrik and Subramanian, 2003; Rodrik et al., 2002), but also cushions the depth of GDP decrease.

For the further analysis author used only OECD country data, to verify whether the statistical relationship still holds for the advanced economies. Analysis of various factors of the severity of Covid-19 economic crisis demonstrates that countries with better quality of Institutions score better and have smaller negative size of GDP % change in 2020 (Figure 7) than other countries. (Acemoglu and Robinson, 2012) in their world famous book *"Why Nations Fail: The Origins of Power, Prosperity and Poverty"*, concluded that institutional quality is one of the key factors of economic growth.

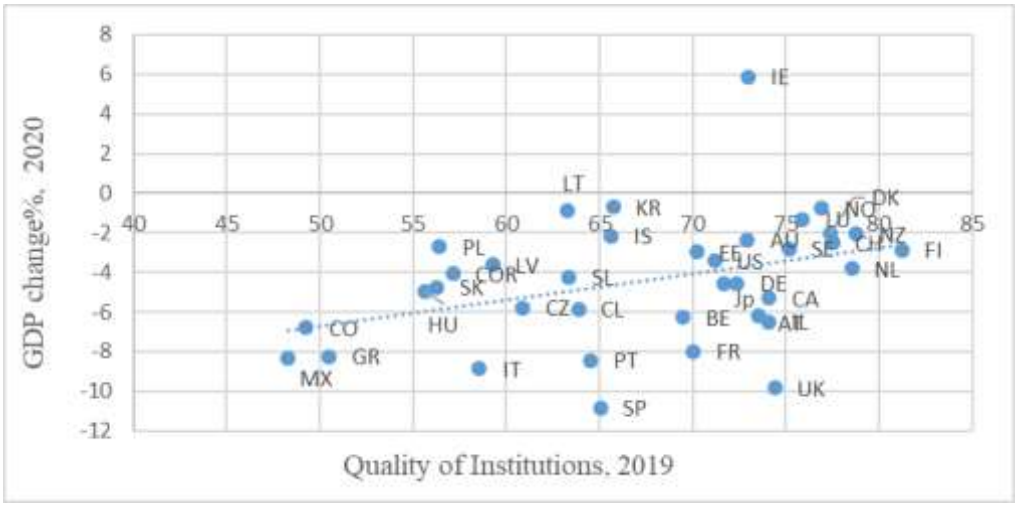

Figure 7. **Quality of Institutions in 2019 and GDP % change in 2020.**

Source: IMF (2021); WEF database, 2019; author's calculations

In order to further analyse other factors, author delved into Worldwide Governance Indicators (WGI), which consists of six key indicators: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption. The names of indicators are self-explanatory, indicating the strength or respective weaknesses of particular branch of the government. Strength in setting up, creating, regulating, stabilizing, legitimizing functioning of the respective market and protecting property rights and ensure contract enforcement of the market economy (Kaufmann et.al., 2005).

"If you cannot measure it", Lord Kelvin once famously exclaimed, "you cannot improve it", (World Bank Institute, 2009). By offering the tools to gauge the governance and monitor changes of its quality, the World Bank's Worldwide Governance Indicators (WGI) present the framework for the measurement of Institutional Quality. WGI provide an information regarding the states' ability to govern and safeguard necessary environment for the state's market economy to function and to carry out the duties and the tasks. Figure 8 demonstrates that negative GDP % change in 2020 was smaller in countries with better or higher respective government effectiveness in 2019.

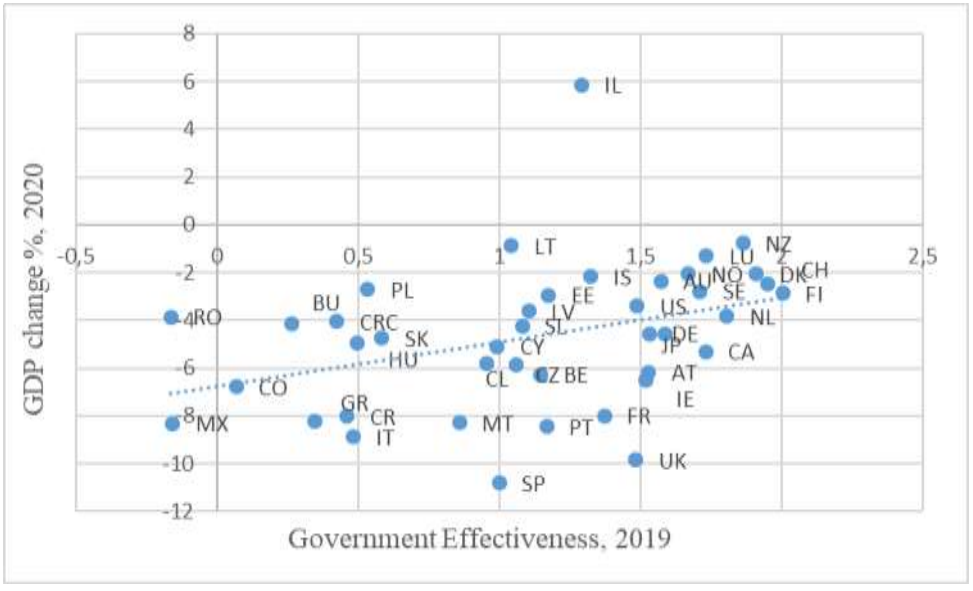

Figure 8. **Government Effectiveness in 2019 and GDP % change in 2020**

Source: IMF (2022); WEO October 2022; WGI , 2019; author's calculations.

Trust in Government and government policies is another important indicator reflecting the behaviour of the public and readiness to follow and to execute the decisions, orders and invitations of the government in turbulent times, like Covid-19 crisis. Figure 9 reflects that countries with higher Confidence in Government had less

negative GDP % change in 2020. It correlates with an assumption that people having more Confidence in Government, had to had less stringent NPI containment measures and thus, smaller mobility decrease, decrease of economic activity and GDP % change 2020.

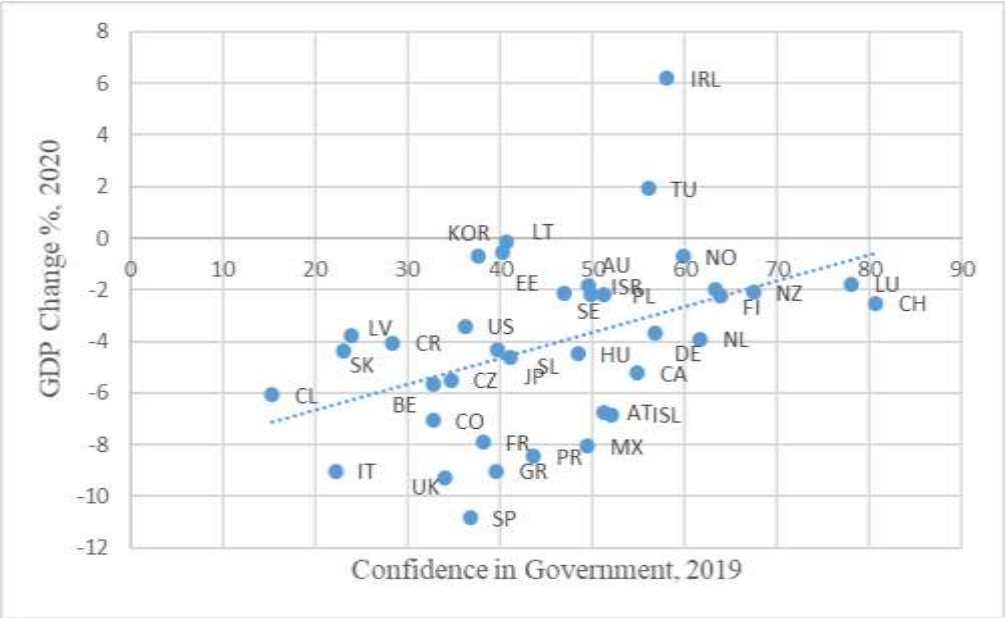

Figure 9. **Confidence in Government and GDP change %**

Source: OECD(2021); IMF (2022), WEO, October, 2022; author's calculations

Summed up Quality of Institutions, Government Effectiveness and Trust in Government in 2019 in Table 3, provides new set of data, allowing to carry out analysis how these factors influenced or helped to facilitate the crisis and rhetorically ask whether lower borrowing stemmed from higher Quality of Institutions, Government Effectiveness and Trust in Government. Table 3 also includes public debt level of 2019. Thus, providing comprehensive information about the debt level and the respective Quality of Institutions, Government effectiveness and Trust in Government factors and allowing to rank the OECD countries according to these four indicators in column Total Rating. Out of that Total Rating, author extends further analysis whether countries with better Total Rating have more appetite to borrow in order to tackle the crisis problems and whether they borrowing more than countries with lower Total Ranking.

Table 3. OECD country rankings (Public Debt; Government effectiveness; Quality of Institutions and Trust in Government Policies)

Country	PublicDebt 2019	Rating	Govt effect 2019	Rating	Institu-tions 2019	Rating	Trust Govt 2019	Rating	Total Rating
Luxembourg	22.3	2	1.73	6	75.9	7	78	2	17
Switzerland	39.6	11	1.95	2	77.5	4	80.7	1	18
NewZealand	31.8	5	1.67	9	78.8	2	67.5	3	19
Denmark	33.7	7	1.91	3	77.4	5	63.3	5	20
Finland	59.6	23	2.01	1	81.2	1	63.9	4	29
Norway	40.9	12	1.86	4	76.9	6	59.8	7	29
Netherlands	48.5	16	1.80	5	78.6	3	61.7	6	30

Sweden	34.9	8	1.71	8	75.2	8	51.3	13	37
Australia	46.7	14	1.57	11	72.9	14	46.9	19	58
Canada	87.2	29	1.73	7	74.1	11	54.9	11	58
Germany	58.9	22	1.53	12	72.4	15	56.8	9	58
Ireland	57.2	20	1.29	19	73.0	13	58.1	8	60
Estonia	8.5	1	1.17	20	70.2	18	40.3	23	62
Iceland	66.2	26	1.52	14	74.1	10	52.1	12	62
Austria	70.6	27	1.53	13	73.5	12	51.2	14	66
Israel	58.8	21	1.33	18	65.6	21	49.6	16	76
Lithuania	35.9	9	1.04	26	63.3	26	40.7	22	83
UK	83.9	28	1.48	16	74.4	9	34.1	30	83
Japan	236.3	37	1.59	10	71.7	16	41.1	21	84
Turkey	32.6	6	0.05	36	53.9	34	56.1	10	86
Czech Rep	30.0	4	0.96	28	60.9	27	34.7	29	88
Chile	28.3	3	1.06	25	63.9	24	15.3	37	89
Poland	45.6	13	0.53	30	56.4	31	49.8	15	89
France	97.4	30	1.37	17	70.0	19	38.2	26	92
USA	108.8	33	1.49	15	71.2	17	36.3	28	93
Latvia	36.7	10	1.10	23	59.3	28	23.9	34	95
Slovenia	65.4	24	1.08	24	63.4	25	39.7	24	97
Portugal	116.6	34	1.17	21	64.5	23	43.6	20	98
Belgium	97.7	31	1.15	22	69.5	20	32.8	31	104
Hungary	65.5	25	0.50	31	55.7	33	48.4	18	107
Spain	98.3	32	1.00	27	65.1	22	36.8	27	108
Mexico	53.3	18	-0.16	37	48.3	37	49.5	17	109
Slovak Rep	48.1	15	0.59	29	56.3	32	23.1	35	111
Costa Rica	56.4	19	0.42	33	57.1	30	28.3	33	115
Colombia	52.4	17	0.07	35	49.3	36	32.8	32	120

Greece	185.6	36	0.35	34	50.5	35	39.6	25	130
Italy	134.1	35	0.48	32	58.6	29	22.2	36	132

Source: IMF (2022); WEO, October 2022, OECD (2021); author's calculations

Anglo-saxonian countries and Japan clearly stand out as the separate group of aggressive borrowers during pandemic, hoping that the provision of larger, "*whatever it takes*" fiscal stimulus at the outset of the crisis will resolve arising problems faster and more efficiently. It did not. However, rest of the OECD countries except Spain, Italy and France had more modest appetite to borrow. (Fournier & Fall, (2015). Figure 10 allows to draw a conclusion that countries with better Quality of Institutions, Government Effectiveness and Trust in Government and lower Public debt to GDP level in 2019, were borrowing less in 2020 and 2021. Thus, also allowing to conclude that these countries used fiscal resources more efficiently.

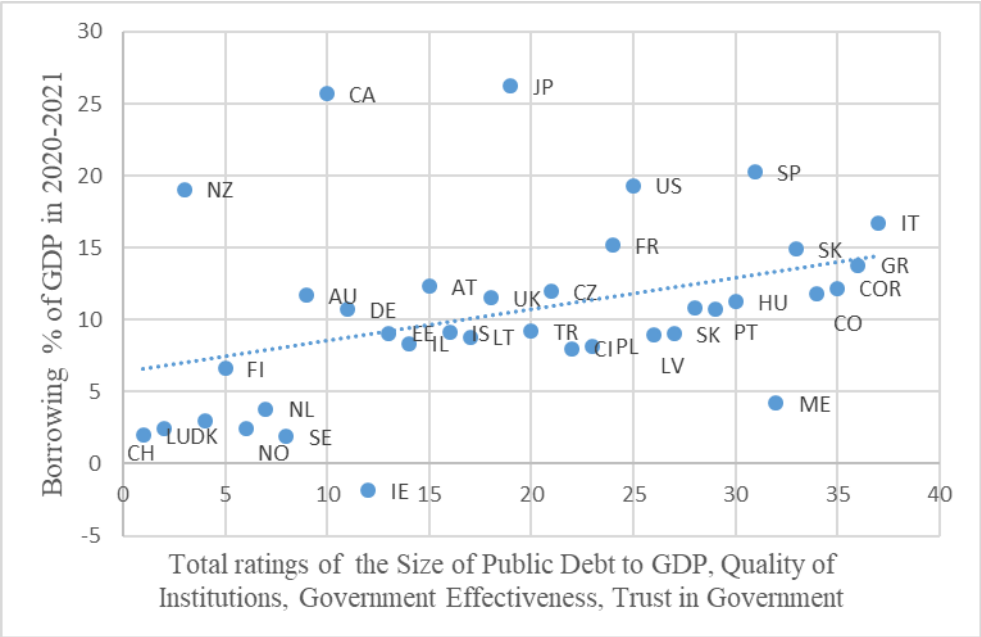

Figure 10. Ratings of Size of the Public Debt to GDP, Quality of institutions, Government effectiveness and Trust in Government in 2019

Source: IMF (2022); WEO October, OECD (2021); WGI (2019); author's calculations

Countries with better Quality of Institutions, Government Effectiveness and Trust in Government and lower Public debt to GDP level in 2019, not only had less negative GDP % change, but also recovered sooner reaching pre-crisis 2019 GDP level, than the countries with larger debt level at the beginning of the 2020 and lower Institutional Quality, Government effectiveness and Confidence in Government and as the result deeper crisis.

Preliminary studies also approve the hypothesis that countries with better quality of institutions, government effectiveness and trust in government policies not only recover sooner to the pre-crisis 2019 level GDP, but also are capable to reach the envisaged and projected GDP level of 2020, which was forecasted before COVID-19 pandemic.

5. Conclusions, proposals, recommendations

Every economy from to time witnesses smaller or larger economic turbulences. Covid-19 crisis provided opportunity to compare how the countries tackled economic crisis associated with COVID-19 imposed problems . Paper provides answer why some countries in 2020 experienced less negative GDP % change and others had more negative GDP % change in 2020. Based on Covid-19 twin (health and economic) crisis analysis results, author concludes:

1) countries with smaller Public debt to GDP in 2019, better Quality of Institutions, especially Government Effectiveness, more Trust in government, had smaller GDP % change in 2020.

2) countries with smaller Public debt to GDP in 2019, better Quality of Institutions, especially Government Effectiveness, more Trust in government had shallower economic crisis in 2020 and recovered to the pre-crisis 2019 GDP level sooner than the others.

3) Countries with smaller Public debt to GDP in 2019, better Quality of Institutions, especially Government Effectiveness, more Trust in government, borrowed less and increased less the outstanding debt obligations.

4) Based on Covid-19 twin (health and economic) crisis analysis results, author concludes that countries with larger outstanding Public Debt to GDP levels recovered later, i.e. reached pre-crisis GDP level later than countries with smaller Public Debt to GDP.

Periods after financial or economic crisis always must be used to renew the fiscal space and to rebuild the fiscal buffers in order to be able to act in the next crisis, which will definitely will come uninvited (Fall & Fournier, 2015).. Period after Great Financial Crisis was not wholeheartedly used to renew initial fiscal space and lower the outstanding Public Debt. Only few countries managed to restore the 2007 debt to GDP level and therefore, safeguarded speedier recovery.

The next analysis is awaiting whether higher Quality of Institutions, Government effectiveness and Trust in government also warrants speedier overall recovery and reaching the GDP levels forecasted at the end of 2019, before COVID-19 crisis. Preliminary studies also approve the hypothesis that countries with better Quality of Institutions, Government Effectiveness and Trust in government not only recover sooner to the pre-crisis 2019 level of GDP, but will also sooner reach in 2019 projected GDP level for 2020, which was forecasted by IMF (IMF,2020) at the end of 2019, before COVID-19 pandemic.

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