PART 2

FISCAL RISKS AND UNCERTAINTIES

CHAPTER 2.1.

THE EFFECTS OF THE COVID-19 FISCAL MEASURES ON ECONOMIC VARIABLES: AN ANALYSIS ACROSS COUNTRIES AND COUNTRY GROUPS

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Abstract

The first case of COVID-19 was discovered on November 17, 2019 in China, followed by Thailand and Japan in January, and South Korea, Taiwan, USA, France, and Australia at the end of January 2020. The negative economic effects that started in February due to halting business activities and international travel limitations, as well as limitations on imports and exports, became most unsettling in March and April. The pandemic that took hold of the globe, very shortly reached beyond being a health crisis, and its social, political, economic, and financial effects started to enter the agenda. While the effects of the crisis on national economies were very heavy due to its global scale, its depth has varied from country to country. The economic and financial effects of the crisis will depend on, first the current problems and structural characteristics of a country at the time it faced the crisis, and second, the responses and the forms and speeds of interventions by policy makers. Measures taken and policy decisions made by nation-states will lead to different outcomes for different countries and country groups. This study analyses these fiscal measures in three categories: fiscal emergency measures, deferrals, and liquidity provision and credit guarantees. The analysis starts with a monthly evaluation throughout the pandemic according to country groups, using EU, G7, G20, and OECD data. Data on individual countries were also analyzed when national data was available and correlations between these three types of fiscal measures and certain economic variables were evaluated. The study found significant and positive correlations between emergency measure packages and changes in exports, liquidity provision and credits, and interest rates.

Keywords: COVID-19 Pandemic, Fiscal Measures, Economic Variables, Correlation Matrix, Cross-Country Analysis.

1. Introduction

March 11, 2020 is the day the World Health Organization announced that COVID-19 is a pandemic, and it is considered to be the beginning of a new global crisis. COVID-19 is a health crisis, and every nation's primary target has been protecting human health and controlling a possible capacity increase in their health care systems. In this context, the initial measures taken to reduce the damage caused by the virus have been directed to reinforcing the healthcare system, and in order to prevent a healthcare crisis and to slow down the spread of the disease, the first measure taken was limiting social mobility. Temporarily shutting down public spaces and businesses, canceling public events, public transport limitations, suspension of education, travel limitations, social isolation, and partial curfews have been the initial response in every country.

While the impact of the crisis on national economies has been very intense due to its global scale, the depth of the crisis varied from country to country. The economic and financial effects of the crisis vary, first, according to the existing problems and structural characteristics of the countries at the time they faced the crisis and, second, according to the responses and forms and speeds of intervention by policy makers. It has been observed that the world was caught unprepared, at a global scale, to a crisis that imposes huge costs in terms of human health and the economy, and the responses to the crisis have not been sufficiently coordinated, with each country devising distinctive methods to cope. While the most economically sensitive countries and their poor take the biggest blow, the ground for collaboration that international organizations tried to evoke has fallen short.

Since the date that the World Health Organization declared the pandemic, the biggest economic impact of this crisis has been on the supply side. The pandemic itself significantly reduced labor force participation rates. The increase in the number of unemployment claims in the US is considered to be the highest rates since the Great Depression. Moreover, people infected with COVID-19 and people who have been in contact with them have been legally forced to withdraw from production. Production stopped completely in certain industries due to the measure towards preventing the spread of the disease and almost stopped in others due to the disruption of supply chains. COVID-19 negatively affected the demand side of the economy as well. Unemployment due to socialization limitations and reduction in production affected purchasing power and household consumption demand as well.

The countries that were harmed the most in the pandemic are the ones that have an important share in the world economy. Thus, the economic effects of the COVID-19 crisis

are expected to be heavier than other crises. Each country is trying its best to minimize the damage by preparing fiscal measure packages. Nevertheless, the global cost of the fight against a worldwide epidemic with an uncertain duration will be high for the whole world.

The effects of this health crisis on society and the economy will depend on the measures taken in the process. The measure packages and policy decisions by nation-states will lead to differences in outcomes among countries and country groups. This study aims to analyze empirically the varying effects of fiscal measures that aim to reduce the impacts of the COVID-19 crisis for different countries and country groups.

2. Fiscal Policies and Fiscal Measures during the COVID-19 Pandemic

The two basic policy targets that were very immediately adopted by every country were social isolation to prevent the virus from spreading and rapidly implementing fiscal measure packages in order to mitigate economic recession. To this extent, the initial measures have been policy measures towards preventing the healthcare system from collapse and reducing the rate of the spread of the disease. As opposed to other crises, the COVID-19 pandemic crisis is primarily a health crisis. Therefore, the first social and fiscal measures have been directed towards the healthcare sector in order to protect human lives. Developing a vaccine and a treatment, protecting healthcare workers and income provision, capacity building measures, and aid to other countries can be included in this category.

As in other crises, another important target in this process has been maintaining the web of economic relationships among employers and workers, producers and consumers, and lenders and borrowers in parallel with the social and economic effects of the pandemic. Rapid and coherent governmental responses were needed to alleviate the health and economic effects of COVID-19, and fiscal policies played a very important role. To this extent fiscal policies have been introduced in many countries around the world under the name of fiscal measures.

The fiscal measure packages that various countries announced in order to get the COVID-19 pandemic under control and to minimize its socioeconomic effects are presented in Figure 1.

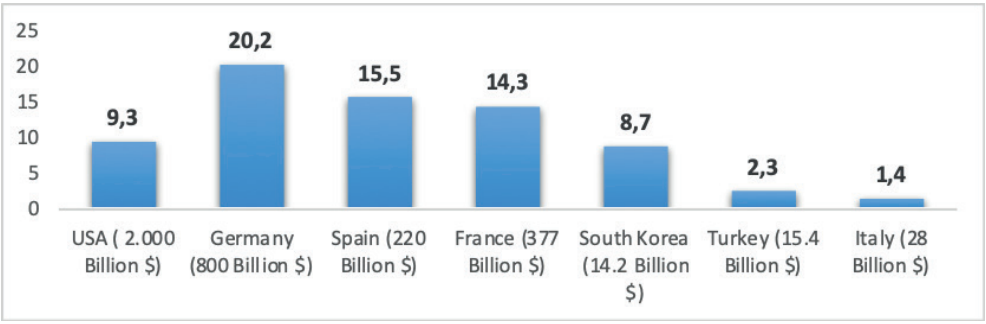


Figure 1. The Initial COVID-19 Pandemic Fiscal Measure Packages as % of 2019 GDP for Selected Countries
Source: Data was compiled from statements of the finance ministries of these countries. 2019 GDP figures were used.

Figure 1. shows the initial support packages announced by developed countries that have been affected by the health crisis most in terms of the number of cases and deaths and packages announced by Turkey and South Korea, which were relatively less affected. The highest support package with respect to the country's GDP was announced by Germany. The scope of the fiscal support packages was expanded as the impact of the health crisis increased. Especially in Italy, the size of the package was increased as the health and economic aspects of the crisis grew.

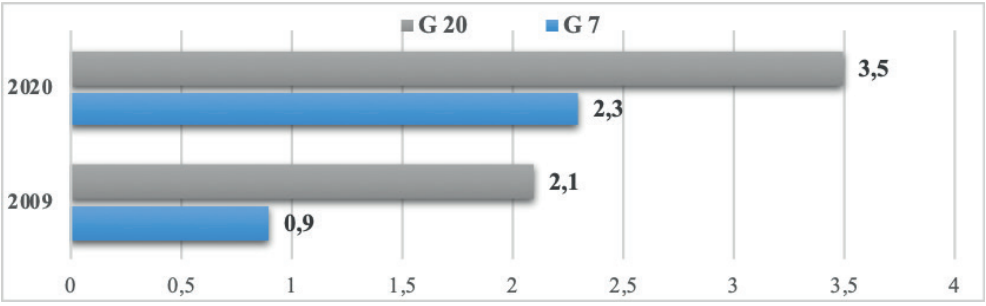


Figure 2. The Ratio of the Fiscal Measure Packages to GDP in G-7 and G-20 Countries during the Global Financial Crisis and the COVID-19 Pandemic
Source: IMF, Fiscal Monitor, April 2020a

By April 8, 2020, the G-20 economies had announced that they will use, through revenue and expenditures, approximately 3.5% of their GDP as a fiscal measure against the pandemic. This amount is considerably high in comparison to the 2.1% package announced in 2009 against the Global Financial Crisis that started in 2008. Similarly, the G-7 countries allocated 0.9% of their GDP in 2009 for the financial crisis while declaring 2.3% when the 2020 crisis

started. The comparison between the size of the fiscal measures in 2020 and 2009 implies that the recession caused by the health crisis, when combined with the uncertainties of the pandemic, will be more serious. It can be said that nation-states have been more cautious now than they were during the 2009 financial crisis.

The fiscal measures introduced by governments for households and companies can be categorized according to their expected effects as follows (Anderson, et al. 2020):

- ***Emergency Fiscal Measures***: The initial measures taken as an expansionary fiscal policy are additional state expenditures (healthcare research, payroll support, income transfers, subsidizing SME's, public investments) and foregone revenues (cancellation of certain taxes, tax reductions and exemptions, exemptions for social security contributions), which are automatic stability restorers. Emergency fiscal measures simultaneously repress economic stagnation and increase fiscal deficits.
- ***Deferrals:*** In some countries, social security contributions and some taxes have been deferred. Further measures were adopted in terms of credit services and bill payment deferrals. These measures will increase individuals' incomes and liquidity positions of companies without removing their liabilities. Despite revenue losses by individuals, falling profits for companies, and the reduction of tax revenues, the disruptions in budget balances will be at a reparable level.
- ***Liquidity Provisions and Credit Guarantees:*** These measures include export guarantees, liquidity provisions, and credits via national development banks. These measures improve cash flow for the private sector. However, companies need to take positions and act according to the credits they receive. The measures in this category will not weaken the budget balance in 2020. However, the budget balance will be negatively affected if cash flow provisions cannot achieve economic recovery.

At the global level, spending and revenue measures amount to $3.3 trillion, and loans, equity injections, and guarantees total $4.5 trillion. Different types of fiscal support will have different effects in terms of public finance and economic variables in the short and the long run. Additional spending or tax cuts result in immediately higher budget deficits. Support to companies in financial trouble through loans or equity injections do not impact budgets directly but may increase debt or require additional borrowing. Guarantees do not affect deficits or debt in the near term, but they expose the government to medium- to long-term fiscal risks (IMF, Nisan 2020a: 2-18).

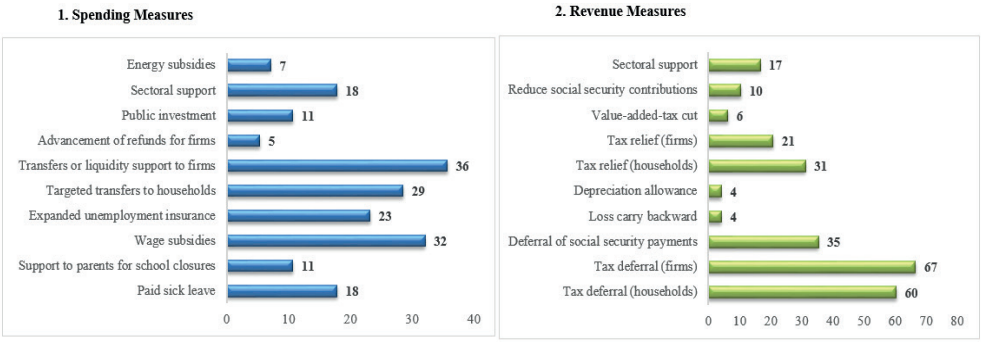


Figure 3. Common Fiscal Support Measures for Non-Health Sectors in Response to COVID-19 (Percent of economies with fiscal support measures)
Sources: Announcements by national authorities; IMF Policy Tracker 2020b ; and IMF staff estimates.

The ratio of the expenditure and revenue provision items, excluding healthcare, in fiscal support by IMF member states to households and companies are given in the chart above. It is seen that across the globe, expenditure support for SME's and households were predominantly in the form of cash and credit support. Income support on the other hand is focused more on tax deferrals for companies and households.

Another important issue related to fiscal measures is the differences between the weights of the fiscal measure packages in different countries. Fiscal measures taken by developing countries are very low compared to developed ones. The initial packages by some countries such as the US, Australia, and Canada focus on fiscal measures through revenue and expenditures while Germany, Italy, France, Spain, and England focus on credit and guaranteed debts. Considering their impacts, these countries' budget deficits will increase if they cannot find resources for revenues and expenditures and resort to funding from their budgets. Countries that expand credit possibilities on the other hand will need to avoid fiscal risks in the future.

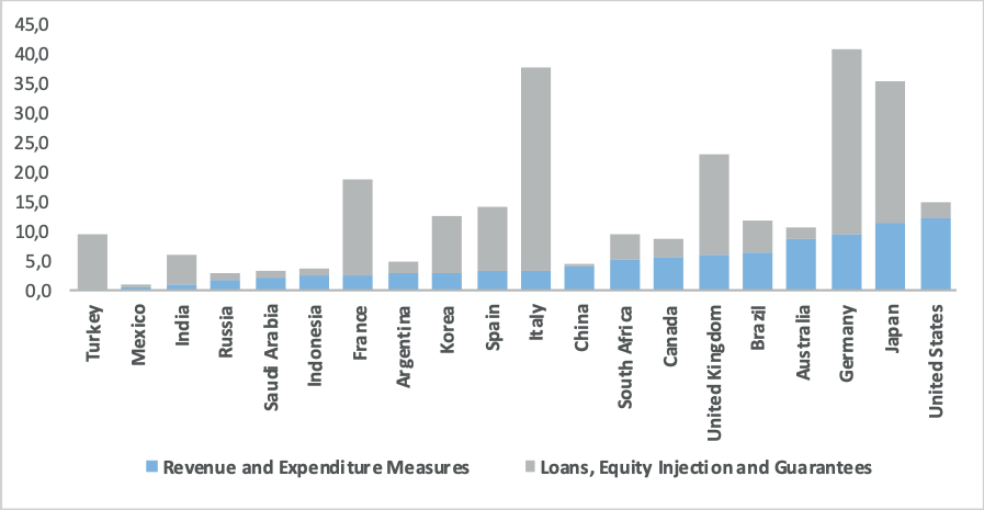


Figure 4. Fiscal Response to the COVID-19 Pandemic
(percent of national GDP)
Sources: Announcements by national authorities; IMF Policy Tracker 2020b ; and IMF staff estimates, June 2020.

The shares of the three types of fiscal measure packages in the respective country's GDP are given in Appendix Table 8. Countries that allocate the highest shares for emergency fiscal measures from their GDP are, respectively, New Zealand, Singapore, the US, and Japan while the lowest share is 0.2%, which is allocated by Turkey. Denmark, Sweden, and Japan have the highest shares of deferrals while the lowest is Argentina. Turkey is around the middle of this list with 1.4%. The countries that allocated the highest share of their GDP for liquidity provisions and credit guarantees are, respectively, Italy, Germany, and Japan. Turkey is 11th among 51 countries with 9.1% (Figure 4).

3. Fiscal Effects of the Measures Adopted at the Beginning of the COVID - 19 Pandemic

Different measure packages in size and content by different countries will have a different scale of effects as well. First of all, every country has different economic conditions, and they faced the crisis under different circumstances. Rapidly adopted and effective measure packages will doubtlessly alleviate stagnation. While the size and contents of the packages open the gap among countries, their effects remain similar:

- *The impact of these expansionary fiscal policies will lead to the suspension of fiscal regulations and disruption of fiscal discipline,*

- *Budget deficits and public debt burden will increase,*
- *Fiscal risks will increase, and some countries will face a financial crisis,*
- *Fiscal risks for companies will increase when their access to state loans and debt guarantees are limited,*
- *The costs of additional fiscal expenditures will rise dramatically in countries with heavy debt burdens,*
- *High debt and increased cost of borrowing will complicate the implementation of fiscal policies,*
- *Reduced public investments will affect growth figures in developing countries.*

Developed countries have the capacity to announce bigger fiscal packages than developing countries. These countries will probably overcome the crisis faster as well, and this will increase income inequality between countries. Developed European countries and the US have announced large support packages. In these countries, the fiscal effect of the crisis will be lower as long as company performances do not fall since the packages consist mainly of income support and loan guarantees that will accelerate cash flows. However, since this crisis itself is a supply shock, a slowed-down global trade and broken supply chains will lead to increased fiscal risks for companies.

The fact that public debt is not very high in Asian countries, that fiscal accounts are generally healthy in developing European countries, and that most Gulf countries have significant amounts of Sovereign Wealth Funds, will ease these countries in terms of fiscal provisions, yet their budget deficits and public debt will inevitably increase. Although the macroeconomic effects of the pandemic are uncertain and the size of discretionary fiscal policy responses to COVID-19 may still rise, they will affect the overall balance and public-debt-to-GDP ratios over the medium term (IMF, 2020a: 9)

Since national debt burdens have increased in countries with relatively weaker economic data, it will become more costly for these counties to generate additional funding. Weaker countries will turn to the IMF and World Bank for resources.

4. Effects of the Fiscal Measures Taken During the Pandemic on Economic Variables – Comparison between Countries and Country Groups

The first cases of COVID-19 were discovered on November 17, 2019 in China, followed by Thailand and Japan in January, and South Korea, Taiwan, the USA, France, and Australia at the end of January. The negative economic effects that started in February due to halting business activities and international travel limitations as well as limitations on imports and

exports became most unsettling in March and April. Since the World Health Organization announced the pandemic, the biggest economic impact of this process has been on the supply side. The first effect of the COVID-19 crisis on the supply aspect was the fall of labor force contributions due to legal limitations on and reductions of working hours. Moreover, people who are infected with COVID-19 and people who have been in contact with them had to withdraw from production. People responsible for taking care of disabled people, the elderly, and children also, indirectly, had to withdraw from the labor supply. The employed labor force was reduced, and production was negatively affected.

The second effect of COVID-19 on the supply aspect is related to production and supply chains. The public health measures towards stopping the epidemic, travel bans, prohibition of social activities, curfews, stay-home and business closure practices caused economic activities to slow down- even stop completely in certain industries- and production to fall. This constriction of the supply of goods resulted in broken supply chains and increased losses as well as bankruptcies and increased unemployment (Elgin and Başbuğ, 2020).

The effects of the COVID-19 crisis and related social restrictions on the demand side also caused demand to grind to a halt, especially for service sector industries such as retail, cafes and restaurants, tourism and travel, and small local businesses. As a result of lowered social mobility, reduced consumption of goods and services, reduced purchasing power, and insecurities due to the withdrawal of the labor force from the economy caused significant reductions in consumption spending and demand shocks. Another reason for the demand shock has been the serious constrictions in exports due to the global reduction of the goods and services trade. For instance, the fact that Europe and the US, which have a significant share in Turkey's exports, were the most effected countries from the crisis reduced the demand for its export goods. Long delays at customs also caused disruptions in trade. Decreased production and consumption and the constriction of employment, all very important economic variables, also slowed down economic growth. The effects of the pandemic crisis on the trade of goods and money influenced interest rates as well, causing some currencies to lose and others to gain value in the global market.

The tables below were prepared to compare certain economic variables that are subjected to analysis for various country groups before and during the pandemic. Since data for most economic variables are published quarterly and annually, only exports, unemployment, consumer price index, interest rates, and industrial production variables could be analyzed. The currency exchange value against the US Dollar was also included. In addition to the comparison given in the appendices, the analysis involved an evaluation according to EU,

G-7, G-20, and OECD country groups. All of the data was obtained from OECD statistics, and calculations were made by the authors.

- ***Export***

The table below shows export figures for the EU, G-7, G-20 and OECD countries before and during the pandemic.

Table 1. Export (Billions, USA $)

Export	Number of countries[1]	(Billions, USA $)					Change	Change (%)
		January	February	March	April	May		
EU	22	474.0	467.6	423.6	318.6	353.9	-120.14	-5.17
G7	7	478.3	479.0	432.2	323.8	334.7	-143.58	-20.62
G20	19	1142.6	1205.3	1096.4	891.7	927.8	-214.82	-14.60
OECD	37	906.9	896.9	825.4	633.1	658.0	-248.91	-6.46
World	46	1178.3	1241.7	1129.2	921.5	952.9	-225.5	-24.52

As shown in Table 1 and Figure 5, exports of the EU and OECD countries fell to a certain extent from January to February while rising in G-7 and G-20 countries. By March and April, however, export volumes had fallen significantly for all groups. Although there was a comparative increase in May, January and February volumes had not been reached. According to this table exports of G-7 countries fell by 143 billion US Dollars, or approximately 21%, from February to May. This group was followed by G-20 countries with a 14% fall in exports. The falls in exports for OECD and EU countries have been lower than other groups. When figures from 46 countries that publish their data monthly is considered as world data, exports have fallen by 225.5 billon US Dollars, or approximately 25%.

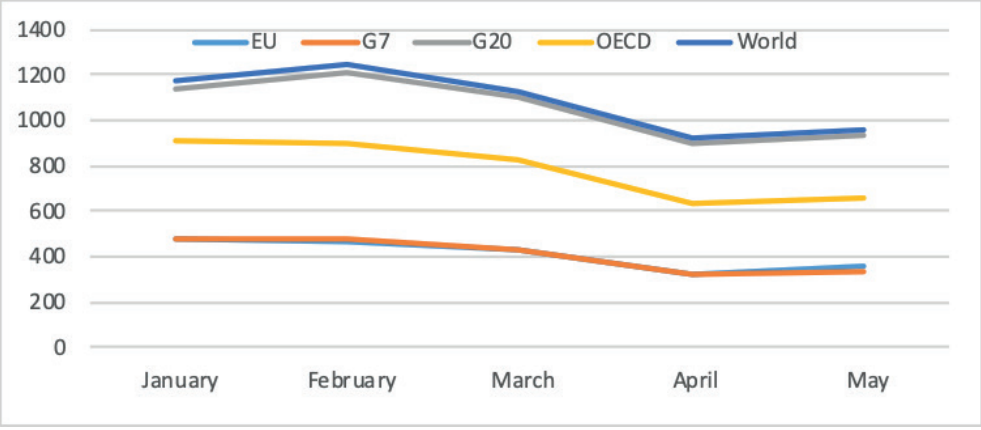


Figure 5. Export (Billions USA Dolar)

1 The countries whose data can be accessed are given in Table 9

As seen in Table 9 in the appendices, the biggest fall of exports between February 2020 and May 2020 was 52% in Mexico, followed by 45% in Saudi Arabia. Colombia, Canada, France, and the US follow them. Turkey's exports have fallen 27% in this period. The least effected countries are China, Australia, and Chile. Ireland's exports on the other hand have increased.

- ***Unemployment Rate***

Table 2. Unemployment Rate (%)

Unemployment rate (%)	Number of countries[2]	January	February	March	April	May	Change
EU	22	6.2	6.1	6.1	6.2	6.5	0.4
G7	7	5.2	5.1	5.4	7.1	7.1	2.0
G20	11	5.6	5.4	5.5	5.1	5.2	-0.2
OECD	35	5.5	5.5	6.0	6.8	7.1	1.6

The data given in Table 2 shows that the rate of unemployment increased 2% in G-7 countries, 1.6% in OECD countries, and 0.4% in EU countries from February 2020 to May 2020. Meanwhile, there has been a 1% increase from February to March in G-20 countries, followed by a rapid fall to a level below January and February figures. Table 9 in the appendices show that the highest rise in unemployment rates were recorded in Colombia, doubling from February to May. This country is followed by the US and Canada, where unemployment rates rose, respectively, from 3.5% and 5.6% to 13.3% and 13.7%. In Italy and Portugal on the other hand, unemployment rates have fallen from February to May. World data is not included because most of the available monthly data is from OECD countries.

- ***Consumer Price Index***

Table 3. Consumer Price Index (%)

CPI (%)	Number of countries[3]	February	March	April	May	Change
EU	22	106.4	106.5	106.3	106.2	-0.2
G7	7	105.9	105.8	105.7	105.7	-0.2
G20	17	115.8	115.8	115.8	115.3	-0.5
OECD	33	109.4	109.5	109.4	109.4	0.0
World	42	110.9	110.9	110.8	110.5	-0.4

The consumer price index figures and their changes within 2020 according to country groups are given in Table 3. According to the table, the consumer price index has not changed significantly in any group, and it stayed the same in OECD countries while falling 0.2% in the EU and G-7 and 0.5% in the G-20. For the 42 countries with available data, it was found that the consumer price index fell 0.4%. According to Table 9, China had the highest fall with 3.4% while Turkey had the biggest rise with 6.8%.

2 The countries whose data can be accessed are given in Table 9.

3 The countries whose data can be accessed are given in Table 9.

- ***Interest Rate***

Table 4. Interest Rate (%)						
Interest Rate (Overnight interbank rate)	**Number of countries[4]**	**February**	**March**	**April**	**May**	**Change**
EU	22	-0.19	-0.21	-0.26	-0.30	-0.11
G7	7	0.38	0.05	-0.15	-0.15	-0.53
G20	17	2.83	2.54	2.28	1.91	-0.92
OECD	37	0.74	0.54	0.37	0.28	-0.46
World	43	1.37	1.35	0.95	0.69	-0.69

Table 4 shows overnight interest rates for four country groups. All groups have reduced interest rates during the COVID-19 epidemic, and the biggest reduction happened in G-20 countries. For the 43 countries whose interest rate data were available, the overall reduction was 0.68%. According to Table 9, Turkey and South Africa reduced interest rates by 2.5%, followed by Czechia and Iceland with 3% and 1.8%, respectively. Denmark and Hungary, on the other hand, had increased interest rates.

- ***Industrial Production***

Table 5. Industrial Production (Index, 2015=100)						
Industrial Production (index, 2015=100)	**Number of countries[5]**	**February**	**March**	**April**	**May**	**Change**
EU	22	110.09	102.16	86.65	92.63	-17.47
G7	7	103.30	92.37	77.11	82.45	-20.85
G20	11	106.76	98.55	82.52	88.26	-18.50
OECD	31	108.93	102.32	87.61	92.22	-16.71
World	32	108.70	109.06	102.55	87.99	-20.71

Table 5 shows that industrial production fell between 17 and 21% in all countries. For the 32 countries with available data, a reduction of 21% was recorded. According to Table 9, the countries with the highest fall in industrial production were Slovakia, Hungary, Turkey, and Portugal, in this order.

- ***Exchange Rate***

Table 6 shows some exchange rates against the US Dollar. The highest devaluation is recorded for the Brazilian Real with 30%, followed by the South African Rand (about 21%), the Mexican Peso (about 18%), the Russian Ruble (about 14%), the Colombian Peso (13%), and the Turkish Lira (12%). The Swedish Krone, Danish Krone, Australian Dollar, Euro, Swiss Franc, Japanese Yen, New Zealand Dollar, Chilean Peso, and Hungarian Forint, on the other hand, respectively, had the highest appreciation against the US Dollar.

4 The countries whose data can be accessed are given in Table 9.

5 The countries whose data can be accessed are given in Table 9.

Table 6. Exchange Rate							
Country	**Unit**	**January**	**February**	**March**	**April**	**May**	**June**
Australia	Australian Dollar	1.45	1.50	1.61	1.59	1.54	1.45
Euro Zone	Euro	0.90	0.92	0.91	0.92	0.92	0.89
Canada	Canadian Dollar	1.31	1.33	1.40	1.41	1.40	1.36
Chile	Chilean Peso	774.18	797.71	840.33	852.09	820.02	795.88
Colombia	Colombian Peso	3317.20	3409.82	3870.01	3986.56	3863.34	-
Czech Republic	Czech Koruna	22.71	22.97	24.04	25.07	25.01	23.71
Denmark	Danish Krone	6.73	6.85	6.75	6.87	6.84	6.63
Hungary	Forint	300.91	309.27	312.11	327.99	322.36	308.68
Iceland	Iceland Krona	123.35	126.75	134.73	144.23	143.95	135.55
Israel	New Israeli Sheqel	3.46	3.43	3.60	3.57	3.52	3.46
Italy	Euro	0.90	0.92	0.91	0.92	0.92	0.89
Japan	Yen	109.33	110.03	107.49	107.81	107.22	107.59
Korea	Won	1165.55	1195.17	1220.30	1224.46	1229.06	1208.23
Mexico	Mexican Peso	18.78	18.80	22.14	24.10	23.33	22.16
New Zealand	New Zealand Dollar	1.51	1.56	1.65	1.66	1.64	1.55
Norway	Norwegian Krone	8.95	9.29	10.22	10.42	10.09	9.53
Poland	Zloty	3.83	3.92	4.01	4.18	4.16	3.94
Sweden	Swedish Krona	9.50	9.69	9.80	10.02	9.74	9.31
Switzerland	Swiss Franc	0.97	0.98	0.96	0.97	0.97	0.95
Turkey	Turkish Lira	5.93	6.06	6.34	6.85	6.93	6.82
United Kingdom	Pound Sterling	0.76	0.77	0.81	0.81	0.81	0.80
Argentina	Argentine Peso	59.91	61.26	63.02	65.66	67.63	-
Brazil	Brazilian Real	4.15	4.34	4.93	5.32	5.64	-
China	Yuan Renminbi	6.92	7.00	7.02	7.07	7.11	-
India	Indian Rupee	71.31	71.49	74.35	76.24	75.66	-
Indonesia	Rupiah	13732.2	13776.2	15194.6	15867.4	14906.2	-
Russia	Russian Ruble	61.78	63.88	73.15	75.22	72.61	-
Saudi Arabia	Saudi Riyal	3.75	3.75	3.75	3.75	3.75	-
South Africa	Rand	14.40	15.02	16.61	18.58	18.14	-

5. The Effects of the Fiscal Measures Taken by Countries during the COVID 19 Pandemic on Economic Variables

The COVID-19 fiscal measures put in effect by governments towards households and companies were put in three categories (urgent fiscal measures, deferrals, and liquidity provision and credit guarantee) in the second section of this study, and the relationships between these measures and the economic variables that have been analyzed throughout the COVID-19 pandemic were presented.

These relationships were analyzed using the pairwise correlation matrix, which informs us about the direction and the size of the relationship without including any causal relationship between variables. Pearson's (1986) product-moment correlation coefficient ρ is calculated with this formula:

$$\hat{\rho} = \frac{\sum_{i=1}^{n} w_i \left(x_i - \overline{x}\right)\left(y_i - \overline{y}\right)}{\sqrt{\sum_{i=1}^{n} w_i \left(x_i - \overline{x}\right)^2} \sqrt{\sum_{i=1}^{n} w_i \left(y_i - \overline{y}\right)^2}} \tag{1}$$

if the weight (w_i) is not specified, it is considered as one (w_i=1). $\overline{x}$, which is indicating the mean value of x, is calculated with:

$$\overline{x} = \left(\sum w_i x_i\right) / \left(\sum w_i\right) \tag{2}$$

The significance level of the pairwise correlation is calculated with:

$$p = 2 * ttail\left(n-2, |\hat{\rho}| \sqrt{n-2} / \sqrt{1-\hat{\rho}^2}\right) \tag{3}$$

Table 7 presents the correlations and their significances between the variables mentioned in the table of correlations.

Table 7. Correlation Tables of Economic Variables with Fiscal Measures

Variables	Export	Unemployment Rate	Exchange Rate	CPI	Interest Rate	Industrial Production
Emergency Fiscal Measures	0.3084***	0.3989***	0.3016	-0.2291	-0.1032	0.0120
Deferrals	0.2176	-0.1012	-0.4436***	-0.1241	0.2169	0.0114
Liquidity Provision and Credit Guarantees	-0.0913	-0.4213***	-0.3660**	0.1360	0.4163**	-0.4381***

** is shown significance at the 1% level.*

- ***Emergency Fiscal Measures***

According to the correlation table given in Table 7, the only significant correlation coefficients are between emergency fiscal measures, exports, and unemployment rates while the rest are statistically insignificant. There is approximately a 13% positive correlation between emergency fiscal measures and exports, which can lead us to say that emergency fiscal measures can increase exports. However, there is also a positive correlation of 40% between emergency fiscal measures and unemployment. As seen in Figure 6, although these packages have a positive effect on exports, they do not reduce unemployment.

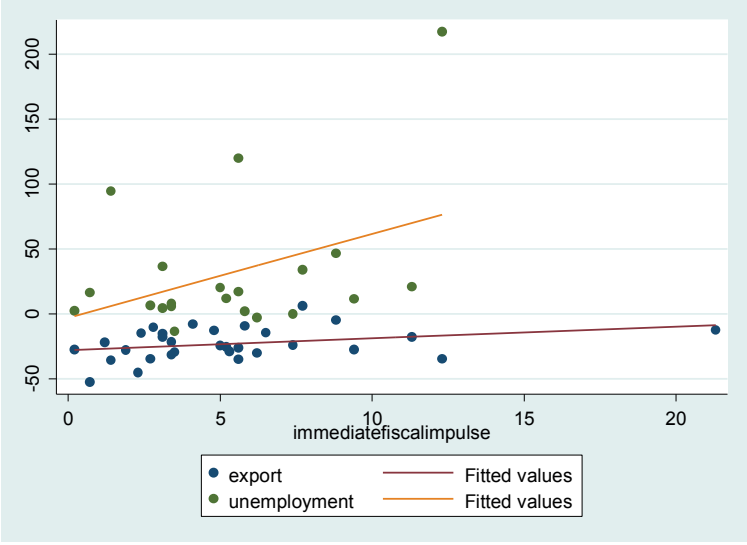


Figure 6. Emergency Fiscal Measures Dispersion Chart

- ***Deferrals***

As seen in Table 7 and Figure 7, there is a negative correlation of 44% between deferrals and increases in exchange rates. Therefore, deferrals can be said to prevent devaluations of the national currency against the US Dollar.

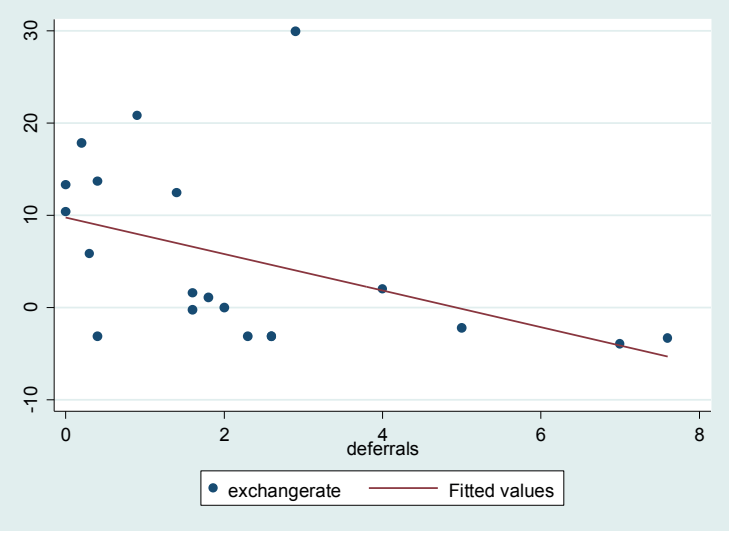


Figure 7. Deferrals Dispersal Chart

Yet no relationship was found between deferrals and the rest of the economic variables.

- ***Liquidity Provision and Credit Guarantees***

Table 7 shows that liquidity provision and credits have a negative correlation with unemployment rates and industrial production while having a positive correlation with interest rates. Although this measure reduces unemployment, it increases interest rates and negatively impacts industrial production. This can be observed clearly in the chart below.

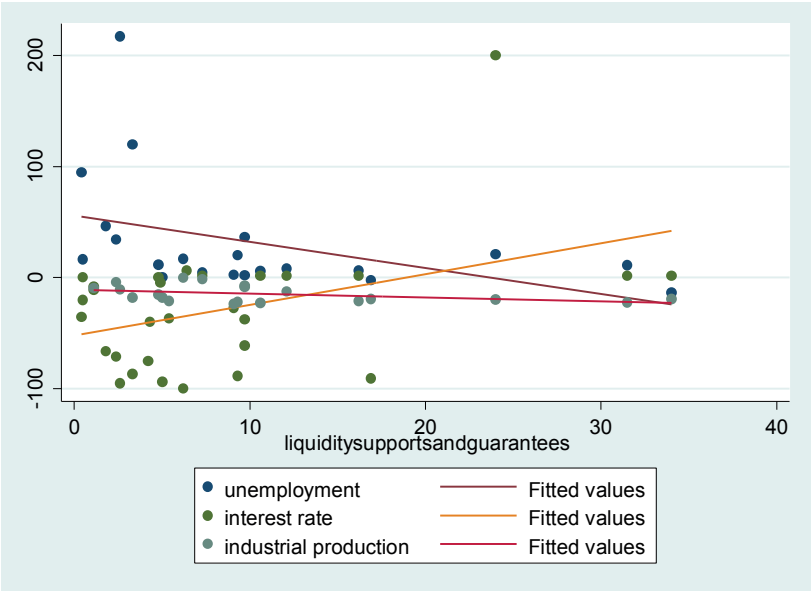


Figure 8. Liquidity Provision and Credits Dispersal Chart

6. Conclusion

The most important terms that combine various aspects of the COVID-19 pandemic are uncertainty and risks that countries face. The state of uncertainty prevails, in terms of human health and other effects of the pandemic. The uncertainties related to economic variables and economic recession risks have increased especially due to the social limitations that aim to prevent the spread of the virus.

Since March 11, 2020, when the World Health Organization announced COVID-19 as a pandemic, every country has been struggling to maintain its social and economic structure. In this process the first duties of the governments are, doubtlessly, the protection of human health and the continuation of healthcare services. Their second duty, then, was implementing fiscal measures in order to mitigate and alleviate the future effects of the economic recession that would arise due to social limitations. While nation-states created different fiscal measure

packages according to their social and economic structures, it was possible to categorize these into three groups. The first fiscal measures as an expansionary fiscal policy has been additional government expenditure, the second being the deferral of contributions and taxes, and the third being export guarantees and liquidity provision and credits from national development banks.

Emergency fiscal measure packages are money spent by governments to stabilize the economy and elevate stagnation in the short run. Since these expenditures require additional funding from outside the budget, they can lead to financial difficulty and budget deficits. According to empirical results, the emergency fiscal measure packages adopted by nation-states in this process led to the resurgence in exports and helped suppress stagnation. In the short run, emergency measure packages do not have a significant effect on other variables. Also, in the short run, they have not had a positive effect on unemployment rates, yet the continuation of the emergency measure packages is anticipated to compensate the stagnation process in the long run.

Another fiscal measure has been deferrals. Deferrals of tax payments and social security contributions have a temporary effect on the deficit and debt and aim to provide liquidity to taxpayers. Social security contributions, certain taxes, debts, and bills have been deferred in order to reduce the burden on companies. Although deferrals create a financing need today, the government will eventually be repaid in the future. The results of the analysis show that deferrals were not related to unemployment in the short run and only found to be negatively related with interest rates. This measure is also expected to affect other economic variables in the long run.

The liquidity provision and credits for households and companies aim to provide funding to the private sector, usually by creating credits and equity. While companies create financial space for themselves, the way these credits and provision are used is also important. According to our analysis, these liquidity provisions and credits help to lower unemployment rates and interest rates. However, they are not helpful in increasing industrial production in the short run.

Our analysis aimed to emphasize the short-term effects of fiscal measures on some economic variables for the time being, using the changes that occurred from January to May or June 2020. Although all these fiscal packages aim to improve the economy, their effects are not always visible in the short run, and long-term effects for a 1 to 2-year period remain uncertain. Fiscal measures are expected to have a positive effect on economic measures while increasing budget deficits. According to IMF and OECD estimates, national budget deficits

will be far more than anticipated. The uncertainty of the duration of the pandemic sustains economic burdens and uncertainty. Among the three categories of fiscal measures, the category that has the highest effect on economic variables is liquidity provisions and guarantees. According to the results of the analysis, liquidity provisions and guarantees are effective in reducing unemployment rates, reducing interest rates, and increasing industrial production in the short run. It is observed that developed countries such as Germany, France, Italy, Japan, and England rely heavily on liquidity provisions and guarantees. Considering that emergency fiscal measures and deferrals will inflame budget deficits and financial problems even further and that they have a weaker effect, our analysis concludes that it will be better to rely on liquidity provisions and guarantees in the short run. For Turkey, it is possible to say that the government chose the right path by allocating the highest share of its GDP for liquidity provisions and credits among these three packages, yet the long-term effects of each fiscal measure package remains uncertain and will be monitored.

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Appendix

Table 8. Share of Financial Measures in GDP (%)

Country	Emergency Fiscal Measures	Deferrals	Liquidity Provision and Credit Guarantees
Albania	1.2	-	1.7
Argentina	2.8	0.0	2.0
Australia	8.8	-	1.8
Bangladesh	1.0	-	-
Belgium	3.4	2.6	12.1
Brazil	6.5	2.9	5.4
Bulgaria	1.7	0.5	4.0
Canada	5.6	4.0	3.3
Chile	7.7	1.6	2.4
China	4.1	1.6	0.5
Colombia	1.4	0.0	0.4
Czech republic	5.0	-	9.3
Denmark	5.8	7.6	9.7
Egypt	1.7	-	0.1
Ethiopia	1.8	-	0.6
Finland	3.1	2.3	7.3
France	2.7	2.6	16.2
Georgia	4.0	-	0.0
Germany	9.4	-	31.5
Ghana	0.5	-	0.3
Guinea-Bissau	2.0	-	2.2
Honduras	2.2	-	2.1
India	1.2	0.3	4.9
Indonesia	2.4	-	1.1
Italy	3.5	0.4	34.0
Japan	11.3	5.0	24.0
Kazakhstan	2.1	-	2.9
Kenya	0.5	0.2	-
Korea	3.1	1.8	9.7
Mauritius	1.7	-	0.9
Mexico	0.7	0.2	0.5
New Zealand	21.3	-	4.2
Nigeria	0.4	-	-
Norway	5.6	-	6.2
Pakistan	2.0	1.2	-
Peru	8.1	1.5	8.9
Philippines	2.2	-	1.0
Poland	7.4	-	5.0
Romania	1.6	-	3.1
Russia	1.9	0.4	1.1
Saudi Arabia	2.3	2.0	0.9
Senegal	2.8	0.1	0.5
Singapore	15.4	-	4.2
South Africa	5.3	0.9	4.3
Spain	3.4	-	10.6
Sweden	5.2	7.0	4.8
Switzerland	4.8	-	6.4
Thailand	8.2	-	3.6
The Netherlands	4.1	4.3	4.1
Tunisia	1.7	0.2	1.1
Turkey	0.2	1.4	9.1
United Arab Emirates	2.1	-	-
United Kingdom	6.2	-	16.9
United States	12.3	-	2.6
Vietnam	1.1	2.4	0.1

Table 9. Change for Economic Variables for Countries

Countries	Export	Unemployment Rate	CPI****	Interest Rate****	Industrial Production
Australia	-4.89	2.0	-	-0.5	-
Austria	-9.04	0.9	0.2	-0.0	-24.3**
Belgium	-21.35	0.4	-0.2	-0.0	-14.2
Canada	-34.82	6.7	-1.0***	-1.5	-19.5**
Chile	-3.93	2.8**	0.2	-1.3	-4.2
Colombia	-35.77	10.2	0.0	-1.5	-
Czech Republic	-24.18	0.4*	0.8	-2.0	-24.7
Denmark	-9.32	0.1	-0.4	0.2	-7.8
Estonia	-14.95	1.3**	-0.9	-0.0	-20.4
Finland	-15.15	0.3	-0.4	-0.0	-2.0
France	-34.80	0.5	0.3	-0.0	-21.8
Germany	-27.45	0.4	1.0	-0.0	-22.7
Greece	-29.41	-1.5*	0.3	-0.0	-6.3
Hungary	-29.65	0.5**	0.5	0.5	-32.8
Iceland	-15.55	0.6	1.9	-1.8***	-
Ireland	8.31	0.8	-0.2	-0.0	-3.1
Israel	-14.07	0.8	-0.3	-0.2	-
Italy	-29.54	-1.2	0.1	-0.0	-20.0
Japan	-17.64	0.5	-0.3	-0.0	-19.4
Korea	-17.66	1.2	-0.9	-0.8	-9.1
Latvia	-14.17	2.9	-0.5	-0.0	-7.9
Lithuania	-14.22	3.0	-0.5***	-0.0	-1.6
Luxembourg	-8.86	1.9	-0.4	-0.0	-21.2
Mexico	-52.45	0.6	-0.2	-1.2	-
Netherlands	-16.23	0.7	0.9	-0.0	-8.1
New Zealand	-12.59	-	-	-0.7	-
Norway	-25.86	0.6**	0.9	-1.5	-0.5
Poland	-23.95	0.0	0.6	-1.6	-22.4
Portugal	-32.73	-0.9	2.2	-0.0	-25.4
Slovak Republic	-31.64	0.4	0.2***	-0.0	-34.6
Slovenia	-22.10	0.6	-0.9***	-0.0	-23.8
Spain	-31.38	0.8	0.4	-0.0	-23.8
Sweden	-25.24	0.9	0.8	0.0***	-17.1
Switzerland	-19.96	-	-0.2	-0.0***	-
Turkey	-27.45	0.3*	6.8	-2.5***	-28.3
United Kingdom	-30.11	-0.1*	0.2	-0.6	-19.4
United States	-34.61	9.8	-0.4	-1.5	-16.2
Argentina	-10.20	-	-	-	-
Brazil	-14.57	-	-0.4	-1.6	-20.5
China	-7.93	-	-3.4	0.0***	-
India	-21.92	-	0.8***	-0.3***	-
Indonesia	-14.93	-	0.5	-0.5	-
Russia	-27.82	-	2.0***	-0.5***	-11.9
Saudi Arabia	-44.94	-	-0.2***		-
South Africa	-28.64	-	-0.3**	-2.5	-

* Since the last announced data belongs to March, February-March difference was calculated.
** Since the last announced data is for April, the February-April difference was calculated.
*** Since the last announced data belongs to May, the difference between February and May was calculated.
**** Since June data is available for many countries, June was taken as the last month, the difference between February and June was calculated.