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The Impact of COVID-19 on Stock Markets: A Study on Selected Countries*

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ABSTRACT

A new virus and the illness caused by it, first appeared in China at the end of 2019, then quickly spread to the rest of the World and became a pandemic. This pandemic has caused a global crisis in many ways including socially, financially, economically but most importantly a health crisis. This pandemic has not only rattled countries' economies but has also impacted financial markets. Whether this impact is positive or negative, the degree of the impact, which countries has been more and less affected, impact with regards to industry segment, whether there's a difference between the impact on developed nations and developing nations requires further research. With that in mind, selected countries' stock markets have been analyzed and interpreted during the pandemic in this research paper using charts created with datas of COVID-19 and stock market indices. According to the findings it can be stated that with the increase in the number of COVID-19 cases and deaths there have been tremendous drops in the stock markets. It has been observed that indices during COVID-19 show a similar trend with the epidemic in some countries.

1. Introduction

The novel coronavirus has first appeared in the Hubei Province of China in the city of Wuhan and has quickly spread to the rest of the World causing a pandemic. On January 30th 2020 World Health Organization (WHO) has announced that an "international public health emergency" and warned nations to take measures to control the spread of the virus. The disease-causing virus has been named Severe Acute Respiratory Syndrome Coronavirus, SARS-CoV-2, and the illness that it causes has been named after the abbreviation of the words "Corona Virus Disease" COVID-19. Although the COVID-19 is caused by a coronavirus similar to MERS and SARS, the main differentiator of COVID-19 is how quickly it has spread. The virus, as can be seen from Figure 1, has swiftly spread to many of the World's countries.

The fast spreading virus has particularly impacted countries such as China, Iran, Italy, and the USA more so compared to the rest of the World. Number of cases is multiplying as days pass and the number of fatalities

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Figure 1: Spread of coronaviruses (*Source:* Wu and Chow [23])

is proportionally increasing with the number of cases. Since it is a novel virus there is not much known about it. New information is obtained from each new experiment and research study. According to research the disease is more common among individuals between 30 and 79 years old with the median age group being 49-59 (Kamer and Colak [17]).

It can be observed the death rate is particularly high among those with chronic illnesses, more specifically, respiratory illnesses. The reason for this is that the virus first clings to the lungs. A vaccine is yet to be found against the virus and the disease it is causing. Research on this subject — the search for a vaccine, scientific research, the search for a treatment method — are ongoing. In times where information on the novel coronavirus changes by the hour, Table 1 shows the number of cases, deaths, recovered individuals, commonness of cases, commonness of deaths, commonness of recovery etc. in certain countries as of April 2020.

As can be seen from the Table 1 the number of cases is 4.521.989 and the number of deaths is 303.082. As per the number of cases the countries most affected by the disease are, in order: USA, Spain, Russia, UK, Italy, Brasil, France, Germany, Turkey, and Iran.

1.1. The Impact of COVID-19 on Economic and Financial Life

As the pandemic spread, the World has adopted precautionary measures and limitations so as to slow down and stop the spread of the disease. Countries have closed their borders, transportation has been limited, events with large amounts of people have been cancelled, state-of-emergency has been declared, governments have imposed a curfew, schools have paused teaching, certain lock-down measures have been imposed. At first glance although the pandemic is a health-related issue, the measures imposed and their consequences have had a deep impact on economic systems. Due to the pandemic many countries' rate of growth have declined, unemployment has increased, and, in particular, tourism and transportation industries has been negatively affected. Considering the lack of of treatment to the novel coronavirus and the disease it is causing as well as the possibility of the treatment not being discovered on time the negative economic impact is expected to continually grow. Each country, in accordance to the strength of its economy, has announced aid package against the negative impacts of the pandemic in order to alleviate the effects. These aids packages primarily address the economic consequences of the pandemic followed by the social consequences.

It is expected that there will be a global recession due to the pandemic. Moreover, there was economic stillness globally even before the pandemic. Therefore, it is expected that the global economy is entering a period of very tough times. The IMF [8], assuming that precautionary measure peak during the 2nd quarter and ease during the 2nd half, global economic growth will be at –3% (on average for developed and developing nations). This growth means a drop of 6,3% in comparison to January 2020. This year growth in developed economies is expected to be $-6,1\%$ and in developing economies is expected to be $-1,0$. In addition, GDP per capita is expected to drop in more than 170 nations. With the assumption that the pandemic ends in the 2nd quarter of 2020, worldwide policies are effective against corporate bankruptcies, extended loss of jobs as well of systemic fiscal pressure global economic growth will recover to 5,8% in 2021. Even still, economic activity is expected to be less than what

Table 1
COVID-19 information regarding countries ordered by number of cases

#	Country	Total Case	New Case	Total Deaths	New Deaths	Total Recovered	Total Tests
#	***World***	***4.521.989***	***96.334***	***303.082***	***5.317***	***1.702.394***	
1	USA	1.457.593	27.246	86.912	1.715	318.027	10.638.893
2	Spain	272.646	1.551	27.321	217	186.480	2.467.761
3	Russia	252.245	9.974	2.305	93	53.530	6.188.102
4	UK	233.151	3.446	33.614	428	N/A	2.219.281
5	Italy	223.096	992.000	31.368	262	115.288	2.807.504
6	Brazil	202.918	13.761	13.993	835	79.479	735.224
7	France	178.870	810.000	27.425	351	59.605	1.384.633
8	Germany	174.975	877.000	7.928	67	150.300	3.147.771
9	Turkey	144.749	1.635	4.007	55	104.030	1.508.824
10	Iran	114.533	1.808	6.854	71	90.539	643.772
11	China	82.929	3.000	4.633	-	78.195	-
12	India	81.997	3.942	2.649	98	27.969	1.947.041
13	Peru	80.604	4.298	2.267	98	25.151	587.292
14	Canada	73.401	1.123	5.472	170	36.091	1.169.380
15	Belgium	54.288	307.000	8.903	60	14.111	623.628
16	Saudi Arabia	46.869	2.039	283.000	10	19.051	513.587
17	Netherlands	43.481	270.000	5.590	28	N/A	282.776
18	Mexico	40.186	1.862	4.220	294	26.990	142.204
19	Chili	37.040	2.659	368.000	22	15.655	325.417
20	Pakistan	35.788	490.000	770.000	9	9.695	330.750
21	Ecuador	30.502	16.000	2.338	4	3.433	88.923
22	Switzerland	30.463	50.000	1.872	2	27.100	328.163
23	Sweden	28.582	673.000	3.529	69	4.971	177.500
24	Portugal	28.319	187.000	1.184	9	3.198	582.341
25	Qatar	28.272	1.733	14.000	–	3.356	143.938
26	Belarus	26.772	947.000	151.000	5	8.168	308.156
27	Singapore	26.098	752.000	21.000		5.973	224.262
28	Ireland	23.827	426.000	1.506	9	19.470	258.808
29	UAE	21.084	698.000	208.000	2	6.930	1.560.923
30	Bangladesh	18.863	1.041	283.000	14	3.603	151.930
31	Poland	17.615	411.000	883.000	22	6.696	554.357
32	Ukrain	16.847	422.000	456.000	17	4.143	202.495
33	Israel	16.579	31.000	265.000	1	12.521	485.922
34	Romania	16.247	245.000	1.053	17	9.053	286.217
35	Japan	16.120	71.000	697.000	19	9.868	233.144
36	Austria	16.058	61.000	626.000	2	14.405	344.606
37	Indonesia	16.006	568.000	1.043	15	3.518	173.690
38	Colombia	13.610	680.000	525.000	16	3.358	165.738
39	South Africa	12.739	665.000	238.000	19	5.676	403.018
40	Quwait	11.975	947.000	88.000	6	3.451	231.930
41	Philipinnes	11.876	258.000	790.000	18	2.337	189.469
42	Republic of Dominican	11.320	124.000	422.000	13	3.351	47.774
43	South Korea	10.991	29.000	260.000	1	9.762	711.484
44	Egypt	10.829	398.000	571.000	15	2.626	105.000
45	Denmark	10.713	46.000	537.000	4	8.805	357.986
46	Serbia	10.374	79.000	224.000	2	4.084	162.797
47	Panama	8.944	161.000	256.000	4	6.067	45.873
48	Czechia	8.351	82.000	293.000	3	5.241	334.714
49	Norway	8.196	21.000	232.000	3	32.000	212.655
50	Argentina	7.134	255.000	353.000	24	2.385	93.673

Source: https://www.worldometers.info/coronavirus/, 30.04.2020

was planed and expected for 2021 before the occurrence of the pandemic. Moreover, the pandemic will have a 9 Trillion USD negative impact on global GPD in years 2020 and 2021. The pandemic has negatively impacted all countries' growth expectation and it has become certain that developed nations will enter recessions. Starting with China, an imbalance in supply and, later, demand has caused global chaos. China's 1st quarter is expected to be around –9%; however, other developed nations will probably see the negative effects in the 2nd quarter. When considered from a sector-based approach it can be observed that industrial production has significantly slowed down, tourism and air travel have decreased almost to the point extinction.

The 2nd main effect of the pandemic has been to the labor markets. Short-time employment, working-from-home, furloughs, lay-offs have been implemented and these measures have vastly affected the labor market and the laborer. Due to global economic standstill many people have lost their jobs and continue to lose their jobs. International Labor Organization expects that approximately 25 million people worldwide will lose their jobs due to the pandemic. There is almost no doubt that poverty will increase given that many people even while working can barely make ends meet. Right now there are a few scenarios for how an increase/decrease in GDP will affect unemployment. As shown at Table 2, these are as follows: (ILO [7]; Özdemir [20]):

- *Low Scenario:* When global GDP growth decreases by 2% unemployment will increase between $3,5$ and 7 Million people. According to calculations it is expected that the rise in unemployment will be $5,3$ million people.
- *Middle Scenario:* With global GDP growth decreasing by 4% global unemployment is expected rise between $7,7$ and $18,3$ million people. According to these calculations global unemployment will rise by 13 million people.
- *High Scenario*: With the assumption that the pandemic has highly destructive consequences and a drop in global GDP growth by 8%, global unemployment is expected to rise between 13 and 36 million people. According to the worst-case scenario the increase in unemployment is expected to be 24,7 million people.

Table 2
Global GDP and unemployment forecast scenarios

	World GDP Growth Decline	Global Unemployment Growth Range (million person)	Estimated Unemployment Growth Rate (million person)
Low	%2	3,5-7	5,3
Medium	%4	7,7-18,3	13
High	%8	13-36	24,7

Source: International Labour Organizaton [7]; Özdemir [20]

In the case of Turkey, the sector that will be most impacted by the COVID-19 pandemic is tourism and lodging. The tourism industry is a crucial sector in Turkey as it employs a large number of people and it strengthens foreign currency reserves. On the other hand, pharmaceuticals, industrial production, energy, chemistry sectors have been less impacted by the pandemic. Moreover, it's fair to say that these sectors, in some cases, have been positively impacted by the pandemic. According to the study, over 80% of participants believe that the Turkish economy will be greatly impacted by the pandemic and that they expect a 3% shrink in the Turkish economy. In the same study, participants have stated for the economic consequences of the pandemic to go away 12 months is necessary and that their respective sectors have been relatively as well as severely impacted (KPMG [19]). According to a study conducted by EY [6] 73% of participants expect the pandemic have a significant negative impact on the global economy and that their profit margin will be that of 2 years ago or below. In the research, enterprises are undergoing evolution programs, are more frequently conducting strategic and portfolio analyses as well as looking into acquitions opportunities in the upcoming 12 months. These results provide a different perspective: the pandemic is creating an environment for evolution and change for enterprises.

Around the globe financial markets are also affected as much as the real economy from such developments. It is known that, according to Efficient Markets Hypothesis, financial markets are directly impacted by positive and negative news. In global financial markets investors' behavior is affected by political, technological, natural, economic as well as relocation-related developments. In particular with the advancement of information technology, information has started to spread quickly reaching large quantities of people. As an effect, financial markets have become become more fast-pace. With the 1990's there has been a advancement in information technology. With this advancement, financial services firms, banks, intermediaries, and insurance firms have been forced to utilize alternative distribution channels. What was at first being used due to the cost advantages it provided has evolved into marketing campaigns with the goal of customer acquisition. This has even more so increased with the advancement of social media. Later foreign exchange markets, cryptocurrencies, and industry 4.0 has come into play.

Precautionary measures such as state-of-emergency, curfew, work-from-home, and short-time work have impacted economic life from ground up. This impact is expected to last. Unlike the effects of other contagious epidemic diseases such as Sars, Mers, Ebola, Zika, Aids, and Influenza which were felt more at local levels the effects of Sars-Cov-2 has been felt on the global economy and global markets. Since the effects of the pandemic are at a global level, it can be stated that it is leaving a stronger impact than other coronaviruses on countries' economies and financial markets. A spree of selling has started in the Far East stock markets and spread to the US stock markets. During this time the dumping of stock has led to the stock markets to lose value and investors seeking steadier investments have decided to invest in the US Dollar, gold, and US Treasury Bonds. Similar to the stock market, there has been a withdrawal from cyrptocurriencies starting with Bitcoin.

As per China's global position regarding production and supply chain, there has been worry that the impact of the novel coronavirus will be stronger than previous coronaviruses. Based on this, it is expected that the economic impact on China's economy and financial markets will be felt globally in every country and that growth will decrease. As the impact of the pandemic spreads throughout the globe, the main focus of countries and businesses has become societal security and health. With that being said, the impact of the pandemic on economic growth and business profitability is causing a spree of stock dumping (Arslan [2]). The general viewpoint is that investors during times of such crises should avoid investing in stock markets and should stick to investing in the gold markets. Such a strategy is thought to be better in the long-term. In addition, since the possibility of the World becoming Internet-based also exists, cryptocurrencies are thought of being another option for investors.

As soon as the World Health Organization announced the epidemic as a pandemic on March 11th stock markets, starting with the US stock markets, have suffered significant losses. Even countries which lead the global economy have entered an ambiguous phase with regards to fighting the disease. This ambiguous phase, in return, has lead to tremendous inconsistency in the markets. 20 countries which are on top of the list of the number of COVID-19 cases have experienced an average of a 30% drop in their stock markets (Kaplıca [18]). The Turkish stock exchange, Borsa Istanbul, is also feeling the effects of the novel coronavirus. According to Peker [21], the returns of stocks Show variability based on their technology levels, relationship with globalisation, and product and human activity. In this regard:

- "Food", "textile", "forestry, paper, printing", "construction", "retail commerce", "hospitality", "real estate investment trusts", "transportation", "banking", "insurance", and "technology" industries have first been positively impacted with the origination of the disease in China; however, have negatively been impacted after the spread of the virus into Turkey on March 11th 2020.
- Industries that are highly technologically-based such as "chemistry", "metals", "metal goods", "industry based on rock and soil", "wholesale commerce", "sports" have not been negatively impacted with the origination of the disease in China but rather with the what has happened in Turkey.
- "Holding companies", "financial services", "financial leasing" industries which are heavily dependent on international trade and commerce have directly taken a hit with the origination of the disease in China. These industries are observed to be linked to the global situation and less so linked to the situation at a national level.
- "Electricity, gas, and steam" industries which employ a low quantity of people have been observed to showcase steady growth regardless of the effects of the pandemic.

Around the globe in stock markets investors are dumping stocks in fear and panic and leaning towards different investment vehicles due to the ambiguity and negative feelings that exist. Certain investor features play a role in investments and the decision-making process. For example, while certain investors can showcase more risk-tolerant behavior, others act more risk-averse and conservative. In this regard, it is important to analyze investors' behavior from a financial theories perspective. In particular in times of war, natural disaster, and pandemics investors' behavior can directly affect financial markets. It is possible that such an effect is in play during this pandemic.

Investors' behavior towards risk affects their investment decisions. As a rule of thumb, investors prefer the low-risk alternative between 2 options with the same return profiles and the higher-return-yielding alternative between 2 options with the same amount of risk. Apart from this, investors can be classified into 3 groups: risk-loving, risk-averse, and risk-neutral. The general rule is that investors are risk-averse with the investment decision-making (Özkan [9]). With coronavirus and the COVID-19 pandemic global economies have been negatively impacted and risk has become wide-spread. With increased risk investors have started seeking safer investment vehicles. From this standpoint, it can be stated that stock markets have directly been negatively affected by the coronavirus and the pandemic. In this regard, in the rest of this study stock market indices movements have been analyzed and interpreted together with COVID-19 data.

2. A Study on the Impact of the COVID-19 Pandemic and It's Effect on Global Stock Markets

2.1. Purpose, Methodolody and Limitations

The purpose of this study is to take a look into the effect of the pandemic to selected countries' stock markets. In this study not only the 8 countries, USA, UK, Japan, Germany, France, Spain, Italy and China that have been among the countries most affected by the pandemic — which happen to lead the global economy — but also Turkey's COVID-19 and stock market data have been included. The indices that used in this study are USA-Dow Jones, UK-LSE, Japan- NIKKEI, Germany-DAX, France-CAC, Spain-IBEX, Italy-FTSE MIB, China-SSEC and Turkey-BIST. In this study data have been analyzed by forming graphs according to upwards/downwards skewness. The limitation of this study is that only 9 countries have been included in the study. Also, since the future of the pandemic is unknown the study only includes the origination of the disease in the given country until the 50th day thereafter. Another limitation is that, there is no data available for the days the stock markets are closed during weekends and due to the pandemic. These days have been normalized and included in this study.

2.2. Results

2.2.1. USA

In the US the pandemic has affected supply chain, air-land-water transportation, tourism, and consumer demand creating a supply and demand imbalance. With the pandemic there has been high amounts of petroleum supply but low demand. With petroleum prices decreasing, in order to protect the price of petroleum OPEC and Russia have met to no avail. The disagreement between Saudi Arabia and Russia has caused crude oil prices to dip to previous levels. The dip in petroleum prices has been recorded as the sharpest since January 1991 at the beginning of the Gulf War. After this US stock markets have severely been impacted which led to a pause of trading on Wall Street to avoid abrupt decreases. The markets has witnessed the strongest decrease since the 2008 Global Financial Crisis. Investors have dumped corporate stocks and bonds and leaned towards treasury bills.

The Federal Reserve, came together under extraordinary circumstances due to the impact of the coronavirus and has decided to drop interest rate by 50 basis points. With this decision, interest rates have been puled back to 1-1,25%. The FED has not came together under such circumstances since the 2008 Global Financial Crisis and hasn't cut interest rates in such a fashion. If the disease continues, it is expected that unemployment rises to 15% by May and the country will suffer from recession. By leading COVID-19 cases and deaths globally USA is trying to limit the economic and social impacts of the pandemic with 2 Trillion USD of aid. With regards to the statements above, the relationship between the total number of cases, new cases, total number of deaths, new deaths and the Dow Jones index has been shown in Chart 1.

Chart 1: USA stock market and COVID-19 cases-deaths

When Chart 1 is observed, it can be seen that with the occurrence of the 1st case in the USA Dow Jones has started to fall; after the 2nd week it has bounced back up; and, afterwards, apart from small ups and downs has been steady. A severe decrease after the 31st day occurred, becoming even stronger after the 34th day and a strong decrease has occurred in the week following. During the same time the number of COVID-19 cases have tripled. In addition, on March 3rd 2020 with the announcement that the Federal Reserve decreased interest rates the index has gone up by 1.000 points and on March 7th 2020 after the results of the OPEC meeting the index dropped 2.000 points.

2.2.2. UK

According to the UK Office for Budget Responsibility announcement, as long as COVID-19 battling precautionary measures are in effect for 3 months the country faces an expected economic loss of 35%. The budget deficit is expected to rise 14% to the highest level ever since the 2nd World War. The UK government has to-date announced 400 Billion USD worth of aid. This aid equals 15% of the countries GDP.

The fact that there was no consensus reached between Organization of Petroleum Exporting Countries and other countries which produce crude oil about decreasing supply of petroleum has caused abrupt sales in the stock markets that were already experiencing fear due to COVID-19. The drop in stocks has become even more noticeable with USA President Donald Trump's decision to ban air travel from EU countries. With regards to the statements above, Chart 2 shows the relationship between total number of cases, new cases, total number of deaths, new deaths and the London Stock Exchange.

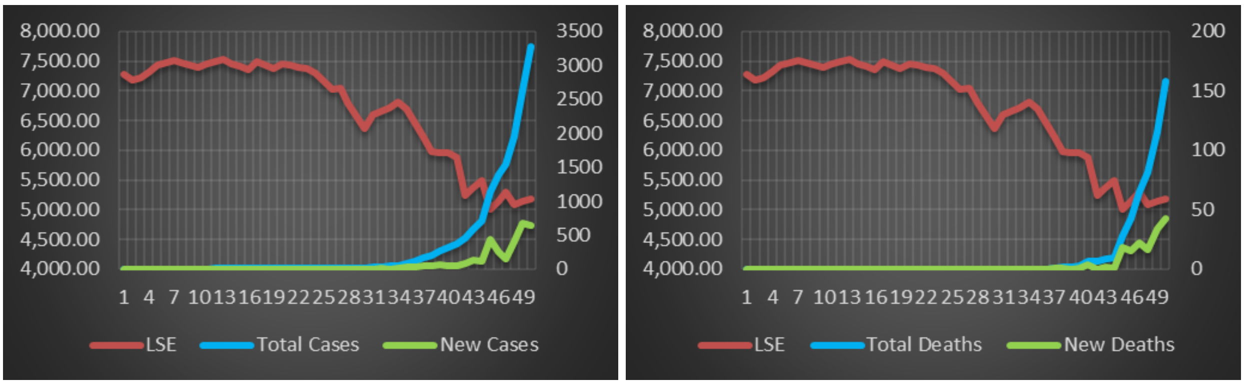

Chart 2: UK stock market and COVID-19 cases-deaths

It can be observed from Chart 2 that with the occurrence of the 1st COVID-19 case, the drop in LSE has started. Only after the 4th week there has been a slight bounce back up. After the 33rd day, with the rise of the number of cases and deaths there has been a significant decrease in the stock market. On March 7th 2020 with the results of the OPEC meeting the stock market index which was at 6.462,55 dropped to 5.965,77. In addition the stock market index has not been affected by Trump's travel ban; however, has partially dropped on March 17th 2020 with the announcement of the aid package.

2.2.3. Japan

Japan is one of the countries where the number of deaths decreased more slowly. With the announcements of the spread of the disease the Japanese Nikkei index has started to decline. It is assumed that the annoucement of USA President Donald Trump stating that the 2020 Summer Olympic Games which were to be held in Tokyo can be postponed played a role in this decline.

As per the impact of the disease, the February 2020 imports of Japan have decreased by 14% in comparison to the same month of the previous year. It is of value to underline that imports from main trade partner China has decreased by 47%. JP Morgan expects fort he Japanese economy to shrink by 17% in the 2nd quarter and by 4,4% in 2020 altogether. In order to alleviate the impacts of the pandemic and the precautionary measures, Japan has announce an aid package totaling 1 Trillion USD. This aid package equals 20% of the entire countries production. With regards to the statements above, the relationshi between the total number of cases, new cases, total number of deaths, new deaths and the Nikkei index have been showcased in Chart 3.

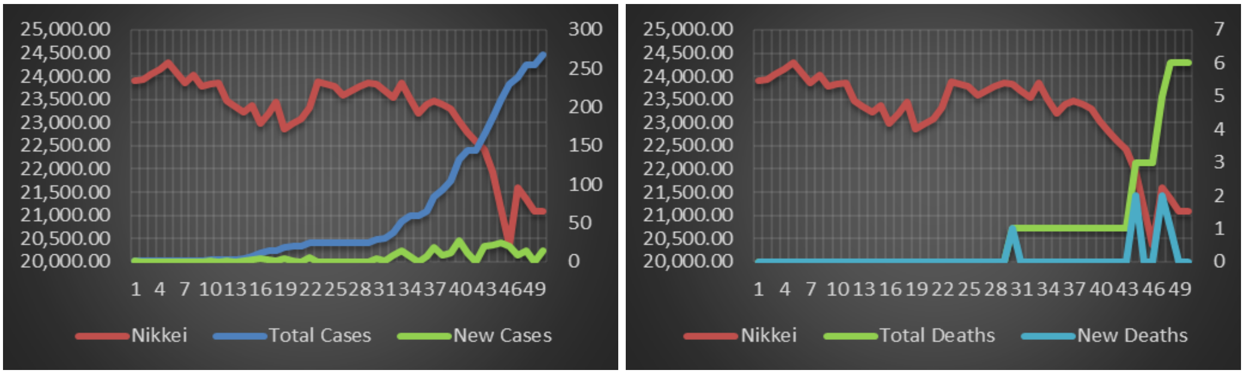

Chart 3: Japan stock market and COVID-19 cases-deaths

When Chart 3 is observed, it can be seen that with the occurence of the 1st case the has been a decline in the Nikkei Index. After the 2nd week there has been a partial rebound. After the 33rd day, with a significant increase in the number of cases and number of deaths, the index has dropped severely. After the 45th day, there is partial recovery.

2.2.4. Germany

Even though the occurrence of the disease in January and February 2020 in Germany has not slowed down economic performance significantly, it can be observed that the disease has negatively impacted the 1st quarter of 2020. The Federal Office of Statistics has announced that GDP has decreased by 2,2% in comparison to the last quarter of 2019. This is the largest drop in GDP since the Global Financial Crisis and the 2nd largest since the unification of Germany. The leading economy of the EU, Germany has announced an aid package totaling 750 Billion Euros. As per this aid package, small businesses and entrepreneurs can collect direct aid upto 15,000 Euros. With this aid package, Germany is in debt fort he 1st time since 2013.

With no concensus being reached between OPEC and non-OPEC countries that produce petroleum, there has been a drop in the stock market (due to dumping of shares) which has already been experiencing tremendous fear due to COVID-19. With regards to the statements above the relationship between the total number of cases, new cases, total number of deaths, new deaths and the DAX Index has been shown in Chart 4.

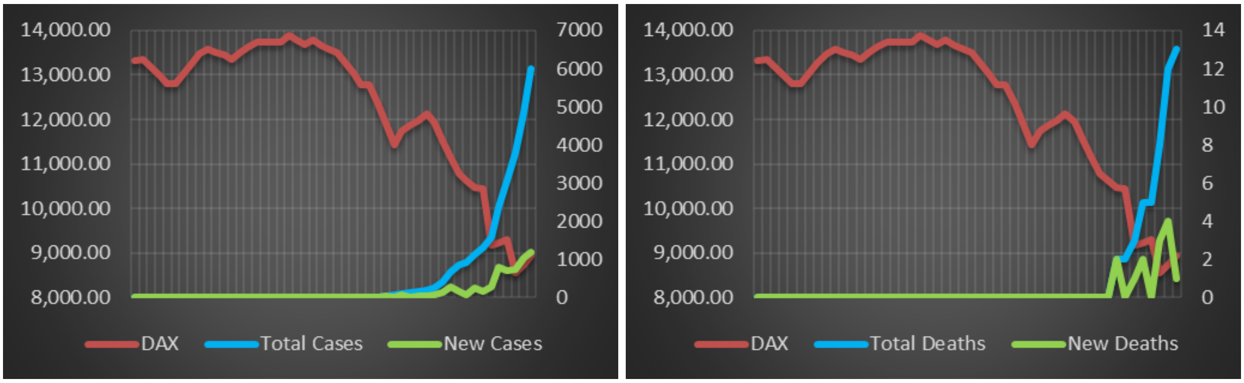

Chart 4: Germany Stock Market and COVID-19 Cases-Deaths

When Chart 4 is observed, it can be seen that particularly after the 21st day which is when cases and deaths increased significantly, there has been a noticeable drop in the German DAX Index. After March 7th 2020, the index which was at 11.541,87 dropped to 10.625,02.

2.2.5. France

The French Central Bank, announced on April 8th 2020 that due to the pandemic and it's effects that the French economy is expected to shrink by 6%. This growth rate is the lowest in the country since 1945 in any given quarter. The industries that are expected to be hit the hardest by the pandemic are construction, transportation, and hospitality. Due to the pandemic the budget deficit has become an all-time high since the 2nd World War. Inflation in 2020 is expected to be 0,5%. The main reason for this expectation is the drop in oil prices. Therefore, the main concern of the government is more so the bottleneck that certain subgroup of industries in the economy will face more so than inflation. Thus, it has been decided that all industries will be supported with the following mechanisms: tax postponement, partial unemployment, solidarity fund, and credit guarantee. In total, 345 Billion Euro worth of aid has been announced. After the lack of consensus between OPEC and non-OPEC countries, there have been abrupt sales in the stock market with the given concerns due to the COVID-19 pandemic. With regards to the statements above, Figure shows the relationship between total number of cases, new cases, deaths, new deaths and the FTSE MIB Index.

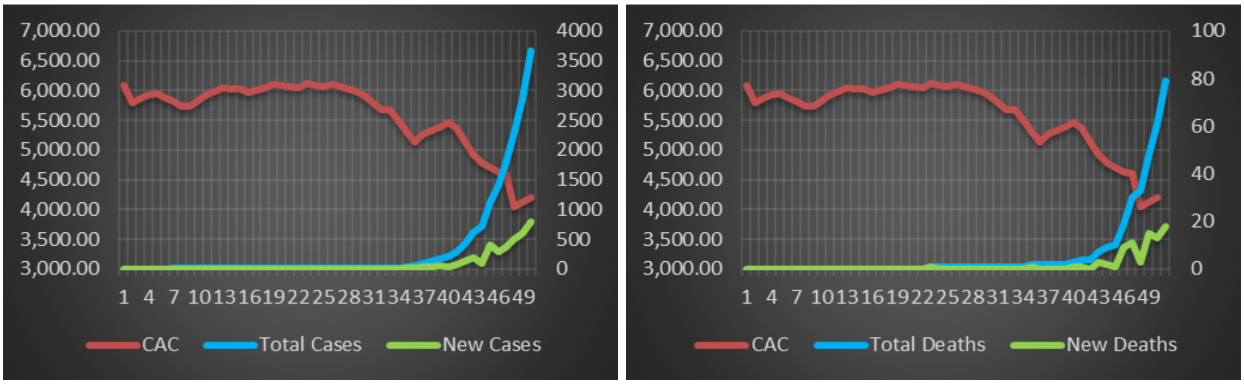

Chart 5: France stock market and COVID-19 cases-deaths

As can be seen from Chart 5, the French stock market was relatively steady until the 25th day after which there was a significant drop in stocks. This drop has intensified after the 41st day. On March 7th 2020 after the OPEC meeting the CAC Index dropped approximately 9%.

2.2.6. Spain

The Spanish Stock Market was relatively steady until the 2nd week after the 1st occurrence of a case in the country after which there was a significant drop in the stock market index due to the high number of cases and deaths. The government decided that the pandemic poses a threat to Spanish firms trading on the Stock Exchange and has taken some measures. According to these measures when a foreign investor (any investor residing in a non-EU or non-EFTA (European Free Trade Agreement) country wants to directly invest more than or equal to 10% of the company's equity or there is the chance that the investor will take over the management of the Spanish company trading on the Spanish Stock Exchange, the trade will be put on hold due to public security and order concerns. Similarly, investments from foreign government corporations, or 3rd party countries' funds will be put on hold.

Spain has announced a 200 Billion Euro package against the negative impacts of the pandemic. The breakdown of the package is as follows: 100 Billion Euros will be lent to companies under government guarantee, 17 Billion Euros will be taken from the state budget and 83 Billion Euros will be obtain from private corporations. The stated amount equals about 17-20% of GDP. In Spain, one of the industries that will most negatively be affected by the pandemic is tourism. Tourism makes up about 12-13% of Spain's GDP is expected to lose 40 Billion USD during 2020 due to the pandemic. Also the government imposed a law in order for employees not to be laid off during the pandemic. According to this law companies which take advantage of ERTE (a special clause that can be taken advantage of during first majeure cases such as the pandemic) do not have to pay insurance premiums to the government for the given employees. The Spanish Central Bank announced that due to the pandemic the economy will shrink upto 13,6%. With that being said, it seems as if Spain will be one of the most affected European countries. With regards to the statements above Chart 6 shows the relationship between total number of cases, new cases, deaths, new deaths and the IBEX Stock Index.

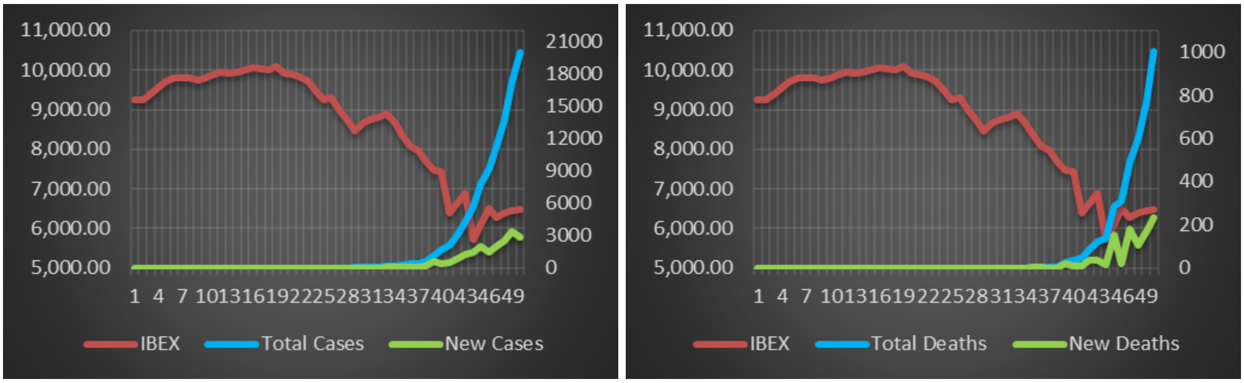

Chart 6: Spain Stock Market and COVID-19 Cases-Deaths

When Chart 6 is observed it can be seen that particularly after the 18th day there has been a significant drop due to the number of deaths and cases rising. This drop has continued until the 45th day. After the 45th day there has been slight recovery. After the announcement of the economic aid package the IBEX Index has risen by 398 points.

2.2.7. Italy

Italy is one of the non-Asian countries experiencing the most number of infected people. As the EU's 3rd largest economy, it has been one of the slowest growing countries in the region. Italy has grown by a mere 0,3% during 2019 and despite the negative atmosphere the government expects a 0,6% growth in 2020. International credit rating agency Moody's has stated that the effects will be felt more so during the 2nd quarter and has dropped Italy's expected growth rate from 0,5% to $-0,5\%$. In order to palliate the effects of the pandemic Italy has announced aid packages totaling 25 Billion Euros. In addition, the government has announced that they have postponed many loan payments, including mortgages. The lack of consensus on decreasing petroleum supply during the meeting between OPEC and non-OPEC countries has caused abrupt sales in the stock market as it was already facing worry due to pandemic. Chart 7 shows the relationship between FTSE MIB Index and the total number of cases, new cases, total deaths, and new deaths.

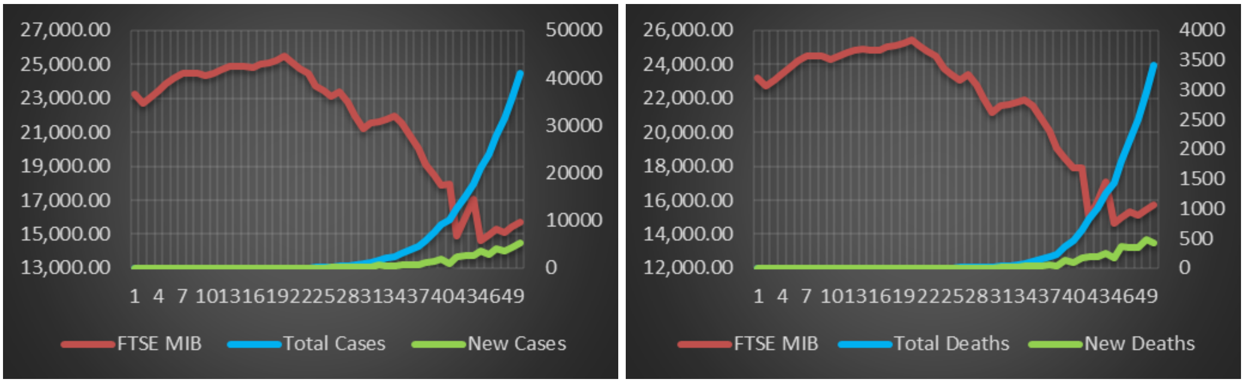

Chart 7: Italy Stock Market and COVID-19 Cases-Deaths

When Chart 7 is observed it can be seen that particularly after the 18th day, with the rise of number of cases and deaths the FTSE MIB stock index has declined. This decline has continued until the 45th day and after the 45th day there has been recovery. On March 7th 2020, with the announcement of the OPEC meeting the index has dropped from 20.799,89 to 18.475,91. After March 16th, with the announcement of the aid package, the index has shown steady growth. In Italy, the stock market has reacted similarly to the Spanish Stock Market.

2.2.8. China

As the origination point of the disease, China is one of the mostly affected countries. Since China is where the disease first was discovered, it's economic impact has been on China. China, fort he 1st time in 30 years, has experienced a shrinkage in industry and the countries economy has shrunk by 10% in the 1st quarter alone. Also, emission have decreased 25%. The main reason fort his is that the virus has affected consumer spending and Chinese spending on travel. Even though China is the leading nation with regards to production industry, many factories have had to halt (pause) operations. Also, the trade war between the USA and China has negatively impacted Chinese exports. The trade war between the 2 countries has also negatively impacted global economic growth as well. The economy which has grown by 6,1% in 2019 it at its 30-year all-time low.

In order to battle the virus, China has put aside 183 Billion USD. In this regards, the prevention of the spread of the disease, controlled spending increase, the increase of production of medical equipment, the expedition of payment of unemployment premiums, and tax discounts are being foreseen. China is expected to fuel it's economy with the low prices of oil as it has already taken the spread of the disease under control. Chart 8 shows the relationship between the SSEC Index and the total number of cases, new cases, deaths, new deaths.

Chart 8 shows that during the 1st few days of the disease there was horizontal movement in the index; however, after the 3rd week of the epidemic there has bee a sudden drop. After the 35th day of the disease, recovery has been observed.

2.2.9. Turkey

In terms of the occurrence of deaths due to the disease Turkey provides a similar scenario to China. The fact that Turkey is a regional power with regards to food production and the fact that Turkey has adopted an economic growth model based on exports is one of Turkey's strengths during the COVID-19 crisis. During the entire crisis, there is no expected shortage of food supply. The strong and flexible production industry is capable of producing

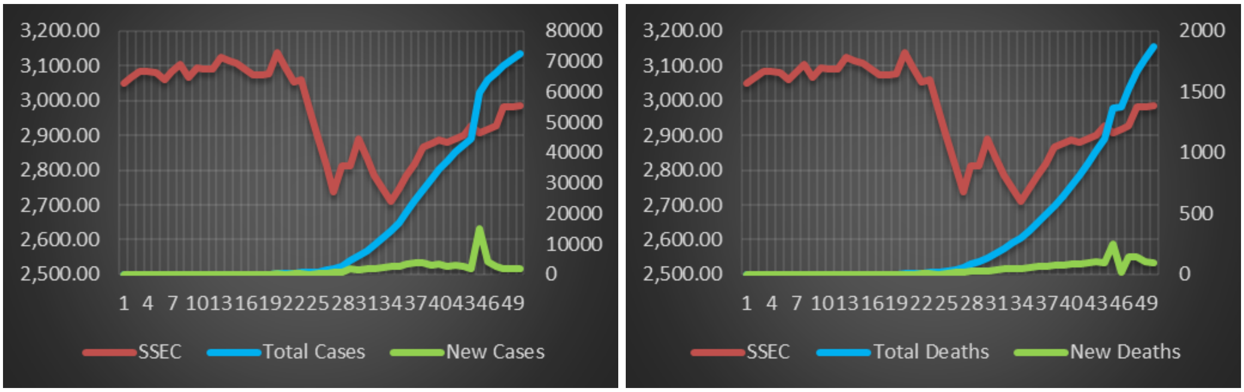

Chart 8: China stock market and COVID-19 cases-deaths

ventilators, masks, medicine as well as disinfectants in the shortest amount of time. Thanks to it's production capabilities, Turkey has been able to send medical aid to over 30 countries. In the past years, Turkey has built and started operating government-owned "City Hospitals", some of Europe's largest medical complexes. These hospitals have many intense care units. Strong and organized health care administration and the experience and care of health care professionals are Turkey's strengths during the combat around the disease (Demir [4]). The IMF, in it's Global Economic Outlook report, has stated that the Turkish economy will shrink this year by 5% and that employment will rise to 17,2%. The World Bank and Goldman Sachs have also decreased their 2020 expected economic growth in Turkey. Since Turkey's largest trade partners are European countries and since European countries have become the center of the pandemic, there has been a tremendous decrease in demand from Europe. The tourism/hospitality industry is at the forefront of industries that will be affected by the pandemic. The tourism industry is a vital industry fort he Turkish economy as it not only employs many number of people but it also provides the country with foreign currency reserves. To palliate the negative economic consequences of the pandemic Turkey has announced an aid package "Economic Stability Shield", worth 100 Billion TRY. With the trickle-down effect, the entire package is expected to have an impact of about 400-500 Billion TRY. With the aid package industries such as retail, commercial real estate (malls), automotive, and logistics have been allowed to postpone their taxes withheld, VAT and Social Security Taxes by 6 months. In order for companies not to experience cash flow issues, companies' loan payments to banks have been postponed by 3 months. Chart 9 shows the relationship between the BIST Index and the total number of cases, new cases, deaths, new deaths.

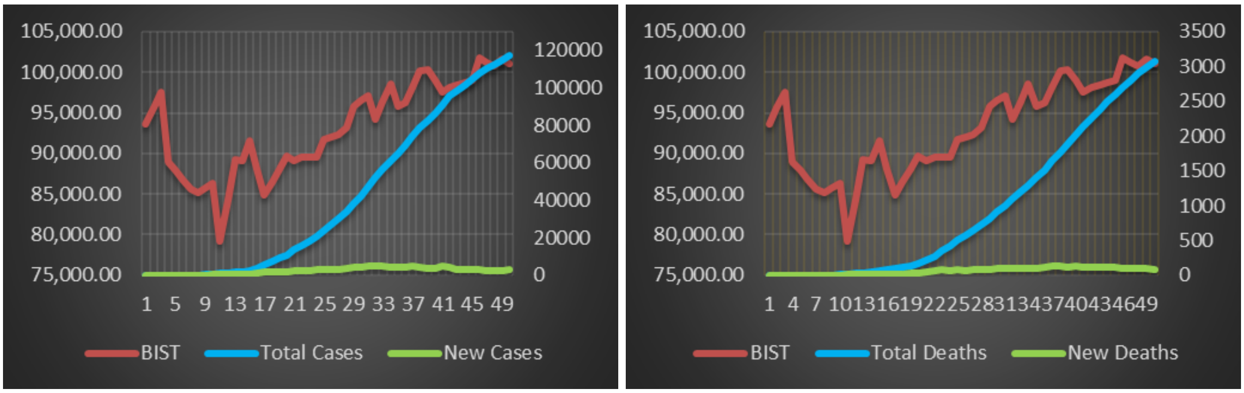

Chart 9: Turkey stock market and COVID-19 cases-deaths

Based on Chart 9, with the announcement of the spread of the disease, unlike in other countries, there has been an abrupt drop in the index. The index entered recovery after the 17th day. In the following days, despite the increase in the number of cases and deaths, the stock market continued to rise. After the announcement of the economic aid package on March 8th 2020, the index dropped by 350 points. The reason for these movements is the general belief that the stock market dropped too much with the announcement of the 1st case. Foreign investors prefer to invest in BIST as a high-yield investment vehicle. In the following days, the reason for the increase in the stock market can be that the index and stock provided an attractive purchase opportunity for foreign investors.

The results of our study support this claim. All the data belonging to the 9 countries can be seen together in Chart 10. As can be seen from the Chart 10, the only stock exchange that partially differentiates itself from the rest is BIST.

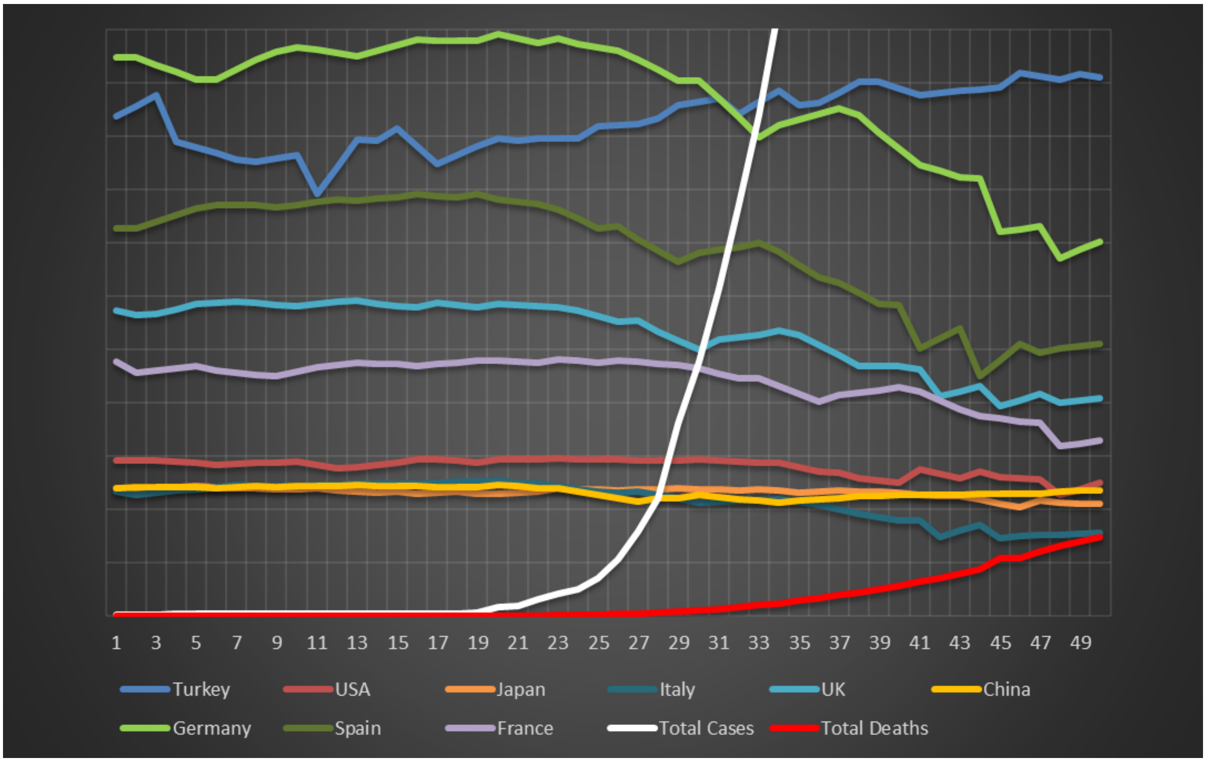

Chart 10: World stock markets and COVID-19 cases-deaths

It is striking that the index trend follows a similar path with the epidemic in Italy, Spain, France, Germany and England. In the USA and Japan, it is observed that the index is trying to hold on to the current level by experiencing fluctuations, but the vertical increases in the number of cases and deaths have fallen sharply together. According to the chart in China, the epidemic period can be divided into three. In this context, it is seen that the increase with a horizontal and low slope in the first period experienced sharp decreases and increases in the intermediate period, and finally it started to increase again in a balanced way. The index in Turkey in the first ten days of the cases, unlike other countries in a choppy fashion has soared after slows down the slope. According to study of Zeren and Hizarcı [24] on the total daily number of cases and deaths and it's potential effects on stock markets, different stock exchanges move and react together with regards to the number of deaths. Findings obtained in this study confirmed their conclusion but reached a conclusion that a different situation exists for Turkey. In the stock market index movements, it can be said that the steps taken by countries towards the epidemic do not have a positive effect. Although the meetings or statements on a global basis have a very partial positive effect on some country indices, it is seen that they cannot go beyond contributing to the decrease in general and cannot produce a solution. For example, following the failure to cut production at the meeting of the Organization of Petroleum Exporting Countries (OPEC) and some non-OPEC crude oil producing countries, COVID-19 has caused hard sales in the stock markets that are already uneasy. The declines increased further after US President Donald Trump restricted travel from the European mainland to the country in an effort to prevent the spread of the coronavirus.

3. Conclusion

At the end of 2019 the World has come across a novel coronavirus that causes a disease which spread all around the World. The spread of this disease has become a pandemic. Humanity doesn't know when it will end, there is no specific cure/treatment method, and the number of cases as well as deaths is increasing by the thousands.

Shaking the global economy, the pandemic has affected commercial, social, financial and other forms of life. Due to the pandemic there is a search for a security blanket in the markets, change in investment vehicles, capital exiting the markets, global trade coming to a standstill, and credit ratings are negatively affecting countries' economic situations.

In this study, the effect of the pandemic on selected countries' stock exchanges has been researched. In general, when the findings are analyzed as a whole it can be stated that with the increase in the number of case and deaths there have been tremendous drops in the stock market (with the partial exception of BIST). It has been observed that indices show a similar trend with the epidemic in Italy, Spain, France, Germany and England. In these countries, the index was not affected much at the beginning of the pandemic process, and there were decreases due to the increase in the number of cases and deaths. In some countries such as the USA and Japan, it was observed that the index fluctuated initially during the pandemic process, and the vertical increases in the number of cases and deaths fell sharply together. In this context, it can be said that the US and Japanese stock exchanges differ from the stock markets of other countries in this way. In the first period of the pandemic process in China, there was an increase with a horizontal and low slope, sharp declines were observed in the intermediate period, and in the third period it recovered and started to increase in a balanced way. In Turkey, the stock market has followed a different course from all other countries. There was a fluctuating decline in the first ten days of the pandemic process and then the index started to rise despite the increase in the number of cases and deaths. When the stock market index movements are considered together with the steps taken by the countries towards the epidemic, it can be said that the medical, social and economic measures taken by the countries within the scope of the epidemic are not enough to collect the indexes. Although global developments have a very partial positive effect on some of the indices, it is seen that they cannot go beyond contributing to the decline in general and cannot produce a solution.

From Turkey's perspective, the period after the crisis, with high levels of liquidity and low interest rates, can be a leap of faith for the country. During this process, emphasis on value-added production and the forming of value-added production is key. The outlook and macroeconomic data for the rest of the year are almost entirely linked to how the disease will be prevented from spreading. The sooner this process is over, the sooner a damage report can be issues and the recovery phase will begin.

Since this study was conducted for a limited number of countries and within a certain date range, it would be beneficial to examine in a longer period of time by including more countries' stock markets in the sampling in future studies. From selected example countries in the study seven countries (Italy, Spain, France, Germany, UK, USA), are developed countries while two of them are (Turkey and China) developed countries. Considering that the stock markets of developing countries behave differently from other developed country stock markets, in future studies taking more developing country samples can contribute to the detailed effect of the epidemic's effects on developed/developing countries and the full understanding of the response of the stock markets to the epidemic.

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