

COVID-19 Pandemic Burden on Global Economy: A Paradigm Shift

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Abstract

The pandemic caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) virus obstructed the Chinese economy and has expanded to the rest of the world at a rapid pace affecting at least 215 countries, areas and territories. The advancement of the disease and its economic repercussions is profoundly ambiguous, making it challenging for policymakers to formulate suitable microeconomic and macroeconomic policy responses. It has been estimated that each additional month of crisis would cost from about 2.5-3% of the global GDP and that the GDP growth would take a blow, reaching about 3-6%, depending on the country. Scenarios also suggest that GDP can drop by more than 10% and even exceed 15% in some countries. Economies will be negatively affected because of the high number of jobs at risk. Countries highly dependent on foreign trade are more negatively affected. Given that disease and its economic influence are highly unpredictable in numerous aspects, the global economy at the moment is the most critically threatened in history. Via addressing the economic consequence of coronavirus disease-2019 (COVID-19) in different industries and countries, the article presents assessments of the likely global economic costs of COVID-19 and the GDP growth of different countries. Moreover, the scenarios in this article illustrate how an outbreak could significantly affect the global economy in the short run.

Keywords: COVID-19; Economy; GDP; Global; Impact; Market; Pandemic

1. Introduction

In late December 2019, a novel pathogenic virus SARS-CoV-2, causative agent for the pneumonic condition COVID-19 was initially observed in Wuhan, China [1]. Since its onset the viral condition has successfully managed to spread among 215 countries, areas or territories as of 11th May, 2020 [2]. Specific vaccine against the novel virus is still underway however, a number of factors have to be considered in the making like, the target population the vaccine will be subjected to, mutation rate of the virus etc. and the existing non-specific treatments are based on knowledge gained from the previous two outbreaks caused by viruses from the same family [3,4]. Health care systems in the affected countries are overwhelmed by the soaring number of infected cases. The extreme containment measures exhibited across the world in an effort to reduce further transmission of the virus have actively played part in slowing the economy in numerous ways, beginning from negative impacts due to mortality and morbidity, from simultaneous demand and supply shock to limited transportation and closed borders [5]. The economic crisis is such that it may

even exceed the global financial crisis of 2008-09, when the rate of global trade declined faster than the global growth [6]. The fall in the employment and economic activity is expected to be followed by a period of stagnation ultimately leading to recession. [1]

The disease initially broke out in China and later on proceeded to significantly affect some of the economically important nations like, China, Italy, Japan, Korea, USA and Germany. Due to their economic significance, outbreak in those nations catalyzed the process of global economic shock. These 6 nations are facing serious consequences of the outbreak attributing to approximately 60%, 65% and 41% in terms of world supply and demand, world manufacturing and world manufacturing export, respectively. These countries are also at the center of many international supply chains, consequently spewing out a chain reaction of supply shock in other nations within their network [6].

The COVID-19 outbreak although may seem similar in characteristics to the 2003 SARS outbreak in terms of biology however, the two scenarios have varying economic effects. For instance, today China on its own

comprises 16% of the world economy as opposed to representing 3% of the world economy back in 2003; it is also currently leading the world's import and export sector, indirectly affecting all associated companies for example, Apple and Nike [7].

Apart from the supply and demand crisis generated, the COVID-19 pandemic has left substantial bumps in the productivity growth and employment resulting in labor market shock. Business enterprises around the world are confronting harrowing downturn in revenue, consequently leading to insolvencies and job losses. As of 29th April, 68% of all workers across countries including those in Africa, Europe, the Americas and Central Asia with suggested workplace closures are in turmoil, of which 81% are employers and 66% own-account workers, according to a report by the International Labor Organization (ILO). The shock is predicted to observe a decrease in the working hours and wages, consequently giving rise to informal employment as per the observations in previous crises; unfortunately, this method may as well be restricted by the aggressive containment measures, 1.6 billion informal economy workers are affected due to social distancing methods [8].

Informal and/or migrant workers along with those involved in the tourism, hospitality industries and Aviation sectors fall into the most vulnerable categories. In order to offset this growing issue, according to ILO policies must be made to ensure health protection to the workers, employers and their families. In addition to income support policies to encourage the economy and labor demand along with suitable responses for small business and informal economy sectors in the form of monetary aid and loan guarantees [8,9]. Understanding the impacts of pandemic on global economy is crucial to take and recommend necessary steps required to alleviate any undesirable circumstances. This article provides an overview about the impacts caused by COVID-19 pandemic on global economy which should help understand how the pandemic is influencing the worldwide economic aspects and what measures might be needed to fight against the most disastrous economic crisis of recent time.

2. Significance of Market

Market, in economics, refers to the common platform physical or virtual where exchange of goods and services take place between willing buyers and sellers, which include retail stores or businesses that sell to other markets. There are different types of markets based on a number of factors like the size and type of product, customer base, legality etc.

COVID-19 has hit the global market profoundly, crushing the expectations of an 11-year-old bull-market in 2020 [10]. According to a report by IMF (International Monetary Fund) investors have withdrawn a total of US\$83 billion from multiple businesses in the emerging market which has eventually led to a decrease in the revenue of these businesses. Many investors are also seeking liquidity in the worst case scenario [11].

Types of markets include:

- **Financial market:** Refers to a common ground where securities, bonds and currencies may be exchanged between purchasers and sellers. For instance, stock markets, foreign exchange market, bond market etc. It is one of the most intensely affected sectors in the global market which primarily initiated from the oil price drop. This has resulted in financial assets price deflation that also transferred into currency exchange ranges. Stock markets throughout nations and states (New York, Frankfurt, Tokyo and London) have been disrupted too. The break in the supply chains have culminated into cash-flow problems for various companies [12].
- **Auction market:** Refers to a platform that gathers interested buyers for the purchase of a certain lot of products. The product is sold off to the highest bidder. These markets usually carry out the exchange of products like livestock, houses etc.
- **Black market:** Refers to illegal market that are off the radar of government or other regulatory bodies. Some serve the purpose of evading tax laws while others may provide goods and services during a period of shortage of those. Some black-market sectors such as that of Cuba's have taken this health

crisis to their advantage by catering to the needs of increasing medical supplies. Apart from medical equipment consumer goods and food items are also pillaged within Cuba and resold at sky-high prices [13].

Markets are responsible for the distribution of goods among people, they facilitate trade which sets off a cascade of events and opportunities that benefit the economy, starting from production and employment which eventually elevate the national income.

In light of the current situation, a large number of business owners have to sit at home, since not all businesses have the work from home opportunity and a large group of people are being laid off from their jobs. As a result, it is a global phenomenon that the employment rate is decreasing. A possible ripple effect of this could be a fall in the minimum wage rate because otherwise employers will be reluctant to hire workers when there is very little demand for their goods due to the lockdown and borders being closed. On the other hand, workers will be okay to settle for a lower wage rate because the job market is going to be tough and we can see a possible inflation coming. With cost of living rising, the poor workers may have no other option but get their hands on any job they find even if it is for a lower wage.

2.1. Probable Economic Scenarios at a Global Scale after COVID-19 Outbreak

The COVID-19 outbreak that began as a health crisis gradually culminated into a major unprecedented economic crisis throughout the globe, which has led to economists/analysts laying out several possible scenarios. Most of these models consider GDP as a significant determinant of economic revival in the post-COVID era.

An example includes, McKinsey economists showcasing 9 probable scenarios predicting US economy's trajectory, with 4 optimistic results that maybe acquired through quick containment of the virus before the end of 2020. In contrary to the extreme case scenarios with continued economic decline until emergence of an efficient vaccine in the market.

According to another report, a base case scenario assuming a shutdown of 1.5 months suggested restoration of economic activities by the end of May for most countries, with GDP growth of -4.5% for most countries while shutdown of 3 months, i.e. until mid-June may result in a GDP growth of -6.2%, and the worst-case scenario comprising of 4-month long shutdown where economic activities don't resume until August leading to a GDP growth of -10.4% affecting almost all nations. All of these scenarios are based on the assumption that highly tourism related nations are more prone to effects of the economic fallout [7].

Although many nations have begun to relax the lockdown measures calming the market turbulence in many regions yet much of the reality depends upon further evolution of the health crisis, which is still uncertain.

2.3. Factors Affecting Economies During Outbreak

Under normal circumstances, some of the factors that are directly associated with the economic growth include demand, supply, prices, wages, production, cost and labor. All of which are affected in the wake of this pandemic. The global economy could shrink as much as 1% due to the interruption in the supply chains and international trade, in this pandemic [14].

The surging mortality and morbidity rates have reduced the extent of productivity and production capabilities, eventually leading to a supply shock, while the lurking uncertainty of the current situation and limited income and wealth during these times has changed the consumption patterns and investments, resulting in a subsequent demand shock. This is not all, since much of economy shocks are diffused from one nation to another through globalization processes like financial, trade and migration linkages. The implementation of extreme measures to contain the virus has been acting as both a boon and bane. Social distancing has pushed individual business and enterprises based on gathering and physical presence to reduce their productivity or in worst case scenario bring it to a standstill [15].

The gravity of the economic effects will depend primarily on two factors [14]:

- The length of the time period over which economic activities of the major economic nations are suppressed.
- The efficiency of the fiscal policies developed by the governments in response to the current crisis.

3. Macroeconomic and Microeconomic Impacts of COVID-19 on Different Nations

The SARS-CoV-2 outbreak, which has become a global pandemic upon its origin in Wuhan, China in December 2019, has caused significant damage to the worldwide economy. The virus has already left a long-lasting impact on more than 200 countries on both macroeconomic and microeconomic levels. Initially, the epicenter of the virus was China but a rapid transmission rate enabled the virus to spread worldwide, hence causing tremendous havoc throughout the globe. The impact of COVID-19 among the consumers is noteworthy as panic within the consumers and firms has caused the ruination of the usual consumption patterns. Market anomalies are clearly noticeable as stock indices around the globe have plunged, and worldwide financial markets have responded to the changes caused by the phenomenon [5]. Here we are going to dive into the macroeconomic and microeconomic impacts of COVID-19 and show a clear picture of the current economic state of different nations.

3.1. Microeconomics Factors and Impacts

Microeconomics deals with the study of individuals, industries and business-related decisions. It involves the economic interactions of a particular individual or company or firm. COVID-19 has had a disastrous impact on microeconomic level worldwide.

3.1.1. Changes in Labour Supply

Labour economics deals with employers and workers and ensures a balanced pattern in wages, income and employment. The pattern is disrupted when there is a change in the labour supply. As per different sources, the current incubation period of COVID-19 is 14 days. Hence, it is mandatory for an average worker to be absent from work for 14 days, if he or she is infected or

if the worker shows multiple symptoms of COVID-19 [3,4].

Absence from work has a major effect and that is, reduction in productivity. It leaves a significant impact not only on a business level but on a household level too, as more consumption of health services or goods can be seen. As a result, expenditure on health at the household level is increased drastically. The individual, along with his or her family is psychologically affected as well. So, the suffering from disease, stress and complete isolation rule out the possibility of online-based work. Moreover, it can have a long-lasting financial effect on the individual as well as on the company. The particular company or firm might face problems due to the absence of workers, and as a result, they might take different action plans including a new furlough policy or cutting wages of employees [5,16].

3.1.2. Crisis in Manufacturing Companies

COVID-19 has caused a severe industrial collapse as manufacturing companies are now facing a crisis. Production plans are postponed which definitely has spillover effects. Car manufacturers like, Ferrari and Volkswagen, are suspending production in Europe. They are closing operations due to industrial shutdown as well as for lack of parts. The effect is also noticeable in luxurious goods, like Swiss watches. The manufacturers are facing problems due to lack of parts and components. The supply chain disruption will surely have a major impact on the business cost for the manufacturing companies in foreseeable future. Hasbro, a toy manufacturing company is also suffering as 70% of the source of its goods is from China. Due to the shutdown of different factories in China and the disruption of the transportation route, it has been extremely difficult for manufacturing companies like Hasbro to market its products [7].

3.1.3. Revenue Decline in Media Industry

The media industry has too been affected severely by the COVID-19 outbreak. Different media groups and television networks are encountering a significant drop in advertising revenue. For example, Facebook's ad revenue may see a drop of US\$15.7 billion in 2020.

Google's net revenue is currently projected to be US\$127.5 billion, down US\$28.6 billion. It is estimated that Google and Facebook could lose over US\$44 billion in advertising revenue in 2020 due to the COVID-19 phenomenon [17].

Various multimedia companies are encountering financial downfall and record low ratings on TV due to the outbreak as the arenas are empty with people not being able to physically be present to enjoy an event. WWE, an American media and entertainment company has fired many employees due to the outbreak of coronavirus [18]. The lead program of the company has recently seen the lowest viewership in history. The show only gained 1.68 million views marking it the lowest since 2018 [19]. Different sporting events like, UEFA Euro 2020 and Tokyo Olympic Games, which were supposed to be broadcasted by media, are postponed to 2021 [7]. The production of various TV series is either postponed or called off. Award shows and concerts are also out of the way due to the lockdown. The anime industry in Japan is also facing a crisis with an uncertain future due to the COVID-19 outbreak [20].

3.1.4. Impacts on Tourism Industries

The tourism industry is going through an incredible amount of loss as tourist destinations like, Paris, Venice, Madrid and Rome are deserted. Travel bans and lockdown have been big blows to this industry so far. German tourism giants like, Touristik Union International (TUI) have made a request for state aid to keep their businesses alive. Major tourist spots like, Disneyland has been announced closed indefinitely [7].

Even Southeast Asian countries like, Malaysia are facing terrible loss in the tourism industry. The country was expecting around 30 million tourists in 2020 with a projection of €20 billion revenue. However, due to the COVID-19 pandemic, the estimated revenue may see a significant fall as around 3.5 million people working in the tourism industry are affected severely [8]. In addition to that, spillover effects can also be observed as businesses relying on tourism are also on the verge of facing huge financial loss [21].

3.2 Macroeconomic Factors and Impact

Macroeconomics involves the study of pattern, performance, and policymaking of an economy as a whole. It involves proper decision making in order to achieve maximum national income and economic growth. Unlike microeconomics, macroeconomics focuses on a national, regional and global scale. COVID-19 has struck on a macroeconomic level severely. Some of the key points are highlighted below:

3.2.1. Global GDP Shrink

The outbreak has been a big blow to the world economy but its impact is still uncertain at this point. Economists are taking everything into account to determine the global reduction in the economy. Gross Domestic Product (GDP) has always been a major factor in macroeconomics. While there is not a definite way to predict how much the GDP might shrink in the upcoming year, the financial experts have forecasted that GDP loss in the US in the global pandemic scenario would be 2.4%. Monetary GDP loss in the best-case scenario has been predicted to be US\$76.69 billion. The real global GDP might also decrease by 0.5% (from 2.9% to 2.4%). Projected GDP loss in China is 2.4% whereas, the GDP loss in Italy has been forecasted as 3% [22].

3.2.2. Changes in Government Expenditure - Taxes and Subsidies

Governments now have to come up with economic reliefs and change tax measurements. In South Asian countries like Bangladesh, government agencies have already taken initiatives to ensure tax relief and financial help to the affected families. The National Board of Revenue (NBR) has lifted import taxes in medical and safety products. The government of Japan has to expand subsidies in order for people to maintain jobs during the health crisis. The government had also extended dates for taxpayers who had due dates for 2019 tax returns. An emergency tax reform scheme was also developed and finalized by April 2020 and implemented from May 2020. The changes can be seen in Europe as well. The United Kingdom (UK) government has allowed the VAT payments due from 20 March to 30 June to differ at the option of the taxpayer. The government has also announced that

income tax payments that are due for 31 July 2020, might be differed until 31 January 2021. The Russian government has announced that small and mid-sized enterprises (SME) can request for 6-month delay for the payment of income tax [23].

3.2.3. Disruption of Global Supply Chain and Global Trade

Due to the interruption to the production, the global supply chain has been disrupted. As a result, global trade is at crisis level and spillover effects have been causing damage throughout the various levels of supplier network. It has been estimated that global trade in 2020 might fall throughout the entire world, affecting every area of the economy. Not only will it affect the strong exporters but also it will be a blow to the importers. According to the World Trade Organization (WTO), global trade may fall up to 32% due to the COVID-19 phenomenon [7]. The "domino effect" will come into play as the global tourism, travel and hospitality companies shut down their economic activities, thus effecting SMEs globally [24]. Stock markets have also collapsed and stock indices have been plunged. The Dow Jones Index has already encountered its worst one-day fall. Markets around the globe are closing down significantly [5,7].

3.2.4. Unemployment, Poverty and Other Issues

COVID-19 has increased the rate of unemployment rapidly. Due to the domino effect, the self-employed and least well-paid people are affected the most. Besides, different small businesses are shutting down due to the pandemic. As a result, the world is at the risk of the unemployment problem. More than 10 million people have already lost their jobs in the US [24]. It has been estimated that 6.7% of worldwide working hours could be wiped out which is equivalent to 195 million full-time workers. Upper-middle income nations are more likely to take the biggest blow as per International National Organization. Around 81% of the global workforce are severely affected by the COVID-19 pandemic due to both full-time and partial workplace closures. In America 43% of the workers are at risk of unemployment whereas, the proportion in Africa is 26%. Globally, around 2 billion workers working in

informal sectors (developing economies for the most part) are at risk [24,25].

It has also been forecasted that the world might see a rise in global poverty for the first time since 1998. The current estimation is that the COVID-19 phenomenon will put 49 million people around the globe to extreme poverty in 2020. Sub-Saharan Africa could be affected the most as it has been estimated that around 23 million people could be pushed into poverty. The numbers are pretty high for India as well as it has forecasted that around 12 million Indians could be facing poverty by the end of 2020 [26].

Various international fairs have been cancelled due to the pandemic. For example, "AutoEmotion – Automobile Exhibition" in Austria has been cancelled. "Antiques and Contemporary Art Exhibition" in France has been postponed. "Venus Berlin – International Fair" has been cancelled. There are many other fairs and exhibitions that saw the same fate. So, the damage has already been done but only time will tell what the final scenario will be [27].

3.2.5. Oil Prices Down Worldwide

Collapse in the global demand and supply chain has caused enormous damage to the oil markets as the oil markets have plummeted significantly. Demand for oil and oil products have been reduced largely, causing an enhancement in imbalances as additional supply is being pumped in the system. Oil prices dropped to \$20 a barrel, marking a loss of 70% in value. The storage capacity is also crossing its limits as supply is far greater than the demand during the COVID-19 pandemic. However, the demand shock could result in the lower-cost producers to regain market share. On 9 March, Russia and the Organization of the Petroleum Exporting Countries (OPEC) and other producers tentatively agreed to the biggest oil production cuts in history. OPEC involves Algeria, Angola, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, Republic of the Congo and South America. They agreed to cut 10% of the global production from the markets for the months of May and June. However, experts have said that

rebalancing the state of oil markets could be much more difficult than imagined [28].

4. Unavoidable Inflation

In a mission to control the spread of the virus, social distancing is to be maintained; which has caused the shutdown of various local businesses, supermarkets, financial markets, corporate offices along with coast-to-coast businesses. As a result, many economists are anticipating high levels of inflation, because both supply and demand have been affected by the pandemic. Travel agency services, hotels, restaurants, home electronics\furnishings, sport events are sectors that have been more vulnerable to the current pandemic [29].

Energy resources such as, crude oil, natural gas and coal prices have declined due to the shutdown of industries and less transportation. Cost of industrial metals such as, copper and zinc has also dropped by 13% overall in 2020. These low prices could hamper the long-term growth or quality jobs in a developing economy as necessary investments are not done. But on the bright side, it is an opportunity to use energy-subsidy on other pandemic-related emergencies. On the other hand, disruption of supply chain has affected agricultural commodities because of less effective distribution of the goods, fertilizer and unavailability of labor. So, production of perishable crops such as fruits and vegetables is threatened and developing countries may have food security at risk [30].

Economists believe that the preventive measures have made it inevitable for an economic recession to occur as many companies are shutting down businesses. A recession is caused by massive decline in economy activities which lasts for a few months, the decline occurs due to less consumer spending and income which ultimately leads to unemployment. Traditionally, it is defined as two consecutive quarters of economic contraction or the part of economy at which stock prices fall, less expenditure, unemployment increases and production rate is reduced. But economic contraction is unlikely to last forever; because where as some businesses and services are on halt, healthcare, food, household

products are in high demand now. In addition, as days go by, people's paradigm will shift towards being more optimistic and they will be more comfortable buying non-essential things which will benefit other business holders. Recession caused due to the pandemic differs from all the past recessions; because of the uncertainty regarding the time required for the lockdown to be withdrawn. In order to step into expansion, it is very crucial to grip control over current situation by frequent testing, development of vaccines or any other effective treatment. Once quarantining is no longer required, many lost jobs will be restored and recovery from the recession will become possible [31,32].

The ILO estimation regarding unemployment and underemployment has shown significant increase in both. In categories of low, mid and high scenarios; the rise in global unemployment was found to be 5.3 million, 13 million and 24.7 million respectively. An America-based study shows that metropolitan areas are likely to suffer greater unemployment rate than other areas because the economy in those areas are dependent on tourism, hospitality rather than on agriculture or professional services. So tourism areas are more like to experience the shutdown of businesses and thus more unemployment insurance claims was collected from those locations. However, the study also identifies persistence in the high unemployment rate of metropolitan areas and suggests that these areas tend to go back to its original rate because local economies begin to adapt by the help of specific policies. Underemployment is also likely to be high due to the shutdown and unemployment. People who lost their jobs will switch to other sources of income or "informal employments" for which they might be over competent for; so that they can have any type of income required in this crisis. This does not directly contribute to the economy downfall, but unavailability of goods and movement restrictions may actually prevent these informal employments [9,33].

Preventive measures have confined labors to their homes and restricted many industrial jobs, which has caused labor supply shocks. And the patterns of consuming spending have changed, demands for healthcare services and products have increased but

demand for other non-essential goods or services have decreased which has caused demand shocks. A study held to analyze these two occurrences, shows that transportation is likely to face demand-side reductions whereas sectors that include manufactured goods, mining will face supply shocks. In case of restaurants, hotels or other recreational services have both supply and demand shock but demand shock mostly because people are avoiding mass gathering due to the risk of infection. Other findings of the study indicate that high-wage occupations are less likely to be affected by both supply and demand shocks compared to low-wage occupations. To compare the magnitude of supply and demand shocks, the analysis has found largest shocks to be from the supply-side. Thus, the challenge is to secure the health of the people who will rejoin their jobs to start working again. Three interesting predictions from the study are: shock experienced by one industry will impact other industries as the demand for intermediate goods decreases, both income and demand will decline in case of those industries which have lower output and lastly those sectors where demand is high will increase supply eventually once labor mobility restrictions are overcome [34].

“Keynesian supply shocks” are characteristics of a negative supply shock that can lead to a shortage of demands. A statistical analysis has confirmed that there are possibilities that supply shock may be responsible for a “demand-deficient recession”. During this outbreak of an infectious disease, temporary supply shock may result in the decline of output and employment. This study has found locked down consumers, market incompleteness and unable to interchange across sectors, accountable for Keynesian supply shocks [35]. Based on epidemiological assumptions from past pandemics and considering all the changes in the macroeconomic conditions, risk premium will increase due to the instabilities of companies caused by economic shocks, reduction of consumption and lack of labor mobility. To elaborate, at this time when the economic growth is debatable and businesses are experiencing economic shock, both established and risk-prone companies will face heightened levels of risk premium. There will also be

an increased equity risk premium because there will no sharp differences among companies in terms of levels of risks [5].

5. Effect of Economic Decline on Manufacture and Services

5.1. Impact on Education

After the commencement of lockdown, many institutes, events and travelling have been halted to prevent the spread of the virus. According to UNESCO, the public health emergency has affected over 70% of student population in 168 countries over the world [36]. The numbers of universities that have switched to online teaching are expanding day by day; but there are still challenges like technological barriers, training or availability to overcome. Moreover, proper evaluation of online exams is questionable as ensuring students are not cheating is difficult. Universities that are functioning have taken critical preventive measures in order to maintain safety of faculties, students and staff members. It has been suggested that graduates must decide to stay in school and pursue their degree to tackle the consequences of the global recession. Universities should be lenient towards non-privileged students regarding fees; banks, government or student loans must be available for those students who need it [37].

5.2. Impact on Air Travel and Tourism

COVID-19 has affected the aviation industry as non-essential travelling overseas has been banned. In other scenarios, people have been respecting the restrictions announced by the government which led to a decline in demand for air tickets. So, airlines such as LOT Polish Airlines, Air Baltic, Scandinavian airlines have helplessly shutdown their services. According to The International Air Transportation Association (IATA), air industries are likely to lose around US\$113 billion if lockdown or travelling bans are not withdrawn quick enough. Along with airlines, the pandemic has impacted tourism industries that include hotel bookings, restaurants, travel agencies or tour operators. IATA estimates the loss to be over US\$200 billion globally [38]. Most airlines are facing the dilemma of

deciding whether they should redeploy the planes to other companies however the decision seems unfavorable as other markets are also idle.

5.3. Impact on Oil Industry

On a positive note, the oil price has decreased in the airline industry due to less demand and overall, expenditure is reduced [39]. After a meeting at the Organization of the Petroleum Exporting Countries (OPEC), Saudi Arabia went competitive with Russia and increased their crude oil extraction along with slashing oil prices. The price of per barrel of Brent Crude Oil was cut to be less than US\$34 with a drop of 24%. Moreover, due to COVID-19, there will be both negative supply shock and negative demand shock for oil industries in MENA (Middle East and North Africa). Confinement of workers will cause less production of oil and reduced transportation has decreased the demand for oil; which is affecting the global economy. But lastly Saudi Arabia, Russia and the rest of OPEC failed to be on the same page and refused to reduce the production of oil amidst already 30% fall in price this year because of a steady economic growth caused by the pandemic [40,41].

5.4. Impact on Sports Industry

Sports section has had promising contributions to the global economy until the lockdown; sales of sport services and other related commodities worth US\$489 billion back in 2018. But the recent outbreak has postponed several sports event such as, Wimbledon tennis championship, North America's Basketball Association, Tokyo Olympics and so on. The revenues collected from sponsorships, broadcasting deals, tickets during the events are mainly what supported the sports business. But as lockdown is to be continued, many executives are worried that the downfall in the business may be long-lasting. Players of the Premium League have agreed on pay cuts, insurance policies of the Tokyo Olympics will bear most of the costs. But cricket, rugby and football unions do not have insurance coverage in this case. Some sports industries like USA Rugby, MSK Zilina have already gone bankrupt. If the lockdown is extended for longer periods, larger franchises will meet the same fate. To

rescue Europe's football team from such events, governments of many regions may provide help and also FIFA has planned to provide emergency funds worth US\$2.7 billion to national federations or clubs [42].

5.5. Impact on Health and Pharmaceutical Industries

The viral outbreak has undoubtedly pushed health sectors into turmoil. The unexpectedly large number of patients outnumbered medical equipment, hospital beds and healthcare providers. As a result, the services are not as smooth and effective as they are supposed to be. The US has provided US\$50 billion as funding for proper law enforcement regarding lockdowns and provide better care via media like "telehealth". But the concern regarding uninsured individuals still remains, including people who have lost their jobs or people who have quit jobs that have high risks of getting infected such as, cooks or salespeople [43]. These uninsured people are not going to get compensation and this will drastically affect their financial state and the business they were involved in [44]. In February, S&P 500 Managed Health Care Index diminished to 7% depicting that healthcare sectors will face maximum financial consequences. There are lesser chances of cash flow in 2020 according to Moody's, as many elective surgeries are been cancelled. Moreover, non-profit or public medical sectors economic condition will unstable because of increased expenses. Circumstances may get worse when investors will apply strategies to make profit from the enormous investments made in medical supply firms or hospitals. Number of deaths will increase if there are not sufficient medical goods, hospital beds or isolation centers [38].

In Singapore, the director of Minister of Health (MOH) has taken the decision to cease any non-emergency operations and provide treatment to only the citizens of the country in order to both cut expense and have adequate capacities in the private and public hospitals [45]. China has been using "telepresence bots" in the hospitals to assist overdriven healthcare works; the bot delivers medical items, monitors patients' health and

can video communicate using in-built cameras. These robots were deployed by Keenon Robotics Co., Siasun Robot and Automation Co. which are Chinese companies. There will be a boost in production of these robots according to the financial services which will make China closer to reaching its goal of becoming intensely automated [46]. The demand for ventilators has reached the sky as it is one of the remedies to deal with breathing difficulties when a person is infected. Thus, governments around the globe have been trying to manage as many ventilators as possible. Each of these machines may cost up to US\$50,000 and requires international supply chains along with many safety trials for getting approved. UK has asked other engineering companies like Rolls Royce, Dyson which were not involved in ventilation productions to start making them in order to cope up with the number of patients admitted to the hospitals [47].

Pharmaceutical companies worldwide are facing challenges to keep up with the emerging remedies for the viral disease and competitive pressures to survive in the pharmaceutical markets. At a remorseful time like this, making large profits out of a global pandemic will be highly distasteful for the pharmaceutical industries. However, whereas most businesses are facing a downfall, pharmaceutical companies like Gilead and Eli Lilly are experiencing positive growth on the stock market. But other companies like the AstraZeneca, is expecting a fall in revenues caused by China's unfavorable economic condition; but the company plans to overcome it by joining with Sanofi in developing a vaccine. Companies are also helping to lift up the economic burden by donation of tablets and funds. Bayer donated 3 million Resochin tablets and Novartis is committed to donating 130 million doses of hydroxychloroquine and providing US\$20 million to local communities that have been hit by the pandemic. In the long run, both of these companies will be benefitted financially by the production of these two drugs. Novartis has also taken part in the COVID-19 Therapeutics Accelerator and is receiving fund from the Bill and Melinda Gates Foundation for the research and production of antiviral drugs [48]. The Gates Foundation, Wellcome and Mastercard are collectively

funding US\$125 million to companies for the discovery of new treatments for the novel corona virus. Wellcome and the Gate's foundation are funding US\$100 million to the COVID-19 Therapeutics Accelerator and Mastercard's Impact Fund has promised to provide US\$25 million. The objective of the funding is to speed up the development of vaccines or antiviral drugs and large scale productions [49].

6. World Economy Before and After COVID-19 Pandemic

Several forecasts showed at the beginning of 2020 that an economic recovery was on its way. The consequences of the 2008 global financial crisis were minimizing. There were also increases in trade and economic growth across most countries. The stock markets had also risen to new record highs [50]. The spread of COVID-19 in the last four months has caused an unprecedented economic crisis. To properly assess the impact on the world economy, three key sectors must be analyzed. These are (1) manufacturing and trade, (2) services, and (3) financial markets and commodity prices [51].

6.1. Manufacturing and Trade

Previous post-war crises and pandemics have normally affected poorer countries therefore this pandemic is different. The impact on poorer nations is significant locally but, globally those consequences are rarely felt due to the isolated nature of their economies. In comparison the COVID-19 pandemic has affected richer more developed nations which have a far greater economic importance to world trade. This will greatly impact smaller nations as those nations are dependent on trade with larger nations such as China, USA and UK and create a supply side shock much like in the 2008-2009 Great Trade Collapse [52]. As shown in **Table 1**, the countries with the share of global GDP and highest share of export of manufactured goods also have the highest infections in the world. Therefore, this is both a supply-side shock as well as a demand shock.

Country	GDP	Manufacturing	Exports	Manufactured Exports	COVID-19 cases
USA	24%	16%	8%	8%	31.8%
China	16%	29%	13%	18%	2.0%
Japan	6%	8%	4%	5%	0.4%
Germany	5%	6%	8%	10%	4.1%
UK	3%	2%	2%	3%	5.4%
France	3%	2%	3%	4%	3.3%
India	3%	3%	2%	2%	1.8%
Italy	2%	2%	3%	3%	5.2%
Brazil	2%	1%	1%	1%	4.2%
Canada	2%	0%	2%	2%	1.7%

Table 1: Large economies and COVID-19 infection (As of May 14, 2020) [53,54]

6.3. Financial Markets

According to a study by Zhang, Hu and Ji regarding the impact of the COVID-19 pandemic on financial markets, there was massive volatility in the stock prices among countries during March. The worst affected countries, USA, South Korea and Japan despite having well developed stock markets experience extreme volatility during the month of March when the infection rates were starting to increase. China also experienced volatility during February when it first declared an emergency, showing that the corona virus pandemic has negative effects on stock market prices [55]. Furthermore, the volatility of the stock markets cannot be explained by the effect of long term expectations instead, it is more affected by current sentiments [56].

As shown on **Figure 1**, impact on oil prices are stark as lockdowns have reduced the need for transportation and travel and therefore the demand for commodities have decreased in the energy sector, added to the release of large quantities of oil into the international market by Saudi Arabia in March the price of oil is at a historic low [57]. Agricultural produce on the other hand is not as affected as it is a necessity and therefore protected from mass declines in demand, however due to the demand shocks created by reduction in income caused by the lockdown there is a decrease in price of agricultural products as shown in **Figure 2** [58].

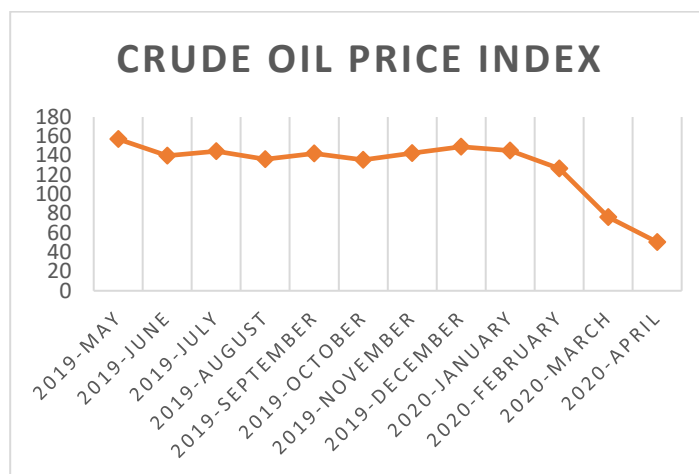


Figure 1: Monthly changes to Crude Oil Price Index, International Monetary Fund [60]



Figure 2: Monthly changes to Food Price index, International Monetary Fund [60]

Precious metals such as gold and silver however have increased in value as shown in **Figure 3**, as prices of other commodities decrease due to the shock of the

COVID-19 pandemic investors shift money to precious metals as they are at lower risk of price fluctuations [59].

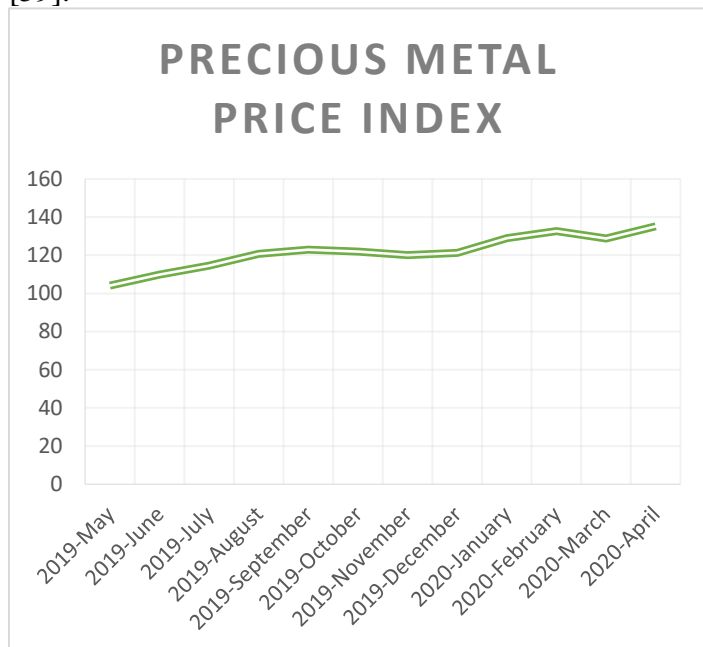


Figure 3: Monthly changes to Precious Metal Price Index, International Monetary Fund [60]

7. Potential Approaches to Tackle Negative Outcomes

Three different layers have been discussed in order to tackle the negative impacts of COVID-19. Some of the important points of the three pillars are discussed below:

7.1. Ensuring Safety in Workplaces

Strengthening Occupational Safety and Health (OSH) measures is a must. Health access should be provided for everyone. Workers have to adapt to different work arrangements like Teleworking. The company CEOs should grant access to paid leave. Health care resources should be provided in the working place. For example, the US government is taking significant initiatives during the pandemic. US Center for Disease Control and Prevention (CDC) has issued a guidance regarding health safety and advised the public to wear masks. A guideline was also provided for the safety of critical workers. Occupational Safety and Health Administration (OSHA) has also updated a guideline for preparing safe workplace environment during COVID-19. New Zealand is another great example of how well the government can maintain safety in the

workplace. The New Zealand Health Ministry has released around 18 million masks from its reserve during the pandemic to overcome the shortage of PPE. There are several other countries which are taking effective initiatives from which the nations lagging behind can learn [61].

7.2. Stimulation of Economy

Active fiscal policy should be implemented. In the initial stage, broad-based tax relief (differed payroll and VAT reduction), unemployment benefits along with public investment for low earning workers and SMEs. The interest rate should be reduced as part of the monetary policy and reserve rate should be relaxed. Provision of liquidity should be ensured immediately. Financial support should be provided in order to keep the SMEs alive [62].

For example, the US government has allocated \$5 trillion in federal relief packages. The Paycheck Protection Program and Health Care Enactment Act have allocated US\$60 billion for small businesses. Main Street Lending Program has also allocated US\$600 billion for around 40,000 mid-sized businesses. The Chinese government can also be an example of how fiscal policy can be implemented. The government of China has taken steps to provide financial support to SMEs for 4 years. They are also working to keep the liquidity on track and to stabilize the supply structure. The government of Italy has suspended payment of taxes and mortgages (tax and VAT payments for March-April 2020, and tax liquidation until 31 May) [61].

7.3. Ensuring Employment and Income

Employment retention schemes should be put into thought. Wage subsidies and other short-time work arrangements should be provided in order to support SMEs. Financial relief is a must for avoiding factory closures and ensuring business continuity. Existing schemes should also be scrutinized. For example, the government of Germany has taken some praiseworthy initiatives during the pandemic to keep the economy going and to reduce the rate of unemployment. An increase in the period for short-term employment under

privileged conditions has been ensured. Service guarantee for the social services has been given by the federal government. Employees in geriatric care will be paid a one-time salary premium. Asian countries like Bangladesh has also taken important decisions during the pandemic. In order to reduce the risk of labour unrest, the government has announced four new stimulus packages in the order of TK 727.5 billion with additional TK 50 billion to defray the cost of April, May and June wages [61].

8. COVID-19 Government Intervention Schemes

COVID-19 has caused havoc and it has affected every aspect of society. In dreadful times such as this, governments have to take immediate and proper initiatives to terminate or minimize the probable impacts of the outbreak. The role of government is very significant during this time and can be looked from several angles:

8.1. Immediate Responses

Even if the information is limited, the government must find ways to create "action plans" during this outbreak. Quickness in decision making can definitely lessen the negative impact to some degree. The government has to make sure a proper management is there. Continuity of operations should also be ensured. Citizen engagement is another vital area to deal with. Self-service and cognitive help can assist agencies through which citizens can maintain good health. Different agencies in UK, Spain, Poland, Czech Republic, and US appointed agents to solve questions and doubts regarding COVID-19 virtually [63].

Government's duty is to minimize the spread of infection throughout the country. They have to make sure that health care resources are available, such as testing kits, hand gloves and masks should be in adequate quantity [62]. The government should also ease concern and psychological stress of citizens by providing necessary information. They should also provide fiscal stimulus to counter COVID-19 outbreak period. The government can ramp up funds for the virus effected regions. Emergency liquidity must be ensured as well [16].

Active fiscal policy along with the monetary policy and financial support to several sectors (especially, health) is essential as an immediate response from the government. These steps are vital in order to keep the economy going. Small businesses, enterprises and various industries might collapse if these steps are not taken accordingly. Government's expenditure during the pandemic plays an important role to shape the economy of post-pandemic world. The government of Canada can be taken as an example. They have released a COVID-19 Economic Response Plan on March 18. The plan is to support the individuals, businesses and industries. In this stage, the governments should spend money to prevent, detect and treat the virus. They should also spend money on firms and businesses that were affected by providing temporary relief. They can also take initiative to make business continuity plan [61].

8.2. Recovery and Reformation

The motto of government following the immediate response should be to rebuild and emerge stronger. The government should plan actions to move towards normalcy. They should re-establish the confidence of the agencies. They must assure the citizens regarding the safety of work place so that they can go back to work. The length of economic downturn should also be shortened by the government [63]. Administration of vaccines and other remedies should be supported. Cost control for the foreseeable future should be assessed by stabilizing health systems and considering financial state of the hospitals and health care clinics. Disbursing the funds is also a necessity. Backlogs should be addressed. The government should also provide financial support to the industries which are trying to reopen their businesses [64].

8.3. Preparation for the "New Normal"

The government should ensure that business processes are re-imagined. A number of questions may arise from the outcome of this outbreak- why did it happen, what is the total financial loss, how can we avoid such phenomenon in future, how can we ensure remote working, which processes have worked and how to

improvise them, what were the obstacles and so on [64].

In this stage, the government should think of building long term enhancements to public sectors. They should build a far better foundation for any future phenomenon. What are the scenarios that can be observed based on government's economic steps and decisions? This is a question of concern as the future of a country and its citizens largely depend on it. Before discussing it briefly, let us take a look at the steps the government has already taken:

The fiscal policy responses of United States of America are highly noticeable. They have responded with a Paycheck Protection Program and Health Care Enhancement Act worth 484 billion dollars. Coronavirus Aid, Relief and Economy Security Act worth US \$2.3 trillion have also been considered. Coronavirus Preparedness and Response Supplemental Appropriations Act have also been put into effect worth US \$8.3 billion. The government of UK has also made changes in tax measurement. Additional funding for public services and charities has been ensured. In order to support vulnerable citizens, social security and safety have been proposed. They have also brought a new Term Funding Scheme. The role of government can also be seen in Asian countries like Bangladesh. Their Ministry of Disaster Management and Relief has been passing relief and food supplies at district level. Open Market Sale (OMS) has been a beneficial program to buy rice at one-third of the market price. Bangladesh Bank is also focusing to ensure sufficient liquidity. Now considering all this, the question arises that what scenarios can be seen based on these steps and initiatives? What can be achieved based on the decisions and activities of the government? [61].

A few examples can be provided regarding the outcome of government actions. Small businesses might be able to retain workers. Expansion of virus testing can be seen. Less unemployment risks can be observed. Operations of financial institutions can be resumed at slow pace. Industries can survive if the steps are taken right. Accelerated use of digital tools can be seen and schemes will be created to develop point solutions.

Social care may be improved. Global supply chains will be restructured. However, a significant change will be observed in our production and consumption activities. Post COVID-19 nation will see a significant impact on GDP based on the government spending during the outbreak [64].

In general, we can predict a state capitalism by putting priority in exchange value. We may also see a decentralized response which leads to barbarism. Through life safety priority and centralized response, we may face state socialism or mutual aid in case of decentralized response [65].

It is safe to say that the government can gain trust ensuring health care resources and boosting health care systems, along with providing workplace safety and economic balance. Through new screening procedures and supporting vaccination efforts, the government can strengthen that trust of citizens. A strict social distancing should be maintained at any cost for a significant amount of time. At the same time, on macroeconomic and microeconomic levels, the government should keep on supporting different industries, small enterprises, private clinics, and other effected firms and individuals for a certain period.

9. Feasible Measures to Cope up with Recent Economic Crisis

9.1. Monetary Policies

A study showed that countries which implemented expansionary monetary policies were able to overcome the negative effects of the subprime mortgage crisis earlier [66].

- **Required Reserve Ratio:** Banks are required to hold a certain amount of their deposits in the central banks of their respective countries. This amount, which is known as the required reserve; cannot be used by banks as a means to make investments. This is used as a guarantee in the event banks face liquidity problems [67]. If banks increase the required reserve ratio then they will hold more of their deposits in the central, this means there is less money being used. For the implementation of expansionary monetary policy, the reserve ratio is

lowered so that banks can use more of their deposits and invigorate the economy [68].

- **Currency Transactions:** Central banks can trade foreign currency in the foreign exchange market and thereby increase or decrease their currency rate. Selling foreign currency will to the market will decrease the exchange rate while buying will increase the exchange rate. During time of recovery, central banks would buy foreign currency to decrease demand for foreign currency and thereby increase money supply in the local market [69].
- **Open Market Operations:** Central Banks have the ability to change the money supply and to shape market participant expectations using open market operations. This is the most commonly used monetary policy instrument. In this process, the central bank will buy or sell government bonds in an attempt to increase or decrease the money supply. For the case of expansionary monetary policy, central banks buy government bonds to increase liquidity in the market [70].
- **Discount Rate:** Central banks provide commercial banks with loans when needed. The interest rate charged to the commercial banks is known as the discount rate. Increasing the discount rate will cause liquidity to decrease in the market while decreasing the discount rate will cause liquidity to increase in the market. During recession, central banks follow expansionary monetary policy to increase money flow therefore they decrease the discount rate [67].

9.2. Fiscal Policies

Countries facing recession require their economies to be more active, therefore it is necessary for governments to choose expansionary fiscal policies [66].

- **Tax Rate:** Tax imposed on consumers and businesses have an effect on the economy. Higher tax rates decrease public spending and economic activity, on the other hand a lower tax rate increases public spending and economic activity. To combat

recession, it is necessary to impose lower tax rates and increase economic activity [71].

- **Government Debt:** This is the accumulation of prior government deficits. If governments aim to increase disposable income they can decrease government debt, likewise if they aim to decrease disposable income they can increase government debt. As an expansionary fiscal policy tool, governments can decrease government debt to increase disposable income and therefore increase economic activity [72].
- **Government Expenditure:** Government expenditure such as subsidies and grants lower costs and increase private spending. Government expenditure also includes infrastructure development as well as other projects. Increasing government expenditure can increase economic activity which is necessary in a recession [73].

9.3. Other Policies

- **Postponing Loan Payments:** Due to the slowing down of economic activity, many people and countries are incapable of meeting their deadlines for loan payment. Private lenders as well as large institutions such as the IMF and World Bank can extend their loan payments and ensure greater security for debtors [74].
- **Increasing Social Protection:** Due to loss of livelihoods during the pandemic many low-income families are finding it difficult to make ends meet. It is necessary for all governments to provide services either at subsidized prices or completely free of cost to those most hard hit. Governments must also provide unemployment benefits to those newly unemployed and financial relief to small and medium enterprises [75].
- **Innovations to Monitor and Disseminate Information:** Ensuring that lockdown protocols are maintained is of great importance to limit the spread of infection. It is also important to disseminate information regarding infections as well the overall scenario to prevent misinformation and allow better policies to be formulated. Technological innovations can be used to monitor

whether or not protocols are followed as well as to spread necessary information in real time [75].

10. Summary

The pandemic has the potential to reach a substantial proportion of the global population. The virus has already mutated into an economic and labor market shock, affecting demand (consumption and investment) and supply (production of goods and services). Prospects for the economy and the quantity and quality of employment are depreciating swiftly.

Quarantining affected people, and lessening full-scale social interaction is a sufficient response. Wide dissemination of good hygiene practices can be a low cost and profoundly productive response that decreases the extent of contamination and, therefore, decreases the economic and social cost. The longer-term responses are even more critical. For example, medical personnel and equipment availability, public cooperation and sufficient funding to continue research that would prevent a crisis such as this. Countries need to prepare themselves for impending disaster, if all else fails. To ensure that no country needs to face such a case, there should be mutual understanding and support between governments and the scientific community.

Global collaboration, particularly in the field of public health and economic development, is vital. All influential countries need to engage actively. The outbreak of COVID-19 explicates that if diseases generate in developing countries due to overcrowding, inadequate public health, and interaction with wild animals, it can eliminate people of any socioeconomic group in any society. This critical policy intervention has been in our knowledge for ages, yet politicians continue to disregard the scientific proof of public health's role in enhancing the quality of life and as a driver of economic growth.

Humans all around the world are facing an entirely new type of emergency. In this case, the health risk (actual mortality and infection rates) is not fundamentally associated with the economic uncertainty of the global economy. Historically, global trade has allowed countries to partake in risk. This time, this channel is

unlikely to help much. It is a global shock when the world is much more integrated. Interest rates are at real lows, and the current crisis is also producing spillover effects throughout supply chains. A global recession now seems unavoidable.

Furthermore, beyond all, it also depends on the duration of the prevailing lockdowns. At the date of this article, the continuation of the lockdown as well as the recovery, is still unknown. That is why several scenarios are implemented. In the base scenario, GDP growth would take a hit, ranging from about 3-6%, depending on the country. Results imply that, on average, each additional month of crisis will cost from about 2.5-3% of the global GDP. The economic costs of a recession are unevenly allocated. Many of the commonly affected sectors are already known. Moreover, based on previous crises, it appears that younger and less-educated workers will, unfortunately, be more likely to lose their jobs.

11. Concluding Remarks

The ultimate fate of this pandemic and its economic influence is highly unpredictable and questionable in many aspects, making it tough for policymakers to formulate a suitable macroeconomic policy response. These scenarios illustrate the trebuchet of costs that might be shunned by more significant investment in public health systems in all economies except in less developed economies where health care systems are behind the times, population density is high and diseases are more likely to arise. In the face of financial tension, there is a crucial role for governments to play. While cutting interest rates is a possible response for central banks, the shock is not only a demand management problem but a multifaceted crisis. This initiative will expect monetary, fiscal, and health policy responses. The final financial outcome of this crisis is hardly foreseeable. It depends on the duration of the pandemic, aptness of response and countries' policy acknowledgments. Nevertheless, an effective vaccine would be welcome news and can definitely save economies from collapsing. If the ongoing crisis lasts till the end of the summer, the

global economy will suffer most horribly than seen in the last two centuries.

Conflict of Interest

Authors declare no conflict of interest regarding the publication of the manuscript.

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