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Article: **Economics of COVID-19: A case of Punjab, Pakistan**

Author(s): Sadia Yasmeen^{1*}, Hadia Sohail²

Affiliations: ^{1,2}Institute of Islamic Banking and Finance, University of Management and Technology, Lahore Pakistan

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Economics of COVID-19: The Case of Punjab, Pakistan

Sadia Yasmin^{1*}
Hadia Sohail²

Abstract

Desperate times call for desperate measures. This study explores those assessment tools which may enlighten the current pandemic situation. It assesses the link between the COVID-19 incidence and its effects on the length of the expected recessionary period in the region. Being a developing economy, the Prime Minister of Pakistan feared that the severity of recession because of a strict lockdown may not be tolerable. This study developed a theoretical model to explain the possible parameters and tradeoffs which can help in the decision to ease the lockdown. Previously, social and print media focused on the reporting of COVID-19 cases and consequently, its mortality rate. This study used the relative forms of recovery and mortality rates to assess their quadratic/nonlinear pattern with respect to time. It is proposed here that the government should use more complicated plots to assess how COVID-19 is evolving and should also prepare a fact finding team to assess the situation for easing the lockdown.

Keywords: COVID incidence curve, economic recession, smart lockdown

JEL Classification: E44; R5

Introduction

The COVID-19 outbreak is caused by the virus named “Severe Acute Respiratory Syndrome Coronavirus 2” (SAR-CoV-2). Up till now, no vaccine is available even though the virus has proved lethal. Only preventative strategies have been recommended against the possible outbreak of coronavirus (Graham, Donaldson, & Baric, 2013). This virus emerged in December 2019 in the city of Wuhan in China with a population of 11 million people (Sihombing, Malczynski, Jacobson, Soeparto, & Saptodewo, 2020). At first, the outbreak was only limited to China. However, it spread all over the

^{1,2}Institute of Islamic Banking and Finance, University of Management and Technology, Lahore Pakistan

*Corresponding author: sadia.yasmin84@gmail.com

world and many people were infected by the disease. It caused many deaths reported across various countries in just a matter of days (McKibbin & Fernando, [2020](#)). COVID-19 is a known respiratory illness which is contagious and has so far infected millions of people around the world. Up till June 2020, a total of 6,287,771 COVID-19 cases had been reported to WHO ([n.d.](#)). Out of these cases, there were 3,79,941 mortalities. Indeed, COVID-19 has proved to be a global threat and a challenge to economies across the world.

When COVID-19 began to spread across the world, the response to this pandemic was mixed. Consequently, hospitals remained crowded, there was no space for patients and there was a shortage of equipment (Stojkoski, Utkovski, Jolakoski, Tevdovski, & Kocarev, [2020](#)). When the first COVID-19 case was found in the United States and Europe, they initially opted for herd immunity although they had witnessed the situation in China. No precautionary response to the first case led to its rapid spread in USA, Italy and UK. According to the website World Meters, up till 7th June, 2020 the total number of their cases were 1,988,591 and deaths were 1,12,099 (Cases report of USA, [2020](#)). This happened because it took them time to close down such a huge economy (Arshed, Meo, & Farooq, [2020](#)).

This outbreak undoubtedly put pressure on the economies of various countries by decreasing their GDP from 3%-16% (Sihombing et al., [2020](#)). When the pandemic started, fear and uncertainty were instigated in every country. The rational assessment was that profit earnings of firms would get affected adversely by COVID-19, hence global stock market plummeted by US\$6 trillion in wealth and this happened between 24th to 28th February. Similarly, the 10 largest companies registered at S&P 500 index experienced a combined loss of around \$5 trillion in the same week. These losses were expected due to the investors' rational assessment of what will happen in COVID-19 crisis (Ozili & Arun, [2020](#)).

The major problem confronted during COVID-19 is that the flow of goods through global supply chains was reduced significantly, given that China is the world's largest manufacturer and exporter. The Chinese government ordered the closure of major

factories in the country during this pandemic (Lin et al., [2020](#)). Countries like Iran, Pakistan, Italy, France and many others issued stay-at-home instructions countrywide in order to control the spread of the virus, which had already caused multiple deaths and was putting pressure on healthcare infrastructure. Such stay-at-home policies planted the seeds of recession in both developed and developing countries (Ozili, [2020](#)). There has been a general consensus among economists that the coronavirus pandemic would plunge the world into a global recession (Global Recession Already, [2020](#)). In March 2020, the International Monetary Fund (IMF) stated that it is expected that the current global recession may be much more severe than the 2007-08 global financial crisis, followed by a recovery in 2021 (Georgieva, [2020](#)).

There is considerable literature available on the causes of recessions (Mian & Sufi, [2010](#); Stiglitz, [2009](#); Bezemer, [2011](#); Bagliano & Morana, [2012](#); Jagannathan, Kapoor, & Schaumburg, [2013](#); Gaiotti, [2013](#); Bentolila, Jansen, & Jiménez, [2018](#)). However, the cause of global recession in 2020 is novel in modern history. In the past, there were recessions like Asian debt crisis of 1997 triggered by the collapse of the Thai baht in July 1997, which caused a region wide financial crisis and economic recession (Radelet & Sachs, [1998](#)). Global financial crisis of 2008 occurred due to weak monetary policy followed by subprime mortgages, weak regulatory structures and high leverage in the banking sector. It was a great economic recession faced by the whole world, including both developed and developing countries (Allen & Carletti, [2010](#)). In Greece, the recession of 2010 was caused by the aftereffects of the global financial crisis of 2008 as well as structural weaknesses in the Greek economy. As a member of the Eurozone, there was a lack of flexibility regarding the monetary policy (Rady, [2012](#)). A few years back in Nigeria, fall in the prices of crude oil dumped the economy into recession. (Ozili & Arun, [2020](#)).

1.1. Coronavirus and Punjab

As compared to US, China and Italy, Pakistan took precautionary measures at an early stage because of its proximity to China, which consequently slowed down the spread of the virus. For instance, the Government of Pakistan imposed locked down in

major cities. By now, the virus has unsettled economic activities, business concerns, and consumption practices.

Pakistan, a country with scarce resources and a miserable healthcare system is doing its best to combat coronavirus. However, much more needs to be done. The number of confirmed cases in Pakistan up till 7th June, 2020 rose to 98,943. The most affected province due to COVID-19 was Punjab with 37,090 cases, followed by Sindh with 36,364 cases.

Prime Minister of Pakistan Imran Khan is well aware of the financial limitations of the country. He initiated a multipronged strategy to safeguard the people and most importantly, he constantly communicated with the nation through his media interactions. He was well aware of the unsustainability and inconvenience of a full lockdown, so he extended maximum relief in the current lockdown.

PM said, “About 25% of Pakistanis cannot afford to eat two times a day, therefore, if we shut down the cities, we save them from virus at one side, but they will die from hunger on the other end” (Tarar, [2020](#)).

Following PM’s footsteps, the government of the Chief Minister Usman Buzdar announced a one-month additional salary for medical staff on March 31, 2020 who were engaged in the treatment of coronavirus. The government of Pakistan also established a COVID-19 relief fund for public welfare. Punjab was in lockdown from March 21, 2020 onwards, where all educational institutes, markets, shopping malls and even industries were closed. People were required to do their work from their homes to avoid COVID-19 virus spread. However, during *Eid ul Fitr* holidays (May 19 onwards), the prevailing lockdown was converted into a smart lockdown and shops were scheduled to open from 9 am to 5 pm. Afterwards, there was seen an upward trend in the number of new cases reported along with an increase in deaths on a daily basis. However, the Government of Pakistan claimed that this increase in the coronavirus was because of a two-fold increase in the testing capacity.

Up till June 7, 2020, the number of total reported COVID-19 cases was 37,090, followed by 683 deaths and the number of the

patients who recovered from the disease remained 8,109. Before the Eid holidays, it was believed that the ratio of the recovered cases remained quite high and the situation was under control. However, after Eid, the number of confirmed cases increased exponentially. Pakistan's health infrastructure is relatively weak. Despite of this fact, there is much room to develop robust strategies to counter the spread of the virus. Statistics showed that on June 1, 2020 over 2000 new patients were reported in the provinces in just two days. It was also reported that Lahore was the epicenter of this disease. Most of the shops were closed because Special Operating Procedures (SOPs) were not followed in Punjab. This forced the government to move towards smart lockdown. Punjab is in smart lockdown ever since because the government does not afford to pay every person. The monthly food expense of an average household composed of five family members ranges between Rs.14,000 to Rs.17,000 (Haq, Nazli, & Meilke, [2008](#)). After the conversion to smart lockdown, earning activities resumed and people began to earn on their own.

Due to an increase in cases, the very first action taken by the government was to close down all educational institutes. Office work was mainly converted to work from home, while some colleges and other institutes started online classes so that everyone could stay at home. At first, it was assumed that this pandemic would not affect us that much. However, as time passed, there were many cases in Punjab which forced the educational institutes to remain closed. Government officials and education experts feared that schools may not reopen for another six months, particularly in remote areas where safety guidelines, hygiene and social distancing rules were hard to implement. This is why high school students were promoted to the next class without regular examinations and admissions to colleges were granted on the basis of the previous year's results. So far, the situation is not good in Punjab since cases are increasing daily. The number of confirmed COVID-19 cases in the Punjab province reached 29,489 (Government of Pakistan, [2020](#)). Punjab is the most affected province which was affected by COVID-19 after Sindh where statistics show 31,086 patients followed by 526 mortalities. The main issue is not the virus. The problem is that the people of Pakistan are not taking it seriously and this problem is exacerbated due to a lack of efficient governance.

Although doctors everywhere are working on it, so far there is no proper treatment available.

Based on recent figures, the total number of confirmed COVID-19 cases in the Punjab province is 96,983 and the number of deaths is 2205. The number is not increasing daily but it is relatively under control now. The government is still worried, this is why it asked people to stay at home and to go outside only if so needed. Many patients have now thankfully recovered from this virus. Approximately 5,112 recoveries were seen till May 20, 2020. If we compare the number of COVID-19 positive cases in Punjab with the rest of the country, then the greatest number of recoveries are in Punjab and the total number of deaths is also lower than other provinces. In Pakistan, a possible treatment used in case a person recovers from COVID-19 is that their plasma is transfused to the infected patient with the same blood group.

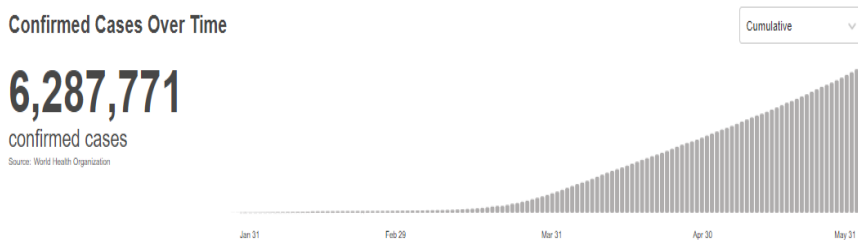


Figure 1. COVID-19 confirmed cases (Source: WHO)

1.2. Corona Virus and Pakistan

Pakistan was free from COVID-19 until February 26, 2020 when the first COVID-19 case was confirmed in Sindh by the Ministry of Health. Afterwards, within 15 days the number of COVID-19 positive patients reached 20. It increased gradually at a high rate along with the number of mortalities. The economy was put at a high risk and the situation became worse in Punjab and Sindh province.

Government of Pakistan has taken every possible precautionary measure against the spread of COVID-19, such as detecting, tracing, social distancing, awareness campaign, isolation, quarantine and lockdown. A COVID-19 relief fund was also established by the government for public welfare. Social network helplines were launched in different languages spoken in different areas to assist the people. SOPs were designed and a number of health centers were

established to control the spread of the virus and to treat the infected people. In spite of all these facts, the current scenario of Pakistan’s economy is not satisfactory at all and its financial standing is poorer than developed countries due to COVID-19 breakout.

For instance, in his recent speech, Minister for Planning, Development and Reforms in Pakistan anticipated that over 18 million people will lose jobs amid lockdown in Pakistan. Pakistan Institute of Development Economics (PIDE) revealed that in the current scenario approximately 70 million people might fall below the poverty line. Every country is trying to flatten the curve and to limit the spread of the disease to a certain level. In Pakistan, the disease has not proved to be as chronic as in Europe and USA and the number of patients is far less as compared to them.

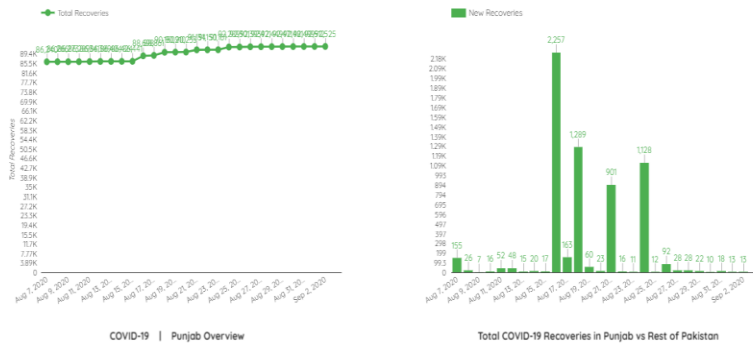


Figure 1. COVID-19 positive cases for Punjab

1.3. Research Objectives

This study sets itself to fulfil the following objectives. It first describes the situation of COVID-19 in the Punjab province. It also presents the dynamics of the theory of smart lockdown and explores parameters related to the decision to ease lockdown. Then, patterns of the recovery rate and mortality rate from COVID-19 in Punjab are presented and implications based on the current scenario are discussed.

2. Literature Review

COVID-19 has disturbed the economic situation of many countries. Firstly, it has affected adversely major economies such as China. China provides products to many countries and one of them is

Pakistan. So, when China was caught in this pandemic, Pakistan suffered a lot because of it. In previous years there have seen several recessions, however, this time pandemic is the cause of the recession.

Many research papers have explored the causes of recession (Stiglitz, [2009](#); Gaiotti, [2013](#); Bezemer, [2011](#); Mian & Sufi, [2010](#); Bentolila et al., [2018](#); Bagliano & Morana, [2012](#)). However, this pandemic has triggered a new type of recession that is very different from past recessions, such as the Asian debt crisis of 1997 caused by the collapse of Thai baht in July 1997, which created panic and initiated a huge financial crisis in Asia (Radelet, Sachs, Cooper, & Bosworth, [1998](#)). Another recession occurred in 2016 in Nigeria caused by the fall in the price of crude oil.

Different researches have studied various topics related to COVID-19. Baker, Farrokhnia, Meyer, Pagel, and Yannelis ([2020](#)) investigated the effect of lockdown on employment at state level. Employment is a significant macroeconomic factor and lockdown has affected many employed people. Some papers such as Andersen, Hansen, Johannesen, and Sheridan ([2020](#)), Chen, Qian, and Wen ([2020](#)), and Baker et al. ([2020](#)) studied the impact of consumption response during this pandemic. They strived to find whether in this situation the consumption of food and other stuff increased or decreased since it affects our economy in many ways.

Several research papers have explored the consequences of COVID-19 using measures of life expectancy as well as infant and child mortality (Pritchett & Summers, [1996](#); Bloom & Sachs, [1998](#); Bhargava, Jamison, Lawrence, & Murray, [2001](#); Cuddington, Hancock, & Rogers, [1994](#); Cuddington & Hancock, [1994](#); Robalino, Jenkins, & Maroufi, [2002](#); Haacker, [2004](#)).

All pandemics have terrible effects on the economy of the affected country and/or the whole world. Influenza killed 40 million people worldwide during the years 1918-20. It affected the whole world and it took a year for people to get back to normal life. At that time, it affected the global economy and trade adversely (Fernandes, [2020](#)). We can relate this scenario with the current scenario because this pandemic has also affected global trade adversely.

Fernandes (2020) discussed that every country is facing issues due to this pandemic, however, some big economies are facing too many issues because they need to maintain a high economic growth rate and take care of their people, simultaneously. It has been observed that in US the crisis will cost 3% of the GDP. Due to the composition of the model used in the paper, it seems that different countries will be affected differently. However, it seems that Greece, Italy, Spain and Portugal will be affected to a greater degree than any other country. In this crisis, it seems that mainly young people and illiterate people will lose their jobs.

Maliszewska, Mattoo, and van der Mensbrugge (2020) explored how trade and GDP is affected by COVID-19 in different countries. The paper showed that due to this pandemic, there is a chance that that trade will be affected and could shrink by US\$1400 million. In the case of China, the biggest decline is in their exports and manufactured goods.

Macroeconomic theories related to the impacts on the global pandemic scenario assume that the pandemic hit China the hardest but it has also affected other countries. This global pandemic is expected to decrease the Chinese GDP. The impact on China becomes progressively more negative as the impacts of the various shocks accumulate. First, supply shock reduces GDP through a decrease in employment (and capital), leading to lower production and exports. Exports are very important to sustain the incomes of businesses in China. Thus fall in exports will decrease imports via decrease in incomes. Global GDP is also going to be affected, the extent and exact details of which will emerge in future. It is expected that the global GDP will decline by 2.1%. Developing countries' GDP is expected to decline by 2.5% and that of high-income countries by 1.9%. The biggest GDP losses in the global pandemic scenario are expected in East Asia and Pacific (EAP) countries due to their relatively deep integration into the world economy through trade and due to a direct impact on tourism. The estimated magnitude of COVID-19 impact on some countries are following, Cambodia (3.2 %), Singapore (2.1 %), Hong Kong SAR, China (2.3 %), Thailand (3 %), Vietnam (2.7 %), and Malaysia (2.1 %) (Maliszewska et al., 2020).

Every country in the world is affected by this pandemic, although some were affected sooner than others such as Japan. They had their first case in mid-January and then the second case was discovered at the end of January. Japan got affected after China, so they started working on building the medical team required to handle the pandemic. They worked fast to control the situation. Although in their case, exports were affected because of lockdown. They closed their schools. They have taken serious actions since the pandemic started (Shaw, Yong & Hua, [2020](#)).

3. Theory of Incidence of COVID-19

Imports were among the first to be affected by this pandemic. There are many countries who depend on imports. There are many countries who depend on the major exports of China, Japan and India (Ozili, [2020](#)). The reduction in trade has disturbed many countries who were not affected at first by this pandemic. Pakistan was first in the line of effected because of its trade link with China. Due to this, the remaining stock available in Pakistan became very expensive.

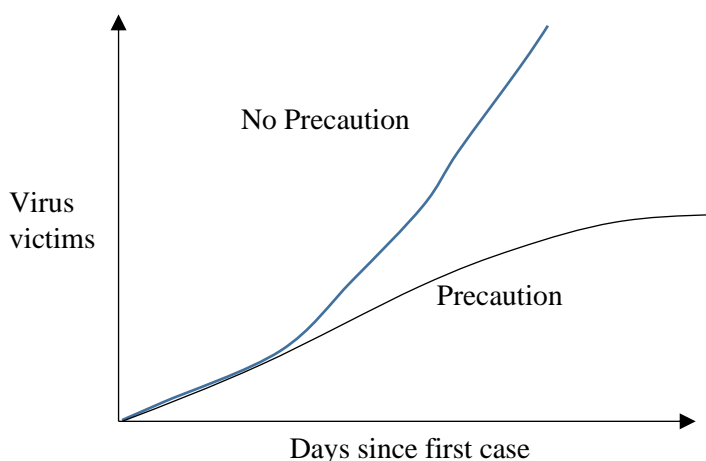


Figure 2. COVID-19 incidence curve

Literature suggests that the spread of viruses over time usually follows the pattern of exponential (positive increasing) series, which means that we will experience a large increase in the patients of the virus, eventually. It will not stop until everyone is affected just like a flu virus. However, if precautionary measures are properly

applied, we can convert the exponentially increasing series to a gradually decreasing series.

This precaution based incidence curve has three phases, that is, to increase return to scale, constant return to scale and to decrease return to scale (shown in figure 3). As a whole, this curve follows a quadratic function of time. Recent literature talks about stringent policies to flatten this curve faster (achieving constant returns to scale). However, according to the report of World Economic Forum, although higher stringency will achieve flattening faster but it will also lead to a more severe economic recession (Arshed et al., [2020](#)). The following Figure 4 shows the comparison between the COVID-19 spread curve over time with and without policy. When there is no policy it follows the herd immunity pattern and gradually disappears. Since there is no closing of businesses, only a few of workers and customers fall ill. Hence, we will experience a minor case of economic recession (shown in Figure 4).

While in the strict case where government intervenes via social distancing and other means, the curve sees a peak faster but it also disappears quickly. Since in this case, when everything is closed, there will be a severe economic recession.

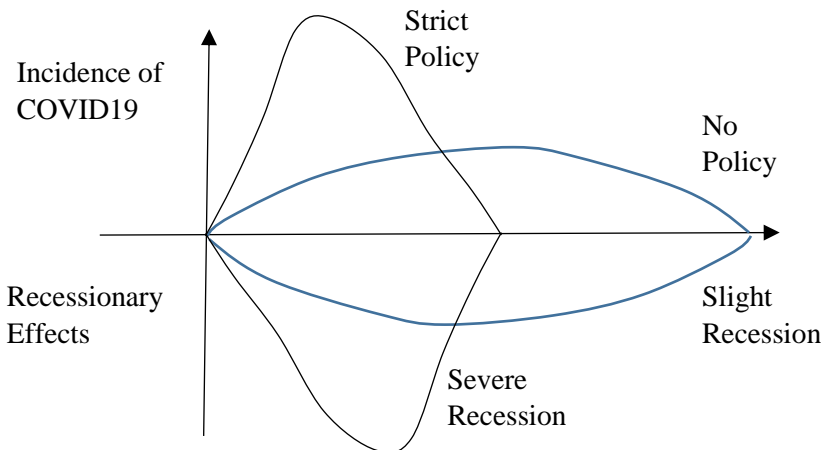


Figure 3. Incidence and effect of COVID-19 curve

This study proposes a policy that may help developing countries in easing the effects of recession resulting from stringent anti-COVID measures. Here, it is proposed that Governments should opt

for smart lockdown. Further, when the government perceives that there is a proportional increase in the number of people recovering from COVID-19, then it should start easing the lockdown. The dotted line shows one such example (Figure 5). If the country eases the lockdown, then the curve starts to show a longer right tail as expected. Its advantage is that the country starts to recover faster than expected.

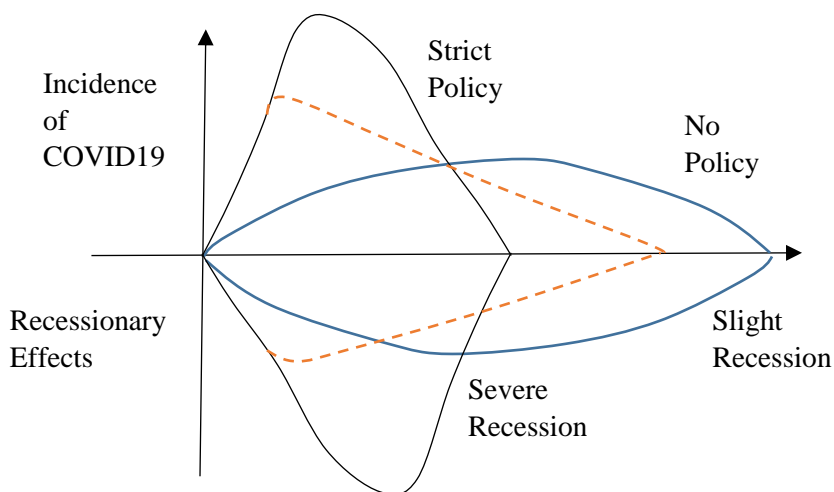


Figure 5. Policy options for incidence and effect of COVID-19 curve

The dynamics behind this approach suggest that policymakers must explore the capacity to hold patients and monitor the rate at which COVID-19 is increasing and decreasing. Poor countries should not show the eagerness to ease lockdown just to recover financially until they expect that the increase in the cases of COVID-19 because of a longer tail (a period of gradual decrease in the COVID-19 cases) can be absorbed by the existing health infrastructure. This is only possible if the rate at which the patients are discharged from the health facilities is faster than the rate at which new cases are admitted.

4. Method and Results

In order to examine the current state of coronavirus in the Punjab province, we used the data from the official website of the Government of Pakistan ([2020](#)).

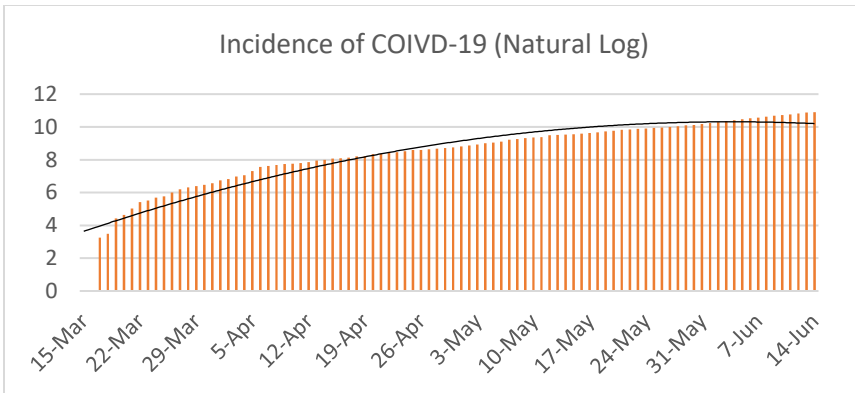


Figure 4. Historical pattern of COVID-19 cases

Figure 6 shows the curve of the log of total positive cases which is a quadratic function of the number of days since the first case. The curve is bending downwards hinting that we may achieve the flattening soon. However, if we observe it minutely, we find that before May 2020 the number of cases stayed below the incidence curve and after May 2020, the number of cases reached above the curve. This issue needs to be addressed by the government.

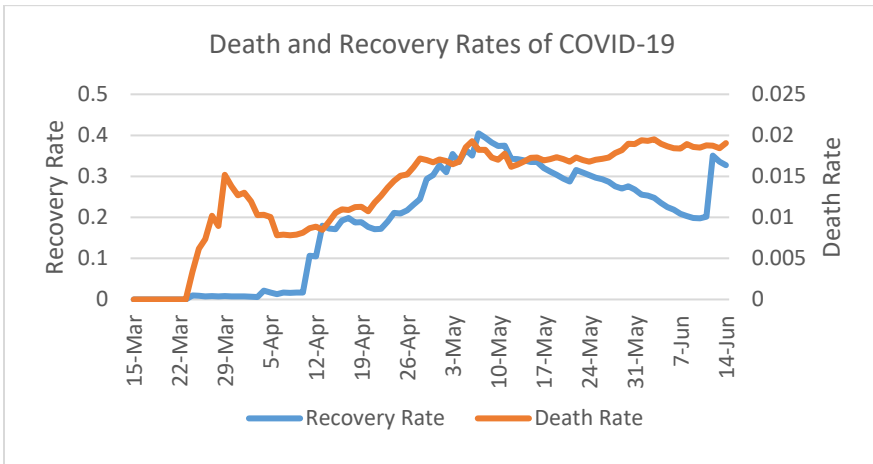


Figure 5. Historical pattern of death and recovery from COVID-19

Death rate gradually increased in the starting days. However, the data confirms that there is a decline in the number of deaths reported in the Punjab province (Figure 7). While the number of recovered cases were declining at the start of June 2020, now there is also an increase in the number of people recovered from COVID-19.

Table 1
Regression Estimates

Variables	Recovery Rate Model	Death Rate Model
Days	1.900 (0.000)	0.042 (0.000)
Day 2	-0.013 (0.000)	-0.0003 (0.000)
Ln Cases	-3.792 (0.000)	0.015 (0.000)
R squared	0.954	0.978
F-test	611 (0.000)	1323 (0.000)

Table 1 provides the estimates of the quadratic function of recovery to total cases and death to total cases ratios while controlling for total cases. The quadratic function model was adapted from Arshed et al. (2020). A sample of 92 days provided significant estimates as per F-test. The proposed variables were able to explain 95% variation in the recovery rate and 97.8% variation in the death rate. Indeed, a 1% increase in total positive cases decreased the recovery rate by 3.792% and increased the death rate by 0.015%. These results point to the first frightening issue, that is, future cases are slowing down the recovery rate faster than the rate at which the number of deaths is increasing. Hence, with each passing day, there will be increase in distance between the death rate and recovery rate.

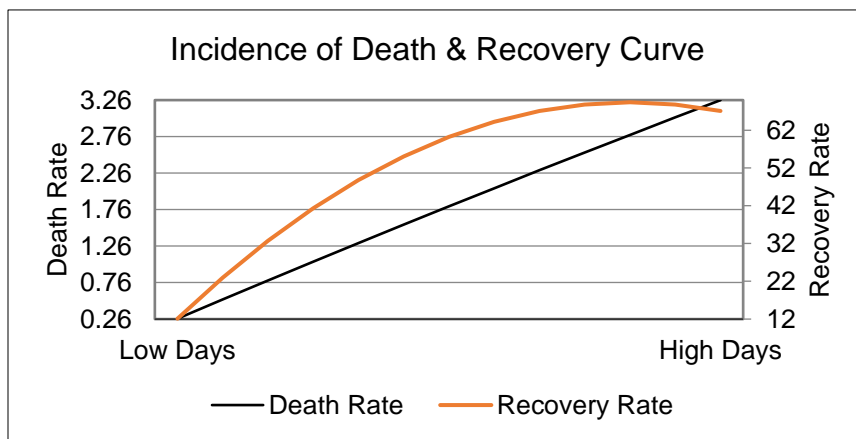


Figure 6. Estimated pattern of death and recovery from COVID-19

In these estimates, the level coefficient of days is bigger for the recovery rate and smaller for the death rate which shows that there has been a steady increase in the proportion of people who have

recovered from COVID-19. While the square of days is smaller for the recovery rate and larger for the death rate, which shows that with the passage of time we will observe a considerable diminishing effect in the recovery rate as compared to the death rate as evident in Figure 8.

5. Conclusion

In this paper, we observed how the COVID-19 pandemic started in China and then spread to other countries. We observed its impact on global trade and other sectors of the economy as well. We also observed how it started in Pakistan and the serious actions taken by the government to enforce lockdown in many cities of Pakistan. Lockdown was very effective at first but after sometime, it was observed that due to lockdown the majority of people became unemployed and the economic situation worsened. So, the government converted this lockdown into a smart lockdown. This decision was taken just a few days before Eid, which started from May 19, 2020 onwards. Henceforth, lots of people were able to earn their living once again but its effects were also disquieting because people did not follow the government's recommended SOPs. Since after Eid holidays, COVID-19 cases are on the rise which is an alarming situation. There has been an upward trend in the number of deaths reported in the Punjab province, whereas recoveries have started to decrease as well. This study used the data of recovery rate and mortality rate of the COVID-19 patients and assessed it against the quadratic function of the number of days since the first case was reported in the Punjab province. Figure 8 shows that there is a steady increase in the death rate, while it is observed that there is a diminishing effect in the increase in the recovery rate. Even though the values associated with death rate are quite low, yet at the current pace, it is feared that they may outpace the recovery rate. This study suggests the policymakers that assessing only the number of positive cases may not help in grasping the severity of the situation. Here, the use of relative forms of mortalities from COVID-19 and recoveries from COVID-19 may help in assessing the pressure on the system. Lastly, this study discussed the theoretical model. It provided indications as how to ease the lockdown and also discussed the parameters needed to be evaluated before taking the decision to ease the lockdown.

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