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The impact of Covid-19 on Gig economy

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ABSTRACT

Covid-19 has jolted and halted the whole world. Economies and stock markets have been hit hard however very little is known about the impact of the pandemic on Gig economy. So, this study is an attempt to understand the impact of Covid-19 on Gig economy. The Online Labor Index of Oxford University has been used as a measure of Gig Economy and daily record of new cases and deaths of Corona patients has been used as proxies for Covid-19. The world data for Gig economy ranges from July 1, 2019 to June 22, 2020 and the data regarding Covid-19 ranges from December 31, 2019 to June 22, 2020. This study uses GARCH and VAR model to understand the above mentioned relationship. The results of volatility clustering shows that the volatility of Gig economy increased with the news of Covid-19. Findings of VAR show that covid-19 has significant positive impact on new job openings in Gig economy. Granger causality test shows a bi-directional relationship between covid-19 and Gig economy i.e. Covid-19 cases affected online job openings and online job filling affected the spread of pandemic. The Findings suggest that policymakers should make policies to support Gig economy because it has the potential to keep the world going even in the toughest of times.

1. Introduction

Covid-19 virus has taken China and the whole world at a surprisingly fast pace. The epidemic which was first detected in the Wuhan city of China spread in the whole world like the jungle fire and became pandemic. The earliest response to the disease was lockdown which affected daily lives, markets, and economy badly. A lot of existing research papers have studied the impact of the incidence of Covid-19 on stock markets and economy. Al-Awadhi et al. (2020) studied the impact of Covid-19 on Chinese stock market and concluded that daily growth of Covid-19 new cases and deaths adversely affected the stock returns. In a relatively more comprehensive study, Liu et al. (2020) studied the impact of Coronavirus outbreak on 21 leading stock

exchanges. The study found that the stock markets fell quickly after the outbreak and the negative impact was more prominent in case of Asian countries compared to others. In an all-inclusive study, (Ashraf, 2020) used data from stock markets of 64 countries and the results supported the adverse impact of Covid-19 on stock market hypothesis.

Hevia and Neumeyer (2020) studied the impact of Covid-19 on economy and concluded that Non Preventive Interventions (NPI) – Social distancing may result in an output decline exceeding that of great depression. The study concluded that financing fixed cost of living could create unprecedented need for liquidity and many firms will go bankrupt and unemployment will soar, provided the epidemic persists. Açikgöz and Günay (2020) concluded that pandemic has sever adverse impact on employment, consumers, supply chains and financial markets of Turkey and the World. The manuscript proposed that the pandemic will cause global economic recession. Some other studies have analyzed the impact of Covid-19 on economies of different countries and regions (Giulietti, 2020; Mahendra Dev & Sengupta, 2020; Susilawati et al., 2020).

As mentioned above, many existing studies have analyzed the impact of Covid-19 incidence on stock markets and traditional economies but very little is known about the effect of Covid-19 on Gig economy. Gig economy is relatively new concept and it is considered to be the most significant economic change of last decade and is conceptualized along four dimensions including: online intermediation; paid tasks; independent contractors and personal services. This study attempts to understand the impact of Covid-19 on platform economy. Because of the lockdown, many companies have asked their employees to work from home, where possible. So, it is interesting to know whether the incidence of pandemic has positively affected the Gig Economy or not?

As mentioned above, one of the major characteristic of Gig economy is online platform i.e. online market where the buyers and sellers meet. How has the Covid-19 affected this online labor market compared to the stock markets? As Hevia and Neumeyer (2020) and Açikgöz and Günay (2020) concluded that the pandemic will result into recession or even depression, would this affect be minimized by increase in online jobs which will keep the wheel of the global economy moving.

This study is different from above mentioned studies in a number of ways. First, the above mentioned studies have analyzed the impact of Covid-19 incidence on traditional stock markets and typical economies but this study examines the impact of Corona virus spread on Gig economy. Second, most of the above mentioned studies have analyzed the impact of Covid-19 on stock markets and economies of a country or a region but because the Gig economy platforms are global in nature so this study examines the impact of pandemic on worldwide Gig economy. Third, the findings of this study are conclusive unlike many above mentioned studies which conclude that the full impact of Covid-19 on stocks and economies is yet to be known. Fourth, the data used for the analysis in this study is longest and latest. Fifth, this study uses multistage time series analysis. In the first stage, GARCH model has been used to understand whether the Covid-19 affected Gig economy or not and in the second stage Vector Autoregressive (VAR) model was run to find the relationship between Gig economy and incidence of pandemic.

The rest of the paper is as follows. The second section describes literature and the third part is about methodology. Fourth segment present results and discussion and the fifth portion concludes the paper by providing suggestions.

2. Literature review

Corona virus causes respiratory infection including cold, pneumonia, cough and sneezing to human beings and transfers through airborne droplets (Kumar, 2020). Covid-19 was first detected in Wuhan city of China and spread to other regions and the world very quickly. WHO and ECDC advised citizens not to visit public places and to avoid close contact with infected people (Kumar, 2020). To keep the citizens safe from the disease, Chinese government locked the city down by banning the entry and exit of people from the city. This practice was adopted throughout the country and everything came to stand still. The lockdown adversely affected the financial markets and economy(Açikgöz & Günay, 2020; Liu et al., 2020).

A. A. M. Al-Awadhi et al. (2020) investigates the impact of Covid-19 on stock market returns of Chinese companies. The study used panel data analysis and concluded that both daily growth of confirmed cases and deaths caused by Covid-19 have significant negative impact on stock return of all listed Chinese companies. In a macro level study, (Onali, 2020) used GARCH and VAR models on stock market data from US and six worst hit countries by the virus to understand the impact of Covid-19 on Dow Jones and S&P 500. No other variable except number of reported new cases in China significantly determined variation in stock markets. The findings of (Onali, 2020) differs from A. A. M. Al-Awadhi et al. (2020) because the number of new cases in US did not adversely affect the stock market.

He et al. (2020) examined the impact of Covid-19 on stock markets of China, Italy, South Korea, France, Spain, Germany, Japan and US. The study concluded that Covid-19 has adverse and short term impact on stock markets of affected countries. In a similar paper, (Wang & Enilov, 2020) examined the impact of Covid-19 on stock returns of G-7 countries. The study also supported the adverse impact of Covid-19 on stock markets of G-7 countries. Liu et al. (2020) extends the same line of literature by studying the impact of Corona virus on 21 leading stock markets of the world. The study used the event study method and found that stock markets fell quickly after the virus outbreak. Asian markets were hit hard compared to their western counterparts. Ashraf (2020) studied the same question but by using data from 64 countries. The findings also supported the adverse impact of Covid-19 on stock markets. The study came up with two main findings. First, markets reacted more proactively to number of new cases rather than number of new deaths. Second, the market reaction was stronger in early days and between 40 and 60 days after the initial confirmed cases.

Baker et al. (2020) nailed the topic by concluding that no previous pandemic has affected stock markets more powerfully than Covid-19. The study suggest that the policy response to curtail the spread of virus is responsible for unprecedented impact of disease on stock markets. All the above mentioned studies agree that the Covid-19 has an adverse impact on stock markets but Sansa (2020) came up with an opposite

finding for the impact of Covid-19 on Chinese and US stock markets. The study found a positive impact of new registered cases on financial markets of these two countries. The limitation of the study is that it only uses data ranging from March 12,020 to March 25, 2020.

Ozili and Arun (2020) studied the impact of Covid-19 on global economy and concluded that the measures to limit the spread of virus resulted in shut down of financial markets, corporate offices, businesses and events which brought the economies to their knees. The exponential spread of virus and heightened uncertainty led to the flight to safety in investment and consumption among investors, consumers and international trade partners. In a review paper on the same topic, (Açikgöz & Günay, 2020) concluded that pandemic has severe adverse impact on employees, customers, markets and supply chains. The study proposed that pandemic will cause global economic recession and lead to a permanent shift in world and its politics. The structure of health sector, security, trade, agriculture, employment, production and scientific discoveries will change permanently.

Shifting the focus from global to domestic, (Susilawati et al., 2020) studied the impact of Covid-19 on Indonesian economy. The study concluded that the Covid-19 has significant adverse impact on different sectors of Indonesian economy. The sectors include: transportation; tourism; trade; health and especially the financial sector. Mahendra Dev and Sengupta (2020) studied the impact of Covid-19 on Indian economy and concluded that the economy is likely to face extended period of slow down due to country-wide lockdown, global economic downturn and associated disruption of demand and supply chains. About the magnitude of the impact, the study suggest that it will depend on duration and severity of the crisis along with manner in which situation will unfold once the lockdown is lifted.

As Gig Economy is an emerging topic so different studies have analyzed the factors that influence and get influenced by it. It's important to have a look on some of the most relevant studies which have analyzed the factors which affect supply and demand of labor in the new platform economy. Sinchaisri et al. (2019) found that financial incentive positively influence the decision to join online labor force and number of hours a participant work. The study also found that workers exhibit income targeting i.e. they work less when they reach closer to their earning goal and work more as they get older on the platform (inertia). Rockmann et al. (2018) concluded that one of the most important factor to join online labor force is individual's perceived level of control over the employing organization. In another study, Alex Rosenblat (2016) concluded that the decision to join online workforce depends on range of motivations i.e. lacking other jobs to wanting control of own schedule. On finding ways to motive Gig employees, (Ravenelle (2019) suggest that Theory Y managerial assumptions can be used to encourage innovation, creativity and sense of self instead of the assumptions of theory X. On the other hand, the factors that influence client's behavior include: hedonic motivation; economic benefits; trust; and perceived platform quality (Auditianto et al., 2019). In a similar study, Tussyadiah (2016) found that the intention to reuse P2P accommodation depends on enjoyment and value obtained from previous experience.

I t's obvious from the above mentioned discussion that there are many studies which have examined the impact of Covid-19 on financial markets and economies. However, to the best of our knowledge, none of the existing studies has explored the impact of Covid-19 on Gig economy. However, (ILO, 2020) has studied the impact of Covid-19 on classical job market. The study concluded that Covid-19 crisis has already resulted in economic and labor market shock, impacting aggregate supply and demand. The lockdown has knock-on effect on jobs and hence incomes particularly for informal and casually employed workers. The Corona crisis has suppressed the chances of new job openings and hiring. ILO (2020) is silent about the impact of Covid-19 on Gig economy. Current study bridges this gap by thoroughly understanding the impact of Covid-19 on platform economy.

3. Data and Methodology

Data has been collected from two different sources. Gig economy data i.e. Online Labor Index (OLI) has been obtained from The iLabour Project of Oxford University (Kässi & Lehdonvirta, 2018) and data regarding new Covid-19 cases and deaths has been obtained from 'Our World in Data' (https://ourworldindata.org/coronavirus-data). The data for the OLI series range from July 12,019 to June 2,22,020 and the data for new cases and deaths range from December 3,12,019 to June 2,22,020. The OLI measures the supply and demand of online freelance labor. OLI new jobs provides information about the supply of jobs and OLI filled jobs provides evidence about demand for online jobs. OLI is constructed by tracking all the tasks or projects posted on five major English language platforms which are selected on daily basis from 40 top English – language online job platforms on the basis of visitor's estimates provided by Alexa. Alexa is a virtual assistant artificial intelligence technology developed by Amazon and it's capable of performing plenty of tasks such as music playback, preparing to do lists, setting alarms, providing weather information, other real-time information etc. and most importantly record of traffic to a websites. Covid-19 new cases represent the daily number of new Covid-19 patients and new deaths caused by the Corona, worldwide.

This study uses two stage methodology for analysis by using STATA 13. In the first stage, volatility of the OLI series ranging from July 12,019 to June 2,22,020 has been measured using GARCH (1, 1) model. The purpose of measuring volatility is to conclude whether the incidence of Covid-19 has affected the online labor market or not? The mathematical expression for GARCH (1, 1) is given below.

$$\delta_t^2 = \beta_0 + \theta_k \delta_{t-k}^2 + b_1 u_{t-1}^2$$

This model shows that volatility in the period t depends on magnitude of squared errors in the previous periods. It examines the mean and variance of a series simultaneously. After running this model, we predicted the variance as a new variable. The graphs of conditional variance for both the series of OLI have been drawn to finalize whether the gig economy reacted to the news of pandemic or not. The graphs show that new online job openings and filling clearly reacted to the Covid-19 news. In the second stage, the study used VAR model to find the short term relationship between

the incidence of Covid-19 and Gig economy. The researchers concluded to go ahead with VAR analysis after performing different tests. A list of all the steps performed to decide that VAR should be used is given below.

In the first step of second stage, the study used the Augmented Dickey Fuller Test (ADF) to know whether the series are stationary or not? The series were stationary at different levels i.e. co-integration was not possible. Therefore, instead of using Vector Error Correction Model (VECM) technique to find the long term relationship, this study used VAR technique to find short term relationship between Covid-19 and Gig economy. The lag length for VAR was decided on the basis of AIC, FPE and HQIC criteria. Granger causality test has been applied to know whether bi-directional causality exist between incidence of Covid-19 and gig economy. Post estimation stability test was also run to know about the stability of our results. All our results are robust.

Following VAR models have been used for the analysis. In the first model the main dependent variable is OLI new openings with Covid-19 new cases and recorded deaths are main independent variables.

$$OLI\ new\ openings_t = \alpha_0 + OLI\ new\ openings_{t-4} + New\ cases_{t-4} + New\ deaths_{t-4} + \varepsilon$$

$$New\ cases_t = \alpha_0 + OLI\ new\ openings_{t-4} + New\ cases_{t-4} + New\ deaths_{t-4} + \varepsilon$$

$$New\ deaths_t = \alpha_0 + OLI\ new\ openings_{t-4} + New\ cases_{t-4} + New\ deaths_{t-4} + \varepsilon$$

In the second model, the main dependent variable is the second component of OLI i.e. OLI filled jobs. The main independent variable are same like previous model.

$$OLI\ Filled_t = \alpha_0 + OLI\ Filed_{t-4} + New\ cases_{t-4} + New\ deaths_{t-4} + \varepsilon$$

$$New\ cases_t = \alpha_0 + OLI\ Filled_{t-4} + New\ cases_{t-4} + New\ deaths_{t-4} + \varepsilon$$

$$New\ deaths_t = \alpha_0 + OLI\ Filled_{t-4} + New\ cases_{t-4} + New\ deaths_{t-4} + \varepsilon$$

The symbols used in the equation are self-explanatory. α_0 Represent the constant and ε stands for error term. The subscripts t and t-4 denote daily values and four days previous values respectively. The results calculated on the basis of above mentioned models have been discussed in the following section of this paper.

4. Results

Table 1 provides the descriptive statistics. It has two panel namely Panel A and Panel B. Panel A provides the summary statistics for OLI labor index variables for the period ranging from July 12,019 to June 2,22,020. The daily average of new task/jobs posted on top five platforms is 141 with a standard deviation of 27 and the value in the series are normally distributed as the Skewness is zero and kurtosis's values are less than 3. The average jobs filled daily on these platforms are 138 with a standard deviation of 27. This series is positively skewed and has fat tails.

Table 1. Panel A: Descriptive statistics for July 12,019 to June 2,22,020.

	Mean	Median	Std.	Min.	Max.	Skewness	Kurtosis	N
OLI new jobs	140.78	92.60	27.71	80.32	224.69	0.005	2.39	358
OLI filled jobs	138.25	88.09	38.84	55.20	594.04	4.98	56.56	358

Panel B : Descriptive Statistics for December 3,12,019 to June 2,22,020

	Mean	Median	Std.	Minimum	Maximum	Skewness	Kurtosis	N
OLI new jobs	152.05	153.77	26.47	89.17	198.05	−0.18	2.03	166
OLI filled jobs	147.07	146.29	29.82	83.94	309.01	0.998	7.18	166
Covid-19 new cases	46217.3	34047	45328.4	0	144070	0.32	1.5	165
Covid-19 deaths	2581.4	1641	2687.71	0	10520	0.52	1.99	165

Source: the authors based on the data sources mentioned in the methodology section.
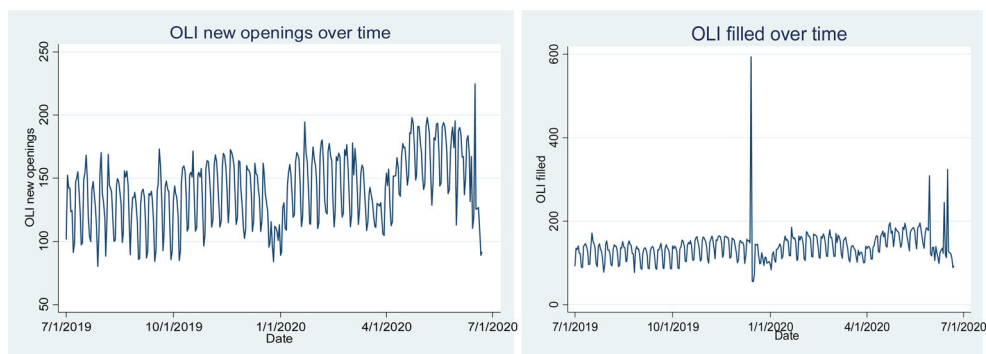

Figure 1. OLI new openings and OLI filled jobs over July 12,019 to June 2,22,020. Source: the authors based on the data sources mentioned in the methodology section.

The average number of new jobs/tasks during Covid-19 period is 152, posted daily on these Gig economy platforms. This number is significantly higher than the annual average mentioned in panel A, which implies that the number of online jobs has increased after the spread of pandemic. Similarly, the average number of daily filled jobs is also higher during Covid-19 period compared to pre Covid-19 era. The average number of jobs filled daily in Panel B is 147 which is quite higher than 138 mentioned in Panel A. OLI is a normally distributed variable as per the statistics of Panel B, however, OLI filled jobs have fat tails. The OLI new openings and OLI filled jobs have been shown in figure 1. OLI new openings show a gradual increase and decline followed by similar pattern ending towards the end of June. OLI filled show that number of filled jobs exacerbated towards the end of year 2019. The situation stayed same from January 2020 to May 2020 and two small peaks can be seen towards the end of June 2020.

Table 2 shows the Pearson correlation coefficient for different series. It also has two panels namely Panel A and Panel B. Panel A shows that there is strong positive correlation between OLI new jobs and filled jobs over July 12,019 to June 2,22,020 period. Panel B shows that the correlation between OLI new jobs and filled jobs is even stronger for the period ranging between December 3,12,019 and June 2,22,020. The correlation between Covid-19 new cases and deaths and OLI is positive. Overall, it is concluded from the correlation matrix that Covid-19 has resulted in more online job openings and fillings.

Table 3 provides the results for GARCH (1, 1) analysis. The results show that β_0 > 0, 0≥ β_1 <1 i.e. all the conditions for GARCH (1, 1) are fulfilled. The

Table 2. Panel A: Correlation Matrix for July 12,019 to June 2,22,020.

	OLI New jobs	OLI Filled jobs	Covid-19 new cases	Covid-19 deaths
OLI new jobs	1			
OLI filled jobs	0.658***	1		
	(0.000)			

Panel B: Correlation Matrix for December 3,12,019 to June 2,22,020

	OLI New jobs	OLI Filled jobs	Covid-19 new cases	Covid-19 deaths
OLI New jobs	1			
OLI Filled jobs	0.806***	1		
	(0.000)			
Covid-19 new cases	0.359***	0.246***	1	
	(0.000)	(0.001)		
Covid-19 deaths	0.391***	0.308***	0.860***	1
	(0.000)	(0.000)	(0.000)	

Values show Pearson correlation coefficient; numbers in brackets present *p* values and *** express significant at 1% level of significance. Source: the authors based on the data sources mentioned in the methodology section.

conditional variance was predicted and stored as a new variable and Figure 2 shows it in the form of a graph. It shows the volatility of OLI new openings and OLI filled jobs. Volatility of OLI new openings increased with the incidence of Covid-19 after a calm period of almost two months. The graph shows a calm period after the breaking of Covid-19 news and the volatility shows an increase in April and May and a very high volatility towards the end of June 2020. The volatility of OLI filled jobs show a peak towards the end of the year 2019 followed by a calm period till June 2020 and two peaks towards the end of June 2020. Form the above discussion regarding graphs, this study concludes that incidence of Covid-19 did affect Gig economy.

To understand the nature of relationship between Gig economy and Covid-19, this study uses Gig economy and Covid-19 data from December 3,12,019 to June 2,22,020. OLI new openings and OLI filled jobs have been used as a proxy for Gig economy and Covid-19 new cases and deaths have been used as proxies for Covid-19 disease. Figure 3 shows the graph of all the series used for the analysis. The x-axis mentions dates and y-axis on left hand side shows number of new OLI openings and fillings and y-axis on right hand side depict number of Covid-19 new cases and deaths. OLI new openings and filling shows two curves having up and down movement and Covid-19 new cases worldwide shows and increasing trend. Number of deaths also show an increasing trend especially from April 2020 to onward.

To understand the impact of Covid-19 incidence on Gig economy, we have performed a series of steps whose detail is discussed below. First, this study ran Augmented Dickey Fuller test to know about the stationary of the series. The results of the test are given in Table 4 which shows that OLI new jobs and filled jobs are stationary at level and Covid-19 new cases and deaths are stationary at first difference. It shows that the Gig economy and Covid-19 are integrated at different levels. Therefore, no long run relationship exist between Gig economy and Covid-19. To know the short term relationship between the series, VAR model has been used. The lag length of 4 was decided on the basis of AIC, FPE and HQIC criteria.

Table 5 displays the results of VAR analysis with Covid-19 new openings as main dependent variable. According to the results, incidence of Covid-19 has significant

Table 3. GARCH (1,1) results.

	OLI new openings	OLI filled
Θ	0.506***	0.015
	(0.001)	(0.768)
β1	0.145**	0.379
	(0.020)	(0.762)
β0	508.351***	908.913
	(0.000)	(0.620)

Results of GARCH (1, 1) model. β0 shows constant; θ represents the coefficient of variance of previous periods and β1 shows the square of error terms of previous periods. ***, ** mean significance and at 1% and 5% level, respectively. Source: the authors based on the data sources mentioned in the methodology section.
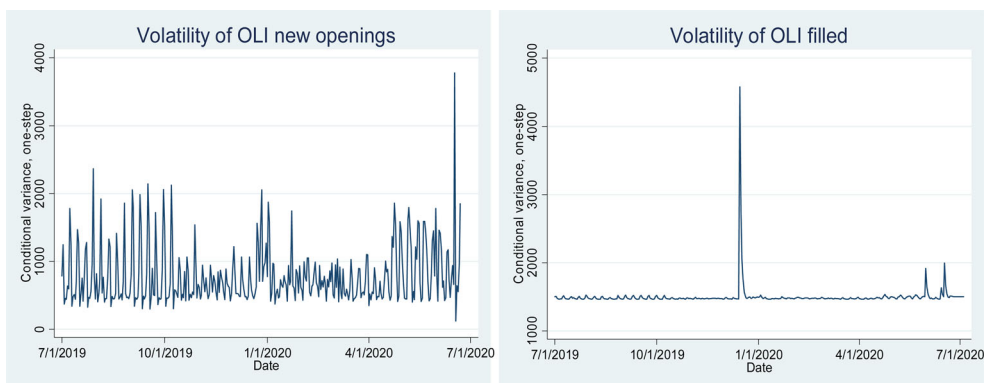

Figure 2. Conditional variance/volatility of OLI new opening and OLI filled jobs over July 12,019 to June 2,22,020. Source: the authors based on the data sources mentioned in the methodology section.
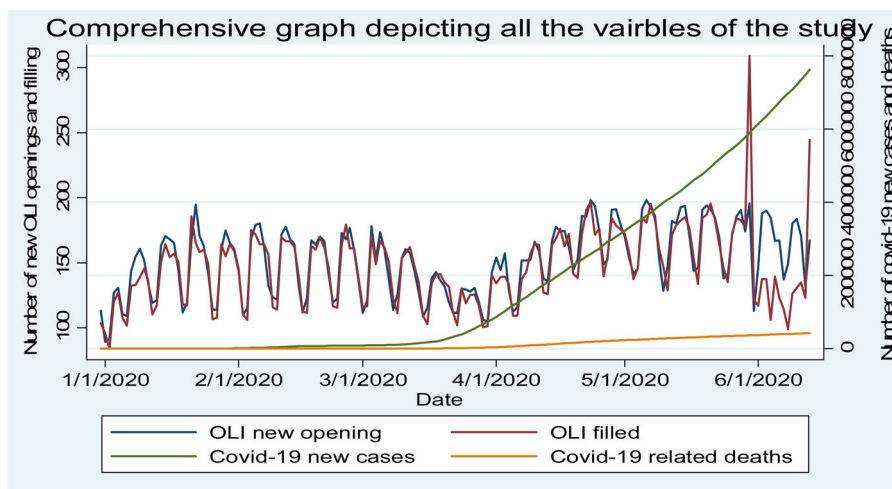

Figure 3. Comprehensive graph depicting all the variables of the study over December 3,12,019 to June 2,22,020. Y-axis on left hand side shows number of new OLI openings and filled jobs and the y-axis on right hand side presents the number of Covid-19 new case or deaths. Source: the authors based on the data sources mentioned in the methodology section.

positive impact on OLI new job openings. The impact of daily worldwide deaths is stronger than the number of new registered cases. According to the second column of the table, OLI new openings doesn't explain variation in Covid-19 new cases but

Table 4. Augmented Dickey Fuller test.

Variable	Test in level	Test in first difference
OLI new jobs	−5.925***	
	(0.000)	
OLI filled jobs	−7.027***	
	(0.000)	
Covid-19 new cases	0.065	−12.657***
	(0.964)	(0.000)
Covid-19 deaths	−2.042	−13.585***
	(0.269)	(0.000)

Values show results of Augmented Dickey Fuller test; p values are in parentheses and *** shows significance at 1% level. Source: the authors based on the data sources mentioned in the methodology section.

Table 5. Empirical results.

	Dependent variable		
	OLI openings	Covid-19 new cases	Covid-19 deaths
OLI openings$_{t-4}$	−0.201***	−33.889	−19.502***
	(0.007)	(0.324)	(0.000)
Covid-19 new cases $_{t-4}$	0.0003***	1.125***	0.023***
	(0.003)	(0.000)	(0.000)
Covid-19 deaths $_{t-4}$	0.001***	−2.050***	0.617***
	(0.677)	(0.001)	(0.000)
Cons.	171.586***	8199.631	3024.887***
	(0.000)	(0.102)	(0.000)

Results of VAR analysis. Left column shows 4th lag of independent variables and a constant; Variables on the top of the column show dependent variables, p values are in parentheses and *** shows significance at 1% level. Source: the authors based on the data sources mentioned in the methodology section.

there is inverse relationship between lagged values of Covid-19 deaths and new registered cases. It implies that increase in deaths scare the people and they increase social distancing as a result the spread of the virus decreases. OLI new openings have significant inverse relationship with Covid-19 deaths. Increase in availability of online jobs reduces the deaths significantly. The relationship between Covid-19 new cases and deaths is significant and positive. It means the increase in new cases results in more deaths. The results of the Granger causality test also show that Covid-19 new cases and deaths collectively explain variation in OLI new openings i.e. incidence of Covid-19 has positive effect on Gig economy i.e. incidence of Covid-19 has resulted in more openings of online jobs.

Table 6 also displays the results of VAR model with OLI filled jobs as main dependent variable. The results show that neither Covid-19 new cases nor deaths significantly explain variation in OLI filled jobs. However, the results show that both Covid-19 new cases and deaths have positive relationship with OLI filled jobs. The relationship between lagged values of OLI filled jobs and Covid-19 new cases is inverse, which means incidence of new Covid-19 cases decline due to filling of online jobs. The relationship between increase in deaths and incidence of new cases is also inverse. It means that increased number of new patients scare people who become more continues and as a result, number of new victims decline. More filling of online jobs results in fewer deaths as the relationship between OLI filled and Covid-19 deaths is significant and inverse. The results also show that increase in number of Covid-19 cases is associated with more deaths. The results of the Granger test show that Covid-19 new cases and filled jobs don't effect OLI filled jobs but collectively they do. The collective effect of Covid-19 new cases and deaths is positive and

Table 6. **Panel A:** Empirical results.

| | Dependent variable | | |
	OLI filled	Covid-19 new cases	Covid-19 deaths
OLI filled $_{t-4}$	0.016	−68.840**	−14.820***
	(0.843)	(0.022)	(0.000)
Covid-19 new cases $_{t-4}$	0.0001	1.117***	0.021***
	(0.542)	(0.000)	(0.000)
Covid-19 deaths $_{t-4}$	0.0015	−1.840***	0.626***
	(0.398)	(0.004)	(0.000)
Cons.	139.517***	12972.850***	2320.401***
	(0.000)	(0.003)	(0.000)

Results of VAR analysis. Left column shows 4th lag of independent variables and a constant; Variables on the top of the column show dependent variables, p values are in parentheses and *** shows significance at 1% and 5% level respectively. Source: the authors based on the data sources mentioned in the methodology section.

significant. Overall, this study concludes that there is no long term relationship between Covid-19 incidence and Gig economic but platform economy has been affected positively by Covid-19 in the short run.

5. Conclusion

This study concludes that Covid-19 has positively affected the Gig economy. The number of average daily tasks/jobs posted and filled on platform economy has increased since the incidence of Covid-19. As the Covid-19 incidence has created the extraordinary situation so the Gig economy is taking time to adjust with the new normal due to the prevailing uncertainty. The conditional variance of OLI series have shown increase at the beginning of tough year 2020 which implies that Gig economy has reacted to the incidence of Covid-19. The positive relationship between Covid-19 and Gig economy exist in short term as the study failed to find the existence of long term relationship between these two variables. Furthermore, the impact of Covid-19 on OLI new openings is more prominent than its impact on OLI filled jobs.

The finding of this study contradict with the many existing studies who have concluded that Covid-19 has only adversely affected the stock markets and economies. Covid-19 has positively affected the Gig economy exactly like the environment. So, the incidence of Corona virus has not only brought devastation rather it has positively affected some areas i.e. family life, environment and Gig economy. As far as the future research is concerned, the forecast regarding the Covid-19 and its impact on Gig economy can provide important insights for policy makers. Studies may also focus on finding the ways to make the conversion to Gig economy easy in order to avoid adverse consequences of any such epidemic or pandemic in future.

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References

Açikgöz, Ö., & Günay, A. (2020). The early impact of the Covid-19 pandemic on the global and turkish economy. *Turkish Journal of Medical Sciences*, *50*(SI-1), 520–526. https://doi.org/10.3906/sag-2004-6

Al-Awadhi, A. A. M. (2020). Swiss Finance Institute Research Paper Series *Feverish Stock Price Reactions to COVID-19*.

Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhammadi, S. (2020). Death and contagious infectious diseases: impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, *27*, 100326. https://doi.org/10.1016/j.jbef.2020.100326

Ashraf, B. N. (2020). Stock markets' reaction to COVID-19: cases or fatalities? *Research in International Business and Finance*, *54*, 101249. https://doi.org/10.1016/j.ribaf.2020.101249

Auditianto, A., Giri Sucahyo, Y., Gandhi, A., & Ruldeviyani, Y. (2019). *Discovering the Influencing Factors of Physical Gig Economy Usage: Quantitative Approach on Clients9 Perception [Paper presentation].* 2019 International Conference on Advanced Computer Science and Information Systems, *ICACSIS 2019*.

Baker, S. R., Bloom, N., Davis, S. J., Kost, K., Sammon, M., & Viratyosin, T. (2020). The unprecedented stock market reaction to COVID-19. *The Review of Asset Pricing Studies*, *10*(4), 742–758.

Giulietti, A. (2020). *Journal of Chemical Information and Modeling Impact of the Corona Virus (Covid 19) on the African Economy*.

He, Q., Liu, J., Wang, S., & Yu, J. (2020). The impact of COVID-19 on stock markets. *Economic and Political Studies*, *8*(3), 275–288. https://doi.org/10.1080/20954816.2020.1757570

Hevia, C., & Neumeyer, A. (2020). A conceptual framework for analyzing the economic impact of COVID-19 and its policy implications. *COVID19 Policy Document Series*. https://www.ilo.org/wcmsp5/groups/public/—dgreports/—dcomm/documents/briefingnote/wcms_738753.pdf

ILO. (2020). COVID-19 and the world of work: impact and policy responses. *ILO Monitor 1st Edition*, *137*, 241–248.

Kässi, O., & Lehdonvirta, V. (2018). Online Labour Index: measuring the online Gig economy for policy and research. *Technological Forecasting and Social Change*, *137*, 241–248. https://doi.org/10.1016/j.techfore.2018.07.056

Kumar, D. (2020). Corona virus: a review of COVID-19. *Eurasian Journal of Medicine and Oncology*, *17*(8), 2800. https://doi.org/10.14744/ejmo.2020.51418

Liu, HYue., Manzoor, A., Wang, CYu., Zhang, L., & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries stock markets response. *International Journal of Environmental Research and Public Health*, *17*(8), 2800. https://doi.org/10.3390/ijerph17082800

Mahendra Dev, S., & Sengupta, R. (2020). Covid-19: impact on the Indian economy. *Working Paper*, 2020–013.

Onali, E. (2020). COVID-19 and stock market volatility. *SSRN Electronic Journal*.

Ozili, P. K., & Arun, T. (2020). Spillover of COVID-19: impact on the global economy. *SSRN Electronic Journal*.

Ravenelle, A. J. (2019). We're not Uber:' control, autonomy, and entrepreneurship in the Gig economy. *Journal of Managerial Psychology*, *34*(4), 269–285. https://doi.org/10.1108/JMP-06-2018-0256

Rockmann, K., Jacob, M.-R., & George, E. (2018). The drive to drive: understanding Gig work by understanding the Gig worker. *Academy of Management Global Proceedings*.

Rosenblat, A. (2016). What motivates the Gig economy, according to 85 interviews with uber and lyft drivers. *Harvard Business Review*. https://hbr.org/2016/11/what-motivates-gig-economy-workers

Sansa, N. A. (2020). The Impact of the COVID-19 on the Financial markets: evidence from China and USA. *SSRN Electronic Journal*.

Sinchaisri, P., Allon, G., & Cohen, M. (2019). The impact of behavioral and economic drivers on Gig economy workers. *Academy of Management Proceedings*, *2019*(1), 10216. https://doi.org/10.5465/AMBPP.2019.287

Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's pandemic on the economy of Indonesia. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 3(2), 1147–1156. https://doi.org/10.33258/birci.v3i2.954

Tussyadiah, I. P. (2016). Factors of satisfaction and intention to use peer-to-peer accommodation. *International Journal of Hospitality Management*, 55, 70–80. https://doi.org/10.1016/j.ijhm.2016.03.005

Wang, W., & Enilov, M. (2020). The global impact of COVID-19 on financial markets. *SSRN Electronic Journal*.