

RESEARCH ARTICLE

Pharmaceutical and Transportation Stocks Under the Coronavirus 2019 (Covid-19) Pandemic: Evidence from Pakistan

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Abstract: The Coronavirus Diseases 2019 (COVID-19) outbreak has resulted in a huge amount of investment losses to the global economy but as per rational belief the sector that could give positive returns during this pandemic is pharmaceutical whereas, the transport sector is believed to give substantial negative returns due to strict lockdown policy and restriction on transportation. Thus, this study aims to investigate the impact of COVID-19 on the pharmaceutical and transport companies listed on the Pakistan stock exchange and to determine the returns trend of the selected sectors in comparison with the market index. The study has used the data set of daily closing stock prices of ten pharmaceutical companies and four transport companies ranging from 06-June-2019 to 10-December-2020 comprising 394 trading days. The empirical results show that the pharmaceutical sector moved against its benchmarking index (contrarian effect) meanwhile, the stocks returns of the transport sector moved along with its benchmarking index (momentum effect). Hence, it can be concluded that pharmaceutical stocks showed a negative trend whereas, transport stocks showed positive trend during the turbulence of COVID-19. Additionally, the findings from this study paper contributes to nullifying the general hypothecon of pharmaceutical companies showing positive returns and transport companies exhibiting negative returns during the COVID-19 pandemic.

Keywords: COVID-19; pharmaceutical companies; transport companies; momentum effect; contrarian effect.

JEL Classification Codes: G3, O16

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1 Introduction

The coronavirus diseases 2019 (COVID-19) originated from Wuhan, the city of China have soon become a global crisis. As per statistics, on March 11, 2020, the COVID-19 has affected more than 1 million people across the world, which includes thousands of deaths (Albulescu, 2021). As a reason, the World Health Organization (WHO) declared the new coronavirus as the “global pandemic”. Moreover, the spread of COVID-19 has not stopped yet, on January 14, 2021, the infected people have reached the figure of 93,351,785 with 1,996,912 deaths caused by the COVID-19¹. Other than the number of deaths and infections caused by this global pandemic, it has also widespread fear and panic among people around the world. As a result, it has created a sense of emergency and widespread panic across the globe is faster than the virus itself (Aslam, Awan, Syed, Kashif, & Parveen, 2020). Apart from affecting the social system globally, the COVID-19 has also jolted the economies and businesses around the world (Laing, 2020). Overall, the COVID-19 pandemic has a significant impact on the world economies and several business sectors such as tourism which has faced serious threats to their business activities due to strict lockdown policy adopted by the governments across the globe (Zhang, Hu, & Ji, 2020).

In various articles, it is well documented that the coronavirus pandemic might hit different sectors of the economy such as entertainment, tourism, hotels, and airlines. Kamal, Chowdhury, and Hosain (2021) studied US marine transport stocks from NYSE and found negative reaction of these stocks to COVID-19. Sharma, Thomas, and Paul (2021) studied the tourism industry’s stocks negative reaction to COVID-19. However, the pharmaceutical and transportation sectors can play a crucial role throughout the COVID-19 pandemic because cargo and freight services are much needed for necessities and medicines deliveries. While observing the recent studies remarkably, it is observed that the researchers did not put much attention on the pharmaceutical and transport industries during the COVID-19 pandemic, particularly in the case of Pakistan. This knowledge gap inspired us to research the effect of COVID-19 on pharmaceutical companies and transport companies listed with the Pakistan stock exchange. Additionally, when COVID-19 was reported at the end of December in Wuhan, city of China, the market index in Pakistan, KSE100 index, however, looks to be stable or positive as the crisis in China is likely to support the domestic businesses. This pandemic has spread all over the world since December 2019, including Pakistan. Gradually the PSX began to fall as the COVID-19 confirmed cases rapidly increased in Pakistan.

This study is based on the theoretical model efficient market hypotheses proposed by Fama (1970). According to this theory, market information plays a significant role in shaping investment decisions. He also iterates that markets are rational and efficient investors overreact to both good and bad news. Based on this, we can identify two investment strategies viz. Contrarian strategy and Momentum Strategy. In the case of a contrarian strategy, the investors will overreact to the news, while in the momentum strategy, the investors will gradually react to market news. In other words, if the investors are moving as per the general market trend, it can be categorized as a momentum strategy. On the other hand, under the contrarian strategy, investors will do just the opposite of the market movements. This theoretical postulation is on the ground that we have to check how the investors react to pharmaceutical stocks and transportation stocks during the COVID-19 pandemic. The mathematical testing of this study was carried out based on the model proposed by

¹<https://www.worldometers.info/coronavirus/>

(Aravind, 2016). Donadelli, Kizys, and Riedel (2017) studied the US pharmaceutical firms' reactions to infectious diseases and found that large pharmaceutical companies are less affected with these alerts, as compared to small pharmaceutical firms.

Overall, the study contributes to the existing literature in number of ways. Firstly, the study is novel in terms of incorporating the pharmaceutical sector, and transportation sector during the COVID-19 pandemic. Secondly, the study compares the sectoral performance of pharmaceutical, and transportation companies in both the periods: 1) Pre-COVID-19 pandemic phase, 2) During COVID-19 pandemic phase. Thirdly, the study also compares the performance of the two sectors with regards to the market index (KSE 100).

The main objective of this study is to investigate the impact of COVID-19 on the pharmaceutical and transport companies listed on the Pakistan stock exchange and to determine the returns trend of the selected sectors in comparison with the market index. Furthermore, the layout of this paper is as follows. Section 2 includes a literature review, section 3 comprises data and methodology, section 4 refers to the empirical findings. At last, the conclusion is given in section 5.

2 Literature Review

Coronavirus is deemed to be transmitted from animals to humans and was first reported in China in Dec 2019 (Kothai & Arul, 2020). Currently, there are no antiviral medicines for the cure of Covid-19 infections (Yethindra, 2020). The pharmaceutical industry in Pakistan, which is excessively reliant on China for raw materials and semi-finished goods required to make drugs. Imports from China is about 450 million USD in 2012 reported by Pant and Pande (2017). As an Impact of COVID 19, the pharmaceutical sector is extremely facing interruption of supply (Daily Times Dec, 3, 2020)². Pakistan mostly imports pharmaceutical raw materials from China, South Korea, and India (Dawn, Nov.3, 2020)³. In Pakistan, 1st coronavirus case was reported in Karachi on 26th Feb, 2020, and WHO announced Coronavirus as a pandemic on 11th March, 2020 reported by Abid, Bari, Younas, Tahir Javaid, and Imran (2020).

In the above context, we can easily state that the market is very much sentimental and it is affected by the new piece of information (Fama, 1970). Assogbavi, Osagie, Frieder, and Shin (2005) explored how past information can impact the trading performance in the Canadian market, it was found that there exists substantial evidence that supported the momentum investment strategy, which implies purchasing historical winner shares and selling historical loser shares. According to Schiereck, De Bondt, and Weber (1999), equity prices are reflected by the investor's assessment of future companies' profit. Additionally, Pal (2020) studied that global trade is expected to decrease by 13% to 32% in 2020 due to Covid-19 and the subsequent lockdown. Whereas, Babar (2017) reported Pakistan pharmaceutical industry is the 10th largest Asian Pacific country in the pharmaceutical sector and fulfils 70% of local demand.

According to the Pakistan Pharmaceutical Manufacturers Association (PPMA)⁴ 2017 report, the Pakistan pharmaceutical industry (PPI) produces 70% of finished goods for the local demand of the country. PPI revenue is about 423 billion rupees for FY2019 and the

²<https://dailytimes.com.pk/699999>

³<https://www.dawn.com/news/1484730>

⁴<https://www.ppma.org.pk/Profile/pakistan-pharmaceutical-industry>

annual growth rate is 13.23% (as per IMS) reported in PACRA, April 2020 on the pharmaceutical sector of Pakistan. The exports are \$200 million for the year 2017, and listed companies' market share is 25.14% reported in PACRA's May, 2018 report on the pharmaceutical industry in Pakistan. According to Ahmed, Vveinhardt, and Streimikiene (2018) pharmaceutical industry is a major employer in the Pakistani industry, it provides both skilled and unskilled jobs. Javed (2020) showed estimated losses in the major sectors of Pakistan during COVID-19 such as the agriculture and mining sector (\$ 1.5 billion loss), trade & services (\$1.94 billion), transport (\$ 565.6 million), manufacturing (671 million dollars).

Studies in the past have addressed the impacts of pandemics on different equity sectors including transportation industry, and pharmaceutical industry. In today's globalized and integrated world, the importance of transportation has increased a lot. However, in 2003 SARS outbreak had a significant impact on the transportation sector. Loh (2006) in his study found that airlines stocks listed across the equity markets of China, Hong Kong, Thailand, and Singapore are more reactive towards any SARS news thus, increasing the volatility of airline stocks. Furthermore, Harbison (2003) identified during the peak times of SARS in March 2003, the total number of passengers declined by 5.6%, hence compelling several airlines in the Asia Pacific region to postpone, delay orders, and downsize their staff to minimize the cost. Moreover, SARS disease in 2003, had a drastic impact on several transport mediums in Beijing i.e., international air transport, bus transport, subway transport, and cargo transport by air (Beutels et al., 2009). Furthermore, Sobieralski (2020) also found that the COVID-19 pandemic has caused governments to implement strict lockdown, and travel restrictions thus, negatively affecting the transportation industry globally.

Generally, the demand for the medical equipment's and products increases in a health emergency such as during the pandemics, and epidemics. Chen, Chen, Tang, and Huang (2009) stated that during the SARS epidemic, the sale in the medical and health care equipment increased significantly. As a result, the share prices of these pharmaceutical company's increases. Furthermore, Jingwen (2005) in their study found that there exists significant positive relationship between SARS outbreak disclosure information and China's pharmaceutical industry. Additionally, the empirical findings of Smith, Yago, Millar, and Coast (2005) showed that SARS outbreak had a greater impact on non-health equity sectors as compared to the stocks of pharmaceutical industry. Moreover, during the COVID-19 pandemic, pharmaceuticals and technology sectors outperformed other equity sectors in China (Al-Awadhi, Alsaifi, Al-Awadhi, & Alhammadi, 2020).

According to Lynch et al. (2019) pharmaceutical stocks are major contributors to stock market volatility. Pandya (2017) has suggested a contrarian stand can bring more profit to the investors both in the short and long run. Aravind (2016) in his research, points out that contrarian strategy seems suitable for pharmaceutical stocks based on long-term data, however, momentum strategy can generate more profit for investors in the short-term. Morrin et al. (2002) empirical results showed that using pharma stocks listed on the NYSE and realize that there are fewer momentum investors than contrarian investors. However, Firoozabadi and Rastegar Sorkheh (2019) stated that strong herding behavior had a negative effect on the returns of the pharmaceutical industry in every period except, in the bust periods.

Regarding the hypothetical postulation of this study, Ellison and Mullin (2001) studied that news possibly will affect the movement of pharmaceutical industry shares in the short term. Schumaker and Maida (2018) also came out with a similar conclusion by an example

as the drawing of a common medicine from the product range can result in dropping the share price of pharmaceutical companies. According to Hwang (2013) “share return under performance due to adverse events is more substantial in size and continues longer than abnormal returns due to festive events. In the context of our study, the unpleasant news of COVID-19 could positively hit pharmaceutical stocks.

In another study, Kebriaeezadeh, Zartab, Fatemi, and Radmanesh (2013) studied that the return on pharmaceutical stocks is reliant on many factors like inflation rate, the net return, net working capital, and operating cycle, etc. Masoumi, Azar, RezaPour, and Mehrara (2019) studied that positive developments in the economy like money supply and GDP can certainly affect the profit of pharmaceutical companies. Kim (2014) studied that the sustainability pharmaceutical industry depends upon effective research and development programs that produce advanced products and keep working on new products. Good policy recommendations, rapid change, and suitable changes in production are necessary for the pharmaceutical industry’s growth (Banerjee & Thakurta, 2015).

Ayati, Saiyarsarai, and Nikfar (2020) studied both short & long-term COVID-19 impacts on the pharmaceutical sector and concluded that covid-19 poses a considerable crisis in the health sector, including the pharmaceutical industry. Arellana, Márquez, and Cantillo (2020) studied the effects of COVID-19 on the Colombian transport industry, results of the study showed that due to national policies in Columbia, road transport diminished and air transport is also closed and air cargo is operating only for medical and necessities. According to Serrano and Kazda (2020), COVID-19 has impacted the transport industry badly, specifically Air transport. Nearly 80% of airlines are down in April 2020 compared to the previous year. Air transport is badly affected by Covid-19 in Europe but cargo is not affected by the pandemic reported (Nižetić, 2020). Furthermore, Pagano, Sedunov, and Velthuis (2021), in their study used Robin hood clients’ data and found that clients use both momentum strategy, and contrarian strategy furthermore, the findings suggest that, in early stage of COVID-19 momentum effect decreases and contrarian effect increases for US stock market.

Thus, after reviewing most of the previous literature, this study by nature is the first one to figure out the impact of COVID-19 on the stocks returns of pharmaceutical sector, and transport sector listed at Pakistan stock exchange. Also, to study the returns trend of both the sectors in comparison with the market index (KSE 100), during the COVID-19 outbreak.

3 Research Methodology

This study includes the daily closing prices of ten pharmaceuticals and four transportation companies listed on the Pakistan stock exchange. The pharmaceutical sector includes Abbot Laboratories Pakistan Ltd, AGP Ltd, Ferozsons Laboratories Ltd, Glaxo Smith Kline Pakistan Ltd, Glaxo Smith Kline Pakistan Ltd, Highnoon Laboratories Ltd, Sanofi-Avent Pakistan Ltd, the Searle Company Ltd, Wyeth Pakistan Ltd. In contrast, the Transport sector consists of Pakistan International Airlines Corporation, Pakistan International Bulk Terminal Limited, Pakistan International Container Terminal Limited, and Pakistan National Shipping Corporation Limited. Based on data available all the companies of the pharmaceutical sector were picked except the two whereas four out of five transport companies were selected. The daily closing prices of the selected companies from 10-June-2019 to 10-December-2020 were taken into account. The data consist of 394 observations which were

divided into two phases 1) Pre-pandemic 2) During Pandemic, each phase consisted of 197 observations. Additionally, the daily returns of the KSE 100 index were also calculated to compare the stock returns with that of market index returns.

To compare the overall performance of the Pharmaceutical sector and transport sector of Pakistan during the COVID-19 pandemic, from 10-June-2019 to 10-March-2020 this period was regarded as the pre-pandemic period whereas, the period from 11-March-2020 to 10-December-2020 was selected as the during the pandemic phase. This division was based on the verdict of the World Health Organization (WHO) which stated COVID-19 as the "Global Pandemic" on 11-March-2020. Furthermore, studies have used this typology of methods to determine momentum effect, and contrarian effect. For example Guobuzaitė and Teresienė (2021) check the momentum effect during the covid-19 for future markets of S&P 500 along with other economic variables. Djalilov and Ülkü (2021) studied the Russian stock market and found the contrarian effect in the Moscow stock exchange during the COVID-19.

4 Results and Discussion

All the empirical analysis was performed on the daily returns of the selected companies and the KSE 100 index was calculated via the formula of continuous compounding returns illustrated in equation 1.

$$R_i = \ln \frac{P_1}{P_0} \quad (1)$$

Where R_i is equal to the returns of the single stock, P_1 stands for the current stock price, P_0 refers to the previous day stock price, and \ln belongs to log natural function.

Furthermore, table 1 illustrates the average returns for all the selected pharmaceutical stocks in the pre-pandemic period and during-pandemic period. Overall, Table 1 shows the positive returns for all the stocks in the pre-pandemic phase except Abbott Laboratories Pakistan Ltd. whereas, during the pandemic phase all the pharmaceutical stocks show a positive trend. In contrast, table 2 shows that except for Pakistan international airlines (PIA) all the transport stocks exhibit positive returns in both the pre-pandemic period and during-pandemic period. Additionally, the magnitude of the transport stock returns in the pre-pandemic is more than a during pandemic phase. Thus, it can be observed that during COVID-19 most of the pharmaceutical stocks and transportation stocks give positive returns.

Table 1: Average Returns of Pharmaceutical Stocks during the COVID-19 Pandemic

Symbol	Companies	Pre-pandemic	During-pandemic
ABOT	Abbott Laboratories (Pakistan) Limited	-0.09%	0.33%
AGP	AGP Limited	0.21%	0.08%
FEROZ	Ferozsons Laboratories Limited	0.32%	0.26%
GLAXO	GlaxoSmithKline Pakistan Limited	0.33%	0.01%
GSKCH(GLC)	GlaxoSmithKline Consumer Healthcare	0.02%	0.07%
HINOON	Highnoon Laboratories Limited	0.38%	0.12%
IBLHL	IBL HealthCare Limited	0.26%	0.22%
SAPL	Sanofi-Aventis Pakistan Limited	0.04%	0.03%
SEARL	the Searle Company Limited	0.12%	0.11%
WYETH	Wyeth Pakistan Limited	0.06%	0.10%
KSE 100	Karachi Stock Exchange 100 index	0.04%	0.06%

Table 2: Average Returns of Transportation Stocks during the COVID-19 Pandemic

Symbol	Companies	Pre-pandemic	During-pandemic
PIAA	Pakistan International Airlines Corporation	-0.02%	-0.05%
PIBTL	Pakistan International Bulk Terminal Limited	0.16%	0.12%
PICT	Pakistan International Container Terminal Limited	0.07%	0.00%
PNSC	Pakistan National Shipping Corporation Limited	0.14%	0.08%
KSE 100	Karachi Stock Exchange 100	0.04%	0.06%

Beta is a parameter in the regression equation that measures the sensitivity of the individual stock returns over market returns. Table 3 and Table 4 give the beta coefficients for all the selected stock returns with the KSE 100 index return. Besides, the formula for calculating the Beta coefficient is given in equation 2.

$$\beta = \frac{(n\sum xy) - (\sum x.\sum y)}{n\sum x - \sum x} \quad (2)$$

Where n is equal to the number of observations, 'x' shows the independent returns (KSE100), 'y' represents the return of the dependent variable (pharmaceutical stocks and transportation stocks). The symbol beta belongs to the regression results of each of the stocks' returns with the return of its market index (KSE 100). Additionally, table 3 and table 4 also show the probability values for all the beta coefficient of all the selected stocks

in both the pre-crisis and during-crisis period and the p values suggest that all the beta parameters are significant and falling within the critical value of 5% (0.05). Thus, the overall beta results are statistically significant, therefore; they can be used directly for further empirical analysis.

Table 3: Beta Coefficients of Pharmaceutical Stocks with KSE 100

Symbol	Companies	Pre-pandemic		During-pandemic	
		Beta coefficient	P-value	Beta coefficient	P-value
ABOT	Abbott Laboratories (Pakistan) Limited	0.708	0.000***	0.737	0.000***
AGP	AGP Limited	1.087	0.000***	1.026	0.000***
FEROZ	Ferozsons Laboratories Limited	1.578	0.000***	1.278	0.000***
GLAXO	GlaxoSmithKline Pakistan Limited	1.152	0.000***	0.778	0.000***
GSKCH(GLC)	GlaxoSmithKline Consumer Healthcare	0.832	0.000***	0.712	0.000***
HINOON	Highnoon Laboratories Limited	0.552	0.000***	0.631	0.000***
IBLHL	IBL HealthCare Limited	1.402	0.000***	0.981	0.000***
SAPL	Sanofi-Aventis Pakistan Limited	0.813	0.000***	0.278	0.000***
SEARL	the Searle Company Limited	1.658	0.000***	1.194	0.000***
WYETH	Wyeth Pakistan Limited	0.828	0.000***	0.937	0.000***

Table 4: Beta Coefficients of Transportation Stocks with KSE 100

Symbol	Company	Pre-pandemic		During-pandemic	
		Beta Coefficient	P-value	Beta Coefficient	P-value
PIAA	Pakistan International Airlines Corporation	1.591	0.000***	1.125	0.000***
PIBTL	Pakistan International Bulk Terminal Limited	1.554	0.000***	1.469	0.000***
PICT	Pakistan International Container Terminal Limited	0.294	0.003***	0.483	0.000***
PNSC	Pakistan National Shipping Corporation Limited	0.492	0.000***	1.041	0.000***

In the next step, the abnormal return earned by each of the stocks with respect to its benchmark (KSE 100) is calculated. Equation 3 represents the mathematical representation of abnormal gains.

$$\omega = R_i - (\beta * R_m) \quad (3)$$

Where ' ω ' refers to the abnormal gain over a market index, R_i shows the individual stock return, and R_m is the market index return (KSE 100).

All those stocks showing positive abnormal returns are regarded as the winner stocks whereas, those stocks with abnormal loss in the pre-crisis period were recognized as the loser stocks as illustrated in Tables 5 and 6. Furthermore, table 5 and table 6 provide the individual stocks returns for the selected Pharmaceuticals companies and transportation companies along with their abnormal returns and movement. It can be seen from table 5 and table 6 companies including AGP Limited, Ferozsons Laboratories Limited, GlaxoSmithKline Pakistan Limited, Highnoon Laboratories Limited, IBL HealthCare Limited, Sanofi-Aventis Pakistan Limited, the Searle Company Limited, Wyeth Pakistan Limited are the winning stocks whereas, Abbott Laboratories (Pakistan) Limited and GlaxoSmithKline Consumer Healthcare are the loser stocks. Whereas transport companies including Pakistan International Airlines Corporation, Pakistan International Bulk Terminal Limited, Pakistan National Shipping Corporation Limited are the winner stocks, and Pakistan International Container Terminal Limited is regarded as loser stock.

Generally, it is assumed that the past trend will repeat in the future also. If so, then the momentum strategies are considered as the best approach. In the case of pharmaceutical stocks, table 5 shows that except GlaxoSmithKline Pakistan Limited all other winner stocks follow the momentum effect. On the other side, all the loser stocks return movement is based on the contrarian effect. Additionally, during the crisis period, all the pharmaceutical companies exhibit abnormal gains over the KSE 100 index return except GlaxoSmithKline Pakistan Limited. However, GlaxoSmithKline Pakistan Limited has shown negative returns compared to the KSE 100 index return during the crisis period which is opposite to the returns in the pre-crisis period. In simple words, during the crisis period, investors feel GlaxoSmithKline Pakistan Limited stock was risky one therefore, they have shifted their investment towards other stocks. In contrast, table 6 shows that the returns movement of all the stocks of transport companies except Pakistan National Shipping Corporation Limited (PNSC) follows the momentum effect.

(Table 5 and 6 here)

Table 5: List of Pharmaceutical Stocks Abnormal Returns along with their direction of Movement

Symbol	Company	Pre-pandemic			During-pandemic		
		Stock re- turn	Abnormal gains	Type	Stock re- turn	Abnormal gains	Movement
ABOT	Abbott Laboratories (Pakistan) Limited	-0.09%	-0.12%	Loser	0.33%	0.28%	Contrarian
AGP	AGP Limited	0.21%	0.16%	Winner	0.08%	0.02%	Momentum
FEROZ	Ferozsons Laboratories Limited	-0.32%	0.25%	Winner	0.26%	0.18%	Momentum
GLAXO	GlaxoSmithKline Pakistan Limited	0.33%	0.28%	Winner	0.01%	-0.04%	Contrarian
GSKCH	GlaxoSmithKline Consumer Healthcare	0.02%	-0.02%	Loser	0.07%	0.03%	Contrarian
HINOON	Highnoon Laboratories Limited	-0.38%	0.36%	Winner	0.12%	0.08%	Momentum
IBLHL	IBL HealthCare Limited	0.26%	0.20%	Winner	0.22%	0.16%	Momentum
SAPL	Sanofi-Aventis Pakistan Limited	0.04%	0.00%	Winner	0.03%	0.01%	Momentum
SEARL	the Searle Company Limited	-0.12%	0.05%	Winner	0.11%	0.04%	Momentum
WYETH	Wyeth Pakistan Limited	0.06%	0.02%	Winner	0.10%	0.05%	Momentum

Table 6: List of Transport Stocks Abnormal Returns along with their direction of Movement

Symbol	Company		Pre-pandemic		Type	During-pandemic		Movement
			Stock re- turn	Abnormal gains		Stock re- turn	Abnormal gains	
PIAA	Pakistan national Airlines Corporation	Inter-	-0.02%	0.09%	Winner	-0.05%	0.03%	Momentum
PIBTL	Pakistan International Bulk Terminal Limited	Interna-	0.16%	0.12%	Winner	0.12%	0.02%	Momentum
PICT	Pakistan International Container Terminal Limited	Interna-	0.07%	-0.09%	Loser	0.00%	-0.12%	Momentum
PNSC	Pakistan National Shipping Corporation Limited	National	0.14%	0.06%	Winner	0.08%	-0.03%	Contrarian

The overall empirical results for the pharmaceutical sector and transport sector are generalized based on the procedure suggested by Forner & Marhuenda, 2003. During the crisis period, if the average abnormal gains of winner stocks are greater than loser stocks, it proves the presence of momentum effect. Besides, the mathematical representation of the momentum effect and contrarian effect is given in equation 4 and equation 5.

$$W[R_{it} - (t \times R_{mt})] - L[R_{tp} - (t \times R_{mt})] > 0 \tag{4}$$

refers to the momentum effect.

$$W[R_{it} - (t \times R_{mt})] - L[R_{tp} - (t \times R_{mt})] \tag{5}$$

refers to the contrarian effect.

In this study, for the pharmaceutical sector, the average abnormal returns of winner stocks and loser stocks are 0.063% and 0.154% respectively which indicates that the difference between them is in a negative figure (0.063% < 0.154%). Thus, it is proved that during the COVID-19 pandemic the pharmaceutical stocks returns move against the benchmarking index KSE 100 and this global pandemic has negatively affected the stocks of pharmaceutical companies listed at Pakistan. The above results nullify the finding of Donadelli et al. (2017) that disease related news (DRNs) affects the pharmaceutical stocks positively. Conversely, for the transport sector, the average abnormal returns of winner stocks and loser stocks are -0.023% and -0.026% and the difference between them is greater than zero hence it proves that during the COVID-19 the transport stock returns moves along with the KSE 100 market index therefore, we can infer that COVID-19 has a positive impact on the transport sector.

5 Conclusion

The main purpose of this study was to determine the returns trend of Pharmaceutical stocks and transport stocks in comparison with its benchmark KSE 100 index. The empirical findings from the study suggest that the pharmaceutical sector moved against that of the KSE 100 index hence, following the contrarian effect whereas, the returns trend in the transport sector followed the momentum effect which means it mimics the KSE 100 index. However, there is a general belief that during a pandemic the quantity demanded pharmaceutical products will increase thus increasing the prices of pharmaceutical stocks, and in the case of transportation stocks their performance would decrease due to the strict restriction policy adopted on traveling domestically and internationally. But, this general assumption did not work so far during the COVID-19 pandemic in the context of Pakistan. Because the vaccines and medicines with respect to COVID-19 are still under trial and will require substantial time to be available globally thus, this outbreak till now is not going to increase the general supply of vaccines and medicines. Meanwhile, the transport sector of Pakistan comprises of few companies, and the policies adopted by the government policy in a form of smart lockdowns and packages to the construction industries have resulted in a positive trend in the transport sector of Pakistan. Besides, future studies can use the same methodology for other sectors of the Pakistan stock exchange also this study can be extended to other emerging economies.

5.1 Implications

The findings of this study provide useful implications for investors, related businesses, and governments. Both investors and portfolio managers will have a better understanding regarding which stocks of the two selected sectors are risky during the pandemic, and offers greater diversification benefits. Therefore, governments must make supportive regulations for pharmaceutical, and transportation sectors such as lower taxation, and offering loans with low-interest rates. Furthermore, this study reflects the short-term market fluctuations due to the COVID-19 outbreak as it influences the pharmaceutical sector and transportation sector. It will assist the government to formulate and implement a quick policy for different equity sectors that are vulnerable to the COVID-19 pandemic including the pharmaceutical sector and transportation sector. Moreover, this study also provides a baseline for researchers to check the long-term effects of COVID-19, when the long-run data is available.

5.2 Limitations

Based on certain limitations, this study sets directions for future researchers which are as follows: firstly, the study is based on the pharmaceutical industry and transportation industry of Pakistan, future studies can incorporate other sectors. Secondly, this study can be extended to several other economics such as developed, and developing countries. Thirdly, the current study is based on the pre-pandemic phase, and during the pandemic phase, studies in the future can include the post-pandemic phase thus enabling researchers to explore the long-term effects of COVID-19 on a sectoral level.

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