

Reaction of Indian Gold Exchange Traded Funds to Covid-19 Cases and Fatalities

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ABSTRACT

Exchange Traded Funds (ETFs) are recently popularised new form of financial market instruments that provide benefit of both mutual funds and stocks. Present study investigated if there exists any difference between the average returns of selected Gold ETFs during Covid-19 era against pre Covid-19 era and subsequently analysed the long term and short term impact of new Covid-19 cases and fatalities on returns of Gold ETFs through Auto-regressive distributed lag (ARDL) model. It has been observed that in long term new Covid-19 cases had positive and significant impact on the returns of ETFs while new fatalities had significant negative impact on the returns of all the Gold ETFs except for BSLGOLD ETF. Short-run relationship between dependent and independent variables was in contrast to the long-term relationship.

SARI PATI

Exchange Traded Funds (ETFs) baru-baru ini mempopulerkan bentuk baru instrumen pasar keuangan yang memberikan manfaat, baik reksa dana maupun saham. Studi saat ini menyelidiki apakah ada perbedaan antara pengembalian rata-rata ETF Emas yang dipilih selama masa pandemi Covid-19 dengan era pra Covid-19 dan kemudian menganalisis dampak jangka panjang dan jangka pendek dari kasus Covid-19 yang baru dan kematian karena penyakit tersebut, pada pengembalian ETF Emas melalui model Auto-regressive distributed lag (ARDL). Telah diamati bahwa dalam jangka panjang kasus Covid-19 baru memiliki dampak positif dan signifikan terhadap pengembalian ETF, sementara kematian baru memiliki dampak negatif yang signifikan terhadap pengembalian semua ETF Emas, kecuali ETF BSLGOLD. Hubungan jangka pendek antara variabel dependen dan independen berbeda dengan hubungan jangka panjang.

INTRODUCTION

The recent outbreak of Covid-19 pandemic caused by dreaded novel Corona-virus SARS-CoV-2 has created great disorder around the world. Beginning of this infectious disease was marked in early 2020 from Wuhan, an industrial hub in People's of Republic China (PRC) and soon on 11th March it was declared as global pandemic by the World Health Organisation (WHO). By the end of March 2020, most of the countries had already imposed partial or complete lockdowns. Italy, Iran, India Spain, France, the United Kingdom and the United States have been worse hit by this global pandemic. Over 8.3 million confirmed positive cases and over 0.45 million deaths were witnessed across the globe as on June 19, 2020, whereas this number rose to 32.7 million total infected cases and 0.99 million deaths during the fourth week of September, 2020. India itself reported total positive cases of over 5.4 million with 86,961 new cases and 1130 deaths on 21st September. Gates (2) regarded this disease as "once in a century pathogen".

This pandemic has adversely affected both developing as well as developed economies. Financial markets, labour markets, demand supply patterns, consumptions behaviours and all other sectors of world economy have been severely impacted. India being a developing nation along with the habitat of world's second highest population has limited resources to cope up with the damage this virus will cause to public health and economy. Indian financial markets have also been adversely impacted from the day when lockdown was first announced due to rising Covid-19 cases. Due to imposition of nationwide lockdown the SENSEX fell by 3,934.72 i.e. 13.15percent and ended at 25,981.24 points low, while the Nifty 50 fell by 1,100.85 points i.e.12.70percent, lower at 7634.60. All other major sectoral indices were also hit hard. Amid rising cases of Covid-19, when all other sectors of economy soured, ironically yellow metal (Gold) witnessed upsurge in its prices. On 25th March 2020, Gold prices on Multi Commodity Exchange (MCX) rose to Rs 42,028 per 10gm. Gold prices

further strengthened and on 18 May 2020, it was at its all-time high of Rs.47,929 per 10gm. As on 22nd September 2020, Gold prices reached Rs.50,566 per 10gm. Rising gold prices amid Covid-19 has made it evident that gold became an attractive bet during pandemic due to its "Safe Heaven Appeal". In the light of rise in Gold prices, this study, thus, make an attempt to explore the impact of Covid-19 pandemic on the returns of Gold ETFs which are passively managed funds intended to track price of physical Gold.

The present study attempts to investigate the reaction of Indian Gold ETFs to Covid-19 cases and fatalities. For the purpose of the analysis, daily data of closing price for each fund was obtained from the website of National Stock Exchange (NSE), India for the period ranging between 1/9/2019 to 30/6/2020. Data obtained was then classified in to pre and during Covid-19 era. Initially descriptive statistics has been used to understand the difference in returns of Gold ETFs in both the periods. After analyzing the difference in returns, ARDL bounds testing approach has been applied to understand the long term and short term relationship between Covid-19 cases, fatalities and returns of Gold ETFs. The remainder of the paper is structured as follows: Section 2 provides review of literature and identify research gap to formulate the objectives of the study; Section 3 describe research methodology; Section 4 details out empirical findings; and followed by section 5 provides policy implications, and limitations and Section 6 provides concluding remarks and scope for further research.

Literature Review

Stock markets are highly responsive to the events that happen across the globe. Returns provided by major indices and other financial instruments depends upon the events that occur, news that comes up, any natural calamity that occur and many other such things happening across the world. Outbreak of Covid-19 has been one such situation. Financial markets became much more vulnerable since it has been declared as global pandemic. In

a very short span of time various studies has been conducted to understand the impact of Covid-19 on stock market and its instruments. Alfaro et al. (2020), Ramelli and Wagner (2020) inspected the impact of Covid-19 on U.S stock returns. Analysis revealed a negative relation between covid-19 cases and the U.S stock returns i.e. an increase in number of cases reduce the U.S market value by 4 to 11 percent and vice versa. Similar negative relation was witnessed among returns of two broad indices of Chinese stock market i.e. Hang-Seng Index and Shanghai Stock Exchange Composite Index as conferred by Al-Awadhi et al. (2020). These results were in lieu of the extensive study conducted by Ashraf B.N. (2020) whereby stock returns of 64 countries were assessed in response to Covid-19 outbreak.

Further, it was witnessed that markets became sluggish, prices of shares, oil, equity and bonds fell all over the world brought out in the studies conducted by Baret et. al. (2020), Ozili and Arun (2020) and Khan et. al.(2020). Rajamohan et. al. (2020), Aravind and Manoj Krishnan(2020), Topcu and Gulal (2020) assessed the impact of Covid-19 pandemic on emerging markets through these studies it was witnessed that emerging markets are adversely affected by this outbreak. Also Asian markets were found to be worst hit during this time (Topcu and Gulal 2020).

When all the sectors of financial markets soured, it was simultaneously observed that demand for Gold ETFs was on rise. Thus, through this study an effort has been made to explore if there is any difference in the average returns of Gold ETFs during Covid-19 era against pre Covid-19 era. Further, long term as well as short term relationship among Covid-19 cases ,fatalities and returns of Gold ETFs traded on NSE has been assessed through ARDL bounds testing approach.

Research Gap

While going through the previously conducted studies, it became evident that most of the studies focused on the impact of Covid-19 on broad

market indices of different countries. Whereas, impact of this pandemic on other financial market instruments is still unexplored. Thus, in this study we make an attempt to explore the impact of Covid-19 out-break on the Gold ETFs listed on NSE thereby, contributing to the pool of existing literature.

Objectives of the Study

The objectives of the study are as follows:

1. To explore if there is any difference in the average returns of Gold ETFs during Covid-19 era against pre Covid-19 era.
2. To analyze the long term impact of daily new cases and new fatalities due to Covid-19 on the returns of GOLD ETFs.
3. To analyze the short term impact of daily new cases and new fatalities due to Covid-19 on the returns of GOLD ETFs.

METHODS

Sampling Design

The study has been conducted on all the Gold ETFs listed on the NSE,India. For the purpose of analysis, daily data of closing price for each fund was obtained for the period ranging from 1/9/2019 to 30/6/2020 from the website of NSE. Data obtained was then classified into period before Covid-19 and during Covid-19. As first confirmed Covid-19 case of India was reported on 30/1/2020. Thus, period before 30thJanuary is considered as pre Covid-19 era and period subsequent to this date is considered as during the Covid-19 era. While, data regarding daily cases and fatalities due to Covid-19 was collected from the website of the Ministry of Health and Family Welfare, Government of India for the period ranging between 30/1/2020 to 30/6/2020. The statistical computations were performed using Eviews-11.

Methodology

To begin with the study, we first analyzed if there is any difference between the returns of ETFs in pre and during Covid-19 era through descriptive statistics.

Table 1. Profile of Selected Gold ETFs

S.No.	Scheme Name	Symbol	Index	Issuer	Launch Date
1	UTI Gold ETF	GOLDSHARE	GOLD	UTI Mutual Fund	Mar. 2007
2	Reliance Gold ETF	GOLDBEES	GOLD	Reliance Nippon Life AMC	Mar. 2007
3	Kotak Gold ETF	KOTAKGOLD	GOLD	Kotak Mutual Fund	July 2007
4	Quantum Gold Fund	QGOLDHALF	GOLD	Quantum Mutual Fund	Feb 2008
5	SBI Gold ETF	SETFGOLD	GOLD	SBI Mutual Fund	April 2009
6	Invesco India Gold ETF	IVZINGOLD	GOLD	Religare Mutual Fund	Mar. 2010
7	ICICI Prudential Gold ETF	IPGETF	GOLD	ICICI Prudential Mutual Fund	Aug 2010
8	HDFC Gold ETF	HDFCFMGETF	GOLD	HDFC Mutual Fund	Aug 2010
9	Axis Gold ETF	AXISGOLD	GOLD	Axis Mutual Fund	Nov.2010
10	Birla Sun Life Gold ETF	BSLGOLDETF	GOLD	Birla Sun Life Mutual Fund	May 2011
11	IDBI Gold ETF	IDBIGOLD	GOLD	IDBI AMC	Nov 2011

Log Returns for each ETF has been calculated as:

$$R_{i,t} = \ln(P_{i,t}) - \ln(P_{i,t-1})$$

Where;

$R_{i,t}$ = Return of ETF

$\ln(P_{i,t})$ = Closing Price of ETF day t

$\ln(P_{i,t-1})$ = Closing Price of ETF day $t-1$

After analyzing the difference in returns between two periods, the impact of daily new confirmed cases and fatalities caused due to Covid-19 on returns of Gold ETFs for the period starting from 13/3/ 2020 to 30/6/2020 was investigated as there were no new cases of Covid-19 in India after 30/1/2020 up to 12/3/2020. In order to get a comprehensive understanding of the relationship between returns of ETFs and new cases of Covid-19 and fatalities due to it, Autoregressive- Distributed Lag (ARDL) model introduced by Pesaran and Shin (1999) and later extended by Pesaran et al. (2001) has been employed.

ARDL technique of analysis is a co-integration technique that enables to understand the long – run and short-run dynamics between the variables. ARDL is advantageous over Ordinary Least

Square(OLS) method and other co-integration techniques, as it does not require variables to be integrated at the same order also this model is suitable even if the sample size is small. As for our study, selected variables are integrated at different orders and sample size is also small thus, we opt for ARDL Model to understand the long run as well as short run impact of new confirmed cases of Covid-19 and new fatalities due to it on returns of Gold ETFs.

The ARDL model used in this study can be expressed as follows:

$$\Delta \ln(R_{i,t}) = C_{oi} + \sum_{p=1}^0 \sigma_{p1} \Delta \ln(NC)_{t-p} + \sum_{q=1}^0 \varphi_{q1} \Delta \ln(NF)_{t-q} + \theta_{1i} \ln(NC)_{t-1} + \theta_{2i} \ln(NF)_{t-1} + \epsilon_t$$

Here, $R_{i,t}$ represents log returns of an ETF, $\ln(NC)$ and $\ln(NF)$ are natural logs of New cases and natural log of New Fatalities due to Covid-19 respectively. The parameters σ and φ are short run coefficients and θ is the corresponding long run

multipliers and ϵ_t is an error term of the underlying ARDL model. Similar equation can be adopted for all the 11 Gold ETFs.

Above, ARDL model will be executed in three steps where initially the existence of co-integration relationship is assessed using bounds test. Where, null hypothesis of no co-integration has been tested for each of the model. F-statistics so obtained is then compared with the critical values of lower and upper bounds as given by Pesaran et. al. (2001). Null hypothesis of no co-integration cannot be rejected if the value of F-statistics falls below the lower bound critical value $I(0)$ on the contrary if the value of F-statistics is more than the value of upper bound value $I(1)$ then null hypothesis will be rejected. However, decision becomes inconclusive if the value of F-statistics falls between the values of lower bound and upper bound. Second step, is to identify the long run coefficients of the model. Third and last step of ARDL model is to estimate short run coefficients through Error Correction Model (ECM).

ANALYSIS AND INTERPRETATION

Descriptive Analysis of Returns of Gold ETFs in Pre Covid-19 Era And during Covid-19 Era.

In this section, descriptive analysis of the returns of the Gold ETFs in pre Covid-19 era and during Covid-19 era has been made. Table 2, describes the descriptives of daily returns in pre Covid-19

era while Table 3 presents the descriptives of daily returns during Covid-19 era. Through, comparison, it has been observed that there has been a considerable increase in the mean returns during Covid-19 against returns of pre Covid-19 era. Along with mean returns, risk of ETFs has also increased from the time Covid-19 cases has started coming up. Highest increase in mean returns has been observed for GOLDSHARE and IDBIGOLD i.e. by 17 basis points. However, lowest increase in mean returns has been observed for IVZINGOLD i.e. 12 basis points.

Through, descriptive analysis it has been observed that returns of all the Gold ETFs have increased from the time Covid-19 has become a pandemic. Thus, there comes a need to analyse the impact of Covid-19 cases and fatalities on the return characteristics of ETFs.

Analysing impact of Covid-19 Pandemic on Returns of Gold ETFs

Unit Root Test

Under this section of study, impact of Covid-19 pandemic on returns of Gold ETFs have been analysed through ARDL model. Before applying ARDL model, Unit Root Tests were conducted for all the variables. Although, stationarity at same level is not required in ARDL but it is necessary to check in order to ensure that no series is stationary at second

Table 2. Descriptive Statistics of ETFs return for the period 1/9/2019 - 29/1/2020

ETFs	No. of Observation	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
AXISGOLD	100	0.032	0.841	-2.865	2.868	0.201	2.841
BSLGOLD	99	0.035	1.003	-4.177	2.925	-9.850	9.784
GOLDSHARE	100	0.036	0.842	-2.908	3.056	0.865	9.664
GOLDBEES	100	0.028	1.127	-4.496	5.922	-9.890	98.526
HDFCGOLD	100	0.027	0.777	-2.531	2.447	-0.084	2.878
ICICIGOLD	100	0.023	0.738	-2.545	2.916	-0.007	3.483
IDBIGOLD	97	0.038	1.236	-3.943	4.655	0.533	3.757
KOTAKGOLD	100	0.036	0.811	-3.0165	2.478	-0.420	2.725
QGOLDHALF	100	0.034	0.827	-2.888	2.837	-0.057	3.699
IVZINGOLD	87	0.068	1.399	-3.223	4.340	0.274	0.482
SETFGOLD	100	0.037	0.802	-2.580	2.850	0.229	3.233

Source: Author's own calculation

Table 3. Descriptive Statistics of ETFs return for the period 30/1/2020 - 30/6/2020

Variable	No. of Observation	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
AXISGOLD	101	0.187	1.775	-4.236	7.953	0.257	1.064
BSLGOLD	101	0.188	2.242	-9.998	12.169	0.911	12.007
GOLDSHARE	101	0.208	1.179	-2.547	4.861	0.488	1.452
GOLDBEES	101	0.181	1.592	-3.850	4.780	0.920	2.942
HDFCGOLD	101	0.186	1.576	-3.496	5.274	-1.048	13.330
ICICIGOLD	101	0.179	1.489	-4.159	4.757	1.235	3.885
IDBIGOLD	101	0.206	2.200	-12.566	9.517	0.372	1.250
KOTAKGOLD	101	0.178	1.609	-3.129	7.030	0.559	1.758
QGOLDHALF	101	0.178	1.510	-3.598	5.326	0.039	3.083
IVZINGOLD	99	0.190	1.586	-5.957	5.540	1.059	4.231
SETFGOLD	101	0.184	1.787	-7.520	7.613	-0.026	5.613

Source: Author's own calculation

Table 4. Unit Root Test

Variables	At Level		At First Difference		Order of Integration
	ADF	PP	ADF	PP	
Ln(NC)	-3.976 (0.01)**	-2.728 (0.228)	-2.485 (0.03)**	-28.873 (0.000)**	$I(1)$
Ln(NF)	-1.804 (0.924)	-2.719 (0.232)	-9.576 (0.000)**	-15.778 (0.000)**	$I(1)$
AXISGOLD	-8.150 (0.000)**	-8.149 (0.000)**			$I(0)$
BSLGOLD	-9.85 (0.000)**	-9.931 (0.000)**			$I(0)$
GOLDSHARE	-6.717 (0.000)**	-6.953 (0.000)**			$I(0)$
GOLDBEES	-9.271 (0.000)**	-7.230 (0.000)**			$I(0)$
HDFCGOLD	-7.250 (0.000)**	-7.230 (0.000)**			$I(0)$
ICICIGOLD	-8.703 (0.000)**	-8.713 (0.000)**			$I(0)$
IDBIGOLD	-11.434 (0.000)**	-11.434 (0.000)**			$I(0)$
KOTAKGOLD	-9.626 (0.000)**	-9.586 (0.000)**			$I(0)$
QGOLDHALF	-9.195 (0.000)**	-9.182 (0.000)**			$I(0)$
IVZINGOLD	-8.726 (0.000)**	-8.72 (0.000)**			$I(0)$
SETFGOLD	-8.433 (0.000)**	-8.479 (0.000)**			$I(0)$

Source : Author's Calculation

Note : Parentheses reflect p-value of coefficient at 5percent significance level. Significant p value is denoted by **.

difference i.e. $I(2)$. For this purpose, Augmented Dickey Fuller (ADF) test and Phillip-Perron (PP) test has been conducted. Null hypothesis for both

the test is that “variables have a unit root”. Table 4 below presents the result of unit root test, through which it has been observed that all the return series

are stationary at level while Ln(NC) and Ln (NF) are stationary at first difference. Results of both the tests are in convergence thus it can be said that selected variables are integrated at different levels. Dependent variable (DV) i.e. return series of each ETF in all the models is stationary at level whereas Independent Variables (IVs) i.e. Ln (NC) and Ln(NF) are integrated at first difference. Thus, our model is of type $I(0)$, $I(1)$.

ARDL Bounds Test

Before studying the long run relationship between daily new Covid-19 cases and fatalities on returns of ETFs, it was necessary to check if there exists any co-integration between the variables. Co-integration relationship between the variables can be tested through bounds test. Where, null hypothesis of no co-integration has been tested for each of the model. F-statistics so obtained is then compared with the critical values of lower and upper bounds as given by Pesaran et. al.(2001). Null hypothesis of no co-integration cannot be rejected if the value

of F-statistics falls below the lower bound critical value $I(0)$ on the contrary if the value of F-statistics is more than the value of upper bound value $I(1)$ then null hypothesis will be rejected. However, decision becomes inconclusive if the value of F-statistics falls between the values of lower bound and upper bound.

Table 5 Panel A below, presents the estimation of bounds test for assessing the co-integration among the eleven sets of dependent and independent variables i.e. return series, new cases and new fatalities of each ETF.

Akaike Information Criteria (AIC) has been chosen to decide upon optimal lags, whereby maximum lags were taken as 4. The results of the bound test depicts that for all the ARDL equations, value of F-statistics is more than the critical upper bound i.e. $I(1)$, which implies that there exists a long-run equilibrium relationship among each ARDL equation at 1percent significance level.

Table 5. Panel A: ARDL Bound Test Results

ARDL Equation	F-statistics	K	Selected Model	Conclusion
F(AXISGOLD Ln(NC) , Ln(NF))	31.517	2	ARDL(1,0,3)	Co-integration
F(BSLGOLD Ln(NC) , Ln(NF))	37.045	2	ARDL(1,0,3)	Co-integration
F(GOLDSHARE Ln(NC) , Ln(NF))	23.743	2	ARDL(1,3,4)	Co-integration
F(GOLDBEES Ln(NC) , Ln(NF))	39.465	2	ARDL(1,0,3)	Co-integration
F(HDFCGOLD Ln(NC) , Ln(NF))	23.688	2	ARDL(1,0,3)	Co-integration
F(ICICIGOLD Ln(NC) , Ln(NF))	30.972	2	ARDL(1,4,3)	Co-integration
F(IDBIGOLD Ln(NC) , Ln(NF))	46.842	2	ARDL(1,0,2)	Co-integration
F(KOTAKGOL Ln(NC) , Ln(NF))	39.409	2	ARDL(1,2,4)	Co-integration
F(QGOLDHALF Ln(NC) , Ln(NF))	37.584	2	ARDL(1,0,3)	Co-integration
F(IVZINGOLD Ln(NC) , Ln(NF))	23.539	2	ARDL(2,4,3)	Co-integration
F(SETFGOLD Ln(NC) , Ln(NF))	27.578	2	ARDL(1,0,2)	Co-integration

Source: Author's own calculation

Table 5. Panel B: Critical Values with Unrestricted Constant and Trend

K = 2		
Significance Level	I (0)	I (1)
At 1%	6.34	7.52
At 5%	4.87	5.85
At 10%	4.19	5.06

Long Run Dynamics

The second step was to estimate the coefficients of long-run relationship. As long-run co-integration was established in the above section, it was thus possible to estimate long run dynamics for each of independent variable with dependent variables. Table 6 below presents the long run coefficients of independent variables, Error Correction Term (ECT) along with the results of diagnostic tests for each of the ARDL model. Here, LM test has been used to check the presence of serial correlation, CUSUM test checks the stability of model and R^2 checks if the model fits the data or not.

Result of LM test reveals that there is no serial correlation in all the models, except for BSLGOLDETF. R^2 of each of the model indicates that models are significant. Further, CUSUM test was performed to check the stability of each ARDL model. Figure 1 presents the result of stability diagnostic with CUSUM test for all the eleven models. The red lines in the graphs represent the upper and lower bounds at 5percent level of significance whereas blue line symbolize the coefficients estimated in ARDL models. If this blue line crosses these bounds, then the estimated models are not regarded as stable. From the graphs of Figure 1, it has been evidently reflected that all the models are stable. These finding of diagnostic tests assure the robustness of the ARDL models.

The long run test results in table below reveals that there is a significant positive relation between returns of all the Gold ETFs and number of new Covid-19 cases while a significant negative relationship is depicted between returns of all GOLD ETFs and number of new fatalities reported every day except for BSLGOLD ETF for which there is no significant relationship with number of new Covid-19 cases and number of new fatalities.

Table 6, also reports ECT, which denotes the speed of adjustment towards long term equilibrium. ECT values for all the ARDL models were found to be negative and significant which means any

deviation among the variables in the short run will be compensated and long-term equilibrium will be attained. ECT for all the ETFs is negative and more than -1 which means that equilibrium is attained in a dampening manner but for GOLDSHARE and HDFCGOLD ECT is -0.99 and -0.92 respectively which means equilibrium is attained monotonically with the speed of adjustment of 99percent and 92percent respectively.

Estimating Short Run Dynamics: Error correction Model

Third step in ARDL model is to estimate the short run coefficients. The short run dynamics for each model are presented in below Table 7. Through ECM it has been revealed that there exists no significant short-run relationship between new Covid-19 cases and returns of AXISGOLD, BSLGOLD, GOLDBEES, HDFCGOLD, ICICIGOLD, IDBIGOLD, Q GOLDFHALF and SETFGOLD which is in contrast to the long run relationship depicted in the previous section whereas new Covid-19 cases positively impact the returns of GOLDSHARE, KOTAKGOLD and IVZINGOLD. However, a negative and significant relationship is witnessed between one day lag of new cases and returns of GOLDSHARE, KOTAKGOLD and IVZINGOLD.

In regard to impact of new fatalities on returns of ETFs it has been observed that no significant short-run relationship exist except for IVZINGOLD for which new fatalities are found to be negatively related to returns. However, one day lag of new fatalities positively impact returns of all the selected ETFs. Second day lag of new fatalities also have a positive impact on return of ETFs except for GOLDBEES, ICICIGOLD, IDBIGOLD and SETFGOLD. Third day lag of new fatalities also had significant and positive impact on the returns of GOLDSHARE and KOTAKGOLD.

Thus, it has been observed that short-run relationship between dependent and independent variables is in contrast to the long-term relationship observed in previous section of the study.

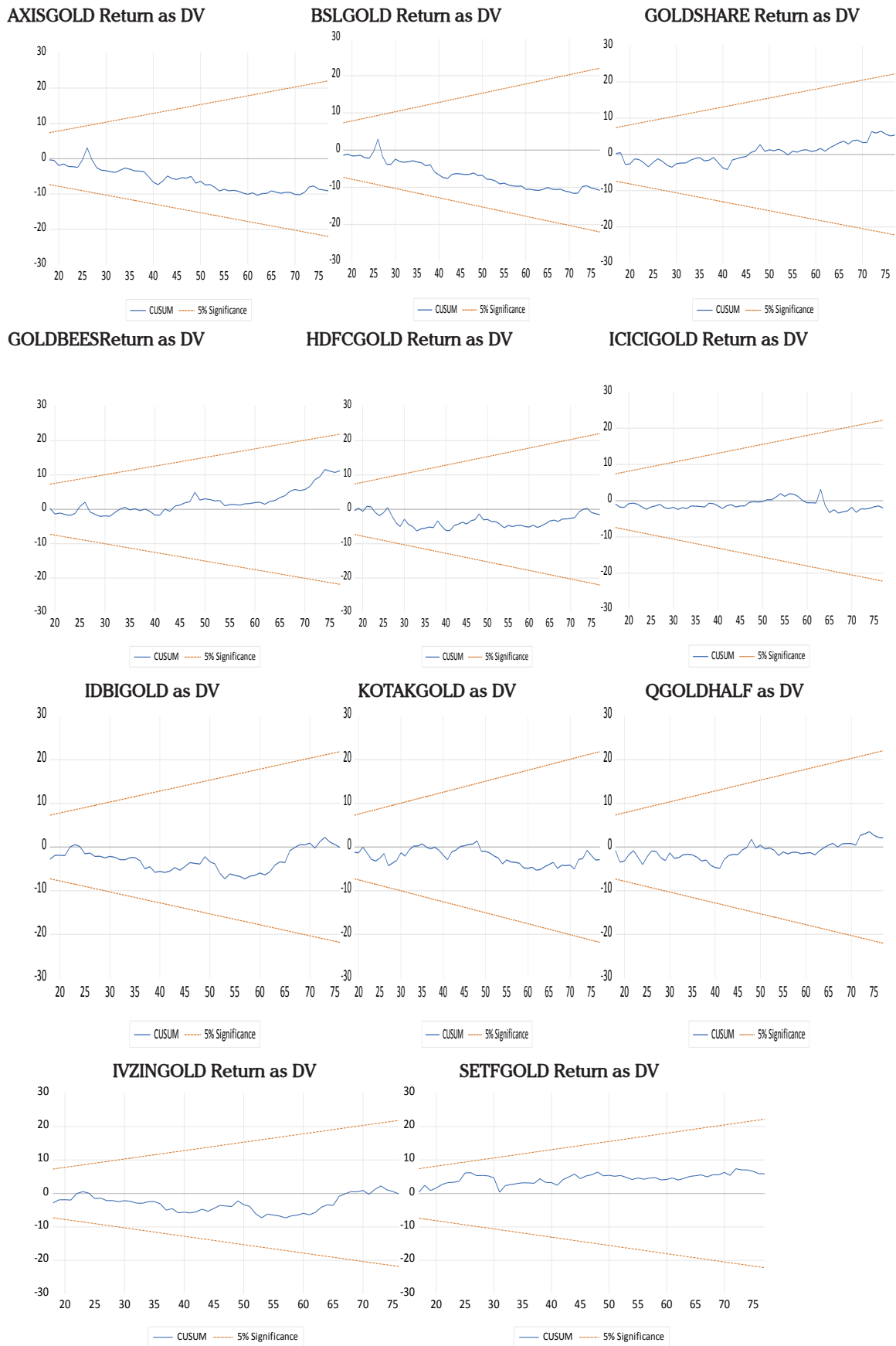


Figure 1. Plots Of Stability Diagnostic With CUSUM Test

Table 6. Long Run ARDL Coefficients

DV/IDV	AXIS GOLD	BSL GOLD	GOLD SHARE	GOLD BEES	HDFC GOLD	ICICI GOLD	IDBI GOLD	KOTAK GOLD	QGOLD HALF	IVZIN GOLD	SETF GOLD
Ln(NC)	0.7143 (0.000)**	0.3982 (0.07)	-1.001 (0.000)**	0.7209 (0.001)**	0.764 (0.006)**	0.943 (0.004)**	0.575 (0.04)**	0.911 (0.001)**	0.722 (0.000)**	1.136 (0.000)**	0.8283 (0.007)**
Ln(NF)	-1.234 (0.001)**	-0.905 (0.520)	-1.478 (0.000)**	-1.057 (0.004)**	-1.308 (0.004)**	-1.43 (0.004)**	-0.468 (0.18)	-1.543 (0.000)**	-1.086 (0.001)**	-1.543 (0.000)**	-1.511 (0.002)**
ECT	-2.56**	-1.78**	-2.98**	-2.31**	-2.23**	-3.48**	-1.94**	-3.68**	-2.54**	-5.4**	-2.14**
Coint(eq)	-1.02 (0.000)**	-1.14 (0.000)**	-0.99 (0.001)**	-1.12 (0.01)**	-0.92 (0.003)**	-1.16 (0.000)**	1.30 (0.000)**	-1.200 (0.000)**	-1.15 (0.000)**	-1.67 (0.000)**	-1.01 (0.000)**
LM	0.219	0.019	0.25	0.688	0.21	0.185	0.12	0.04	0.77	0.55	0.57
CUSUM	S	S	S	S	S	S	S	S	S	S	S
R ²	0.60	0.65	0.60	0.65	0.60	0.62	0.68	0.72	0.64	0.76	0.60

Source: Author's calculations

Notes: Parentheses reflects significance at 5percent level denoted by **. S symbolises that the model is stable.

Table 7. Short- Run ARDL Coefficients

DV/IDV	AXIS GOLD	BSL GOLD	GOLD SHARE	GOLD BEES	HDFC GOLD	ICICI GOLD	IDBI GOLD	KOTAK GOLD	QGOLD HALF	IVZIN GOLD	SETF GOLD
D(Ln(NC))	-	-	0.552 (0.039)**	-	-	0.073 (0.176)	-	0.965 (0.002)**	-	1.303 (0.000)**	-
D(Ln(NC)(-1))	-	-	-0.646 (0.000)**	-	-	-0.047 (0.924)	-	-0.547 (0.034)**	-	-1.350 (0.000)**	-
D(Ln(NC)(-2))	-	-	-0.316 (0.13)	-	-	0.283 (0.582)	-	-	-	-	-
D(Ln(NC)(-3))	-	-	-	-	-	0.046 (0.082)	-	-	-	-	-
D(Ln(NF))	0.572 (0.217)	0.88 (0.15)	0.339 (0.19)	0.44 (0.25)	0.211 (0.608)	-0.017 (0.967)	0.334 (0.57)	-0.072 (0.85)	0.265 (0.490)	-0.724 (0.031)**	-0.64 (0.17)
D(Ln(NF)(-1))	1.634 (0.003)**	2.050 (0.000)**	1.567 (0.000)**	1.43 (0.000)**	1.217 (0.013)**	1.420 (0.004)**	1.46 (0.01)**	2.585 (0.000)**	1.440 (0.000)**	1.462 (0.001)**	1.31 (0.007)**
D(Ln(NF)(-2))	1.58 (0.001)**	2.44 (0.000)**	0.991 (0.000)**	-	0.84 (0.048)**	0.77 (0.07)	-	1.481 (0.002)**	0.579 (0.140)	1.013 (0.005)**	-
D(Ln(NF)(-3))	-	-	0.526 (0.000)**	-	-	-	-	1.410 (0.000)**	-	-	-
D(IVZINGOLD(-1))	-	-	-	-	-	-	-	-	-	0.470 (0.006)**	-
D(IVZINGOLD(-2))	-	-	-	-	-	-	-	-	-	0.375 (0.005)**	-
D(IVZINGOLD(-3))	-	-	-	-	-	-	-	-	-	0.175 (0.055)**	-

Source: Author's calculations

Notes: Parentheses reflects significance at 5percent level denoted by **.

MANAGERIAL IMPLICATIONS AND LIMITATIONS

ETFs are a convenient way to diversify fund and due to their unique features they are gaining attention worldwide. Therefore, this study has important implications for the retail investors as well as various other major players of the financial markets as

during this time of vulnerability as investors are not very sure about reaction of markets. Results of this study highlights how ETFs respond to the market conditions thus paving a way for investors to make suitable decisions. This study will also add to the pool of existing literature as there is no study till

date highlighting the reaction of ETFs to this ongoing pandemic. Although, there are certain limitations associated with this study as current research work only focus on Gold ETFs traded on NSE. Also window of study is also very short. Thus, leaving a scope for further research.

CONCLUSION

This paper initially examines if there is any difference in the average returns of Gold ETFs in pre Covid-19 era and during Covid-19era through descriptive analysis, through which it has been observed that there is a considerable rise in daily average returns of ETFs during Covid-19 era .Thus, it was further analysed the impact of new Covid-19 cases and new fatalities due to Covid-19 on returns of Gold ETFs through ARDL model. It has been observed that in long term new Covid-19 cases have positive and significant impact on the returns of ETFs while new fatalities have significant negative impact on the returns of all the Gold ETFs except for BSLGOLD ETF.

Further, short run dynamics were examined with ECM and it has been observed that there exists no significant short-run relationship between new Covid-19 cases and returns of AXISGOLD,BSLGOL

D,GOLDBEES,HDFCGOLD,ICICIGOLD,IDBIGOLD, QGOLDHALF and SETFGOLD which is in contrast to the long run relationship depicted .In regard to impact of new fatalities on returns of ETFs it has been observed that no significant short-run relationship is observed for all the ETFs except for SETFGOLD returns. However, one day, two day, and third day lag of new deaths were found to be having a significant and positive impact on the returns of some of the ETFs. Thus, it has been observed that short-run relationship between dependent and independent variables is in contrast to the long-term relationship. However, these variables attain a long-run equilibrium within a day or even less as depicted by ECT.

Scope for Future Research

Current research work can be further extended by including other categories of ETFs in sample i.e. Equity ETFs, Debt ETFs and World Indices ETFs. Also period of study can be increased to better understand the response of ETFs. Further researcher can also engage in examining the impact of Covid-19 on international ETFs relative to Indian ETFs. ■

Declaration

This paper is an original contribution and has not been plagiarised from any source/individual. Also it has not been previously published or submitted elsewhere for publication in a refereed or copyrighted publication. The authors declare that there is no potential conflict of interest with respect to the research, authorship and/or publication of this article.

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