

Examining the Impact of COVID-19 on Stock Market Indices and Cryptocurrencies: A Comparative Study of Egypt and USA

Nancy Youssef

School of Management and Technology, Arab Academy for Science, Technology & Maritime Transport, Alexandria, Egypt
Email: nancyoussef@aast.edu

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Abstract

In this paper, we investigate the link between the well-known traditional finance and economic asset class and the digital currencies. The present study is undertaken to investigate the impact of the COVID-19 on the Financial Markets and the four major Cryptocurrencies from January 2020 to May 2021 in Egypt and USA. On the process of investigating the impact of the COVID-19 on the financial markets the study assumes the COVID-19 cumulative cases, Death cases, and the Fatality ratio to be the independent variables, and the Stock returns for the two indices (EGX30 and S&P 500), and the Returns for the four major cryptocurrencies (Bitcoin, Ethereum, Litecoin, and Tether) to be the dependent variables of the study. The study findings revealed that there is a negative relationship between the COVID-19 cumulative cases, and daily S&P 500 stock returns, and there is a negative relationship between COVID-19 cumulative cases, fatality ratio, and daily EGX30 stock returns. There is a positive relationship between COVID-19 world death cases and daily Bitcoin prices, daily Ethereum prices, and daily Litecoin prices. There is a negative relationship between COVID-19 world death cases and daily Tether prices because tether is the only important stable coin on the crypto market with significant market capitalization.

Keywords

COVID-19, Financial Markets, Egypt and USA, Cryptocurrencies

1. Introduction

The recent COVID-19 has impacted all financial markets worldwide in particular share prices trend dropped significantly and continuously. Among the finan-

cial markets experienced this situation is The Dow and S & P from the United States from America. Sansa (2020) supported the fact by stating that, “The Dow Jones, and S & P both of which take into account the share prices of a variety of companies in the US have dropped by over 20%” (Sansa, 2020).

Another world evidence of the impact of the financial markets worldwide is from Nikkei who trades with Tokyo Stock Exchange. The trend of market price of Nikkei as well experienced the volatility of the share prices and mostly the dropping trend throughout since the outbreak of the COVID-19 and becoming the pandemic to the whole world. Sansa (2020) elaborated that “Similarly, the Nikkei, which takes into account share prices of companies in the Tokyo Stock Exchange has also dropped significantly in the last few days” (Sansa, 2020).

It is important to look at how cryptocurrencies behave in this situation. The greatest challenge that lies in the context of the ongoing COVID-19 crisis is to find a “safe haven”. A safe haven is supposed to be immune to this crisis and protect the value of assets of investors (Vukovic et al., 2021). In a recent article, they apply wavelet methodology (Grinsted et al., 2004; Kang et al., 2019) to daily data of COVID-19 world deaths and daily Bitcoin prices from 31st December 2019 to 29th April 2020, finding that levels of COVID-19 caused a rise in Bitcoin prices. This effect is especially strong for the portion of their period post April 5. Their results, as well as others, are particularly meaningful when considering that COVID-19 catalyzes greater concern for future economic costs, and likely greater economic uncertainty (Goodell and Goutte, 2021).

Overall, our study of how Bitcoin prices co-move with the intensity of the COVID-19 crisis contributes, alongside other new investigations, to our understanding both of how COVID-19 is impacting financial systems; as well as how Bitcoin might act as a hedge, diversifier, or safe haven during extreme, global, crises.

Globally, the COVID-19 shock is severe even compared to the Great Financial Crisis in 2007-2008. However, the impact of the COVID-19 on the financial markets has never been researched. Different Monetary International organisations and platforms have alerted that the recent COVID-19 will have serious effects on the global economy and perhaps the effects will surpass the 2007/2008 world economic crises. Globally, the corona virus shock is severe even compared to the Great Financial Crisis in 2007-2008. Therefore, the study seeks to show the effect of COVID-19 on Egypt as emerging financial market and USA as developed financial market.

The present study was inspired by the following two questions: “What is the impact of the COVID-19 on the Financial Markets from the period dated January 2020 to May 2021 in Egypt and USA?” and “Is there any safe haven for cryptocurrencies during a pandemic crisis?”

The study investigated the response of cryptocurrencies during the pandemic along with the response of financial markets to these variables. To examine the

impact, the study used structural equation modeling analysis, and robust regression for additional robustness checks. Thus, the goal of the study was to examine all such interdependencies that arose due to the ongoing COVID-19 crisis to support future studies. The study adds value to the existing literature by examining the impact of the ongoing COVID-19 crisis on the cryptomarket and financial markets. More specifically, the present study contributes by investigating more specific crypto market issues, such as if the crypto market is a hedge or safe haven (Vukovic et al., 2021).

2. Literature Review

2.1. The Impact of COVID-19 on Stock Market Indices

Different previous studies identified the response outcome of the financial markets with the recent pandemic COVID-19 (Sansa, 2020). Experts revealed that the financial markets have quickly responded to the COVID-19 as it changes direction and becoming pandemic in the process of spreading all over the world. This will lead to the world recession, concerning financial markets response to the COVID-19. Ramelli and Wagner (2020) clearly insisted that, “These early results suggest that the market fairly quickly began to respond to concerns about the possible economic consequences of the novel corona virus”.

Baret et al. (2020) have in detail discussed the impact of the COVID-19 to the financial markets and banks. Baret et al. (2020) argued that the COVID-19 have significant effects to the general financial markets as recently the world witness the fall of shares, oil, equity and bonds throughout the world. This is the evidence that the COVID-19 has seriously pushed the financial markets in a different direction and response on investments. Baret et al. (2020) in detail argued that, “Since February 21, 2020, bond yields, oil, and equity prices have sharply fallen, and trillions of dollars, across almost all asset classes, have sought safety”.

Griffin and Shams (2020) identified the extent of the companies affected by the recent COVID-19 pandemic. Griffin and Shams (2020) clarified that “Companies experiencing decreased revenues, higher operating costs and/or cash flow challenges due to COVID-19”. It has been reported that as the world is experiencing the recession economically to restore and recover the economy will be for the long run because of the serious big negative impact of the COVID-19 to the world economy. ICAEW Report (2020) on their report contribution reported that “The COVID-19 pandemic made for difficult, if not entirely unexpected, listening, but did offer hope of a recovery in the longer term”. Sansa (2020) finds that there is a positive significant relationship between the COVID-19 confirmed cases and New York Dow in USA.

Contrary to other different world financial markets, Literature revealed that the China financial markets remain strong and stable regardless of the present COVID-19 pandemic. Xinhua (2020) reported this different and significant opinion in the world financial market, insisting that, “China’s financial market re-

mains generally stable compared with overseas markets despite the spread of the novel corona virus (COVID-19)". Larry (2020) suggested that since the world is at a large part depend on the goods and china production then the importation of the goods become the challenge because as the spread of corona virus stands serious production stops and exportation as well. Therefore a big number of countries who depend on the importation of goods from China are automatically affected due to this COVID-19. Larry (2020), in detail clarified that, "The effect of imports to China has directly affected the export economy of countries around the world".

Zhang et al. (2020) indicated that the rapid spread of coronavirus COVID-19 has dramatic impacts on financial markets all over the world. It has created an unprecedented level of risk, causing investors to suffer significant loses in a very short period of time. This paper aims to map the general patterns of country-specific risks and systemic risks in the global financial markets. It also analyses the potential consequence of policy interventions, such as the US' decision to implement a zero-percent interest rate and unlimited quantitative easing (QE), and to what extent these policies may introduce further uncertainties into global financial markets.

In line with (Ganie et al., 2022) who indicate that COVID-19 affected stock markets severely and elevated the volatility many folds, especially in March 2020. Brazilian stock indices show the highest decline among the selected countries, with a fall of more than 50% during the pandemic, while Mexican indices show the lowest fall of around 30% during the same period. The highest volatility during the event is also seen for Brazilian indices, followed by US indices, with standard deviations above 3.5% and 2.5%, respectively, our study revealed that there is negative relationship between the COVID-19 cumulative cases, and daily S&P 500 stock returns.

In a study conducted by Alber (2020) indicated attempts to verify the effects of Coronavirus spread on stock markets. Coronavirus spread has been measured by cumulative cases, new cases, cumulative deaths and new deaths. This has been applied on the worst 6 countries (according to number of cumulative cases), on daily basis over the period from March 1, 2020 till April 10, 2020. Coronavirus spread has been measured by numbers per million of population, while stock market return is measured by Δ in stock market index. Results indicate that stock market return seems to be sensitive to Coronavirus cases more than deaths, and to Coronavirus cumulative indicators more than new ones. Besides, robustness check confirms the negative effect of Coronavirus spread on stock market return for China, France, Germany and Spain. However, these effects haven't been confirmed for Italy and United States.

In line with El-Basuony (2020) who finds that there is a negative significant relationship between the confirmed cases and death cases from COVID-19, the trading volume on Egyptian stock exchange from 1st April 2020 to 21st May 2020 in Egypt, our study revealed that there is a negative relationship between

COVID-19 cumulative cases, fatality ratio, and daily EGX30 stock returns.

2.2. The Impact of COVID-19 on Cryptocurrencies

The crypto market is very volatile, especially with its most famous currency, Bitcoin. Bitcoin is mostly used for speculative purposes, which causes high volatility and market bubbles (Goodell and Goutte, 2021). Given the growing interest in Bitcoin, it is important to choose a reliable model to forecast the risk of such an investment. By using specifications that can account for structural breaks in GARCH, namely Markov switching GARCH models, Maiti et al. (2020) analyzed Bitcoin daily log returns exhibiting regime changes in their volatility dynamics. Because of such dynamics, it is important to explore ways to reduce the level of risk of an investment in Bitcoin and to hedge or discover some factors that can influence the price movement of Bitcoin. Tether is the only important stable coin on the crypto market with significant market capitalization (Ardia et al., 2019).

Tether is purportedly backed by USD (US dollar) reserves, but there is no clear evidence of it. The study by (Griffin and Shams, 2020) tested two hypotheses regarding the role of a Tether in the crypto world, especially on Bitcoin. The first hypothesis put forward was that demand is driven by the idea that Tether is being used as a medium of exchange for fiat currency's entry into the crypto world. The second hypothesis was that Tether flows cause positive Bitcoin returns. The obvious argument behind this is that Tether is being printed, without support, in USD, and is pushed out into the market with an inflationary effect on asset prices. This is in accordance with the study of (Griffin and Shams, 2020), which has shown that none of the exposures to macroeconomic factors, stocks markets, currencies, or commodities can explain cryptocurrency prices.

As Bitcoin and gold are often looked at as safe havens, the relationship between these assets is important for discovering if there is any hedge option between them. There is always a question of the hedging capabilities of Bitcoin regarding some stock exchange indices. Baek and Elbeck (2015) explored the financial asset capabilities of Bitcoin using GARCH models. The initial model showed several similarities to gold and the USD, indicating hedging capabilities and advantages as a medium of exchange. By applying the asymmetric GARCH methodology (Bouri et al., 2018). Bitcoin can be used to hedge its position against FTSE 100, and in the short term, against the USD. Dyhrberg (2016) based their findings on this original sample and an extended sample period. The study showed that Bitcoin exhibits distinctively different return, volatility, and correlation characteristics compared to other assets, including gold and the USD.

In line with the study by (Mnif et al., 2020) considered five cryptocurrencies to investigate herding biases by quantifying the self-similarity intensity of cryptocurrency returns' during the COVID-19 pandemic. The study found that the COVID-19 crisis has had a positive impact on the efficiency of the cryptocur-

rency market. To test the influence of the COVID-19 pandemic on cryptocurrency market efficiency, the study used the following methodologies: a multi-fractal detrended fluctuation approach, the Magnitude of Long memory index, and the generalized Hurst exponent. Our study revealed that there is a positive relationship between COVID-19 world death cases and daily Bitcoin prices, daily Ethereum prices, and daily Litecoin prices.

In accordance with the study by (Maiti et al., 2020) who found that Tether has a sizable impact on Bitcoin prices. These findings are generally consistent with the evidence that sophisticated investors may earn profit from the bubbles. Our study finds that there is a negative relationship between COVID-19 world death cases and daily Tether prices because tether is the only important stable coin on the crypto market with significant market capitalization.

Goodell and Goutte (2021) apply wavelet methodology (Grinsted et al., 2004; Kang et al., 2019) to daily data of COVID-19 world deaths and daily Bitcoin prices from 31st December 2019 to 29th April 2020, finding that levels of COVID-19 caused a rise in Bitcoin prices. This effect is especially strong for the portion of our period post April 5.

A further question is how the role of Bitcoin in hedging other assets has changed during the period of the COVID-19 crisis. Understandably there are few studies yet on such recent events. An exception is Conlon and McGee (2020), who show that Bitcoin has indeed been a poor hedge against the S & P500 during the COVID-19 crisis.

Overall, our study of how Bitcoin prices co-move with the intensity of the COVID-19 crisis contributes, alongside other new investigations, to our understanding both of how COVID-19 is impacting financial systems; as well as how Bitcoin might act as a hedge, diversifier, or safe haven during extreme, global, crises.

2.3. Research Hypothesis

Therefore, this paper expands the existing literature by exploring the impact of COVID-19 on Stock Market Indices and Cryptocurrencies. The objective aim of this study is to improve a model to enhance the performance of Stock Market Indices and Cryptocurrencies during and after COVID-19 Crisis. In particular, to examine the ability of Stock Market Indices and Cryptocurrencies to fulfil excess returns using system-based model (SEM).

- 1) There is a significant negative relationship between COVID-19 cumulative cases, and daily EGX30 stock returns.
- 2) There is a significant negative relationship between Fatality ratio and daily EGX30 stock returns.
- 3) There is a significant negative relationship between COVID-19 cumulative cases and daily S&P 500 stock returns.
- 4) There is a significant positive relationship between COVID-19 world death cases and daily Bitcoin prices, daily Ethereum prices, daily Litecoin prices.

5) There is a significant positive relationship between COVID-19 world death cases and daily Tether prices.

3. Data and Variables Measurement

3.1. Data

In accordance with the study by (Vukovic et al., 2021), the study dataset consisted of the following variables for studying the impact of the COVID-19 from January 2020 until May 2021: EGX30 index daily returns (data source: Yahoo), S&P 500 index daily returns (data source: Yahoo), daily returns of four cryptocurrencies (Bitcoin, Ethereum, Litecoin, and Tether) (data source: <https://coinmarketcap.com/>), and COVID-19 global cases (https://covid19.who.int/?gclid=Cj0KCQjwtrSLBhCLARIsACh6Rmi7W83H7UMDy24JTZgQjIa2vL5-9vE1J36WyrQRyFPPnUIMonqCtJAaAhSsEALw_wcB).

3.2. Endogenous and Exogenous Variables Measurements

This study uses different endogenous variables, exogenous variables, which might influence the returns (Huber and Mellace, 2013). The endogenous variables in this study are EGX30 index daily returns, S&P 500 index daily returns, and daily returns of four cryptocurrencies (Bitcoin, Ethereum, Litecoin, and Tether). The empirical analysis is carried out using Market Risk which is calculated using standard deviations of daily returns.

The study variables were as follows: 1) the dependent variables are the cryptocurrency daily returns, EGX30 index daily returns, and S&P 500 index daily returns; 2) the independent variables are COVID-19 confirmed cases, COVID-19 death cases, and the Fatality ratio.

$$\text{Fatality Ratio} = \frac{\text{New Deaths}}{\text{Cumulative Cases}}$$

All daily returns are calculated using the HPR (Holding Period Returns) formula.

$$R_{it} = \frac{1}{n} \sum_{i=1}^n R_i$$

4. Empirical Evidence

To test the effect of COVID-19 on Stock Market Indices and Cryptocurrencies, this paper utilizes SEM technique to deal with the endogeneity problem through the following three stages model: specification, model estimation, and goodness of fit indices (Hair et al., 2006). In this paper, we investigate the interrelationships between Stock Market Indices, and Cryptocurrencies simultaneously.

To check the robustness of the findings, we use robust statistical techniques:

- SEM + panel data: a recursive structural equation model has causation which flows in one direction.

4.1. Structural Model Specification

Considering the potential endogeneity problem between COVID-19 Cases and Stock Market Indices and Cryptocurrencies and similar to (Erkens et al., 2012) the central research question focuses on whether or not COVID-19 Cases-Stock Market Indices and Cryptocurrencies is moderated by the structure of Market Risk by using the following structural equation model.

Since there are three different measures of returns (EGX30, S&P 500, and Cryptocurrencies), we end up with three estimates. The model using EGX30 (daily returns), S&P 500 (daily returns), and Cryptocurrencies (Bitcoin, Ethereum, Litecoin, and Tether) are respectively named as Model 1, Model 2 and Model 3. We illustrate the path diagram of the three endogenous variables in **Figure 1**.

Model (A):

The first equation of the SEM can be modelled by the following specification:

$$\begin{aligned} \text{Return}_{\text{EGX30}} = & \alpha_{it} + \alpha_1 (\text{Risk}_{\text{EGX30}}) + \alpha_2 (\text{Cumulative_cases}_{\text{Egypt}}) \\ & + \alpha_3 (\text{New_cases}_{\text{Egypt}}) + \alpha_4 (\text{New_deaths}_{\text{Egypt}}) \\ & + \alpha_5 (\text{Fatality Ratio}_{\text{Egypt}}) + \alpha_6 (\text{Price}_{\text{EGX30}}) + \varepsilon_1 \end{aligned}$$

Next, the determination of the Risk is also endogenized using the following specification:

$$\begin{aligned} \text{Risk}_{\text{EGX30}} = & \beta_{it} + \beta_1 (\text{Cumulative_cases}_{\text{Egypt}}) + \beta_2 (\text{New_cases}_{\text{Egypt}}) \\ & + \beta_3 (\text{New_deaths}_{\text{Egypt}}) + \beta_4 (\text{Fatality Ratio}_{\text{Egypt}}) \\ & + \beta_5 (\text{Price}_{\text{EGX30}}) + \varepsilon_1 \end{aligned}$$

Model (B):

The first equation of the SEM can be modelled by the following specification:

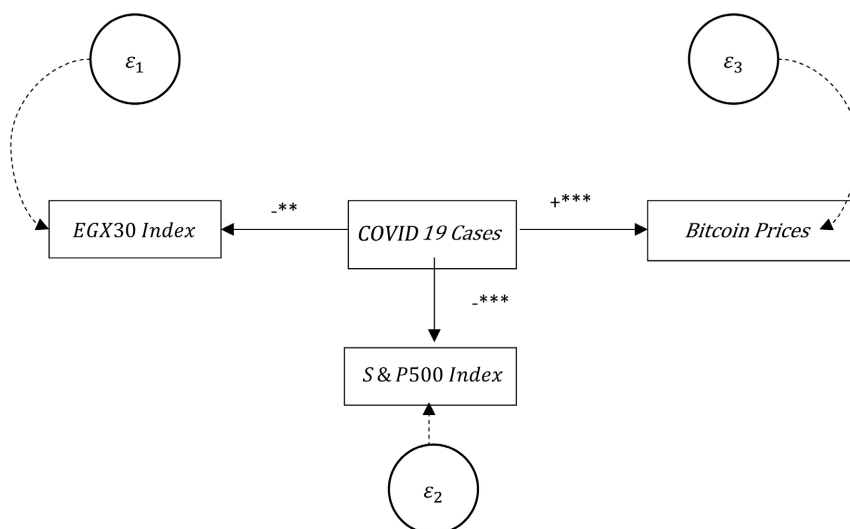


Figure 1. Path diagram of the structural equation model. Notes: ** 5% level, *** 1% level.

$$\begin{aligned} \text{Return}_{\text{S\&P500}} &= \alpha_{it} + \alpha_1 (\text{Risk}_{\text{S\&P500}}) + \alpha_2 (\text{Cumulative_cases}_{\text{US}}) \\ &+ \alpha_3 (\text{New_cases}_{\text{US}}) + \alpha_4 (\text{New_deaths}_{\text{US}}) \\ &+ \alpha_5 (\text{Fatality Ratio}_{\text{US}}) + \alpha_6 (\text{Price}_{\text{S\&P500}}) + \varepsilon_1 \end{aligned}$$

Next, the determination of the Risk is also endogenized using the following specification:

$$\begin{aligned} \text{Risk}_{\text{S\&P500}} &= \beta_{it} + \beta_1 (\text{Cumulative_cases}_{\text{S\&P500}}) + \beta_2 (\text{New_cases}_{\text{S\&P500}}) \\ &+ \beta_3 (\text{New_deaths}_{\text{S\&P500}}) + \beta_4 (\text{Fatality Ratio}_{\text{S\&P500}}) \\ &+ \beta_5 (\text{Price}_{\text{S\&P500}}) + \varepsilon_1 \end{aligned}$$

Model (C):

The first equation of the SEM can be modelled by the following specification:

$$\begin{aligned} \text{Return}_{\text{Bitcoin}} &= \alpha_{it} + \alpha_1 (\text{Risk}_{\text{Bitcoin}}) + \alpha_2 (\text{Price}_{\text{Bitcoin}}) \\ &+ \alpha_3 (\text{WorldNew_deaths}) + \varepsilon_1 \end{aligned}$$

$$\begin{aligned} \text{Return}_{\text{Ethereum}} &= \alpha_{it} + \alpha_1 (\text{Risk}_{\text{Ethereum}}) + \alpha_2 (\text{Price}_{\text{Ethereum}}) \\ &+ \alpha_3 (\text{WorldNew_deaths}) + \varepsilon_1 \end{aligned}$$

$$\begin{aligned} \text{Return}_{\text{Litecoin}} &= \alpha_{it} + \alpha_1 (\text{Risk}_{\text{Litecoin}}) + \alpha_2 (\text{Price}_{\text{Litecoin}}) \\ &+ \alpha_3 (\text{WorldNew_deaths}) + \varepsilon_1 \end{aligned}$$

$$\begin{aligned} \text{Return}_{\text{Tether}} &= \alpha_{it} + \alpha_1 (\text{Risk}_{\text{Tether}}) + \alpha_2 (\text{Price}_{\text{Tether}}) \\ &+ \alpha_3 (\text{WorldNew_deaths}) + \varepsilon_1 \end{aligned}$$

Next, the determination of the Risk is also endogenized using the following specification:

$$\text{Risk}_{\text{Bitcoin}} = \beta_{it} + \beta_1 (\text{Price}_{\text{Bitcoin}}) + \beta_3 (\text{WorldNew_deaths}) + \varepsilon_1$$

$$\text{Risk}_{\text{Ethereum}} = \beta_{it} + \beta_1 (\text{Price}_{\text{Ethereum}}) + \beta_3 (\text{WorldNew_deaths}) + \varepsilon_1$$

$$\text{Risk}_{\text{Litecoin}} = \beta_{it} + \beta_1 (\text{Price}_{\text{Litecoin}}) + \beta_3 (\text{WorldNew_deaths}) + \varepsilon_1$$

$$\text{Risk}_{\text{Tether}} = \beta_{it} + \beta_1 (\text{Price}_{\text{Tether}}) + \beta_3 (\text{WorldNew_deaths}) + \varepsilon_1$$

Lastly, the determination of the Price is also endogenized using the following specification:

$$\text{Price}_{\text{Bitcoin}} = \gamma_{it} + \gamma_1 (\text{WorldNew_deaths}) + \varepsilon_1$$

$$\text{Price}_{\text{Ethereum}} = \gamma_{it} + \gamma_1 (\text{WorldNew_deaths}) + \varepsilon_1$$

$$\text{Price}_{\text{Litecoin}} = \gamma_{it} + \gamma_1 (\text{WorldNew_deaths}) + \varepsilon_1$$

$$\text{Price}_{\text{Tether}} = \gamma_{it} + \gamma_1 (\text{WorldNew_deaths}) + \varepsilon_1$$

4.2. The Estimation Results

The results about the estimation of the structural model (A), (B), and (C) are presented in **Table 1**.

According to the previous, in testing the hypotheses, results reveal that there are five hypotheses in this study, i.e. H1, H2, H3, and H4 are statistically significant.

Table 1. Estimated path coefficients of the SEMs.

Equation	Model A	
EGX30	1	2
ReturnEGX30		
RiskEGX30	0.1929004	0.041
Cumulative_casesEgypt	-4.01E-08	0.010
Fatality RatioEgypt	-2.046311	0.000
PriceEGX30	-6.14E-06	0.205
New_casesEgypt	-5.23E-06	0.202
New_deathsEgypt	0.0001093	0.173
Constant	0.0185301	0.154
RiskEGX30		
Cumulative_casesEgypt	-3.82E-08	0.001
FatalityRatioEgypt	0.4222606	0.317
PriceEGX30	-0.0000122	0.001
New_casesEgypt	-1.79E-06	0.557
New_deathsEgypt	8.62E-06	0.885
Constant	0.0413348	0.000
S&P 500	Model B	
ReturnSP500	1	2
RiskSP500	0.1510791	0.150
Cumulative_casesUS	-1.08E-09	0.000
PriceSP500	0.0000379	0.000
FatalityRatioUS	1.38E+00	0.032
New_casesUS	-5.20E-08	0.085
New_deathsUS	4.78E-06	0.006
Constant	-0.1232209	0.000
RiskSP500	1	2
Cumulative_casesUS	1.09E-09	0.000
PriceSP500	-0.0000387	0.000
FatalityRatioUS	2.574082	0.000
New_casesUS	5.39E-08	0.005
New_deathsUS	-5.33E-06	0.000
Constant	0.1332956	0.000

Continued

Cryptocurrencies	Model C	
	1	2
ReturnBitcoin	1	2
RiskBitcoin	0.0310314	0.626
PriceBitcoin	-4.89E-08	0.779
WorldNew_deaths	4.61E-07	0.506
Constant	0.0016264	0.726
RiskBitcoin	1	2
PriceBitcoin	1.83E-07	0.168
WorldNew_deaths	5.18E-07	0.326
Constant	0.0262718	0.000
PriceBitcoin	1	2
WorldNew_deaths	2.730923	0.000
Constant	1995.473	0.097
ReturnEthereum	1	2
RiskEthereum	0.0870549	0.174
PriceEthereum	2.71E-06	0.579
WorldNew_deaths	1.33E-07	0.887
Constant	0.0019293	0.768
RiskEthereum	1	2
PriceEthereum	0.0000143	0.000
WorldNew_deaths	7.43E-07	0.296
Constant	0.0414345	0.000
PriceEthereum	1	2
WorldNew_deaths	0.131916	0.000
Constant	-153.4745	0.011
ReturnLitecoin	1	2
RiskLitecoin	0.0921436	0.149
PriceLitecoin	0.0000648	0.253
WorldNew_deaths	-4.99E-07	0.601
Constant	-0.0015791	0.813
RiskLitecoin	1	2
PriceLitecoin	0.0001624	0.000
WorldNew_deaths	-2.10E-07	0.771
Constant	0.0349696	0.000

Continued

PriceLitecoin	1	2
WorldNew_deaths	0.0111679	0.000
Constant	18.95352	0.000
ReturnTether	1	2
RiskTether	-0.1931744	0.000
PriceTether	0.3567747	0.000
WorldNew_deaths	2.50E-08	0.024
Constant	-0.3571672	0.000
RiskTether	1	2
PriceTether	0.2305474	0.000
WorldNew_deaths	-3.35E-08	0.001
Constant	-0.2297886	0.000
PriceTether	1	2
WorldNew_deaths	-9.78E-08	0.000
Constant	1.001678	0.000

Note: This table provides results from SEM of the effect of COVID-19 on Stock Market Indices and Cryptocurrencies from January 2020 to May 2021. A robust t-statistics test is conducted, and p -values are in parentheses. Column (2) provides p -values. Column (1) presents the path coefficients of the model (A).

Thus, these hypotheses are supported. The study findings revealed that there is a negative relationship between the COVID-19 cumulative cases, and daily S&P 500 stock returns, and there is a negative relationship between COVID-19 cumulative cases, fatality ratio, and daily EGX30 stock returns. The study findings revealed that there is a positive relationship between COVID-19 world death cases and daily Bitcoin prices, daily Ethereum prices, and daily Litecoin prices.

While, one hypothesis i.e. H5 is found statistically not significant. Hence, this hypothesis is not supported. The study findings revealed that there is a negative relationship between COVID-19 world death cases and daily Thether prices.

Although the hypothesis is not supported, the result is consistent with (Mnif et al., 2020) who found that the COVID-19 crisis has had a positive impact on the efficiency of the cryptocurrency market. These findings are generally consistent with the evidence that tether is the only important stable coin on the crypto market with significant market capitalization.

4.3. The Goodness of Fit

The fit indices shown in **Table 2** indicate that the hypothesized structural model provides a good fit to the data.

Table 2. Structural equation model goodness of fit.

Measures	Fitted	Variance Predicted	Residual	R-squared	Mc	Mc2
EGX30						
RiskEGX30	0.0000884	0.0000172	0.0000712	0.1949739	0.4415584	0.194974
ReturnEGX30	0.000141	0.0000126	0.0001284	0.0893729	0.298953	0.089373
overall				0.2530951		
S&P 500						
RiskSP500	0.0002375	0.0001255	0.000112	0.5283776	0.7268959	0.528378
ReturnSP500	0.0003065	0.0000394	0.0002671	0.1286419	0.3586669	0.128642
overall				0.5881749		
Cryptocurrencies						
Risk Bitcoin	1.29E-03	0.0000265	0.0012592	0.0206212	0.1436009	0.020621
Return Bitcoin	4.12E-06	2.17E-03	0.001895	0.0435311	0.001895	0.001895
Price Bitcoin	1.51E+08	1.69E+08	0.4714053	0.6865896	0.4714053	0.471405
Return Ethereum	0.0000315	0.0041103	0.0076008	0.0871824	0.0076008	0.007601
Risk Ethereum	0.0001129	0.0023568	0.0457216	0.213826	0.0457216	0.045722
Price Ethereum	351293.2	419287	0.4558814	0.6751899	0.4558814	0.455881
Return Litecoin	0.0000463	0.004476	0.0102361	0.1011736	0.0102361	0.010236
Risk Litecoin	0.0001416	0.002578	0.052066	0.2281798	0.052066	0.052066
Price Litecoin	2.52E+03	3.40E+03	0.4254612	0.6522739	0.4254612	0.425461
Return Tether	2.04E-07	9.32E-07	0.1799383	0.4241913	0.1799383	0.179938
Risk Tether	9.12E-07	1.60E-07	7.53E-07	0.1749572	0.4182789	0.174957
Price Tether	2.00E-06	1.93E-07	1.81E-06	0.0964094	0.3104986	0.096409
overall				0.7247524		

Notes: MC = correlation between dependent variables and its predictions.

In **Table 2** the (R-squared) value of EGX30 is 0.25, the (R-squared) value of S & P500 is 0.58, and the (R-squared) value of Cryptocurrencies is 0.72. Therefore, the fit indices indicate that the hypothesized structural model provides a good fit to the data.

5. Conclusion

The present study is undertaken to investigate the impact of the COVID-19 on the Financial Markets and Cryptocurrencies from January 2020 to May 2021 in Egypt and USA. The study findings revealed that there is a negative relationship between the COVID-19 cumulative cases, and daily S&P 500 stock returns, and there is a negative relationship between COVID-19 cumulative cases, fatality ra-

tio, and daily EGX30 stock returns.

Even though the results of our study differ from those of (Corbet et al., 2021), in that only Tether has near safe haven characteristics (while Bitcoin, Ethereum, and Litecoin cannot be recognized), such studies have academic importance in analyzing assets in terms of major crises, and providing methodological, theoretical, and applicative experience in investment finance issues. Moreover, policymakers and investors cannot accept cryptocurrencies as safe havens, but only as highly volatile and speculative assets (which is in line with the work of (Klein et al., 2018; Goodell, 2020).

Lastly, the COVID-19 crisis is informing investors, policy makers and the public at large that natural disasters can inflict economic damage on a previously unprecedented scale. How will this effect cost of capital, the role of governments protecting financial systems, and political stability in societies? No doubt these questions and many others will be grappled with by financial academics for many years to come (Goodell, 2020).

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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