Impact of COVID19 on the Islamic Cryptocurrencies

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Abstract— **Cryptocurrency is a new form of digital asset based on a network distributed across a large number of computers. The main objective of this work is to investigate the impact of COVID-19 on the Islamic cryptocurrency markets returns. In this methodology, we identify a group of Islamic cryptocurrencies consisting of the X8X, Hellogold and OneGram. This paper uses the Newey-West standard errors regression to estimate the effect of the COVID-19 pandemic on the Islamic cryptocurrencies returns. The empirical results show that COVID-19 total deaths have a negative effect on respectively the X8X cryptocurrency, HelloGold, and OneGram cryptocurrencies. In the same way, the COVID-19 total confirmed cases growth has a negative effect on respectively the X8X cryptocurrency, and OneGram cryptocurrencies. This study contributes to the literature by identifying the impact of COVID-19 on the Islamic cryptocurrency markets.**

Keywords-component; Islamic cryptocurrency, COVID-19, cryptocurrency market returns.

I. INTRODUCTION

The number of Muslims in 2015 is estimated at 1.8 billion worldwide, or 24.1% of the world population [1]. Thus, they have more than $800 billion to invest [2]. This capital is currently increasing by about 15% per year [3]. The recent build- up of liquidity in Muslim countries is attracting the attention of researchers to satisfy their demand for cryptocurrencies.

Scientists have created innovative technological applications exploiting existent blockchain to meet the religious needs of some investors such as the OneGram, the X8X, and the HelloGold.

The OneGram is the first cryptocurrency that has been certified in compliance with the ancient Islamic rules. Each OneGram coin is backed by at least one gram of physical gold which provides a stable floor price.

The X8X, HelloGold, and the OneGram are the most popular cryptocurrencies compatible with Islamic laws. In fact, the X8X currency offers an alternative to value preservation assets. It trades 8 currencies and gold in its basket to fight inflation whilst remaining fully liquid and cash-backed.

The HelloGold, the X8X and the OneGram have some common characteristics than Bitcoin. They are considered speculative because they generally offer no cash flow underlying their valuations [4]. Their prices' fluctuations are depending on the occurrence and lasting of some events or crises.

Some events like disasters or epidemic diseases such as COVID-19 may incite this behaviour [5]. COVID-19 is part of a large family of viruses that may cause illness ranging from the common cold to more severe diseases [6]. Nowadays, this coronavirus has provoked fear and anxiety among people and investors [7].

Major events may significantly affect cryptocurrency market returns [8]. The COVID-19 outbreak has affected the investment and business environment in the world. Several investigations have focused on stock market response [9] and conventional cryptocurrency reactions [10]. However, to the best of our knowledge, the response of Islamic cryptocurrencies has not been investigated. For this reason, this paper attempts to answer the question of how is the reaction of Islamic cryptocurrencies to this pandemic. The outbreak started on 31 December 2019, and since then, the number of infected cases has been published on a daily basis. To investigate the effect of this epidemic on stock returns, we employ the Newey-West standard errors regression using four measurements: the daily growth in total confirmed cases, the daily confirmed cases, the daily growth in total deaths caused by COVID-19, and the daily deaths caused by COVID-19.

Our results provide evidence of a significant negative effect of all measurements on cryptocurrency returns over the period of 10 January to 10 April 2020. Our further tests suggest that some cryptocurrencies performed better than others during the outbreak of the COVID-19. We also find that the X8X cryptocurrency faces a significantly higher negative effect on the returns in comparison with OneGram and HelloGold cryptocurrencies. The implications of our study are important for cryptocurrency market main players to understand and predict the behaviour of Islamic cryptocurrency returns during epidemic diseases. The principal novelty of the present study is the examination of the effect of contagious infectious

diseases, specifically the COVID-19 virus, on Islamic cryptocurrency market returns.

The rest of this paper is organized as follows: The next section provides the Literature Review. Section 3 presents the data research methodology. Section 4 develops the empirical results and section 5 concludes the paper.

II.   LITERATURE REVIEW

COVID-19 is a severe respiratory illness with pneumonia-like symptoms, received worldwide attention in 2020. COVID19 originated in Wuhan. In December 2019, the Wuhan Municipal Health Commission in Wuhan City, Hubei province, China, reported a cluster of 27 pneumonia cases (including seven severe cases) of unknown aetiology, with a commonly reported link to Wuhan's Huanan Seafood Wholesale Market, a wholesale fish and live animal market [11] The infected people carried the disease to Thailand, Japan and South Korea.

Several studies have paid their attention to study the event consequence of SARS and COVID19 on financial markets. As the recent coronavirus is belonging to the SARS virus family, we start our investigation by examining the previous studies on these issues.

Chen, Jang, & Kim (2007) examined the effect of the SARS epidemic on Taiwanese hotel stock prices movements using an event-study approach. Seven publicly traded hotel companies experienced steep declines in earnings and stock price during the SARS outbreak period. On and after the day of the SARS outbreak, Taiwanese hotel stocks showed significantly negative cumulative mean abnormal returns, indicating a significant impact of the SARS outbreak on hotel stock performance.

Wells et al. (2020) estimate the impact of control measures and investigate the role of the airport travel network on the global spread of the COVID-19 outbreak. Their results show that the daily risk of exporting at least a single SARS CoV-2 case from mainland China via international travel exceeded 95% on January 13, 2020. They found that 779 cases (95% CI: 632 to 967) would have been exported by February 15 2020, without any border or travel restrictions and that the travel lockdowns enforced by the Chinese government averted 70.5% (95% CI: 68.8 to 72.0%) of these cases. In addition, during the first three and a half weeks of implementation, the travel restrictions decreased the daily rate of exportation by 81.3% (95% CI: 80.5 to 82.1%), on average.

Arshad Ali, Baloch, Ahmed, Arshad Ali, & Iqbal (2020) reviewed the diligent measures that have been used to constrain the propagation of the COVID19. Hence, the Public Health Emergency of International Concern (PHEIC) has been established by the World Health Organization (WHO) with strategic objectives for public health to curtail its impact on global health and economy.

Several studies have focused on the disturbance caused by the COVID19 pandemic on financial markets. The impact of the COVID19 pandemic on stock markets was investigated by Okorie & Lin (2020) who examined the fractal contagion effect of this pandemic using the Detrended Moving Cross-Correlation Analysis (DMCA) and Detrended Cross-Correlation Analysis (DCCA) techniques. The results confirm a fractal contagion effect of the COVID-19 pandemic on the stock markets which fizzles out over time (in the middle and long run) for both the stock markets return and volatility. Therefore, they provide pieces of evidence for the COVID-19 fractal contagion effect on the stock markets.

The impact of this pandemic on cryptocurrencies was also explored by Mnif, Jarboui, & Mouakhar (2020) who justified a positive effect of the pandemic on the cryptocurrency market using multifractal detrended fluctuation analysis.

In this paper, we paid our attention to study the impact of COVID-19 on Islamic cryptocurrencies.

III.   DATA AND METHODOLOGY

A. Data

Unlike traditional equities and commodities, digital assets are traded on a number of exchanges.

Data is obtained from www.coinmarketcap.com, where closing prices are constructed using a weighted combination of closing prices from all exchanges on which the asset is traded.

The sample consists of three types of Islamic cryptocurrency namely *X8X 29 from 06 August 2018 to 24 March 2020 and the OneGram from 22 January 2019 to 23 February 2020 to and the Hellogold from 12 October 2017 to 24 March 2020*, extracted in daily frequency according to their availability. We also retrieved the number of daily active confirmed cases and daily cases of death from COVID-19 in all over the world from Worldmeter for the period between January 10 to 10 April, 2020.

The continuously compounded daily returns of Islamic cryptocurrencies is computed by taking the difference in the natural logarithm of two consecutive daily cryptocurrency prices defined as:

$r_t = Log(P_t) - Log(P_{t-1})$

where r_t is the cryptocurrency return at date t, and P_t is the cryptocurrency price at date t.

Figure 1depicts the evolution of daily cryptocurrencies' prices and returns. As shown in this Figure, the cryptocurrencies' prices show high instabilities. The impact of COVID-19 is observed for all cryptocurrency markets. The time variations of stock returns display stylized fact tails and volatility clustering in the X8X, HelloGold and OneGram return series.

B. Methodology

This paper does not follow classical event study methodology because the peak of the event is not the start date and that this lasts for several days. We employ the regression with Newey-West standard errors to reduce estimation bias and multicolinearity. In fact, this estimator is used to overcome autocorrelation (also called serial correlation), and heteroskedasticity in the error terms in the models, often for regressions applied to time series data.
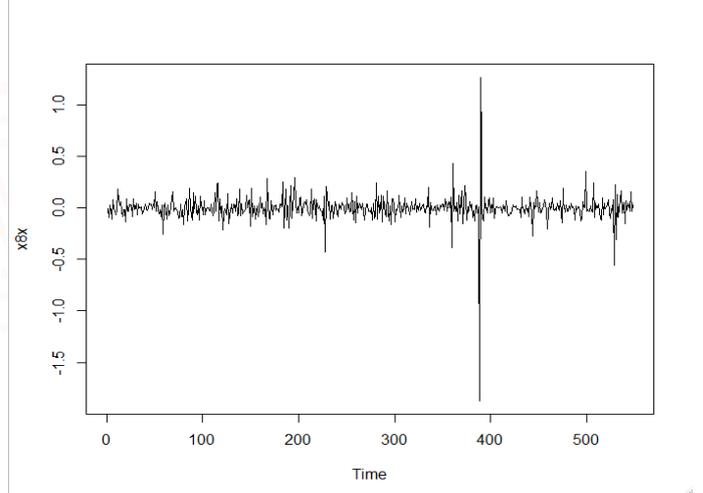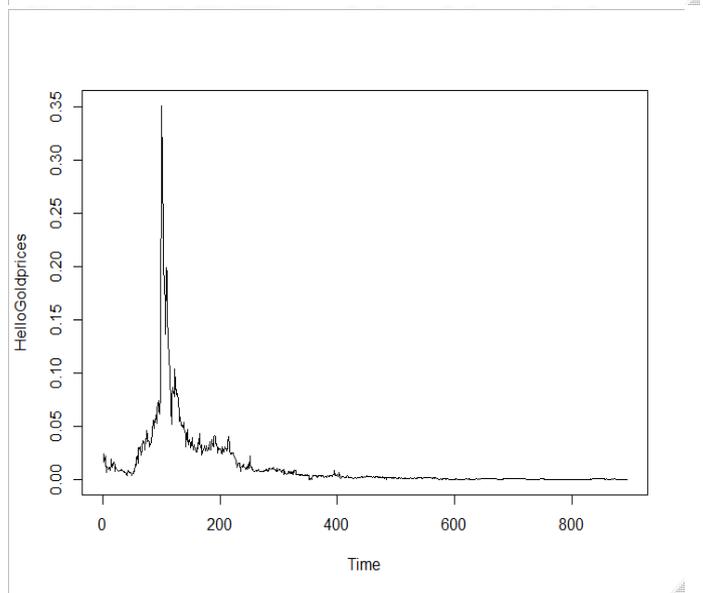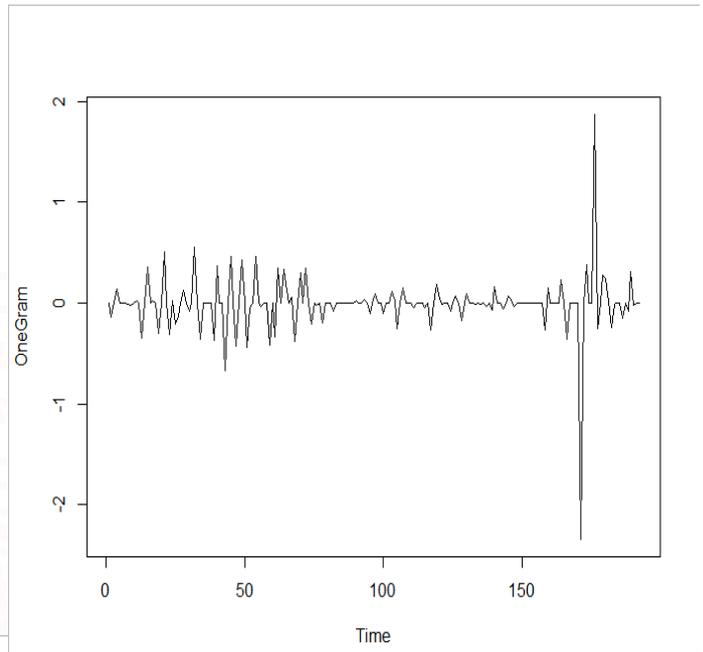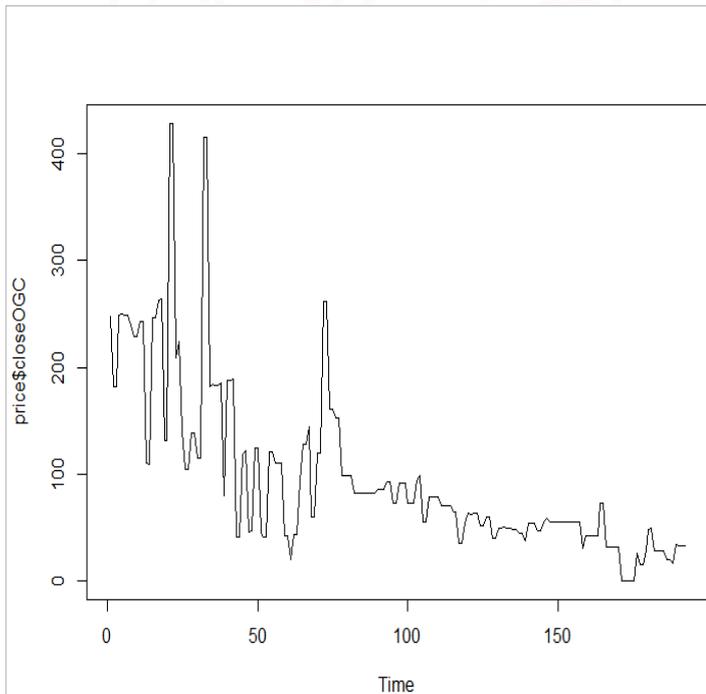
Therefore, we estimate cryptocurrency returns as:

$$R_{i,t} = \alpha_0 + \alpha_1\, COV19_{i,t-1} + \varepsilon_{i,t}$$

$CR_{i,t}$ the return of the cryptocurrency i at day t regressed on the lagged previous daily values of $COV19_{i,t-1}$, which is either daily growth in total confirmed cases or daily growth in total cases of COVID19 deaths; $\varepsilon_{i,t}$ is the error term.
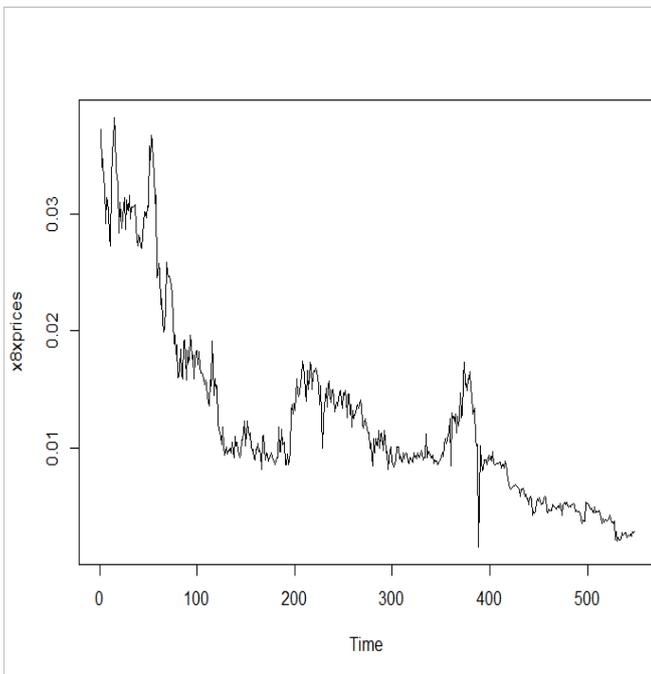
IV. EMPIRICAL RESULTS

Figure 1: OneGram, HelloGold and X8X prices' and returns'

After representing the prices' and returns' plots of the three Islamic cryptocurrencies (Figure1), this work tests the impact of COVID-19 predictors on the Islamic cryptocurrency returns.

Table 1 illustrates the results of our regression, in which we analysed the Islamic cryptocurrency market during the outbreak of the COVID-19. The results suggest that Islamic cryptocurrency returns are significantly negatively related to both the daily growth in total confirmed cases and the daily growth in total cases of deaths caused by COVID19.

Several studies have proved a negative impact of the COVID 19 pandemic on the stock markets [17]. Other researches have justified a positive effect on cryptocurrencies (Mnif et al., 2020a). However, others demonstrated an effect of instability during this pandemic (Lahmiri & Bekiros, 2020). This empirical study shows a negative impact on Islamic cryptocurrencies.

TABLE I.   ONEGRAM CRYPTOCURRENCY RETURNS AND COVID19

Panel A OneGram cryptocurrency				
	Estimate	*Pr(>|t|)*	*Std. Error*	*t value*
Intercept	9.1900e-03	0.47692	1.2855e-02	0.7149
Number of confirmed cases	-4.383e-07	0.25603	3.8290e-07	-1.1447
Increase in confirmed cases	-1.363e-06	0.51800	2.0983e-06	-0.6495
Deaths	-1.269e-06	0.80410	5.0978e-06	-0.2489
Deaths' growth	1.2796e-04	0.01097*	4.9035e-05	2.6095

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

TABLE II.   HELLOGOLD CRYPTOCURRENCY RETURNS AND COVID19

Panel A HelloGold cryptocurrency				
	Estimate	*Pr(>|t|)*	*Std. Error*	*t value*
Intercept	-2.184e-02	0.14247	1.4731e-02	-1.4824
Number of confirmed cases	2.4998e-07	0.55507	4.2164e-07	0.5929
Increase in confirmed cases	4.0090e-06	0.11344	2.5027e-06	1.6019
Deaths	-1.551e-06	6.0386e-06	5.0978e-06	-0.2569
Deaths' growth	3.7493e-05	-8.96e-05 *	-2.3911	0.01934

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

TABLE III.   X8X CRYPTOCURRENCY RETURNS AND COVID19

Panel A X8X cryptocurrency				
	Estimate	*Pr(>|t|)*	*Std. Error*	*t value*
Intercept	-7.4818e-03	0.3561487	8.0576e-03	-0.9285
Number of confirmed cases	3.0207e-07	0.1478790	2.0656e-07	1.4624
Increase in confirmed cases	-1.8887e-06	0.0008727 ***	5.4436e-07	-3.4697
Deaths	-5.832e-06	0.03775 *	2.7571e-06	-2.1154
Deaths' growth	2.9706e-05	0.012492 *	1.1602e-05	2.5605

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Conclusion:

This paper tests the impact of the COVID19 on the outcomes of three Islamic cryptocurrencies. The results clearly show that the COVID-19 cases' growth, COVID-19 death growth have a significant negative impact on the Islamic cryptocurrencies returns. In other words, the empirical results show that COVID-19 total deaths have a negative effect on respectively the X8X cryptocurrency, HelloGold, and OneGram cryptocurrencies. In the same way, the COVID-19 total confirmed cases growth has a negative effect on respectively the X8X cryptocurrency and OneGram cryptocurrencies. Our findings are adequate for the general expectation about these markets and in line with empirical findings obtained elsewhere [19] [18] [20]. Nevertheless, this research presents some challenges due to the data and market capitalization as Islamic cryptocurrencies are very recent and they are less traded on the financial markets.

The results in this study provide valuable information for policymakers, help them making policies. This paper is, therefore, useful in building trading strategies. More attention should be paid to the impact of COVID-19 on financial markets as it could offer a better experience in market management models.

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